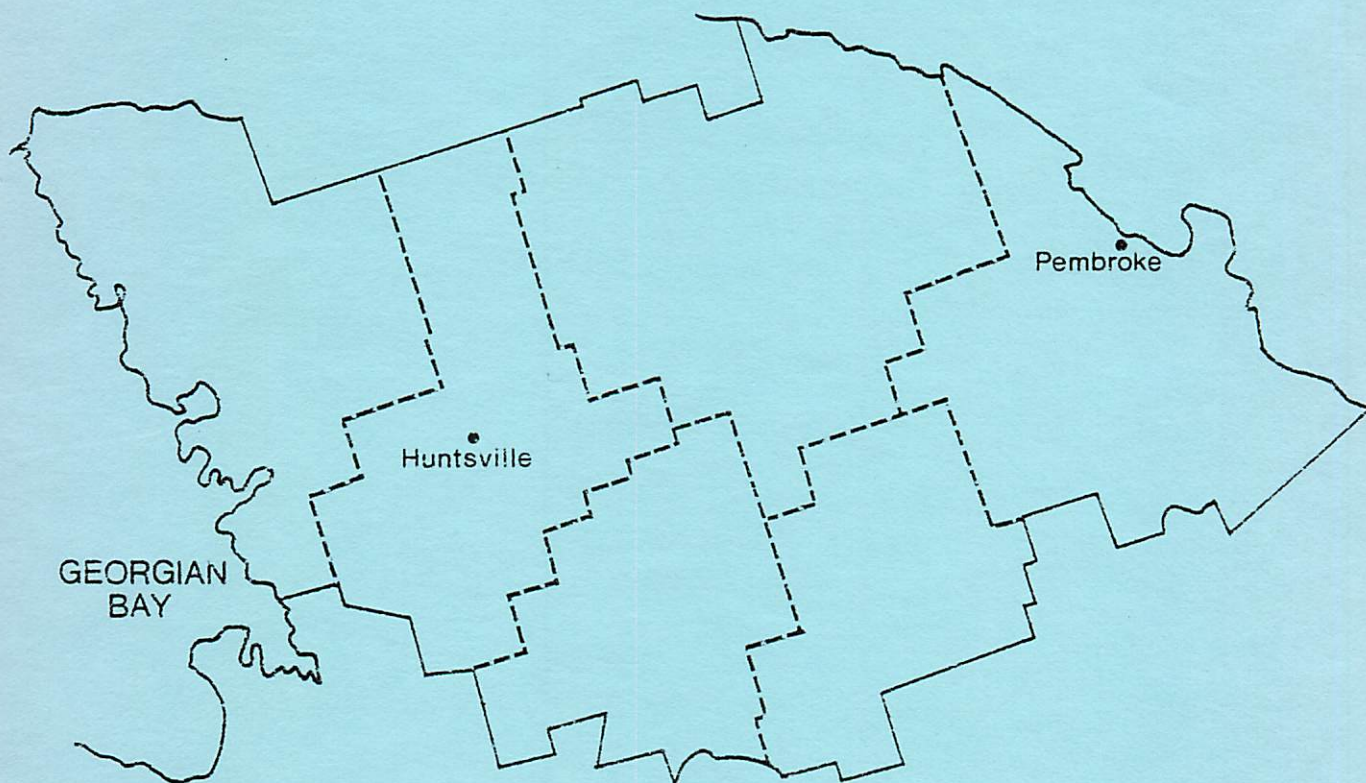


1979

Results of forest insect and disease surveys in the ALGONQUIN REGION of Ontario, 1978

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CARRIED OUT BY THE GREAT LAKES FOREST
RESEARCH CENTRE IN CO-OPERATION WITH
THE ONTARIO MINISTRY OF NATURAL RESOURCES

SURVEY HIGHLIGHTS

The following information deals with the more important forest insect and disease conditions in the Algonquin Region in 1978.

A major decline in the forest tent caterpillar infestation was a highlight of the 1978 field season. Population increases of the spruce budworm, web-spinning sawfly and redheaded pine sawfly were evident. An outbreak of the hemlock looper occurred in the southern part of the Region. Populations of the larch sawfly and oak leaf shredder remained at approximately the same level as in 1977. Control measures were carried out for forest tent caterpillar populations at Grundy Lake and Mikisew Provincial parks and also at the Leslie M. Frost Centre. Controls were also conducted on Crown-owned and private pine plantations for the redheaded pine sawfly.

Forest disease surveys concentrated on a virulent strain of *Gremmeniella abietina* which affects larger red pine trees, and a decline of sugar maple which followed after repeated defoliation by forest tent caterpillar. The red oak plots established in 1977 were resurveyed in 1978. Road salt caused browning and some mortality on roadside trees along well travelled highways. There was an increase in the distribution of Scleroderris disease on young red pine. Anthracnose of maple and frost injury to ornamental trees caused concern to private individuals and government agencies.

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FRONTISPIECE

The following information deals with the more important forest and timber conditions in the mountain region in 1957. The condition of the forest and timber resources in the mountain region in 1957 is described in this report. Population statistics for the mountain region are also included. The population statistics are based on the 1950 census of the United States. The population statistics for the mountain region are based on the 1950 census of the United States. The population statistics for the mountain region are based on the 1950 census of the United States.



Frontispiece. Severe defoliation of mature eastern hemlock by the eastern hemlock looper, *Lambdina fiscellaria fiscellaria* Gn.

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INSECTS

Pine False Webworm, *Acantholyda erythrocephala* (Linn.) (formerly
Cephalcia frontalis Westw. or *Cephalcia* spp.)

This introduced sawfly, first observed in Canada on Mugho pine (*Pinus mugho* Turra) in Scarborough Township in Simcoe District in 1961, has since spread north and east into the Minden, Bancroft, and southern parts of the Bracebridge and Parry Sound districts. Populations have persisted in two large red pine (*Pinus resinosa* Ait.) plantations in Burleigh Township, Bancroft District, since 1972. Other persistent infestations have occurred in Somerville and Galway townships, Minden District; in Watt Township, Bracebridge District; and in Carling Township, Parry Sound District. A further extension northward was observed in Bethune Township in Bracebridge District in 1978 (Table 1).

Table 1. Summary of damage caused by the pine false webworm on red pine in four districts of the Algonquin Region in 1977 and 1978 (based on the examination of 100 trees at each location).

Location (Twp)	Avg ht of sample trees (m) ^a	No. of trees infested	
		1977	1978
Bancroft District			
Burleigh	1.7	87	82
Bracebridge District			
Watt	1.4	37	29
Bethune	2.7	-	16
Minden District			
Somerville	2.7	78	60
Parry Sound District			
Carling	1.7	100	60

^a 1 m = 3.28 ft

Cedar Leafminers, *Argyresthia thuiella* Pack. and
Fulicalvaria thujaella (Kft.)

Populations of this leafminer complex declined to a low level in 1978, especially in the Minden and Bancroft districts where severe browning of white cedar (*Thuja occidentalis* L.) foliage has occurred in recent years. In 1978 only a few small pockets of light-to-moderate damage remained in Somerville Township, Minden District, and in Burleigh Township in Bancroft District.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling and egg-mass counts have been included with those of other survey regions in a special report by Howse et al. (Report O-X-300). This report provides a complete description and analysis of the spruce budworm situation in Ontario in 1978 and gives infestation forecasts for the province for 1979.

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.)

Populations of this defoliator remained generally low. However, in 1978 light-to-moderate defoliation of red oak (*Quercus rubra* L.) occurred in Ryde and Morrison townships in the Bracebridge District. Light defoliation of oaks was observed in the Silent Lake Provincial Park area, Bancroft District, and in Petawawa, Westmeath, Radcliffe, Wilberforce and McKay townships in Pembroke District.

Eastern Pineshoot Borer, *Eucosma gloriola* Heinr.

Populations increased on red pine in the Minden and Bracebridge districts but decreased in the Bancroft District. Summary of trees infested is shown in Table 2.

Birch Leafminer, *Fenusa pusilla* (Lep.)

The high populations, which have persisted in the Bracebridge-Huntsville area of the Bracebridge District for a number of years, declined in 1978. Severe browning of white birch (*Betula papyrifera* Marsh.) leaves were observed in urban areas in the Pembroke and Bancroft districts. Low populations were observed in Minden and Parry Sound districts (Table 3) and at several scattered locations in the Algonquin Park District.

American Aspen Beetle, *Gonioctena americana* (Schaeef.)

Populations of this beetle increased in several areas of the Region. Small pockets of severe damage to trembling aspen (*Populus tremuloides* Michx.) occurred in Stisted, Chaffey, and Macaulay townships

in the Bracebridge District, and in Monteith Township, Parry Sound District. Pockets of light-to-moderate defoliation of young aspen were observed in Cardiff Township, Bancroft District, in Sabine Township, Algonquin Park District, and in Radcliffe Township, in Pembroke District. Small numbers of colonies were common at scattered locations in the Region.

Table 2. Summary of eastern pineshoot borer infested red pine shoots taken at seven locations in the Algonquin Region in 1978 (based on the examination of 100 randomly selected trees).

Location (Twp)	Avg ht of sample trees (m) ^a	No. of trees infested	Total no. of infested shoots	Avg no. of infested shoots per tree
Bracebridge District				
Stisted, Lot 20, Conc. IX	2.1	67	103	1.53
Stisted, Lot 10, Conc. X	1.8	72	93	1.29
Strong	1.8	53	78	1.47
Watt	1.5	29	31	1.06
Minden District				
Somerville	2.1	27	46	1.70
Minden	2.4	51	69	1.35
Lutterworth	1.9	43	73	1.69

^a 1 m = 3.28 ft

Fall Webworm, *Hyphantria cunea* Dru.

Numerous feeding nests were observed along County Road 639 in Somerville Township and along 503 in Snowdon Township in the Minden District. Elsewhere in the Region only scattered individual trees were infested. There was a definite reduction in the heavy infestation reported in Petawawa Township, Pembroke District, in 1977.

Pine Engraver Beetle, *Ips pini* Say

Heavy infestations of the pine engraver beetle caused red pine mortality at several locations in the Pembroke District. A pocket of more than 50 trees were either dead or dying after being heavily infested in a large block of 4-m (13-ft) red pine at Quadeville in Lyndoch Township. All trees were heavily attacked and killed in a

group of pole-size red pine south of Shady Nook, Stafford Township. These trees were growing on a shallow soil site and may have been weakened by this condition. A smaller pocket of 5-m (16-ft) trees were also attacked and killed in a part of a large red pine plantation in Frazer Township.

High populations of this beetle initially develop in slash, wind-falls or in trees dying of other causes, but when this breeding material is not present healthy trees may be attacked and killed.

Table 3. Summary of damage by the birch leafminer on white birch at four locations in the Algonquin Region in 1978 (based on the examination of 100 leaves selected randomly from three trees at each location).

Location (Twp)	Avg DBH of sample trees (cm) ^a	Leaves mined (%)	
		1977	1978
Bracebridge District			
Ryde	7.5	--	19
Macaulay	7.5	93	27
Chaffey	10.0	98	63
Minden District			
Lutterworth	7.5	--	67

^a 1 cm = 0.39 in.

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* Gn.

The last heavy infestation of this major defoliator reported in Ontario occurred on eastern hemlock (*Tsuga canadensis* [L.] Carr.) in the Lake of Bays, Muskoka Lake and Parry Sound areas from 1950 to 1955 and on balsam fir, (*Abies balsamea* [L.] Mill.), white spruce (*Picea glauca* [Moench] Voss) and various deciduous trees on the shoreline and islands of Lake Abitibi near Cochrane between 1950 and 1954. Heavy tree mortality resulted from severe defoliation at both locations. In 1955 a spray project using DDT and oil was carried out on Bernice Island in Georgian Bay. From 1956 to 1977 no major outbreaks were observed in Ontario. In 1978 moderate-to-severe defoliation and some mortality of eastern hemlock were observed on islands and lakeshores around Anstruther, Catchacoma, Gold and Cold lakes in the southern part of Anstruther and Cavendish townships and in the northern part of Harvey and Burleigh townships (see Frontispiece). In all, approximately 404 ha (1000 acres) were affected, with about 60 ha (150 acres) of mature hemlock moderately to severely

defoliated (Fig. 1). Subsequent aerial photographs taken by the Ontario Ministry of Natural Resources (OMNR) indicate that there could be some discrepancies in the southern boundary of the infestation.

Defoliation and mortality checks were made between Anstruther and Poplar lakes and on the north shore of Cold Lake. At both locations the defoliation ranged from 5 to 95% and mortality was 18% at the former location and 1% at the latter. One hundred trees were examined at each location.

Heavy adult flights were observed between August 23 and October 3 with declining numbers until October 17, 1978.

In September and November of 1978 egg surveys were conducted at several locations to attempt to forecast larval populations expected in 1979. Because of the lack of quantitative criteria available, accurate forecasts cannot be made but it would appear that populations levels will be much lower in 1979 than in 1978 and perhaps the infestation has collapsed.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

An almost complete collapse of the large infestation reported in 1977 occurred in 1978 (Fig. 2). Larval mortality caused by starvation and an increased population of the parasitic fly *Sarcophaga aldrichi* Park. in 1977 are suspected to be the main causes of the decline.

Small pockets of moderate-to-severe defoliation persisted in Mowat and Blair townships in the northern part of the Parry Sound District, and near the village of Minden, in the Minden District. Colonies and small numbers of larvae were observed in Machar and Lount townships and in the Lake of Bays area, all in Bracebridge District, and in Cardiff Township in Bancroft District.

In 1978, excessively high populations of the parasitic fly were observed throughout the entire Region causing considerable public concern. Field dissections of cocoons after moth emergence showed very high parasitism at six locations (Table 4).

Control by aerial spraying using *Bacillus thuringiensis* was carried out in mid-May at Grundy Lake and Mikisew Provincial parks and at the Leslie M. Frost Centre. No larvae were observed in post-spray surveys at the aforementioned locations.

Egg-band counts to forecast larval populations in 1979 were taken at numerous locations in the Region. Three trees were felled at each location and examined. Results of this survey are shown in Table 5.

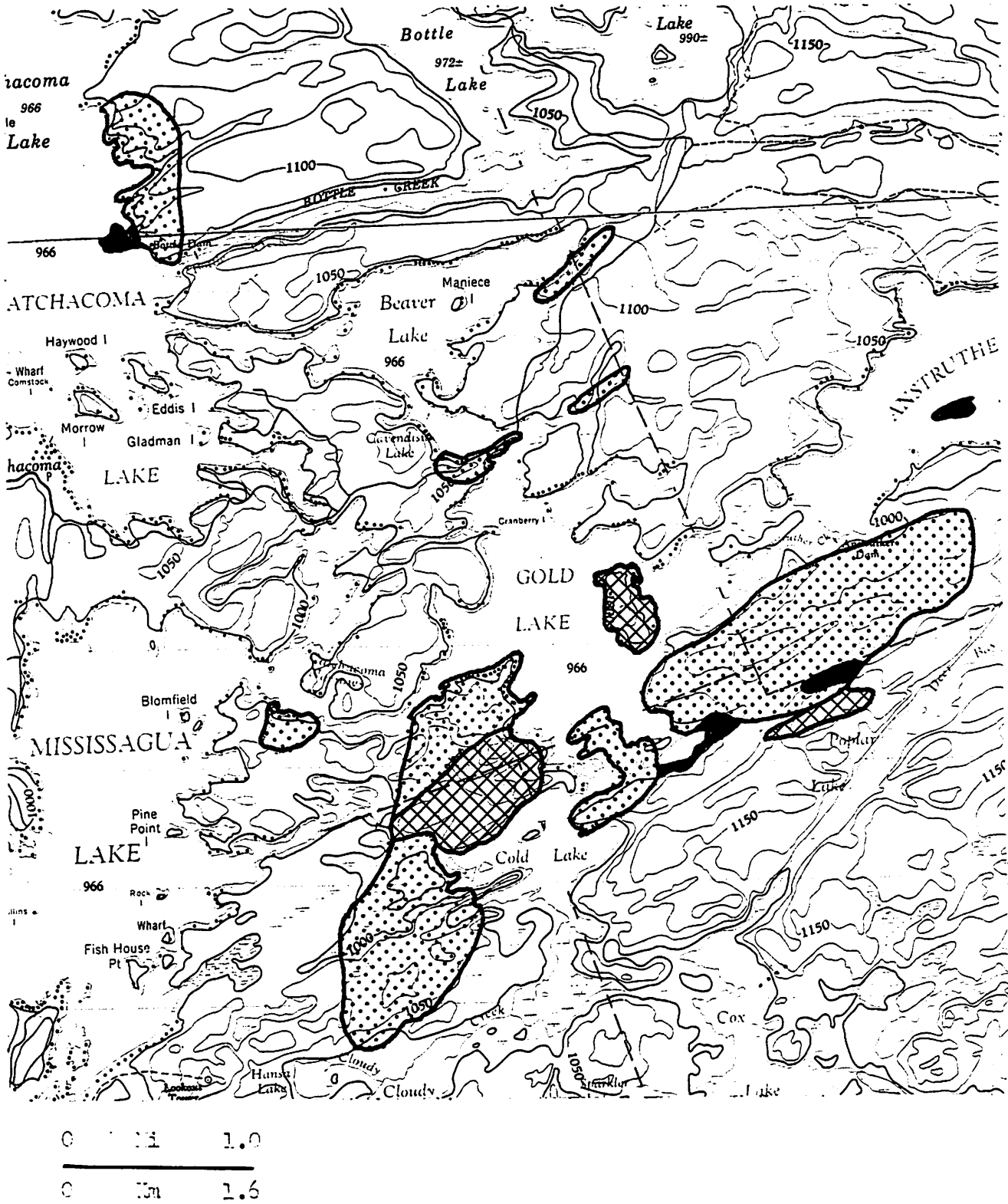


Fig. 1. Areas within which defoliation of eastern hemlock occurred in 1978 (determined by ground and aerial surveys).




Moderate-to-severe defoliation . .  or 
Trace-to-light defoliation 

Table 4. Results of forest tent caterpillar cocoon dissections made at six locations following moth emergence.

Location (Twp)	No. of cocoon examined	No. parasitized	No. successful emergence	Other
Minden District				
Minden	55	51	3	1
Sherborne	36	33	2	1
Bracebridge District				
Brunel	25	24	1	0
Machar	63	56	4	1
Parry Sound District				
Mowat	100	93	4	3
Blair	100	89	5	6

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Populations of this insect increased in four of the six districts in the Region. Severe defoliation occurred in a privately owned 6-ha (15-acre) red pine plantation in South Algona Township, Pembroke District; a 4-ha (10-acre) plantation in Wollaston Township, Bancroft District; a 6-ha (15-acre) plantation in Lutterworth Township and a 10-ha (25-acre) 10-year-old plantation in Minden Township, Minden District. Light-to-moderate defoliation was observed at several other locations in Anstruther, Burleigh and Chandos townships in the Bancroft District, in Somerville Township in the Minden District and in Watt Township in the Bracebridge District (Table 6). Early inspections of Crown-owned and some private plantations, and prompt chemical control measures using Malathion were employed by OMNR and private owners to prevent severe defoliation at numerous other areas.

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

Population increases occurred in the Pembroke District and in the northern part of the Parry Sound District. Light-to-moderate defoliation was observed on numerous trees in a 2-ha (5-acre) block of 6 m (20 ft) jack pine (*Pinus banksiana* Lamb.) in North Algona Township, Pembroke District, and in natural and planted jack pine at four locations in Blair and Mowat townships, Parry Sound District (Table 7). Smaller fringe trees near both of these infestations were completely defoliated (see photograph). A light infestation was present on fringe trees in a natural jack pine stand in Buchanan Township, Pembroke District.



Severe defoliation of
jack pine by the jack pine
sawfly, *Neodiprion pratti*
paradoxicus Ross.

Sugar maple mortality
in the Moon River area,
Parry Sound District.



Table 5. Summary of forest tent caterpillar egg-band counts at 18 locations in the Algonquin Region.

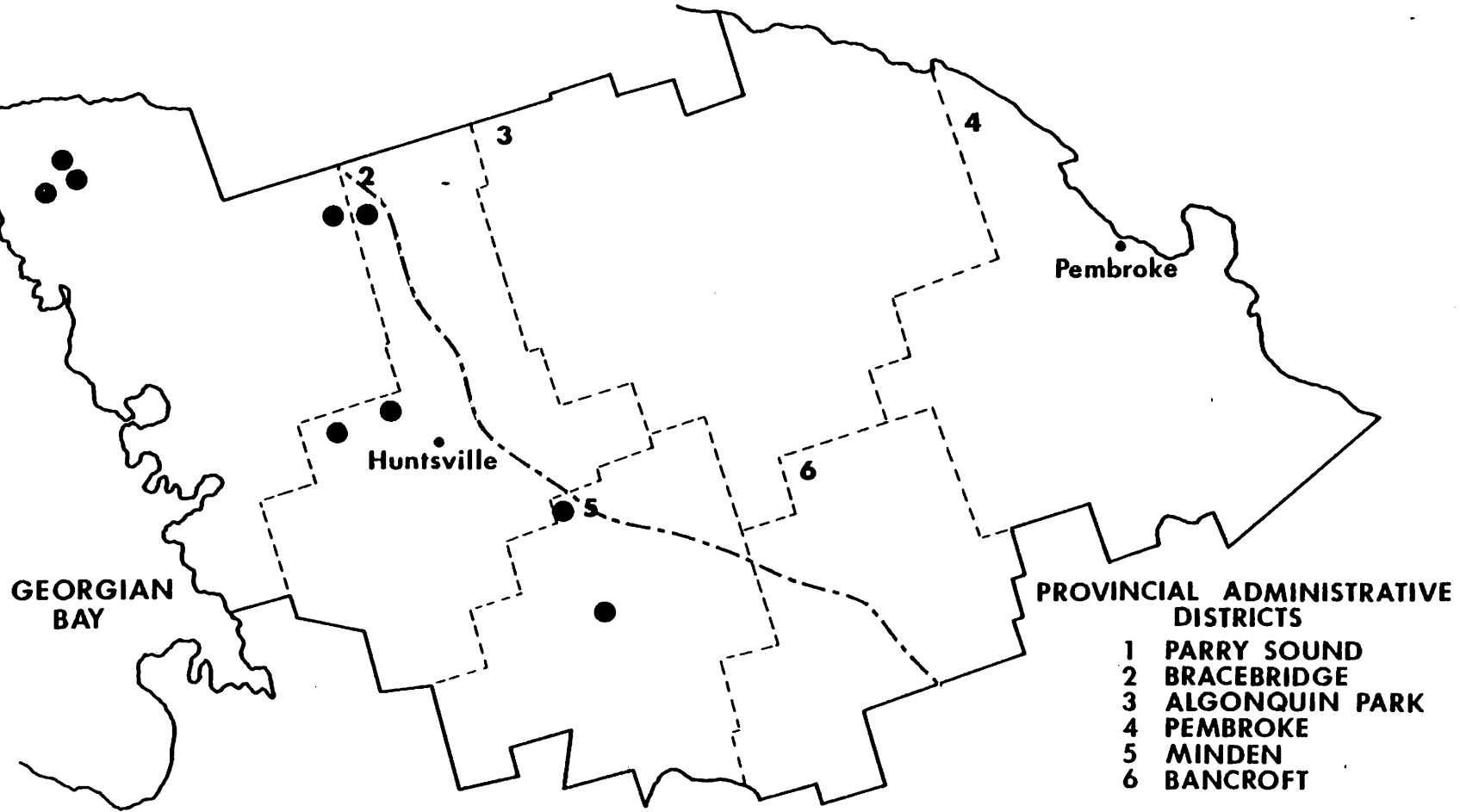
Location (Twp)	Host	Avg. DBH of sample tree (cm) ^a	Avg no. of egg bands per tree	Infestation forecasts for 1979 ^b
Parry Sound District				
Carling	tA	12	0	nil
Foley	cPo	20	0	nil
Mowat	tA	12	.6	L
Mowat	tA	12	0	nil
Henvey	tA	12	.3	L
Henvey	tA	12	.6	L
Mowat	tA	12	1.0	L
Foley	tA	12	0	nil
Bracebridge District				
Finlayson	sM	12	0	nil
Monck	tA	12	0	nil
Ridout	tA	12	0	nil
Strong	tA	12	0	nil
Wood	sM	12	0	nil
Watt	tA	12	0	nil
Machar	tA	12	1.3	L
Minden District				
Minden	tA	12	0	nil
Bancroft District				
Cardiff	tA	12	0	nil
Wollaston	tA	12	0	nil

^a 1 cm = 0.39 in.

^b L - light

Population forecasts for 1979 indicate that a further decline can be expected throughout the Region.

ALGONQUIN REGION



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Fig. 2. FOREST TENT CATERPILLAR
 Locations where defoliation occurred in 1978
 Moderate-to-severe defoliation ●
 Eastern boundary of 1977 infestation - - - - -

Table 6. Summary of redheaded pine sawfly colony counts made on red pine in five districts of the Algonquin Region in 1978 (based on the examination of 100 randomly selected trees at each location).

Location (Twp)	Avg ht of sample trees (m) ^a	No. of trees infested	No. of colonies	No. of colonies per infested tree
Algonquin Park District				
Lyell	1.5	2	2	1.0
Bancroft District				
Dungannon	1.4	19	19	1.0
Bracebridge District				
Watt	1.5	5	5	1.0
Minden District				
Somerville	1.5	25	27	1.1
Minden	3.1	43	43	1.0
Lutterworth	1.5	67	76	1.1
Pembroke District				
Admaston	1.5	6	6	1.0
Grattan	1.8	55	99	1.8
Ross	1.2	23	28	1.2
Wilberforce	1.4	8	15	1.8

^a 1 m = 3.28 ft

European Pine Sawfly, *Neodiprion sertifer* (Geoff.)

Low populations persisted in three districts in 1978 with small increases in Macaulay and Watt townships, Bracebridge District. A single colony of larvae was observed in Somerville Township, Minden District; this constitutes only the second time colonies have been observed in the Minden District. In Bancroft District populations remained at a low level as indicated in Table 8.

Table 7. Summary of jack pine sawfly colony counts on jack pine at four locations in the Parry Sound District in 1978 (based on the examination of 100 trees at each location).

Location (Twp)	Avg ht of sample trees (m) ^a	No. of trees infested	Total no. of colonies	Avg no. of colonies per infested tree
Blair	5.8	8	15	1.8
Mowat	4.8	5	5	1.0
Blair	4.8	11	13	1.2
Mowat	5.2	22	26	1.2

^a 1 m = 3.28 ft

Table 8. Summary of European pine sawfly colony counts made at five locations in the Algonquin Region (based on the examination of 100 randomly selected trees).

Location (Twp)	Host	Avg ht of sample trees (m) ^a	No. of trees infested	Total no. of colonies	Avg no. of colonies per infested tree
Minden District					
Somerville	scP	1.0	1	1	1.0
Bracebridge District					
Macaulay	scP	2.5	10	11	1.1
Watt	rP	1.0	11	11	1.0
Bancroft District					
Dungannon	mP	0.75	3	4	1.3
Monteagle	mP	0.75	4	6	1.5

^a 1 m = 3.28 ft

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

High populations were again observed on spruce trees throughout the Region. Moderate-to-severe defoliation of ornamental spruce occurred in the towns of Parry Sound and Bracebridge and on numerous planted

spruce in Arrowhead and Mikisew Provincial parks in the Bracebridge District. Moderate-to-severe defoliation of open-grown young white spruce was observed at several locations in Grattan, Admaston, North Algona and Wilberforce townships, Pembroke District, and in Monteagle and Faraday townships in the Bancroft District.

White Pine Weevil, *Pissodes strobi* (Peck)

This perennially active insect caused considerable damage in 1978 to open-grown conifer trees and plantations. High populations were observed at 10 locations in the Region (Table 9).

Table 9. Summary of damage caused by the white pine weevil in four districts of the Algonquin Region from 1976 to 1978 (based on the examination of 100 randomly selected trees at each location).

Location (Twp)	Host	Avg DBH of sample trees (cm) ^a	Trees weeviled (%)		
			1976	1977	1978
Algonquin Park District					
Guthrie	wP	2.5	-	-	4
Lyell	wP	6.0	47	35	23
Stratton	wP	2.5	-	-	15
White	jP	2.5	-	-	2
Bracebridge District					
Macaulay	wP	5.0	-	-	26
Parry Sound District					
Blair	jP	2.5	-	93	76
Blair	jP	2.5	-	-	36
Carling	wP	5.0	-	-	51
McDougal	wP	5.0	-	-	61
Monteith	wP	5.0	-	-	13
Pembroke District					
Hagarty	jP	6.0	-	14	9
Wylie	nS	3.0	-	6	14

^a 1 cm = 0.39 in.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

After several years of population increases, damage levels declined in most parts of the Region in 1978. In the northern part of the Pembroke District where moderate-to-severe defoliation of tamarack (*Larix laricina* [Du Roi] K. Koch) was reported in recent years the intensity of damage declined to a low level. However, small pockets of light-to-moderate defoliation remained in McNab, Buchanan, Alice and Sherwood townships. In the Bancroft District light defoliation of tamarack continued in Limerick, Herschel and Cardiff townships. In the Minden District moderate-to-severe defoliation continued in a 2-ha (5-acre) tamarack stand in Somerville Township, and light defoliation occurred in Hindon Township. Elsewhere in the Region light defoliation was confined to scattered trees.

Table 10. Other forest insects.

Insect	Host(s)	Remarks
<i>Acleris variana</i> Fern. Blackheaded budworm	wS	occurs in conjunction with spruce budworm at numerous locations in the Region
<i>Altica ambiens alni</i> Harr. Alder flea beetle	Al	Severe defoliation continued for the second consecutive year at one location in Nightingale Twp, Algonquin Park District.
<i>Altica populi</i> Brown Poplar flea beetle	bPo	moderate defoliation at one location in Cardiff Twp, Bancroft District, and in Grattan Twp, Pembroke District
<i>Aphrophora cribrata</i> (Say) Pine spittlebug	jP, scP	high populations in Wallbridge and McDougall twp, Parry Sound District; in Minden Twp, Minden District; and in Stisted Twp, Bracebridge District
<i>Aphrophora saratogensis</i> (Fitch) Saratoga spittlebug	sweetfern	Populations remained low; highest count was observed in Hagarty Twp, Pembroke District, where 31 nymphs were found on 100 randomly examined plants.

(continued)

Table 10. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Archips argyrospilus</i> (Wlk.) Fruit tree leafroller	tA	light populations in several forest tent caterpillar infested stands
<i>Archips cerasivoranus</i> (Fitch) Uglynest caterpillar	ecCh	small pockets of heavy infestations in Alice Twp, Pembroke District; small numbers of colonies at scattered locations in the Region
<i>Cecidomyia reeksi</i> Vock. Jack pine resin midge	jP	light damage in Stratton, White and Fitzgerald twp, Algonquin Park District
<i>Coleophora laricella</i> Hbn. Larch casebearer	tL	Populations remained low in the Region.
<i>Diprion hercyniae</i> (Htg.) European spruce sawfly	wS	low populations throughout the Region
<i>Dryocampa rubicunda</i> <i>rubicunda</i> Fabr. Greenstriped mapleworm	rM	Populations remained low; small numbers of colonies were found in Head and Maria twp, Algonquin Park District.
<i>Enargia decolor</i> Wlk. Aspen twinleaf tier	tA	light population in Blair Twp, Parry Sound District
<i>Eupareophora parca</i> (Cress.) Spiny ash sawfly	wAs	moderate defoliation of small trees in Chandos Twp, Bancroft District, light at scattered locations in the Region
<i>Hydria prunivorata</i> Ferg. Cherry scalloped moth	cherry	moderate defoliation on scattered trees in Monteith and McMurrich twp, Parry Sound District
<i>Lithocolletis ontario</i> Free. Aspen leafblotch miner	tA, 1A	Severe leafmining continued on young trees at numerous locations in the Algonquin Park District; low populations were found elsewhere in the Region.

(continued)

Table 10. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Lithocolletis ostryarella</i> Chamb. Ironwood leafblotch miner	I	heavy infestations in Horton, Admaston, Alice, N. Algona and McKay twp, Pembroke District; light at numerous scattered locations through the Region
<i>Malacosoma americanum</i> F. Eastern tent caterpillar	cherries	high populations in Dalton and Carden twp, Minden District, in Machar Twp, Bracebridge District; small infestations in Chandos and Cardiff twp, Bancroft District
<i>Meadorus lateralis</i> Say Stink bug	wB	colonies found feeding on cones at one location in Rolph Twp, Pembroke District
<i>Messa nana</i> Klug Birch leafmining sawfly	wB	light infestation in Cardiff Twp, Bancroft District; small numbers found in Sproule Twp, Algonquin Park District, which constitutes a new distribution point
<i>Neodiprion abietis</i> complex Balsam fir sawfly	bF	light defoliation on scattered trees in Richards Twp, Pembroke District
<i>Neodiprion nanulus nanulus</i> Schedl Red pine sawfly	rP, jP	few colonies in N. Algona and Alice twp, Pembroke District
<i>Neodiprion pinetum</i> (Nort.) White pine sawfly	wP	moderate defoliation on several scattered trees in Stanhope Twp, Minden District
<i>Paraphytogromyza populicola</i> (Wlk.) Lombardy poplar leafminer	lPo	Severe leafmining continued for the second consecutive year on scattered trees in Petawawa Twp, Pembroke District.
<i>Paraprociophilus tessellatus</i> (Fitch) Woolly alder aphid	Al	light infestation Sherwood Twp, Pembroke District

(continued)

Table 10. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Petrova albicapitana</i> (Busck.) Pitch nodule moth	scP	light infestation in a plantation in MacAulay Twp, Bracebridge District
<i>Plagodia versicolora</i> Laich Imported willow leaf beetle	W	light-to-moderate damage on numerous large trees at scattered locations in Pembroke District
<i>Pleroneura brunneicornis</i> Roh. Balsam shootboring sawfly	bF	population increase in Stisted and Laurier twp, Bracebridge District
<i>Pristiphora geniculata</i> (Htg.) Mountain ash sawfly	Mo	heavy damage common in Mikisew and Arrowhead Provincial parks; defoliation observed on ornamental trees throughout the Region
<i>Profenusa thomsoni</i> (Konow) Ambermarked birch leafminer	wB	light populations in Alice and McNab twp, Pembroke District; small numbers occur throughout the Region
<i>Pseudexentera cressoniana</i> Clem. Oak leafroller	rO	caused severe defoliation in a 4-ha (10-acre) stand in Ryde Twp, Bracebridge District
<i>Pseudexentera oregonana</i> Wlshm.	tA	light population in Alice Twp, Pembroke District and in Blair Twp, Parry Sound District
<i>Psilocorsis reflexella</i> Clem. Leaftier	rO, wB, Be, Al	light populations at numerous locations in the Region
<i>Pulicalvaria piceaella</i> (Kft.) Combed spruce needleminer	wS	numerous moderately infested trees in Stisted Twp, Bracebridge District
<i>Pyrrhalta tuberculata</i> Say Willow leaf beetle	W	severe browning of foliage in a number of swamps in Hagarty and Admaston twp, Pembroke District

(continued)

Table 10. Other forest insects (concluded).

Insect	Host(s)	Remarks
<i>Sparganothis sulfureana</i> Clem. Needletier	rP	60% of trees infested at one location in Dysart Twp, Minden District; light population in Watt Twp, Bracebridge District
<i>Synanthedon pictipes</i> G.&R. Lesser peach tree borer	cherry	occurred in Chaffey Twp, Bracebridge District

TREE DISEASES

Scleroderris Disease of Pine, *Gremmeniella abietina* (Lagerb.) Morelet

The European race of *G. abietina*, which appears to be more virulent than the North American race, now occurs in the states of New York and Vermont. This race differs from the race that infects young pine in Ontario, in that it infects and kills the upper branches of mature trees. The possibility of spread to Canada has caused concern among forest managers in southern Ontario. Both Canadian and American authorities have imposed quarantines to impede the spread of the disease. In the United States shipments of material capable of harboring *Gremmeniella* from affected areas is prohibited. The Canadian quarantine¹ screens the importation of susceptible host materials from all parts of the world where the European race exists. This quarantine reduces the risk of accidental introduction, and, it is hoped, will provide the time needed to develop control methods and research necessary to control the disease.

In 1978 infection by this race was detected in Quebec in an isolated red pine plantation just 2 km (1.25 mi.) north of the New York border. This plantation was immediately put in quarantine and sanitized by destroying all infected material.

A detailed survey was carried out in the four southern regions of Ontario to determine if the new race was present in Ontario. Five hundred pine trees at each of 40 locations were examined for symptoms in the Algonquin Region (Fig. 3). Although there is a current infection centre of the North American race in the Bracebridge and Parry Sound districts, negative cultures and the lack of symptoms indicate that there was no occurrence of the European race.

A 25-km (16-mi) extension southward of the North American race occurred in the Bracebridge District. A 6-ha (15-acre) red pine plantation in the Bracebridge Resource Management Unit was severely infected. Resampling showed a general decline in the number of trees infected in Stisted, McMurrich and Bethune townships, Bracebridge District (Table 11). Sanitation trials carried out at several locations in 1976 and 1977 by OMNR show varied results in 1978. In Lot 13, Concession XIV, Stisted Township, no infections were observed on 3-m (15-ft) red pine, whereas in Lot 10, Concession XII, 37% of the small 1-m (3-ft) trees were infected. The lower branches at each location had been removed and destroyed. In Lot 25, Concession IV, McMurrich Township, a 2-ha (5-acre) Scots pine (*Pinus sylvestris* L.) plantation was levelled in 1976 by bulldozing, and the trees were burned. In 1977, the site was re-planted with red pine and in 1978, 13% of the seedlings were infected.

¹ Quarantine circular 16^c - Agriculture Canada

Table 11. Incidence of the North American race of Scleroderris disease of pine in seven red pine plantations in the Algonquin Region from 1976 to 1978 (based on the examination of 150 trees at each location).

Location (Twp)	Avg ht of trees (m) ^a	Trees affected		
		1976	1977 (%)	1978
Bracebridge District				
Stisted Lot 18 Conc. VI	1.3	-	95 ^b	50
Lot 10 Conc. XII	2.1	-	79 ^b	37
Lot 13 Conc. XIV	4.6	100 ^b	3	0
Bethune Lot 25 Conc. X	2.1	-	87	10
Macaulay B.R.M.C.	1.3	-	-	80 ^c
Parry Sound District				
McMurrich Lot 20 Conc. VIII	1.5	50	42	18 ^b
Lot 25 Conc. IV	.5	-	-	13 ^b
Spence Lot 20 Conc. IV	2.0	66	25	1

^a 1 m = 3.28 ft

^b sanitation trials

^c new locations

Maple Anthracnose, *Kabatiella apocrypta* (Ell. & Ev.) Arx

The incidence of this foliar disease declined to low from medium in 1977. Light browning of foliage of sugar maple (*Acer saccharum* Marsh.) was observed in Hindon Township, Minden District and Sinclair, Watt and Brunel townships, Bracebridge District. Very low incidence on individual trees was observed in the remaining four districts.

Pine Needle Cast, *Lophodermium pinastri* (Schrad. ex Hook) Chev.

Light-to-moderate levels of foliar damage were observed in scattered young red pine plantations throughout the Region. In affected plantations the incidence of infected trees ranged from 5% in Brudenell Township, Pembroke District, to 89% in Herschel Township, Bancroft District (Table 12).

ALGONQUIN REGION

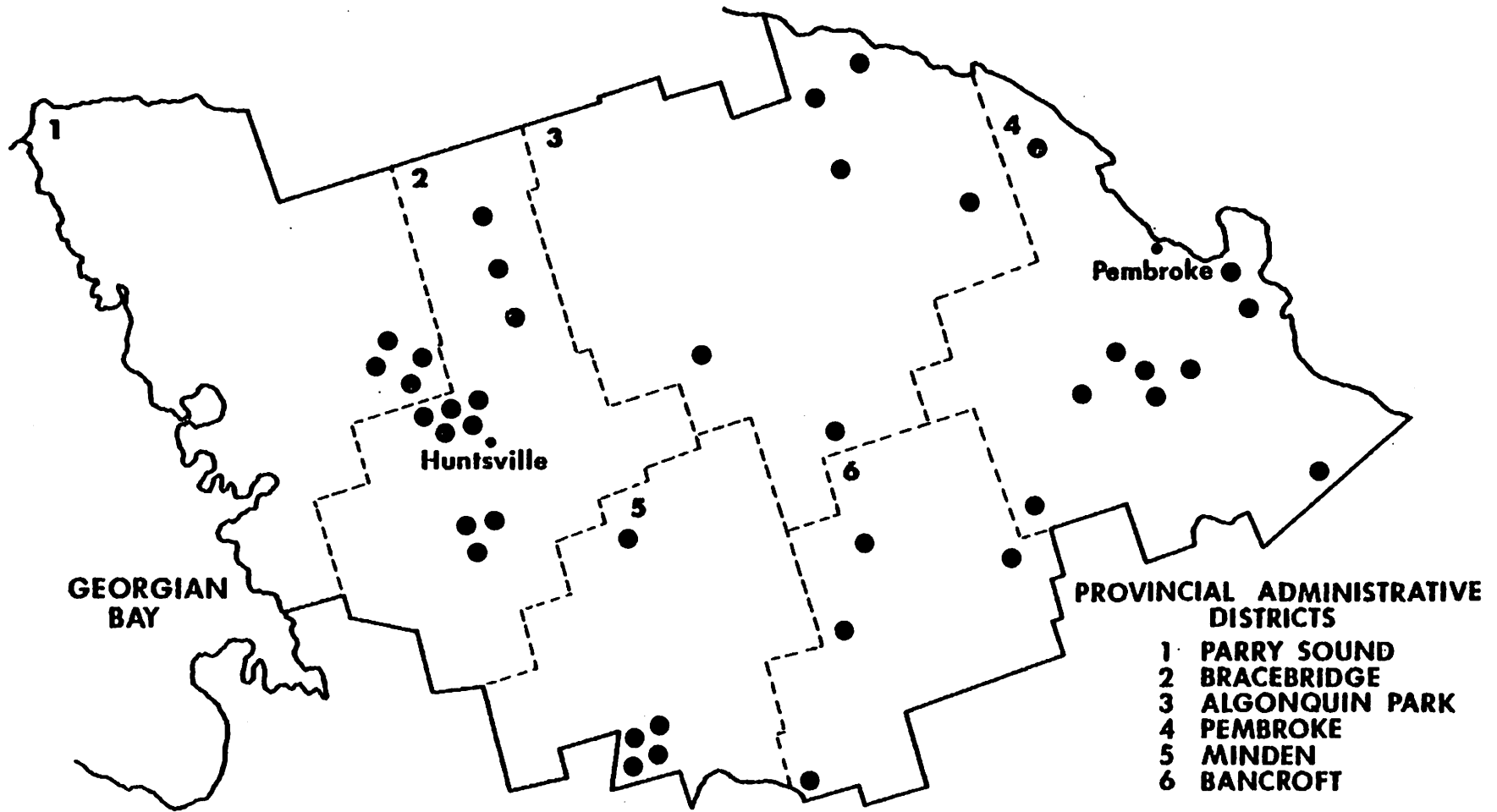


Fig. 3. SCLERODERRIS DISEASE OF PINE

Locations where checks were made to determine the presence or absence of the European race of *Gremmeniella abietina* (Lagerb.) Morelet

Locations ●

Table 12. Summary of damage caused by pine needle cast at six locations in the Algonquin Region in 1978 (based on the examination of 150 trees at each location).

Location (Twp)	Avg ht of sample trees (m) ^a	Area affected (ha) ^b	Trees affected (%)	Foliar damage (%)
Algonquin Park District				
Fitzgerald	1.5	4	25	10
White	1.5	20	10	15
Bancroft District				
Herschel	1.7	3	89	16
Pembroke District				
Brudenell	1.0	4	5	trace
Frazer	1.6	10	34	6
Sherwood	1.7	8	10	10

^a 1 m = 3.28 ft

^b 1 ha = 2.47 acres

Maple Decline

Numerous pockets of mortality of sugar maple occurred in the southern parts of the Parry Sound, Bracebridge and Minden districts (Fig. 4). The largest area affected, approximately 8,100 ha (20,000 acres), was adjacent to the Moon River in Freeman and Conger townships in Parry Sound District. Mortality in this area (see photograph) averaged approximately 25% at two sample points (Table 13). Estimates at other locations in this area ranged from 50% to 80%. In a small woodlot in Medora Township, Bracebridge District, mortality was 90%, and mortality in a mixed hardwood stand in Hindon Township, Minden District, was 64%. There has been severe defoliation of sugar maple by forest tent caterpillar in all of these areas for several years previous to 1978.

Oak Decline

In 1977, semi-permanent sample plots were established at three locations in the Algonquin Region to determine the amount of deterioration and the possible cause of oak decline. There was a general

ALGONQUIN REGION

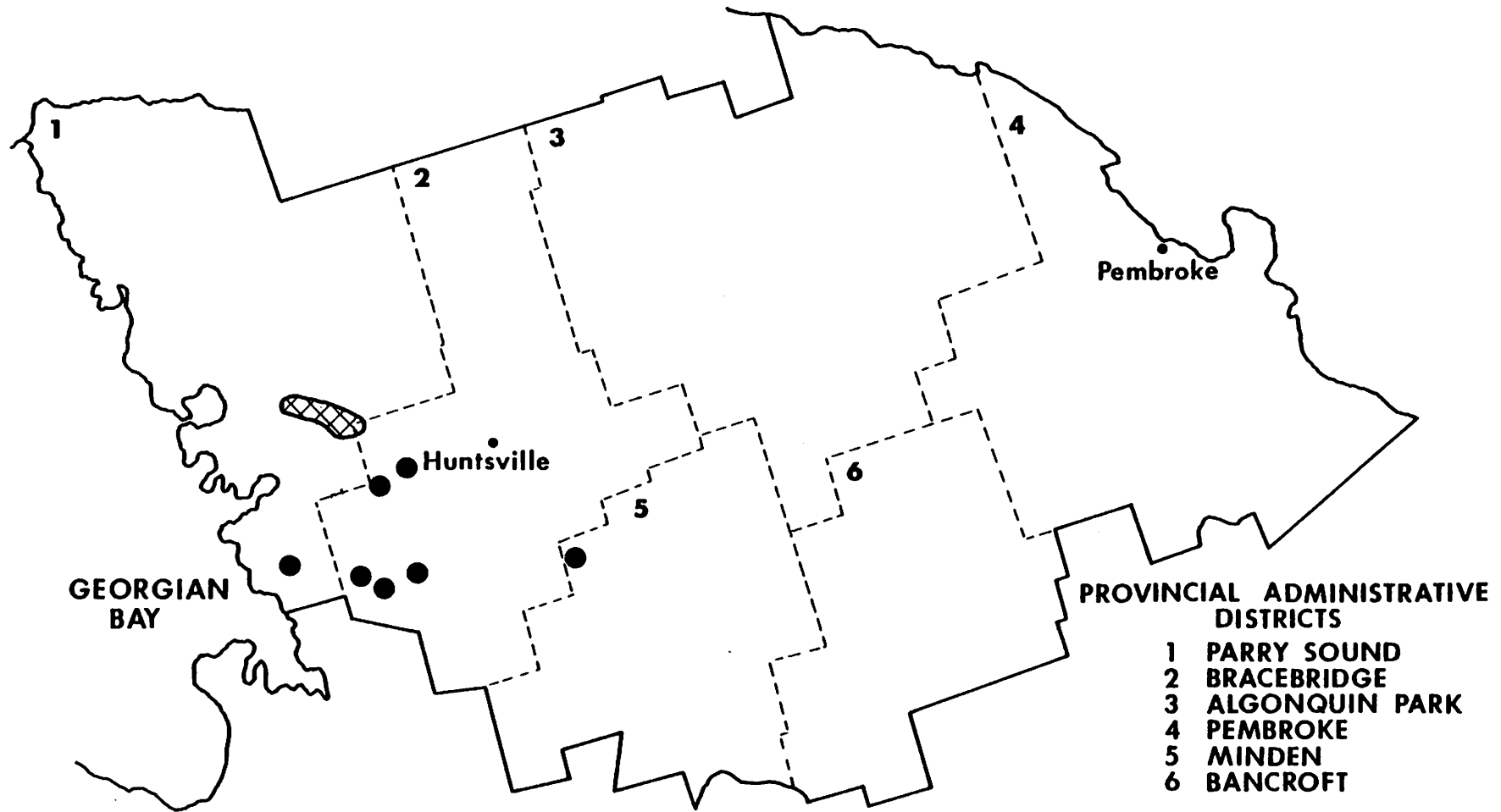



Fig. 4. Areas within which sugar maple mortality occurred in 1978.

Mortality ●
 Scattered tree mortality 

decline in vigor of the red oak trees in the three plots in 1978 (Table 14). Heart rot organisms found in two of the three plots were *Fomes igniarius* (L.) Gill. and *Fomes everhartii* (Ell. & Gall.) Schrenk & Spauld.

Table 13. Summary of maple decline at five locations in the Algonquin Region in 1978.

Location (Twp)	Avg DBH (cm) ^a	No. of trees examined	Crown class ^b		
			0&1 (%)	2&3 (%)	4&5 (%)
Bracebridge District					
Medora	29.1	152	2.0	7.4	90.6
Minden District					
Hindon	26.8	115	4.3	31.1	64.3
Parry Sound District					
Freeman (1)	17.2	81	49.8	24.7	24.6
Freeman (2)	14.4	64	51.5	23.4	25.0

^a 1 cm = .39 in.

^b Classes 0 & 1 Healthy and light crown mortality 0-20%
 Classes 2 & 3 Moderate crown mortality 21-60%
 Classes 4 & 5 High crown mortality and dead >60%

Salt Damage

This perennial problem was again evident along well-travelled highways in the Region. Severe browning of various species of pine was observed along Highway 69 between Nobel and MacTier in Parry Sound District and along Highway 11 near Burkes Falls in the Bracebridge District. In the Bancroft District severe browning of foliage and some tree mortality occurred on 4-m (13-ft) red pine plantings along Highway 127 approximately 5 km (3 mi.) north of Lake St. Peter; and moderate browning of foliage was observed on red pine along Highway 62--6 km (4 mi.) east of Maynooth.

Table 14. Summary of oak decline at three locations in the Algonquin Region in 1978 (based on the re-examination of 100 tagged trees at each location).

Location (Twp)	Avg ht of sample trees (m) ^a	Avg DBH of sample trees (cm) ^b	Crown class ^c									
			1		2		3		4		5	
			77	78	77	78	77	78	77	78	77	78
Bracebridge District												
Macaulay	28	20	17	3	44	43	29	44	10	8	0	2
Pembroke District												
Alice	16	16	44	43	45	55	11	12	0	0	0	0
Wylie	28	16	26	8	43	54	30	37	1	1	0	0

^a 1 m = 3.28 ft

^b 1 cm = 0.39 in.

^c Oak decline is principally branch mortality; class 1 is healthy; classes 2-4 have more than 20%, 40% and 60% of the branches dead, respectively. Class 5 is dead (this category was not used in 1977).

Single-tree Mortality of Balsam Fir

In recent years scattered red colored, dead balsam fir trees, which characterize this mortality, have been increasing in numbers through the Region. In 1978 the incidence of red trees became more apparent. However, the cause of this mortality is as yet not known.

The following disease organisms have been collected from dead and dying trees in 1977 and 1978:

Armillaria mellea (Vahl ex Fr.) Kummer, Armillaria root rot; *Cytospora kunzei* Sacc., Cytospora canker; *Dermea balsamea* (Pk.) Seaver, stem canker; *Micropera abietina* (Peck) Höhn, stem canker; *Thyronectria balsamea* (Cke. & Pk.) Seel., canker; *Valsa* spp., Valsa canker.

Table 15. Other forest diseases.

Organism	Host(s)	Remarks
<i>Armillaria mellea</i> (Vahl ex Fr.) Kummer Armillaria root rot	rP, bF jP	Mortality in a 35-year-old red pine plantation in Somerville Twp, Minden District increased from 0.5 to 1.0 ha (1.2 to 2.5 acre); scattered dead trees were found throughout the Region.
<i>Ciborinia whetzellii</i> (Seaver) Seaver Ink spot of aspen	tA	small widely scattered pockets of light-to-moderate foliar damage in Blair Twp, Parry Sound District, Stisted Twp, Bracebridge District, Fitzgerald and Murchison twp, Algonquin Park District; generally low levels through the remainder of the Region
<i>Chrysomyxa ledi</i> d By. Needle rust of spruce	bS	trace level of infection in Wylie Twp, Pembroke District
<i>Coleosporium asterum</i> (Diet.) Syd. Needle rust	rP	86% of trees infected in a 2.5-ha (6-acre) plantation in Ross Twp, Pembroke District; light incidence in McDougall Twp, Parry Sound District
<i>Cronartium</i> spp. Eastern gall rust	jP	37% of trees infected at one sample point in White Twp, Algonquin Park District; common through the Region
<i>Cryptodiaporthe densissima</i> (Ell.) Wehm. Cryptodiaporthe canker	rO	light incidence of twig mortality in S. Algona Twp, Pembroke District
<i>Cytospora chrysosperma</i> Pers. ex Fr. Cytospora canker	hybrid poplar	caused light incidence of branch tip mortality in a hybrid poplar plantation in Wilberforce Twp, Pembroke District

(continued)

Table 15. Other forest diseases (continued).

Organism	Host(s)	Remarks
<i>Cytospora kunzei</i> Sacc. Cytospora canker	wS	2.6% of trees infected in a 4.5-ha (11-acre) block of 53-year-old white spruce (<i>Picea glauca</i> [Moench] Voss) at the Petawawa Forest Experiment Station (PFES), Pembroke District
<i>Cytospora</i> spp. Cytospora canker	tL	scattered dead trees in a block of tamarack plantings, PFES, Pembroke District
<i>Davisiomycella ampla</i> (Davis) Darker Needle cast	jP	41% of examined trees infected in White Twp, Algonquin Park District; light incidence through the Region
<i>Diplodia pinea</i> (Desm.) Kickx. Needle cast	scP	high incidence of infected needles in a small plantation in Frazer Twp, Pembroke District
<i>Dothichiza populea</i> Sacc. & Briard Dothichiza canker of poplar	cPo	common through the Region
<i>Dothiorella advena</i> (Cke. & Ell.) Sacc. Dothiorella canker and dieback	rO	light incidence of branch mortality in Wilberforce Twp, Pembroke District
Frost damage	nS, wS bF	Twenty percent of shoots were damaged on 80% of the examined trees in a young 10-ha (25-acre) plantation in Frazer Twp, 67% of small nS trees were moderately damaged at the PFES, and small pockets of severe damage occurred in Westmeath Twp, Pembroke District
<i>Gloeosporium</i> spp. Leaf anthracnose	hybrid poplars	light-to-moderate incidence of infection on scattered trees in a plantation, Wilberforce Twp, Pembroke District

(continued)

Table 15. Other forest diseases (concluded).

Organism	Host(s)	Remarks
<i>Hendersonia pinicola</i> Wehm. Needle cast of pine	jP	one tree was killed and two adjacent 5-m (16.5-ft) open-grown trees heavily infected, Richards Twp, Pembroke District
<i>Hypoxyylon mammatum</i> (Wahl.) Miller Hypoxyylon canker of poplar	tA	infections and light incidence of tree mortality common through the Region
<i>Linospora tetraspora</i> G.E. Thomps. Leaf blight	bPo	light-to-moderate incidence of infection common through the Region
<i>Pollaccia radiosa</i> (Lib.) Bald. & Cif.	tA	high incidence of damaged shoots on small trees at one location in Wylie Twp, Pembroke District; trace levels at scattered locations through the Region
<i>Polyporus tomentosus</i> Fr. Red butt rot	wS	tree mortality observed at PFES, Pembroke District