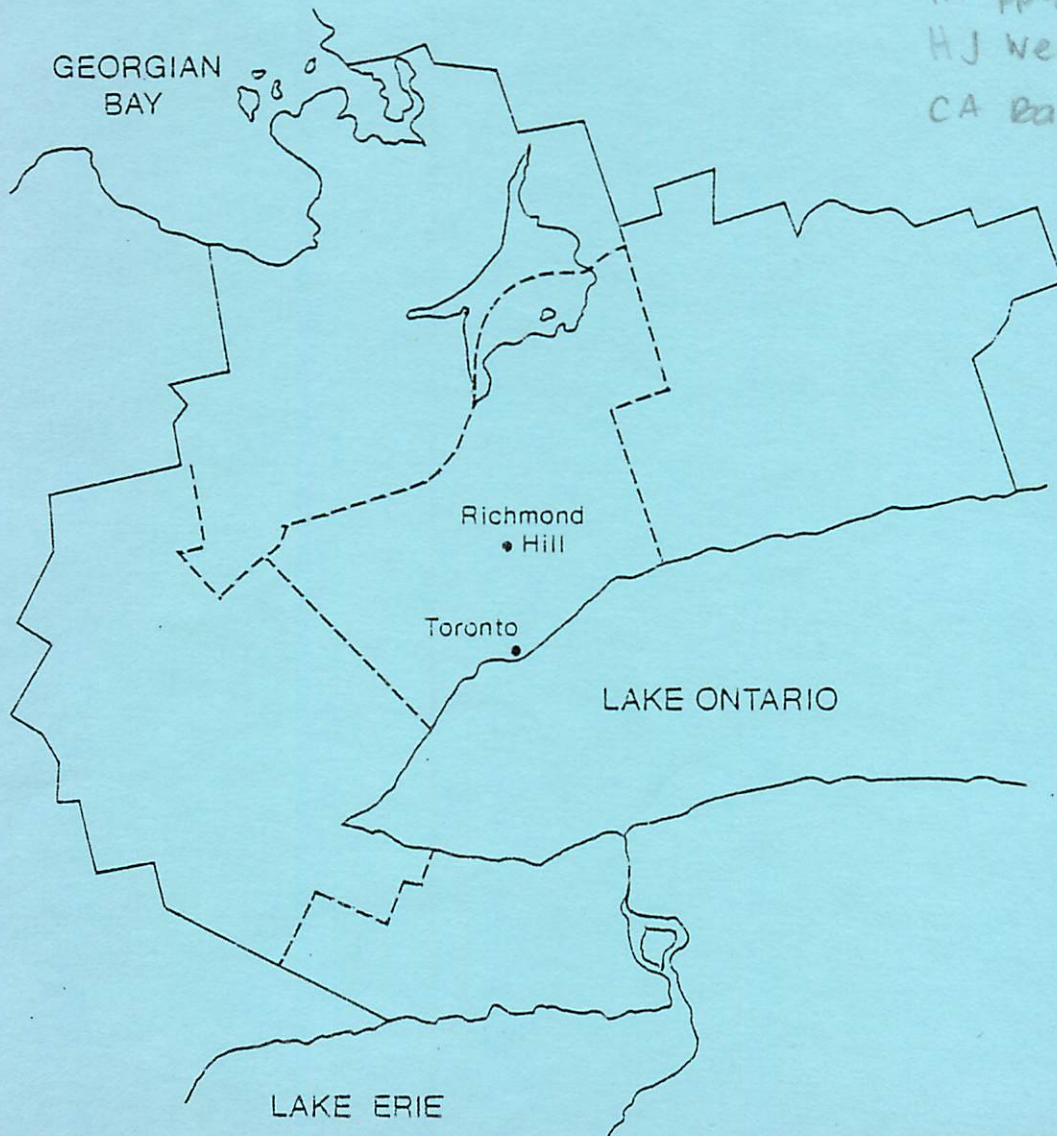


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Results of forest insect and disease surveys in the CENTRAL REGION of Ontario, 1980

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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

This report constitutes a review of the more important forest insect and disease conditions in the Central Region of Ontario in 1980. Major insect pests which increased in numbers were the larch sawfly, cedar leafminers, Leconte's sawfly and saddled prominent. Populations of the pine false webworm, oak leaf shredder and birch leafminer persisted at high levels. Several usually rare insects were found in infestation proportions. These included the maple leaf cutter, maple webworm and aspen casebearer.

Forest disease surveys concentrated on a search for the European race of Scleroderris canker and a survey of the more important pests of white pine plantations. The North American race of Scleroderris canker was detected for the first time in a red pine plantation in the Dufferin County Forest by personnel of the Pest Control Section of the Ontario Ministry of Natural Resources. The disease was also suspected, but unconfirmed, at another location in Tiny Township, Huronia District. Oak decline, ash dieback and Diplodia tip blight were again encountered at damaging levels and inquiries were received from concerned individuals.

In a departure from the format of previous years, pests in this report are organized according to their impact as follows:

Category A - of major importance, capable of killing or severely damaging trees or shrubs.

Category B - of moderate importance, capable of sporadic or localized injury to trees or shrubs.

Category C - of minor importance, not known to present a threat to living trees or shrubs.

In addition, an index listing the occurrence of the more important pests by district is included.

The authors wish to thank personnel of the Ontario Ministry of Natural Resources and private individuals for their assistance and cooperation during the field season.

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Frontispiece



Eastern white cedar
(*Thuja occidentalis* L.)
damaged by cedar
leafminers (*Argyresthia*
spp.).

Fruiting bodies of *Rhizina* root rot
(*Rhizina undulata* Fr.) growing in
furrows ploughed for new seedlings.



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INSECTS

Category A

Pine False Webworm, *Acantholyda erythrocephala* (Linn.)

Although populations remained generally high in 1980, some declines were noted in older infestations. In the Huronia District, heavy infestations persisted in Essa, Vespra and Oro townships while infestations declined to medium intensity in Tiny and Medonte townships. New, heavy infestations were located at several locations in Flos and Medonte townships. High numbers of larvae in a 3 ha (7.4 acres) red pine (*Pinus resinosa* Ait.) plantation in Oro Township which was established in 1979 caused virtually complete failure of the 30 to 40 cm (11.7 to 15.6 in.) trees.

In the Lindsay District, heavy infestations persisted in Harvey, Douro and Bexley townships. Light infestations occurred in Balsam Lake Provincial Park in Bexley Township. Small numbers of larvae were observed commonly in the Huronia and Maple districts and as far west as Elmira in the Cambridge District. Although red and Scots pine (*P. sylvestris* L.) appeared to be the preferred hosts, the insect was observed feeding on all pine species.

Orangestriped Oakworm, *Anisota finlaysoni* Riotte

After declining to very low levels in 1979 populations increased in 1980. Small pockets of heavy infestation occurred on small numbers of open growing white oak (*Quercus alba* L.) trees on the western outskirts of Brantford and in the Breslau-Conestogo area of Cambridge District. Medium infestations were observed on hedgerow trees south of Milton in the Cambridge District and small numbers of larvae were noted on a few ornamentals in Toronto in the Maple District.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts will be included with those of other regions in a special report to be published later this year. This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1980 and gives infestation forecasts for the province for 1981.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Light infestations persisted in Scots pine Christmas tree plantations at several locations in Oro Township and on planted Scots pine and jack pine (*Pinus banksiana* Lamb.) in Essa, Tosorontio and Mulmur townships, Huronia District. A single new medium

infestation was observed in a 20 ha (50 acre) Christmas tree plantation in Adjala Township, Huronia District. Small numbers of larvae were observed at several locations in the Cambridge District and in the Uxbridge and Newmarket areas of the Maple District.

Birch Leafminer, *Fenusa pusilla* (Lep.)

Generally high populations prevailed in the northern Huronia District. Conspicuous browning of white birch (*Betula papyrifera* Marsh.) foliage was evident at a number of scattered locations in Oro, Rama, and Orillia townships and east of the town of Angus in Essa and Vespra townships, Huronia District. Heavy infestations occurred north of Midhurst in Vespra and Flos townships, in Nottawasaga Township, Huronia District, and along the Niagara Parkway between Niagara-on-the-Lake and Fort Erie in the Niagara District. Light-to-medium infestations were observed south of Victoria Harbour in Tay Township, Huronia District and on roadside trees in Cavan, Haldimand, Asphodel and Clarke townships, Lindsay District. In addition, unprotected ornamental birch in most urban areas suffered medium-to-heavy defoliation.

Saddled Prominent, *Heterocampa guttivitta* Wlk.

A general increase in populations of this defoliator was evident. Light infestations were observed in Awenda Provincial Park in Tiny Township and in sugar maple (*Acer saccharum* Marsh.) woodlots in Oro, Tiny, Medonte and Flos townships. Occasional larvae were encountered at a number of other locations in the Huronia District and at several locations in the Maple District.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Small population increases were again recorded in the southern Lindsay and eastern Huronia districts. Small, light infestations were observed in red pine plantations in Scugog and Clarke townships, Lindsay District (Table 1). In the Huronia District, several medium and heavy infestations occurred in Orillia Township and light infestations were found in red pine plantations in Tiny Township and along Highway 400 in Vespra Township. Scattered single larval colonies were encountered at several locations in the Maple District.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* Roh.

After several years of low population levels, higher numbers of this sawfly were observed in the Lindsay and Huronia districts. In the Huronia District, heavy infestations caused severe defoliation of blue spruce (*Picea pungens* Engelm.) and white spruce (*Picea glauca* [Moench] Voss) windbreaks along Highway 9 west of Orangeville in Amaranth Township

and east of Orangeville in Mono Township. Small, heavy infestations also occurred along Highway 90 east of Angus and in Oro Township west of Dalton.

In the Lindsay District, severe defoliation occurred on white spruce and black spruce (*Picea mariana* [Mill.] B.S.P.) plantations in Bexley and Manvers townships. Both plantations totalling approximately 4 ha (9.9 acres) were sprayed with malathion applied with handsprayers and good control was achieved.

Table 1. Summary of redheaded pine sawfly colony counts in two districts in 1980 (100 trees examined at each location).

Location (Twp)	Area (ha) ^a	Stocking (trees/ha) ^a	Avg ht of trees (m) ^b	Total no. of colonies
Lindsay District				
Clarke	2	2990	2.5	13
Scugog	5	2990	1.75	23
Huronian District				
Orillia	10	2400	1.5	239
Vespra	15	2700	1.5	23

^a 1 ha = 2.47 acres

^b 1 m = 3.28 ft

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Populations, which were on the decline in 1978 and 1979, began increasing again in 1980. In the Maple District, numbers increased to high levels in several European larch (*Larix decidua* Mill.) plantations in the Durham and York regional forests. Private plantations in the same area suffered moderate-to-severe damage. Aerial control operations with malathion were successfully carried out in one private plantation of about 5 ha (12.35 acres) south of the town of Uxbridge.

In the Huronia District, populations persisted at high levels in an 8.3 ha (20 acre) larch plantation at Canadian Forces Base Borden and on mature tamarack (*Larix laricina* [Du Roi] K. Koch) in about 1 ha (2.47 acres) in Rama Township. New heavy infestations were evident

at several locations totalling about 10 ha (24.7 acres) in Flos Township. Scattered medium and heavy infestations persisted in Mono, Mulmur, Medonte and Vespra townships.

In the Cambridge District, numbers increased from moderate to high in the Luther Marsh in East and West Luther townships, where approximately 41 ha (100 acres) were affected. Heavy infestations were also noted at several locations in Blenheim and Beverly townships and in the Sandy Hill tract in Woolwich Township. Numerous light and occasional medium infestations were noted. Although larval colonies were common in the Lindsay and Niagara districts, infestations generally remained low.

Poplar Leafroller, *Pseudexentera oregonana* Wlsh., *Chorisonteura conflictana* Wlk., *C. rosaceana* Harr.

Populations declined to medium levels in Orillia Township and to low levels in Flos, Tiny and Medonte townships, Huronia District. Similar declines were noted in the Guelph and Fergus areas of Cambridge District. Heavy infestations persisted on trembling aspen (*Populus tremuloides* Michx.) and largetooth aspen (*Populus grandidentata* Michx.) on approximately 20 ha (49.4 acres) at Canadian Forces Base Borden and on approximately 10 ha (24.7 acres) southwest of Bradford in the Huronia District. Heavy infestations of the large aspen tortrix, *Choristoneura conflictana* Wlk., occurred in Balsam Lake Provincial Park, Lindsay District for the second consecutive year. Scattered patches of light defoliation were observed at a number of other widely separated locations.

Category B

Blackheaded Budworm, *Acleris variana* Fern.

A single pocket of heavy infestation was observed in a small (1 ha or 2.47 acres) white spruce plantation in Oro Township, Huronia District. A light infestation occurred on a few mature hemlock (*Tsuga canadensis* [L.] Carr.) trees in Nottawasaga Township and higher than usual numbers of larvae were collected from beating samples at Canadian Forces Base Borden. Small numbers of larvae were commonly observed elsewhere.

Cedar Leafminers, *Argyresthia canadensis* Free., *A. thuiella* Pack.,
A. aureoargentella Brower and *Pulicalvaria thujaella* (Kft.)

Heavy infestations which began in 1979 expanded in 1980 to encompass virtually the entire Region (Fig. 1). The only exceptions were in the western Niagara District where infestations were light,

CENTRAL REGION

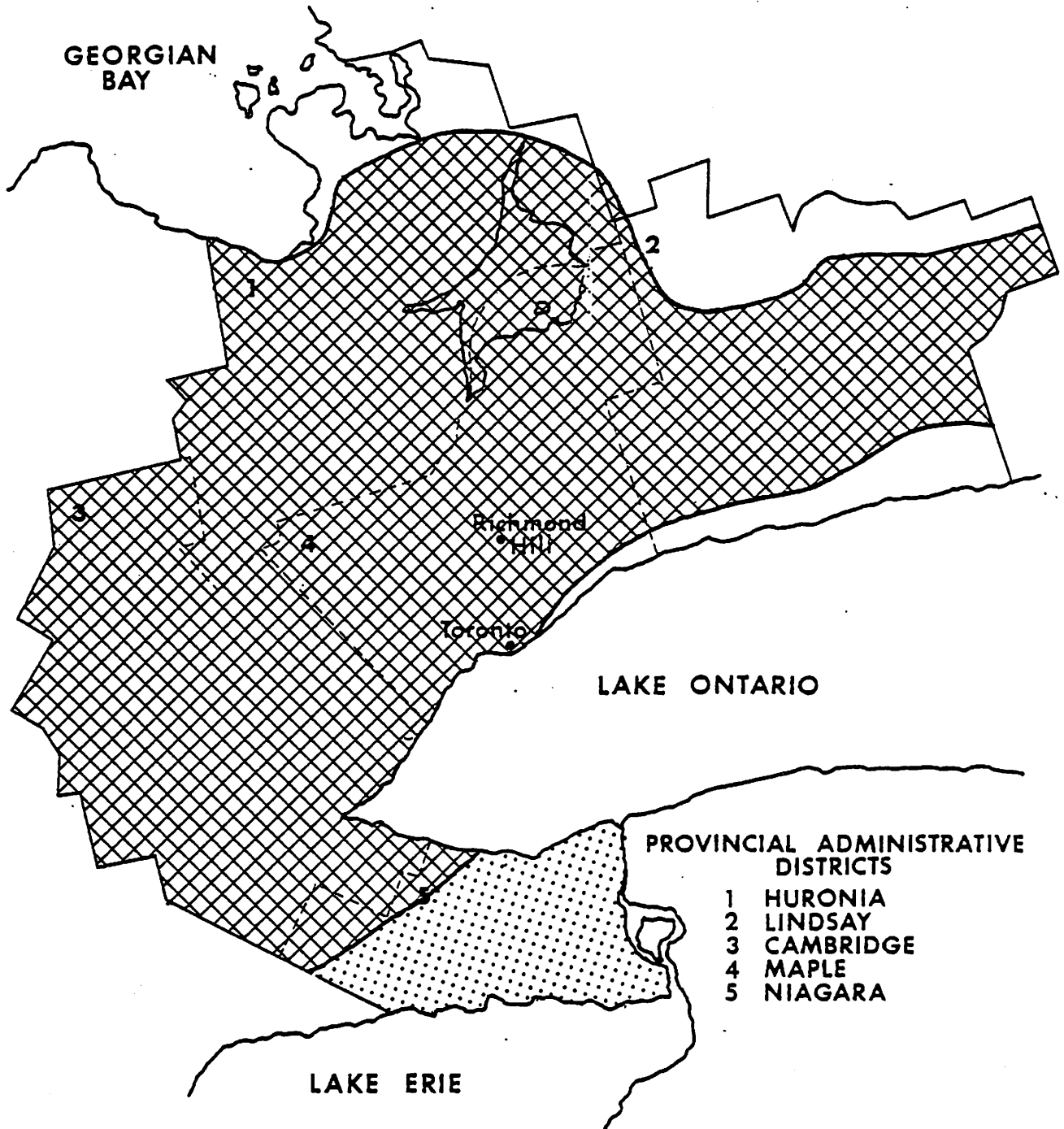




Fig. 1. CEDAR LEAFMINERS

Areas within which damage to eastern white cedar occurred in 1979.

Light 
Moderate to heavy 

in the northeastern Huronia District where numbers were very low, and in narrow strips in the extreme north and south of the Lindsay District where populations were also very low.

Most eastern white cedar (*Thuja occidentalis* L.) stands within the infested area (24 500 km² or 9800 mi²) suffered moderate-to-severe leafmining and, although new growth combined with the shedding of damaged foliage resulted in an improved appearance, many stands remained very thin (see Frontispiece). Although twig and branch mortality were widespread, top killing and tree mortality were evident at only a few locations. One of these was in the vicinity of Mono Mills in the townships of Mono and Caledon in the Huronia and Maple districts, respectively. Other locations were on the west side of Highway 400 south of Barrie, and in Oro Township, northeast of Barrie in the Huronia District.

Larch Casebearer, *Coleophora laricella* Hbn.

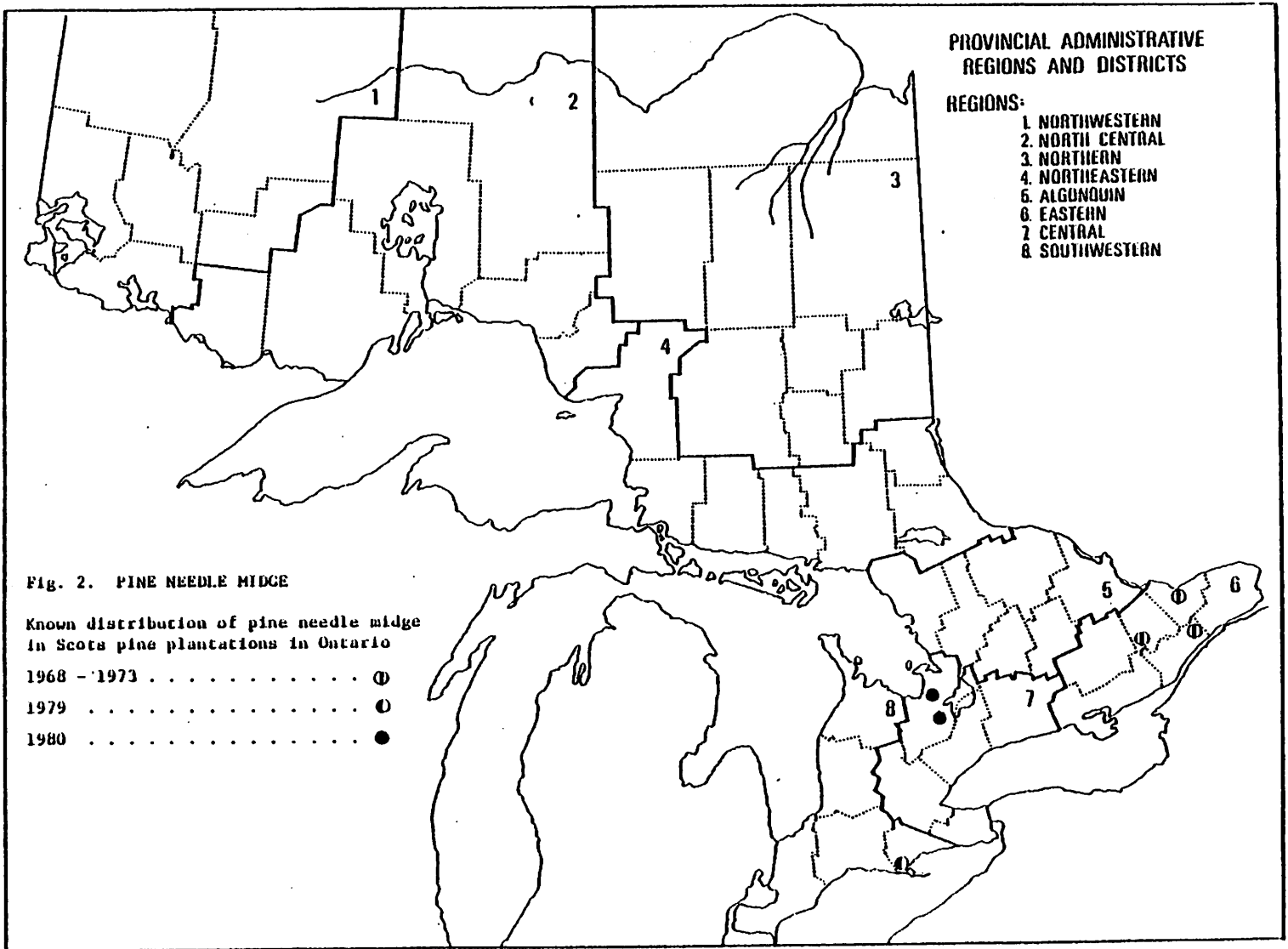
Medium and heavy infestations persisted on tamarack in swampy areas and on European larch plantations in the Kitchener-Guelph area and north of Elmira in the Cambridge District. Infestations also remained heavy in about 5 km² (2 mi²) in the Minesing swamp and in West Gwillimbury Township, Huronia District and in the Orono Forest Station, Lindsay District. New heavy infestations were observed in a number of larch plantations in Georgina, Pickering and Uxbridge townships, Maple District. Light infestations were numerous and widespread throughout the Region.

Pine Needle Midge, *Contarinia baeri* (Prell.)

This pest of pine caused serious damage to Scots pine Christmas tree plantations in eastern Ontario in the Ottawa, Brockville and Lanark districts between 1968 and 1973. It was first collected in southwestern Ontario in 1979 near St. Williams in the Simcoe District where high populations were observed in a single Christmas tree plantation (Fig. 2).

In 1980 the insect was found in the Huronia District for the first time. Single heavy infestations were noted on 7.5 m (24.8 ft) Scots pine in a 1 ha (2.47 acre) plantation west of Phelpston in Flos Township and along Highway 400, south of Highway 89 in West Gwillimbury Township.

The adult of the pine needle midge is a small fly which deposits its eggs on the needles of the current year's growth during June and July. The larvae feed at the base of the needles during June, July and August. Fully grown midge larvae, which are bright orange and about 2 to 3 mm (.07-.12 in.) long, drop to the ground where they pupate in the duff. Winter is passed as a pupa in the duff with the adults beginning to emerge in June of the following year.



Damage is usually confined to the upper third of the crown where both leaders and laterals are often denuded. This is especially damaging to Christmas trees and ornamental pine planting stock which are rendered unmerchantable during the year of insect attack.

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

Populations of this insect remained high in 1980. In the Huronia District, heavy infestations continued in Tiny Township along the west side of Georgian Bay between Wasaga Beach and Methodist Point. Aerial surveys in the same area revealed patches of severe defoliation on Giants Tomb, Christian, Hope and Beausoleil islands in Georgian Bay. These infestations totalled approximately 250 km² (100 mi²). Smaller pockets of heavy infestation recurred in woodlots in Oro, Flos, Vespra and Orillia townships.

In the Niagara District, high populations again occurred in the Niagara Falls-Welland-Fonthill area where approximately 15 ha (37 acres) of red oak (*Quercus rubra* L.) and white oak were moderately to severely defoliated. Small, localized pockets of heavy infestation were also noted near Dunnville and along the Lake Erie shoreline near Port Colborne.

High numbers also persisted in the Maple District where heavy infestations were evident in the Uxbridge-Vivian area. Small, scattered, heavy infestations extended southwest from this area to the vicinity of Richmond Hill. Low populations again occurred in Clarke Township, Lindsay District.

In an effort to protect high value stands of red oak, the Ontario Ministry of Natural Resources carried out aerial spraying operations with Orthene at Awenda Park, Midhurst Forest Station, in the Hendrie Tract of the Simcoe County Forest in the Huronia District and in the Uxbridge Main Tract of the Durham Regional Forest in the Maple District. The total area treated was about 800 ha (2000 acres). In nearly all cases excellent foliage protection was achieved and in most, good population control resulted as is indicated by fall egg surveys summarized in Table 2. Areas in the Wildman Tract of the Simcoe County Forest and in the Dufferin County Forest which were treated with Orthene in 1979 showed little sign of re-infestation.

Eastern Pineshoot Borer, *Eucosma gloriola* Heinr.

Heavy infestations persisted on planted red pine in the Orono Forest Station, Lindsay District, where 89% of the trees were infested. No leaders but 182 lateral shoots were attacked. Light-to-medium infestations were noted in Mariposa Township, Lindsay District. Populations were generally low throughout the remainder of the Region.

Table 2. Summary of oak leaf shredder egg counts and defoliation estimates for three districts in 1980.

Location	Plot no.	Mean no. of eggs/38 cm ² sample		Defoliation forecast for 1981 ^b
		1979	1980	
Huronian District				
Awenda Park	*1	1.1	0	Nil
	*2	4.1	0.4	N-L
	*3	15.6	0.3	N-L
	*4	13.6	0.8	N-L
	***5	4.2	0.1	N-L
	***6	5.9	0.5	N-L
	***7	5.1	1.8	N-L
	***8	2.7	0.1	N-L
	*9	12.5	1.0	N-L
	(partially sprayed 1980) 10	65.5	6.8	N-L
	11	37.6	28.6	H
	*12	10.5	4.3	N-L
	*13	23.8	1.6	N-L
	***14	3.6	2.5	N-L
	***15	1.4	0.6	N-L
	***16	1.6	1.4	N-L
	17	36.7	4.1	N-L
	*26	24.2	1.9	N-L
	*30	11.8	3.3	N-L
	*31	1.7	0.3	N-L
Wildman Tract				
**1	0.9	3.1	N-L	
**2	0.7	2.2	N-L	
**3	2.5	2.2	N-L	
**4	0.5	0.9	N-L	
**5	20.0	1.3	N-L	
6	1.6	0.3	N-L	
7	1.3	15.3	M	
Hendrie Forest				
*1	74.1	0	N	
*2	32.8	0.3	N-L	
Check 1		13.1	M	
Midhurst Nursery				
*1	4.6	0.5	N-L	
*2	34.1	0.3	N-L	
*3	25.6	0.8	N-L	
Check 1		5.8	N-L	

(cont'd)

Table 2. Summary of oak leaf shredder egg counts and defoliation estimates for three districts in 1980 (concluded).

Location	Plot no.	Mean no. of eggs/38 cm ^a sample		Defoliation forecast for 1981 ^b
		1979	1980	
Huronian District (cont'd)				
<u>Orr Lake Tract</u> Danial's Property	1		45.6	H
<u>Dufferin County Forest</u>	1	0.9	3.8	N-L
	2	0.1	0.3	N-L
	3	2.1	18.3	M
	4	0.8	1.1	N-L
	5	0.3	2.8	N-L
	6A	1.9	4.0	N-L
	7	1.0	9.6	M
	8	Not sampled 1980 - private land		
	9	29.4	103.9	H
	10	27.7	69.3	H
	11	3.8	12.1	M
	12	10.3	6.3	N-L
	13	1.7	7.4	L
	14	4.6	9.8	M
	**95	11.3	16.8	M
	Check 1	26.0	44.4	H
	**Check 2	0.4	18.0	M
	Check 3	29.5	44.3	H
Maple District				
<u>Uxbridge Forest</u>	1		16.7	M
	2		2.0	N-L
Niagara District				
Rock Point Park	-		3.3	N-L
Welland	-		0.1	N-L
Pelham (Fonthill)	-		12.0	M

^a 1 cm = 0.39 in.

^b N = nil, L = light, M = moderate, H = heavy

* sprayed 1980

** sprayed 1979

*** sprayed 1979 and 1980

Fall Webworm, *Hyphantria cunea* Dru.

A general increase in numbers of feeding nests was noted in most of the Region. The most severe damage occurred in the Cambridge-Brantford-Hamilton area of Cambridge District where nests were common on ornamentals and on black ash (*Fraxinus nigra* Marsh.) and red maple (*Acer rubrum* L.) in low lying areas. High populations also persisted on roadside trees in Flos, Vespra and Tiny townships, Huronia District and on ornamentals in Niagara Falls, St. Catharines, Dunnville and Rock Point Provincial Park, Niagara District. In Asphodel, Dummer and Harvey townships, Lindsay District, populations which had remained high for several years declined to low levels. Elsewhere single nests were common on open growing and hedgerow trees.

Maple Leaf Cutter, *Paraclemensia acerifoliella* Fitch

A single heavy infestation of this usually rare insect occurred in the Robertson Tract of the Halton Regional Forest, Cambridge District. At this location, approximately 12 ha (29.6 acres) of semimature sugar maple suffered an average of 60% defoliation with some individual trees being 100% defoliated. This insect was also observed in higher than usual numbers in woodlots north of Elmira in the Cambridge District and south of Uxbridge in the Maple District.

Category C

Aspen Casebearer, *Coleophora innotabilis* Braun

Unusually high numbers of this insect occurred for the second consecutive year. Discrete pockets (totaling approximately 1 ha or 2.47 acres) of very heavy infestation were again found on balsam poplar (*Populus balsamifera* L.) south of Orangeville in Caledon Township, Maple District and in West Gwillimbury Township, Huronia District. New heavy infestations were found east of Angus in the adjoining townships of Essa and Vespra and at a number of locations in Mulmur Township, Huronia District. Light infestations were observed at several locations in the Huronia and Maple districts.

Walnut Caterpillar, *Datana integerrima* G. & R.

A general population increase was evident in 1980. Heavy infestations occurred on planted walnut (*Juglans nigra* L.) in the Cambridge-Brantford-Paris area and in the vicinity of Guelph in the Cambridge District. Substantially increased numbers were evident in the Mississauga-Bramalea area along with continued heavy infestations in the Markham area of Maple District. Increased numbers were observed on individual trees at a number of locations in the Huronia District whereas populations remained generally low in the Lindsay and Niagara districts.

Zimmerman Pine Moth, *Diorycetria zimmermani* complex

In the Huronia District, heavy infestations recurred in about 166 ha (410 acres) in the Angus-Base Borden area and in the nearby Dufferin County Forest on red pine and Austrian pine (*Pinus nigra* Arnold). High numbers of infested shoots were again observed west of Dufferin Road 18 in Mulmur and Melancthon townships and in the Wildman Tract of the Simcoe County Forest in Tiny Township. New heavy infestations occurred in about 4.1 ha (10.1 acres) of planted red pine northwest of Orillia in Orillia Township. A single heavy infestation occurred in the Cambridge District where severe stem boring caused extensive mortality of ornamental Scots pine at the Puslinch Golf Course near Guelph. Light infestations were noted on planted red pine in the Zephyr Tract in East Gwillimbury Township and in adjacent Scott Township, Maple District. Low populations were also observed in the metropolitan Toronto area.

Oak Leafmining Sawfly, *Profenusa lucifex* Ross

Continued severe browning of white oak foliage over approximately 8 300 ha (20,000 acres) occurred south of Rice Lake in Hamilton and Haldimand townships, Lindsay District (Table 3). Moderate damage was also observed on white oak in Belmont and Harvey townships, Lindsay District and on red oak at the Midhurst Forest Station, Huronia District. Small numbers of mined leaves were noted at a number of widely separated locations.

Table 3. Summary of leaves mined by the oak leafmining sawfly at four locations in the Lindsay District from 1978 to 1980 (counts based on examination of 100 leaves selected randomly from five trees at each location).

Location (Twp)	Host	Percentage of leaves mined		
		1978	1979	1980
Hamilton	rO	87	69	76
Haldimand	rO	67	73	63
Harvey	wO	63	27	67
Douro	rO	-	-	57

Oak Leafrollers, *Pseudexentera cressoniana* Clem.,
Argyrotaenia quercifoliella Fitch

Sporadic, heavy infestations consisting mainly of *Pseudexentera cressoniana* Clem. occurred in the Honey Harbour-Six Mile Lake-Sparrow Lake area in the northeast Huronia District over an area of about 414 km² (160 mi²). Small, discrete pockets of heavy infestation also occurred in the Pilkie Tract of the Simcoe County Forest in Flos Township, Huronia District and south of Winona in the Cambridge District. Infestations which were heavy in the Cambridge-Paris area of Cambridge District in 1979 declined to low levels in 1980. Although all species of oak are attacked, white oak and bur oak (*Quercus macrocarpa* Michx.) are the preferred hosts. Defoliation of 80-90% occurred on these hosts.

Maple Webworm, *Tetralopha asperatella* Clem.

A single heavy infestation occurred in a maple sugar bush of about 10 ha (24.7 acres) north of Elmira in Woolwich Township, Cambridge District. A number of other woodlots in the same area were lightly to moderately defoliated. Small localized pockets of light and medium infestation were encountered near Orr Lake, in Flos Township and south of Penetanguishene in Tiny Township in the Huronia District and in the Halton Hills area of Cambridge District. Records show that this insect has been implicated in maple dieback problems in the northern United States.

Table 4. Other forest insects.

Insect	Host(s)	Remarks	Rating
<i>Aceria chondriphora</i> Keifer Ash gall mite	WAs	several ornamentals heavily infested in Bowmanville, Lindsay District	C
<i>Acrobasis juglandis</i> Le Bar Pecan leaf casebearer	Wa	medium infestations in small walnut plantations near St. Clements and south of Georgetown, Cambridge District	C
<i>Acronicta ovata</i> Grt. Smeared daggermoth	rO	light infestation on a few trees at Awenda Provincial Park, Huronia District	C

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks	Rating
<i>Alsophila pometaria</i> Harr. Fall cankerworm	Man. M	heavy on scattered trees between Brantford and Mount Vernon, Cambridge District	A
<i>Altica populi</i> Brown Poplar flea beetle	bPo	severe browning of foliage in small stands totaling 2 ha (4.9 acres) near Kirkfield, Lindsay District, and near Rockwood, Cambridge District	C
<i>Anthophila pariana</i> Cl. Apple and thorn skeletonizer	Cherry	single tree heavily defoliated in Whitby, Lindsay District	C
<i>Aphrophora cribrata</i> (Wlk.) Pine spittlebug	ScP, wP	heavy infestations in approximately 50 ha (123.5 acres) of pine plantations in Tiny and Medonte twp, Huronia District and in Beverly Twp, Cambridge District	A
<i>Archips cerasivoranus</i> (Fitch) Uglynest caterpillar	various deciduous species	common at low levels in the Niagara District; heavy at several locations in the northern Huronia District	B
<i>Baliosus ruber</i> Web. Basswood leafminer	Ba	light infestation on ornamentals at Angus, Huronia District	B
<i>Cecidomyia reeksi</i> Vock Jack pine resin midge	jP	heavy on planted trees near Craighurst and Orillia, Huronia District	C
<i>Cecidomyia</i> spp. Midge	scP	heavy in one 4 ha (9.9 acres) plantation in Manvers Twp, Lindsay District	C

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks	Rating
<i>Cenopsis acerivorana</i> MacK. Maple leafroller	sM	heavy in 10 ha (24.7 acres) in the Pilkie Tract, Simcoe County Forest, Huronia District	C
<i>Cenopsis pettitana</i> Rob. Basswood leafroller	Ba	medium infestation on a few fringe trees south of Wellesley, Cambridge District	C
<i>Coleophora cinerella</i> Cham. Birch casebearer	wB	several trees severely defoliated in Hamilton Twp, Lindsay District	C
<i>Coleophora limosipenella</i> Dup. Hickory casebearer	bHi	heavy infestations on a few scattered roadside trees west of Kleinberg, Maple District	C
<i>Coleophora serratella</i> (Linn.) Cigar casebearer	Apple	medium infestations on hedgerow trees near Palgrave, Maple District	C
<i>Conophthorus coniperda</i> (Sz.) White pine cone beetle	wP	heavy infestations in white pine (<i>Pinus strobus</i> L.) cones at Angus, Huronia District	C
<i>Diprion similis</i> (Htg.) Introduced pine sawfly	wP	found commonly on beating samples at low population levels	C
<i>Ectoedemia argyropeza downesi</i> Wilk. Aspen petiole miner	tA	heavy in about 2 ha (4.9 acres) in West Gwillimbury Twp, Huronia District and in Pickering Twp, Cambridge District	C
<i>Ectoedemia lindquisti</i> (Free.) Small birch leafminer	wB	high numbers on shoreline trees at Awenda Park, Huronia District	C
<i>Exoteleia dodecella</i> Linn. Pine bud moth	scP	light infestation in one Christmas tree plantation near Wyevale, Huronia District	B

(continued)

Table 4. Other forest insects (continued).

Insect	(Host(s))	Remarks	Rating
<i>Ips pini</i> Say Pine engraver beetle	scP rP	associated with patches of mortality near Midhurst Forest Station, Huronia District	B
<i>Messa nana</i> Klug. Birch leafmining sawfly	wB	light foliar damage in Clarke Twp, Lindsay District	C
<i>Neodiprion abietis</i> complex Balsam fir sawfly	bF	continued high populations in Oro, Orillia, Medonte and Rama twp, Huronia District; light in Puslinch and Erin twp, Cambridge District	A
<i>Neodiprion nanulus nanulus</i> Schedl Red pine sawfly	rP	low populations in plantations in Douro and Belmont twp, Lindsay District	B
<i>Neodiprion pratti banksianae</i> Roh. Jack pine sawfly	jP	light infestations near Palgrave, Maple District and at Six Mile Lake Provincial Park, Huronia District	A
<i>Neodiprion sertifer</i> (Geoff.) European pine sawfly	scP rP	increased populations in Cowan and Haldimand twp, Lindsay District; generally low populations elsewhere	A
<i>Orgyia leucostigma</i> J.E. Smith Whitemarked tussock moth	wE, siM	heavy infestations along the Toronto waterfront in the vicinity of the C.N.E. grounds, Maple District	C
<i>Parectopa robiniella</i> Clem. Locust digitate leafminer	Lo	medium infestation near St. Catharines, Niagara District	C
<i>Petrova albicapitana</i> (Busck.) Pitch nodule maker	scP	one 4 ha (9.9 acres) plantation moderately infested in Manvers Twp, Lindsay District	C

(continued)

Table 4. Other forest insects (concluded).

Insect	Host(s)	Remarks	Rating
<i>Pissodes strobi</i> (Peck) White pine weevil	wP, wS jP	little change in population levels throughout the Region; 6% of leaders attacked at Rock Point Provincial Park, Niagara District	A
<i>Pristiphora geniculata</i> (Htg.) Mountain ash sawfly	Mo	common on ornamentals throughout the Region	A
<i>Ptilinus ruficornis</i> Say Deathwatch beetle	rM	medium population of beetles boring in recently cut trees in the Elliott Tract, Halton Regional Forest, Cambridge District	F
<i>Pulicalvaria piceaella</i> (Kft.) Combed spruce needle miner	wS	heavy needle miner infestation south of Arthur, Cambridge District	C
<i>Pyrrhalta luteola</i> (Mull.) Elm leaf beetle	Chinese elm	numerous trees severely defoliated in the town of Bowmanville, Lindsay District	C
<i>Rhyacionia buoliana</i> (Schiff.) European pineshoot moth	rP	heavy infestations at several locations totaling about 4 ha (9.9 acres) in the Cambridge District	
<i>Sericothrips tiliae</i> Hood Basswood thrip	Ba	low numbers found on roadside trees in Belmont Twp, Lindsay District	C
<i>Sparganothis directana</i> Wlk. Leafroller	ecCh	low populations in Belmont Twp	C
<i>Thera juniperata</i> L. Juniper looper	rJ	low populations on ornamentals in Ops Twp and the town of Lindsay, Lindsay District	C
<i>Zeiraphera canadensis</i> Mut. & Free. Spruce bud moth	wS	medium infestation south of Arthur, Cambridge District	B

TREE DISEASES

Category A

Diplodia Tip Blight, *Diplodia pinea* (Desm.) Kickx

Mortality in Scots pine stands evaluated for this disease ranged from nil in Scott Township, Maple District to 15% in Medonte Township, Huronia District (Table 5). Severe foliar damage was also noted in Scots pine stands in Vespra, Tiny, and Oro townships, Huronia District, in Uxbridge and Scott townships, Maple District and in the Guelph-Cambridge area of Cambridge District. In addition, heavy damage was again noted on ornamental Austrian pine at Canadian Forces Base Borden in the Huronia District, in the cities of Guelph, Cambridge, and Kitchener-Waterloo in the Cambridge District, and in Niagara Falls in the Niagara District.

Table 5. Summary of damage caused by Diplodia tip blight at five locations in 1980 (150 trees examined at each location).

Location (Twp)	Area ^a (ha)	Stocking (trees/ha) ^a	Avg ht of trees (m) ^b	Trees affected (%)	Foliar damage (%)	Mortality (%)
Huronia District						
Medonte	10	2400	10	96	63	15
Tiny	8	2700	8	60	30	4
Maple District						
Uxbridge	20	2800	11	30	25	0
Scott	5	2800	12	25	20	0
Cambridge District						
Woolwich	10	2700	15	90	40	2

^a 1 ha = 2.47 acres

^b 1 m = 3.28 ft

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet

For the third consecutive year, extensive surveys were carried out to detect the European race of this disease. The formal survey was carried out in 15 selected plantations, in each of which 500 individual trees were closely examined. These again included the tree nurseries at the Orono Forest Station in Lindsay District and the Midhurst Forest Station in Huronia District. In addition, numerous other plantations were examined in the course of routine survey activities. Results in all cases were negative.

The North American race of this disease was discovered by personnel of the Pest Control Section of the Ontario Ministry of Natural Resources in a compartment of the Dufferin County Forest in Melancthon Township, Huronia District (Fig. 3). Damage similar to that caused by *G. abietina* was present in a Scots pine plantation in Tiny Township, Huronia District. Laboratory analysis could not confirm the presence of this fungus. Plans for 1981 include sampling of this stand again to identify the causal agent.

Category B

Leaf Anthracnose of Maple, *Kabatella apocrypta* (Ell. & Ev.) Arx

Although this leaf disease was common throughout the Region, the overall intensity of foliar damage decreased in 1980. Quantitative sampling showed a range in the percentage of trees infected from 90% in Pilkington Township, Cambridge District to 40% in Vespra Township, Huronia District. Foliage damage averaged 24% (Table 6).

Localized pockets of heavy infection were recorded in Tosorontio, Oro and Amaranth townships, Huronia District, in the Markham area of Maple District and southeast of Guelph in the Cambridge District. Medium-to-heavy infections occurred on ornamentals in St. Catharines, Welland and Fonthill in the Niagara District. As usual, ornamentals and roadside trees were most heavily damaged and only light infections were observed on woodlot and forest trees.

Horse Chestnut Leaf Blotch, *Phyllosticta sphaeropsoides* Ell. & Ev.

A marked increase in the incidence and severity of this disease was evident in the Cambridge and Niagara districts. In the Cambridge District, severe foliage damage was observed on ornamentals in the cities of Guelph, Cambridge, Kitchener-Waterloo and Brantford. Heavy damage was also evident in St. Catharines and Niagara Falls in the Niagara District. Although damage was less severe, conspicuous browning of foliage was encountered at numerous locations in the Huronia and Maple districts.

CENTRAL REGION

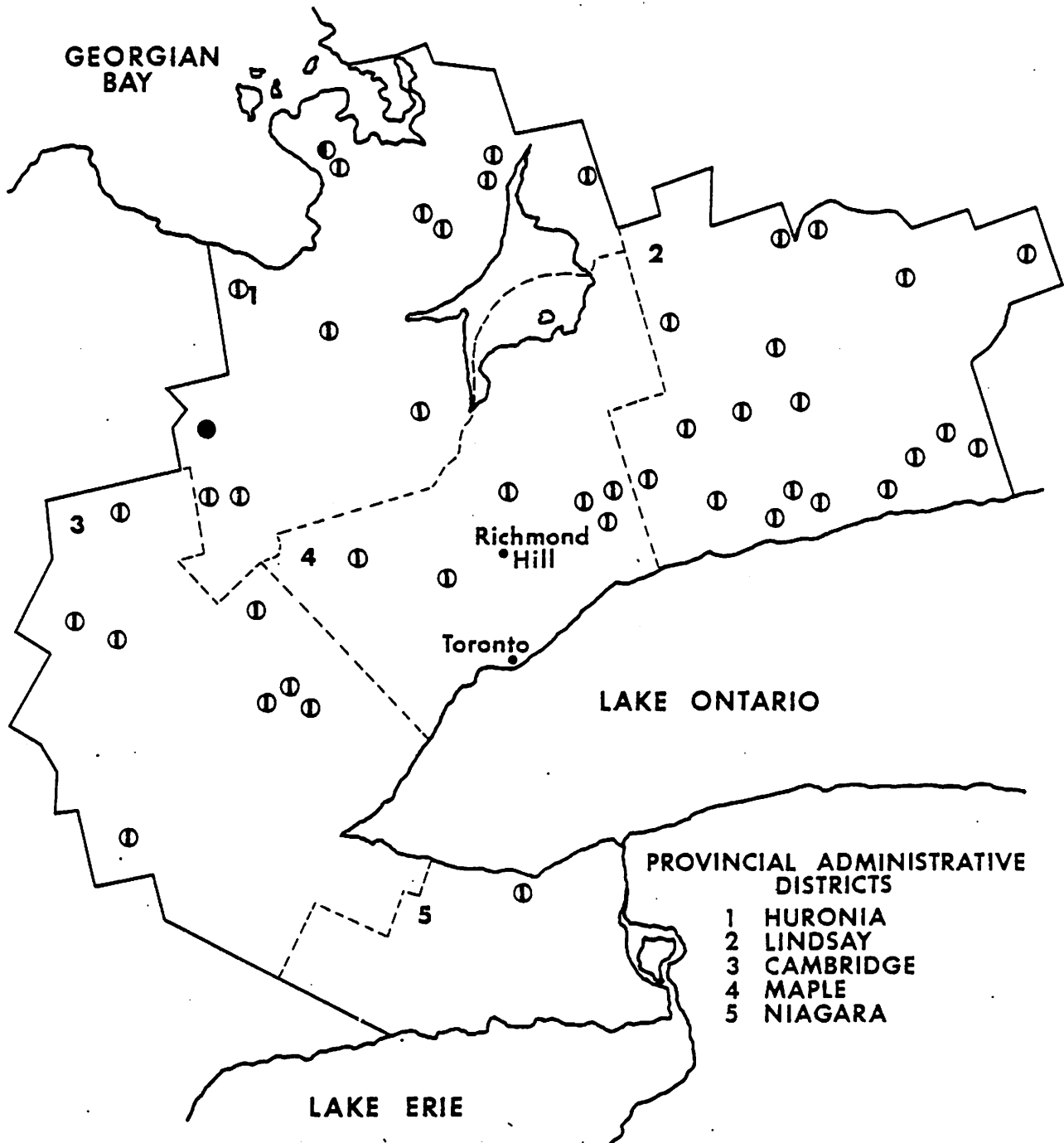


Fig. 3. SCLERODERRIS CANKER

Locations where pine plantations were examined to determine the presence of this disease.

- Negative results ○
- Positive, North American race ●
- Suspected but unconfirmed ◐

Table 6. Summary of damage caused by leaf anthracnose on roadside sugar maple at eight locations in 1980 (150 trees examined at each location).

Location	Avg ht of trees (m)	Trees affected (%)	Foliar damage (%)
Huronian District			
Melancthon	17	59	14
E. Garafraxa	21	55	25
Vespra	20	40	25
Cambridge District			
Eramosa	19	53	20
Pilkington	19	90	50
Maple District			
Toronto Gore (Peel)	18	60	30
Whitchurch	16	70	10
Scott	19	60	25

Rhizina Root Rot, *Rhizina undulata* Fr.

Considerable damage associated with heavy fruiting by this fungus was detected in the Orr Lake Tract of the Simcoe County Forest in Flos Township and in the Dufferin County Forest in the adjacent townships of Tosorontio and Mulmur, Huronia District. The infections occurred on sites which were originally planted to red pine and white pine and were burned in the early summer of 1979. The Orr Lake site was replanted with white pine and red oak in the spring of 1980. Large masses of fruiting bodies were common throughout the new plantation along furrows ploughed to prepare the site for the new seedlings (see Frontispiece). Examination revealed rhizomorphs of the fungus growing abundantly among the roots of both tree species. Although no completely dead trees were observed, 15% of the white pine seedlings examined exhibited symptoms of attack by the fungus and are expected to die. The red oak seedlings showed little or no reaction to the presence of the fungus.

Poplar Leaf Diseases, *Septoria musiva* Pk. and *Septoria populicola* Pk.

These leaf diseases were present at higher than normal levels in 1980. Particularly heavy infections were observed in the Canadian Forces Base Borden-Barrie area of Huronia District, in the Pefferlaw

and Uxbridge Brook areas of Scott Township, Maple District and in the area between Guelph and Fergus in the Cambridge District. Smaller scattered pockets of heavy infection occurred in Tay and Oro townships, Huronia District and in Arthur Township, Cambridge District. Light and medium infections were common. Defoliation in heavily infected stands was 80-100%.

Table 7. Other forest diseases.

Organism	Host(s)	Remarks	Rating
<i>Cenangium ferruginosum</i> Fr. ex Fr. Cenangium dieback of pines	rP	common on dead or dying trees in a 1 ha (2.47 acres) plantation at the Orono Forest Station, Lindsay District	B
<i>Ceratocystis ulmi</i> (Buism.) C. Moreau Dutch elm disease	wE	higher than usual incidence among reproduction trees at several locations in Orillia Twp, Lindsay District	A
<i>Ciborinia whetzellii</i> (Seaver) Seaver Ink spot of aspen	tA	small pocket of medium infection in Orillia Twp, Huronia District	A
<i>Cronartium ribicola</i> J.C. Fisch. White pine blister rust	wP	little change in the status of this disease in 1980	A
<i>Cylindrocladium floridanum</i> Sob. & Seymour Cylindrocladium root rot	rP	heavy infection in one compartment at the Midhurst Forest Station, Huronia District	A
<i>Cytospora nivea</i> (Hoffm.) ex Sacc. Cytospora canker of poplar	tA	medium infection (stem and branch cankers) in West Gwillimbury Twp, Huronia District	C
<i>Diplodia</i> sp.	gAs	associated with dieback on a large ornamental tree in Millbrook, Lindsay District	C

(continued)

Table 7. Other forest diseases (concluded).

Organism	Host(s)	Remarks	Rating
<i>Fomes annosus</i> (Fr.) Karst. Annosus root rot	rP, scP	particularly heavy fruiting in a plantation in Blenheim Twp, Cambridge District; several new infection centres in the Region	A
<i>Gloeosporium aridum</i> Ell. & Holw. Leaf anthracnose	wAs	heavy in Wilmot Twp, and medium in Nassagaweya Twp, Cambridge District	B
<i>Marssonina betulae</i> (Lib.) Magn. Leaf spot of birch	wB	heavy in 1 ha (2.47 acres) in the Luther Marsh in East and West Luther twp, Cambridge District	C
<i>Marssonina populi</i> (Lib.) Magn.	ltA tA	heavy infections in Vespra Twp, Huronia District; light-to-moderate at many other locations	C
<i>Marssonina juglandis</i> (Lib.) Magn. Leaf spot of walnut	Wa, Bu	higher than usual infection levels throughout the Region	C
<i>Micropera abietina</i> (Pk.) Hoehn. Hemlock branch canker	He	associated with branch and twig mortality in a single 0.5 ha (1.23 acres) plantation in Nassagaweya Twp, Cambridge District	B
<i>Naemacyclus minor</i> Butin Needlecast	scP	trace infection levels at one location in West Gwillimbury Twp, Huronia District	B
<i>Nectria galligena</i> Bres. Nectria canker	Ba	high numbers of cankers on individual trees in Nassagaweya Twp, Cambridge District and Uxbridge Twp, Maple District	A
<i>Polyporus schweinitzii</i> Fr. Red-brown butt rot	wP	fruiting on mature ornamental trees at the Angus seed plant, Huronia District	B

Diebacks and Declines

Ash Dieback

This condition was again prevalent at damaging levels in the Cambridge, Huronia and Maple districts. Severe damage was observed on woodlot white ash (*Fraxinus americana* L.) in Arthur and Nassagaweya townships, Cambridge District, and on hedgerow trees in the Markham area of Maple District. Less severe damage was common on ornamentals and roadside trees in the Huronia, Niagara and Lindsay districts.

Maple Decline

The status of this decline remained unchanged in the Huronia District, where extensive mortality occurred in several townships in 1977 and 1978. No new areas of damage were observed and some trees in previously affected areas are recovering. A single pocket of mortality (about 1 ha or 2.47 acres) was discovered in a mature sugar maple bush near St. Agatha in Wilmot Township, Cambridge District. This stand was severely defoliated by the forest tent caterpillar (*Malacosoma disstria* Hbn.) in 1976 and 1977.

Oak Decline

Oak continued to die at a number of scattered locations in the central and northern portions of Simcoe County in the Huronia District. The most severe damage occurred on the east side of Farlain Lake in Tiny Township, where infestations of the oak leaf shredder (*Croesia semipurpurana* Kft.) have remained heavy for several years. Quantitative sampling at this location indicated 25% mortality, and 23% of the trees with dead tops. Many of the dead and damaged trees were infected with Armillaria root rot (*Armillaria mellea* [Vahl ex Fr.] Kumm.). A similar situation prevailed in the Uxbridge Township area of Maple District, although aerial spraying of oak leaf shredder in some of the more severely affected areas may alleviate the problem.

Abiotic Damage

Salt Damage

Salt damage was again heavy along major highways, particularly Highways 400 and 401 in the Huronia and Maple districts. Conspicuous damage was evident along major traffic arteries in the metropolitan Toronto area, Maple District, south of Paris in the Cambridge District, along Highway 11 north of Barrie in the Huronia District and in the cities of St. Catharines, Welland and Niagara Falls in the Niagara District. Varying degrees of damage were apparent at numerous other highly salted areas throughout the Region.

Winter Drying

This condition was less severe than usual. Heavy browning of foliage was again observed in a number of Scots pine plantations in Oro and Tiny townships, Huronia District and in several white pine and red pine plantations in the Maple District. Moderate foliar damage was noted on red pine in Erin Township and on white pine in Blenheim and West Garafraxa townships, Cambridge District. In most cases damaged foliage was shed and the trees recovered well.

Frost

Heavy frosts were reported several times in early June, 1980. The latest occurred on 16 June, when temperatures as low as -2°C were reported at a number of locations in the Region. These caused severe new shoot mortality, mainly to white spruce and walnut at numerous locations in the Lindsay District. Less severe damage occurred on white ash, walnut, and European larch east of Cambridge in the Cambridge District, and on white spruce near Maple in the Maple District. Light damage was also noted on white ash and black ash (*Fraxinus nigra* Marsh.) at several locations in Nottawasaga and East Garafraxa townships, Huronia District.

Special Surveys

White Pine Plantation Survey

In 1980 the Forest Insect and Disease Survey carried out a special survey of white pine plantations to determine the incidence of specific insect and disease pests and to supply baseline data for future studies. In each stand examined, 10 plots of 15 trees each were randomly selected. Each tree was scrutinized for the presence and abundance of the specific pests. The insect pests involved in the survey were the white pine weevil (*Pissodes strobi* Peck), the eastern pineshoot borer (*Eucosma gloriola* Heinr.) and the pine bark adelgid (*Pineus strobi* [Hartig]). The diseases included white pine blister rust (*Cronartium ribicola* J.C. Fisch.), basal stem cankers, foliage diseases, and Armillaria root rot (*Armillaria mellea* [Vahl ex Fr.] Kumm.). The most serious insect damage was recorded in Whitchurch Township, Maple District, where 14% of the trees examined suffered leader damage by the white pine weevil, and in Bexley Township, Lindsay District where 27% of the trees were infected with white pine blister rust. Although a high incidence of the pine bark adelgid was found at several locations, little serious damage was noted. Complete results are summarized in Table 8.

Table 8. Summary of the results of a white pine plantation survey carried out in the Central Region in 1980 (150 trees examined at each location).

Location	Avg ht of sample trees (m) ^a	Area of planta- tion (ha) ^b	Stocking (trees/ha) ^b	Percentage of trees affected		
				<i>Pissodes strobi</i>	<i>Pineus strobi</i>	<i>Cronartium ribicola</i>
Lindsay District						
Bexley	2.0	5	2100	5.6	0	27
Huronian District						
Flos	0.5	1	2000	0	0	0
Melancthon	7.0	5	2500	0	75	5
Cambridge District						
Blenheim	1.2	10	2900	0	0.6	2
Maple District						
Whitchurch	5.5	20	2800	14	61	3
Niagara District						
Sherbrooke	4.8	1.0	2400	5.3	0	0

^a 1 m = 3.28 ft

^b 1 ha = 2.47 acres