FOREST INSECT AND DISEASE SURVEYS IN THE SOUTHWESTERN REGION OF ONTARIO, 1975

V. JANSONS

GREAT LAKES FOREST RESEARCH CENTRE
SAULT STE. MARIE, ONTARIO
CANADIAN FORESTRY SERVICE
DEPARTMENT OF THE ENVIRONMENT

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Copies of this report may be obtained from

Information Office,
Great Lakes Forest Research Centre,
Canadian Forestry Service,
Department of the Environment,
Box 490, Sault Ste. Marie, Ontario.
P6A 5M7

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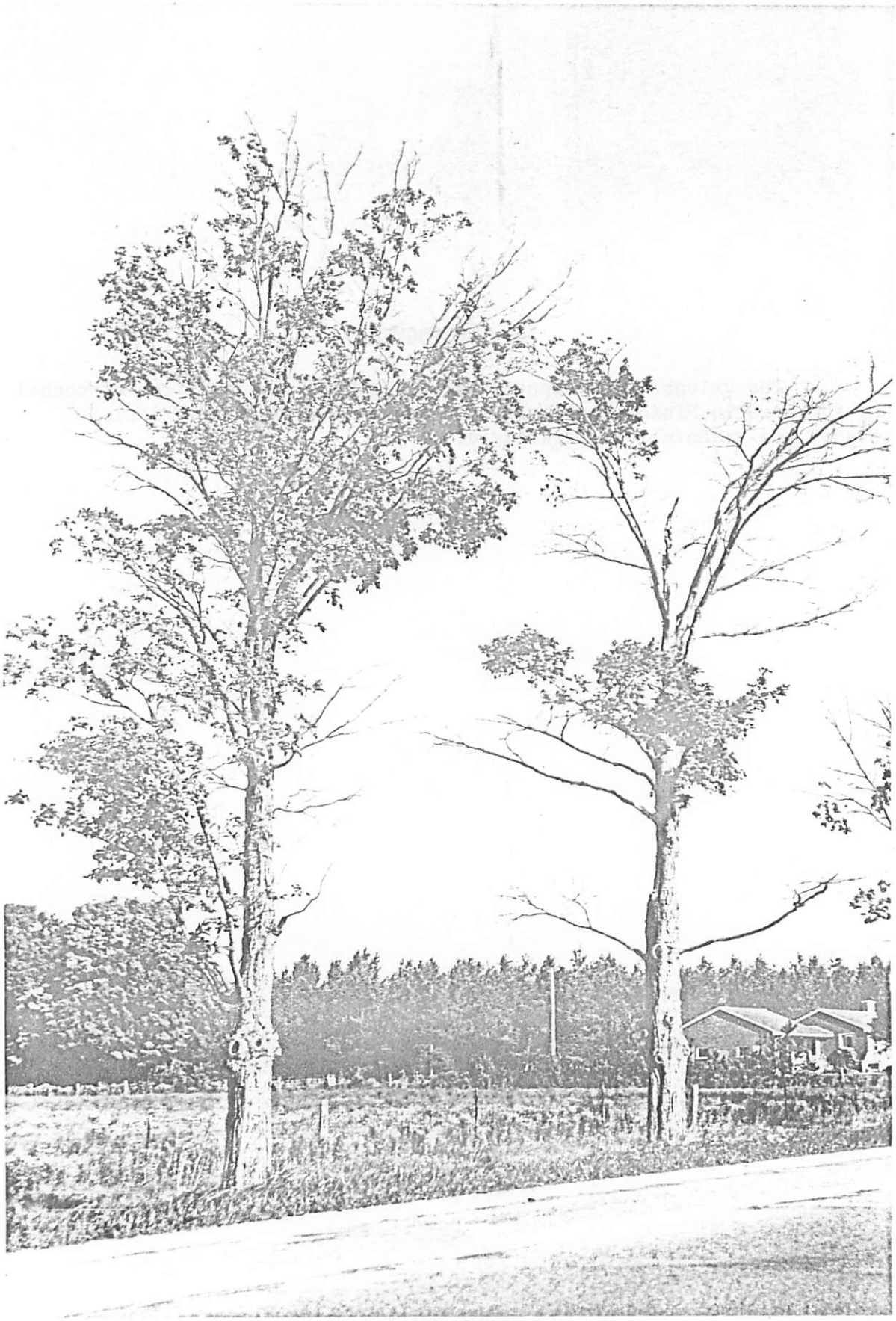

Frontispiece. Deterioration of maple trees caused by highway rebuilding.

SURVEY HIGHLIGHTS

The dramatic increase in the extent of forest tent caterpillar infestation highlighted forest pest conditions in the Region. The area of moderate-to-severe defoliation of sugar maple stands increased to approximately 2,500 acres (1,000 ha) compared with 575 acres (230 ha) in 1974. Fall egg-band counts indicate a further buildup for 1976. Another pest that caused much public concern was spruce budworm in that feeding damage was conspicuous on spruce. Specific information on this major pest is presented in Report O-X-250 on a province-wide basis. Severe leafminer damage on white cedar continued in the northern part of the Region and some top mortality was observed on cedars in the Owen Sound District. Numbers of fall webworm and walnut caterpillar increased in the central part of the Region. European pine sawfly populations remained generally low except in one instance of severe defoliation in a Scots pine plantation in the Owen Sound District. Damage by the larch sawfly and European pine shoot moth also increased, but white pine weevil damage remained low.

As in the past several years, the gradual deterioration of roadside sugar maple caused concern in some parts of the Region. Eastern dwarf mistletoe continued to cause branch mortality of white spruce at several locations on the Bruce Peninsula and a special survey relating to the white pine blister rust revealed that the percentages of trees with infection were low. A condition known as top-killing and branch mortality of Scots pine occurred in a plantation in the Simcoe District. Dutch elm disease continued to cause tree mortality throughout the Region. The incidence of Valsa canker in a white spruce plantation in the Owen Sound District increased, while in a plantation of Colorado spruce at Bells Lake infection caused by shoot blight declined to a trace level.

V. Jansons
Technician
Southwestern Region

TABLE OF CONTENTS

INSECTS

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

Severe damage to eastern white cedar (*Thuja occidentalis* L.) continued through most of the Owen Sound District and in the eastern part of the Wingham District (see Appendix, Fig. A1). The cumulative destruction of foliage over the past 2 to 3 years has resulted in severe twig and branch mortality in most heavily infested areas. Considerable top mortality was also evident in cedar stands growing on poor sites in the Owen Sound, Chatsworth, Durham and Markdale areas of the Owen Sound District, and in Minto and Carrick townships of the Wingham District. Leafminer populations were generally low in cedar stands on Bruce Peninsula with the exception of small areas north of Lions Head and at Barrow Bay in Eastnor Township where heavy infestations persisted. To the south in parts of the Simcoe, Aylmer and Chatham districts where severe damage was common in 1974 the infestation intensity declined to a low level.

Winter drying of foliage and the heavy crop of old cones also contributed considerably to the brown appearance of cedar in some areas. Generally the public was concerned over the serious condition of cedar trees in the Region.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Populations of this defoliator of poplar (*Populus* sp.) generally declined in the northern parts of Bruce Peninsula, Owen Sound District, where moderate damage occurred in 1974. Pockets of localized light defoliation of trembling aspen (*Populus tremuloides* Michx.) were observed in the Johnston Harbour Road area, along Highway 6 in St. Edmunds Township and in several stands of young aspen in Lindsay Township. A new small area of light defoliation was found north of Lions Head in Eastnor Township.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts have been included with those of other survey regions in a special report by G. M. Howse et al. (Report O-X-250). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1975 and gives infestation forecasts for the province for 1976.

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

An increase in numbers of caterpillars on black walnut (*Juglans nigra* L.) was evident in the central and southern parts of the Region. Moderate-to-severe damage to small groups and individual walnut trees occurred in Stanley, Hay, Stephen and Goderich townships in the Wingham District; in McGillivray and West Williams townships in the Aylmer District; and at several locations in the Simcoe District. Light defoliation was also common at various locations.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Light populations continued to spread and kill mainly lateral shoots of young planted white pine (*Pinus strobus* L.) through the central part of the Owen Sound District and the northern part of the Wingham District. However, in areas known to support high population levels in the past, damage again tended to decline (Table 1). Elsewhere, small numbers of damaged white pine, Scots pine (*Pinus sylvestris* L.) and red pine (*Pinus resinosa* Ait.) shoots were observed at scattered locations.

Table 1. Summary of shoot damage to white pine by the eastern pine shoot borer in the Southwestern Region from 1973 to 1975 (Counts were based on the examination of 100 trees at each location.)

Location (Twp)	Avg ht of trees (ft)[a]	Total no. of shoots infested			Leaders attacked (%)		
		1973	1974	1975	1973	1974	1975
Owen Sound District							
Brant	12	19	15	16	0	0	0
Keppel	5	-	-	9	-	-	1
Sullivan	6	-	-	11	-	-	0
Glenelg	6	-	-	8	-	-	2
Wingham District							
Downie	12	14	28	13	1	0	0
Turnberry	8	-	-	17	-	-	1
Aylmer District							
McGillivray	12	25	8	6	0	0	1
Simcoe District							
Charlotteville	12	13	11	3	0	0	0

[a] 1 ft = 30.48 cm

Fall Webworm, *Hyphantria cunea* Dru.

This defoliator of hardwoods became abundant in the central part of the Region where unsightly feeding tents were common at scattered locations on fringe and open-grown cherry (*Prunus* sp.), white oak (*Quercus alba* L.), hawthorn (*Crataegus* sp.), and apple (*Malus* sp.). Centers of infestation were located near London in the Aylmer District; in the Pinery Provincial Park, Chatham District; and in Stephen, Colborne and Goderich townships, Wingham District. Farther north light damage was evident on basswood (*Tilia americana* L.), black ash (*Fraxinus nigra* Marsh.), hawthorn, white birch (*Betula papyrifera* Marsh.) and apple in Albemarle Township in the Owen Sound District. Nests were also found again on scattered black walnut, hackberry (*Celtis occidentalis* L.), basswood and hickory (*Carya* sp.) in the Point Pelee and Wheatley areas, Chatham District.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Numbers of tents were again high this spring on deciduous hosts in the central part of the Owen Sound District. Pockets of severe infestation on cherry, particularly black cherry (*Prunus serotina* Ehrd.), hawthorn and apple were common in Sullivan, Holland, Elderslie, Arran and Derby townships. Many scattered tents were observed at numerous other locations in the Owen Sound District. Numbers of colonies dropped off sharply in the southern part of the Owen Sound District where a polyhedral virus infection had caused much late-instar larval mortality in 1974.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

The total area of moderate-to-severe defoliation of sugar maple increased from 575 acres (230 ha) in 1974 to approximately 2,500 acres (1,000 ha) in 1975.

In the Owen Sound District, infestations of varying intensities expanded considerably in the southeastern part of Sullivan Township and spread into Bentinck Township. In Holland Township, where approximately 25 acres (10 ha) were severely defoliated in 1974, the outbreak spread to over several hundred acres and patches of moderate-to-severe defoliation were scattered through the northeastern half of the township. A new infestation was detected in Osprey Township north of Maxwell where approximately 200 acres (80 ha) of sugar maple were severely defoliated. Four woodlots were moderately defoliated east of Markdale in Glenelg

Township and two were heavily damaged in Euphrasia Township. In Normanby Township the infestation extended east along County Road 9 (see Appendix, Fig. A2).

In the Wingham District, defoliation extended over a number of woodlots south and east of Mildmay in Carrick Township. In Culross Township scattered sugar maple stands were heavily damaged south of Teeswater and moderate-to-severe defoliation recurred in a large woodlot northeast of Teeswater. Larval development was rapid this year with feeding completed by June 15 and most host trees (sugar maple, white ash (*Fraxinus americana* L.), basswood and cherry) refoliated by mid-July (Fig. 1 and 2).

Sample plots to study the long-term impact of defoliation were established in 14 sugar maple stands in the infested area. Infestation forecasts for 1976 based on egg-band counts are summarized in Table 2. Except for the sampling location in Sullivan Township where population must have emigrated to adjoining stands, the average number of egg bands per 4-ft (1.2-m) branch increased two and one-half times, indicating that infestations will be much more severe next year.

Table 2. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1976 in the Southwestern Region (Counts were based on the examination of one 4-ft (1.2-m) side branch from each of five sugar maple trees at each location.)

Location (Twp)	Defoliation[a] in 1974	Total no. of egg bands in 1974	Defoliation in 1975	Total no. of egg bands in 1975	Infestation forecast for 1976
Owen Sound District					
Holland	N	21	S	33	S
Holland	T	7	L-M	31	S
Holland	L	6	L-M	13	M-S
Glenelg	T	3	L	15	M-S
Bentinck	T	4	L	12	M-S
Glenelg	T	4	L	6	L-M
Sullivan	L	27	S	0	N
Osprey	N	1	L	21	S
Normanby	T	4	L	7	L-M
Wingham District					
Carrick	S	5	L-M	8	L-M
Carrick	L	16	M-S	35	S
Carrick	M	5	L-M	13	M-S

[a] N - nil, T - trace, L - light, M - moderate, S - severe

Fig. 1. A clump of sugar maple trees completely defoliated by the forest tent caterpillar, June 15

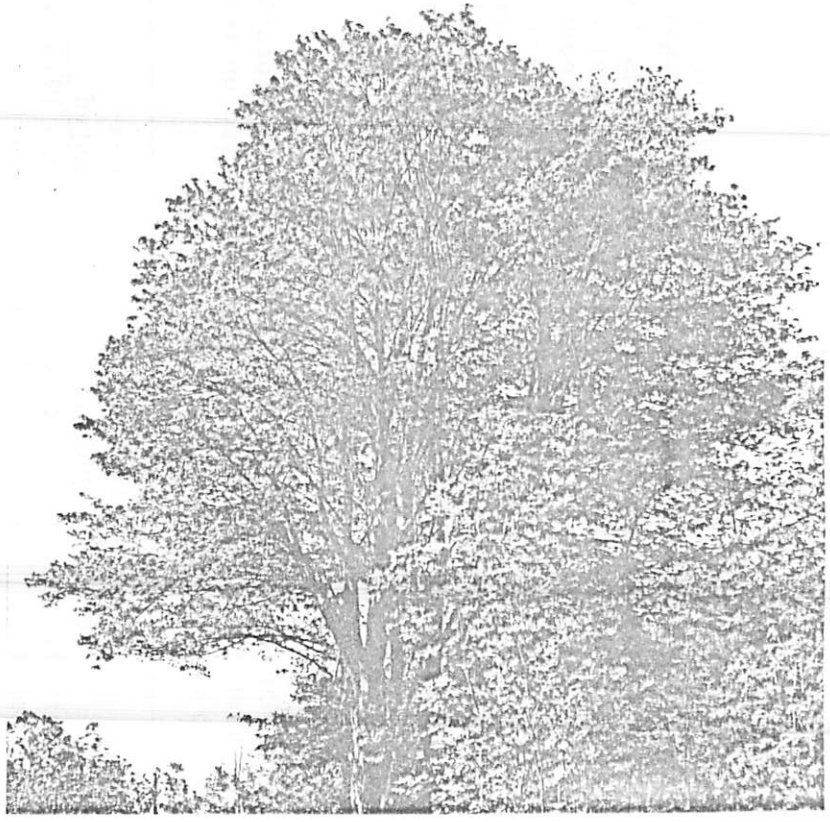

Fig. 2. The same clump of sugar maple trees refoliated, July 15.

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

In the Owen Sound District, two new infestations were observed in Normanby Township. Heavy damage occurred in a 20-acre (8-ha) plantation west of Durham where 8-ft (2.4-m) Scots pine trees were severely defoliated. Light defoliation was noted in a plantation of young red pine near the Ayton Tract. In another plantation near Crawford in Normanby Township, an infestation declined from medium to light intensity. A light infestation continued for the second consecutive year in a red pine plantation in Malahide Township, Aylmer District. Colony counts made in three districts (Table 3) show no consistent trend over a 3-year period. Elsewhere in the Region feeding was light and of little consequence.

Table 3. Summary of European pine sawfly colony counts at locations in three districts, 1973-1975 (Counts were based on the examination of 100 trees at each location.)

Location (Twp)	Host tree	Avg ht of trees (ft)[a]	Avg no. of colonies per tree			Trees infested (%)			Degree of infestation[b]
			1973	1974	1975	1973	1974	1975	
Owen Sound District									
Sullivan	ScP	9	1.1	0.4	0.7	90	23	14	L
Amabel	ScP	9	0.6	0.7	0.4	24	19	34	L
Bruce	ScP		-	2.2	1.5	-	67	29	L
Normanby	rP	5	-	-	2.2	-	-	31	L
Simcoe District									
S. Walsingham	ScP	8	-	0.3	0.4	-	17	24	L
Aylmer District									
Malahide	rP	8	-	2.7	4.3	-	83	68	L

[a] 1 ft = 30.48 cm

[b] L = light

White Pine Weevil, *Pissodes strobi* (Peck)

This pest is of much less consequence in the Southwestern Region than in many other parts of Ontario. A light infestation of white pine has continued for a number of years in a mixed white pine-red pine plantation in Sullivan Township, Owen Sound District, where 8% of the trees examined showed current damage. Elsewhere numbers of attacks were low (Table 4).

Table 4. Summary of leader damage by white pine weevil in three districts from 1973 to 1975 (Counts were based on the examination of 100 white pine trees at each location.)

Location (Twp)	Avg DBH (in.)[a]	Trees infested 1973 (%)	1974 (%)	1975 (%)
Owen Sound District				
Sullivan	3	2	1	3
Sullivan	3	11	6	8
Wingham District				
Turnberry	1	3	0	0
Kinloss	2	-	2	0
Simcoe District				
Charlotteville	3	1	0	0

[a] 1 in. = 2.54 cm

Larch Sawfly, *Pristophora erichsonii* (Htg.)

Larval populations increased in the northern part of the Region where European larch (*Larix decidua* Mill.) was the host. Severe defoliation was observed on plantings in Robinson Tract in Colborne Township, Wingham District and in a plantation in Derby Township, Owen Sound District. Moderate damage recurred in Minto Tract in Minto Township, Wingham District and at Inglis Falls, Owen Sound District. In the Simcoe District, moderate damage recurred on large trees in the St. Williams Nursery area and in several blocks of European larch in Charlotteville Township. Defoliation was light in several other European larch plantations, and numbers of sawflies remained low on tamarack (*Larix laricina* [Du Roi] K. Koch) on the Bruce Peninsula and in numerous other stands examined.

European Pine Shoot Moth, *Rhyacionia buoliana* Schiff.

An upward trend in the proportion of young red pine plantations found to be infested was again evident. Percentages of shoots damaged increased considerably in the sample plot in Biddulph Township, Aylmer District (Table 5). Sufficient numbers of shoot moth were found at four plantations to establish sample plots. But in Amabel Township in the Owen Sound District where a heavy infestation had persisted for three consecutive years the number of infested shoots declined from 82% in 1974 to 39%.

Table 5. Summary of shoot damage by European pine shoot moth in three districts from 1973 to 1975 (Counts were based on the examination of one bud cluster on each of 100 trees at each location.)

Location (Twp)	Host	Avg ht of trees (ft)[a]	Bud clusters infested 1973	1974 (%)	1975
Owen Sound District					
Amabel	rP	4	80	82	39
Sullivan	rP	5	-	-	1
Normanby	rP	4	-	-	3
Wingham District					
Turnberry	rP	3	-	-	6
Goderich	ScP	6	-	-	9
Aylmer District					
Biddulph	ScP	4	-	27	54
Malahide	rP	7	11	2	0

[a] 1 ft = 30.48 cm

Table 6. Other forest insects

Insect	Host(s)	Remarks
Acronicta rubricomma Gn.	hackberry	light population on Point Pelee, Chatham District
Adelges lariciatus (Patch)	wS	moderate damage to numerous white spruce in Sullivan Twp, Owen Sound District and in the Windsor area, Chatham District; light damage at numerous other locations through the Region
Alsophila pometaria (Harris)	Ba	light defoliation on small scattered trees at the St. Williams Nursery, Simcoe District

(continued)

Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
Altica corni Woods	Do	severe defoliation in Amabel Twp, Owen Sound District; light damage at several other locations
Anoplonyx luteipes Cress.	tL	light population, Glenelg Twp, Owen Sound District
Archips cerasivoranus (Fitch)	ecCh	heavily infested shrubs in Point Farms Provincial Park, Wingham District; general population increase through the northern part of the Region
Arge pectoralis (Leach)	wB	Light populations of birch sawfly occurred at several locations on the Bruce Peninsula, Owen Sound District.
Bucculatrix ainsliella Murt.	rO	The population declined to an extremely low level in a 50-acre (20-ha) red oak stand in Wingham Twp, Simcoe District, where severe defoliation occurred in 1974.
Cecidomyia verrucicola (O. S.)	Ba	light infestation of this leaf-gall forming insect in the Point Pelee National Park, Chatham District
Choristoneura pinus pinus Free.	jP, ScP	Populations of jack pine budworm remained low; small numbers were found in Hullet and Hay twp, Wingham District.
Chrysomela scripta F.	eCo	moderate defoliation in several seedbeds at the St. Williams Nursery, Simcoe District

(continued)

Table 6. Other forest insects (continued)

Insect	Host(s)	Remarks
Coleophora laricella Hbn.	eL	Populations remained low throughout the Region.
Cryptorhynchus lapathi (Linn.)	bPo	several young trees killed by these stem borers in Charlotteville Twp, Simcoe District
Diapheromera femorata (Say)	rO	small numbers in Charlotteville Twp, Simcoe District
Diprion hercyniae (Htg.)	wS	Populations remained low.
Diprion similis (Htg.)	wP	light-to-moderate damage on numerous trees in a plantation in St. Vincent Twp; light infestation observed in Sullivan Twp, Owen Sound District
Erannis tiliaria Harris	Ba, wAs sHi, sM	a general population increase; light populations common at numerous sample points in the Region
Fenusa pusilla (Lep.)	wB	severe leaf mining on large trees in the Eugenia Lake area, Artemesia Twp, Owen Sound District; heavy damage common on a variety of ornamental birches in residential areas through the Region
Japanogromyza sp.	wO	light infestation of this leaf miner in the Grand Bend and Pinery Provincial Park area in Chatham District
Leperisinus aculeatus (Say)	wAs	bark beetles numerous in one dead tree

(continued)

Table 6. Other forest insects (continued)

Insects	Host(s)	Remarks
Lithocolletis hamadryadella Clem.	wO	light infestation of leaf-miners in the Sarnia area, Chatham District
Macremphytus sp.	Do	small numbers in Point Pelee National Park, Chatham District
Mindarus abietinus Koch.	bF	light infestations of balsam twig aphids in the Inverhuron-Southampton area, Owen Sound District
Monoctenus sp.	eC	Cedar sawfly populations remained very low.
Neodiprion abietis complex	bF	population very low
Neodiprion nanulus nanulus Schedl	jP	low numbers in St. Edmunds Twp, Owen Sound District
Nycteola cinereana N. & D.	bPo	light defoliation of small trees in St. Edmunds Twp, Owen Sound District
Orgyia antiqua L.	tL	small numbers in Biddulph Twp, Chatham District
Phloeosinus canadensis Sw.	eC, rC	bark beetles common in dead trees
Phyllobius oblongus Linn.	Ba	small numbers in St. Williams Nursery, Simcoe District
Pikonema alaskensis Rohwer	wS	a general population increase in the northern part of the Region; light-to-moderate damage on small trees in Glenelg and Amabel twp, Owen Sound District

(continued)

Table 6. Other forest insects (continued)

Insects	Host(s)	Remarks
Pikonema dimmockii (Cress.)	wS	small numbers in E. Wawanosh Twp, Owen Sound District
Pineus strobi (Htg.)	wP	heavy infestations on numerous semimature trees in Grey Main Tract, Owen Sound District, and on young trees in Hay Township, Wingham District
Plagiodera versicolora Laich	W	light-to-moderate defoliation of large trees in Point Pelee National Park, Chatham District, and on scattered trees in the northern part of Wingham District; populations declined to a low level in the London area, Aylmer District
Pristiphora geniculata (Htg.)	Mo	increasing population throughout the Region; moderate and severe defoliation at numerous locations
Profenusa thomsoni (Konow)	wB	light damage on scattered trees in Caradoc Twp, Aylmer District
Proteoteras willingana Kft.	mM	small numbers of damaged shoots in St. Vincent Twp, Owen Sound District
Psilocorsis reflexella Clem.	tA	light population in Albemarle Twp, Owen Sound District
Pyrrhalta luteola (Mull.)	wE, cE	severe defoliation of several white elms in Goderich, Wingham District; moderate-to-severe damage on numerous scattered Chinese elm trees in the London area, Aylmer District

(continued)

Table 6. Other forest insects (concluded)

Insect	Host(s)	Remarks
Pyrrhalta tuberculata Say	W	Severe browning of foliage was caused by this leaf beetle in willow swales in Glenelg, Egremont, Proton and Normanby twp in the Owen Sound District and in Minto and Howick twp, Wingham District
Pyrrhia exprimens Wlk.	bPo	light damage on small trees in Amabel Twp, Owen Sound District
Semiothisa oweni Swett	tL	collected in beating samples, Holland Twp, Owen Sound District
Tetralopha asperatella Clem.	sM	light damage on several fringe trees in Biddulph Twp, Aylmer District

TREE DISEASES

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Pk.

This organism was observed commonly on white spruce (*Picea glauca* [Moench] Voss) along the Lake Huron shore on Bruce Peninsula in the Owen Sound District. Severe branch mortality occurred in numerous localized pockets between Red Bay in Albemarle Township and Tobermory in St. Edmunds Township. At one sample point in Albemarle Township 12% of the trees were affected and up to five witches' brooms were observed per infected tree. Light tree mortality occurred here and at several widely scattered locations in the area. Observations indicated that trees in all diameter and age classes are susceptible to attack by this disease.

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

Dutch elm disease was first detected in southwestern Ontario on the Niagara Peninsula and in the Windsor area in 1950. Severe tree mortality spread northward through the areas of high elm density and by 1965 the disease was well established in Grey and Bruce counties. In 1975 infection and mortality rates for white elm (*Ulmus americana* L.) remained high in the Owen Sound District, particularly in the northern part of Grey and Bruce counties where elms are abundant. In the southern part of the Region where the elm content is low as the result of cumulative mortality, infection was most obvious in clumps of young white elm regeneration. Infection was also noted on the small number of scattered surviving white elm trees, and occasionally on rock elm (*Ulmus thomasii* Sarg.) and Chinese elm (*Ulmus parvifolia* Jacq.) trees.

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

Light damage was common in white pine plantations in the Region. The highest level of infection among nine evaluations was in a 20-year-old white pine plantation in Colborne Township in the Wingham District where 2.6% of the trees examined were infected (Table 7).

Cedar–Apple Rust, *Gymnosporangium juniperi-virginianae* Schw.

High incidence and severe damage caused by numerous galls occurred on open-grown red cedar (*Juniperus virginiana* L.) in the vicinity of Rondeau and Wheatley provincial parks in the Chatham District. The damage was also severe on scattered trees in the Stratford area, Wingham District. Low incidence and infection levels were common at several other locations in the southern part of the Region. This rust, for which apple is the alternate host, forms galls on infected branches of red cedar and if the infection is sufficiently heavy the branches are killed.

Table 7. Summary of damage to white pine caused by white pine blister rust in five districts in 1975

Location (Twp)	Avg height of trees (ft)[a]	Age of trees (yr)	Trees infected (%)
Owen Sound District			
Sullivan	11	12	0
Glenelg	12	12	0
Wingham District			
Colborne	18	20	2.6
Downie	12	15	1.4
Aylmer District			
N. Dorchester	17	15	0.7
McGillivray	14	15	1.3
Chatham District			
Sarnia	5	10	0
Romney	8	10	0
Simcoe District			
Charlotteville	6	20	1.3

[a] 1 ft = 30.48 cm

Nectria canker, *Nectria cinnabarina* (Tode ex Fries) Fries

This disease caused stem and branch cankers on numerous young sycamore maple (*Acer pseudoplatanus* L.) planted in the city of Sarnia. Several of the infected trees were killed by large stem cankers which are characterized by discolored and sunken bark. Light infections were observed on Norway maple (*Acer platanoides* L.) in the town of Goderich in Wingham District. This weakly parasitic organism is widespread on hardwoods, where it causes cankers around wounds and at the base of dead branches. Trees weakened by some other agents are more susceptible to infection by this organism.

Tip Blight of Spruce, *Sirococcus strobilinus* Preuss.

For the third consecutive year a decrease was observed in the amount of damage caused by this pathogen in a plantation of blue spruce (*Picea pungens* Engelm.) at Bells Lake in the Owen Sound District. In 1972 shoot mortality was severe. The percentage of damaged shoots decreased from 50 in 1973 to 19 in 1974 and to a trace level in 1975. Prior to 1972 defoliation had increased annually.

The needle cast organism *Rhizosphaera kalkhoffi* Bub. which was previously associated with the damage was not present in 1975.

Valsa Canker, *Valsa kunzei* Fr.

Although symptoms of this disease had been observed on white spruce for several years, the canker-causing organism could not be found in the Grey Main Tract, Owen Sound District, until 1974. In 1975, 2.7% of the trees in one compartment of pruned white spruce were infected. Copious resin flow was evident on stems of numerous trees. The incidence of cankering is likely to increase.

Deterioration of Maple

The progressive deterioration of maple trees in many parts of the Region has caused public concern. Symptoms include leaf scorch, curled and stunted leaves, premature shedding of foliage, dying branches in the crown and eventual mortality. A special survey was carried out during the summer of 1975, sometimes in company with officers of the Ontario Ministry of Natural Resources, to attempt to identify the causes of deterioration. In no instance was the deterioration observed in undisturbed woodlots.

In the case of maples growing along secondary roads and highways, it was fairly evident that the application of salt to road surfaces during the winter and the spraying of herbicides along rights of way during the summer were major factors involved. Along secondary roads, some deterioration was also caused by road rebuilding and widening: root systems were disturbed, the soil was compacted, and stems were injured. Maples growing adjacent to agricultural areas also appeared to be affected by herbicides.

Deterioration of maples growing as shade trees was investigated at numerous locations and was attributed to one or more of the following factors: changes in elevation, soil compaction, mechanical injuries to roots or stems or the use of chemical weed killers on lawns or adjacent fields. Leaf scorch and premature shedding of leaves, two symptoms of deterioration which appeared early in the summer of 1975, were considered to be due to high temperatures and prolonged periods of drought.

Quantitative data showing the type of deterioration present at 12 areas in the Region where conditions were most severe are given in Table 8.

Abiotic Damage

Deterioration and mortality of red pine trees continued in a number of 25- to 30-year-old plantations in Glenelg and Holland townships

in the Owen Sound District. A characteristic symptom was the dying back of crowns from the top. Most plantations affected are located on sites on which the soil substrate is composed of calcareous boulders.

In 1975 the browning of eastern white cedar foliage was observed at several locations in the Region. This condition combined with cedar leafminer damage caused severe damage to trees in parts of the Owen Sound District.

Damage to other conifer species by winter drying was significant.

Table 8. Summary of sugar maple deterioration along highways in the Southwestern Region in 1975

Location (Twp)	No. of sample trees	No. of trees showing symptoms	Proportion of trees affected (%)	Mortality (%)
Owen Sound District				
Keppel, Hwy 70 & 6	44	32	72.7	0
Amabel, Hwy 21	40	27	65.0	2.5
Kincardine, Hwy 9 & 21	38	26	68.4	0
Derby, Hwy 6 & 21	65	32	47.4	2.5
Wingham District				
Colborne, Hwy 21	50	39	74.0	4.0
Hay, Hwy 83	60	28	46.6	0
Carrick, Hwy 9	50	29	58.0	0
Aylmer District				
E. Zorra, Hwy 59	50	24	48.0	0
W. Williams, Hwy 7	48	17	35.5	0
Simcoe District				
Windham, City Road 4	50	23	46.0	0
Chatham District				
Bosanquet, Hwy 21	35	16	45.7	0
Howard, Hwy 21	30	11	33.3	3.3

Top-killing and Branch Mortality of Scots Pine

Considerable top and branch mortality was observed on young Scots pine in a 10-acre (4-ha) mixed pine plantation in South Walsingham Township in Simcoe District. The damage was confined to an area within this plantation approximately 2 acres (0.8 ha) in size, where 37% of trees were affected, 15% being damaged severely. The top and branch mortality was confined to trees under 4 ft (1.2 m) in height. The organism *Cenangium ferruginosum* Fr., considered to be a weak parasite, was found on dead branches submitted to the Forest Insect and Disease Survey.

Table 9. Other forest diseases

Organism	Host(s)	Remarks
Apiosporina morbosa (Schw.) Arx Black knot	ecCh	high level of infection at several locations in St. Edmunds and Lindsay twp, Owen Sound District
Armillaria mellea (Fr.) Kummer Armillaria root rot	eC	not found in 1975
Ciborinia whetzelii (Seaver) Seaver Ink spot disease	tA	incidence extremely low in 1975
Coleosporium asterum (Diet.) Syd. Needle rust	rP	not observed in 1975
Cytospora chrysosperma (Pers.) Fr. Cytospora canker	bPo	caused mortality of several young trees in Charlotteville Twp, Simcoe District
Cronartium quercuum (Berk.) Miyabe ex Shirai	ScP	Infections continued in Keppel and Glenelg twp, Owen Sound District.
Eutypella parasitica Davidson & Lorenz Eutypella canker of maple	sM	infections common through the northern part of the Region

(continued)

Table 9. Other forest diseases (continued)

Organism	Host(s)	Remarks
Fomes annosus (Fr.) Karst	rP	Infection continued to be heavy in red pine plantations in the St. Williams Nursery and Turkey Point areas, Simcoe District.
Fomes pinicola (Sw. ex Fr.) Cke. Red belt fungus	wS	found in roots of a living tree in the Grey Main Tract, Owen Sound District
Gloeosporium apocryptum Ell. & Ev. Leaf anthracnose	rM	light infection in Sullivan Twp, Owen Sound District
Gloeosporium nervisequum (Fckl.) Sacc. Leaf anthracnose	Sy	attacked leaf petioles and caused light-to-moderate defoliation of numerous trees in the Simcoe District
Gloeosporium quercinum Westd. Leaf anthracnose	rO	light-to-moderate lower crown branch mortality on numerous young trees in the Rondeau Provincial Park, Chatham District
Gloeosporium sp. Leaf anthracnose	chO	light infections in Bosanquet Twp, Chatham District
Hypoxylon mammatum (Wahl.) Miller Hypoxylon canker	tA	continued to cause stem cankers on trembling aspen in the Region
Phyllosticta sp. Leaf rust	Haw	high level of infection on several trees in Wheatley Provincial Park, Chatham District
Lophodermium pinastri (Shrad. ex Hook.) Chev. Pine needle cast	rP	infection levels low since 1973 when severe damage to red pine seedlings occurred in the St. Williams Nursery, Simcoe District

(continued)

Table 9. Other forest diseases (concluded)

Organism	Host(s)	Remarks
Pollaccia elegans Serv. Tip and leaf blight	bPo	small pockets of severe tip mortality on young trees in Amabel Twp, Owen Sound District
Pollaccia radiosa (Lib.) Bald. & Cif. Tip and leaf blight	lA	light infections in Amabel Twp, Owen Sound District
Pollaccia saliciperda (All. & Tub.) Arx	W	light infections, St. Williams Nursery, Simcoe District
Puccinia caricina DC. Leaf rust	silver buffaloberry	rust infection on several plants in Eastnor Twp, Owen Sound District
Stegonosporium ovatum (Pers. ex Merat) Hughes Branch canker	sM	heavy infections on dead branches on deteriorating sugar maple trees in Arran Twp, Owen Sound District
Stigmina juniperina Geo. & Bad. Needle cast	J	This organism caused considerable branch tip mortality in the Inverhuron Provincial Park, Owen Sound District.

APPENDIX

SOUTHWESTERN REGION

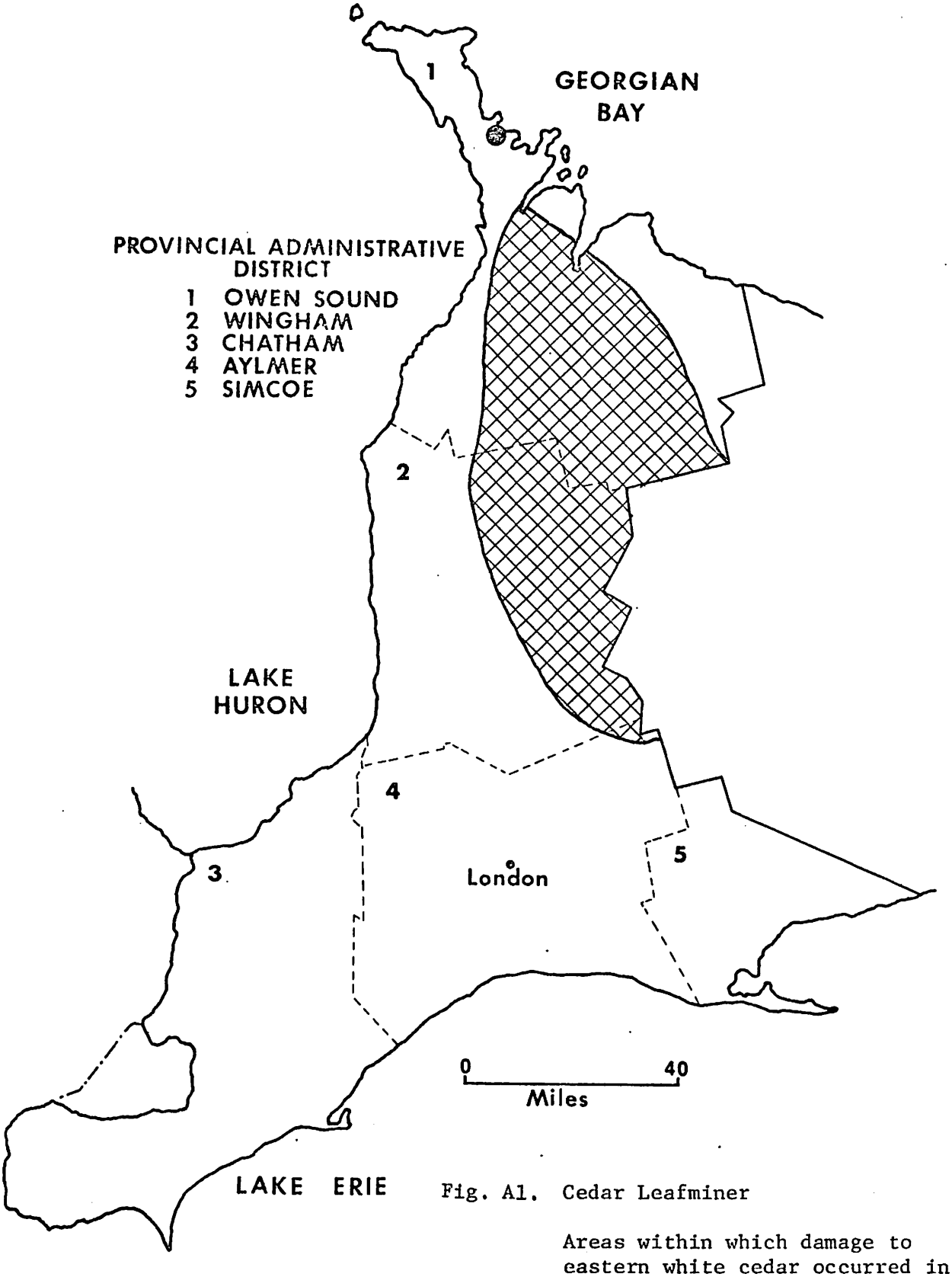

Fig. A1. Cedar Leafminer

Areas within which damage to eastern white cedar occurred in 1975

Severe browning of foliage or

SOUTHWESTERN REGION

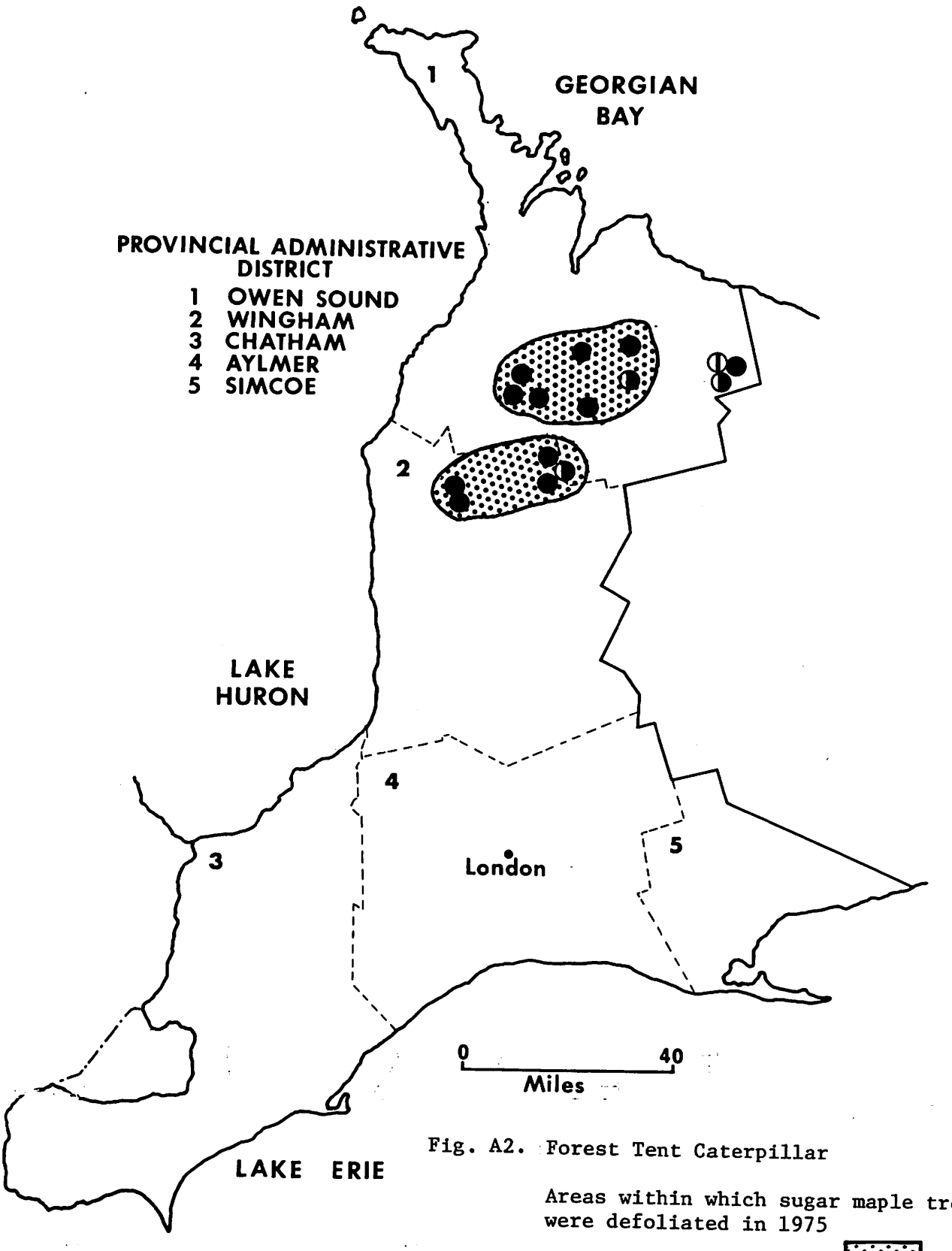

Fig. A2. Forest Tent Caterpillar

Areas within which sugar maple trees were defoliated in 1975

Light defoliation ◐ or
Moderate defoliation ◑
Severe defoliation ●