

FOREST INSECT AND DISEASE SURVEYS
IN THE SOUTHEASTERN SURVEY REGION, 1971

(FOREST DISTRICTS: KEMPTVILLE, TWEED, AND LINDSAY)

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Frontispiece. Severe defoliation of red oak by Croesia semipurpurana (Kft.)

SURVEY HIGHLIGHTS

This report deals with forest insect and disease problems in the Southeastern Survey Region in 1971.

Feeding damage by the European pine sawfly increased in intensity, as did populations of cedar leaf miners. A needle midge that has caused concern to Christmas tree growers in the Kemptville District continued to damage Scots pine trees. Hardwood defoliators that seriously detracted from the beauty and vigor of forest stands included a tortricid on oak, the orange-striped oakworm and the fall webworm.

Dutch elm disease continued to decimate existing stands of elm. Extensive surveys were carried out to determine whether or not oak wilt and beech bark disease--two diseases of major importance in neighboring states--were active in the Region. Surveys were also carried out to determine the presence of root and butt rots in spruce and fir stands. Intensive surveys were made for Scleroderris canker of pine but none was found.

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INSECTS

An Orange-striped Oakworm, *Anisota findlaysoni* Riotte

Populations of this insect increased markedly in 1971. In the Tweed District, a small infestation near Kingston in 1970 expanded in 1971 to cover an area approximately 5 miles wide along the north shore of Lake Ontario from Kingston to Belleville. Within this area, individual trees and small stands of oak of all ages and size classes were completely defoliated. White [*Quercus alba* L.] and burr oak [*Q. macrocarpa* Michx.] were the preferred hosts, although damage was noted occasionally on red oak [*Q. rubra* L.]. Numerous inquiries were received from the public, mainly from urban locations within the affected area. Little damage was observed elsewhere in the Region.

Pine Spittle Bug, *Aphrophora parallela* (Say)

Generally, high populations occurred in the Region. Moderate to severe damage was noted in pine plantations in the southern part of the Lindsay District and on numerous ornamentals in the northern part. Light mortality of 15- to 20-foot Scots pine [*Pinus sylvestris* L.] occurred in Hamilton and Darlington townships. Chemical control, using fixed wing aircraft, was carried out in a private Christmas tree plantation in Manvers Township and it reduced populations to a low level. Although scattered pockets of heavy infestation persisted, populations generally declined in the Tweed and Kemptville districts.

Cedar Leaf Miners, *Argyresthia aureoargentella* Brower, *A. freyella* Wlshm., *A. thuiella* Pack., *Pulicalvaria thujella* Kft.

High populations of this complex of species persisted throughout most of the Region. Severe browning of eastern white cedar [*Thuja occidentalis* L.] foliage occurred south of a line running between Fenelon Falls in the Lindsay District, eastward to the town of Marmora in the Tweed District, across the Tweed District to the town of Perth in the Kemptville District, then north to just south of Arnprior (see Appendix, Fig. A1). Particularly heavy infestations were observed in the Smiths Falls, Ottawa and Winchester areas in the Kemptville District, near the junction of Highways 2 and 38 in the Tweed District, and in the Peterborough-Lindsay area in the Lindsay District. Scattered pockets of moderate to severe damage but generally lower populations existed outside this defined area. Tree mortality was observed frequently throughout the infested area. The brown discoloration and tree mortality is causing concern among industries who use cedar foliage in the production of wreaths and cedar oil.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

A considerable proportion of the field season was devoted to different types of surveys and sampling related to the determination of the spruce budworm situation in Ontario as a whole. In view of the magnitude and importance of the current outbreak in this province and to avoid a piecemeal presentation, our results will be presented along with those of other survey regions in a single report, as it was in 1970. See appended Information Report O-X-163 by G. M. Howse *et al.*

Needle Midges, *Contarinia* (new species) and *Cecidomyia pinifoliella* (Felt)

Heavy infestations of the needle midge *Contarinia*, formerly called *Cecidomyia* sp., recurred on Scots pine in Oxford, Goulbourn, Mountain, North Elmsley, North Plantagenet and Montague townships in the Kemptville District. Light to moderate infestations were observed, on Scots pine, at many locations in the easternmost seven counties of the Region. At one location in Goulbourn Township, severe damage in 1969 and 1970 was followed by extensive bud failure in the top whorl of many host trees in 1971. In spite of this, all trees examined showed excellent growth in 1970.

Another species, *C. pinifoliella*, caused moderate to light damage to planted and natural white pine [*Pinus strobus* L.] stands in Presquile Park and Northumberland County Forests in the southeastern part of the Lindsay District.

A Tortricid on Oak, *Croesia semipurpurana* Kft.

Pockets of severe defoliation were observed at three locations (see Frontispiece). In Clarke Township in the Lindsay District, approximately 85 acres of red oak suffered moderate to severe defoliation. Severe defoliation was also observed in a 50-acre stand of oak southwest of Dacre in Brougham Township, in the Tweed District. A single small pocket of severe defoliation occurred in Lavant Township in the Kemptville District.

Large numbers of adults were present on oak in the areas surrounding the infestations, indicating a possible spread in 1972. In addition, large numbers of moths were captured in a light trap at White Lake in Olden Township in the Tweed District.

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

Generally, high populations recurred in the Kemptville and Tweed districts. In the Kemptville District, heavy infestations were observed on ornamental walnut trees in the towns of Chesterville, Cornwall and Winchester for the second consecutive year. Scattered walnut and hickory trees suffered moderate defoliation in the Gananoque area. Light mortality occurred near Smiths Falls in an ornamental walnut hedge which was severely defoliated for the fifth consecutive year.

In the Tweed District, heavy infestations recurred on scattered walnut and hickory trees in the Kingston-Napanee area, and along Highway 37 between Tweed and Actinolite. Low populations were noted at numerous other locations in the Region.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

This insect caused severe browning of white [*Betula papyrifera* Marsh.] and grey birch [*B. populifolia* Marsh.] foliage at numerous locations in the five easternmost counties, and adjacent parts of Carleton and Grenville counties in the Kemptville District. In the Tweed District, damage was light to moderate in the southern part of Leeds County, and severe at a single location in Cashel Township.

In the Lindsay District, moderate to severe leaf mining occurred in Glamorgan and Methuen townships, and somewhat lighter damage was noted in Burleigh and Belmont townships. The percentage of leaves with mines is shown in Table 1 (p. 4) for representative locations.

Fall Webworm, *Hyphantria cunea* (Drury)

Populations of this insect increased markedly across the Region.

In the Kemptville District, high populations were recorded on most deciduous hosts along the St. Lawrence River between Brockville and Gananoque, and along Highway 401, between mileage 470 and 480 in the Morrisburg area. Severe defoliation was also observed in woodlots near Fitzroy Harbour in Fitzroy Township.

Severe defoliation occurred in Huntingdon Township and at several locations in Prince Edward County in the Tweed District.

In the Lindsay District, the highest populations occurred north of the town of Bobcaygeon in Verulam Township, but heavy infestations were also noted in Harvey, Fenelon, Clarke, and Brighton townships.

Table 1. Summary of damage by a birch leaf miner in the South-eastern Survey Region in 1970 and 1971. (Based on the examination of 100 leaves selected randomly from three trees at each location)

Location (twp)	Host	Avg DBH of sample trees (in.)	% of leaves mined	
			1970	1971
Lindsay District				
Glamorgan	wB	3	--	62
Burleigh	wB	3	--	53
Methuen	wB	4	--	87
Belmont	wB	4	--	37
Tweed District				
Cashel	wB	3	--	83
Kemptville District				
Oxford	wB	4	100	93
Elizabethtown	wB	5	55	83
East Hawkesbury	wB	4	76	47
Williamsburg	wB	3	93	91

A Birch Leaf Miner, *Messa nana* Klug

Populations remained at a high level in the Region. Medium to heavy infestations were observed on white and European birch [*B. alba* L.] in Cavan, Clarke and Cartwright townships in the southwestern part of the Lindsay District (Table 2), and on white birch in Pittsburg Township in the Tweed District. A new infestation was observed in Bathurst Township in the Kemptville District.

Table 2. Summary of damage by a birch leaf miner in the Southeastern Survey Region in 1971. (Based on the examination of 100 leaves selected randomly from three trees at each location)

Location (twp)	Host	Avg DBH of trees (in.)	% leaves mined in 1971
Lindsay District			
Cavan	European birch	4	92
Clarke	wB	4	39
Cartwright	wB	5	86

Balsam Fir Sawfly, *Neodiprion abietis* complex

Heavy infestations of this sawfly persisted in the northern sections of the Tweed and Kemptville districts. In the Kemptville District, severe defoliation occurred in scattered stands of balsam fir [*Abies balsamea* (L.) Mill.] in Huntley, Fitzroy, Pakenham and March townships. Particularly heavy damage was observed in scattered woodlots along Highway 29 between Arnprior and Pakenham. Moderate defoliation was noted on small clumps and individual trees in Drummond and Bathurst townships.

In the Tweed District, severe damage was evident along Highway 17 in Horton and McNab townships, in woodlots in Admaston Township, and in many clumps and stands of fir in the Madawaska and Bonnechere River watersheds. West of Renfrew, along the Bonnechere River, repeated defoliation by the balsam fir sawfly, in conjunction with heavy spruce budworm infestations has caused notable mortality of balsam fir.

A Jack-pine Sawfly, *Neodiprion pratti paradoxicus* Ross

There was little change in population levels of this sawfly in the eastern part of the Region. Heavy infestations persisted on scattered jack pine [*Pinus banksiana* Lamb.] plantations in Lanark and Ramsay townships, and in single jack pine plantations in Drummond, Goulbourn and Bathurst townships (Table 3). Medium infestations were observed in plantations in Oxford and Clarence townships in the Kemptville District. A few colonies were also noted on pitch pine [*P. rigida* Mill.] in Front of Yonge Township.

In the Tweed District, a heavy infestation occurred on planted trees at White Lake Ranger Station in Olden Township. Light infestations

occurred on planted jack pine in Palmerston Township and on natural jack pine in Abinger Township. Low numbers of colonies were observed on natural and planted trees at numerous other locations across the Region.

Table 3. Summary of jack pine sawfly colony counts in the South-eastern Survey Region in 1970 and 1971. (One hundred trees were examined at each location)

Location (twp)	Avg ht of sample trees (ft)	% trees infested	Avg no. of colonies/ infested tree	
			1970	1971
Kemptville District				
Lanark	20	100	5.9	5.2
Bathurst	20	100	10.0	8.2
Nepean	7	0	0.9	0.0
Bastard	12	50	0.3	0.5

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

Populations increased at numerous locations in the Region, but no significant extension of infestation was observed. In the Kemptville District, ornamentals in Ottawa were again severely defoliated (Fig. 1) but no insects were observed in the Greenbelt plantations surrounding the city. In the Tweed District, an increase in populations occurred in Prince Edward County and around Belleville. In the Lindsay District, populations increased at most locations sampled, but there was only a limited northward extension of the infestation. Higher populations were observed in the eastern part of the District with new, heavy infestations in the Northumberland County Forest (Table 4).

Ground and aerial spraying was carried out in the Orono Nursery and in the Durham and Northumberland County forests. In the Orono Nursery and the Durham County Forest, approximately 300 acres were sprayed by fixed wing aircraft, and in the Northumberland County Forest, control was carried out by using hand sprayers.



Fig. 1. Damage to Scots pine by the European pine sawfly.

Table 4. Summary of European pine sawfly colony counts and degrees of infestation in the Southeastern Survey Region in 1971.
(Counts based on the examination of 100 trees at each location)

Location (twp)	Host	Avg ht of trees (in.)	Avg no. colonies/ infested tree		% trees infested	
			1970	1971	1970	1971
Lindsay District						
Clarke	scP	4	4.3	5.1	--	100
Clarke (Orono nursery)	rP	6	1.0	0.5	--	5
Darlington	scP	6	0.9	1.1	--	89
Cartwright	scP	10	2.2	1.2	--	97
Hamilton	scP	10	--	2.0	--	100
Haldimand	rP	6	1.7	1.1	--	92
Eldon	rP	10	--	0.2	--	13
Verulam	rP	12	--	1.0	--	5

White Pine Weevil, *Pissodes strobi* Peck

Populations were generally high in the Region. Quantitative sampling in the Kemptville District showed that heavy infestations persisted in Augusta, Fitzroy and Dalhousie townships (Table 5). A moderate infestation on Norway spruce [*Picea abies* (L.) Karst.] in Finch Township declined to light intensity. In the Tweed District, heavy infestations recurred on white spruce [*P. glauca* (Moench) Voss] in Bagot Township, and on planted white pine in Faraday Township. In Somerville and Clarke townships in the Lindsay District, white pine plantings 12 to 15 feet high were heavily infested. A new heavy infestation was observed on 6-foot white pine plantings in the Northumberland County Forest. Light infestations were general throughout the remainder of the Region.

Table 5. Summary of damage by the white pine weevil in the Southeastern Survey Region in 1970 and 1971.
(Based on the examination of 100 trees at each location)

Location (twp)	Host	Avg DBH (in.)	% trees infested	
			1970	1971
Kemptville District				
Fitzroy	wP	3	45	42
Dalhousie	wP	4	35	45
Wolford	wP	3	16	39
Augusta	wP	4	--	83
Finch	nS	4	--	7
Tweed District				
McNab	wP	4	40	42
Faraday	wP	2	--	35
Lindsay District				
Glamorgan	wP	3	--	27
Somerville	wP	4	75	62
Clarke	wP	4	9	60
Haldimand	wP	3	--	30
Brighton	wP	3	--	9

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Increased populations of this defoliator were observed at several locations in the Region. In the Tweed District, pockets of heavy infestation occurred on mature tamarack [*Larix laricina* (Du Roi) K. Koch] along Highway 509 in Palmerston Township, along Highway 41 in Kaladar Township, south of Cloyne in Barrie Township, near Ormsby in Limerick Township, and near the Slate Falls Road in Denbigh Township. In the Lindsay District, medium infestations were observed on European larch [*Larix decidua* Mill.] in Clarke Township, and on tamarack in Glamorgan, and Cavendish townships. Generally low populations prevailed elsewhere in the Region.

Smaller European Elm Bark Beetle, *Scolytus multistriatus* (Marsh)

Continuing surveys to determine the spread of this introduced vector of the Dutch elm disease in southeastern Ontario revealed a northward extension of 15 miles in the western part of the Lindsay District. This constitutes the first major northward advance recorded

in the Lindsay District since 1965, but no appreciable change occurred in the eastern boundaries, (see Appendix, Fig. A2). Distribution records for the last decade reveal a fairly consistent spread from west to east along Lake Ontario and the St. Lawrence River, whereas the northward spread has been relatively slow and sporadic. This European species was recorded in Quebec on the north shore of the St. Lawrence River near Montreal in 1969, but so far the results of surveys in the Kemptville District indicate no connection with the distributional pattern in Quebec.

Table 6. Other noteworthy insects

Insect	Host(s)	Remarks
<i>Aceria parapopuli</i> Keifer	bPo	Collected at Ottawa International Airport. New eastern distribution record.
<i>Acleris variana</i> Fern.	He, wS	High populations in Minden and Cartwright twp, Lindsay District. Light infestations at four locations in the Kemptville District.
<i>Altica ulmi</i> Wood	wE, rE	Heavy infestations in S. Elmsley and S. Sherbrook twp, Kemptville District.
<i>Archippus packardianus</i> Fern.	bS	Medium infestation near the village of Dundela, Kemptville District.
<i>Arge pectoralis</i> (Leach)	wB, wiB, yB	Low populations in Kemptville and Tweed districts.
<i>Bucculatrix ainsliella</i> Murt.	rO	Medium infestations in Roxborough Twp, Kemptville District.
<i>Choristoneura pinus pinus</i> Free.	jP, scP	A general increase in population levels across the eastern part of the Region.
<i>Chrysobothris floricola</i> Gory.	rP	Unusual heavy infestation in Oxford Twp, Kemptville District.
<i>Chrysomela scripta</i> F.	cPo	Medium infestation at Sandbanks Park, Tweed District.
<i>Coleophora albiantennaela</i> Wild.	Do	Medium infestation in Olden Twp, Tweed District.

(continued)

Table 6. Other noteworthy insects (continued)

Insect	Host(s)	Remarks
<i>Coleophora betulivora</i> McD.	wB	Heavy at White Lake Ranger Station, Tweed District.
<i>Coleophora elaeagnisella</i> Kft.	<i>Sheperdia canadensis</i>	Heavy at White Lake Ranger Station, Tweed District.
<i>Dioryctria zimmermani</i> Grt.	scP, jP	Heavy infestation on pruned trees near Smiths Falls, Kemptville District.
<i>Epinotia aceriella</i> Clem.	sM	Medium infestation of trumpet skeletonizer in Olden Twp, Tweed District.
<i>Eucosma gloriola</i> Heinr.	rP, scP, wP	Medium infestations general throughout the Region.
<i>Exoteleia pinifoliella</i> (Cham.)	jP	Moderate infestations at two locations in Drummond Twp, Kemptville District.
<i>Hydria prunivorata</i> Ferg.	bCh	Severe defoliation in 85 to 100 acres of scattered trees in Clarke Twp, Lindsay District.
<i>Hylobius congener</i> D. T.	rP	Light mortality in plantation in Hastings County, Tweed District.
<i>Hylobius pales</i> (Hbst.)	scP	Moderate to heavy in Christmas tree plantations in the Region.
<i>Hylobius radicis</i> Buch.	scP, rP	Heavy infestation in plantation in Kaladar Twp, Tweed District.
<i>Lithocolletis hamadryadella</i> Clem.	bO	Heavy infestations persisted in Tweed District. Declined elsewhere.
<i>Macroductylus subspinosus</i> F.	Shrubs	Severe defoliation of roadside hosts in Minden and Lutterworth twps, Lindsay twp.
<i>Malacosoma americanum</i> F.	ecCh	Very high populations throughout the Region.

(continued)

Table 6. Other noteworthy insects (continued)

Insect	Host(s)	Remarks
<i>Malacosoma disstria</i> Hbn.	tA	The infestation in Mountain Twp, Kemptville District collapsed in 1971. Single larvae observed elsewhere.
<i>Megacyllene robiniae</i> (Forst.)	Clammy locust	Causing moderate mortality in Pittsburg Twp, Kemptville District.
<i>Neodiprion lecontei</i> (Fitch)	rP, scP	Light infestations in plantations in Oxford Twp, Kemptville District, Hindon Twp, Lindsay District. Generally low populations elsewhere in the Region.
<i>Oligonychus ununguis</i> Jac.	nS	Medium infestation at Presquile Park, Lindsay District.
<i>Pikonema alaskensis</i> (Roh.)	wS	High populations throughout the Region.
<i>Pissodes approximatus</i> Hopk.	rP	Low populations in red pine plantings in Peterborough County, Lindsay District.
<i>Pristiphora geniculata</i> (Htg.)	Mo	Common on ornamentals throughout the Region.
<i>Pristiphora lena</i> Kinc.	wS	Several colonies on planted trees in Cartwright Twp, Lindsay District.
<i>Psilocorsis quercicella</i> Clem.	rO	Heavy in Horton Twp, Tweed District. Light in Manvers Twp, Lindsay District.
<i>Pyrrhalta tuberculata</i> Say	W	Small pocket of heavy infestation in Barrie Twp, Tweed District.
<i>Rhyacionia adana</i> Heinr.	rP	Light infestation in new plantings in Chandos Twp, Lindsay District.
<i>Taniva albolineana</i> Kft.	bS	Heavy on ornamentals in the village of Maitland, Kemptville District.

(continued)

Table 6. Other noteworthy insects (concluded)

Insect	Host(s)	Remarks
<i>Tetralopha robustella</i> Zell.	pP	Medium infestation on scattered reproduction in Front of Yonge Twp, Kemptville District.
<i>Vespanima pini</i> Kell.	wP, wS	High populations on pruned shade trees in Chandos Twp, Lindsay District.
<i>Xylococculus betulae</i> Perg.	Be	Scale insects common throughout the Region.

TREE DISEASES

Abiotic Damage

In 1970, unusual weather conditions caused severe reddening of foliage, and extensive bud failure in scattered stands of red spruce [*Picea rubens* Sarg.], over an area of approximately 100,000 acres in the northern part of Lindsay and Tweed districts. Incidence ranged from 85 to 100% and tree mortality was as high as 5%.

In 1971, this condition virtually disappeared and most host trees had made an excellent recovery. The red foliage condition persisted at a low level in Eyre Township, Lindsay District, but very little mortality occurred.

The discoloration of pine trees caused by winter drying was lighter throughout the Region; but heavy discoloration was observed in plantations bordering the St. Lawrence Seaway in the vicinity of Upper Canada Village, and in Finch Township in the Kemptville District. In the former, white pine was affected, in the latter all species of pine were injured. Very light damage occurred in Faraday Township in the Tweed District.

Abnormally heavy snowfall throughout most of the Region caused heavy branch mortality and in some cases tree deformity in numerous white, red [*Pinus resinosa* Ait.] and Scots pine plantations. In Burleigh Township, in the Lindsay District, all trees examined had broken branches in the upper whorl and some leader mortality was observed.

Rodent damage was heavy in plantations on Wolfe Island, Howe Island and near Napanee in the Tweed District. Light damage was observed in the Orono Nursery in the Lindsay District. Rodent damage was not rated according to standard evaluation procedures.

Dwarf Mistletoe, *Arceuthobium pusillum* Pk.

This organism has not been reported in recent years in the Region. Scattered white spruce at Outlet Park, Athol Township in the Tweed District, were heavily infected and light mortality was observed. In a black spruce [*Picea mariana* (Mill.) B.S.P.] stand in Cardiff Township in the Lindsay District, the incidence was 75% but level of infection and mortality was light. Single, infected white spruce trees were observed along Highway 28 in Burleigh Township (Fig. 2).



Fig. 2. Witches'-broom caused by dwarf mistletoe, *Arceuthobium pusillum* Pk.

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

This disease caused light mortality in a Scots pine plantation in Manvers Township in the Lindsay District. Numerous semimature trees were infected in a plantation of silver maple [*Acer saccharinum* L.] in Sophiasburg Township, in the Tweed District. In the Kemptville District moderate to heavy infections occurred on mature beech trees in Lavant and Lancaster townships.

Oak Wilt, *Ceratocystis fagacearum* (Bretz) Hunt

This fungus has been a major pathogen of oak over much of the northeastern United States in recent years. In 1971, extensive surveys were carried out across the Region to determine whether or not the wilt was present but none was found.

Both red and white oak trees may be affected, although red oak is more susceptible. Symptoms first appear in early summer and include drying and browning around the edge of the leaves followed by progressive bronzing from the edge of the leaf toward the midrib. The affected leaves are then shed, and often a brown discoloration is found in the outer ring of the sapwood. In the case of red oak, the entire tree may lose its leaves and die in 1 year, whereas white oak will shed leaves and die back from the top, over a period of years. Any suspected areas found should be reported to the authors for checking.

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

The incidence of infection and mortality caused by the Dutch elm disease increased in the Region in 1971. Particularly high levels of incidence were observed in Carden, Minden, Dalton, Douro and Haldimand townships in the Lindsay District; in Hallowell, South Fredricksburg and Madoc townships in the Tweed District, and in the Prescott-Kemptville-Morrisburg area in the Kemptville District (Table 7). Individual healthy trees in five areas of high incidence were marked in 1970, to determine if some elm trees were disease resistant. Three trees became infected in 1971, and one marked tree in Haldimand Township was killed.

Table 7. Summary of Dutch elm disease surveys carried out at 13 locations in the Southeastern Survey Region in 1971

Location (twp)	No. of trees examined	% of trees	
		Healthy	Diseased or dead
Lindsay District			
Minden	50	20	80
Dalton	100	20	80
Carden	100	9	91
Fenelon	50	46	54
Douro	100	25	75
Belmont	50	82	18
Darlington	100	38	62
Haldimand	100	21	79
Tweed District			
Madoc	100	51	49
Hallowell	100	44	56
South Fredricksburg	100	38	62
Kemptville District			
North Elmsley	100	89	11
Edwardsburg	100	30	70
East Hawkesbury	100	91	9

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

This needle rust was observed throughout most of the Region in varying degrees of intensity. Moderate levels of infection occurred in a 15-acre red pine plantation in Burleigh Township, in the Lindsay District, and in a 40-acre red pine plantation in Nepean Township, in the Kemptville District. Trace levels of infection were observed on jack pine in Bathurst Township, and at numerous other locations in the Region.

Beech Bark Disease, *Nectria coccinea* var. *faginata* Lohm., Wats & Ayers

Extensive surveys were carried out in the Region to determine whether or not this disease was present and if the scale *Cryptococcus fagi* (Baer.) usually associated with the disease occurred here. Although neither the disease nor the scale was located, two other scales of beech were found, namely *Xylococcus betulae* Perg. and

Peliococcus serratus Ferris. Stands of beech examined were selected randomly and a standard evaluation procedure as currently being used by the Forest Insect and Disease Survey was applied at each of nine locations.

Root Rots of Spruce and Fir

Forest pathology surveys in 1971 placed major emphasis on determining the distribution of various root rots affecting spruce and fir in Ontario. Accordingly a total of 14 mature and semimature spruce and fir stands were examined in the Region. The root systems of five suspect trees were uncovered at each location and when root rot was found, samples of diseased tissue were forwarded to the laboratory for culture and identification. If symptoms of root rot were observed, a standard evaluation was carried out in the stand by using the sample trees as criteria. Major root rotting fungi recovered from these surveys included *Polyporus tomentosus* Fr., *P. schweinitzii* Fr., *Armillaria mellea* (Vahl ex Fr.) Kummer, and *Coniophora puteana* (Schum. ex Fr.) Karst. Distribution records are summarized in Table 8.

Table 8. Summary of locations where root rots of spruce and fir were found in the Region in 1971

Location (twp)	Host	Root rots recovered
Lindsay District		
Glamorgan	bF	<i>Armillaria mellea</i>
Tweed District		
Palmerston	bS	<i>Polyporus tomentosus</i>
Admaston	wS	<i>Coniophora puteana</i>
Denbigh	wS	<i>P. tomentosus</i>
Abinger	wS	<i>P. tomentosus</i>
Griffith	bF	<i>C. puteana</i>
Kemptville District		
Rear of Yonge and Escott	wS	<i>P. schweinitzii</i>

Scleroderris Canker, *Scleroderris lagerbergii* Gremmen

Intensive examination of seed beds and of pine trees bordering Provincial Nurseries was carried out at Kemptville and Orono to determine the presence of this disease-causing organism. *S. lagerbergii* was not found.

Table 9. Other noteworthy diseases

Organism	Host(s)	Remarks
<i>Cenangium abietis</i> (Pers.) Rehm.	jP, rP	Common on dead lower branches of plantation trees throughout the Region.
<i>Cronartium comandrae</i> Pk.	jP	Collected in Abinger Twp, Tweed District. First record in the Tweed District.
<i>Cytospora pini</i> Desm.	wP	Causing light mortality to planted stock in Wolford Twp, Kemptville District.
<i>Davisomycella ampla</i> (Davis) Darker	jP	Heavy on a few trees in Admaston Twp, Tweed District. Trace to light infections in Bathurst Twp, Kemptville District and Methuen Twp, Lindsay District.
<i>Dothiorella quercina</i> (Cke. & Ell.) Sacc.	rO	Found commonly causing cankers in Kaladar Twp, Tweed District.
<i>Fomes annosus</i> (Fr.) Karst.	rP, wP, scP, jP	Little change in status of this disease in the Region.
<i>Fomes igniarius</i> (L. ex Fr.) Kickx	rO	Common on coppice and over-mature oak at one location in Griffith Twp, Tweed District. General throughout the Region.
<i>Fomes pinicola</i> (Sw. ex Fr.) Cke.	wS	Associated with root rot samples in Region.
<i>Gymnosporangium clavipes</i> (Cke. & Pk.) Cke. & Pk.	Amelanchier eJ	Common at several locations in Tweed District.
<i>Hypoxyylon cohaerens</i> Pers. ex Fr.	Be	Cankers observed on numerous trees in the Region.

(continued)

Table 9. Other noteworthy diseases (concluded)

Organism	Host(s)	Remarks
<i>Libertella faginea</i> Desm.	Be	Some cankers observed near Cornwall, Kemptville District.
<i>Melampsora abietis-canadensis</i> C. A. Ludwig ex Arth.	He, 1A	Light infections in S. Sherbrooke and S. Burgess twp, Kemptville District.
<i>Puccinia graminis</i> Pers.	Barberry	Medium infection in Wolford Twp, Kemptville District. First herbarium record.
<i>Puccinia</i> sp.	<i>Carex</i> sp.	Heavy infection in a red pine plantation in Burleigh Twp, Lindsay District.
<i>Valsa cincta</i> Fr.	Mo	Causing extensive damage to ornamentals in Ottawa in conjunction with bacterial fire blight, <i>Erwinia amylovora</i> (Burr.) Winsl.
<i>Verticillium</i> sp.	sM, Be	Found damaging ornamental maple in Smiths Falls, and collected from beech near Cornwall in the Kemptville District.

APPENDIX

SOUTHEASTERN SURVEY REGION

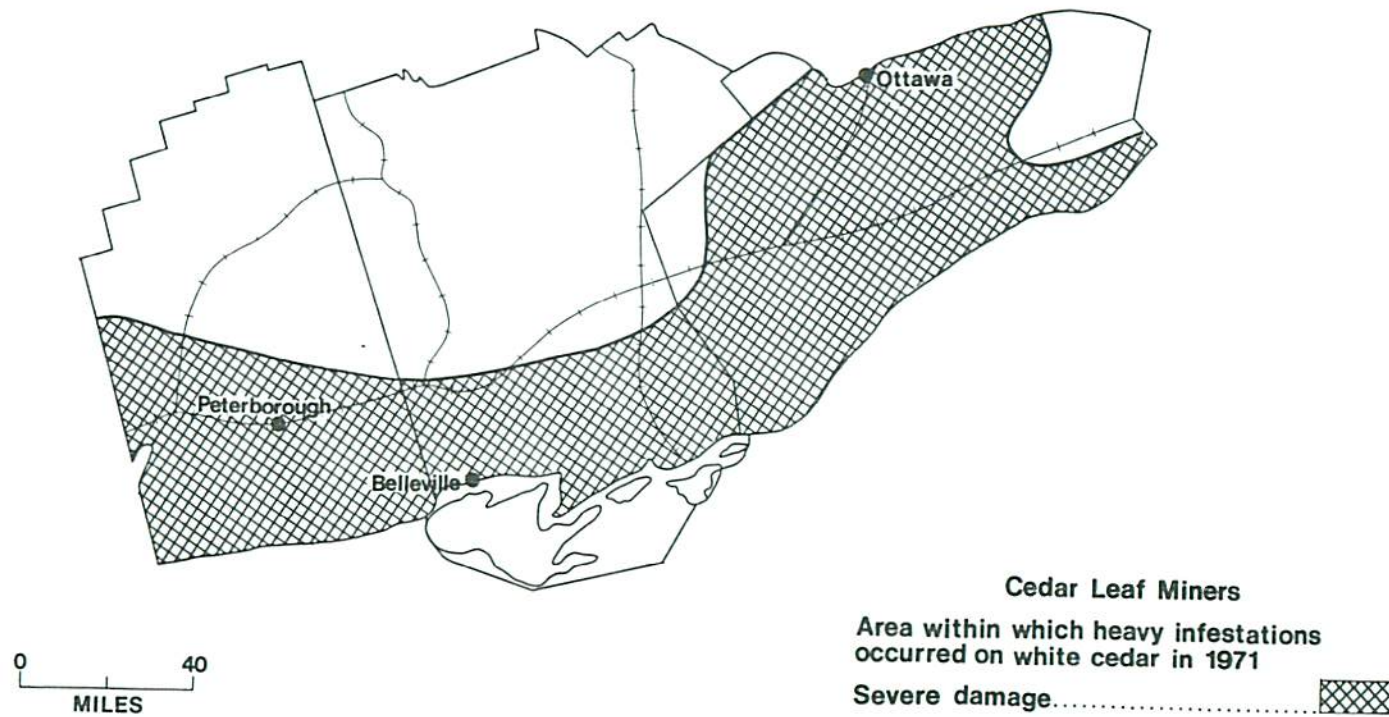


FIG. A1

SOUTHEASTERN SURVEY REGION

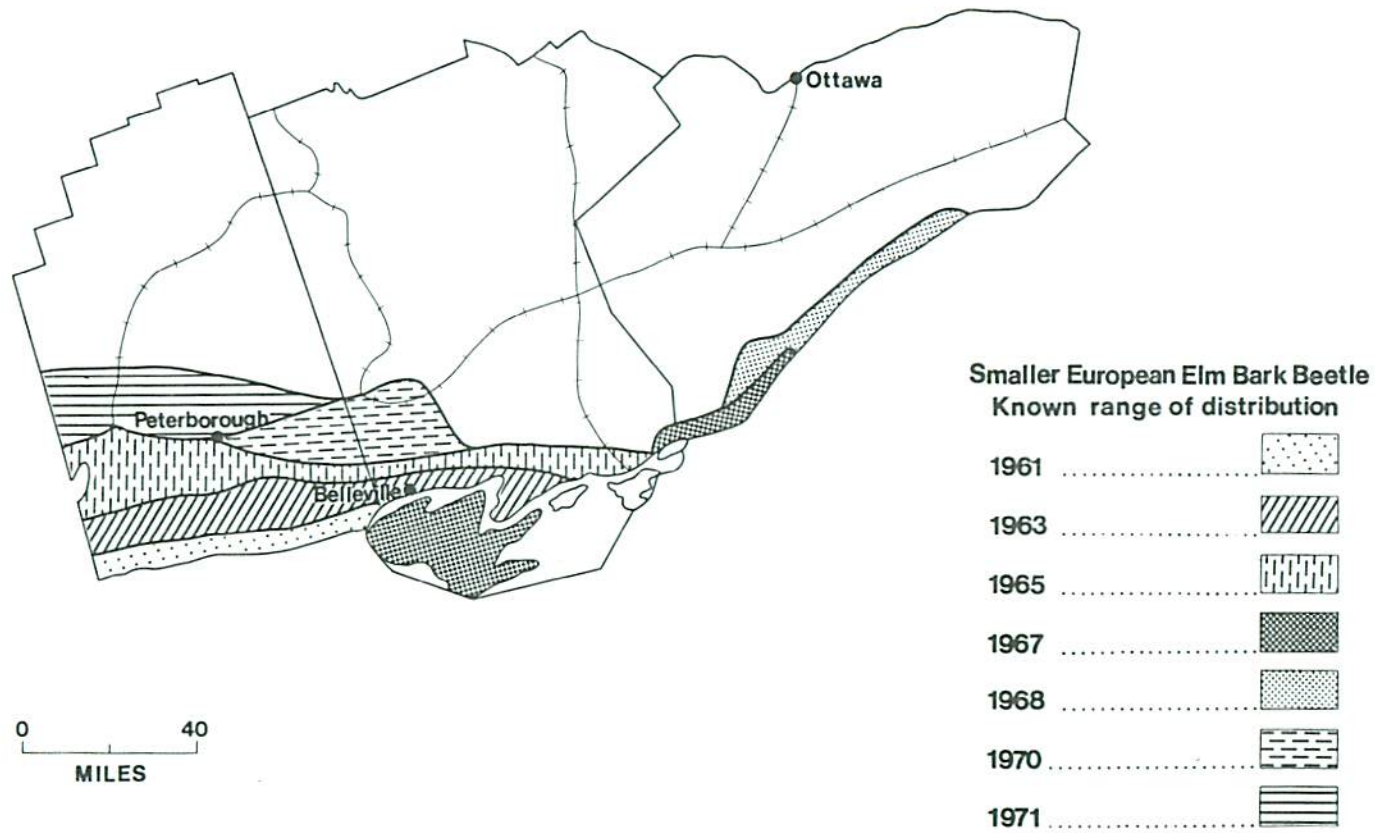


FIG. A2