

FOREST INSECT AND DISEASE SURVEYS  
IN THE SOUTHWESTERN SURVEY REGION, 1972

(FOREST DISTRICTS: LAKE SIMCOE, LAKE HURON AND LAKE ERIE)

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*Copies of this report may be obtained  
from*

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Frontispiece. *Fomes annosus* sporophore attached to an infected red pine stump.

## SURVEY HIGHLIGHTS

High populations of the European pine sawfly continued to be of concern to Christmas tree growers, and the general public has shown an increased awareness of the damage caused to eastern white cedar by a complex of cedar leaf miners. In accordance with an established procedure, specific information on the spruce budworm situation in Ontario will again be presented in a separate report. Sharp increases in the numbers of fall webworm were particularly noticeable along the north shore of Lake Erie and populations of walnut caterpillar, oak leaf shredder, and an orange-striped oakworm continued to cause moderate-to-severe defoliation in localized areas. A definite upward trend in the abundance of the European pine shoot moth was evident after several years of endemic populations.

A condition which causes red pine mortality worsened in several areas, prompting a more intensive investigation. A frost in early June caused severe damage to the new growth of various tree species and sudden changes in weather probably contributed to the upsurge of white pine needle blight over most of the Lake Simcoe District. Four new *Fomes annosus* root rot infections were found.

Aerial spray trials carried out by the Chemical Control Research Institute, Ottawa reduced white pine weevil populations in a number of areas. High numbers of *Exenterus canadensis* Prov., a larval parasite of the European pine sawfly, were observed and several thousand sertifer cocoons, from a total of 44 locations, were submitted to Survey Headquarters in Sault Ste. Marie to assist in determining the current distribution of *Lophyproplectus luteator* (Thunb.), an introduced parasite.

A polyhedral virus was again widely used as a control measure against the European pine sawfly and effects of virus sprays applied to control the red-headed pine sawfly in 1971 appeared to extend into 1972.

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APPENDIX

## INSECTS

An Orange-striped Oakworm, *Anisota finlaysoni* Riotte

This insect caused severe defoliation of white oak (*Quercus alba* L.) trees in the Lake Huron and Lake Erie districts for the second consecutive year. The highest populations were recorded in Burlington, Trafalgar, Binbrook, Beverly, Seneca, South Grimsby and Gainsborough townships. Severe defoliation was usually confined to single trees or to localized small groups of fringe or open-grown trees. Light defoliation was observed in Blenheim and South Dumfries townships.

Cedar Leaf Miners, *Argyresthia aureoargentella* Brower, *A. thuiella* Pack., *Pulicalvaria thuiella* (Kft.)

High populations of this complex of cedar leaf miners continued to infest eastern white cedar (*Thuja occidentalis* L.) in southwestern Ontario. In the Lake Simcoe District, foliar damage was particularly heavy south of a line between Luther Lake in East Luther Township and Scugog Lake on the eastern boundary of the district. Branch mortality is exceptionally high in the Orangeville-Schomberg area with occasional pockets of light-to-moderate tree mortality.

In the Lake Huron and Lake Erie districts, moderate and severe leaf mining were common in cedar stands and hedgerows in Grey County, the southern part of Bruce County and Wellington, Brant, Norfolk and Elgin counties.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

With a few exceptions a general decline in larval populations occurred. Medium-to-heavy infestations persisted in white birch (*Betula papyrifera* Marsh.) stands in the Uxbridge and Barrie-Angus-Alliston areas in the Lake Simcoe District. Small pockets of heavy infestation recurred north of Lion's Head in Eastnor Township, near Hepworth in Keppel Township and in the vicinity of Hespeler in Puslinch Township in the Lake Huron District.

Scattered heavy infestations in 1971 in Scott and East Gwillimbury townships, on the Bruce Peninsula, in the northern part of Grey County and in the Simcoe-Delhi area declined to light intensity. Light damage was observed in the Tottenham area in Adjala and Tecumseh townships and west and north of Orangeville in Amaranth and Mono townships.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts have been included with those of other survey regions in a special information report by G. M. Howse *et al.* (O-X-173). This report provides complete description and analysis of developments in the spruce budworm situation in Ontario in 1972 and gives infestation forecasts for the Province for 1973.

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

After a general upsurge in 1971, larval populations declined considerably, particularly in the southern parts of Simcoe and Dufferin counties and in the northern part of Peel County where the insect has been most prominent. The highest populations recorded in 1972 occurred in Scots pine (*Pinus sylvestris* L.) plantations in Albion and Adjala townships, Lake Simcoe District, where 103 and 161 larvae, respectively, were counted in 20-mat samples. Only small numbers of larvae were found in the Kiwanis plantation in Keppel Township, Lake Huron District, where a light infestation has persisted on Scots pine trees for several years. Elsewhere in the Region populations were generally trace to light and of little consequence.

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

Larval populations of the oak leaf shredder remained high in the Lake Simcoe District for the third consecutive year. The light-to-medium infestations in Uxbridge Township in 1971 increased to heavy intensity and heavy infestations persisted in Tosorontio, Mulmur and Vespra townships. A high percentage of infested red oak (*Quercus rubra* L.) trees in these areas suffered more than 75% defoliation in early summer but most trees re-foliated and appeared near normal by midsummer. Heavy infestations in 1971 in Oro Township and the northern part of Tiny Township generally declined to medium infestations, with scattered localized pockets of heavy intensity.

Maple Trumpet Skeletonizer, *Epinotia aceriella* Clem.

Heavy infestations continued for the second consecutive year in a large sugar maple (*Acer saccharum* Marsh.) woodlot near Doon in Waterloo Township, Lake Huron District, and in the Pearce Provincial Park in Dunwich Township, Lake Erie District. In the latter district a new heavy infestation was noted in a mixed hardwood stand in Humberstone Township. In Colborne Township where a heavy infestation has persisted for 5 years, intensity declined to medium and only light infestations occurred on the Bruce Peninsula where moderate-to-heavy



damage was recorded in 1971. Light foliage damage occurred commonly in sugar maple stands throughout the Region.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

In contrast to increases reported in 1971, larval populations declined considerably in 1972. The most notable reductions were recorded in white pine (*Pinus strobus* L.) plantations in Flos Township, Lake Simcoe District, and in Downie Township, Lake Huron District, where the total number of infested shoots per 100-tree sample decreased from 384 and 273 to 139 and 11, respectively (Table 1). Leader damage, which reached a high of 16% in 1971, did not exceed 3% in areas examined in 1972. Light shoot damage was common in red pine (*Pinus resinosa* Ait.) and Scots pine plantations in the Region.

Table 1. Summary of shoot damage by the eastern pine shoot borer in the Southwestern Survey Region in 1971 and 1972

| Location<br>(Twp)    | Tree<br>species | Avg height<br>of trees<br>(ft) | Total no.<br>of shoots<br>infested |      | Leaders<br>attacked<br>(%) |      |
|----------------------|-----------------|--------------------------------|------------------------------------|------|----------------------------|------|
|                      |                 |                                | 1971                               | 1972 | 1971                       | 1972 |
| Lake Simcoe District |                 |                                |                                    |      |                            |      |
| Vespra               | rP              | 8                              | 162                                | 172  | 16                         | 3    |
| W. Gwillimbury       | wP              | 10                             | 25                                 | 21   | 2                          | 2    |
| Uxbridge             | rP              | 8                              | 31                                 | 17   | 3                          | 1    |
| Sunnidale            | rP              | 8                              | 38                                 | 26   | 6                          | 2    |
| Flos                 | wP              | 12                             | 384                                | 139  | 14                         | 3    |
| Lake Huron District  |                 |                                |                                    |      |                            |      |
| Downie               | wP              | 8                              | 273                                | 11   | 9                          | 0    |
| Brant                | wP              | 8                              | 182                                | 21   | 13                         | 1    |
| Lake Erie District   |                 |                                |                                    |      |                            |      |
| McGillivray          | wP              | 8                              | 39                                 | 18   | 8                          | 2    |
| Charlotteville       | wP              | 10                             | 54                                 | 15   | 2                          | 0    |

Fall Webworm, *Hyphantria cunea* Dru.

Population levels of this defoliator increased noticeably at several points in the Region for the second consecutive year. Heavy infestations in the Welland-Port Colborne area spread westward in a

narrow band along Lake Erie to Dunwich Township in Elgin County (see Appendix, Fig. A1). Localized groups of black walnut (*Juglans nigra* L.), trembling aspen (*Populus tremuloides* Mich.), shagbark hickory (*Carya ovata* [Mill.] K. Koch), hawthorns (*Crataegus* L. sp.) and white birch were severely defoliated (Fig. 1). Medium infestations were recorded along Highway 103 in Baxter Township, Lake Simcoe District, in the southern part of Halton County and in the vicinity of Hamilton in Lake Huron District. A light infestation on large walnut trees in the town of Paris increased to medium intensity.

In contrast, heavy infestations near Washago in Orillia Township and in Waterloo, Oxford and Brant counties decreased generally to light infestations. Elsewhere in the Region small numbers of webs were commonly observed.

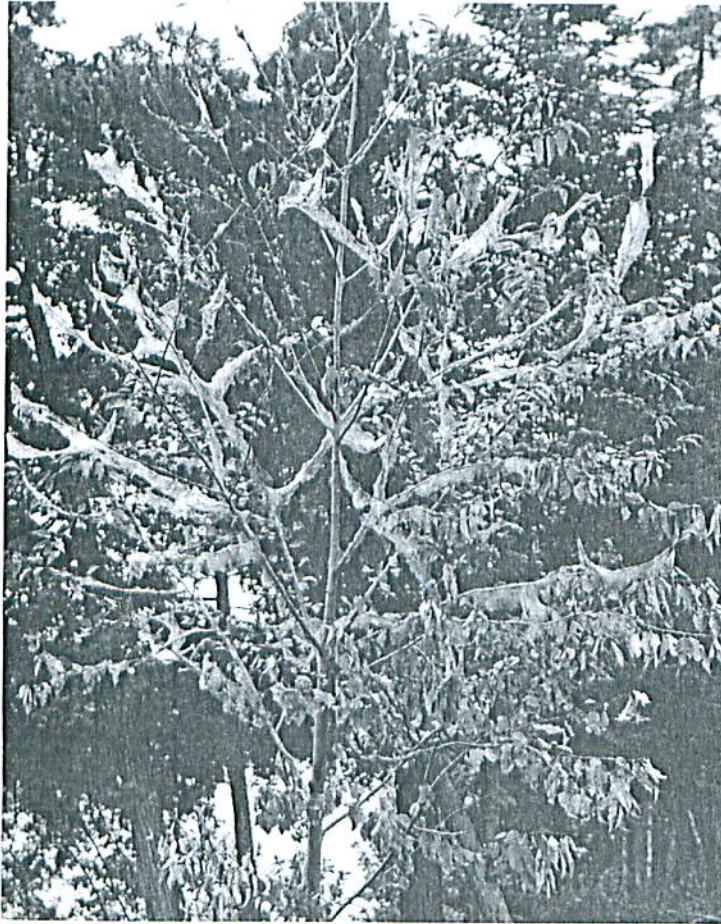


Fig. 1. Severe defoliation and typical webs of the fall webworm.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Larval populations of this pest of hardwoods increased for the second consecutive year and were more widespread in the Region. Heavy infestations were common in Simcoe and Dufferin counties and in the Newmarket-Uxbridge area, Lake Simcoe District. In the Lake Huron District high populations were noted in Grey County, the southern part of Bruce County and in parts of Wellington, Waterloo and Wentworth counties. Tents were most conspicuous in the central part of Grey County where fencerows of black cherry (*Prunus serotina* Ehrh.) were completely defoliated at numerous locations. Defoliation was also severe on choke cherry (*Prunus virginiana* L.), apple (*Malus* sp.) and hawthorn in abandoned fields, untended orchards and along roadsides. However, in most instances vigorous trees had refoliated by mid-July. Moderate damage was observed at several points in the above-mentioned districts and in Haldimand, Lincoln and Welland counties in the Lake Erie District.

Heavy caterpillar mortality was caused by starvation. A polyhedrosis infection caused light mortality of late-instar larvae in Sullivan and Glenelg townships.

Red-headed Pine Sawfly, *Neodiprion lecontei* (Fitch)

Low populations occurred in three small red pine plantations in Mara Township, Lake Simcoe District. Seven colonies were counted on 100 trees examined. Trace population was observed in Sunnidale Township. The insect was not found in Vespra Township where a nuclear polyhedrosis virus was introduced into a medium-to-heavy infestation in 1971.

Jack-pine Sawflies, *Neodiprion pratti banksianae* Roh. and  
*N. pratti paradoxicus* Ross

Although larval populations of *Neodiprion pratti banksianae* declined slightly in some areas, the insect continued to infest jack pine (*Pinus banksiana* Lamb. [= *P. divaricata* (Ait.) Dumont]) trees at several points in the central and southern parts of the Lake Simcoe District (Table 2). A medium infestation persisted in a 5-acre plantation at Base Borden and a new medium infestation occurred near Palgrave in Albion Township. At a sample point in Euphrasia Township in the Lake Huron District, the number of colonies per 10 sample trees declined from 63 in 1971 to 26 in 1972. Light-to-moderate defoliation by *N. pratti paradoxicus* occurred in the McCullough Tract in Sullivan Township.

Table 2. Summary of jack-pine sawfly colony counts at three points in the Southwestern Survey Region from 1970 to 1972 (Counts were based on the examination of 100 trees at each location.)

| Location<br>(Twp)    | Avg height<br>of trees<br>(ft) | Avg no. of<br>colonies/<br>infested tree |      |      | Trees<br>infested<br>(%) |      |      |
|----------------------|--------------------------------|--|------|------|--------------------------|------|------|
|                      |                                | 1970                                     | 1971 | 1972 | 1970                     | 1971 | 1972 |
| Lake Simcoe District |                                |  |      |      |                          |      |      |
| Melancthon           | 20                             | 1.0                                      | 3.8  | 2.6  | 36                       | 69   | 53   |
| Tosorontio           | 18                             | 4.7                                      | 3.3  | 5.4  | 100                      | 100  | 100  |
| W. Gwillimbury       | 18                             | 2.4                                      | 4.1  | 4.0  | 58                       | 65   | 64   |

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

High larval populations persisted in several areas of the Region for the fourth consecutive year. In the Lake Simcoe District severe defoliation of Scots pine and jack pine trees occurred at numerous locations in the southern half of Simcoe County, in the eastern half of Dufferin County and in northern Peel County. Occasional pockets of large Scots and jack pine trees suffered heavy defoliation in the Barrie-Penetang area in northern Simcoe County. Damage to pine plantations in the Vivian-Uxbridge area was less extensive than in 1971 and generally did not exceed light intensity. Extremely high adult populations of a larval parasite, *Exenterus canadensis* Prov., were observed in heavy infestations at several locations in Dufferin and Simcoe counties.

In the Lake Huron District infestations were more common than in previous years (Table 3). Severe defoliation of Scots pine trees occurred in Glenelg Township, at Inverhuron Park in Bruce Township and east of Sauble Falls in Amabel Township. Light and moderate defoliation were noted at numerous locations in the central part of the district. In Beverly Township, where a Scots pine plantation was sprayed with virus in 1971, the number of colonies per 10 sample trees declined from 136 to 32 in 1972. In the Lake Erie District for the second consecutive year Scots and red pine trees were severely defoliated in South Walsingham Township. A new heavy infestation that occurred in a 14-acre red pine plantation near the town of Simcoe completely defoliated the stand.

As a control measure virus was again applied in several areas of the Region by personnel from the Ontario Ministry of Natural Resources and private tree growers. However, owing to adverse weather

conditions, the virus recovery program this year was less productive than in previous years. Several thousand cocoons from a total of 44 locations were submitted to the Forest Insect Laboratory for rearing to determine the current distribution of *Lophyoplectus luteator* (Thunb.), a recently introduced parasite.

Table 3. Summary of European pine sawfly colony counts and degrees of infestation in the Southwestern Survey Region from 1970 to 1972 (Counts were based on the examination of 100 trees at each location.)

| Location<br>(Twp)    | Tree<br>spe-<br>cies | Avg<br>height<br>of trees<br>(ft) | Avg no. of<br>colonies/<br>infested tree |      |      | Trees<br>infested<br>(%) |      |      | Degree<br>of<br>infes-<br>tation |
|----------------------|----------------------|-----------------------------------|--|------|------|--------------------------|------|------|----------------------------------|
|                      |                      |                                   | 1970                                     | 1971 | 1972 | 1970                     | 1971 | 1972 |                                  |
| Lake Simcoe District |                      |                                   |  |      |      |                          |      |      |                                  |
| Uxbridge             | scP                  | 8                                 | 1.0                                      | 1.0  | 1.0  | 19                       | 14   | 6    | light                            |
| Adjala               | scP                  | 10                                | 4.0                                      | 3.4  | 4.0  | 97                       | 93   | 84   | medium                           |
| Mulmur               | scP                  | 10                                | -  | 6.5  | 7.0  | -                        | 100  | 95   | heavy                            |
| Albion               | scP                  | 15                                | 1.0                                      | 7.0  | 5.0  | 21                       | 100  | 80   | medium                           |
| Tosorontio           | scP                  | 10                                | 1.5                                      | 2.0  | 8.0  | 32                       | 43   | 100  | heavy                            |
| W. Gwillimbury       | rP                   | 4                                 | -  | 1.5  | 1.0  | -                        | 61   | 42   | light                            |
| Lake Huron District  |                      |                                   |  |      |      |                          |      |      |                                  |
| Sullivan             | scP                  | 8                                 | 1.6                                      | 5.0  | 6.0  | 71                       | 97   | 92   | medium                           |
| Eramosa              | jP                   | 8                                 | 2.6                                      | 2.2  | 2.0  | 91                       | 56   | 17   | light                            |
| Amabel               | scP                  | 8                                 | 1.4                                      | 2.5  | 2.0  | 42                       | 52   | 22   | light                            |
| Lake Erie District   |                      |                                   |  |      |      |                          |      |      |                                  |
| S. Walsingham        | scP                  | 6                                 | -  | 9.8  | 8.0  | -                        | 100  | 100  | heavy                            |

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

Heavy leader damage was found in the Orr Lake Forest in Flos Township, Lake Simcoe District, where approximately 60% of the trees were weeviled in one localized pocket of white pine. In Oro Township where populations on Norway spruce (*Picea abies* [L.] Karst.) have been high for several years, damage declined noticeably. Elsewhere there was generally a slight decline in areas quantitatively sampled and counts varied from 1 to 27% (Table 4). In a white pine plantation in Sullivan Township, Lake Huron District, an infestation persisted for the fifth consecutive year, and the proportion of trees infested increased from 19% in 1971 to 31% in 1972.

An aerial spray operation conducted by personnel from the Chemical Control Research Institute, Ottawa, substantially reduced populations at several locations in northern Lake Simcoe District.

Table 4. Summary of leader damage by white pine weevil in the Southwestern Survey Region from 1970 to 1972 (Counts were based on the examination of 100 trees at each location.)

| Location<br>(Twp)    | Host | Avg DBH<br>(in.) | Trees infested (%) |      |      |
|----------------------|------|------------------|--------------------|------|------|
|                      |      |                  | 1970               | 1971 | 1972 |
| Lake Simcoe District |      |                  |                    |      |      |
| Whitchurch           | wP   | 4                | 34                 | 23   | 17   |
| Matchedash           | wP   | 7                | 9                  | 14   | 11   |
| Essa                 | wP   | 5                | 33                 | 39   | 27   |
| Oro                  | wP   | 5                | 6                  | 11   | 4    |
| Vespra               | nS   | 6                | 9                  | 16   | 14   |
| E. Gwillimbury       | wP   | 5                | -                  | 18   | 11   |
| W. Gwillimbury       | wP   | 4                | -                  | 5    | 6    |
| Uxbridge             | wP   | 5                | -                  | 7    | 6    |
| Oro                  | nS   | 4                | -                  | 57   | 23   |
| Lake Huron District  |      |                  |                    |      |      |
| Turnberry            | wP   | 1                | 8                  | 1    | 5    |
| Kinloss              | wP   | 2                | 4                  | 4    | -    |
| Waterloo             | wP   | 3                | 3                  | 1    | 2    |
| N. Dumfries          | wP   | 3                | 2                  | 5    | 3    |
| Sullivan             | wP   | 3                | 2                  | 1    | 1    |
| Lake Erie District   |      |                  |                    |      |      |
| S. Walsingham        | wP   | 3                | 6                  | 1    | 2    |
| Charlotteville       | wP   | 3                | 3                  | 0    | 1    |

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

In 1972 a general decline in larval populations occurred in the Lake Simcoe District. With the exception of scattered European larch (*Larix decidua* Mill.) plantations in Whitchurch and West Gwillimbury townships where moderate-to-severe damage was observed in 1971, infestation intensities did not exceed medium. Medium infestations were common in Vespra, Oro, Flos, Medonte, Tosorontio, Adjala, Tecumseh and Albion townships. Numerous pentatomid predators were observed in most of the examined areas. As a result of oviposition, 35-50% tip mortality occurred in numerous European larch stands. In the Lake Huron District

populations declined to medium in a 10-acre tamarack (*L. laricina* [Du Roi] K. Koch) stand in Lindsay Township where severe defoliation had occurred for 2 consecutive years. Moderate defoliation recurred on European larch in South Dumfries and Derby townships and in a stand of tamarack in Puslinch Township. In the Lake Erie District the infestation intensity increased from medium to heavy on European larch in Charlotteville Township, and light-to-moderate defoliation continued in the St. Williams Nursery area in South Walsingham Township. Light defoliation of European larch and tamarack stands was observed at several other scattered locations in the Region.

European Pine Shoot Moth, *Rhyacionia buoliana* Schiff.

After several years of endemic populations, larval populations increased generally. Moderate damage occurred in a small, untended Scots pine plantation near Shelburne in Melancthon Township and in young red pine plantings along roadsides north of Primrose in Mulmur Township, Lake Simcoe District. In the Lake Huron District for the second consecutive year the highest number of damaged shoots was found in the Benham Tract, Eramosa Township, where 16% of red pine bud clusters were infested. Moderate numbers of infested shoots were noted on the lower branches of large Scots pine trees in Brant Township and in several plantations in Proton Township. A heavy infestation persisted in the Springwater conservation area in Malahide Township, Lake Erie District, where 36% of the shoots were infested in a young red pine plantation. Light incidence of damaged shoots was more common in the Region than in previous years.

Table 5. Other noteworthy insects

| Insect                             | Host(s)       | Remarks   |
|------------------------------------|---------------|---|
| <i>Acleris variana</i> Fern.       | WS            | Medium infestation in W. Garafraxa Twp declined to light intensity; low larval populations persisted generally in the Region. |
| <i>Anacamptis innocuella</i> Zell. | tA, lA        | severe defoliation of trembling aspen in King Twp and of largetooth aspen in Essa Twp, L. Simcoe District                     |
| <i>Aphrophora parallela</i> (Say)  | scP, wP<br>jP | medium infestations in Mulmur Twp, L. Simcoe District and Beverly Twp, L. Huron District                                      |

(continued)

Table 5. Other noteworthy insects (continued)

| Insect                                | Host(s) | Remarks  |
|---------------------------------------|---------|--|
| <i>Arge pectoralis</i> (Leach)        | wB      | a general population decline on Bruce Peninsula and in the northern part of Grey County, L. Huron District, where light-to-moderate defoliation occurred in 1971 |
| <i>Argyresthia oreasella</i> Clem.    | Haw     | moderate-to-severe shoot damage in W. Gwillimbury Twp, L. Simcoe District, and in Beverly Twp, L. Huron District   |
| <i>Caulocampus acericaulis</i> MacG.  | sM      | light infestations in the Orangeville and Barrie areas, L. Simcoe District   |
| <i>Cecidomyia reeksi</i> Vock.        | jP      | severe damage to individual trees at numerous locations in L. Simcoe District  |
| <i>Choristoneura conflictana</i> Wlk. | tA      | light-to-medium infestations in the northern part of Bruce Peninsula, L. Huron District  |
| <i>Coleophora betulivora</i> McD.     | wB      | small numbers throughout the L. Simcoe District  |
| <i>Coleophora laricella</i> Hbn.      | tL, eL  | medium infestation in Whitchurch Twp, L. Simcoe District; light elsewhere in the Region  |
| <i>Datana integerrima</i> G. & R.     | Wa      | severe defoliation of occasional trees in York, Ontario and Haldimand counties; moderate damage in Binbrook and Glanford twp                                     |
| <i>Datana ministra</i> Dru.           | wE, Ba  | scattered light infestations   |
| <i>Dioryctria disclusa</i> Heinr.     | jP      | low populations widespread in the Region   |
| <i>Dioryctria</i> new sp.             | rP      | Previous high populations declined to light intensity  |

(continued)



Table 5. Other noteworthy insects (continued)

| Insect                             | Host(s)       | Remarks  |
|------------------------------------|---------------|--|
| <i>Dioryctria reniculella</i> Grt. | wS            | generally small numbers feeding in association with spruce budworm   |
| <i>Diprion frutetorum</i> (F.)     | scP, wP<br>rP | The highest numbers of larvae (27 and 21) counted in 20-mat samples were recorded in Reach and Whitchurch twp, respectively.   |
| <i>Diprion hercyniae</i> (Htg.)    | wS, nS        | Populations remained low in the Region for the second consecutive year.  |
| <i>Diprion similis</i> (Htg.)      | scP, wP<br>rP | With the exception of Pickering Twp, L. Simcoe District, where 1206 larvae were counted in a 20-mat sample, the insect was generally found in small numbers.         |
| <i>Energia decolor</i> Wlk.        | tA            | Populations declined to low on Bruce Peninsula, L. Huron District, where light infestations were recorded in 1971.   |
| <i>Fenusa pusilla</i> (Lep.)       | wB            | heavy infestation in the Base Borden area; moderate damage in Nottawasaga and W. Garafraxa twp; occasional ornamental birches severely damaged throughout the Region |
| <i>Fenusa ulmi</i> Sund.           | wE            | localized heavy infestations in the Region   |
| <i>Hylobius radicis</i> Buch.      | scP           | This insect continued to cause notable tree mortality at several locations in the northern part of L. Simcoe District.   |

(continued)

Table 5. Other noteworthy insects (continued)

| Insect                                     | Host(s) | Remarks  |
|--|---------|--|
| <i>Messa nana</i> Klug                     | wB      | small numbers in Uxbridge and W. Gwillimbury twp, L. Simcoe District; new distribution points in Wilmot and Colborne twp, L. Huron District, and in Charlotteville Twp, L. Erie District |
| <i>Neodiprion virginianus</i><br>complex   | jP      | 14 colonies counted on six sample trees in Mara Twp, L. Simcoe District  |
| <i>Petrova albicapitana</i> (Busck.)       | jP      | A medium infestation occurred on scattered trees in Walpole Twp, L. Erie District; scattered light infestations were observed elsewhere in the Region.                                   |
| <i>Phratora purpurea purpurea</i><br>Brown | tA      | high incidence of damaged leaves in a small aspen stand in S. Dumfries Twp, L. Huron District  |
| <i>Plagioderia versicolora</i> Laich       | W       | This insect caused severe foliar damage at numerous locations in the Region.   |
| <i>Profenusa lucifex</i> Ross              | bO      | Heavy infestation continued on a few trees in Pickering Twp, L. Simcoe District.   |
| <i>Psilocorsis quercicella</i> Clem.       | rO, wO  | Light infestation continued for the third consecutive year in the Pinery Provincial Park, L. Erie District.  |
| <i>Pulicalveria piceaella</i> (Kft.)       | wS      | medium infestations in Uxbridge and Whitchurch twp, L. Simcoe District   |
| <i>Pyrrhalta cavicollis</i> Lec.           | pCh     | This insect caused moderate defoliation in a 2-acre stand in Whitchurch Twp, L. Simcoe District.   |

(continued)

Table 5. Other noteworthy insects (concluded)

| Insect                                      | Host(s) | Remarks  |
|---|---------|--|
| <i>Rhabdophaga swainei</i> Felt             | WS      | 4% of examined buds infested in Dornoch Tract, Bentinck Twp, L. Huron District   |
| <i>Rhyacionia sonia</i> Miller              | JP      | medium infestations in Tosorontio and Uxbridge twp, light in Vespra and Whitchurch twp, L. Simcoe District                     |
| <i>Sciaphila duplex</i> Wlsh. M.            | tA      | light infestation in Proton, Sullivan and Greenock twp, L. Huron District  |
| <i>Zeiraphera canadensis</i><br>Mut. & Free | WS      | Population declined to low in Macton Tract, Wellesley Twp, L. Huron District, where a medium infestation was reported in 1971. |
| <i>Zelleria haimbachi</i>                   | JP      | This insect caused moderate damage to new shoots in the Orangeville area, L. Simcoe District.                                  |

## TREE DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kummer

This disease again caused light tree mortality in eastern white cedar and white spruce (*Picea glauca* [Moench] Voss) hedges in the Midhurst Nursery. Infections reported in red pine plantations in Essa and Flos townships in 1971 continued to cause mortality at the rate of 2-3%. Light mortality of Scots pine regeneration recurred in the Brentwood Tract, Sunnidale Township, and the organism was associated with root and butt rot of jack pine at several locations in the Lake Simcoe District.

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

For the second consecutive year, the highest incidence of this disease in the Region occurred in the central and northern parts of Simcoe and Ontario counties in the Lake Simcoe District, and in Grey and Bruce counties in the Lake Huron District. Current mortality in the above-mentioned areas was as high as 25%. Disease incidence was approximately 10% in numerous small pockets in the remainder of the Region.

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

Browning of trembling aspen foliage caused by this disease was more widespread in the Region than in recent years. Although infections generally ranged from trace to light, a medium infection was recorded south of Base Borden in Tosorontio Township (Table 6). Evaluations made at five locations revealed that incidence fluctuated up to 82.5% and the level of infection did not exceed 40%.

Needle Rust of Pine, *Coleosporium asterum* (Diet.) Syd.

In the Lake Simcoe District a trace infection was present for the second consecutive year, in a stand of 20-ft jack pine trees in the Base Borden area. A light infection on the lower branches of 10-ft red pine trees in the Midhurst Nursery declined to trace intensity. The pathogen was not found elsewhere in the Region.

Table 6. Summary of damage caused by Ink Spot of Poplar in the Southwestern Survey Region in 1972

| Location<br>(Twp)    | Host | Tree height<br>(ft) | Incidence<br>(%) | Level of<br>infection |
|----------------------|------|---------------------|------------------|-----------------------|
| Lake Simcoe District |      |                     |                  |                       |
| Essa                 | tA   | 25                  | 62.5             | trace                 |
| Orillia              | tA   | 30                  | 82.5             | light                 |
| Tosorontio           | tA   | 45                  | 50.0             | medium                |
| Lake Huron District  |      |                     |                  |                       |
| Lindsay              | tA   | 30                  | 62.5             | trace                 |
| Lake Erie District   |      |                     |                  |                       |
| Wainfleet            | tA   | 30                  | 50.0             | light                 |

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

Four additional pockets of infection were detected in 1972 within the area of known distribution, indicating that the disease is more common than previously recognized. In the Lake Simcoe District infections were noted in the Uxbridge Forest Headquarters Tract where several large red pine trees succumbed to the disease. Fruiting bodies were present in this location as well, in an old, dead, largetooth aspen (*Populus grandidentata* Michx.) tree. This stand was thinned previous to the introduction of stump treatment, now a common control practice. The organism (see Frontispiece) was also isolated from cultures from the roots of recently dead red pine and jack pine trees in the Dufferin County Forest, Mulmur Township, and in the Hendrie Forest, Vespra Township (see Appendix, Fig. A2). Previously reported infections in Flos, Medonte and Uxbridge townships remained active but current mortality was negligible.

In the Lake Huron District the disease was recorded for the first time in a 25-year-old mixed jack pine-Scots pine plantation in Woolwich Township. In the Lake Erie District the disease intensified in red pine plantations in the St. Williams Nursery and Turkey Point area where numerous new infections have been found in recent years (see also "Root and butt rots of jack pine").

### Root and Butt Rots of Jack Pine

In 1972 surveys were carried out in jack pine stands at several locations to investigate stand openings and determine what pathogens were causing root and butt rots. Where rot was present samples were taken and the causal organisms were identified at the Research Centre in Sault Ste. Marie. The most important organisms recovered were *Fomes annosus* and *Armillaria mellea* (Table 7).

Stand openings in Keppel, St. Edmunds, Lindsay and Beverly townships in the Lake Huron District and in Charlotteville Township in the Lake Erie District were sampled but the cause of the condition was not identified.

Table 7. Summary of important root and butt rot organisms of jack pine determined in the Southwestern Survey Region

| Location<br>(Twp)    | Organisms recovered                              |
|----------------------|--|
| Lake Simcoe District |  |
| Vespra               | <i>Armillaria mellea</i><br><i>Fomes annosus</i> |
| Sunnidale            | <i>Armillaria mellea</i>                         |
| Essa                 | <i>Armillaria mellea</i>                         |
| Lake Huron District  |  |
| Woolwich             | <i>Fomes annosus</i>                             |

### Semimature Tissue Needle Blight

This condition affecting the foliage of white pine trees was more pronounced in the Lake Simcoe District than in recent years. For several years blight has been reported only on occasional trees throughout the Region indicating that genetic factors may be involved. However, in 1972 trees in all age classes were affected over a large part of the District (see Appendix, Fig. A3). Since weather has been identified recently as a contributing factor it is suggested that abnormally high temperatures during the month of May followed by an unusually late frost on June 10 may have been responsible for the damage. Light-to-moderate infection was common and incidence was as high as 20% (Table 8). No change in the status of this blight was noted elsewhere in the Region.

Table 8. Summary of damage to white pine caused by Semi-mature Tissue Needle Blight in the Lake Simcoe District in 1972

| Location<br>(Twp) | Tree height<br>(ft) | Incidence<br>(%) | Level of<br>infection |
|-------------------|---------------------|------------------|-----------------------|
| Orillia           | 40                  | 10               | medium                |
| Uxbridge          | 50                  | 15               | medium                |
| Innisfil          | 40                  | 15               | medium                |
| W. Gwillimbury    | 15                  | 10               | light                 |
| Sunnidale         | 45                  | 20               | medium                |

#### Shoot Mortality of Blue Spruce

A high incidence of current shoot mortality occurred in a 4-acre blue spruce (*Picea pungens* Engelm.) plantation at Bells Lake in Glenelg Township, Lake Huron District. Infection was recorded on 92% of the trees and the incidence of infected shoots decreased outward from a severe infection center of approximately 1 acre where some tree mortality had occurred previously. The killed shoots closely resembled frost damage but some of the lowest parts of the plantation were unaffected. The organism *Alternaria tenuis* Nees was found in association with dead tips but did not necessarily cause tip mortality.

#### Red Pine Mortality

In 1971 this condition, affecting red pine trees in the 30-35-year age class, was investigated in Holland and Glenelg townships in the Lake Huron District. Although a degree of deterioration of the smaller roots was evident, the cause of tree mortality was not determined. Red pine trees continued to die in the above-mentioned areas in 1972 and additional small pockets of mortality were noted in the Little Tract in Puslinch Township, at Bellwood Lake in East Garafraxa Township and in the vicinity of Holmesville in Goderich Township.

#### An Abiotic Condition of Hardwoods

In 1971 a condition severely affecting the foliage of several deciduous tree species was reported on the Niagara Peninsula in the Lake Erie District. The condition was attributed to the drying effect of high winds at the time the leaves were unfolding.

Results of an intensive investigation by personnel from the Phytotoxicology Section, Air Management Branch, Ontario Department of the Environment indicated that the sudden exposure of the foliage to bright sunshine and high winds after a wet, cloudy period was responsible for the injury. Their work confirmed our findings, at least partially, and helped dispel any rumors that air pollutants might have caused the damage. The condition was not apparent in 1972.

#### Winter Drying

For the second consecutive year this condition was of little consequence in the Region. Only trace levels of incidence were observed in white pine plantings in Melancthon and West Gwillimbury townships and in a few white spruce plantations in Amaranth Township in the Lake Simcoe District. The condition of eastern red cedar (*Juniperus virginiana* L.), eastern white cedar, pines and spruces, particularly along highways 400 and 11 north of Toronto, continued to worsen and cause public concern. Winter drying, fumes from traffic, salt and exposure probably all contributed to the condition.

#### Frost Damage

A late spring frost which occurred on June 10 caused extensive damage to the new growth of several tree species (Fig. 2). From 50 to 60% of the shoots of white and Norway spruce trees in low-lying areas throughout the Lake Simcoe District were killed. In the Midhurst Nursery three large seedbeds of red spruce were heavily damaged, whereas several adjacent beds of white spruce suffered moderate damage. Both contained 3-0 stock.

In the Lake Huron District 50% of the white pine trees and European larch trees were damaged at the light and heavy levels in plantations in Turnberry and Glenelg townships, respectively.

In the Lake Erie District heavy shoot mortality occurred in 92% of red pine and Scots pine trees in a 20-acre plantation in South Walsingham Township. This shoot mortality, in combination with severe defoliation by *N. sertifer*, caused 15% mortality of Scots pine and 10% of red pine plantings (Table 9). Eight per cent of small white pine trees in this area were also killed. Elsewhere in the township and in Charlotteville Township high numbers of red pine, Scots pine and white spruce trees suffered severe shoot damage.

Among the deciduous species ash and oak were moderately affected in localized areas in the northern part of the Region but damage generally was of little consequence.



Table 9. Summary of damage to the current year's growth caused by frost in the Southwestern Survey Region in 1972

| Location<br>(Twp)    | Host | Avg height<br>of trees<br>(ft) | Trees<br>affected<br>(%) | Mortal-<br>ity<br>(%) | Acres<br>affec-<br>ted | Degree<br>of<br>damage |
|----------------------|------|--------------------------------|--------------------------|-----------------------|------------------------|------------------------|
| Lake Simcoe District |      |                                |                          |                       |                        |                        |
| Essa                 | rP   | 2                              | 62                       | 0                     | 20                     | medium                 |
| Whitchurch           | wS   | 6                              | 100                      | 0                     | 20                     | heavy                  |
| Lake Huron District  |      |                                |                          |                       |                        |                        |
| Turnberry            | wP   | 5                              | 50                       | 0                     | 50                     | light                  |
| Keppel               | nS   | 6                              | 20                       | 0                     | 20                     | medium                 |
| Colborne             | nS   | 15                             | 30                       | 0                     | 20                     | medium                 |
| Glenelg              | eL   | 15                             | 50                       | 0                     | 25                     | heavy                  |
| Lake Erie District   |      |                                |                          |                       |                        |                        |
| *S. Walsingham       | rP   | 5                              | 92                       | 10                    | 20                     | heavy                  |
| *S. Walsingham       | scP  | 6                              | 92                       | 15                    | 20                     | heavy                  |
| S. Walsingham        | wP   | 5                              | 87                       | 8                     | 20                     | heavy                  |

\* Mortality of red pine and Scots pine trees at this location attributed to a combination of frost damage and severe defoliation by *N. sertifer*.

#### Oak Decline

Tip and branch mortality of oaks continued in the Lake Simcoe District, particularly in the Orangeville and Uxbridge areas. Surveys in 1972 failed to locate any additional areas.

Considerable branch-tip mortality of red oak occurred in Rondeau Park in Lake Erie District and in a few areas in the southern part of the Lake Huron District. Cankers appeared on several branch tips at Rondeau Park and the organism *Coryneum kunzei* Cda. was identified from samples submitted to the Research Centre.

The red and white oaks in Canatara Park at Sarnia, which were affected by severe wilting and curling of leaves in 1969 and again in 1971, regained much of their vigor, although leaf Anthracnose was present on a few trees at the light infection level.



Fig. 2. Severe frost damage to planted red pine in the Southwestern Survey Region.

Table 10. Other noteworthy diseases

| Organism  | Host(s) | Remarks  |
|---|---------|--|
| <i>Cronartium quercuum</i> (Berk.)<br>Miybe ex Shirai         | scP     | several scattered, heavily infected, large trees in a plantation in Brant Twp, Lake Huron District   |
| <i>Dothichiza populea</i> Sacc. &<br>Briard                   | siP     | high branch mortality on several large trees in Sullivan Twp, Lake Huron District  |
| <i>Endocronartium harknessii</i> (J.P.<br>Moore) Y. Hiratsuka | scP     | light infection on several trees in Lindsay Twp, Lake Huron District   |
| <i>Lophodermium nitens</i> Darker                             | rP      | high incidence of seedling mortality caused by this needle cast in a compartment of red pine in the St. Williams Nursery, Lake Erie District                                   |
| <i>Pollacia radiosa</i> (Lib.)<br>Bald. & Cif.                | tA, lA  | low incidence of infected trembling aspen shoots in Orillia Twp, Lake Simcoe District; numerous infected shoots on several largetooth aspen in Keppel Twp, Lake Huron District |
| <i>Scoleconectria cucurbitula</i><br>(Tode ex Fr.) Booth      | wP      | cankers very numerous on stems in a dense plantation in Doon Tract, Waterloo Twp, Lake Huron District  |
| <i>Septoria musiva</i> Pk.                                    | eCo     | light incidence of this rust infection in two seedbeds at the St. Williams nursery, Lake Erie District   |
| <i>Steganosporium ovatum</i> (Pers.<br>ex Merat) Hughes       | sM      | associated with branch and stem mortality in Essa and Innisfil twp, Lake Simcoe District   |

APPENDIX

# SOUTHWESTERN SURVEY REGION

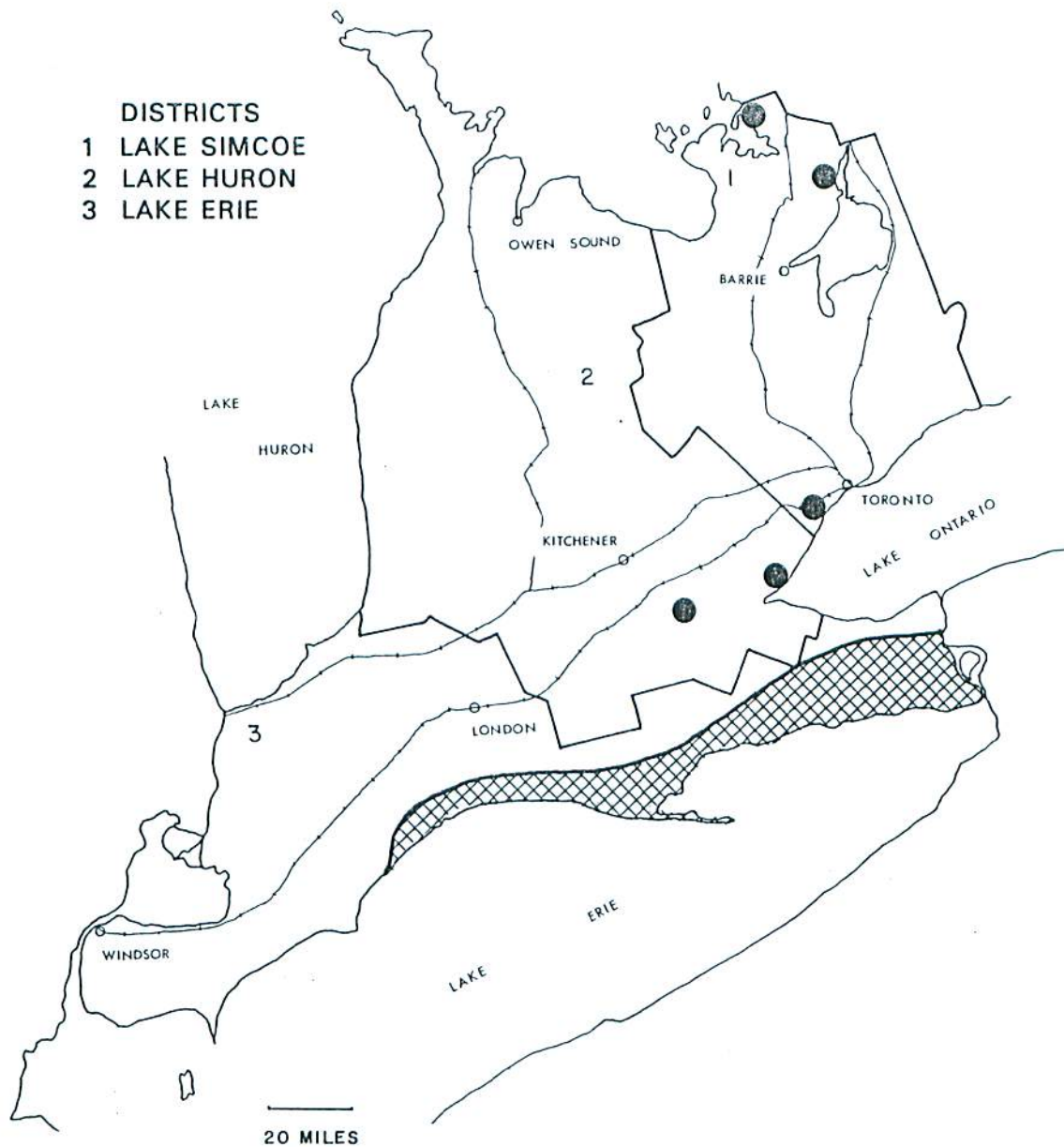


Fig. A1. FALL WEBWORM

Area within which infestations occurred and locations of other infestations in 1972

Moderate-to-severe defoliation . . . . .  or 

# SOUTHWESTERN SURVEY REGION

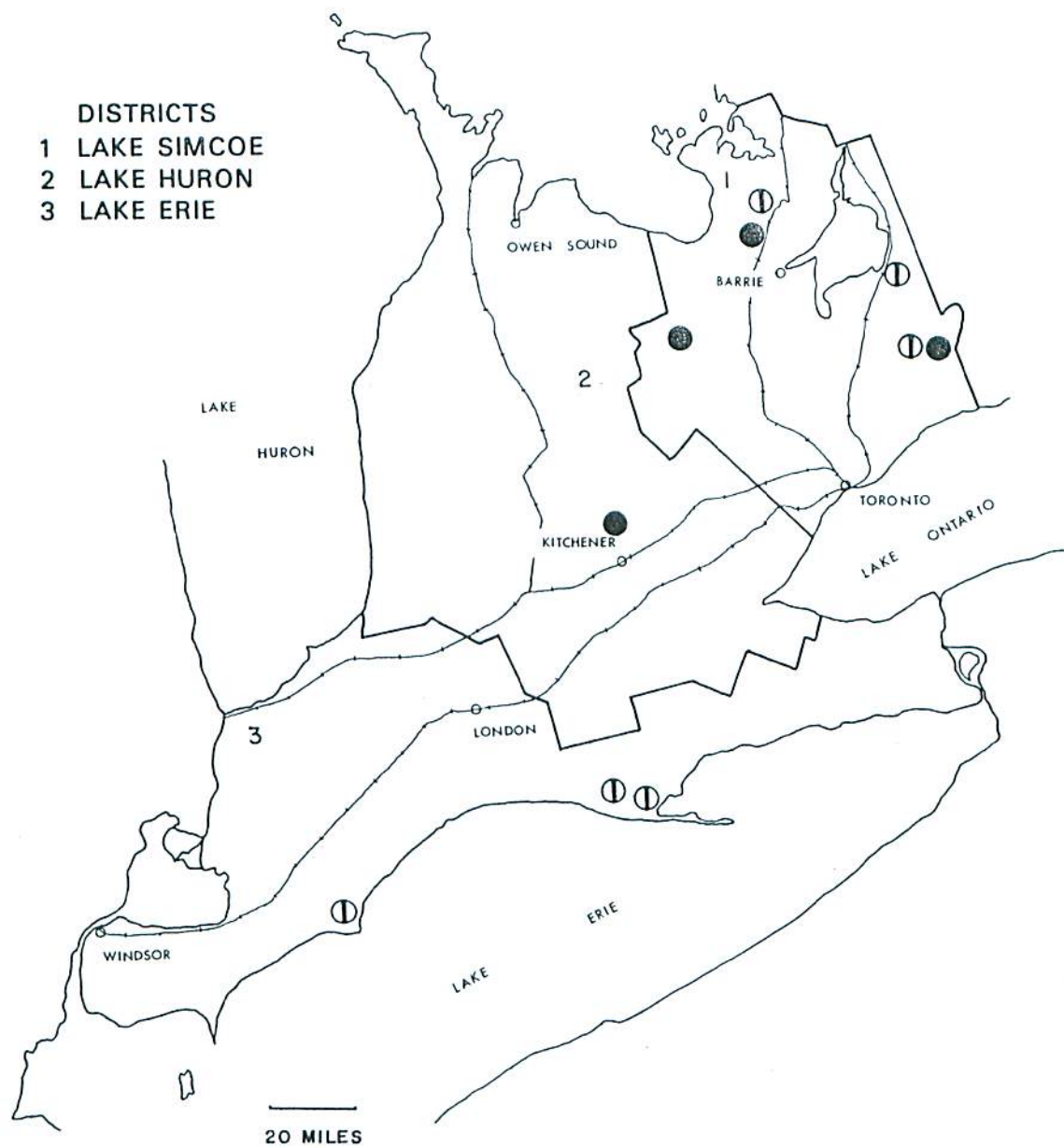


Fig. A2. *FOMES ANNOSUS* ROOT ROT

Known areas of infection in 1971 . . . . ①

Areas of infection found in 1972 . . . . ●

# LAKE SIMCOE DISTRICT

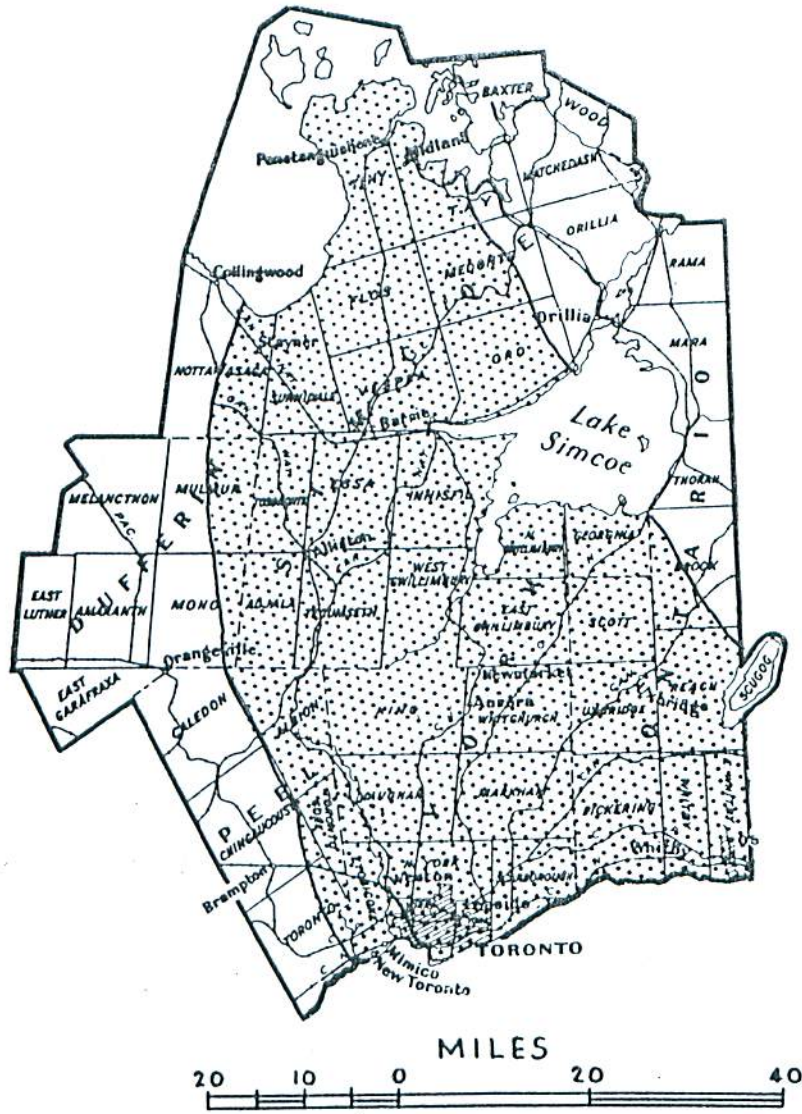


Fig. A3. SEMIMATURE TISSUE NEEDLE BLIGHT

Area of the Lake Simcoe Forest District  
 within which light-to-medium damage  
 occurred in 1972 . . . . .

