

FOREST INSECT AND DISEASE SURVEYS  
IN THE SOUTHWESTERN SURVEY REGION, 1973

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Frontispiece. Top and branch mortality  
of hard pines.

## SURVEY HIGHLIGHTS

A condition causing top-killing and branch mortality of Scots pine that was of major concern to Christmas tree growers north of Lake Ontario was detected in May, 1973. The problem which was given special attention in 1973 was partially resolved and a fungus, *Cenangium ferruginosum*, was found to be associated with the condition. Several new localized pockets of infection caused by *Fomes annosus* were discovered within the known range of the disease. Quantitative data revealed a continuing high rate of infection by Dutch elm disease, especially in the central and northern parts of the Region. In the St. Williams Nursery several beds of 3-0 red pine seedlings were destroyed by a needle cast caused by the pathogen, *Lophodermium pinastri* (Schrad. ex Fr.) Chev. Also, a fungus disease, *Botrytis cinerea* Pers. ex Fr., was associated with tip mortality of spruce and pine seedlings in St. Williams and Midhurst nurseries. Red pine mortality continued in all areas that were previously reported to be affected, and severe shoot mortality of blue spruce was again recorded in the Bells Lake area. However, semimature tissue needle blight of white pine was generally light following heavy infections in 1972.

High populations of the orangestriped oakworm, cedar leaf-miners, fall webworm and white pine weevil recurred in several areas and populations of the European pine shoot moth intensified and were more widespread. Marked reductions were recorded in the abundance of the European pine sawfly, jack-pine budworm, birch skeletonizer and oak leaf-tier. In May, the Ontario Ministry of Natural Resources carried out an aerial spraying operation covering 1300 acres of oak forest north of Orangeville in an attempt to protect the current year's foliage against the oak leaf-tier. Polyhedral virus was applied to control European pine sawfly populations at numerous locations.

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## INSECTS

An Orangestriped Oakworm, *Anisota finlaysoni* Riotte

High larval populations of this insect continued in the southeastern part of the Cambridge District and in the northern part of the Niagara District for the third consecutive year. Highest populations were generally confined to fringe and open-growing white oak (*Quercus alba* L.) trees. Moderate-to-severe defoliation occurred commonly in Trafalgar, Beverly, Binbrook and Grimsby townships. Light-to-moderate damage was recorded in Nassagaweya, Blenheim, South Dumfries and Burford townships in the Cambridge District and in Windham Township in the Simcoe District.

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

Although high populations of this cedar leafminer complex caused moderate and severe damage to the foliage of eastern white cedar (*Thuja occidentalis* L.) trees at scattered locations, larval populations in the Region generally declined. The greatest damage was again recorded south of a line between Scugog Lake on the east and Luther Lake on the west but light branch mortality was evident in scattered cedar stands to the north in the Owen Sound and Huronia districts. Pockets of medium and heavy infestations continued in Puslinch and Erin townships in Cambridge District, in the Clifford-Harriston area in the eastern part of Wingham District, and in the vicinity of the St. Williams Forest Nursery in Simcoe District. Light infestation was commonly observed elsewhere.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Larval populations of this skeletonizer of white birch (*Betula papyrifera* Marsh.) declined for the second consecutive year. In the Maple and Huronia districts small pockets of moderate defoliation persisted in generally light infestations in the Sutton-Newmarket and Orangeville-Primrose areas. Medium-to-heavy infestations in the Uxbridge and Barrie-Angus-Alliston areas declined to light in 1973.

A small pocket of white birch trees was severely defoliated near Lions Head in the Owen Sound District. In contrast heavy infestations near Owen Sound and in Puslinch Township in the Cambridge District declined to light intensity. In the Simcoe District damage was negligible in the Simcoe-Delhi area where a light infestation occurred in 1972.



Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Larval populations of this insect increased from light-to-medium to medium-to-heavy intensity on the Bruce Peninsula in the Owen Sound District. Moderate-to-severe defoliation occurred in small pockets of trembling aspen (*Populus tremuloides* Michx.) trees bordering Highway 6 in Lindsay Township and in the vicinity of Lions Head in Eastnor Township. Light damage was noted elsewhere in the northern part of the Peninsula.

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 information report by G.M. Howse *et al.* (O-X-193). This report provides complete description and analysis of developments in the spruce budworm situation in Ontario in 1973 and gives infestation forecasts for the Province for 1974.

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

Following a decline in larval populations in 1972 the insect continued at low levels in 1973. The highest numbers infesting Scots pine (*Pinus sylvestris* L.), red pine (*Pinus resinosa* Ait.) and jack pine (*Pinus banksiana* Lamb.) trees were recorded in the Tottenham and Bolton areas in the Huronia and Maple districts, where 206 and 134 larvae, respectively, were collected from 20-mat samples. Populations elsewhere in the Region were of little significance.

Oak Leaf-tier, *Croesia semipurpurana* (Kft.)

In contrast to increases recorded in the Huronia and Maple districts in 1972 larval populations declined in a number of areas in 1973. The most notable decreases occurred in red oak (*Quercus rubra* L.) stands in Uxbridge, Tosorontio, Mulmur and Vespra townships where heavy infestations generally declined to light intensity with occasional small pockets of medium infestation. Medium infestations in Tiny and Oro townships declined to light intensity. Exceptions to the general trend were noted in the vicinity of Cedar Valley in Whitchurch Township where a localized pocket of red oak was heavily infested. Moderate damage was recorded north of Orr Lake in Flos Township where light infestation was present in 1972 (Fig. 1).

In 1973 the Ontario Ministry of Natural Resources carried out an aerial spray operation against the oak leaf-tier in an attempt to reduce the amount of damage to current foliage. The area, 1300 acres





Figure 1. Severe defoliation caused by the oak leaftier.

of mixed hardwood with a high content of red oak, was selected because of its long history (15 to 20 years) of damage by this insect. The area included 1070 acres of crown land and 230 acres of private land in Mulmur and Tosorontio townships.

The Canadian Forestry Service was requested to obtain data on insect and host development for spray-timing purposes and to assist in determining the effectiveness of the operation.

Spraying was begun on the morning and evening of May 17 and completed on the morning of May 19 when larvae were in second and third instars and foliage was generally from 1 to 3 inches long. General Airspray Limited, St. Thomas, Ontario used a Stearman aircraft equipped

with four micronair AU3000 units and applied 0.85 lb Sevin 4 oil in 0.78 qt (Imperial) of spray mixture per acre. Spray coverage appeared to be satisfactory.

A limited number of population measurements made before and after spraying, using dissecting microscopes to make random larval counts in one spray block and one check plot showed no population reduction following spraying. Nor could differences in the degree of defoliation be detected between treated and untreated stands.

Maple Trumpet Skeletonizer, *Epinotia aceriella* Clem.

In Cambridge District a heavy infestation in a large sugar maple (*Acer saccharum* Marsh.) woodlot in Waterloo Township continued for the third consecutive year, and a new localized pocket of heavy infestation was noted in the Elora Gorge in Pilkington Township. Heavy infestations persisted in the John E. Pearce Provincial Park in the Aylmer District and in the vicinity of Port Colborne in the Niagara District. In contrast medium and light infestations in Colborne Township in the Wingham District and on the Bruce Peninsula in the Owen Sound District declined to very low levels. Low larval populations were of little significance elsewhere in the Region.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Larval populations of this shoot borer remained low in the Region for the second consecutive year (Table 1). The highest number of infested shoots was noted in a white pine (*Pinus strobus* L.) plantation in Eramosa Township in the Cambridge District where 32 lateral shoots were damaged on ten 15-foot sample trees. As in 1972, leader damage did not exceed 3% in any stand examined.

A Birch Leafminer, *Fenusa pusilla* (Lep.)

In the Huronia District, a heavy infestation of this leafminer recurred in the Angus-Base Borden area, causing severe browning of white birch foliage. Moderate damage was noted in the Creemore-Collingwood area. A medium infestation persisted at Bellwood Lake in the Cambridge District. Elsewhere severe damage to scattered ornamental birches was observed more commonly than in previous years.



Table 1. Summary of shoot damage by the eastern pine shoot borer in the Southwestern Survey Region from 1971 to 1973

Location (Twp)	Tree species	Avg height of trees (ft)	Total no. of shoots infested			Leaders attacked (%)		
			1971	1972	1973	1971	1972	1973
Owen Sound District Brant	wP	9	237	11	14	9	0	1
Wingham District Downie	wP	9	182	21	19	13	1	0
Aylmer District McGillivray	wP	9	39	18	25	8	2	0
Simcoe District Charlotteville	wP	12	54	15	17	2	0	0

Pine Root Collar Weevil, *Hylobius radicis* Buch.

Larval populations of this weevil continued to damage scattered Scots pine plantations in the central and northern parts of the Huronia District. Tree mortality was greatest (approximately 10%) in several plantations in the Barrie-Midland area with lesser amounts in a few townships immediately south of Barrie. Although damage is generally most prevalent in plantations of Christmas-tree size, light stem mortality was noted in 30- to 45-year-old Scots pine plantings in Flos and Vespra townships.

Fall Webworm, *Hyphantria cunea* Dru.

Heavy infestations in the southern parts of Simcoe, Aylmer and Chatham districts increased in intensity and black walnut (*Juglans nigra* L.), shagbark hickory (*Carya ovata* [Mill.] K. Koch), Manitoba maple (*Acer negundo* L.) and basswood (*Tilia americana* L.) trees were severely defoliated. The number of tents decreased westward to Rondeau Park and Point Pelee. Moderate defoliation occurred in localized pockets of black ash (*Fraxinus nigra* Marsh.), white birch, hawthorn (*Crataegus* sp.) and wild apple (*Malus* sp.) in the Washago area and along Highway 103 in Baxter Township, Huronia District. Medium infestations were also noted on a variety of host trees in the southern part of the Cambridge District and in the Simcoe-Delhi and Turkey Point areas of the Simcoe District. Heavy infestations in the Port Colborne area and in Humberstone and Wainfleet townships, Niagara District,



declined to medium intensity. Generally light infestations with occasional small pockets of moderate defoliation commonly occurred elsewhere in the Region.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

This is the second year of severe defoliation of black cherry (*Prunus serotina* Ehrh.) in Sullivan and Bentinck townships in the Owen Sound District and in Culross Township in the Wingham District. The insect also caused moderate defoliation of cherry (*Prunus* sp.) and hawthorn trees in the vicinity of Angus in Essa Township, near Sebright in Rama Township and in the vicinity of Craighurst in Medonte Township in the Huronia District. High populations in the southwestern part of the Huronia District and in Cambridge and Maple districts in 1972 generally declined to light infestation.

A high level of mortality in late larval instars was caused by a polyhedral virus infection in populations examined in Sullivan and Bentinck townships.

Balsam-fir Sawfly, *Neodiprion abietis* complex

After several years of endemic populations, intensities increased notably at scattered locations. Moderate defoliation was recorded in the upper crowns of balsam fir (*Abies balsamea* [L.] Mill.) trees growing on low-lying land in the Bradford-Aurora-Uxbridge area in the Maple District. Light-to-moderate damage occurred commonly in the Angus-Creemore and Orangeville-Shelburne areas in the Huronia District.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

In the Huronia District one pocket of light infestation occurred in a red pine plantation of 7-foot trees west of Sebright, but an occasional fringe tree suffered moderate defoliation. North of Sebright in Rama Township a 30-acre plantation of 6-foot trees was lightly infested, and occasional colonies were observed near Severn Falls in Matchedash Township.

A Jack-pine Sawfly, *Neodiprion pratti banksianae* Roh.

Low populations of this pine sawfly persisted in the southern part of the Huronia District (Table 2). The highest number of colonies occurred on 20-foot jack pine trees in a mixed pine plantation near Bolton in Albion Township. Because the insect was feeding in

association with *N. sertifer*, it was not possible to make separate colony counts. Light-to-moderate defoliation of 15-foot jack pine trees occurred for the second consecutive year in Sullivan Township, Owen Sound District, where 73 colonies were counted on ten sample trees.

Table 2. Summary of jack-pine sawfly colony counts at three points in the Huronia District from 1971 to 1973 (Counts were based on the examination of 100 trees at each location.)

Location (Twp)	Avg height of trees (ft)	Avg no. of colonies per infested tree			Trees infested (%)		
		1971	1972	1973	1971	1972	1973
Melancthon	20	3.8	2.6	3.0	69	53	34
Tosorontio	20	3.3	5.4	3.1	100	100	63
W. Gwillimbury	20	4.1	4.0	2.5	65	64	56

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

Larval populations of this sawfly generally declined. Heavy infestations in Tosorontio and Mulmur townships in Huronia District and in Glenelg, Bruce and Amabel townships in the Owen Sound District in 1972 decreased to light-to-medium intensity. In the Simcoe District the number of colonies declined to very low levels in a Conservation Authority plantation in South Walsingham Township where severe defoliation had occurred in 1971 and 1972. Also, medium infestations on jack pine, Scots pine and red pine plantations in the Tottenham-Bolton area were reduced to light intensity. Elsewhere only minor damage was observed (Table 3).

Where necessary the Ontario Ministry of Natural Resources and private tree growers in the Region continued to apply virus as a control measure, and virus-killed larvae were observed in numerous areas that had been sprayed in previous years. Personnel from the Canadian Forestry Service and the Ontario Ministry of Natural Resources were successful in recovering an abundance of virus from diseased larvae for use in future control programs and research.

Following recovery in Mono Township of *Lophyprolectus luteator* (Thunb.), a European parasite released by the Canadian Forestry Service near Chatsworth in 1962, it was decided to extend the area of search. Approximately 150 individual larval colonies were collected at points outside the known range of the parasite.



Table 3. Summary of European pine sawfly colony counts and degrees of infestation in four districts, 1971 to 1973 (Counts were based on the examination of 100 trees at each location.)

Location (Twp)	Tree spe- cies	Avg height of trees (ft)	Avg no. of colonies per infested tree			Trees infested (%)			Degree of infes- tation <sup>a</sup>
			1971	1972	1973	1971	1972	1973	
Huronian District									
Adjala	scP	15	3.4	4.0	1.0	93	84	25	L
Mulmur	scP	12	6.5	7.0	4.0	100	95	75	M
Sunnidale	scP	12	-	-	3.0	-	-	80	L
Flos	scP	15	-	-	1.0	-	-	30	L
Orillia	scP	12	-	-	2.0	-	-	60	L
Tosorontio	scP	10	2.0	8.0	1.0	43	100	33	L
Maple District									
Albion	scP	15	7.0	5.0	1.0	100	80	30	L
Caledon	scP	10	-	-	1.0	-	-	53	L
Owen Sound District									
Sullivan	scP	8	5.0	6.0	1.1	97	92	90	L
Amabel	scP	8	2.5	2.0	0.6	52	22	24	L
Cambridge District									
Eramosa	jP	8	2.2	2.0	0.2	56	17	19	L

<sup>a</sup> L = light, M = medium

#### White Pine Weevil, *Pissodes strobi* (Peck)

Heavy leader damage continued in a localized patch of 10-foot white pine trees in Flos Township, Huronia District, for the second consecutive year (Table 4). Elsewhere in the district moderate damage was recorded in a Norway spruce (*Picea abies* [L.] Karst.) plantation in Vespra Township and in an immature stand of white pine in Whitchurch Township, Maple District (Fig. 2). In contrast to an increase reported in a white pine plantation in Sullivan Township, Owen Sound District in 1972, the proportion of trees infested decreased from 31% to 11% in 1973. Light damage was noted commonly in the Huronia, Maple, Owen Sound and Wingham districts and occasionally in the Cambridge and Simcoe districts (see Appendix, Fig. A1).



Table 4. Summary of leader damage by white pine weevil in six districts from 1971 to 1973 (Counts were based on the examination of 100 trees at each location.)

Location (Twp)	Host	Avg DBH (in.)	Trees infested (%)		
			1971	1972	1973
Huronian District					
Matchedash	wP	7	14	11	6
Oro	wP	5	11	4	4
Vespra	nS	7	16	14	9
W. Gwillimbury	wP	4	5	6	7
Oro	nS	5	57	23	5
Flos	wP	3	-	60	78
Maple District					
Whitchurch	wP	4	23	17	16
E. Gwillimbury	wP	5	18	11	5
Owen Sound District					
Sullivan	wP	2	1	1	2
Wingham District					
Turnberry	wP	1	1	5	3
Kinloss	wP	2	4	-	2
Cambridge District					
N. Dumfries	wP	2	5	3	3
Waterloo	wP	3	1	2	3
Simcoe District					
S. Walsingham	wP	2	1	2	1
Charlotteville	wP	3	0	1	1

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

In the Huronia District heavy infestations persisted in European larch (*Larix decidua* Mill.) stands in Medonte Township and new heavy infestations were noted in county forests near Craighurst in Oro Township, south of Tottenham in Tecumseh Township and in the vicinity of Holly in Innisfil Township. Severe defoliation of this host recurred in Charlotteville Township in the Simcoe District and in Whitchurch Township in the Maple District. Medium infestations were recorded in Oro Township in the Huronia District, in Whitchurch Township in the Maple District, in South Dumfries Township in the Cambridge District and in Derby Township in the Owen Sound District. A medium infestation in 1972 in a 10-acre tamarack (*Larix laricina* [Du Roi] K. Koch) stand, at Cape Chin on the Bruce Peninsula, declined to light intensity, and light defoliation was observed at scattered locations elsewhere in the Region.



Figure 2. Scots pine tree showing white pine weevil damage.

European Pine Shoot Moth, *Rhyacionia buoliana* Schiff.

Larval populations of this insect increased and were more widespread than in recent years (see Appendix, Fig. A2). A heavy infestation occurred in Amabel Township in the Owen Sound District, where 80% of the new shoots were infested in a 6-acre plantation of 4-foot red pine trees. Notable increases were recorded at several locations in the Cambridge District and a medium infestation recurred in a small Scots pine plantation in Melancthon Township in Huronia District. In Malahide Township in the Aylmer District, where a heavy infestation persisted for several years, larval populations declined to medium intensity (Table 5). Light infestations were recorded in a red pine



planting near Cashtown in Nottawasaga Township and in a Scots pine windbreak in the vicinity of Honeywood in Mulmur Township, Huronia District.

Table 5. Summary of shoot damage by the European pine shoot moth in Cambridge and Aylmer districts from 1971 to 1973 (Counts were based on the examination of 100 red pine bud clusters at each location.)

Location (Twp)	Avg height of trees (ft)	Bud clusters infested (%)		
		1971	1972	1973
Cambridge District				
Eramosa	4	13	16	26
Puslinch	4	-	3	18
S. Dumfries	5	-	15	17
Aylmer District				
Malahide	6	-	36	11
Blandford	6	-	3	4

Table 6. Other forest insects

Insect	Host(s)	Remarks
<i>Acleris variana</i> Fern.	wS	medium infestation in small plantation near Palgrave in Albion Twp, Maple District
<i>Adelges abietis</i> Linn.	wS	light infestation, Bentinck Twp, Owen Sound District
<i>Adelges lariciatus</i> (Patch)	nS, wS	moderate gall aphid damage on large trees in windbreak at the Midhurst Nursery, Huronia District, and on Colorado spruce at the St. Williams Nursery, Simcoe District
<i>Altica populi</i> Brown	bPo	medium infestation on several 30-foot trees in Tecumseh Twp, Huronia District

(continued)



Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Anchylopera</i> sp.	Bl, I	A heavy infestation of this leaftier occurred for the second consecutive year in a small woodlot in the Elora Gorge, Cambridge District.
<i>Anomogyna elimata</i> Gn.	eH	trace population in Medonte Twp, Huronia District
<i>Anoplonyx luteipes</i> Cress.	eL	small numbers in Medonte Twp, Huronia District
<i>Aphrophora parallela</i> (Say)	scP	pockets of medium infestation in Oro and Orillia twp, Huronia District
<i>Archippus packardianus</i> Fern.	WS	low populations in Essa and Mara twp, Huronia District
<i>Arge pectoralis</i> (Leach)	WB	Populations of this birch sawfly declined to a low level on Bruce Peninsula. There were scattered colonies in Medonte Twp, Huronia District and in Eastnor, Bruce and Amabel twp, Owen Sound District.
<i>Cecidomyia reeksi</i> Vock.	jP	moderate-to-heavy damage on occasional trees
<i>Cenopsis acerivorana</i> MacK.	sM	generally light leaf roller damage in the Collingwood area, Huronia District
<i>Cephalcia frontalis</i> Westw.	jP	light web-spinning sawfly damage in Adjala Twp, Huronia District
<i>Choristoneura rosaceana</i> Harr.	WS	trace population at Midhurst Nursery, Huronia District
<i>Chrysomela scripta</i> F.	eCo	light infestation in several seedbeds at St. Williams Nursery, Simcoe District

(continued)

Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Coleophora laricella</i> Hbn.	eL	heavy infestation near Newmarket in Whitchurch Twp, moderate damage in Albion Twp, Maple District, and in Mulmur Twp, Huronia District
<i>Corthylus punctatissimus</i> Zimm.	sM	caused light-to-moderate mortality of regeneration at several locations in Maple and Huronia districts
<i>Datana contracta</i> Wlk.	Ba, wE	occasional colonies observed in Pickering and Essa twp in Maple and Huronia districts, respectively
<i>Datana integerrima</i> G. & R.	Wa	caused severe defoliation in E. Gwillimbury Twp, Maple District; elsewhere light and moderate defoliation occurred on single and small groups of trees at several locations
<i>Datana ministra</i> Dru.	wE, Ba	scattered colonies more common than in recent years
<i>Dioryetria disclusa</i> Heinr.	scP	generally light cone damage in numerous pine plantations
<i>Dioryetria</i> sp. nov.	rP	Generally light infestations persisted in the Huronia District.
<i>Dioryetria reniculella</i> Grt.	wS, scP	low numbers in beating samples from Vespra, Essa, Albion and Nottawasaga twp
<i>Diprion frutetorum</i> (F.)	scP, wP	low populations common; the highest numbers (18, 26 and 36) counted in 20-mat samples were recorded in Pickering, Uxbridge and Whitchurch twp, respectively

(continued)



Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Diprion hercyniae</i> (Htg.)	nS, wS	populations remained low for the third consecutive year
<i>Diprion similis</i> (Htg.)	scP, wP	The highest numbers of larvae (187, 52 and 49) counted in 20-mat samples were recorded in Pickering, Whitchurch and Uxbridge twp, Maple District. The count in Pickering Twp showed a sharp decrease from 1206 larvae in 1972.
<i>Epargyreus tityrus</i> Fabr.	Hon	found in small numbers on a few scattered trees in Oro Twp, Huronia District
<i>Epinotia nanana</i> Treit.	nS	heavy infestation on large trees in a windbreak at Midhurst Nursery, Huronia District
<i>Fenusa pusilla</i> (Lep.)	wB	A medium infestation of leaf-miners persisted at Bellwood Lake, Cambridge District; high incidence of damaged leaves on ornamental birches throughout the Region.
<i>Hydria prunivorata</i> Ferg.	bCh	generally light but widely scattered
<i>Hylobius pales</i> (Hbst.)	scP	medium infestations common in older Christmas tree plantations
<i>Messa nana</i> Klug	wB	light infestations on scattered trees in Oro and Flos twp, Huronia District
<i>Nematus limbatus</i> Cress.	W	highest numbers of this sawfly were observed in Matchedash and Amaranth twp, Huronia District
<i>Neodiprion nanulus nanulus</i> Schedl	rP	scattered colonies in Pinery Provincial Park, Chatham District

(continued)

Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Orgyia leucostigma</i> J.E. Smith	cE	light defoliation of roadside trees in Dover Twp, Chatham District
<i>Petrova albicapitana</i> (Busck.)	jP	Moderate damage occurred in a 25-acre stand in Adjala Twp, Huronia District
<i>Phratora purpurea purpurea</i> Brown	tA	light defoliation in a stand of young aspen in S. Dumfries Twp, Cambridge District
<i>Phyllobius oblongus</i> Linn.	rM	small numbers of European snout weevils collected in Bentinck Twp, Owen Sound District
<i>Pikonema alaskensis</i> (Roh.)	wS	light infestation on scattered open-grown trees in Amabel Twp, Owen Sound District
<i>Pineus strobi</i> (Htg.)	wP	individual trees heavily infested at several locations
<i>Plagioderia versicolora</i> Laich	W	Light-to-moderate defoliation occurred at Point Pelee in Chatham District and in Delaware, S. Dumfries and Kincardine twp in Aylmer, Cambridge and Owen Sound districts, respectively.
<i>Profenusa lucifex</i> Ross	bO	Heavy infestation in Pickering Twp, Maple District declined to medium intensity. Light infestation occurred near Milton, Cambridge District
<i>Pseudexentera oregonana</i> Wlshn.	tA	medium infestation in a 100-acre stand in King Twp, Maple District

(continued)



Table 6. Other forest insects (concluded)

Insect	Host(s)	Remarks
<i>Psilocorsis quercicella</i> Clem.	wO	Medium infestation continued in the Pinery Provincial Park, Chatham District.
<i>Recurvaria robiniella</i> Fitch	Hon	caused severe defoliation to fringe trees in Oro Twp, Huronia District
<i>Zelleria haimbachi</i> Busck.	jP	caused moderate foliar damage in Adjala Twp, Huronia District

## TREE DISEASES

Note: In this section of the report, incidence refers to the proportion of trees infected and level of infection refers to the disease severity.

## Anthracnose of Sugar Maple

This condition caused by *Gloeosporium* sp. was observed commonly on sugar maple trees along major highways in the Region in 1973. The level of infection generally ranged from light to moderate with occasional trees severely damaged (Table 7). The unsightly appearance caused a considerable amount of public concern.

Table 7. Summary of damage to sugar maple caused by anthracnose in three districts in 1973

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Owen Sound District Keppel	40	high	moderate
Cambridge District W. Garafraxa	40	moderate	moderate
Pilkington	35	moderate	light
Wingham District Elma	35	moderate	light

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Pk.

Evaluations made in 1973 revealed the presence of this organism in the central and northern parts of the Bruce Peninsula in the Owen Sound District. One pocket of medium infection was recorded on white spruce (*Picea glauca* [Moench] Voss) trees in Albemarle Township and light damage occurred in Lindsay, Eastnor and St. Edmunds townships (Table 8). Investigations carried out at ten locations elsewhere in the Owen Sound District and in the Huronia and Maple districts showed negative results.



Table 8. Summary of damage to white spruce caused by eastern dwarf mistletoe in the Owen Sound District in 1973

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Owen Sound District			
Albemarle	30	moderate	moderate
Lindsay	35	high	high
Eastnor	35	moderate	moderate
St. Edmunds	40	light	light

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

A high incidence of the disease continued in the central and northern portions of the Region. Quantitative data taken at ten widely scattered locations showed incidence ranging from 6 to 78% (Table 9, Fig. 3).

Table 9. Summary of damage to white elm caused by Dutch elm disease in four districts in 1973

Location (Twp)	Avg height of trees (ft)	Incidence (%)
Huron District		
Tiny	60	78
Nottawasaga	40	72
Rama	60	35
Mono	50	77
Maple District		
Caledon	50	47
Scott	45	26
Owen Sound District		
Lindsay	50	62
Sydenham	40	60
Osprey	50	48
Wingham District		
N. Easthope	30	6

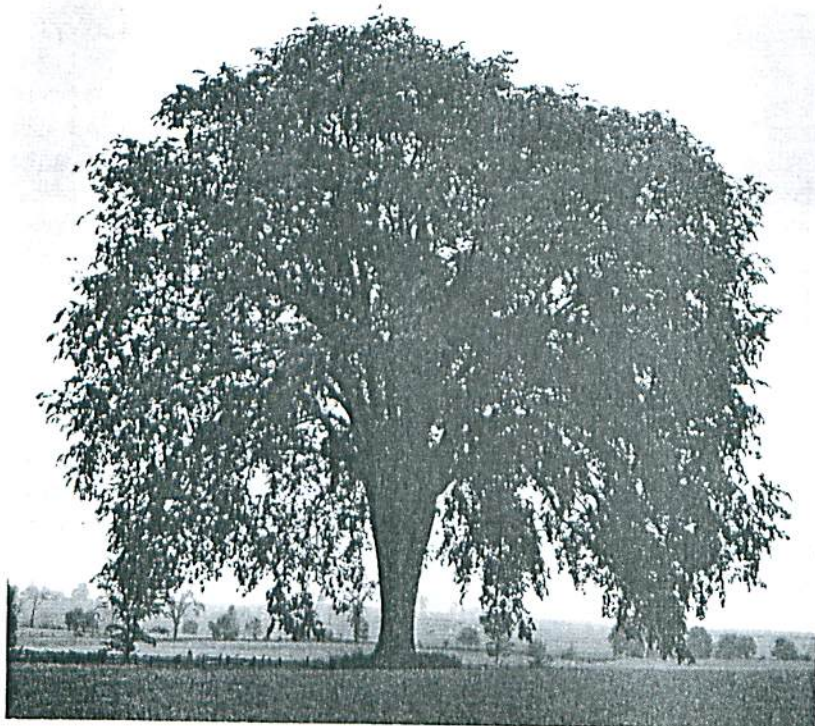


Figure 3. Top: Healthy elm tree.  
Bottom: Elm trees showing deterioration  
caused by Dutch elm disease.



Ink Spot of Poplar, *Ciborinia whetzellii* (Seaver) Seaver

This organism was less prevalent in 1973. The most notable decline was recorded in Tosorontio Township in the Huronia District where only trace infection occurred as compared with moderate damage in 1972. A light infection recurred in Orillia Township and only trace infections were observed elsewhere in the Region. Infections usually occurred on trees growing on low, wet sites.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer

This disease continued to cause stem and branch mortality at the light and moderate levels of infection in the Region (Table 10). Although white pine trees in all age classes are susceptible the organism was generally most prevalent in 8- to 30-year-old stands.

Table 10. Summary of damage to white pine caused by white pine blister rust in four districts in 1973

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Hurononia District			
W. Gwillimbury	25	moderate	light
Sunnidale	30	moderate	light
Maple District			
E. Gwillimbury	25	moderate	moderate
Whitchurch	30	moderate	moderate
Uxbridge	20	moderate	moderate
Albion	20	moderate	light
Owen Sound District			
Holland	30	light	light
Cambridge District			
Puslinch	40	light	light
Waterloo	20	light	light
Woolwich	20	light	light

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka

Levels of infection continued much the same as previously reported in the Region (Table 11). Generally this rust has been most prominent in young stands of Scots pine; however, a moderate infection has persisted on 45-foot Scots pine trees in Whitchurch Township for several years. The occasional heavily infected tree was found in plantations but the overall incidence level was considered negligible and therefore not evaluated.

Table 11. Summary of damage to Scots pine by western gall rust in three districts in 1973

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Huronian District			
Flos	15	high	moderate
Maple District			
Whitchurch	45	moderate	moderate
E. Gwillimbury	10	high	moderate
Albion	8	moderate	light
Owen Sound District			
Keppel	20	moderate	moderate
Amabel	10	moderate	light
Brant	50	moderate	light
Glenelg	15	moderate	light

Annosus Root Rot, *Fomes annosus* (Fr.) Karst.

Several new localized pockets of infection were noted in 1973, particularly in Dufferin and Simcoe counties in the Huronia District. The organism was identified from collections taken from jack pine trees in Vespra Township, from jack pine and red pine trees in Essa Township and from red pine trees at six locations in Tosorontio and Mulmur townships (see Appendix, Fig. A3).

Several of these new infections were discovered by the Ontario Ministry of Natural Resources through the use of aerial photographs and intensive ground surveys made during the winter months using snow machines. Forest managers are now cutting out infected and suspect trees to arrest the spread. All stumps are being treated with a wood-destroying fungus *Peniophora gigantea* (Fr.) Mass.



Infections remained active in Flos Township, Huronia District; Uxbridge Township, Maple District; Woolwich Township, Cambridge District; and in South Walsingham and Charlotteville townships in the Simcoe District. The rate of mortality at these locations has remained virtually unchanged from previous reports.

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

This disease occurred commonly at all levels of infection in the Region (Table 12). The incidence varied directly with trembling aspen content but site did not appear to be an influencing factor. Infected trees are usually girdled and killed or the trunk may break off at the canker before girdling is completed. Stands from 15 to 40 years are most susceptible.

Table 12. Summary of damage to trembling aspen by hypoxyton canker of poplar in five districts in 1973

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection	Current mortality (%)
Huronia District				
Melancthon	40	moderate	moderate	2.5
Amaranth	40	high	high	7.5
Adjala	40	moderate	moderate	5.0
Mono	30	moderate	moderate	2.5
Essa	30	moderate	moderate	2.5
Flos	30	moderate	moderate	5.0
Maple District				
E. Gwillimbury	45	moderate	moderate	5.0
Owen Sound District				
Greenock	50	high	high	0.0
Bruce	40	moderate	moderate	0.0
Wingham District				
Minto	50	moderate	moderate	0.0
N. Easthope	40	moderate	moderate	0.0
Cambridge District				
W. Luther	40	moderate	moderate	2.5

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

This organism, heretofore reported rarely in epidemic proportions, caused severe damage to 3-0 red pine stock in the St. Williams Forest Nursery in the Simcoe District early in the spring of 1973. Several hundred thousand trees were killed in one compartment. Light damage also occurred in a few beds of 1-0 and 2-0 Scots pine and European larch. In the Midhurst Nursery, Huronia District, the disease killed small patches of 3-0 red pine stock. The 1972 buds on heavily infected seedlings failed to elongate in the spring of 1973. The organism was also noted on dead pine needles at several widely scattered locations in the Region.

Valsa Canker, *Valsa kunzei* Fr.

A high level of infection persisted on white spruce trees in a mixed plantation in Vespra Township, Huronia District, where 32.5% of the trees were affected and 5% mortality occurred. A new pocket of light infection was noted in a pure stand of white spruce in East Gwillimbury Township, Maple District. Otherwise nil returns were obtained at widely scattered locations where quantitative sampling was carried out.

#### Mortality of Immature Planted Red Pine

The deterioration of several 30- to 35-year-old red pine plantations continued in the Region in 1973. Additional discolouration and tree mortality were noted especially in a plantation in Wilmot Township, Cambridge District.

#### Top-killing and Branch Mortality of Scots Pine

In the spring of 1973, death of the upper stem and in some instances the branches of Scots pine trees suddenly became evident, particularly east of a line between Toronto and Collingwood (see Appendix, Fig. A4). Although numerous pruned Christmas tree plantations were affected the condition was also prevalent in unpruned plantations on trees ranging up to 20 feet in height. Stem mortality commonly occurred from a constricted area, usually in the 1971 growth, to the top of the tree (see Frontispiece). Constricted areas often extended into 1972 growth. Generally on affected trees the 1973 shoot growth failed to appear but when shoots did appear they usually wilted before elongation reached 6 inches. By far the majority of top-killing occurred by the end of June but on occasion parts of the tree continued to die throughout the summer. Evaluations in Oro Township in the Huronia District and in Uxbridge Township in the Maple District



showed a moderate level of incidence (Table 13). Occasional larger trees suffered single-branch mortality and in some instances a complete whorl was killed. The condition was observed on small numbers of red pine trees at two locations even though the two species were commonly intermixed. Occasionally the proportion of trees affected was highest in low-lying areas.

*Cenangium ferruginosum* Fr. ex Fr. was consistently found fruiting on or near the cankers and dead tissue, but the role of this organism is not clear. It is felt that predisposing factors were involved to favour this fungus which is usually saprophytic or weakly parasitic in nature. Other saprophytic fungi were also present. It seems logical to assume that some unusual type of weather was involved in predisposing trees to attack.

Table 13. Summary of top dying of Scots pine in two districts in 1973  
(Two hundred trees were examined at each location.)

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Huronian District			
Oro	2	moderate	light
Orillia	10	light	light
Sunnidale	8	trace	trace
Oro	10	moderate	moderate
Maple District			
Uxbridge	10	moderate	moderate

#### Winter Drying

This condition caused moderate damage to red and white pine trees in localized areas in Rama and Amaranth townships (Table 14). Trace and light damage were observed at widely scattered locations elsewhere in the Region.

Table 14. Summary of damage caused by winter drying in three districts in 1973

Location (Twp)	Tree species	Avg height of trees (ft)	Incidence	Level of infection
Hurononia District				
Amaranth	wP	5	high	moderate
W. Gwillimbury	wP	15	high	light
Rama	rP	4	moderate	moderate
Owen Sound District				
Glenelg	wP	4	high	light
Aylmer District				
N. Dorchester	wP	5	high	light

Table 15. Other forest diseases

Organism	Host(s)	Remarks
<i>Armillaria mellea</i> (Fr.) Kummer	scP, rP eC, wS	status unchanged from 1972
<i>Botrytis cinerea</i> Pers. ex Fr.	wS, bS rP, scP	commonly associated with light and moderate tip mortality of seedlings in the Midhurst Nursery, Huronia District, and in the St. Williams Nursery, Simcoe District; also light incidence in S. Walsingham Twp
<i>Coleosporium asterum</i> (Diet.) Syd.	rP, jP	trace and light infections of this needle rust at widely scattered locations
<i>Dothistroma pini</i> Hulbary	aP	This pathogen caused moderate needle blight in Oro Twp, Huronia District.
<i>Eutypella parasitica</i> Davidson & Lorenz	sM	Evaluations at 30 locations in the Region revealed incidence did not exceed 7.5%.

(continued)



Table 15. Other forest diseases (concluded)

Organism	Host(s)	Remarks
<i>Fusarium oxysporum</i> Schlecht	Wa	organism found in a patch of dying seedlings at the St. Williams Nursery, Simcoe District
<i>Melampsora abietis-canadensis</i> C.A. Ludwig ex Arth.	eH	Five percent cone infection occurred in Medonte Twp, Huronia District.
<i>Pollaccia radiosa</i> (Lib.) Bald. & Cif.	tA	light infections at widely scattered locations in the Region
<i>Pollaccia saliciperda</i> (All. & Tub.) Arx	W	moderate damage in Wainfleet Twp, Niagara District; scattered light infections
<i>Scolecnectria cucurbitula</i> (Tode ex Fr.) Booth	wP	commonly associated with white pine weevil damage in the Huronia District
<i>Septoria populicola</i> Pk.	bPo	high foliage infections common in the Region in late summer

APPENDIX



# SOUTHWESTERN SURVEY REGION

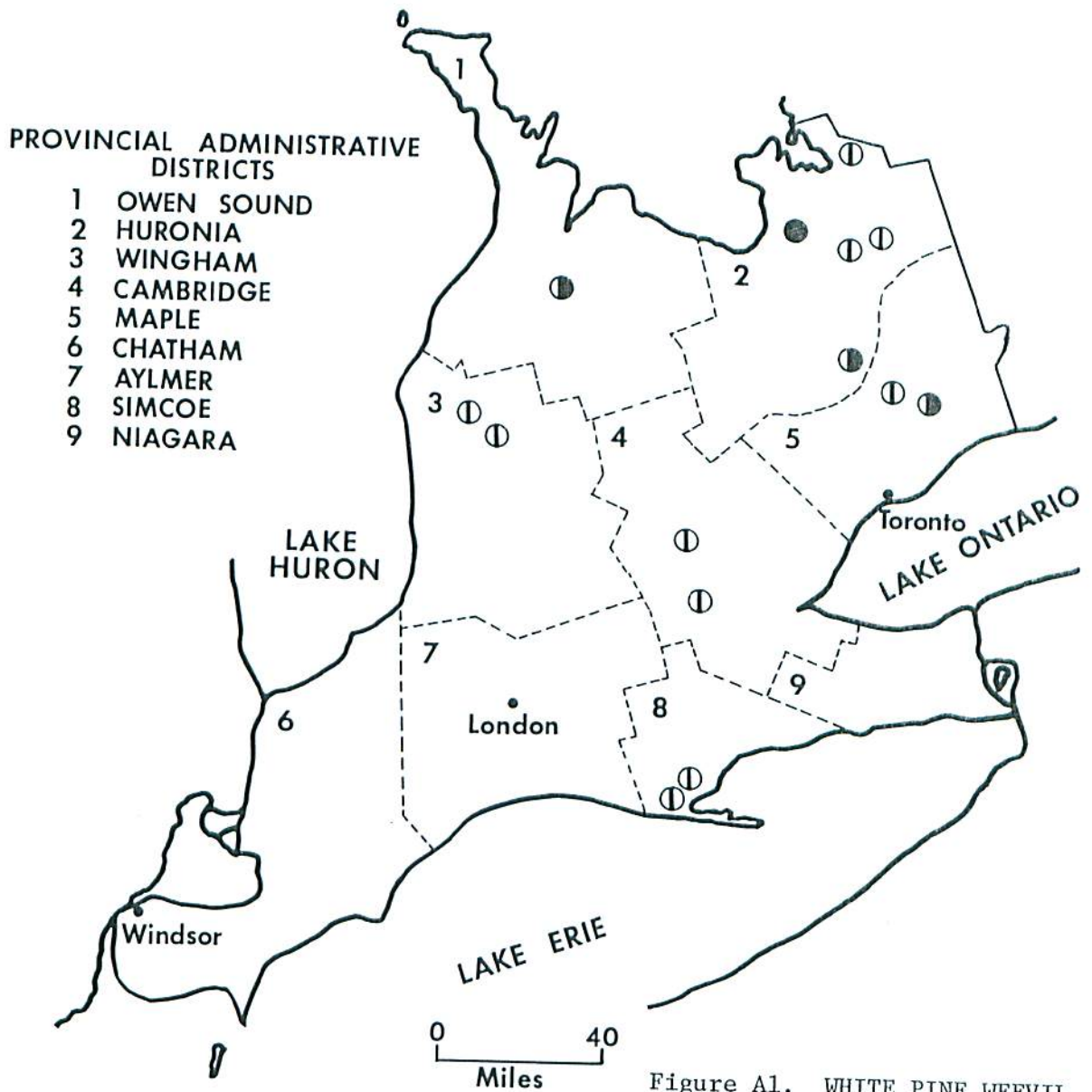


Figure A1. WHITE PINE WEEVIL

Locations where quantitative data were obtained in 1973

Light infestation . . . ⊕

Medium infestation . . . ⊖

Heavy infestation . . . ●

# SOUTHWESTERN SURVEY REGION

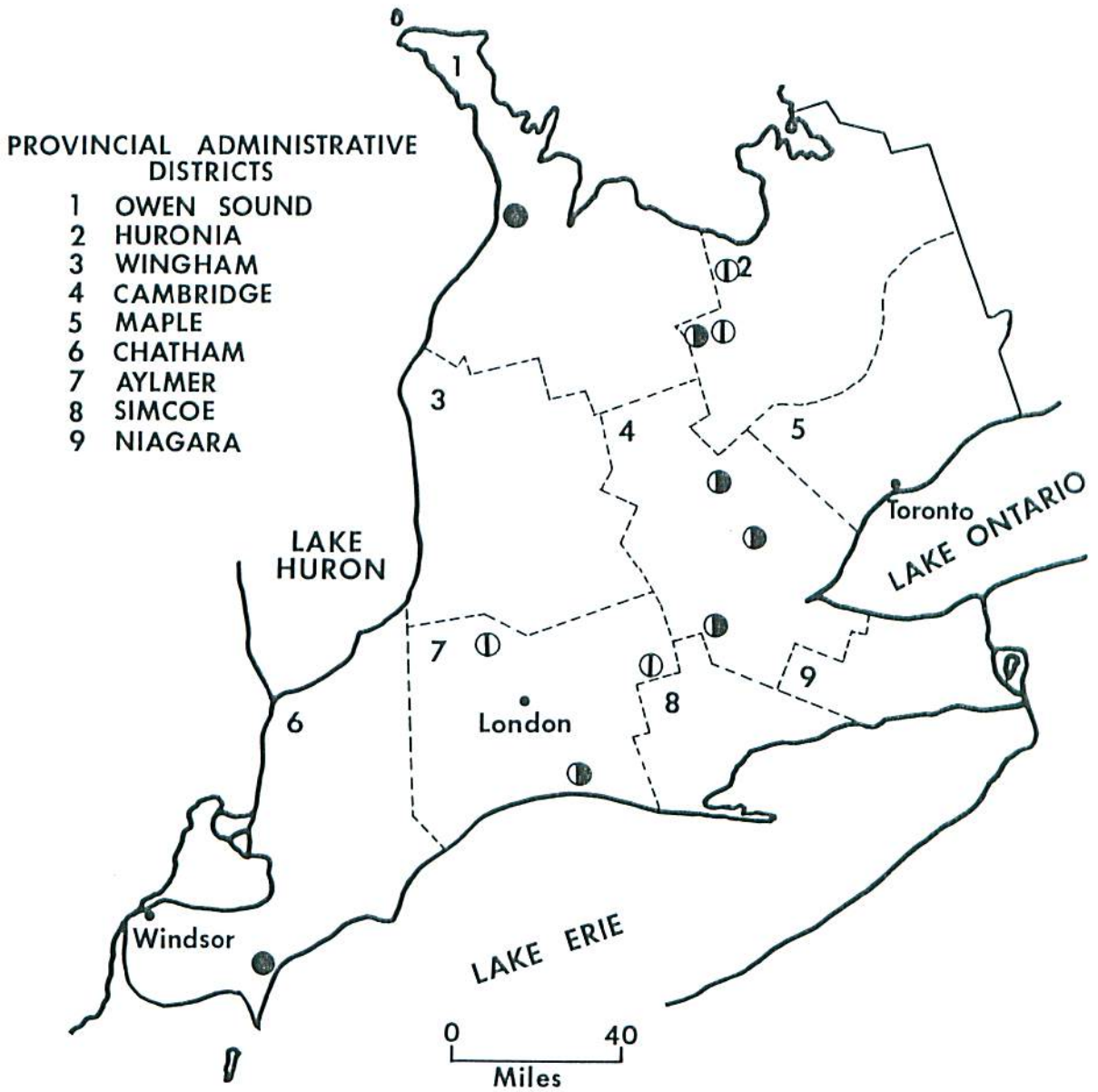


Figure A2. EUROPEAN PINE SHOOT MOTH

Locations where infestations occurred in 1973

- Light infestation . . . . . ①
- Medium infestation. . . . . ②
- Heavy infestation . . . . . ●



# SOUTHWESTERN SURVEY REGION

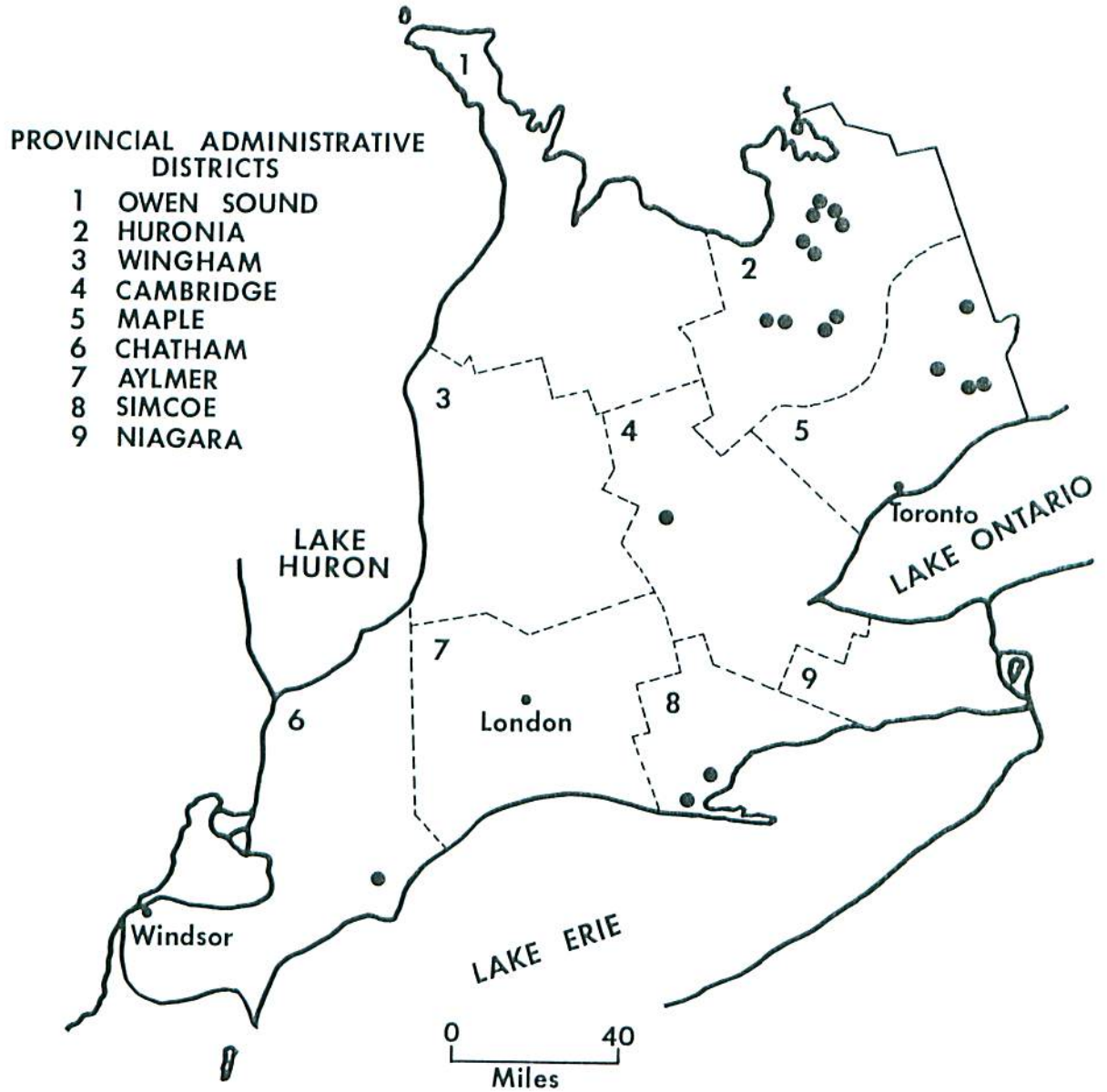


Figure A3. ANNOSUS ROOT ROT

Known areas of infection to 1973

Areas of infection . . . ●

# SOUTHWESTERN SURVEY REGION

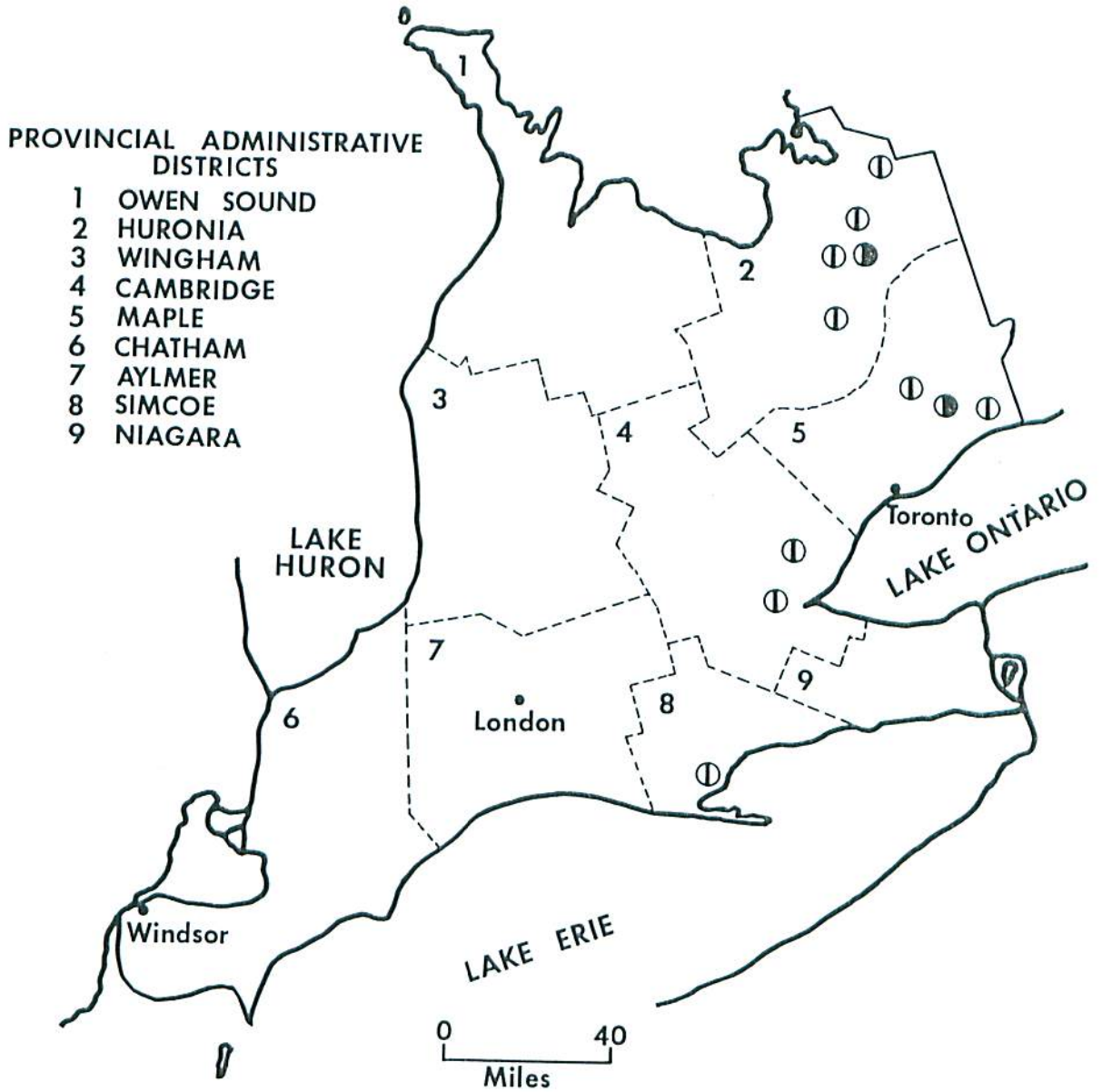


Figure A4. TOP DYING OF SCOTS PINE

Locations where damage occurred in 1973

Light damage . . . . . ⊕

Moderate damage. . . . . ●