

FOREST INSECT AND DISEASE SURVEYS
IN THE EASTERN SURVEY REGION

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

1970

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SURVEY HIGHLIGHTS

In 1970, the working unit for surveying forest insect and disease conditions in Ontario was changed from an individual technician assigned to a forest district, to a survey team led by an experienced supervisor and consisting of one to three additional technicians. Each team covered three to six forest districts. The Eastern Survey Region, which was designated to include four forest districts, was staffed by a 2-man team as follows:

North Bay and Swastika districts: - L. S. MacLeod, Supervisor
Parry Sound and Pembroke districts: - D. H. Lawrence

This report deals with the more important, or potentially more important forest insect and disease conditions found by the team in 1970.

The magnitude of the spruce budworm infestations and the resultant overlap of regional boundaries prompted the reporting of this insect on a broader basis in 1970 than heretofore (see text). A report of spraying operations against the jack-pine budworm was dealt with in a similar way. Poplar stands over large areas were severely defoliated by a complex of insects, sharp increases in population levels of the green-striped mapleworm were recorded and substantial defoliation by the birch skeletonizer occurred. Major coniferous defoliators included persistent infestations of the balsam-fir sawfly in the Pembroke District, red-headed pine sawfly in the Parry Sound District and Swaine sawfly in the North Bay and Swastika districts.

Tree disease surveys were continued with special emphasis on evaluations of cankers affecting pines. Although infection levels remained high, no significant change in the distribution of the Dutch elm disease was noted. Winter drying resulted in conspicuous discoloration of coniferous foliage at many locations through the Region.

L. S. MacLeod
Supervisor

INSECTS

Green-striped Mapleworm, *Anisota rubicunda* Fabr.

A pronounced increase in population levels of the green-striped mapleworm occurred in the townships of Anglin, Rolph, Clara, Cameron, Boyd, Canisbay and Peck in the Pembroke District. In the North Bay District light to moderate defoliation of red and sugar maple understory was observed in the central and eastern parts of Division 71. The insect was not found in the Parry Sound or Swastika districts in 1970.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

A heavy infestation of this insect caused conspicuous discoloration of white birch foliage over a large area in the North Bay, Parry Sound and Pembroke districts (see map). In addition, a relatively small area of severe skeletonizing was observed in Airy Township near the east gate of Algonquin Park.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

A substantial increase in the extent and intensity of infestation occurred in three districts of the Region. Severe defoliation of extensive stands of aspen was common in the Latchford, Gillies and Cobalt areas in the North Bay District and in the Elk Lake, Matachewan, Kirkland and Larder Lake areas in the Swastika District. Light defoliation was observed through the southern and eastern parts of the Pembroke District with severe defoliation occurring in parts of the townships of Sproule, Airy and Nightingale. At many points high populations of the *Noctuid*, *Enargia decolor* Wlk. were intermingled with the *Tortrix* and contributed substantially to the defoliation in these areas.

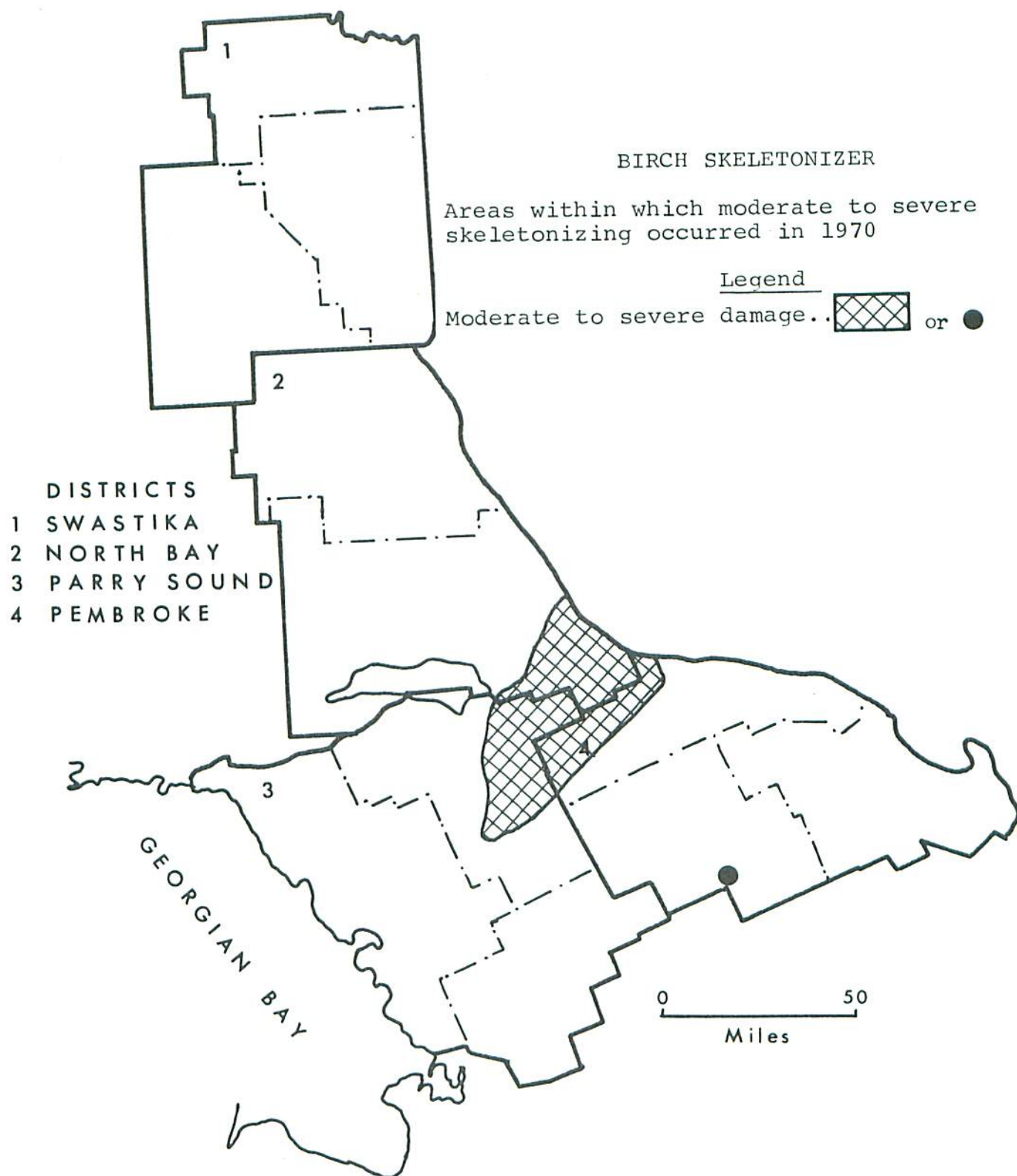
Spruce Budworm, *Choristoneura fumiferana* Clem.

The importance of this pest and the widespread damage it caused in 1970 led to a separate report outlining its activities on a province-wide basis. Specific information summarizing the various outbreaks is provided in Information Report O-X-147 included herein.

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

Major changes in the jack-pine budworm infestation occurred in the Pembroke District in 1970. The Petawawa and Lake Traverse infestations declined sharply and severe defoliation was confined to understory trees and to the periphery of stands in these areas. Small pockets of moderate-to-severe defoliation were observed in Clara, Head, Buchanan and Guthrie townships.

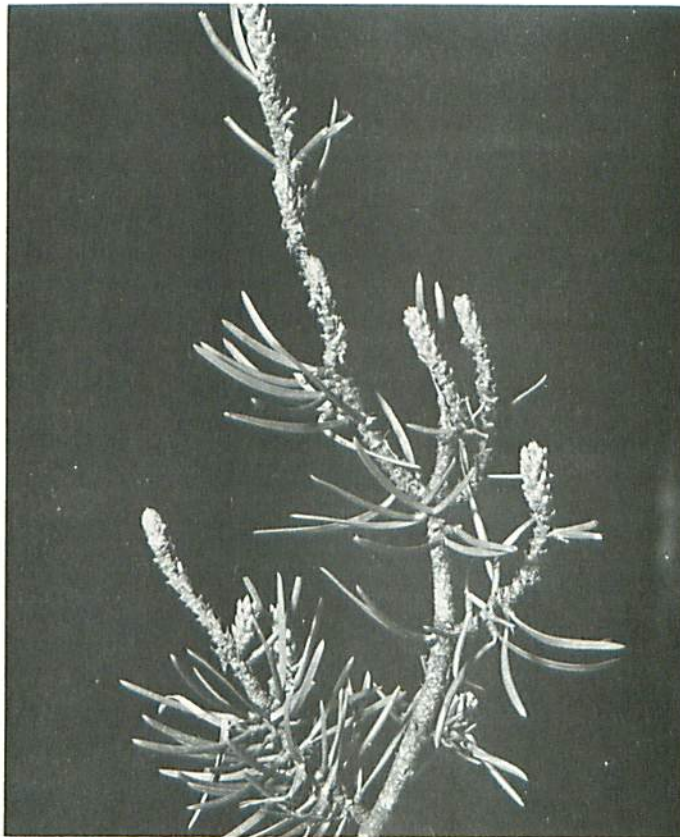
EASTERN SURVEY REGION



JACK PINE BUDWORM

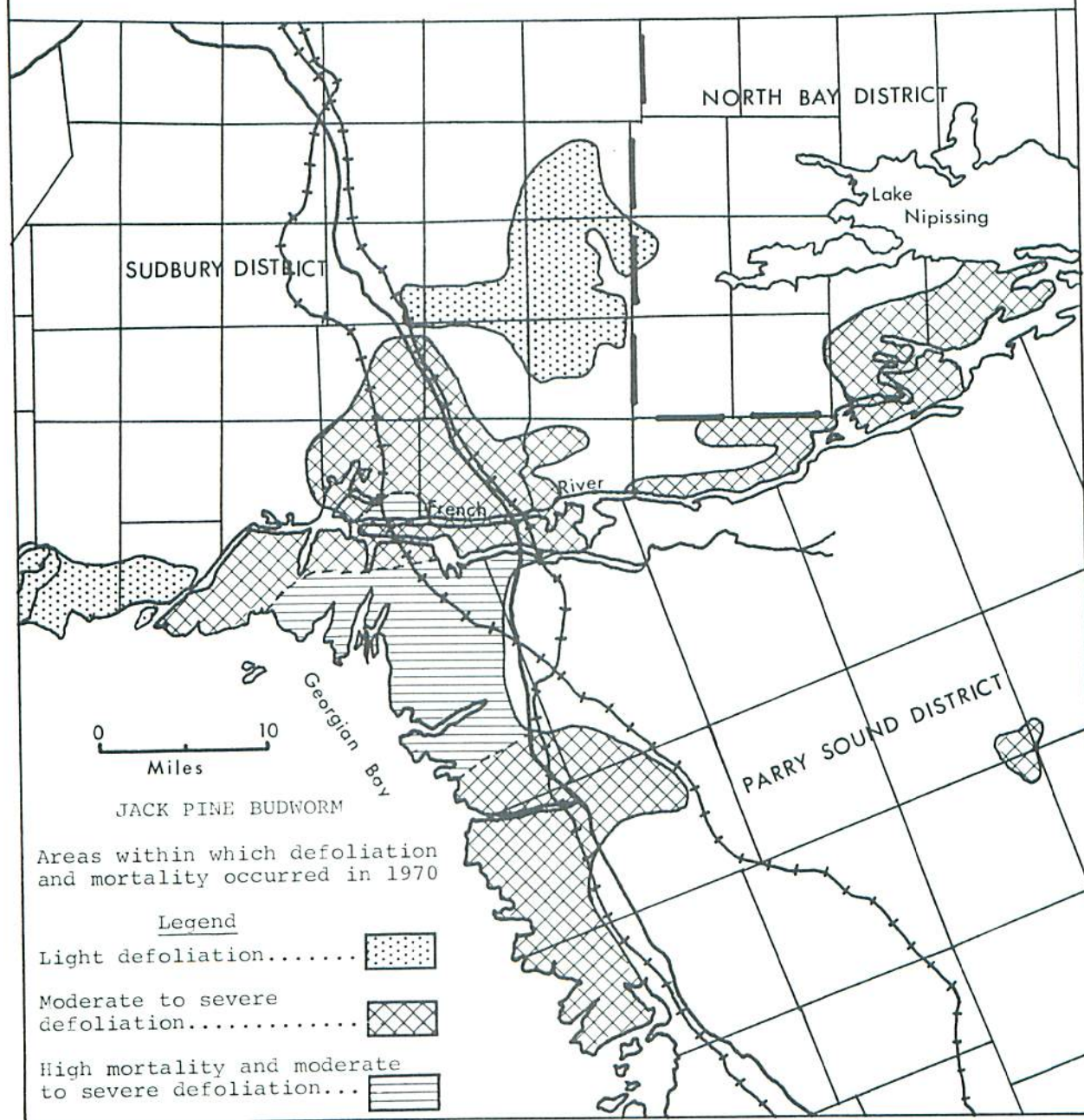


Late instar larva



Severe defoliation of jack pine branch

FRENCH RIVER AREA



Population levels remained high in the northwestern part of the Parry Sound District and in a 12-square mile area south of Illfed Lake in that district (see map). Repeated defoliation of jack-pine on poor sites has caused severe mortality over an area of approximately 100 square miles between Highway 69 on the east, Georgian Bay on the west, and from Still River in the south to the Pickerel River in the north. In addition to the outright mortality, most of the surviving trees within this area are showing dead tops.

In the North Bay District, severe defoliation recurred along the French River through the southern parts of Latchford and Bertram townships and light infestations were common at many points within the townships of Kirkpatrick, Ratter, Dunnet, Haddo, Falconer and Martland.

A Noctuid, Enargia decolor Wlk.

High populations of this insect were present in aspen stands over vast areas in the Swastika, North Bay and Pembroke districts (see map). Precise delineation of infestation boundaries was complicated by the occurrence of sporadic infestations of aspen leaf rollers within the infested areas. Huge moth flights in the fall of 1970 suggest a continuation of heavy infestation in 1971.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Light to moderate mining of white birch foliage was observed from the southern parts of the Parry Sound and Pembroke districts to the central part of the Swastika District. Severe mining occurred on open-grown and ornamental trees at many locations through this area.

Saddled Prominent, Heterocampa guttivitta Wlk.

The two-year-old heavy infestation of this hardwood defoliator which extended over a large area in the Pembroke and Parry Sound districts subsided in 1970. Light defoliation occurred east of Eagle Lake, Machar Township and north of Sand Lake, Proudfoot Township in the Parry Sound District.

Balsam-fir Sawfly, Neodiprion abietis complex

A heavy infestation of this sawfly persisted in the southeastern part of the Pembroke District. Balsam-fir trees were severely defoliated in this area. Small, heavy infestations recurred at several locations in Calvin, Papineau and Mattawan townships, North Bay District. No infestations were observed in the Parry Sound and Swastika districts in 1970.

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

Red and Scots pine plantations were severely defoliated in Ferguson, Hagerman, Croft and Chapman townships in the central part of the Parry Sound District. Light infestations were observed in plantations near North Bay and on red pine reproduction near Marten River and Jumping Caribou Lake in the North Bay District.

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

In recent years damage by this sawfly has been confined to jack-pine trees on islands and shorelines in the Banks, Lady Evelyn, Rabbit and Temagami lakes areas. In 1970, a heavy infestation was located at Big Boot Lake in Klock and Van Nostrand townships, North Bay District where approximately 300-acres of pole-size jack-pine were severely defoliated. In the Swastika District several hundred acres were heavily infested around the north shores of Banks and Makobe lakes and along the southeast shore of an unnamed lake approximately two miles northwest of Makobe Lake. Considerable top killing has occurred in both infestations. Elsewhere populations remained at approximately the same levels recorded in 1969.

White Pine Weevil, *Pissodes strobi* (Peck)

White pine weevil continued to infest plantations and open-grown trees in varying degrees through the North Bay, Pembroke and Parry Sound districts (Table 1). No extensive areas of damage were noted in the Swastika District in 1970.

EASTERN SURVEY REGION

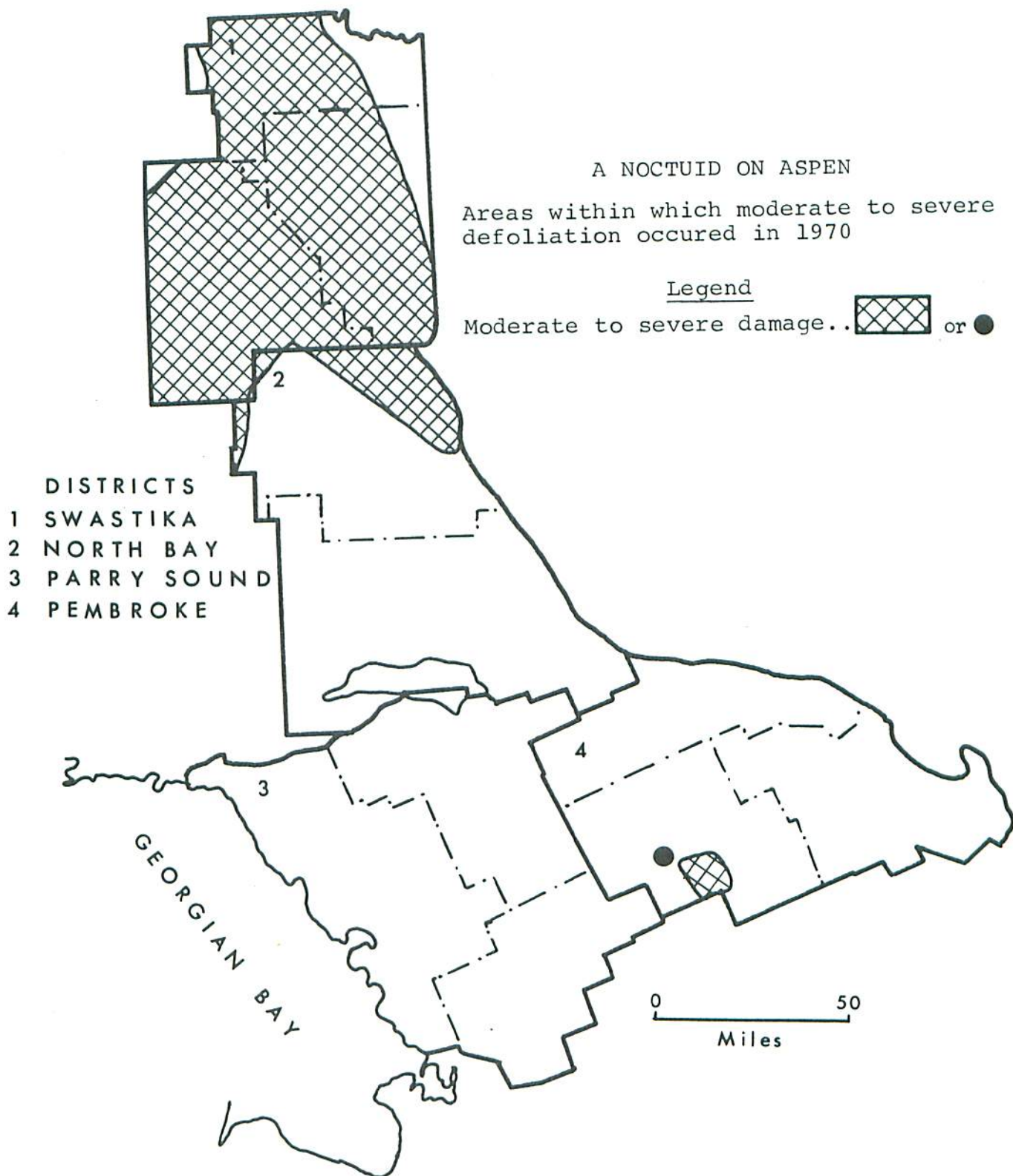


TABLE 1

Summary of Leader Damage by the White Pine Weevil at Nine Points in the Eastern Survey Region, 1970 (Counts were based on the examination of 100 trees at each point.)

Location (township)	Host	Av. height in feet	Per cent trees weevilled	
			1969	1970
<u>North Bay District</u>				
Widdifield	wP	9	34	37
Gillies Limit	jP	15	3	6
Papineau	wP	13	19	22
<u>Pembroke District</u>				
Buchanan	wP	25	8	59
Wylie	nS	35	-	48
Buchanan	jP	10	-	12
<u>Parry Sound District</u>				
Ridout	wP	10	64	47
Armour	scP	20	18	30
Proudfoot	scP	13	56	71

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Several small stands of tamarack were severely defoliated by the larch sawfly in the southern part of the North Bay District and in Perry, Chaffey and Strong townships in the Parry Sound District. One small area of severe defoliation was observed in Petawawa Township in the Pembroke District. Lightly defoliated trees occurred through all four districts in the Region.

TABLE 2

Other Noteworthy Insects

Insect	Host(s)	Remarks
<i>Adelges lariciatus</i> Patch	bS, nS	Heavy infestations in Bronson and Wylie twps., Pembroke District.

TABLE 2 continued

Insect	Host(s)	Remarks
<i>Altica ulmi</i> Woods	E	Common in White Twp., Pembroke District and in Humphrey and McMurrich twps. Parry Sound District.
<i>Anchylopera discigerana</i> Wlk.	yB, wB	High populations in Muloch, French, Poitras twps., North Bay District; Rolph and McKay twps., Pembroke District.
<i>Anchylopera fuscociliana</i> Clem.	E	Abundant in McDougall and MacAulay twps., Parry Sound District.
<i>Anisota virginiensis</i> Dru.	wB	Several small trees severely defoliated, Clarkson Twp., North Bay District.
<i>Archips cerasivorana</i> Fitch	rP	Appreciable damage to plantations in French Twp., North Bay District.
<i>Arge pectoralis</i> Leach	yB, wB	Colonies common at many points through North Bay, Pembroke and Parry Sound Districts.
<i>Conophthorus resinosae</i> Hopk.	rP	High numbers on Temagami, Rabbit, White Bear lakes, North Bay District.
<i>Datana ministra</i> Dru.	yB	Small trees severely defoliated in Phelps Twp., North Bay District.
<i>Dioryctria reniculella</i> Grt.	wS	Low numbers common in North Bay District and in Mulligan Twp., Swastika District.
<i>Diprion hercyniae</i> Htg.	wS	Quantitative sampling showed a general decrease through region.
<i>Epinotia solandriana</i> Linn.	wB	Light infestations at many points in North Bay and Swastika districts.
<i>Eucordelea resinosae</i> Free.	rP	Needle mining common on young trees in North Bay District.

TABLE 2 continued

Insect	Host(s)	Remarks
<i>Gnathotricus materiarius</i> Fitch	wP	Heavy infestation in log dump and lumber at Marten River, North Bay District.
<i>Gonioctena americana</i> (Schaeef.)	tA	Severe defoliation of reproduction in northern part of North Bay District.
<i>Hydria prunivorata</i> Ferg.	bCh	Heavy skeletonizing in Parry Sound and North Bay districts.
<i>Hyphantria cunea</i> Dru.	bAs, E, Po, wB	Common in Parry Sound, Pembroke, and North Bay districts.
<i>Nematus limbatus</i> Cress. <i>Nematus salicisodoratus</i>	W	A few colonies Muloch Twp., North Bay District.
<i>Nematus</i> sp. #3	wB	Several colonies at Ragged Chute, North Bay District.
<i>Neodiprion virginianus</i> complex	jP	Colonies common through Swastika and North Bay districts and in Henvey Twp., Parry Sound District.
<i>Orgyia leucostigma</i> J. C. Smith	rM, sM	Numerous in Machar and Proudfoot twps., Parry Sound District.
<i>Phratora purpurea purpurea</i> Brown	tA, bPo	Severe skeletonizing in Buchanan Twp., Pembroke District.
<i>Pikonema alaskensis</i> (Roh.)	wS	Severe defoliation of windbreaks and plantations in Dymond, Cane and Harley twps., Swastika District.
<i>Plagiodera versicolor</i> Laich	W	Moderate to severe skeletonizing on shade and ornamental trees in southeastern part of Pembroke District.
<i>Pleroneura borealis</i> Felt	bF	Lightly infested trees at many points in region.
<i>Pristiphora geniculata</i> Htg.	Mo	Severely defoliated trees in all districts.

TABLE 2 continued

Insect	Host(s)	Remarks
<i>Pulicalvaria thujaella</i> complex	ewC	Light infestation in south-eastern part of Pembroke District.
<i>Rhyacionia adana</i> Heinr.	rP	Light infestations in French and Firstbrook twps., North Bay District.
<i>Setoptus jonesi</i> (Keifer)	rP	Heavily infested trees in Firstbrook Twp., North Bay District.
<i>Sparganothis sulfureana</i> Clem	rP	Numerous in plantation in French Twp., North Bay District.
<i>Xylococculus betulae</i> Perg	Be	Numerous trees heavily infested in Lount Twp., Parry Sound District.
<i>Zellaria haimbachi</i> Busck.	jP	Light infestations at many points in North Bay and Swastika districts.

TREE DISEASES

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

Wilting of white elm trees in the North Bay District was more apparent than previously noted. Since few infection free stands exist in the Parry Sound and Pembroke districts, an increase of this disease could not be detected but continued tree mortality was evident.

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

Extensive discoloration of aspen foliage recurred at numerous locations through Swastika and North Bay districts (Table 3). This foliar disease was of little significance in Pembroke and Parry Sound districts where only light levels of infection were noted.

TABLE 3

Summary of Incidence and Levels of Infection of the Ink Spot of Aspen in the Eastern Survey Region

Location (township)	Tree height in feet	Basal area	Level of incidence	Level of infection
<u>Parry Sound District</u>				
Mowat	45	73	Heavy	Light
<u>Pembroke District</u>				
Wylie	40	55	Heavy	Light
<u>North Bay District</u>				
Hartle	50	50	Heavy	Moderate
<u>Swastika District</u>				
Grenfell	70	57	Heavy	Moderate
Holloway	70	68	Heavy	Moderate
Marquis	65	64	Heavy	Moderate
Playfair	70	74	Heavy	Moderate
Truax	50	58	Heavy	Moderate

A Needle Rust of Pine, *Coleosporium asterum* (Diet.) Syd

Approximately 250 acres of jack pine planted in 1969 were highly infected with this rust in Beauchamp Township, Swastika District.

Sweet Fern Blister Rust, *Cronartium comptoniae* Arth.

Evaluations of this basal stem canker, common to the North Bay, Swastika, and Pembroke districts, revealed moderate to heavy levels of infection in numerous jack pine stands through these three districts as summarized in Table 4. A moderate level of infection was recorded in a pole-size jack pine stand in Harrison Township, Parry Sound District where this pathogen had not been previously found.

TABLE 4

Summary of Incidence, Mortality and Levels of Infection of Sweetfern
Blister Rust in the Eastern Survey Region

Location (township)	Tree height in feet	Level of incidence	Per cent Mortality	Level of infection
<u>Pembroke District</u>				
Maria	65	Moderate	5	Moderate
Richards	60	Moderate	-	Moderate
<u>Parry Sound District</u>				
Harrison	20	Moderate	2	Moderate
<u>North Bay District</u>				
Coleman	70	High	-	High
<u>Swastika District</u>				
Beauchamp	40	High	-	High
Lawson	60	Moderate	-	Moderate
Mickle	65	Moderate	-	Moderate
Munro	50	Moderate	-	Moderate
Willison	65	Moderate	-	Moderate

Gall Rust of Hard Pines, *Endocronartium harknessii* (J. P. Moore)
Y. Hiratsuka

Appreciable loss of volume in mature jack pine stands through reduced growth and wind snap resulted from this gall rust at several points throughout Pembroke and Parry Sound districts. Most severe damage, as indicated in Table 5, occurred in Maria Township, Pembroke District. An appraisal of this gall was made in a stand in Mattawan Township, North Bay District.

WESTERN GALL RUST



Typical stem canker



Jack pine tree with branch cankers

TABLE 5

Summary of Incidence, Mortality and Levels of Infection of Gall Rust of Hard Pines in the Eastern Survey Region

Location (township)	Tree height in feet	Level of incidence	Per cent Mortality	Level of infection
<u>Pembroke District</u>				
Clara	65	High	2.5	Moderate
Head	40	High	-	Moderate
Maria	65	High	2.5	High
White	55	High	2.5	Moderate
<u>Parry Sound District</u>				
Harrison	20	High	-	Moderate
<u>North Bay District</u>				
Mattawan	60	Moderate	-	Moderate

Hail Damage

Branches and twigs on the northwest aspect of mature white pine and understory balsam fir died as the result of a severe hail storm extending from Eeyore Lake, Maria Township to Jennings Lake, Head Township in the Pembroke District.

Mortality of Red Oak

In 1970 considerable tree mortality and top-dying of red oak was observed over approximately 2,500 acres in Fraser, Wilberforce, Alice and North Algona townships of the Pembroke District. Tree mortality approximating 35 per cent has apparently developed over several years following severe defoliation by forest tent caterpillar which occurred from 1962 to 1967 inclusive. *Cytospora intermedia* Sacc., considered to be a secondary pathogen was frequently associated with dead and dying branches.

Climatic Condition of Red Spruce

Severe discoloration of the 1968 and 1969 foliage of red spruce trees occurred over an area from Livingstone Township, Parry Sound District, to Nightingale Township, Pembroke District (see map). Appreciable branch and twig mortality was observed and many new shoots failed

to develop in 1970. The cause of this condition has not been determined.

Scleroderris Canker of Pine, *Scleroderris lagerbergii* Gremmen

The close examination of natural jack pine stands and numerous jack pine, Scots pine and red pine plantations in conjunction with the establishment of plots, one in North Bay District, two in Swastika District and four in Pembroke District, failed to locate this pathogen. However, cultures from suspect trees resulted in positive records from small red pine trees in Bastedo Township, North Bay District and from jack pine trees at the tree nursery in Swastika District.

Wind Damage

On August 20, 1970 a severe wind storm originating in the Sudbury District swept through the North Bay District from a point north of Hagar through the town of Field to the Quebec border. The path of the storm was approximately one-quarter of a mile wide and heavy windthrow and tree mortality resulted.

Winter Drying

Unusually severe winter drying occurred on windbreaks and plantations of coniferous hosts through the North Bay and Swastika districts during the winter of 1969-70. Although browning of foliage was spectacular, bud damage on pine was not serious and little permanent damage resulted. This condition was also apparent to a lesser degree through Pembroke and Parry Sound districts.

TABLE 6

Other Noteworthy Diseases

Organism	Host(s)	Remarks
<i>Cronartium comandrae</i> Pk.	jP	Cankering in Head and Clara twps., Pembroke District and in Harrison Twp., Parry Sound District.
<i>Isthmiella crepidiformis</i> (Darker) Darker	bS	Several trees killed at one location, North Bay District.
<i>Lophodermium pinastri</i> (Schrad. et Hook) Chev.	rP	Severe browning of foliage in plantation, Boulter Twp., Parry Sound District.

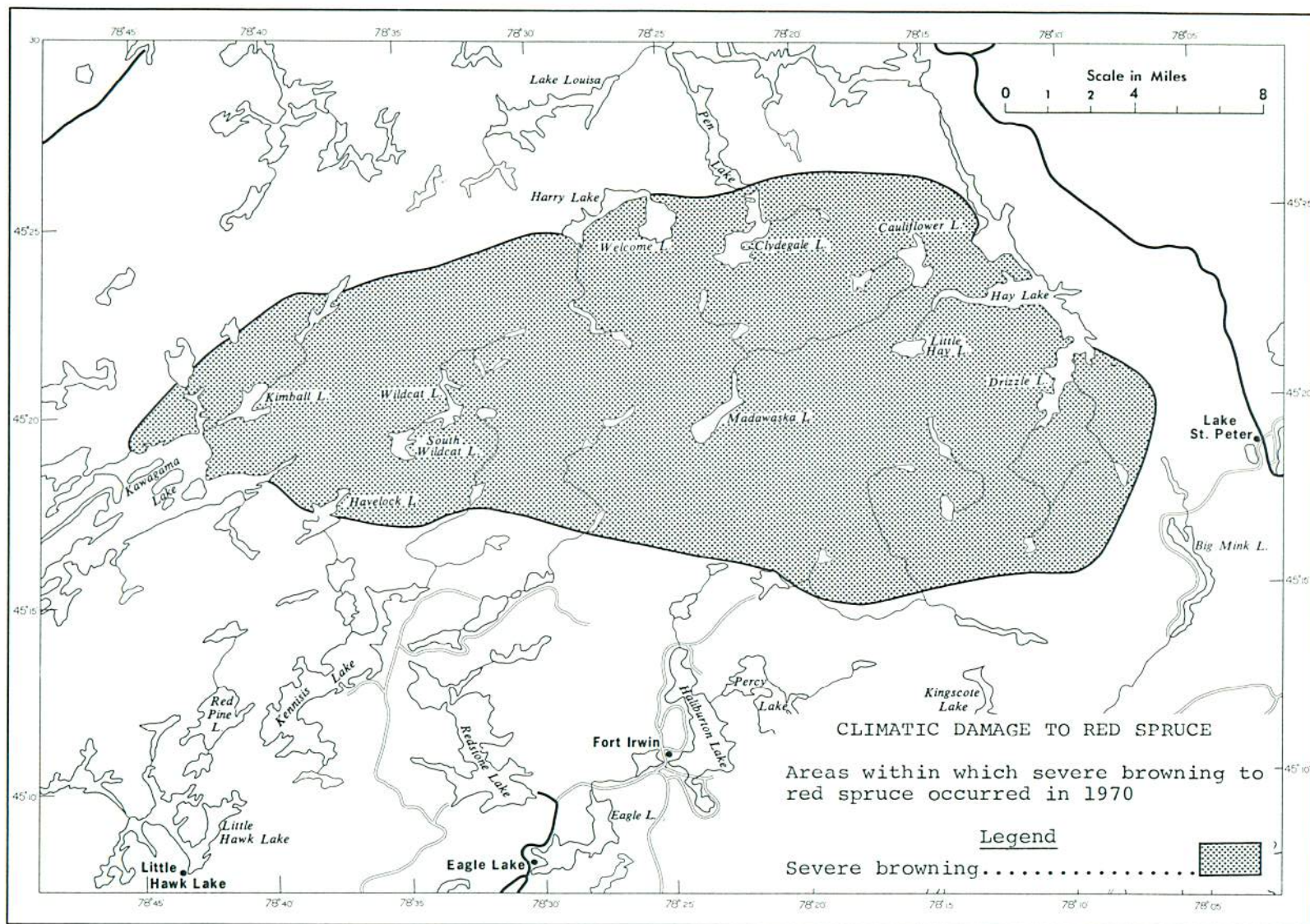


TABLE 6 continued

Organism	Host(s)	Remarks
<i>Melampsora abietis-canadensis</i> C.A. Ludwig ex Arth.	eH	Severely infected cones in Freeman Twp., Parry Sound District.
<i>Melampsora medusae</i> Thuem.	tA	Fruiting common in Bronson and White twps., Pembroke District and in Perry Twp., Parry Sound District.
<i>Naemacyclus niveus</i> (Pers. ex Fr.) Sacc.	ScP	Severe needle cast in a plan- tation in McMurrich Twp., Parry Sound District.