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**GREAT LAKES FOREST RESEARCH CENTRE
CENTRE DE RECHERCHE FORESTIÈRE DES GRANDS LACS**

AUTHOR FILE

Results of forest insect and disease surveys in the SOUTHWESTERN REGION of Ontario, 1982

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



Canada

SURVEY HIGHLIGHTS

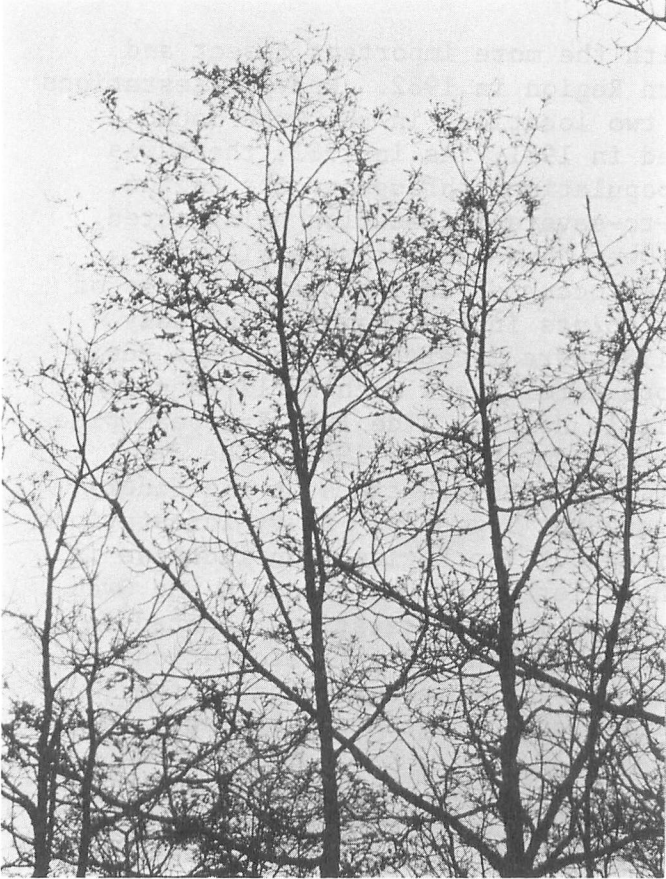
The following report deals with the more important insect and disease conditions in the Southwestern Region in 1982. Heavy infestations of the jack pine budworm occurred at two locations in the Owen Sound District, where none had been observed in 1981. As in 1981, there was a further decline in spruce budworm populations throughout the Region, with only spotty pockets of moderate-to-severe infestation being noted. This was particularly evident in the Owen Sound and Wingham districts. A further decline (with two exceptions) occurred in population levels of a complex of cedar leafminers at many points in the Region. The only areas of heavy infestation noted in 1982 were located in the Bruce Peninsula and near Simcoe. Other coniferous defoliators such as larch case-bearer and the larch sawfly caused little damage. The 1982 European pine sawfly populations showed little change from those of 1981. The red-humped oakworm caused severe defoliation of red oak trees in the Pinery Provincial Park-Grand Bend area of Bosanquet Township. Heavy infestations of fall webworm were again common throughout the Region. An increase in the overall distribution of the birch skeletonizer was noted in the Owen Sound, Aylmer and Simcoe districts. Gypsy moth infestations located in the Westmount section of London were reduced; only light defoliation was observed in this area. Scattered trace-to-light infestations of the orangestriped oakworm, walnut caterpillar and orangehumped mapleworm were common but caused little damage.

In 1982 forest disease surveys concentrated on the detection of Scleroderris canker of pine. Many areas were thoroughly checked but no evidence of the disease was noted. Severe damage by tip blight was common in the Holiday Beach area of Chatham District and caused varying degrees of damage throughout the rest of the Region. Maple scorch caused severe browning and premature dropping of leaves at many points in the Owen Sound and Wingham districts. Ash and maple decline, particularly on exposed sites, along roadsides and on ornamentals continued to cause concern to city arborists and property owners. Oak plots were tallied for the sixth consecutive year to monitor decline. Salt was again a problem, particularly on well travelled highways, but other abiotic conditions such as frost and winter browning were of little consequence.

Special surveys to rate important problems such as Dutch elm disease and pests of red pine trees were carried out on a provincial basis.

The authors would like to take this opportunity to thank personnel of the Ontario Ministry of Natural Resources and other agencies for all the help they gave so generously in 1982.

Frontispiece



Severe defoliation of red oak
(*Quercus rubra* L.) by gypsy moth,
Lymantria dispar (L.)

Roadside mortality of
white elm (*Ulmus*
americana L.) by Dutch
elm disease, *Cerato-*
cystis ulmi (Buism.)
C. Moreau



The criteria used to categorize the insects and diseases are 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 sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Other Forest Insects or Diseases (Tables)

These tables provide information on two types of pest: 1) those which are of minor importance and have not been shown to cause serious damage to forest trees, and 2) those which are capable of causing serious damage but, because of low populations or for other reasons, did not cause serious damage in 1982.

C. A. Barnes

H. J. Evans

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INSECTS

Major Insects

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

In 1982 this web-spinning insect on red pine (*Pinus resinosa* Ait.), jack pine (*P. banksiana* Lamb.), white pine (*P. strobus* L.) and Scots pine (*P. sylvestris* L.) was observed only in the Owen Sound District, where small pockets of infestation occur. These were located in small plantations south of Owen Sound. No change was recorded in distribution to the north of Owen Sound, and defoliation in all cases was negligible.

Orangestriped Oakworm, *Anisota senatoria* (J.E. Smith)

Since 1980 population levels of this insect on red oak (*Quercus rubra* L.) and white oak (*Q. alba* L.) have declined to low levels in the Region. In 1982 a further decline in population levels occurred when only occasional colonies of larvae were noted at widely scattered locations in the Chatham and Aylmer districts, where light infestations were reported in 1981 on open-growing trees in Pinery Provincial Park and near Blenheim in Rondeau Provincial Park. In Aylmer small numbers of colonies were noted near Pearce Provincial Park in Dunwich Township.

Pine Spittlebug, *Aphrophora cribrata* (Wlk.)

As in 1981, this insect caused appreciable damage to European larch (*Larix decidua* Mill.), white pine, and Scots pine at many points in the Region. The most significant damage occurred on European larch in the St. Williams Forestry Station near Port Rowan, where many trees 3 m in height or less had numerous spittle masses along the branches and stems. In the Normandale area the population in a 4-ha white pine plantation was reduced from that observed in 1981. However, spittle masses were still common in this area. In the Aylmer and Wingham districts small localized infestations were common on Scots pine and white pine in the Public Utilities Commission plantations near Woodstock, Aylmer District and in the Robertson tract near Auburn, Wingham District.

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

There was a general decline in population levels of these leafminers on white cedar (*Thuja occidentalis* L.) throughout the Region in 1982. In 1981 approximately 14,500 km² were infested by leafminers. In 1982 only small pockets of heavy infestation remained at scattered locations in St. Edmunds Township, Owen Sound District and at several isolated locations in the Simcoe District, where severe mining of cedar foliage was confined to hedgerows and open-growing trees. Light damage

was common at scattered locations along Highway 401 east of London in Aylmer District and along Highway 21 near Grand Bend in Chatham District. Occasional trees were infested near Wingham and Stratford in Wingham District.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

This skeletonizing insect on white birch (*Betula papyrifera* Marsh.) caused appreciable damage to foliage of this species at numerous locations in the Owen Sound, Wingham, Aylmer and Simcoe districts in 1982. The heaviest infestations were located at many points in the northern part of the Bruce Peninsula, Owen Sound District, where total defoliation was noted, particularly in stands of birch in St. Edmunds Township and on islands north and east of Tobermory (Fig. 1). South of this area many pockets of infestation were noted in the area near the village of Wingham, along Highway 401 near London and on ornamental and open-growing birch in the town of Simcoe. This insect was far more common in 1982 than in 1981 and infested a total area of approximately 3,500 ha.

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. That report will provide a complete description and analysis of developments in the spruce budworm situation in Ontario in 1982 and will give infestation forecasts for the province for 1983.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

A general increase in the numbers of this pest on jack pine occurred near the Johnson Harbour area of St. Edmunds Township, Bruce Peninsula, where approximately 300 ha of jack pine were moderately to severely defoliated. A smaller area of about 8 ha was also infested in Amabel Township of the Bruce Peninsula, where defoliation approached 50%. Egg-mass surveys were carried out in the above areas and all indications are that moderate-to-severe infestations may occur in the same areas in 1983 (Table 1).

SOUTHWESTERN REGION

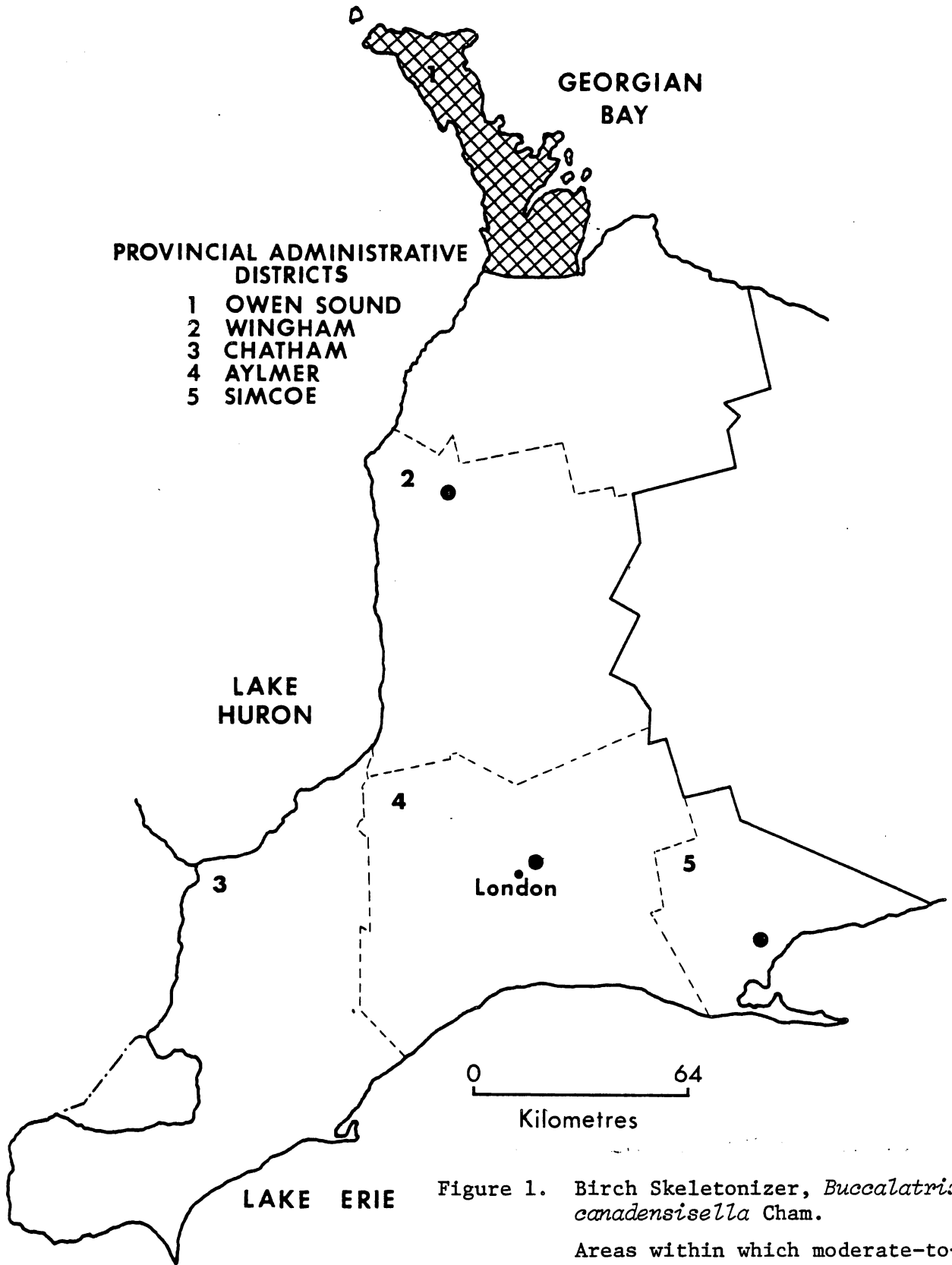


Figure 1. Birch Skeletonizer, *Buccalatrix canadensisella* Cham.

Areas within which moderate-to-severe defoliation occurred in 1982

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Table 1. Summary of jack pine budworm egg-mass surveys in the Owen Sound District in 1982, and 1983 infestation forecasts. (Counts are based on the examination of one 61-cm branch tip taken from the mid-crown of six sample trees at each location.)

Location (Twp)	Total no. of egg masses	Estimated defoliation 1982 (%)	Infestation forecast 1983
Owen Sound District			
Amabel Twp, Sauble Falls	9	47	heavy
St. Edmunds Twp, Plot 1	37	65	heavy
St. Edmunds Twp, Plot 2	2	48	light
St. Edmunds Twp, Plot 3	3	50	medium

Larch Casebearer, *Coleophora laricella* (Hbn.)

A further decline in populations of this casebearer on tamarack (*Larix laricina* [Du Roi] K. Koch) and European larch was evident in 1982. In all areas where light or light-to-moderate infestations occurred in 1981, only small numbers of larvae were observed in 1982. The most significant decline occurred in a stand of tamarack along Highway 401 east of London, where only occasional trees were infested and defoliation was negligible.

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

Although populations were generally low in the Region, small pockets of light infestation occurred at widely separated locations in 1982. In the Owen Sound District the light infestation reported on occasional red oak trees near Emmett Lake in St. Edmunds Township declined to low levels. Only small numbers of larvae were observed in this area. In the Simcoe and Chatham districts pheromone traps were set out to capture male moths. A high number was collected near Pinery Provincial Park in the Chatham District and low numbers were collected near Turkey Point Provincial Park and at St. Williams Forestry Station in the Simcoe District (Table 2). Larvae were collected in small numbers at both locations; however, defoliation was insignificant. Branch samples were submitted from the three oak plots so that a check could be made for overwintering eggs. In all cases no eggs were found. This would indicate that either very low populations or none at all will occur in 1983 (Table 2).

Table 2. Results of oak leaf shredder pheromone trapping, egg counts and defoliation forecasts for two districts in 1982.

Location (Twp)	Total adults captured	Avg no. per trap	Leaves attacked (%)	Foliar damage (%)	No. of eggs	Defoliation forecast 1983
Simcoe District						
Charlotteville (Turkey Point Provincial Park)	18	3.6	8	5	0	Nil to trace
South Walsingham (St. Williams Forestry Station)	46	9.2	7	10	0	" " "
Chatham District						
Bosanquet (Pinery Provincial Park)	737	147.4	18	15	0	" " "

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

An increase in larval populations occurred in a 5-ha plantation of white pine south of the town of Wingham in 1982. In the northwest corner of the plantation severe defoliation has caused some mortality of smaller trees, particularly in the 2 m or under height class. This insect has two generations per year. The first generation feeds on the previous year's needles, and the second generation feeds on the new growth, which generally causes twig and branch mortality. In heavy infestations, successive years of severe defoliation cause whole-tree mortality. It is expected that this plantation will be sprayed in 1983 to try to control this recent outbreak. The area will be further investigated in 1983, as susceptible forest lies adjacent to the infested plantation.

Fall Webworm, *Hyphantria cunea* (Dru.)

As in 1981 this perennial pest of a wide variety of deciduous hosts caused extensive damage to roadside trees at numerous locations in the Simcoe, Aylmer and Chatham districts and to a lesser degree in the Wingham and Owen Sound districts. Heavy infestations persisted on some of the more important species of hardwood such as black walnut (*Juglans nigra* L.), butternut (*J. cinerea* L.) and the ashes (*Fraxinus* spp.), particularly in the vicinity of Simcoe, Port Rowan, Delhi and Tillsonburg in the Simcoe and Aylmer districts, at many points near Rondeau Provincial Park, Point Pelee National Park, and along major highways in the Chatham District, and at numerous locations from Lake Erie north to Tobermory. Defoliation was heavy and the unsightly nests in many instances covered the complete crown of infested trees.

Gypsy Moth, *Lymantria dispar* (L.)

The small pockets of infestation that were reported from the Westmount section of London were reduced to low levels in 1982. Ten jute traps were placed at strategic locations along Wonderland Road and were checked periodically during the larval period. No larvae were collected during these examinations; however, late examination revealed the presence of adult female moths with occasional egg clusters in a small copse of sugar maple (*Acer saccharum* Marsh.)-beech (*Fagus grandifolia* Ehrh.) near the Eaton Centre. Defoliation in the area was light. Control measures were carried out during the winter of 1981-1982. These involved groups of individuals scouting the area, collecting and destroying any visible egg clusters. This control was followed up by an application of *B.t.*, which appears to have been highly effective as larval activity was minimal. In the remainder of the Region, pheromone traps were set out at the three oak plots located in the Simcoe and Chatham districts. No male moths were captured at any of the locations; therefore, it must be assumed that gypsy moth either is not present, or is present at very low levels in these areas.

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

Although populations of this sawfly remain at low levels in the Region, colonies were more common in 1982 than in 1981. Two small pockets of heavy infestation were noted in the Simcoe and Aylmer districts where Scots pine plantations covering an area of approximately 10 ha were moderately to heavily defoliated. These plantations were treated with 'Sevin'. After application only a few colonies were observed in either area. Colonies of larvae were common in a jack pine stand near the junction of highways 401 and 73 in North Dorchester Township, on red pine north of Wingham and on occasional Mugho pine (*Pinus mugho* Turra var. *mughus* Zenari) in the town of Aylmer. Defoliation did not exceed 10% in any location.

White Pine Weevil, *Pissodes strobi* (Peck)

Except in the Simcoe District, population levels of this insect on white pine were little different from those of 1981 (Table 3). Leader damage to white pine was common at numerous points in the Simcoe District. The most common occurrence was in scattered plantations in the Turkey Point Provincial Park and Simcoe areas, where up to 20% of the leaders were attacked. Control measures such as clipping and burning of infested leaders were carried out at many points. The insect also occurred at damaging levels at several points in the Owen Sound District, particularly in Sullivan Township, where 10% of leading shoots were attacked.

Table 3. Summary of leader damage by white pine weevil in two districts in 1981 and 1982 (counts based on the examination of 150 white pine trees at each location).

Location (Twp)	Avg ht of trees (m)	Stocking (trees/ ha)	Area affected	Leaders attacked (%)	
				1981	1982
Owen Sound District					
Sullivan	4	2000		-	10.0
Simcoe District					
Charlotteville	3	2000	4	2.0	6.0

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

A general reduction in larval populations of the larch sawfly occurred throughout the Southwestern Region in 1982. The most notable decreases were in the Long Point-St. Williams Forest Station areas, Simcoe District and in the Owen Sound District where heavy infestations had occurred in 1981. During surveys of known areas of past infestation, many curled shoots were noted; however, either because of poor egg hatch or because of larval development, infestations did not occur. Consequently, the small number of developing colonies caused little defoliation. Elsewhere, small numbers of colonies were noted in tamarack along Highway 401 east of London and near the towns of Palmerston and Wingham where light infestations occurred in 1981.

European Pine Shoot Moth, *Rhyacionia buoliana* (Schiff.)

Little change occurred in the heavy infestation that has persisted for the past few years in a 4-ha red pine plantation located south of Maxwell in Osprey Township, where most trees had varying degrees of damage. The red pine in this plantation are becoming badly distorted as a result of past infestations. Little change occurred in the heavy infestation in a 1-ha red pine planting located near Pearce Provincial Park in Aylmer District. All trees were damaged and in poor condition. Elsewhere small numbers of larvae were noted in scattered small plantations near Delhi and St. Thomas.

Minor Insects

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

A virtual collapse of infestations of this insect on black walnut, butternut and hickory (*Carya* spp.) occurred throughout the southwestern Region in 1982. The most spectacular decrease occurred in a hedgerow of black walnut near Windham Centre in Simcoe District. Only a few colonies of larvae were noted at this location, in comparison with many in 1981. Defoliation was negligible. Elsewhere occasional colonies of larvae were noted in Rondeau Provincial Park, Point Pelee National Park and near Kingsville in the Chatham District, and on scattered trees near Auburn in Wingham District. No colonies were noted or collected in the Owen Sound District.

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

As in 1981, there was a marked increase in the incidence of this pest on sugar maple at many points in the Aylmer, Simcoe and Owen Sound districts. In the Aylmer District, heavy infestations recurred in a 68-ha sugar maple stand in Pearce Provincial Park, where defoliation ranged

upward to 60%. Small isolated pockets of infestation were noted at many locations eastward to Simcoe. In the Owen Sound District, increased numbers of this insect were noted in the Sauble Beach-Sauble Falls area of Amabel Township where sugar maple was again infested. Defoliation averaged 40 to 50%, with occasional trees being up to 75% defoliated. The total area infested was approximately 60 ha. Small numbers of larvae were common in the remainder of the Owen Sound District.

Redhumped Oakworm, *Symmerista canicosta* Francl.

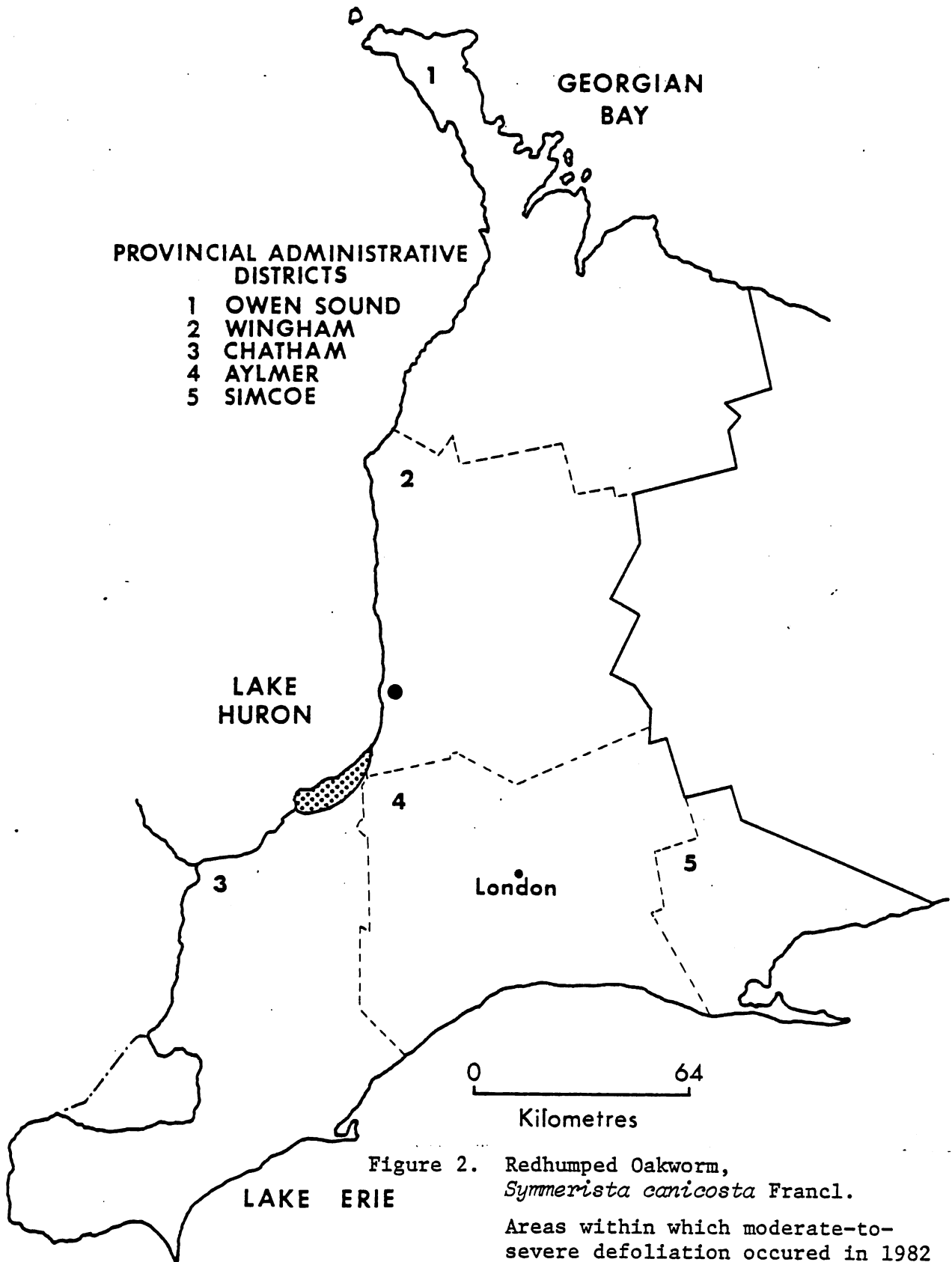
As in 1981, heavy infestations of this oakworm occurred in approximately 3000 ha of red and white oak in Chatham and Wingham districts (Fig. 2). The heaviest infestation occurred in an area along Highway 21 from Grand Bend to Pinery Provincial Park, where defoliation ranged upward to 70% and resulted in numerous inquiries from property owners in the general area of Grand Bend. Small isolated pockets of heavy defoliation were noted as far north as Bayfield in the Wingham District; however, these were confined to open-growing red and white oak trees. In the past, infestations of this insect have been generally of short duration. A combination of starvation, predation and parasitism leads to a collapse of infestations after only a few years. This, coupled with late feeding, has relegated this pest to minor status. Therefore, it is expected that if it follows previous infestations, a reduction in numbers might occur in 1983.

Table 4. Other forest insects.

Insect	Host(s)	Remarks
<i>Acleris variana</i> (Fern.) Eastern blackheaded budworm	wS	common on roadside trees in P.U.C. plantations near Woodstock and near Palmerston; occasional larvae noted in Dr. Murray plantations near St. Mary's, Wingham District
<i>Adelges lariciatus</i> (Patch) Spruce gall adelgid	eL	heavy infestation on needles near Port Rowan, Simcoe District
<i>Altica populi</i> Brown Poplar flea beetle	bPo	pockets of moderate damage in Amabel Twp, Owen Sound District

(continued)

SOUTHWESTERN REGION



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Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Amphibolips confluenta</i> (Harr.) Spongy oak apple gall	r0	heavy infestation on roadside trees near Pinery Provincial Park, Chatham District
<i>Anomogyna elimata</i> (Gn.) Chameleon caterpillar	wB	small numbers on occasional trees near Woodstock, Aylmer District
<i>Archippus packardianus</i> Fern. Spring spruce needle moth	wS	occasional trees lightly infested in Dr. Murray plantations near St. Mary's, Wingham District
<i>Arge pectoralis</i> (Leach) Birch sawfly	wB	moderate numbers of colonies at scattered locations in Bruce Peninsula, Owen Sound District
<i>Argyrotaenia quercifoliana</i> Fitch Tortricid oakworm	w0	low populations on this host in Long Point conservation forest near Port Rowan, Simcoe District
<i>Chionodes fuscomaculella</i> Cham. Micro moth	r0	common in oak plot near St. Williams, Simcoe District; defoliation negligible
<i>Datana ministra</i> (Dru.) Yellownecked caterpillar	wB	occasional colonies of this insect on scattered trees in St. Edmunds Twp, Owen Sound District
<i>Dichomeris ligulella</i> Hbn. Palmerworm	r0	Palmerworm common on this host in Pinery Provincial Park, Bosanquet Twp, Chatham District
<i>Epinotia nanana</i> Treit. European spruce needle-miner	wS	needle damage quite extensive in a 10-ha white spruce plantation in North Dorchester Twp, Aylmer District

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Eucordylea ducharmeii</i> Free. Spruce needleminer	wS	small numbers in P.U.C. plantations near Woodstock, Aylmer District
<i>Heterocampa manteo</i> (Dblly.) Variable oakleaf caterpillar	Ba	small numbers in Keppel and Sydenham twps, Owen Sound District
<i>Hydria prunivorata</i> Ferg. Cherry scalloped moth	bCh	Populations increased throughout the Owen Sound District, where defoliation neared 100% in many instances. Smaller but significant increases were noted in Simcoe District, particularly in the St. Williams-Port Rowan areas.
<i>Malacosoma americanum</i> F. Eastern tent caterpillar	cCh	nests common throughout the Southwestern Region
<i>Mindarus abietinus</i> Koch. Balsam twig aphid	wS	common on occasional trees in Dr. Murray plantations near St. Mary's, Wingham District
<i>Neodiprion abietis</i> complex Balsam fir sawfly	bF	occasional pockets of moderate infestation on poor sites in the Bruce Peninsula, Owen Sound District
<i>Neodiprion pratti banksianae</i> Roh. Blackheaded jack pine sawfly	jP	scattered colonies on jack pine growing along hydro line north of Aylmer, Aylmer District
<i>Neodiprion pratti paradoxicus</i> Ross Jack pine sawfly	jP	small numbers of colonies in Lindsay Twp, Owen Sound District
<i>Orthosia hibisci</i> (Gn.) Speckled green fruitworm	rO	small numbers in red oak plot, South Walsingham Twp, Simcoe District

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Pandemis limitata</i> (Rob.) Threelined leafroller	r0	along with other leafrollers caused light defoliation near Grand Bend, Chatham District
<i>Pikonema alaskensis</i> (Roh.) Yellowheaded spruce sawfly	wS	Though common in the Region, this sawfly was collected or observed only in small numbers.
<i>Pristiphora geniculata</i> (Htg.) Mountain-ash sawfly	Mo	moderate defoliation on shade and ornamental trees in forestry complex near St. Williams, and on occasional trees near Palmerston, Wingham District
<i>Pulicalvaria piceaella</i> (Kft.) Orange spruce needleminer	wS	needle miners common, but at low levels near London and Woodstock, Aylmer District
<i>Spilonota lariciana</i> Heinr. Larch needletier	tL	needletier common on scattered trees in Huron County Forest near Auburn, Wingham District
<i>Symmerista leucitys</i> Francl. Orangehumped mapleworm	sM	numbers reduced to low levels in the Sauble Beach area, Owen Sound District
<i>Tetralopha asperatella</i> (Clem.) Maple webworm	sM	leafrollers common on small trees at many points in St. Williams-Port Rowan and Turkey Point areas, Simcoe District
<i>Trisetacus alborum</i> Keifer White pine needlesheath mite	wP	caused 50-60% damage to leading shoots of potted stock at St. Williams Nursery, Simcoe District
<i>Zeiraphera canadensis</i> Mut. & Free. Spruce bud moth	wS	moderate damage to new growth in seed production area near St. Williams, Simcoe District

(continued)

Table 4. Other forest insects (concluded).

Insect	Host(s)	Remarks
<i>Zeiraphera destitutana</i> (Walker) Purplestriped shootworm	WS	light defoliation of new growth in association with spruce budworm in Wellington County Forest in Minto Twp, Wingham District

TREE DISEASES

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

For the past five years Scleroderris canker detection surveys have been carried out in southern Ontario. Red pine plantations were thoroughly examined at 20 locations in the Region. In addition, many more stands were checked during routine survey activities. No Scleroderris canker of either the European or North American race was detected.

Horse Chestnut Leaf Blotch, *Guignardia aesculi* (Pk.) V.B. Stew.

There was a further decline in foliar damage by this leaf blotch in most areas of the Region in 1982. Heavy damage that occurred on ornamental horse-chestnut (*Aesculus hippocastanum* L.) at many points in the Simcoe District in 1981 did not recur in 1982. Only spotty damage was noted. In the Chatham and Owen Sound districts, very little damage occurred at any location. In the Wingham District only one area of heavy damage was observed. This was in the town of Goderich, where most ornamentals had varying degrees of damage and defoliation of up to 80% was observed. In the Aylmer District only trace-to-light defoliation occurred at previously infected locations.

Tip Blight, *Sphaeropsis sapinea* (Fr.) Dyko & Sutt. = (*Diplodia pinea* [Desm.] Kickx.)

Moderate-to-severe shoot damage occurred on red and Austrian pine (*Pinus nigra* Arnold) at many locations throughout the Region in 1982. The most severe damage was noted on ornamental red pine and Austrian pine at Holiday Beach Park near Amherstburg, Chatham District, where the majority of trees had varying degrees of damage. Scattered mortality is common within the park boundaries. As in past years open-growing and hedgerow trees were more susceptible to infection. Other significant damage was observed in the Simcoe-Port Rowan area, where many peripheral red pine trees had light or light-to-moderate tip damage.

Table 5. Other forest diseases.

Organism	Host(s)	Remarks
<i>Alternaria</i> sp. Damping off	eC	caused varying degrees of foliar damage in one compartment at St. Williams Nursery, Simcoe District

(continued)

Table 5. Other forest diseases (continued).

Organism	Host(s)	Remarks
<i>Apiognomonia quercina</i> (Klbe.) Hoehn. Leaf spot	wO	light-to-moderate damage on ornamental trees along Hyde Park Road in the city of London, Aylmer District
<i>Apiognomonia veneta</i> (Sacc. & Speg.) Hoehn. Anthracnose	Sycamore	severe damage by this leaf disease on ornamental trees near St. Williams, Simcoe District
<i>Cephalosporium</i> sp. Vascular disease	wE	caused branch mortality near Windham Centre, Simcoe District
<i>Cylindrosporella betulae papyrifera</i> (Dearn & Overh.) Arx Leaf spot	wB	caused chlorosis on leaves of white birch at many points throughout the Bruce Peninsula, Owen Sound District
<i>Cytophoma pruinosa</i> (Fr.) Holm. Branch dieback	wAS	common on dying ash near Paisley, Bruce Peninsula, Owen Sound District
<i>Cytospora</i> sp. Canker	Sycamore	branch dieback common on ornamentals near Port Rowan, Simcoe District
<i>Discosia</i> sp. Anthracnose	wAS	moderate damage on regeneration near Meaford, Owen Sound District
<i>Discula</i> sp. Leaf spot	sM	moderate damage on occasional trees near Rondeau Provincial Park gate, Chatham District
<i>Fusarium</i> sp. Damping off fungi	wP	moderate damage to nursery seedlings in compartment 8x at St. Williams Forestry Station, Simcoe District

(continued)

Table 5. Other forest diseases (continued).

Organism	Host(s)	Remarks
<i>Gloeosporium aridum</i> Ell. & Holw. Anthracnose	wAs	common but at low levels on occasional trees near Jones Falls, Derby Twp, Owen Sound District
<i>Gnomonia leptostyla</i> (Fr.) Ces. & de N. Leaf spot	Bu	heavy infection on occasional trees near Meaford, Owen Sound District
<i>Kabatella apocrypta</i> (Ell. & Ev.) Arx Anthracnose	sM	moderate-to-severe damage to roadside trees at many points in the Region; most notable damage south of Wingham in Morris and Goderich twps; common in varying degrees at several other locations
<i>Phacidopycnis</i> sp. Phomopsis canker	eL	caused severe branch dieback on a single tree in Dr. Murray plantations near St. Mary's, Wingham District
<i>Phoma</i> sp. Canker	wE	occasional trees damaged by this canker; associated with Dutch elm disease near Iona Station, Aylmer District
<i>Phyllosticta</i> sp. Leaf blotch	Mo	occasional trees infected at forestry station, St. Williams area, Simcoe District
<i>Septoria</i> sp. Leaf spot	bPo	heavy infection on open-growing trees in red pine plantation northwest of Wingham in Turnberry Twp, Wingham District
<i>Uredinopsis</i> sp. Needle rust	bF	undergrowth regeneration lightly infected by this needle rust near Wiaraton, Owen Sound District

(continued)

Table 5. Other forest diseases (concluded).

Organism	Host(s)	Remarks
<i>Valsa</i> sp. Canker	Be	occasional trees infected at Pearce Provincial Park, Aylmer District; causes branch dieback

Diebacks and Declines

Ash Dieback

Varying degrees of damage to white ash (*Fraxinus americana* L.) were noted along highways throughout the Region in 1982. As in the past several years, this condition has caused moderate-to-severe branch dieback at many points, particularly in the Simcoe, Aylmer and Chatham districts.

Maple Decline

Maple decline is characterized by branch dieback, particularly on trees growing on exposed sites and along roadsides. In 1982 little change was noted in the status of this condition in the Region. Samples of diseased material were submitted from four widely separated locations. It is difficult to state categorically that any of the following are responsible, solely or in part, for maple deterioration, since most are classed as of secondary importance. Some of the more common fungi were: *Cytospora* sp. (a canker), *Steganosporium ovatum* (Pers. ex M rat) Hughes, and *Trichoderma viride* (Pers. ex Fr.); these were collected from roadside trees along county road 6, near Palmerston in Wingham District. Elsewhere in Wingham District quantitative surveys were carried out in the Maple Keys sugar maple bush in Grey Township, where *Cephalosporium* sp. and *Polyporus adustus* Willd. ex Fr. were collected, neither of which are likely to cause significant damage. Other pathogens collected were *Nectria cinnabarina* (Tode ex Fr.) Fr. and *Valsa ambiens* (Pers. ex Fr.) Fr., both cankers, from trees located on private property in the city of Chatham. *Steganosporium ovatum* and a bacterial infection were common on ornamental trees in the town of Listowel. Quantitative surveys were carried out at three locations. The results of these surveys are to be found in Table 6.

Table 6. Summary of results obtained from checking sugar maple trees in a rural and urban location at four points in 1982.

Location (Twp)	Avg DBH of sample trees (cm)	Area affected (ha) or site class	Percentage of crown dead				Tree dead
			0-20	21-40	41-60	>60	
Wingham District							
Grey	35	200	96.0	2.5	1.0	0	.5
Minto	30	roadside	67.5	19.5	8.0	5.0	0
Goderich	45	"	64.0	14.0	12.0	8.0	2.0
"	35	"	49.0	26.0	12.0	9.0	4.0

Oak Decline

For the past six years, three plots of red oak and white oak in the Simcoe and Chatham districts have been monitored for oak decline. After five years of gradual decline in tree vigor, it is interesting to note that some improvement in the 21-40% damage class is evident in all plots (Table 7). This improvement is due principally to the removal of dead branches by wind, which permits a healthier-looking crown to emerge. No change was recorded in crown class five (dead trees) in the plots located in South Walsingham and Charlotteville townships, Simcoe District. However, for the first time since these plots were established in 1977, mortality has occurred in the plot located near Pinery Provincial Park in Chatham District, where two of the sample trees are now dead.

Table 7. Summary of oak decline at three locations in the Region (100 red oak and white oak trees examined at each location).

Location (Twp)	Avg DBH of sample trees (cm)	Area affected (ha)	Year	Percentage of crown dead				Tree dead
				0-20	21-40	41-60	>60	
Simcoe District								
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
South 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
Chatham District								
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

Abiotic Damage

Maple Scorch

Maple scorch, which causes shrivelling, discoloration and premature leaf fall was widespread in the Wingham and Owen Sound districts in 1982 (Fig. 3). Severe damage to stands, woodlots and open-growing sugar maple was most evident in the Maitland River Valley area in the northwestern part of Wingham District and in numerous stands and woodlots in Amabel and Keppel townships, Owen Sound District. Total defoliation was recorded at these locations. Moderate-to-severe damage covering an area of approximately 3,175 km² occurred at many points in Holland, Sydenham, Artemesia and Osprey townships of Grey County and in occasional woodlots from Goderich east to just north of Stratford in the Wingham District. A similar condition was noted at scattered points in the remainder of the Region; however, damage was generally light and posed no immediate problem.

It is too early to speculate on what, if any, permanent damage may result from this condition; however, fall checks indicate that bud development is good in areas that were hardest hit by this scorch. Areas in which damage occurred will be further checked in the spring and summer of 1983 to evaluate foliar development.

Salt Damage

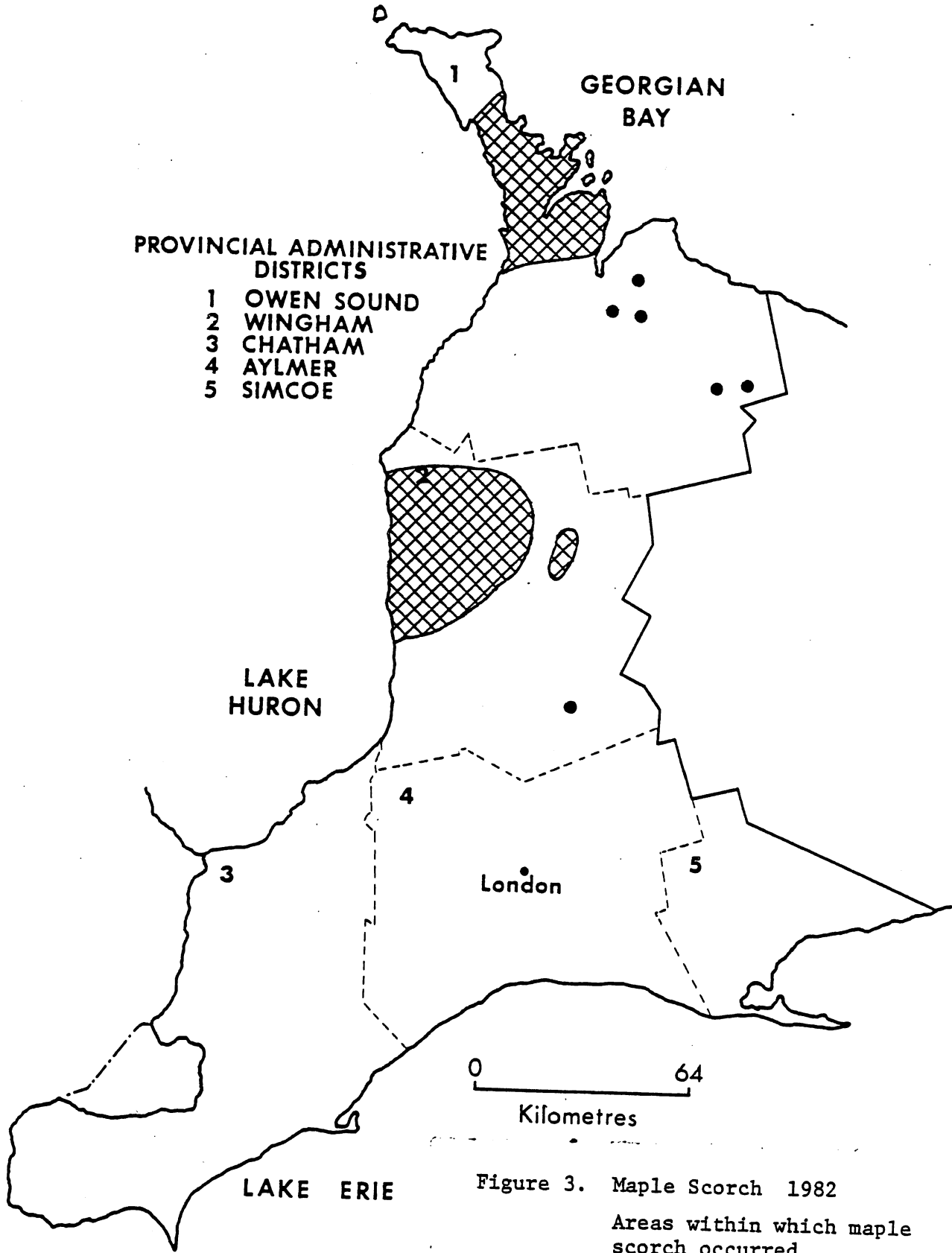
In 1982, as in past years, heavy applications of salt caused varying degrees of damage to roadside trees, particularly pines (*Pinus* spp.), spruces (*Picea* spp.) and cedars (*Thuja* spp.) at many points in the Southwestern Region. This was most evident on well travelled highways such as 401, 3, 7, and 2.

Special Surveys

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

In 1982, a detailed survey of the abundance of Dutch elm disease in surviving, young (10 cm DBH and up to 6 m in height) or juvenile (more than 2 m in height and less than 10 cm DBH) elms (*Ulmus* spp.) and the distribution as well as the numbers of the two known vectors of the causal organism, the native elm bark beetle, *Hylurgopinus rufipes* Eich., and the smaller European elm bark beetle, *Scolytus multistriatus* (Marsh.) was carried out throughout the Region. The survey consisted of checking up to 100 elm trees in an urban or rural setting. However, elm trees were scarce and difficult to find in urban areas (Table 8). The results indicated that infection was fairly constant, and in all but one case ranged upward to 5% (see Frontispiece). In the Chatham District, one hedgerow of young white elm (*Ulmus americana* L.) with 10% infection was found.

SOUTHWESTERN REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

- 1 OWEN SOUND
- 2 WINGHAM
- 3 CHATHAM
- 4 AYLMER
- 5 SIMCOE

0 64
Kilometres

Figure 3. Maple Scorch 1982

Areas within which maple scorch occurred

..... ● or [cross-hatched box]

Table 8. Summary of infection caused by Dutch elm disease in four districts in 1982 (counts based on the examination of up to 150 trees).

Location	Trees sampled			% affected
	unaffected	diseased	dead	
<u>Status of Dutch elm disease in urban areas</u>				
Aylmer District				
Springfield	48	2	0	4
Chatham District				
Essex	0	0	0	0
Grand Bend	0	0	0	0
Ridgetown	0	0	0	0
Sarnia	50	0	0	0
Thamesville	0	0	0	0
Tilbury	0	0	0	0
Owen Sound District				
Flesherton	10	0	0	0
Meaford	2	0	0	0
Thornbury	2	0	0	0
Warton	1	0	0	0
Wingham District				
Palmerston	0	0	0	0
Wingham	0	0	0	0
Total	113	2	0	1.7
<u>Status of Dutch elm disease in rural areas</u>				
Aylmer District				
Bayham Twp	93	3	0	3.1
Chatham District				
Bosanquet Twp	50	0	0	0
Camden Twp	50	0	0	0
Howard Twp	50	0	0	0
Plympton Twp	95	5	0	5.0
Tilbury N. Twp	44	5	1	12.0
Owen Sound District				
Sydenham Twp	57	1	0	1.7
Wingham District				
Minto Twp	14	0	0	0
Total	453	14	1	3.2

(continued)

Table 8. Summary of infection caused by Dutch elm disease in four districts in 1982 (counts based on the examination of up to 150 trees). (concluded).

Location	Trees sampled			% affected
	unaffected	diseased	dead	
<u>Status of Dutch elm disease in juvenile stands^a</u>				
Aylmer District				
Southwold Twp	148	1	1	1.3
Chatham District				
Camden Twp	90	4	6	10.0
Owen Sound District				
Bentinck Twp	100	0	0	0
St. Vincent Twp	100	0	0	0
Sullivan Twp	100	0	0	0
Total	538	5	7	2.2

^a Juvenile stands - less than 10 cm diam and more than 2 m ht.

Vector populations were determined by using artificial sex attractants (pheromones) for the smaller European elm bark beetle and trap logs for both the native elm bark beetle and the smaller European elm bark beetle. The number of galleries found in the trap logs was significant only at the site west of St. Thomas in Southwold Twp (Table 9). All the pheromone traps yielded sufficient numbers of smaller European elm bark beetle adults to indicate a potential problem to adjacent elm (Table 10). In summation, surveys show that Dutch elm disease continues to be a major problem on surviving, young and juvenile elm throughout the Region.

Table 9. Summary of the number of galleries of the native and smaller European elm bark beetles in elm trap logs at five locations in five districts (counts based on the number of galleries in one 2-m log at each location).

Location (Twp)	Total no. of galleries	
	Native elm bark beetle	Smaller European elm bark beetle
Aylmer District		
Southwold	32	273
Chatham District		
Harwich (Rondeau Park)	9	0
Owen Sound District		
Sullivan	0	0
Wingham District		
Ellice	20	3
West Wawanosh	7	0

Table 10. Summary of number of beetles trapped in smaller European elm bark beetle pheromone traps at five locations in the Region in 1982.

Location (Twp)	Trap no.	S.E.E.B.B. ^a adults
Wingham District		
East Wawanosh	1	87
	2	5
N. Easthope	1	201
	2	13
Chatham District		
Harwich (Rondeau Park)	1	22
Aylmer District		
Southwold	1	58
	2	35
Owen Sound District		
Sullivan	1	28

^a Smaller European elm bark beetle

Red Pine Plantation Survey

In 1979 it was decided to do a special survey, on a trial basis, on potentially damaging insects and diseases of red pine. The results emerging from this survey were encouraging. In subsequent years this format was expanded to include eastern white pine and white spruce (*Picea glauca* [Moench] Voss). After a lapse of three years it was decided to examine red pine plantations again to see if any changes had occurred in population or infection levels of specific insects and diseases. The results of these surveys follow.

Seven plantations were inspected in three height classes. These were: two plantations 0-2 m high, two plantations 2-6 m high, and three plantations >6 m high. The only diseases found at damaging levels were the needle rust of hard pine, *Coleosporium asterum* (Diet.) Syd., and Armillaria root rot, *Armillaria mellea* (Vahl ex Fr.) Kumm. The former was found in four of the plantations inspected, where from 17% to 100% of the trees suffered up to 10% defoliation, and the latter which damaged 3% of the trees in the >6-m height class in the plot located in the St. Williams forestry complex. Damage by rodents was quite extensive on small trees in the P.U.C. plantations near Sweaburg, West Oxford Twp, Aylmer District. Insects causing damage, but at low levels, were the European pine shoot moth (Table 11), the European pine sawfly and the eastern pine shoot borer, *Eucosma gloriola* Heinr. Diseases such as *Verticicladiella* sp., *Lophodermium* sp., and *Gremmeniella abietina* (Lagerb.) Morelet were not detected and apparently pose no problem in the Region. Insects causing no immediate concern were the pine false webworm, *Acantholyda erythrocephala* (L.) and the redheaded pine sawfly, *Neodiprion lecontei* (Fitch), neither of which were found in any of the plantations examined.

Seed and Cone Pests of Red Pine

The seed collecting program started in 1981 was continued in 1982. In 1982 red pine was selected for sampling and surveys were carried out in southern Ontario to assess damage caused by cone and seed insects (Table 13). The sampling method used was to select trees of high value such as those in seed production areas, etc. One collection of 100 cones was made in mid-season and examined thoroughly for all species of insect. The insect causing the most damage was the webbing coneworm, *Diorycetria disclusa* Heinr., followed in order of importance by the red pine coneworm, *Eucosma monitorana* Heinr., and the cone resin midge, *Asynapta* sp. Thirty-four percent of the cones were damaged, with a seed loss of 76% (Table 12). The results obtained from these cone surveys in the past two years have been of interest to many. Therefore, it is expected that this type of survey will continue in future years.

Table 11. Summary of the results of a red pine plantation survey carried out in the Southwestern Region in 1982.

Location (Twp)	Area (ha)	Avg ht of trees (m)	Estimated trees per ha	INSECTS					
				European pine sawfly		European pine shoot moth	Pine needle aphid	Coneworm <i>Dioryctria</i> sp.	
				Trees affected (%)	Defoliation (%)	Leaders affected (%)	Trees affected (%)	Trees affected (%)	
Dunwich	5	1.7	4,444	0	0	1.3	0	19.3	
Malahide	2	7.3	2,500	2.0	3	0	100.0	0	
South Norwich	14	3.1	2,500	0	0	0	0	0.7	
Turnberry	21	3.0	1,600	0.7	1	0	0	0	
West Oxford	15	1.3	4,444	7.3	8	9.0	0	0	
Charlotteville	30	12.0	1,111	0	0	0	0	0	
Holland	1.5	9.1	2,000	0	0	0	0	0	

Location (Twp)	DISEASES			
	Needle rust		Armillaria root rot	Rodent damage
	Trees affected (%)	Tree defoliation (%)	Trees affected (%)	Trees affected (%)
Charlotteville	0	0	2.0	0
Dunwich	100.0	6.0	0	0
South Norwich	16.6	5.0	0	0
Turnberry	72.7	10.5	0	0
West Oxford	20.6	2.0	0	9.3
Malahide	0	0	0	0
Holland	0	0	0	0

Table 12. Summary of damage caused by a complex of seed and cone insects on red pine cones at the St. Williams Forestry Station in 1982.

Location (Twp)	No. of cones examined	Cones damaged (%)	Seed loss within damaged cones (%)
South Walsingham (Forestry Station)	100	34	76

