FOREST INSECT AND DISEASE SURVEYS IN THE SOUTHEASTERN SURVEY REGION, 1973

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SAULT STE. MARIE, ONTARIO

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Frontispiece. Semimature Lombardy poplar trees infected with *Dothichiza populea* Sacc. & Briard.

SURVEY HIGHLIGHTS

The following report deals with insect and disease conditions causing economic losses in forests and plantations in the Southeastern Survey Region in 1973.

Spruce budworm again caused severe defoliation to spruce and balsam fir stands over a wide area and balsam fir mortality increased at a few locations in the northern part of the Survey Region (see Information Report O-X-193). Populations of the cedar leafminer complex declined slightly, but mortality was apparent at several locations. There was a decline in populations of the European pine sawfly at several points, but infestation moved out of the city of Ottawa and into trees in the Green Belt. New infestations of the oak leaftier were observed, and high populations of the fall webworm persisted in the southern part of the Survey Region. Adults and larvae of the smaller European elm bark beetle were found 50 miles north of the previously known distribution limit. A small pocket of severe defoliation by the forest tent caterpillar was observed in the central part of the Tweed District.

A condition referred to in this report as top-killing and branch mortality of hard pine caused concern to Christmas tree growers throughout the western part of the Survey Region. Concern was expressed about a tip blight of juniper which caused severe browning in Prince Edward County, and Dutch elm disease continued to decimate white elm throughout the area.

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INSECTS

An Orangestriped Oakworm, *Anisota finlaysoni* Riotte

Population levels of this insect decreased in 1973. Moderate-to-severe defoliation was observed on scattered pockets of bur oak (*Quercus macrocarpa* Michx.) along Highway 401 in Richmond, Ernestown and Kingston townships, Napanee District and on the western portion of Howe Island. Light defoliation occurred in the northern part of the Napanee District. Low population levels were observed in Front of Leeds and Lansdowne townships near the town of Gananoque in the Brockville District.

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

There was a reduction in populations of this leafminer complex at a few locations, but moderate-to-heavy defoliation persisted throughout the remainder of the infested area (see Appendix, Fig. A1). The greatest reduction occurred along Highway 43 between Merrickville and Kemptville in Oxford Township, Ottawa District, where the infestation declined to light. Medium-to-high populations persisted in Lindsay and Bancroft districts in the west and in Lanark and Tweed districts in the east. Pockets of very light defoliation were observed among the areas of moderate-to-severe defoliation. Medium populations caused browning of eastern white cedar (*Thuja occidentalis* L.) hedges in the Ontario Ministry of Natural Resources Tree Nursery at Orono. As in previous years *A. thuiella* was the most abundant species observed. Samples submitted from Asphodel and Burleigh townships in Lindsay and Bancroft districts contained numerous parasitized larvae and pupae.

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-193). This report provides complete description and analysis of developments in the spruce budworm situation in Ontario in 1973 and gives infestation forecasts for the Province for 1974.

Larch Casebearer, *Coleophora laricella* Hbn.

Population increases occurred throughout the Survey Region and severe browning of foliage on native larch (*Larix laricina* [Du Roi] K. Koch) was observed on open-grown trees in Presqu'ile Park, Napanee District. Moderate damage was noted in Mariposa Township, Lindsay

District, in Oxford Township, Ottawa District, and in East Hawkesbury and Lancaster townships, Cornwall District. Elsewhere populations were low.

Oak Leaftier, *Croesia semipurpurana* (Kft.)

There was a general increase in population levels of this insect in 1973. The infestation on red oak (*Quercus rubra* L.) in Clarke and Manvers townships, Lindsay District increased and covered approximately 200 acres. The 50-acre infestation near Jack Lake in Bancroft District remained unchanged but a new heavy infestation was observed south of the Trent Canal in Seymour Township, Napanee District. A moderate infestation occurred in Olden Township, Tweed District, and in the Ottawa Green Belt in Nepean Township. Light defoliation occurred at numerous other locations in the Survey Region. A total of 1,604 adults were collected in a light trap in Olden Township between June 22 and July 22.

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

There was a minor increase in population levels in the eastern part of the Survey Region. Severe defoliation persisted on a black walnut (*Juglans nigra* L.) hedge along Highway 43 in Montague Township, Lanark District, where additional mortality was recorded. Varying degrees of defoliation were reported on scattered individuals and clumps of walnut or hickory (*Carya*) in Cornwall, Napanee, Brockville and Tweed districts.

Birch Leafminer, *Fenusa pusilla* (Lep.)

Increasing populations caused severe browning of white birch (*Betula papyrifera* Marsh.) and wire birch (*B. populifolia* Marsh.) in two counties in the eastern part of the Survey Region and in Lindsay District in the western part (Table 1). Severe defoliation of several white birch trees caused by first-generation larvae occurred near the town of Bancroft. Light-to-moderate defoliation was observed in Minden Township, Minden District, in Tudor Township, Tweed District, and in Stormont and Dundas counties. Low populations were observed on scattered stands of birch throughout the remainder of the area. In Clarke Township this insect was found feeding along with *Messa nana* Klug, another leafminer on birch.

Table 1. Summary of damage by *Fenusa pusilla* on white and wire birch in the Southeastern Survey Region in 1973 (based on the examination of 100 leaves selected randomly from three trees at each location)

Location (Twp)	Host	Avg DBH (in.)	Leaves mined (%) 1973
Brockville District			
Elizabethtown	wB	4	43
Cornwall District			
East Hawkesbury	wiB	4	26
Lancaster	wiB	3	77
Williamsburg	wiB	3	62
Lindsay District			
Clarke	wB	5	100
Mariposa	wB	5	63
Minden District			
Minden	wB	5	31
Ottawa District			
Oxford	wB	3	35
Tweed District			
Tudor	wB	5	13

Fall Webworm, *Hyphantria cunea* Dru.

Population levels of this webworm on deciduous hosts increased considerably in an area between Lake Ontario and Highway 7. Severe damage was observed at scattered locations, especially on black ash (*Fraxinus nigra* Marsh.) in Dundas County, Cornwall District and along Highway 2 between Brighton in Napanee District and Port Hope in Lindsay District (Fig. 1). High populations were found in Huntley and Goulbourn townships, Ottawa District, around Mississippi Lake, Lanark District, in Burleigh Township, Bancroft District, and in Verulam Township, Lindsay District. Low populations occurred in the northern part of the Region.

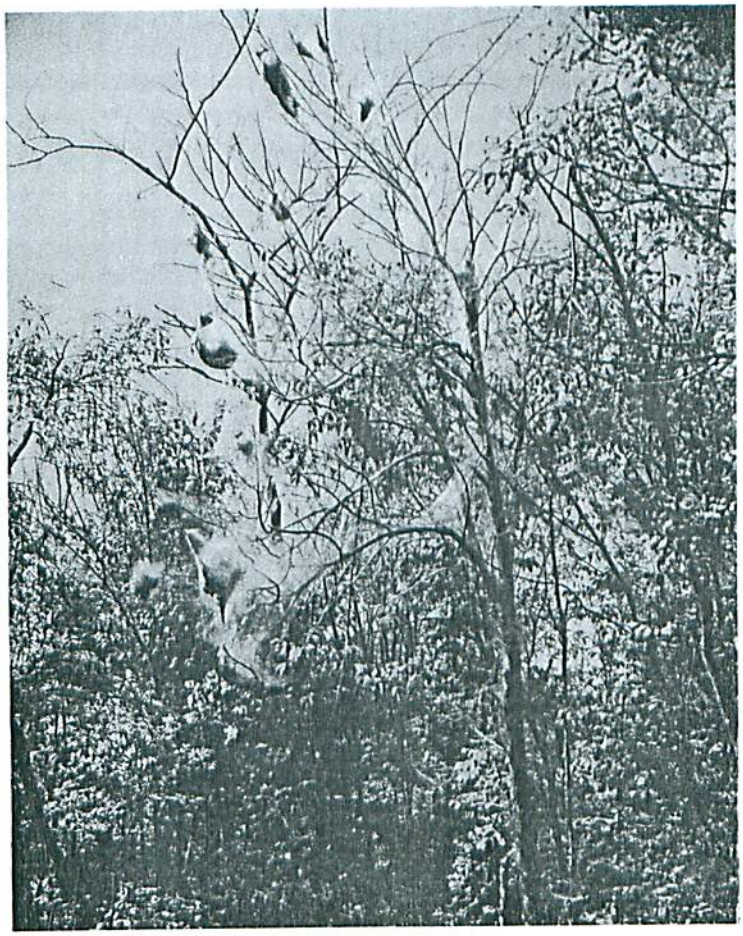


Figure 1. Defoliation and webs on black ash caused by fall webworm.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Population levels of this insect increased in 1973. A 3-acre pocket of severe defoliation was found on trembling aspen (*Populus tremuloides* Michx.) just south of the village of Northbrook on Highway 41 in Kaladar Township, Tweed District. Although no defoliation was observed elsewhere, individual larvae were observed more frequently in Minden Township, Minden District, in Ops Township, Lindsay District, and in Olden and Oso townships, Tweed District. A total of 344 adults were collected in a light trap in Olden Township.

A Birch Leafminer, *Messa nana* Klug

Little change in population levels of this miner occurred in the Region. Severe browning of foliage recurred in the Ganaraska-Durham County Forest for the second consecutive year (Table 2). Moderate damage was observed in Haldimand Township, Lindsay District and in Oxford Township, Ottawa District. Light infestations were noted in Cartwright and Otonabee townships, Lindsay District, and in Kingston Township, Tweed District.

Table 2. Summary of damage by *Messa nana* in the Lindsay District in 1972 and 1973 (based on the examination of 100 leaves selected randomly from three trees at each location)

Location (Twp)	Host	Avg DBH (in.)	Leaves mined (%)	
			1972	1973
Lindsay District				
Clarke	wB	4	100	100
Cartwright	wB	3	78	42
Haldimand	wB	3	100	70
Otonabee	wB	4	93	60

Balsam Fir Sawfly, *Neodiprion abietis* complex

This sawfly was responsible for severe defoliation on scattered clumps of balsam fir (*Abies balsamea* [L.] Mill.) in Horton and McNab townships and, in conjunction with heavy spruce budworm, for similar damage along the Bonnechère River, Pembroke District. Moderate damage occurred on scattered stands of balsam fir in Fitzroy, Huntley, and March townships, Ottawa District and in Pakenham Township, Lanark District (Fig. 2).

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

A further increase in populations of this insect occurred in 1973. Moderate infestations were observed in planted red pine (*Pinus resinosa* Ait.) in Verulam Township, Lindsay District, in Somerville and Glamorgan townships, Minden District, in Oso and Kennebec townships, Tweed District, and in Wolford Township, Brockville District (see Appendix, Fig. A2). Areas of light defoliation were noted at numerous other locations (Table 3). Some tree mortality was observed in Somerville, Oso and Kennebec townships.

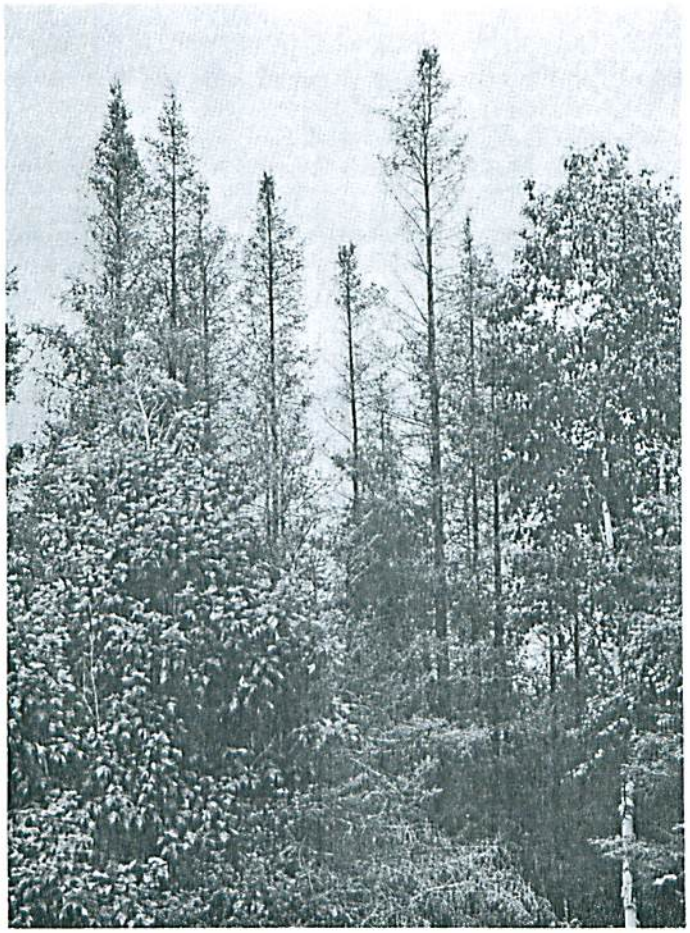


Figure 2. Damage to a balsam fir stand caused by balsam fir sawfly.

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl

There was a slight increase in population levels of this insect in 1973. Moderate-to-severe defoliation occurred on scattered red pine in Lanark Township, Lanark District. A light infestation was observed along Highway 41 in Anglesea Township, Tweed District (Table 4).

Table 3. Summary of redheaded pine sawfly colony counts made on red pine in five districts in 1973 (based on the examination of 100 trees at each location)

Location (Twp)	Avg DBH (in.)	No. of colonies
Minden District		
Glamorgan	1	51
Laxton	2	20
Somerville	1	103
Somerville	2	13
Lindsay District		
Bexley	1	20
Verulam	1	120
Bancroft District		
Faraday	1	12
Lanark District		
Bathurst	1	13
Tweed District		
Hinchinbrooke	1	18
Hungerford	1	21
Kennebec	1	120
Marmora	1	27
Olden	2	82
Oso	1	57

Table 4. Summary of redpine sawfly colony counts in two districts in 1973 (based on the examination of 50 red pine trees at each location)

Location (Twp)	Avg DBH (in.)	No. of colonies
Lanark District		
Lanark	4	72
Tweed District		
Anglesea	4	5

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

Population levels of this sawfly remained high, and severe defoliation occurred in a jack pine (*Pinus banksiana* Lamb.) plantation in Thurlow and Ameliasburg townships, Napanee District. In the former location 371 colonies were observed on one hundred 15-foot trees. Moderate-to-severe damage was observed in Lanark Township, Lanark District, and in Abinger Township, Tweed District.

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

This sawfly increased in intensity at some locations and decreased at others (Table 5). Population increases occurred on red pine in Emily Township, Lindsay District, and on Scots pine (*Pinus sylvestris* L.) in Hungerford Township, Tweed District. Larvae were observed for the first time in the Ottawa Green Belt in Nepean and Gloucester townships, Ottawa District. Unexplained declines were observed in Clarke, Cartwright, and Darlington townships, Lindsay District. High populations developed normally in 1972, but virtually disappeared in the midlarval instar, causing only light defoliation.

Control operations by the Ontario Ministry of Natural Resources and private plantation owners, using a variety of pesticides and a polyhedral virus, have helped to control this insect in many plantations.

Table 5. Summary of European pine sawfly colony counts in four districts in 1972 and 1973 (based on the examination of 100 trees at each location)

Location (Twp)	Host	Avg height (ft)	Trees infested		Avg no. colonies/ infested tree	
			1972	1973	1972	1973
Lindsay District						
Clarke	scP	7	100	20	3.1	.83
Cartwright	scP	7	80	37	3.9	.93
Darlington	scP	6	90	51	2.3	.85
Emily	rP	4	-	19	-	1.00
Verulam	rP	6	78	10	1.0	1.00
Tweed District						
Hungerford	scP	8	-	10	-	.91
Napanee District						
Tyendinaga	scP	10	18	2	1.0	1.00
Ottawa District						
Gloucester	scP	10	-	16	-	.73

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Little change in populations of this defoliator was observed. Severe defoliation of planted white spruce (*Picea glauca* [Moench] Voss) trees recurred in Methuen Township, Bancroft District, and at Balsam Lake Park in Bexley Township, Lindsay District. Light-to-moderate defoliation of individual trees was observed at numerous other locations in the Region.

White Pine Weevil, *Pissodes strobi* (Peck)

Generally, populations of this weevil remained high on white pine (*Pinus strobus* L.) in 1973. Particularly heavy damage occurred in Carlow and Faraday townships, Bancroft District, in Fitzroy Township, Ottawa District, in Dalhousie Township, Lanark District, and in McNab Township, Pembroke District (Table 6). Moderate-to-high populations were also observed in Lindsay, Brockville, Napanee, and Minden districts.

Smaller European Elm Bark Beetle, *Scolytus multistriatus* Marsh.

The recovery of larvae and adults of this insect on white elm (*Ulmus americana* L.) in Denbigh Township, Tweed District, constitutes a distribution extension of approximately 50 miles north of the previously known infestation (see Appendix, Fig. A3). Since 1965 infestations of this beetle have extended mainly to the east with very little movement to the north. In 1971 a 15-mile northward extension occurred in Fenelon Township, Lindsay District.

Satin Moth, *Stilpnotia salicis* Linn.

There was little change in the population levels of this defoliator. Once again severe defoliation of single ornamental silver poplars (*Populus alba* L.) occurred in Cornwall and Lancaster townships, Cornwall District. Very light defoliation was found in a new location in the northern part of Lancaster Township. *Stilpnotia salicis* was not found elsewhere in the area.

Table 6. Summary of damage by the white pine weevil in eight districts in 1973 (based on the examination of 100 trees at each location)

Location (Twp)	Host	Avg DBH (in.)	Trees infested (%)
Bancroft District			
Carlow	wP	1	13
Carlow	wP	1	67
Chandos	wP	2	14
Faraday	wP	3	76
Minden District			
Carden	wP	2	9
Lindsay District			
Clarke	wP	2	8
Haldimand	wP	2	27
Pembroke District			
McNab	wP	5	30
Gratton	jP	3	20
Brockville District			
Wolford	wP	4	22
Napanee District			
Pittsburg	wP	4	19
Lanark District			
Bathurst	wP	3	22
Dalhousie	wP	4	34
Ottawa District			
Fitzroy	wP	4	44

Table 7. Other forest insects

Insect	Host(s)	Remarks
Acleris variana Fern.	wS, eH	Numerous larvae were collected on beating samples from Kennebec and Olden twp, Tweed District, South Sherbrooke Twp, Lanark District, and Cartwright Twp, Lindsay District.

(continued)

Table 7. Other forest insects (continued)

Insect	Host(s)	Remarks
Aphrophora parallela (Say)	scP	High population levels recurred in Tyendinaga Twp, Napanee District, Gloucester Twp, Ottawa District, and Kaladar Twp, Tweed District. Populations declined elsewhere.
Cecidomyia pinifoliae (Felt)	wP	continued high populations in Presqu'ile Park, Lindsay District
Cecidomyia reeksi Vock.	pP	low numbers on Stovin Island, Elizabethtown Twp, Brockville District
Choristoneura pinus pinus Free.	jP	light infestation on planted trees in the Kemptville Nursery
Cone Borers on Red Pine	rP	Severe damage occurred in Clarke and Haldimand twp, Lindsay District where 70% and 75% of the cones, respectively, were infested.
Conophthorus coniperda (Sz.)	wP	moderate damage in Outlet Park, Napanee District, and Bathurst Twp, Lanark District
Corythucha ulmi O. & D.	wE	pockets of severe browning in the Tweed and Napanee districts south of Highway 7; light-to-moderate damage throughout Lanark and Ottawa districts
Dendroctonus simplex Lec.	tL	mortality of nine overmature trees in Galway Twp, Lindsay District
Diprion hercyniae (Htg.)	wS, nS	small numbers in Beckwith and Drummond twp, Lanark District, and West Hawkesbury Twp, Cornwall District

(continued)

Table 7. Other forest insects (continued)

Insect	Host(s)	Remarks
Diprion similis (Htg.)	rP	numerous larvae on beating tray samples in small planted stock in Balsam Lake Park, Lindsay District
Elaphidionoides parallelus (Newm.)	rO	moderate damage to roadside trees in Manvers Twp, Lindsay District
Fenusa ulmi Sund.	wE	severe defoliation of understory trees in Harvey Twp, Lindsay District, and Kingston Twp, Napanee District
Hydria prunivorata Ferg.	bCh	Population levels declined to moderate, but the extent of the infestation remained the same in Clarke and Manvers twp, Lindsay District.
Hylobius pales (Hbst.)	scP	continued high populations in selective cut plantations in Clarke, Manvers and Haldimand twp, Lindsay District
Lecanium corni Bouche	wAs	moderate damage to roadside trees in Kingston Twp, Napanee District, and Admaston Twp, Pembroke District
Malacosoma americanum F.	ecCh	High populations recurred on roadside shrubs throughout the Region, and 652 adults were collected in a light trap in Olden Twp, Tweed District.
Myeloborus ramiperda Swaine	wP	one acre heavily infested in Bedford Twp, Napanee District
Nematus ventralis Say	W	six colonies observed on an ornamental tree in the town of Tweed

(continued)

Table 7. Other forest insects (continued)

Insect	Host(s)	Remarks
Neodiprion pinetum (Nort.)	wP	single infested trees observed in Eyre Twp, Minden District, and in Clyde Twp, Algonquin Park District
Nymphalis antiopa L.	wE	several small trees defoliated in Minden and Chandos twp, Lindsay District, and in East Hawkesbury Twp, Cornwall District
Oligonychus ununquis Jac.	eC, nS	low populations in Presqu'ile Park and on a cedar hedge in the Orono Nursery, Lindsay District
Pamphiliidae	rP	numerous nests observed in Somerville and Cavan twp, Lindsay District and in Hungerford Twp, Tweed District
Petrova albicapitana (Busck.)	jP	high populations in Presqu'ile Park, Napanee District
Phenacaspis pinifoliae (Fitch)	bF	high populations in Harvey Twp, Minden District
Pineus strobi (Htg.)	wP	one tree severely infested in Mariposa Twp, Lindsay District
Pristiphora erichsonii (Htg.)	tL	general population decline
Salebriaria engeli Dyar	rO	Populations of this leaf roller were high in Brighton Twp, Napanee District, Hope Twp, Lindsay District, and Stanhope Twp, Minden District.
Sericothrips tiliae Hood	Ba	moderate defoliation in Harvey Twp, Lindsay and Minden districts

(continued)

Table 7. Other forest insects (concluded)

Insect	Host(s)	Remarks
Xyloterinus politus (Say)	rM	found in stumps during survey for *Corthylus columbianus* Hopk. in the Brockville District
Zeiraphera fortunana Kft.	wS	high populations in Carlow Twp, Bancroft District

TREE DISEASES

Note: In this section of the report, incidence refers to the proportion of trees infected and level of infection refers to the disease severity.

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Pk.

There was a slight increase in the occurrence of this disease in the Region. A high level of infection persisted on white spruce in Outlet Park, Napanee District, with an increase in mortality from 2.5% in 1971 to 17% in 1973. High incidence, with a light level of infection and 2% current mortality, was observed on black spruce (*Picea mariana* [Mill.] B.S.P.) in Cardiff Township, Bancroft District.

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

Mortality increased in scattered pockets of 6- to 8-foot red pine in a plantation in Clarke Township and a moderate infection centre was observed in Hope Township, both in Lindsay District. Several semi-mature Scots pine trees were infected in Larose Forest, Cornwall District (Table 8). Elsewhere in the Region single infected trees were observed.

Table 8. Summary of *Armillaria mellea* surveys carried out at four locations in the Southeastern Survey Region in 1972 and 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Host	Incidence 1972	Incidence 1973	Level of infection 1972	Level of infection 1973
Cornwall District						
Clarence	70	scP	--	light	--	light
Lanark District						
Bathurst	15	scP	--	nil	--	nil
Lindsay District						
Clarke	7	rP	high	high	moderate	high
Hope	5	rP	--	moderate	--	moderate

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

There was a marked increase in the incidence and level of infection in 1973. High levels of infection were observed in the central and eastern parts of the Region and in particular around the City of Peterborough and in Prince Edward County, Napanee District. A survey to determine the rate of mortality of elm was carried out at 14 locations including two urban areas (Table 9).

Table 9. Summary of Dutch elm disease surveys in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Healthy trees (%)	Diseased trees (%)
Cornwall District		
Lancaster	92	8
Lanark District		
Lanark	77	23
North Sherbrooke	70	30
Town of Smiths Falls	48	52
Lindsay District		
Belmont	43	57
Minden District		
Carden	50	50
Monmouth	45	55
Napanee District		
Camden	63	37
Rawdon	68	32
Sophiasburgh & Hallwell	48	52
Town of Campbellford	65	35
Tyendinaga	68	32
Ottawa District		
Osgoode	57	43
Tweed District		
Hungerford	48	52

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

There was little change in the status of this rust in the Region. Continued high incidence occurred in two red pine plantations in Burleigh Township, Bancroft District, but the level of infection

declined to light intensity. Elsewhere, trace levels were observed in Mariposa Township, Lindsay District and in Kennebec and Palmerston townships, Tweed District (Table 10). The alternate host, goldenrod (*Solidago* sp.), could be found in all infected stands.

Table 10. Summary of *Coleosporium asterum* affecting red pine in the Southeastern Survey Region in 1972 and 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Incidence		Level of infection	
		1972	1973	1972	1973
Lindsay District					
Mariposa	3	--	light	--	trace
Minden District					
Burleigh	2	high	high	high	light
Burleigh	3	high	high	high	light
Tweed District					
Kennebec	4	--	high	--	trace
Palmerston	4	--	moderate	--	trace

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

There was little change in the occurrence of this disease in the Region in 1973. High incidence was observed in Abinger Township, Tweed District, and in Clarence Township, Cornwall District. Light-to-moderate incidence occurred in numerous other areas (Table 11).

Cytospora Canker of Poplar and Willow, *Cytospora chrysosperma* (Pers.) Fr.

Moderate-to-high incidence of this pathogen on weeping willow (*Salix babylonica* L.) occurred extensively in the Region. Extreme concern was expressed by numerous private owners of ornamental trees. Drought conditions could have been a factor contributing to the increase in incidence of this disease.

Dothichiza Canker of Poplar, *Dothichiza populea* Sacc. & Briard

The incidence of this disease was high on ornamental Lombardy poplar (*Populus nigra* var. *italica* Muenchh.) throughout most of the

Region. Initial deterioration was in the form of mortality of some of the branches, then a loss of foliage, except for clumps of foliage remaining on apparently healthy branches (see Frontispiece). Occurrence of this disease is usually preceded by a cool wet spring.

Table 11. Summary of blister rust surveys at 12 locations in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection	Mortality (%)
Bancroft District				
Carlow	6	moderate	moderate	2.5
Chandos	20	moderate	moderate	2.5
Brockville District				
Wolford	20	moderate	moderate	5.0
Cornwall District				
Clarence	70	high	high	10.0
Lanark District				
Bathurst	15	moderate	moderate	5.0
Lindsay District				
Clarke	35	moderate	moderate	2.5
Haldimand	15	moderate	moderate	0.0
Minden District				
Carden	30	moderate	moderate	2.5
Napanee District				
Pittsburgh	18	moderate	moderate	0.0
Ottawa District				
Oxford	40	moderate	moderate	5.0
Tweed District				
Abinger	70	high	high	30.0
Kaladar	20	moderate	moderate	5.0

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka

Incidence of this gall rust varied from moderate at two locations to trace at numerous other locations. Moderate infections were observed in Gloucester Township, Ottawa District and in Kaladar

Township, Tweed District. Trace infections were observed at four locations in Lindsay District (Table 12).

Table 12. Summary of *Endocronartium harknessii* on Scots pine in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Lindsay District			
Clarke	45	light	trace
Haldimand	35	light	trace
Haldimand	7	light	trace
Manvers	7	light	trace
Ottawa District			
Gloucester	7	high	moderate
Tweed District			
Kaladar	14	moderate	moderate

Hypoxylon Canker of Poplar, *Hypoxylon mammatum* (Wahl.) Miller

Moderate-to-high infection levels of this pathogen were widespread in the Region. High levels were found in East Hawkesbury and Winchester townships, Cornwall District, in Herschel and Carlow townships, Bancroft District, and in Snowdon Township, Minden District. Light-to-moderate infection levels were recorded in Cardiff Township, Bancroft District, in Carden Township, Minden District, and in the Kemptville Nursery, Ottawa District (Table 13).

A Tip Blight of Juniper, *Phomopsis juniperovora* Hahn

The infection level of this tip blight increased in 1973. Severe browing recurred on eastern red cedar (*Juniperus virginiana* L.) in South Marysburgh and Hallowell townships. Moderate damage occurred in Sophiasburgh and Hallowell townships and on the western tip of Amherst Island, Napanee District. Light incidence was observed in Minden Township, Minden District, in Cardiff Township, Bancroft District, and in Clarke Township, Lindsay District (Table 14).

A control using Bordeaux mixture with a sticker proved effective on ornamental juniper (*Juniperus* L.) in a private nursery in Manvers Township, Lindsay District. A plot containing 40 trees was

established near Picton to determine the effectiveness of Benlate at 4 oz. wettable powder per 80 gal of water applied every 14 days from early June until September. The effects of the spray will not be known until 1974.

Table 13. Summary of Hypoxylon canker in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection	Mortality (%)
Bancroft District				
Cardiff	20	high	moderate	10.0
Carlow	35	high	high	10.0
Herschel	25	high	high	7.5
Cornwall District				
East Hawkesbury	40	high	high	40.0
Winchester	50	high	high	30.0
Minden District				
Snowdon	20	high	high	10.0
Carden	15	moderate	moderate	0.0
Ottawa District				
Oxford	45	light	light	1.0

Table 14. Summary of *Phomopsis juniperovora* surveys in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Host	Incidence	Level of infection
Minden District				
Minden	5	eC	light	light
Napanee District				
Hallowell	15	rJ	high	high
South Marysburgh	30	rJ	high	high

A Leaf Blight of Balsam Poplar, *Septoria populicola* Pk.

This leaf blight caused premature defoliation of balsam poplar (*Populus balsamifera* L.) in the western part of the Region in 1973. Particularly heavily affected were stands in Clarke and Cavan townships, Lindsay District, in Lutterworth Township, Minden District, and in Cardiff Township, Bancroft District (Table 15).

Table 15. Summary of leaf blight in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Avg height of trees (ft)	Incidence	Level of infection
Bancroft District			
Cardiff	20	high	high
Lindsay District			
Cavan	40	high	high
Clarke	25	high	high
Minden District			
Lutterworth	35	high	high

Top-killing and Branch Mortality of Hard Pine

Top-killing and branch mortality with accompanying failure of buds to open on Scots pine caused concern among Christmas tree growers in the southern part of the Lindsay District in the spring of 1973 (see Appendix, Fig. A4). Similar damage was noted on Austrian pine (*Pinus nigra* Arnold) and red pine. An unusual weather condition may have been the factor predisposing the affected trees to succumb to *Cenangium ferruginosum* Fr. ex Fr., a fungus usually considered to be a weak pathogen. An examination of the tops and branches revealed that the 1972 buds were soft and showed no signs of growth; but in some instances the buds were alive in the spring and developed into new shoots, which subsequently curled and died (Fig. 3 and 4). Numerous other stems had normal growth but exhibited cankers in the 1971 internode. Incidence and levels of infection of this condition determined by standard evaluations are shown in Table 16.

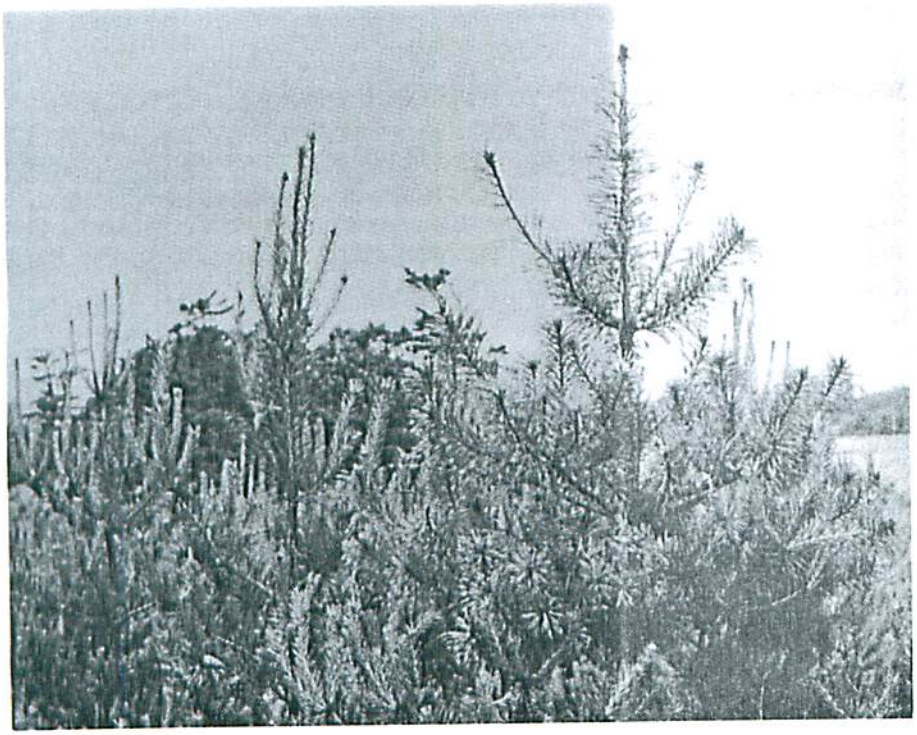


Figure 3. Damaged Scots pine trees showing dead buds in the foreground and healthy shoots in the background.

Figure 4. Curled shoots on affected tree and normal shoots on healthy trees.

Table 16. Summary of top and branch mortality surveys in the Southeastern Survey Region in 1973 (based on the examination of 40 trees at each location)

Location (Twp)	Host	Avg height of trees (ft)	Incidence	Level of infection
Lindsay District				
Cartwright	scP	5	high	high
Clarke	scP	7	high	high
Haldimand	scP	7	high	high
Haldimand	scP	6	high	high
Manvers	scP	7	high	high
Manvers	aP	20	high	high
Verulam	scP	3	high	high
Minden District				
Lutterworth	scP	15	high	high
Somerville	rP	8	high	high
Bancroft District				
Chandos	scP	15	high	high
Tweed District				
Hungerford	scP	10	moderate	light

Results from the examination of samples submitted to the laboratory tend to rule out the existence of a known virulent pathogen or a major insect capable of causing this condition. In the spring there was no indication of insect damage to the branches or stems, but by midsummer most samples submitted contained *Pissodes approximatus* larvae. This insect usually attacks dead or dying material.

Conifer Mortality

In 1972, a pocket of mortality of unknown cause appeared in part of a large stand of mature pine, spruce and balsam fir near Griffith in Griffith Township, Pembroke District. A 1/2-acre plot was established in the damaged area to ascertain whether or not the condition was progressing. It was revealed that the affected area remained unchanged in size in 1973. Mortality of the pines within the plot continued but mortality of spruce and balsam fir showed little change (Table 17). Consequently, the owners have been advised by the Ontario Ministry of Natural Resources to remove the dead trees. Work by the Forest Insect and Disease Survey on the identification of the cause has been discontinued.

Table 17. Summary of damage to mature conifers in a stand of pine in Griffith Township in 1972 and 1973 (based on the examination of 150 trees)

Tree Species	No. of trees examined	Healthy trees (%)		Affected trees (%)		Dead trees (%)	
		1972	1973	1972	1973	1972	1973
rP	113	53	40	16	18	31	42
wP	19	37	36	26	11	37	53
wS	5	80	80	20	20	0	0
bF	13	62	62	38	30	0	8

Wind Damage

A windstorm on July 13 caused severe damage to large sugar maple (*Acer saccharum* Marsh.) and elm trees in and around the town of Brighton in Napanee District. Severe damage also occurred in an area of approximately 15 square miles in the farming area near Fenelon Falls in the Lindsay District.

Nursery Diseases

Surveys were carried out in Provincial and private tree nurseries as part of a program to determine current pathological problems. Results of the surveys are shown in Table 18.

Table 18. Summary of diseases found in tree nurseries in the Southeastern Survey Region in 1973

Organism	Host(s)	Remarks
Lophodermium pinastri (Schrad. ex Fr.) Chev.	rP	Fifty percent of 3-0 stock in two beds in the Orono Nursery were severely infected.
Botrytis cinerea Pers. ex Fr.	tL	Thirty percent of 2-0 stock in one bed in the Orono Nursery showed symptoms.

(continued)

Table 18. Summary of diseases found in tree nurseries in the Southeastern Survey Region in 1973 (concluded)

Organism	Host(s)	Remarks
Microsphaera alni (Wallr.) Salm.	wS, Lilac	Forty percent of 3-0 wS stock in a small bed was moderately infected with 10% mortality in the Kemptville Nursery. Severe infection occurred in several rows of lilac seedlings in Orono Nursery.
Cytospora sp.	nM	Cankers were observed on numerous 6-ft saplings in a private nursery in Manvers Township.

Table 19. Other forest diseases

Organism	Host(s)	Remarks
Cenangium abietis (Pers.) Rehm	scP	trace incidence in a plantation in the Ottawa Green Belt, Ottawa District
Ceratocystis fagacearum (Bretz) Hunt	Oak	Continued surveys did not detect the presence of this disease.
Ciborinia whetzelii (Seaver) Seaver	tA	trace-to-light levels of infection at three locations
Cytospora abietis Sacc.	tL	light level of infection in Galway Twp, Minden District
Cytospora kunzei Sacc.	colS	branches of individual ornamentals infected in Hope and Alnwick twp, Lindsay District
Eutypella parasitica Davidson & Lorenz	sM	Trace-to-light incidence persisted in the survey area.

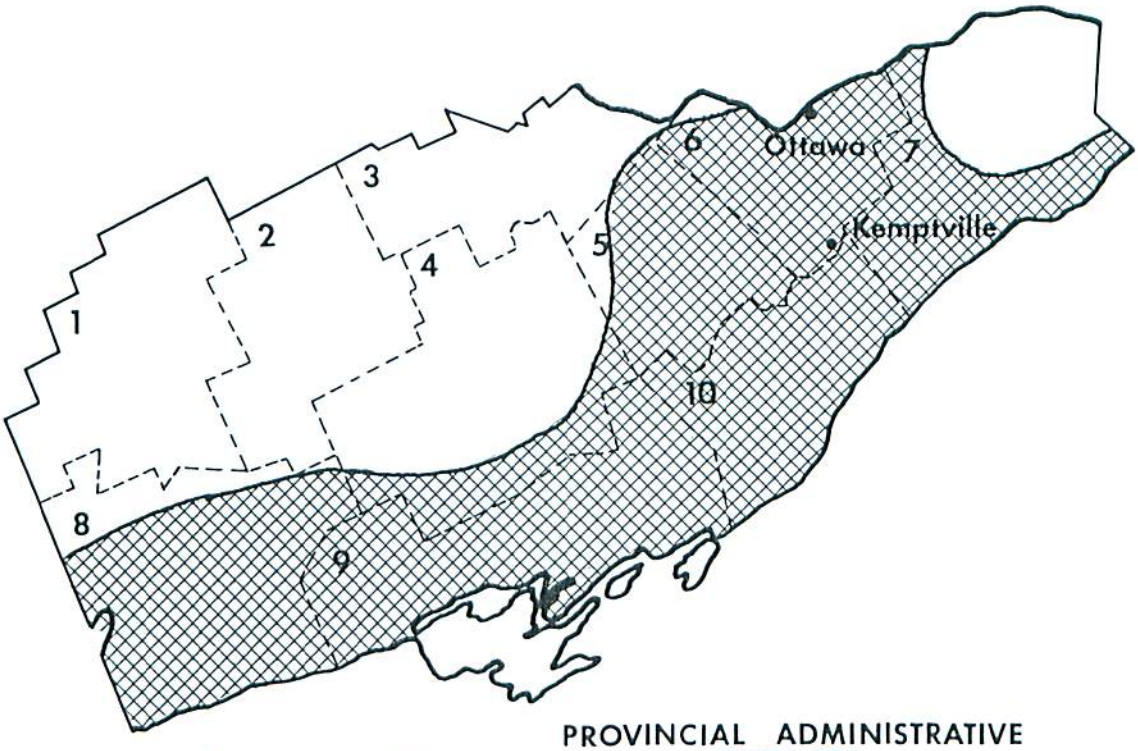
(continued)

Table 19. Other forest diseases (concluded)

Organism	Host(s)	Remarks
Fomes annosus (Fr.) Karst.	rP	prevalent in Durham and Northumberland county forests; trace level of infection in Clarence Twp, Cornwall District
Gremmeniella abietina (Lagerb.) Morelet (≡ *Scleroderris lagerbergii* Gremmen)	rP	Surveys did not detect the presence of this disease in the Region.
Gymnosporangium clavipes (Cke. & Pk.) Cke. & Pk.	rJ	light-to-moderate in Prince Edward County and southern parts of Lennox and Addington counties, Napanee District
Gymnosporangium globosum Farl.	J	light infection on ornamentals at Presqu'ile Park Headquarters, Napanee District
Lophodermium pinastri (Schrad. ex Fr.) Chev.	wP, scP	trace found in Cartwright Twp, Lindsay District and Wolford Twp, Brockville District
Phyllosticta paviae Desm.	Horse chestnut	severe reddening of foliage in Bowmanville, Newcastle and Port Hope, Lindsay District
Pollaccia radiosa (Lib.) Bald. & Cif.	tA	50% incidence and light level of infection in Carlow Twp, Bancroft District; light level of infection in Augusta Twp, Brockville District
Spilocaea pomi Fr.	Ap	prevalent throughout the southern part of the Lindsay District
Taphrina caerulescens (Desm. & Mont.) Tul.	bO	moderate level of infection in Nepean Twp, Ottawa District

APPENDIX

SOUTHEASTERN SURVEY REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

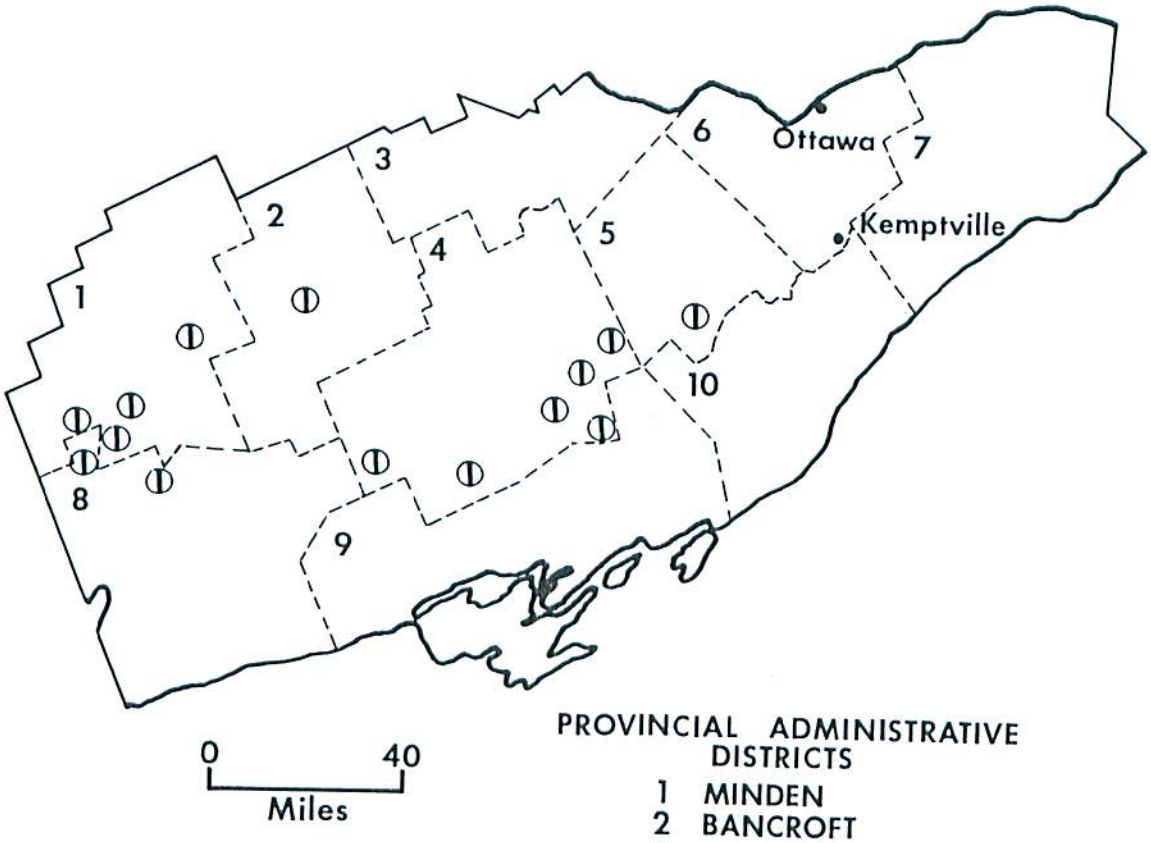
1 MINDEN
2 BANCROFT
3 PEMBROKE
4 TWEED
5 LANARK
6 OTTAWA
7 CORNWALL
8 LINDSAY
9 NAPANEE
10 BROCKVILLE

Figure A1. CEDAR LEAF MINERS

Areas within which infestations occurred in 1973

Moderate-to-severe damage. . .

SOUTHEASTERN SURVEY REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

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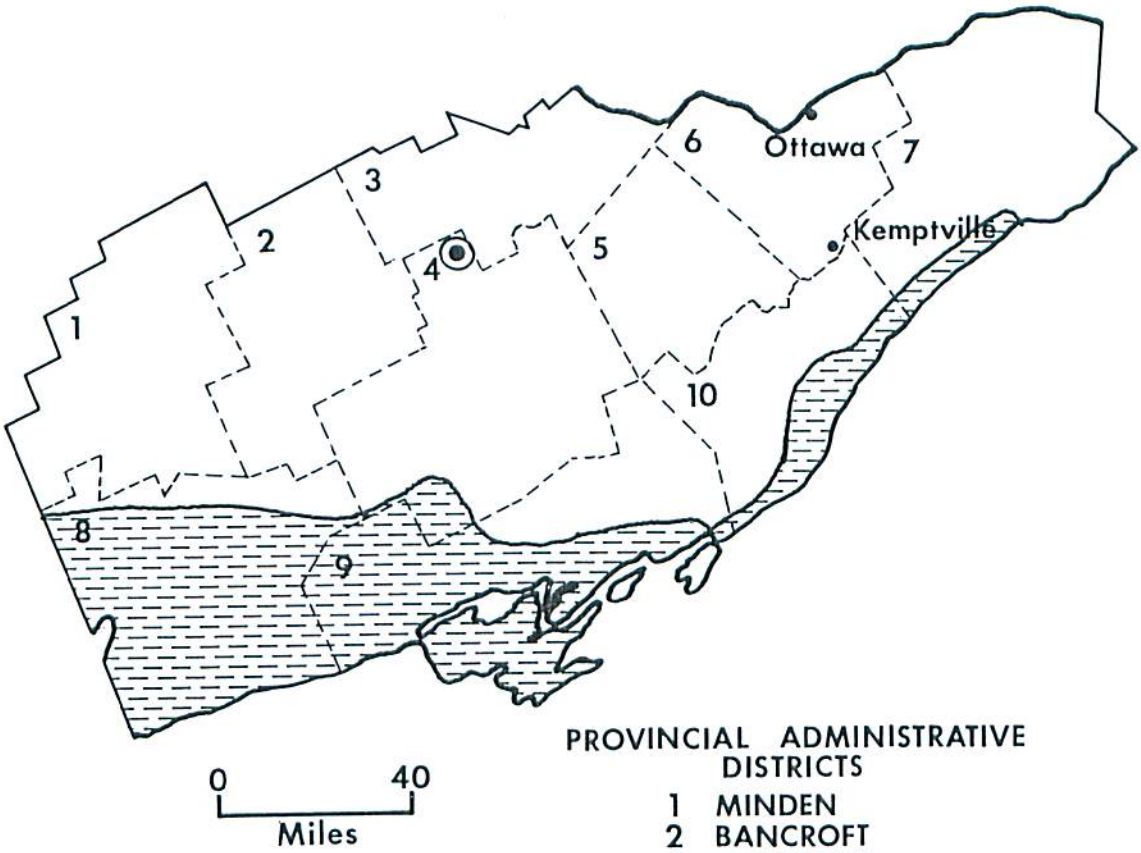
Figure A2. REDHEADED PINE SAWFLY

Areas where light-to-moderate defoliation occurred in 1973

Light-to-moderate defoliation. . . ◐

SOUTHEASTERN SURVEY REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

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10 BROCKVILLE

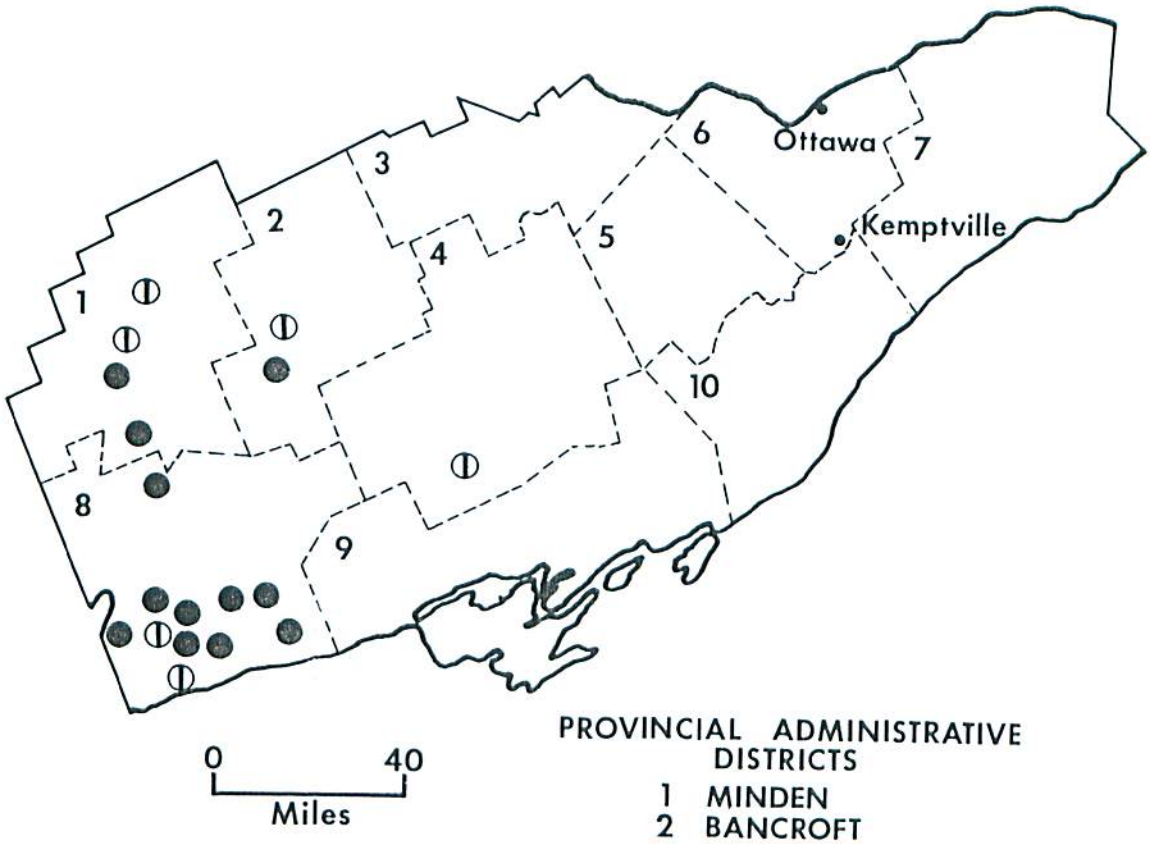
Figure A3. SMALLER EUROPEAN ELM BARK BEETLE

Known range of distribution

1971 . . . . . .

1973 . . . . . .

SOUTHEASTERN SURVEY REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

1 MINDEN
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6 OTTAWA
7 CORNWALL
8 LINDSAY
9 NAPANEE
10 BROCKVILLE

Figure A4. TOP-DYING OF HARD PINE

Areas where this condition was found in 1973

Light . . . . . ◐

Heavy . . . . . ●