

RESULTS OF FOREST INSECT AND
DISEASE SURVEYS IN THE
SOUTHWESTERN REGION OF ONTARIO,
1985

(FOREST DISTRICTS: OWEN SOUND, WINGHAM, CHATHAM,
AYLMER AND SIMCOE)

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GREAT LAKES FORESTRY CENTRE
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SURVEY HIGHLIGHTS

This report deals with forest insects and diseases encountered in the course of special and regular surveys carried out during the 1985 field season in the Southwestern Region. The cedar leafminer infestation on the Bruce Peninsula continued for another year throughout the same area delineated in 1984, at primarily moderate-to-severe damage levels. Spruce budworm populations remained endemic. Oak leaf shredder numbers remained low. Defoliation by the oak skeletonizer increased slightly over the previous year, although the impact in most areas was not considered serious. The maple trumpet skeletonizer and fall webworm were still much in evidence and widespread, and no significant changes in distribution or damage were noted. Throughout much of the Region varying levels of defoliation by the walnut caterpillar were recorded. Several white pine plantations were damaged by the introduced pine sawfly in the Owen Sound District, and a new northerly distribution point in the district was documented for this pest. Gypsy moth larvae were trapped for the first time in the Simcoe District at a provincial park. European pine sawflies were detected in many Scots pine plantations and the incidence of white pine weevil was notably higher this year. Positive incidence of the pinewood nematode was documented in moribund red pine at the St. Williams Forest Station.

All routine and special surveys conducted for both races of Scleroderris canker proved negative. Anthracnose-damaged tissue was commonly noted throughout much of the Region on numerous hardwood hosts. A re-examination of maple woodlots (originally examined in 1984 from a list of random selections) was conducted in the summer of 1985. A red pine plantation survey was carried out at seven locations in four districts to determine the incidence of various forest pests. In the Simcoe District a comprehensive analysis of a red pine cone collection was undertaken and in the Chatham District a second acid rain plot was established for the Region. The authors wish to extend their thanks to the Ontario Ministry of Natural Resources and all other supporting agencies and individuals for their assistance in the 1985 field season.

As in previous years, pests in this report are categorized as follows:

Major Insects or Diseases

capable of causing serious injury to or death of living trees or shrubs

*Minor Insects or Diseases **

capable of causing sporadic or localized injury but not usually a threat to living trees or shrubs

* No minor insects or diseases were reported in the Southwestern Region in 1985.

Frontispiece



Mature larva of the introduced pine sawfly,
Diprion similis (Htg.)



ARNEWS PLOT
5-07
West Wawanosh Township,
Wingham District



ARNEWS PLOT
5-25
Howard Township,
Chatham District

Other Forest Insects/Diseases (Tables)

These tables provide information on two types of pest:

- (1) those which are of minor importance and have not been known to cause serious damage to forest trees,
- (2) those which are capable of causing serious damage but, because of low populations or for other reasons, did not cause serious damage in 1985.

H. Brodersen

H.J. Evans

TABLE OF CONTENTS

Page

INSECTS

Major Insects

Cedar Leafminers, <i>Argyresthia aureoargentella</i> , <i>A. canadensis</i> , <i>A. thuiella</i> and <i>Pulicalvaria thujaella</i>	1
(All districts)	
Spruce Budworm, <i>Choristoneura fumiferana</i>	1
(All districts)	
Oak Leaf Shredder, <i>Croesia semipurpurana</i>	1
(Chatham and Simcoe districts)	
Walnut Caterpillar, <i>Datana integerrima</i> (Aylmer, Chatham, Simcoe and Wingham districts).	2
Introduced Pine Sawfly, <i>Diprion similis</i>	2
(Aylmer, Owen Sound, Simcoe and Wingham districts)	
Maple Trumpet Skeletonizer, <i>Epinotia aceriella</i>	3
(Aylmer, Chatham, Simcoe and Wingham districts)	
Birch Leafminer, <i>Fenusa pusilla</i>	3
(All districts)	
Fall Webworm, <i>Hyphantria cunea</i>	4
(All districts)	
Gypsy moth, <i>Lymantria dispar</i>	4
(All districts)	
European Pine Sawfly, <i>Neodiprion sertifer</i>	4
(Chatham, Owen Sound, Simcoe and Wingham districts)	
White Pine Weevil, <i>Pissodes strobi</i>	5
(Aylmer, Simcoe and Wingham districts)	
Other forest insects	6

TREE DISEASES

Major Diseases

Scleroderris Canker, <i>Ascocalyx abietina</i>	12
(All districts)	

(cont'd)

TABLE OF CONTENTS (concl.)

	<i>Page</i>
 <i>Major Diseases (concl.)</i>	
Leaf Anthracnose, <i>Aureobasidium apocryptum</i> , and others . . . (Aylmer, Chatham, Simcoe and Wingham districts)	12
Other forest diseases	12
 DIEBACKS AND DECLINES	
Oak Decline (Chatham and Simcoe districts)	16
Maple Decline (Aylmer, Chatham, Owen Sound and Wingham districts)	16
Ash Dieback (Owen Sound District)	16
 ABIOTIC DAMAGE	
Late Spring Leaf Scorch (Owen Sound District)	19
Other abiotic damage	19
 SPECIAL SURVEYS	
Red Pine Plantation Survey (Aylmer, Owen Sound, Simcoe and Wingham districts)	20
Red Pine Cone and Seed Survey (Simcoe District)	20
Pinewood Nematode, <i>Bursaphelenchus xylophilus</i> (All districts)	22
Acid Rain National Early Warning System (Chatham and Wingham districts)	24
Climatic Data	24

INSECTS

Major Insects

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

Numerous ground checks along the west side of the Bruce Peninsula throughout the townships of St. Edmunds, Lindsay and Eastnor revealed that the 1,400-ha infestation of 1984 remains largely intact within the same boundaries as were delineated in that year. Within this infestation foliar damage remained unchanged at the moderate-to-severe level. Elsewhere in the Owen Sound District, pockets of moderate damage were occasionally noted along the Lake Huron shoreline between Kincardine and Albemarle townships. Isolated pockets of similar damage were also noted in Collingwood and Egremont townships.

Throughout the other districts in the Region low populations were commonly noted at widespread locations. Checks of windbreaks and hedgerows in 24 townships disclosed that defoliation averaged between 5% and 25%. The greatest proportion of affected sites occurred in the Wingham District. In summary (the Owen Sound District, notwithstanding), populations appear to be more widespread than in 1984, although damage remains light.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Results of damage surveys, population sampling and egg-mass counts of the spruce budworm will be published with those of other regions at a later date in a report devoted specifically to this insect. The report will provide a complete description and analysis of developments in the spruce budworm situation in Ontario in 1985 and will give infestation forecasts for the province for 1986.

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

All defoliation checks done primarily in hardwood stands throughout the Region revealed that damage by this pest continues at trace-to-low levels. On average, the trees affected and subsequent foliar damage amounted to less than 5%. The results of monitoring of three stands for defoliation, adult pheromone trapping and overwintering egg populations are given in Table 1.

Table 1. Results of oak leaf shredder pheromone trapping, egg counts and defoliation forecasts for two districts in 1984 and 1985 (three traps deployed at each location).

Location	Total no. of adults captured		Avg no. per trap 1985	Concentration of pheromone (%)	Leaves attacked 1985 (%)	Foliar damage 1985 (%)	No. of eggs		Defoliation forecast for 1986
	1984	1985					1984	1985	
<u>Chatham District</u>									
Bosanquet Twp (Pinery Prov. Park)	na	na	na	0.03	0.5	1	0	0	nil
<u>Simcoe District</u>									
Charlotteville Twp (Turkey Pt Prov. Park)	na	45	9	0.30	1.5	1	0	0	nil
Southern portion of Walsingham Twp (St. Williams Forest Station)	46	0	0	0.03	3	1	0	0	nil

na - not available

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

This late feeder caused varying levels of defoliation at numerous locations on primarily mature open-grown walnut trees (*Juglans* spp.) throughout much of their range in the Simcoe, Aylmer, Chatham and Wingham districts. Where recorded, the incidence of attacked trees usually exceeded 50%; however, foliar losses in a given clump of trees varied greatly.

Trees in the Simcoe District appear to have been attacked the most and to have suffered the greatest damage. A typical survey of 20 roadside trees from the northern part of Walsingham Township, Simcoe District revealed foliar losses amounting to 5-25% on 11 trees, 25-75% on 6 trees, and more than 75% on one tree; the balance of the trees suffered no discernible defoliation. Several consecutive years of heavy foliage loss often result in branch mortality.

Introduced Pine Sawfly, *Diprion similis* (Htg.)

Various levels of damage caused by this insect were noted in numerous white pine (*Pinus strobus* L.) plantations in the Region. A new northerly distribution point for this species was recorded in Eastnor Township, Owen Sound District on the Bruce Peninsula. Throughout the Owen Sound District low numbers of larvae were noted in plantations in the townships of Sullivan, Bentinck, Sydenham, and Holland. Significant

levels of defoliation (30-50% on average) were recorded in Amabel Township on 1-m trees in a 2-ha portion of a 16-ha plantation and in Saugeen Township (near MacGregor Point Provincial Park), where trees on approximately one-third of a 6-ha plantation suffered foliar losses of 50% and the occasional tree was completely stripped (see Frontispiece). At a second plantation located in Saugeen Township, 2% whole-tree mortality was noted throughout a 6-ha area in which 80% of all trees examined suffered an average foliar loss of 50%.

Low numbers of larvae were noted in young white pine plantations in the western part of Oxford and Bayham Townships, Aylmer District, Charlotteville and Woodhouse Townships, Simcoe District and Blanshard Township, Wingham District. Only trace levels of defoliation were recorded in these areas.

Maple Trumpet Skeletonizer, *Epinotia aceriella* (Clem.)

Foliar damage to sugar maple (*Acer saccharum* Marsh.) trees of all sizes was again documented in virtually the same areas as in 1984. Wingham was the district in which the highest incidence of attacked stands was recorded. However, this organism was commonly observed in Aylmer and Simcoe districts and to a lesser degree in the Chatham District as well.

A typical stand had an average of 62% of its trees affected, but suffered on average less than 10% foliar damage, except in Wingham District, where low foliar damage levels were often noted on 100% of the trees in a given woodlot. Pearce Provincial Park, Aylmer district was again the location of the most acute damage recorded, with 88% of all sugar maple suffering moderate (25-75%) levels of defoliation. This defoliator was occasionally noted at trace damage and incidence levels in the Owen Sound District.

Birch Leafminer, *Fenusa pusilla* (Lep.)

Although widespread damage was again recorded on white birch (*Betula papyrifera* Marsh.) ornamentals across the Region, average levels of defoliation were lower than those recorded in 1984. With few exceptions, populations have remained low over the past four years. Two of these exceptions were in Osprey Township, Owen Sound District and Dorchester Township, Aylmer District. In the former, trees were commonly noted with 20-40% defoliation, while in the latter, a high incidence of attack accounted for an average foliage loss of 20%.

Fall Webworm, *Hyphantria cunea* (Dru.)

This perennial pest was once again recorded through the entire Region. No significant changes were noted in its distribution. Hardwoods of virtually every species typically hosted a single web (a slight reduction from the multiple webs commonly sighted on a given tree the previous year). This organism was most commonly seen in the Wingham District. While the incidence of the pest remains high, foliar losses in all cases noted were low (5-25%).

Gypsy Moth, *Lymantria dispar* (L.)

Burlap and pheromone traps were deployed at 13 provincial parks across the southwestern Region in 1985 (Table 2).

All pheromone traps deployed, with the exception of those at Point Farms Provincial Park, Wingham District, were positive for moth captures. The total number of male moths captured at most locations was low except in Selkirk and Turkey Point provincial parks, where relatively high numbers were recorded.

Burlap traps (skirts) placed on codominant or dominant trees and monitored by Ontario Ministry of Natural Resources (OMNR) personnel yielded positive results at Turkey Point Provincial Park, where a single, mature larva was identified on site by Forest Insect and Disease Survey Unit (FIDS) personnel.

An aerial survey in mid-July along the north shore of Lake Erie in the Simcoe District revealed no areas of discernible defoliation.

Fall egg-mass surveys conducted primarily in provincial parks, as well as extemporaneous checks of stands encountered during routine travel, did not reveal the presence of any egg masses. These surveys and checks included the Westmount area of the city of London in the Aylmer District, which is the documented site of an old infestation.

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

Populations of this sawfly were assessed at seven random locations in three districts during routine travel. No significant changes in numbers were noted from those last described in 1983. Checks of Scots pine (*Pinus sylvestris* L.) windbreaks and ornamentals were all negative in the Wingham and Chatham districts. Young Scots pine plantations (2-3 m tall) examined in the Simcoe District all contained low numbers of colonies. The number of colonies per hundred trees surveyed were as follows: Houghton Township - 2, Middleton Township - 2, Charlotteville Township - 10. Plantations examined in the Arran and Elderslie townships of the Owen Sound District revealed only trace-to-low numbers of colonies and no significant damage. In all cases, foliar loss on affected trees was less than 10%.

Table 2. Results of gypsy moth pheromone and burlap trapping in 1985.

Location (Park)	No. of burlap traps	No. of larvae caught	No. of pheromone traps	No. of male moths caught
<u>Aylmer District</u>				
Iroquois Beach	10	0	1	2
<u>Chatham District</u>				
Rondeau	10	0	1	1
Ipperwash	10	0	1	2
Pinery	10	0	2	7
<u>Owen Sound District</u>				
Craigleith	10	0	2	2
Cyprus Lake	10	0	2	4
Sauble Falls	10	0	2	1
Inverhuron	10	0	2	1
MacGregor Pt.	10	0	2	3
<u>Simcoe District</u>				
Long Point	10	0	2	11
Selkirk	10	0	2	33
Turkey Point	10	1	2	23
<u>Wingham District</u>				
Points Farm	10	0	1	0

White Pine Weevil, *Pissodes strobi* (Peck)

In all, 12 white pine plantations in the Wingham, Aylmer and Simcoe districts were examined for damaged leaders (Table 3). Varying numbers of this pest were noted at 67% of the locations surveyed. Significant numbers of attacked trees were noted at one or more plantations in each of the three districts. In plantations for which there are comparative data, populations increased significantly over those of 1984. Weevils and weevil damage persist at high levels in portions of the Owen Sound District. However, an energetic clipping program in this district continues in an effort to minimize tree damage.

Table 3. Summary of leader damage by white pine weevil in three districts in 1985 (counts based on the examination of 100 white pine trees at each location).

Location (Twp)	Avg height of trees (m)	Stocking (trees/ha)	Area affected (ha)	Leaders attacked	
				1984	1985
<u>Aylmer District</u>					
Bayham	2	1415	2.5	na	0
Lobo	1.3	2375	0.6	na	0
Southwold	6	2250	1.3	na	5
Oxford (west)	2.5	2990	3	3	9
<u>Simcoe District</u>					
Charlotteville	2	2300	1.5	na	2
N. Walsingham	4.5	3600	2	4	13
Windham	3.5	1000	0.4	na	13
Woodhouse	3.5	1900	3.5	na	1
<u>Wingham District</u>					
Blanshard	3.5	1250	1.2	na	2
Goderich	2	1780	0.6	na	0
Hullett	3	1200	50	0	0
Turnberry	3	2300	6	3	9

na = not available

Table 4. Other forest insects.

Insect	Host(s)	Remarks
<i>Acantholyda erythrocephala</i> (L.) Pine false webworm	wP	low numbers on 40% of young plantation trees, with light foliar damage (<10%) in Sullivan Twp, Owen Sound District
<i>Acraspis erinacei</i> (Beutm.) Gall wasp	bO	a single incidence of low larval numbers on a few woodlot trees in Windham Twp, Simcoe District

(cont'd)

Table 4. Other forest insects (cont'd).

Insect	Host(s)	Remarks
<i>Acrobasis</i> sp. Borer	bWa	low levels of shoot and branch mortality of roadside trees, Dunwich Twp, Aylmer District
<i>Acrobasis juglandis</i> (LeBar.) Pecan leaf casebearer	bWa	low numbers on foliage of a single roadside tree, Dunwich Twp, Aylmer District
<i>Adelges cooleyi</i> (Gill.) Cooley spruce gall adelgid	Douglas-fir	up to 5% foliar damage to 100% of all 2-m trees examined in a Christmas tree plantation in the western portion of Williams Twp, Aylmer District
<i>Aphrophora cribrata</i> (Wlk.) Pine spittlebug	scP	On average, 2.5 spittlemasses were noted on each of 30% of all 2-m trees examined in a plantation in Middleton Twp, Simcoe District.
<i>Euculatrix ainsliella</i> Murt. Oak skeletonizer	O	Feeding by first- and second-generation larvae accounted for light foliar damage (<50%) at all locations checked in the Region. A notable exception was recorded in Harwich Twp, Chatham District, where 60% of all oak in a single woodlot suffered foliar losses averaging 5-25%.
<i>Cameraria hamadryadella</i> (Clem.) Solitary oak leafminer	bO	low numbers of larvae causing moderate levels of foliar damage (<75%) on a few woodlot trees, Dereham Twp, Aylmer District
<i>Cecidomyia resinicola</i> (O.S.) jack pine resin midge	jP	moderate numbers recorded on semimature trees in Lindsay Twp, Owen Sound District
<i>Cecidomyia verrucicola</i> O.S. Linden wart gall midge	Ba	galls common on leaves of numerous woodlot trees at a single location in London Twp, Aylmer District

(cont'd)

Table 4. Other forest insects (cont'd).

Insect	Host(s)	Remarks
<i>Choristoneura pinus pinus</i> Free. Jack pine budworm	mP	a single occurrence of moderate damage to a clump of ornamentals in St. Edmunds Twp, Owen Sound District
<i>Cinara strobi</i> (Fitch) White pine aphid	wP	several colonies detected on leaders of several 2-m-tall trees in a trial planting in Charlotteville Twp, Simcoe District
<i>Coleophora laricella</i> (Hbn.) Larch casebearer	tL	moderate numbers found on foliage of open-grown natural regeneration, Longpoint Conservation Authority, Longpoint, Simcoe District
<i>Coleophora ulmifoliella</i> McD. Elm casebearer	wE	trace numbers noted on woodlot trees in St. Vincent Twp, Owen Sound District; low numbers commonly found on foliage of mature woodlot trees in the northern part of Dorchester Twp, Aylmer District, and in Houghton Twp, Simcoe District
<i>Coleophora pruniella</i> Clem. Cherry casebearer	wB	trace numbers on open-grown individual trees, Longpoint Conservation Authority, Longpoint, Simcoe District
<i>Contarinia canadensis</i> Felt Ash midrib gall midge	wAs	a single occurrence of trace foliar damage on a mature roadside tree, Woodhouse Twp, Simcoe District
<i>Dichomeris ligulella</i> Hbn. Palmerworm	rO	trace foliar damage noted on several scattered mature ornamentals, Longwood Road Conservation Area, Caradoc Twp, Aylmer District

(cont'd)

Table 4. Other forest insects (cont'd).

Insect	Host(s)	Remarks
<i>Eucosma monitorana</i> Heinr. Red pine coneworm	rP	damage noted in 44 of 70 cones examined from a single, mature, 20-m-tall plantation, Charlotteville Twp, Simcoe District
<i>Exartema</i> sp. Leafroller	rO	a single incidence of low foliar damage to mature woodlot trees, Charlotteville Twp, Simcoe District
<i>Exoteleia pinifoliella</i> (Cham.) Pine needleminer	jP	An average of 50% defoliation occurred in a 12-m-tall plantation, Euphrasia Twp, Owen Sound District.
<i>Hydria prunivorata</i> Ferg. Cherry scalloppshell moth	ecCh, bCh	moderate foliar damage to a single ornamental in Iroquois Beach Provincial Park, Bayham Twp, Aylmer District; also noted at trace levels on mature black cherry (<i>Prunus serotina</i> Ehrh.) trees in Egremont Twp, Owen Sound District
Lepidoptera Leaf defoliator	W	High numbers of larvae totally defoliated a small clump of ornamentals on nursery property at St. Williams Forest Station in the southern part of Walsingham Twp, Simcoe District.
<i>Malacosoma americanum</i> F. Eastern tent caterpillar	pCh	commonly noted at low incidence and varying levels of damage throughout work area; sickly larvae recorded in Holland Twp, Owen Sound District
<i>Megacyllene robiniae</i> (Forst.) Locust borer	Locust	high incidence of wind-snapped trees noted in a single wind-break as a result of borer activity near Slake Road, Houghton Twp, Simcoe District

(cont'd)

Table 4. Other forest insects (cont'd).

Insect	Host(s)	Remarks
<i>Neodiprion lecontei</i> (Fitch) Redheaded pine sawfly	rP	This insect caused heavy defoliation (50%) to fringe trees in a 7-m red pine plantation in Amabel Twp, Owen Sound District. Approximately 20% of the trees in the interior of the plantation were affected with defoliation of about 10%.
<i>Nephoteryx subfuscella</i> Rag. Striped sumac leafroller	Su	90%+ defoliation recorded on virtually all roadside trees throughout most of the southern portion of Walsingham Twp, Simcoe District
<i>Operophtera bruceata</i> (Hlst.) Bruce spanworm	sM	noted in a 4-ha area at 20% foliar damage level on more than 90% of trees examined in Collingwood Twp, Owen Sound District
<i>Pemphigus populitransversus</i> Riley Poplar petiolegall aphid	hybrid Po	commonly observed at low damage levels on ornamentals in Waterford Conservation Area, Townsend Twp, Simcoe District
<i>Phytocoptella abnormis</i> (Gar.) Linden gall mite	Ba	a single occurrence on a mature woodlot tree at low (<25%) damage level, Woodhouse Twp, Simcoe District
<i>Profenusa thomsoni</i> (Konow) Ambermarked birch leafminer	wB	high numbers of larvae infesting a single ornamental in the town of Teeswater, Culross Twp, Wingham District
<i>Pristophora geniculata</i> (Htg.) Mountain-ash sawfly	Mo	low levels of foliar damage on a single ornamental in the town of Simcoe, Woodhouse Twp, Simcoe District
<i>Pulicalvaria piceaella</i> (Kft.) Orange spruce needleminer	wS	high incidence (>90%) of trace foliar damage on all trees examined in a 7-m-tall plantation in Ellice swamp, Ellice Twp, Wingham District

(cont'd)

Table 4. Other forest insects (concl).

Insect	Host(s)	Remarks
<i>Rhyacionia buoliana</i> (Schiff.) European pine shoot moth	rP	incidence of damaged trees recorded at 4% in a 2-m-tall, 1.5-ha plantation, in the eastern part of Wawanosh Twp, Wingham District
<i>Resseliella</i> sp. Cone midge	wP	larvae found feeding on scale surfaces from seed source supplied by OMNR, Owen Sound District
<i>Toumeyella parvicornis</i> (Ckll.) Pine tortoise scale	aP	a single occurrence of high numbers on an ornamental in the town of Port Rowan in the southern part of Walsingham Twp, Simcoe District
<i>Tasates quadripes</i> (Shim.) Maple bladdergall mite	sM	high numbers commonly found on foliage of mature woodlot trees at a single location, Bayham Twp, Aylmer District
<i>Zeiraphera canadensis</i> Mut. & Free. Spruce bud moth	wS	The average incidence of damaged trees was 66% at 3 plantations checked in Bayham Twp, Aylmer District and Minto and Ellice twps, Wingham District; however, only trace damage to new shoots was recorded at all locations.

TREE DISEASES

Major Diseases

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard

During the spring and summer of 1985 an expanded version of the annual survey for this canker was conducted throughout the Southwestern Region. In all, 34 plantations were inspected across five districts. Any and all suspect material was submitted for laboratory analysis; all on-site inspections and sample submissions proved negative for both the native and the European races (Fig. 1).

Leaf Anthracnose, *Aureobasidium apocryptum* (Ell. & Ev.) Hermanides-Nijhof, and others

Throughout the greater portion of the Simcoe, Aylmer, Chatham and Wingham districts, woodlot and roadside hardwoods suffered varying levels of foliar damage. Host trees most commonly affected included sugar maple, ash (*Fraxinus* spp.), walnut and hickory (*Carya* spp.). Foliar damage across the Region averaged 5-25% (low) on approximately 44% of all trees examined. Trees situated on high ridges (subject to wind lash) accounted for the highest incidence of foliar damage recorded, as in the eastern part of Zorra Township, Aylmer District and the eastern part of Oxford Township, Simcoe District, where 57% of all trees examined suffered moderate levels of foliar loss (25-75%).

As a result of wind lash, frost damage to young foliage or buds, and insect attack, there were suitable inoculation sites for the establishment of one or more of the following species of anthracnose: *Aureobasidium apocryptum* (Ell. & Ev.) Hermanides Nijhof, *Apiognomonia errabunda* (Roberge), *Heteomorph apiognomonia* (Rob.) Höhnelt, *Discula caryae* (Pass.) v. Arx, *Gnomonia caryae* Wolf, *G. leptostyla* (Fr.) Ces. & de Not.

Table 5. Other forest diseases.

Organism	Host(s)	Remarks
<i>Caliciopsis pinea</i> Peck Caliciopsis canker	wP	noted on 3% of all young plantation stock examined in Keppel Twp, Owen Sound District; located at tree butt

(cont'd)

SOUTHWESTERN REGION

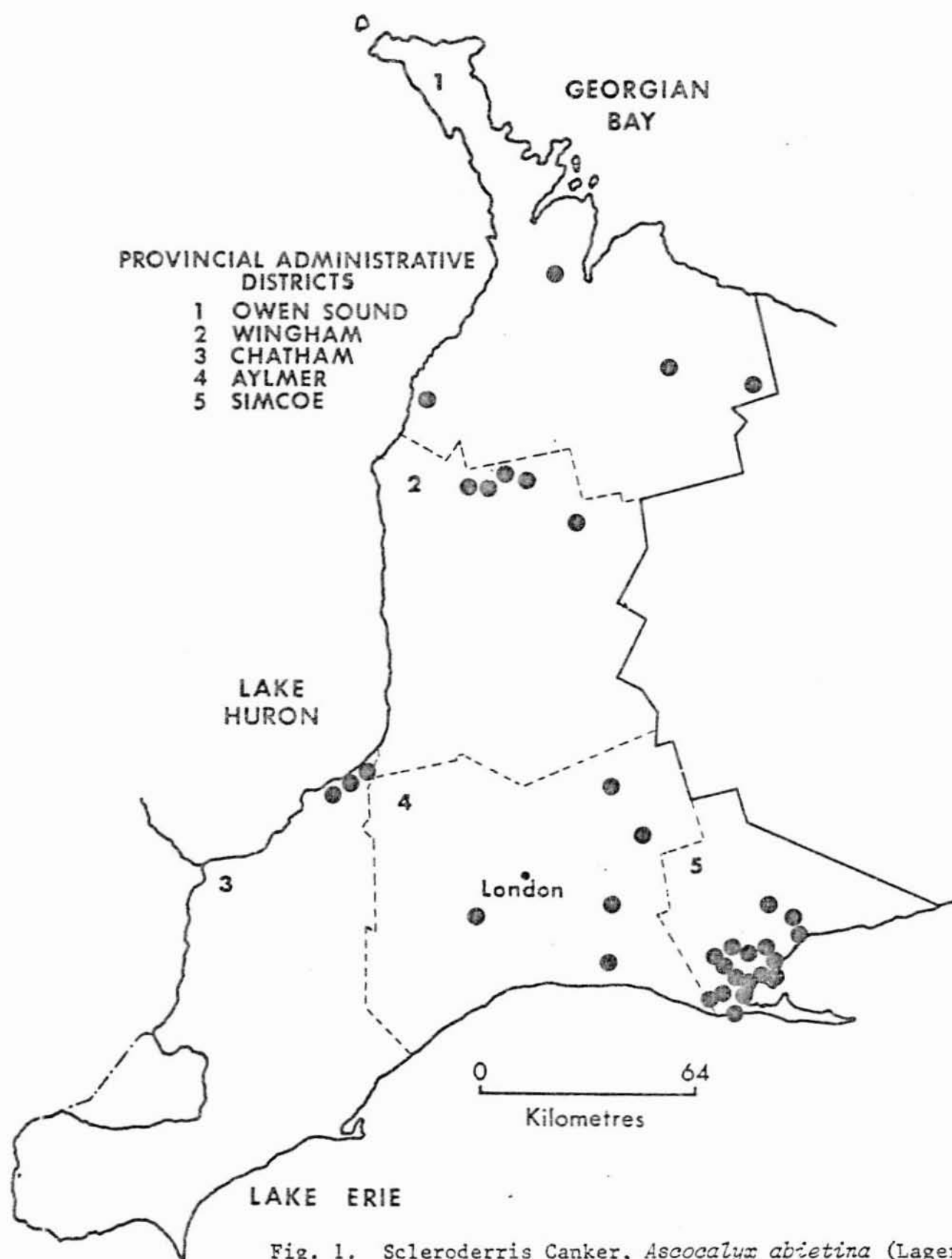


Fig. 1. Scleroderris Canker, *Ascochyta blight* (Lagerb.)

Locations checked for both races in 1985 . . . ● (all negative)

Table 5. Other forest diseases (cont'd).

Organism	Host(s)	Remarks
<i>Ceratocystis ulmi</i> (Buism.) C. Moreau Dutch elm disease	wE, rE	recorded at 8% and 2% incidence, respectively, and at low levels of crown damage (<10%) on 10- to 25-cm trees in the eastern part of Zorra Twp, Aylmer District, and in Culross Twp, Wingham District
<i>Erwinia amylovora</i> (Burr.) Winslow et al. Fire blight	Mo	a single occurrence of crown mortality at the moderate level on an ornamental in Woodhouse Twp, Simcoe District
<i>Guignardia aesculi</i> (Peck.) Stewart Horse chestnut leaf blotch	Che	commonly sighted at varied incidence and foliar damage levels throughout all 5 districts; foliar damage averaging 25-75%
<i>Fusarium</i> spp. Damping-off fungus	wP	accounted for approximately 20% seedling loss in a single compartment, St. Williams Forest Station, in the southern part of Walsingham Twp, Simcoe District
<i>Gymnosporangium</i> sp. Rust	Haw	low levels (<25%) of foliar damage commonly observed on ornamentals in Middle Creek Campground, Romney Twp, Chatham District
<i>Kabatina thujae</i> A. Schneider & v. Arx var. <i>juniperi</i> (A. Schneider & v. Arx) Morelet Needle blight	rJ	recorded at low foliar damage levels (<25%) on young plantation stock in Sullivan Twp, Owen Sound District
<i>Leucostoma kunzei</i> (Fr.) Munk Cytospora canker	wS	several cankered main stems noted on young trees in a private plantation, Keppel Twp, Owen Sound District
<i>Marssonina juglandis</i> (Lib.) Magnus Leaf spot	Wa	noted at a moderate level of foliar damage (25-75%) on scattered bushlot trees in the northern part of Walsingham Twp, Simcoe District

(cont'd)

Table 5. Other forest diseases (concl.).

Organism	Host(s)	Remarks
<i>Meria laricis</i> Vuill. Larch needle cast	L	fruiting on old foliage collected from semimature trees on grounds of Fish Hatchery, Sullivan Twp, Owen Sound District
<i>Microstroma juglandis</i> (Bereng.) Sacc. White mold	Bu	a single occurrence on a mature woodlot tree (L32 CXI) at low damage levels in London Twp, Aylmer District
<i>Mycosphaerella effigurata</i> (Schwein.) House Leaf Spot	ba	high level of foliar damage (<75%) on all trees examined in a < 1-ha stand in the western part of Williams Twp, Aylmer District
<i>Mycosphaerella populicola</i> G.E. Thompson Leaf spot	hybrid Po	low foliar damage (<25%) noted commonly on scattered mature ornamentals in Coldstream Creek Conservation Authority, Lobo Twp, Aylmer District
<i>Phyllosticta catalpae</i> Ell. & G.W. Martin Leaf spot	Catalpa	at a single location on scattered ornamentals at < 10% foliar damage in Norfolk County Park, Woodhouse Twp, Simcoe District
<i>Phyllosticta minima</i> (Burt. & Curt.) Underw. & Earle Leaf spot	sim, rm	found at several locations in treed swamp at low foliar damage levels (<10%) in Windham Twp, Simcoe District, and in a maple syrup woodlot at low incidence and damage levels in Grey Twp, Wingham District
<i>Sphaeropsis sapinea</i> (Fr.) Dyko & B. Sutton Tip blight	aP	recorded at three locations along Hwy 401, with incidence averaging 90%, branch and bud mortality 30%, average height <2 m and area <1 ha in Dereham, western Oxford and northern Dorchester twps, Aylmer District

DIEBACKS AND DECLINES

Oak Decline

The spring of 1985 marks the ninth year in which oak decline has been monitored in the Simcoe and Chatham districts. Trees at all monitored locations continue to recover. Free of the damaging effects of the oak leaf shredder, more than 80% of the trees have been assigned to the lowest class of cumulative crown damage, 0-20% (Table 6).

Although old damage is still evident throughout much of the three stands, the majority of the trees have recovered to the extent that the new growth (of the past several years) has overgrown the bulk of the old damage.

Maple Decline

In response to concerns expressed by the OMNR about maple decline, six hardwood stands originally evaluated for crown deterioration in 1984 were reexamined in 1985. These randomly selected stands located across four districts (Aylmer, Chatham, Owen Sound and Wingham) each contained a minimum stocking of 40% sugar maple.

It was determined in 1984 that, at all locations surveyed, there was no significant crown damage, and the condition of these stands, as determined by the 1985 reexamination, remains unchanged, i.e., no significant crown damage was present in any of the stands surveyed.

Ash Dieback

Ash dieback has long been recognized as a problem in northeastern North America. White ash (*Fraxinus americana* L.) is the main host of this dieback, but red ash (*F. pennsylvanica* Marsh.) and green ash (*F. pennsylvanica* var. *lanceolata* [Borkh.] Sarg.) can also be affected.

Symptoms of ash dieback include bud flash failure along with chlorosis, dwarfing, and tufting and thinning of the foliage that does flush. This is followed by twig and branch dieback that progresses downwards. Symptoms may be evident for 3-10 years before the tree dies. Radial growth is reduced and apical growth is usually terminated during the decline period. Trees rarely recover once the dieback is initiated.

Stresses on ash that have been associated with the dieback include drought, low temperatures, canker fungi, leaf spot fungi, air pollution, viruses and, more recently, mycoplasma-like organisms (MLO). MLOs are somewhat like viruses and are found in the food-conducting

Table 6. Summary of oak decline at three locations in the Region (100 red and/or white oak trees examined at each location).

Location (Twp)	Avg DBH of sample trees (cm)	Area affected (ha)	Year	Culmulative percentage of crown dead				No. of trees dead
				0-20	21-40	41-60	60	
				----- No. of trees -----				
<u>Simcoe District</u>								
Charlotteville	32	315	1977	70	8	12	10	0
			1978	69	9	10	12	0
			1979	58	14	19	8	1
			1980	29	37	25	8	1
			1981	25	41	30	3	1
			1982	23	50	25	1	1
			1983	23	54	21	1	1
			1984	79	16	2	2	1
			1985	88	6	2	3	1
Southern part of Walsingham	22	150	1977	42	35	18	5	0
			1978	40	33	19	4	4
			1979	36	38	16	3	6
			1980	29	38	22	5	6
			1981	19	41	29	1	9
			1982	19	52	18	1	9
			1983	19	50	20	2	9
			1984	72	23	5	1	9
			1985	87	3	0	0	10
<u>Chatham District</u>								
Bosanquet (Pinery Provincial Park)	29	2,542	1977	69	7	17	7	0
			1978	69	7	17	7	0
			1979	68	11	16	5	0
			1980	53	19	21	7	0
			1981	48	24	21	7	0
			1982	49	38	9	2	2
			1983	35	39	20	4	2
			1984	80	12	2	2	4
			1985	85	3	3	4	5

cells of the infected host. They cause a condition that is termed "ash yellows" which, in turn, may be responsible for ash dieback. In New York State it has been reported that 52% of slow-growing ash trees and 82% of trees with dieback were infected with MLO. Evidence there implicates MLO as the most important cause of ash dieback. Symptoms of ash yellows include the previously mentioned symptoms of ash dieback as well as yellowish foliage, epicormic branching or broom formation along the lower trunk or at ground level, premature autumn color and susceptibility to freezing damage in the form of frost cracks.

During the 1985 field season ash dieback was noted at three locations in the Owen Sound District. In Keppel Township, roadside ash (subject to the influences of salt and herbicides) along county road 26 were examined for recent dieback. Trees at this location exhibited stem brooming. *Nectria* canker, *Nectria cinnabarina* (Tode: Fr.) Fr., was collected from the damaged crowns of a few plantation trees in a single location in Sullivan Township. Finally, in Collingwood Township, where deteriorating ashes exhibited tufted foliage at their stem bases, a *Cytospora* canker, *Cytospora pruinosa* (Fr.) Sacc., and *Phyllosticta* sp. were identified on branches. A leaf spot was noted damaging leaves on several trees in small pockets (<1 ha) at several locations throughout the township.

ABIOTIC DAMAGE

Late Spring Leaf Scorch

The rapid transpiration of water through the partially developed leaves of sugar maple and beech (*Fagus* spp.) from late May to early June accounted for varying levels of foliar damage throughout portions of eight townships in the Owen Sound District. Damage, depending on location, often occurred to trees in all size classes; characteristically, however, the majority of the damage was contained in the upper crown portions of those mature trees whose foliage was fully exposed to the desiccating effects of wind and temperature.

Acute damage was recorded in Amabel and Keppel townships where 50% of all trees examined (in all age classes) suffered moderate foliar losses (25-75%). Elsewhere in the District varying levels of scorch damage were detected during routine aerial surveys of maple in the townships of Sullivan, Holland, Greenock, Bentinck, Glenelg and Sydenham. Elsewhere in the Region no significant levels of scorch were encountered.

Table 7. Other abiotic damage.

Type of damage	Host(s)	Remarks
Animal/bird	wP	Roosting starlings broke one or more leaders and/or laterals on 3% of all 3-m-tall trees examined in a single 10-ha plantation in the western part of Oxford Twp, Aylmer District.
Chemical	siM	A single instance in which an overdose of chemical spray was applied for weed control resulted in low levels of foliar damage to roadside trees in Logan Twp, Wingham District.
Salt	eC	Road salt continues to damage hedgerows, primarily those parallel to major thoroughfares. A notable example was recorded in Bayham Twp, Aylmer District, where 60% of a single hedgerow <1 m tall sustained an average of 20% foliar damage.

SPECIAL SURVEYS

Red Pine Plantation Survey

In a continuing effort to determine the impact of certain forest pests known to be of historic importance on native forest trees, a survey was conducted in red pine (*Pinus resinosa* Ait.) plantations across the Southwestern Region in 1985, the results of which are summarized in Table 8.

Seven plantations in three height classes were inspected, two in the 0- to 2-m class, three in the 2- to 6-m class and two in the 6-m or taller class. Two visits were made to each plantation to allow for seasonal variation in the occurrence of specific forest pests. The first visit was scheduled between 3 and 21 June and the second between 29 July and 31 August.

Disease organisms that were checked for but not found at any of the survey locations included: Scleroderris canker, black root stain, *Verticicladiella* sp., needle cast, *Lophodermium* sp., and Armillaria root rot, *Armillaria mellea* (Vahl: Fr.) Kummer. The pine needle rust, *Coleosporium asterum* (Dietel) Sydow, was recorded in two plantations at low foliar damage levels.

Among the forest insects searched for, neither the pine root collar weevil, *Hylobius radialis* Buch., nor the redheaded pine sawfly, *Neodiprion lecontei* (Fitch), was noted at any of the locations. The European pine sawfly and the pine false webworm were both recorded in the Holland Township survey at low numbers. The most prevalent and damaging pest noted was the European pine shoot moth.

Insects that caused no appreciable damage and are noted here for their presence only are the pine needle scale, *Chionaspis pinifoliae* (Fitch), and the spotted pine needle aphid, *Protolachnus agilis* (Kltb.), in Woodhouse Township and the European pine needle midge, *Contarinia baeri* (Prell), in Holland Township.

Red Pine Cone and Seed Survey

This year red pine was surveyed in an effort to determine the impact of pests on seed cone production. A single collection (consisting of the entire second-year green cone crop from three mature trees) was submitted for examination by FIDS staff during the first week of July. The collection source was located near the five-corner intersection on regional road 10 south of Highway 24. Results of this survey are given in Table 9. The bulk of the damage (68%) was caused by the red pine coneworm, *Eucosma monitorana* Heinr.; approximately 20% of the damage was attributed to unknown or unidentifiable Lepidoptera as this dam-

Table 8. Summary of the results of a red pine plantation survey carried out at seven locations in the Southwestern Region in 1985.

Location (Twp)	Estimated stocking (trees/ha)	Avg ht of sample trees (m)	Pine needle rust		European pine sawfly		Pine false webworm		European pine shoot moth		Pine bark adelfid ^a	Eastern pine shoot borer ^b
			trees affected (%)	foliage damaged (%)	trees attacked (%)	no. of colonies per tree	trees attacked (%)	old foliar damage (%)	trees with leaders attacked (%)	trees with laterals only attacked (%)	trees attacked (%)	trees with leaders attacked (%)
<u>Aylmer District</u>												
Oxford (west)	1540	3.1	0	0	0	0	0	0	0	12.6	0	0
<u>Owen Sound District</u>												
Holland	1800	2.8	51	6.9	2	1	6	3	0	4	2.7	0
<u>Simcoe District</u>												
Charlottetown	300	1.9	0	0	0	0	0	0	0	0	0	0
Houghton	2500	4.8	41.3	4	0	0	0	0	0	0	0	0
Woodhouse	2500	16.0	0	0	0	0	0	0	0	0	0	0
<u>Wingham District</u>												
Culross	4444	1.6	0	0	0	0	0	0	0	29.3	0	4
Minto	1700	14.5	0	0	0	0	0	0	0	0	0	0

^a *Pineus strobi* (Htg.)

^b *Eucoama gloriola* Heinr.

age was not sufficiently symptomatic to allow positive identification. Less significant amounts of damage were caused by fir coneworm, *Dioryctria abietivorella* (Grt.), unidentified larvae of the family Gelechiidae and a small midge belonging to the genus *Resseliella*, and no evidence of disease damage was detected.

Table 9. Summary of the results of the red pine cone and seed survey carried out in the Southwestern Region in 1985.

Location (Twp)	Cones		Seeds
	Sound (%)	Damaged (%)	Loss in damaged cones (%)
<u>Simcoe District</u>			
Charlotteville	6	94	33

Pinewood Nematode, *Bursaphelenchus xylophilus* (Steiner & Buhrer) Nickle

The Ontario FIDS Unit conducted an expanded survey across the province in an effort to determine the distribution of this pest. Throughout the Southwestern Region, during the 1985 field season, 23 suspect locations were sampled for the presence of this pest. Sample material was primarily from trees of the genus *Pinus* that had died in the past year or were moribund.

The bulk of the sampling was conducted in the southwestern portion of the Simcoe District (Fig. 2) where this nematode's presence had been confirmed by OMNR staff in 1984. Many sample submissions have yet to be fully processed and complete results are unavailable at the time of writing. To date all test results have proven negative, with the exception of one location.

The positive identification came from red pine discs submitted from the St. Williams Forest Station in the southern part of Walsingham Township, Simcoe District. Subsequent to this identification, nursery staff conducted a sanitation cut in an area of mature trees (approximately 0.5 ha) whose rapid demise was thought to have been precipitated by the pinewood nematode.

SOUTHWESTERN REGION

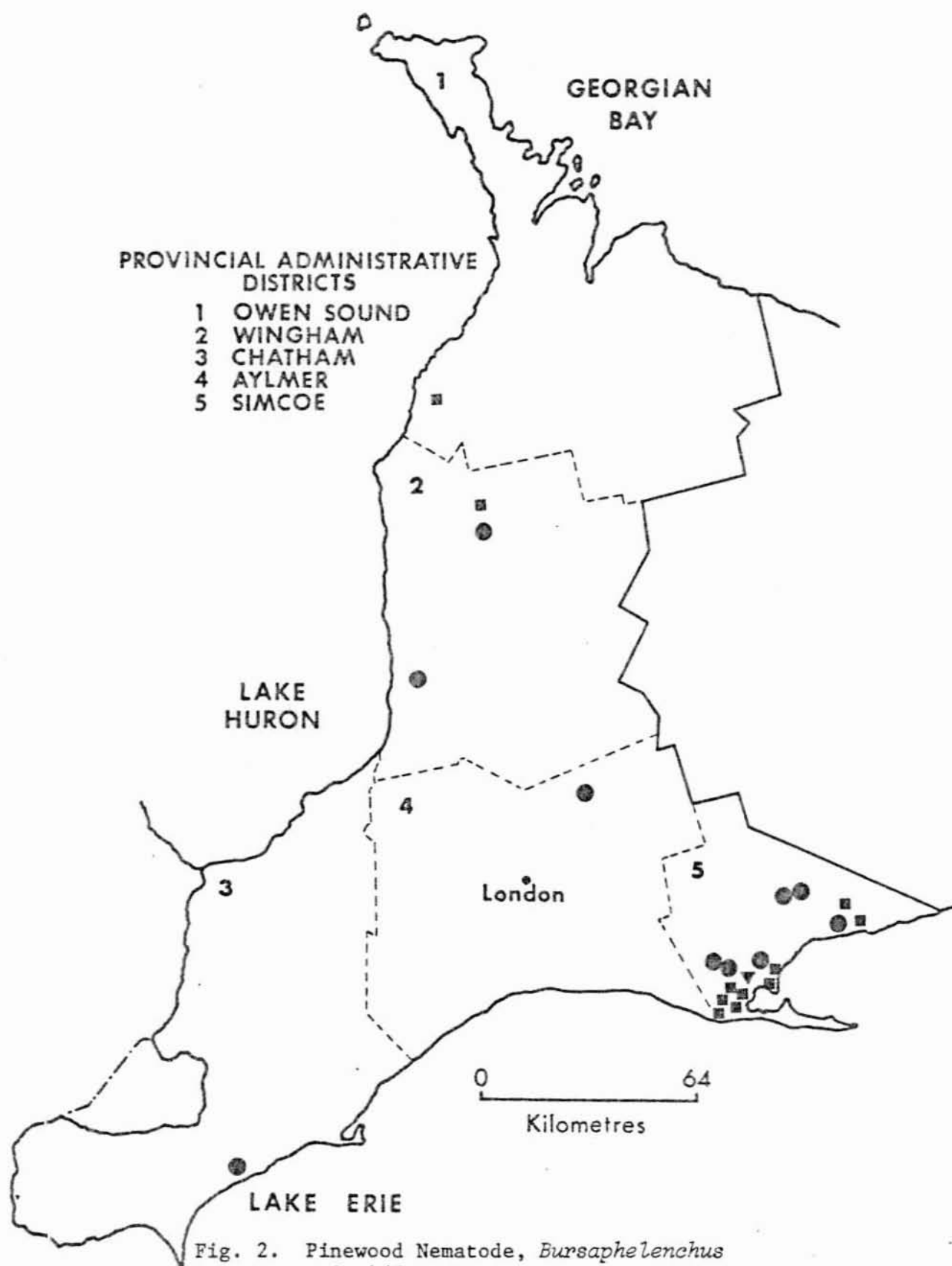


Fig. 2. Pinewood Nematode, *Bursaphelenchus xylophilus* (Steiner & Buhrer) Nickle

Locations checked for the presence
of the nematode in 1985

... ● Negative
... ▼ Positive
... ■ Pending

Acid Rain National Early Warning System (ARNEWS)

The Ontario FIDS Unit established a single study plot in 1984 for detecting acid rain symptoms in southwestern Ontario. This was one of many across the province that are incorporated into a national program designed to detect any damage attributable to acid rain as quickly as it materializes. The plot was established in a sugar maple woodlot in the western portion of Wawanosh Township, Wingham District (see Frontispiece).

A second study plot was established in the Southwestern Region in 1985 in a 4.5-ha sugar maple woodlot located in Howard Township, Chatham District (see Frontispiece). To date, the majority of baseline information, including mensurational, regeneration and vegetative data, has been recorded for both locations. Foliar samples were also collected for chemical analysis and current pest problems were identified. With the exception of the maple trumpet skeletonizer, *Epinotia aceriella* (Clem.), a late-season defoliator, recorded in the Wingham plot, no other significant pests were identified on either plot. Soil work is tentatively scheduled for 1986.

Climatic Data

Forest insects and diseases can be greatly influenced by prevailing weather conditions at specific times critical to their development. Baseline data (Table 10) are included in this report for the purpose of substantiating this fact where possible. Two stations were chosen in 1985: one in the northern part of the Region (Mount Forest), the other further to the south (Simcoe). Data were supplied by the Atmospheric Environment Service, Environment Canada.

Table 10. Summary of mean temperature and total precipitation from two locations in the Southwestern Region in 1985.

Location	Month	Mean temperature			Total precipitation		
		Normal ^a (°C)	Actual (°C)	Deviation from normal (°C)	Normal ^a (mm)	Actual (mm)	Deviation from normal (mm)
Mount Forest	Jan.	-8.4	-9.8	-1.4	74.8	86.6	+11.8
	Feb.	-8.2	-7.7	+0.5	63.1	116.5	+53.4
	Mar.	-3.6	-2.7	+1.1	80.7	114.8	+34.1
	Apr.	4.4	6.5	+2.1	72.4	70.2	- 2.2
	May	10.7	11.9	+1.2	82.8	98.8	+16.0
	June	15.9	13.4	-2.5	79.4	30.2	-49.5
	July	18.2	17.6	-0.6	75.8	47.4	-28.4
	Aug.	17.5	17.0	-0.5	86.1	115.0	+28.9
	Sept.	13.8	15.3	+1.5	80.1	128.4	+48.3
	Oct.	8.1	8.1	0.0	80.5	89.0	+ 8.5
	Nov.	1.6	1.5	-0.1	96.1	125.9	+29.8
	Dec.	-5.4	-7.2	-1.8	92.3	63.3	-29.0
Simcoe	Jan.	-5.6	-7.5	-1.9	67.9	49.8	-18.1
	Feb.	-5.3	-5.5	-0.2	55.9	99.2	+43.3
	Mar.	-0.3	1.2	+0.9	81.4	147.0	+65.6
	Apr.	6.8	8.3	+1.5	84.9	31.2	-53.7
	May	12.6	14.0	+1.4	75.8	120.2	+44.4
	June	18.1	16.1	-2.0	69.5	91.0	+21.5
	July	20.7	19.7	-1.0	75.8	48.6	-27.2
	Aug.	19.6	19.5	-0.1	71.5	148.8	+77.3
	Sept.	15.7	17.0	+1.3	83.2	51.8	-31.4
	Oct.	9.6	10.2	+0.6	80.9	116.4	+35.5
	Nov.	3.7	4.6	+0.9	79.1	234.7	+155.6
	Dec.	-2.8	-4.8	-2.0	80.8	78.1	- 2.7

^a Normal temperature and precipitation are based on the period 1930-1980.