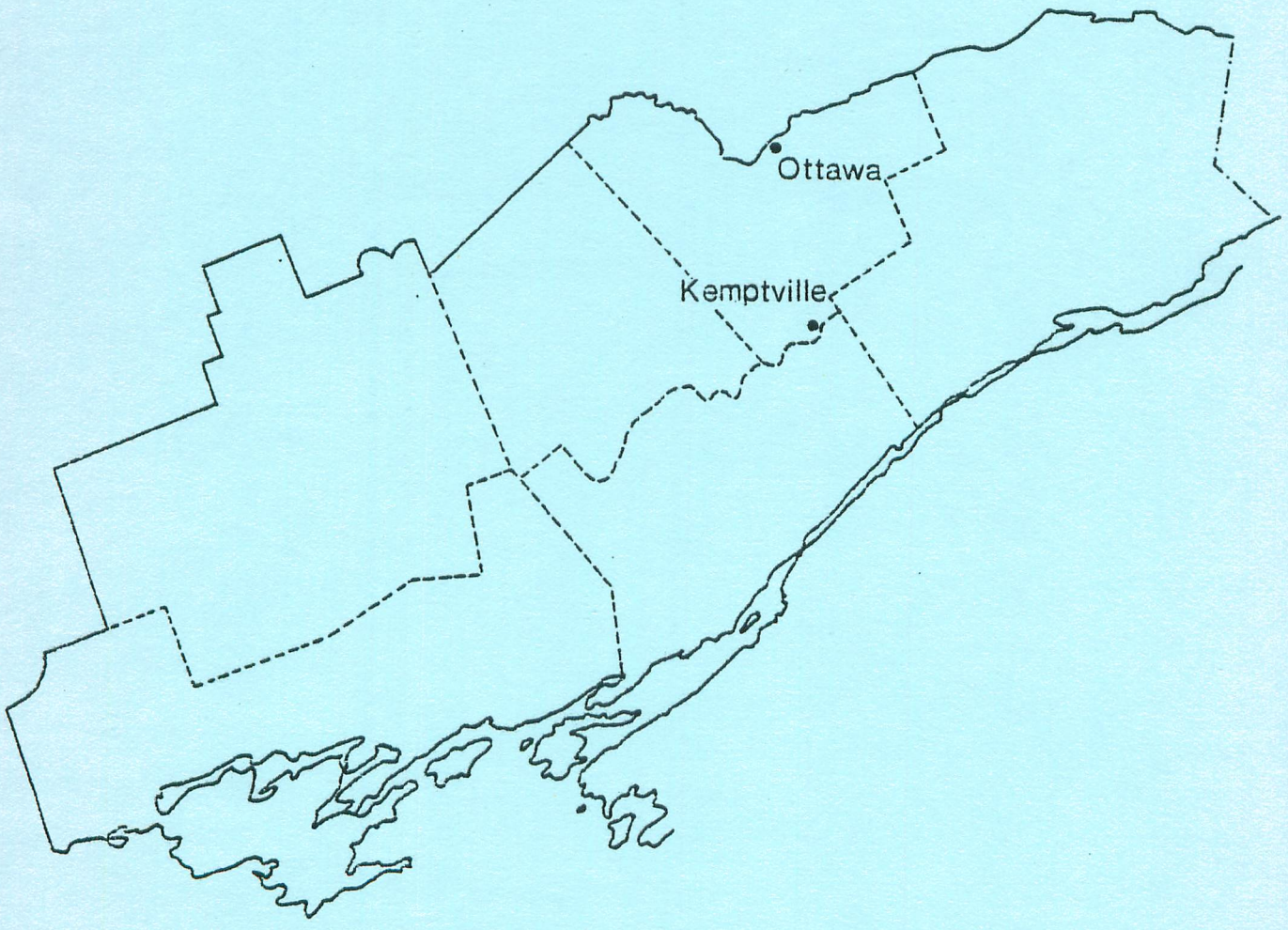
Results of forest insect and disease surveys in the EASTERN REGION of Ontario, 1979



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

SURVEY HIGHLIGHTS

The following information covers the more important insect and disease conditions in the Eastern Region in 1979. After five years of moderate-to-heavy infestations of the forest tent caterpillar, infestations collapsed in the Region in 1979. Spruce budworm caused severe defoliation in spruce and balsam stands at several points in the Tweed and Lanark districts. Balsam fir mortality was widespread in Denbigh, Effingham and Ashby townships of the Tweed District. Infestations of cedar leafminers, webspinning sawfly, leafrollers of aspen, hickory, sugar maple and basswood, fall webworm and satin moth increased at many points and defoliation was widespread. Population levels of pine sawflies, eastern tent caterpillar and white pine weevil remained at approximately the same level as in 1978. A decline was noted in larch sawfly infestations.

The pathology program again placed special emphasis on Scleroderris disease (European race) and on the deterioration of oak and maple. Leaf anthracnose caused severe damage to the leaves of hard maple at many locations. Leaf spot disease (*Marssonina populi* and *brunnea*) was common and caused early leaf fall. Snow and ice caused moderate-to-severe damage to hybrid poplar stool beds at the Kemptville Nursery. Minor needle damage was caused by needle rust of pine at several points.

Personnel of the Ontario Ministry of Natural Resources submitted a total of 83 insect and disease collections to Survey for identification. Their cooperation is deeply appreciated.

C. A. Barnes

Frontispiece. Severe damage of red pine trees by Limestone Chlorosis.

INSECTS

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

Increases in population levels of this webspinning sawfly on pine occurred at many locations in the Brockville and Ottawa districts in 1979 (Table 1). The most notable infestation occurred in a red pine (*Pinus resinosa* Ait.) plantation located on lot 21 Con. VI, Marlborough Township, Ottawa District: over 55% of the trees were infested and defoliation ranged from 60% to 70%. Elsewhere in the Ottawa District scattered pockets of infestation were noted on red pine and jack pine (*Pinus banksiana* Lamb.) at several points in the Ottawa-Carleton Forest near Dwyer Hill. In the Brockville District, two areas of infestation occurred in red pine and Scots pine (*Pinus sylvestris* L.) plantings near North Augusta and Pattersons Corners. The infestation near North Augusta appears to be increasing as red pine trees were lightly to moderately defoliated. Scots pine Christmas trees were lightly to moderately defoliated and spray operations were carried out with limited success. This insect was commonly observed at several locations elsewhere in the district.

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

An overall increase in population levels occurred throughout the Region in 1979 (Fig. 1). Although the heaviest infestations were observed on hedgerow and ornamental white cedar (*Thuja occidentalis* L.), particularly in the Ottawa, Napanee, Cornwall and Brockville districts, clumps of open-growing cedar were severely defoliated at many points in the Region. Infestations in urban areas such as Ottawa, Kingston, Cornwall and Brockville caused concern to property owners, and there were many requests for control measures. However, the success of these pesticide applications was inconclusive, as by late summer the infested trees had put out new foliage sufficient to cover most damage caused by the feeding habits of this insect. The moth flight in late July was extremely heavy, indicating that populations in 1980 will equal or exceed those reported in 1979.

Spruce Budworm, *Choristoneura fumiferana* Clem.

The results of damage surveys, population sampling and egg-mass counts have been included with those of other survey regions in a special report by G.M. Howse et al. (Report O-X-310). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1979 and gives infestation forecasts for the province for 1980.

Table 1. Summary of damage caused by the pine false webworm at six locations in the Eastern Region in 1979 (based on the examination of 150 red pine trees at each location).

Location (Twp)	Avg ht of sample trees (m)[a]	Avg DBH of sample trees (cm)[b]	Trees infested (%)	Defoliation (%)
Ottawa District				
Marlborough	2	2.5	68	15
Tweed District				
Olden	2	2.5	0	0
Napanee District				
Cramahe	5	7.0	0	0
Lanark District				
Lanark	6	10.1	1.3	5
Brockville District				
Augusta	20	21.0	0	0
Cornwall District				
Finch	13	17.7	0	0

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.)
Oak Leafroller, *Pseudexentera cressoniana* Clem.

Light-to-moderate infestations recurred at three locations in the Region in 1979. These infestations were located in the National Capital Commission Green Belt Forest near Bells Corners, where approximately 15% defoliation occurred. The others were located near White Lake in Olden Township, Tweed District and near Joe Lake in Lavant Township, Lanark District. Defoliation in both instances was less than 20%. The insect species involved in defoliating oak trees in the above areas were the oak leafroller and the oak leaf shredder, with the oak leafroller being collected in larger numbers.

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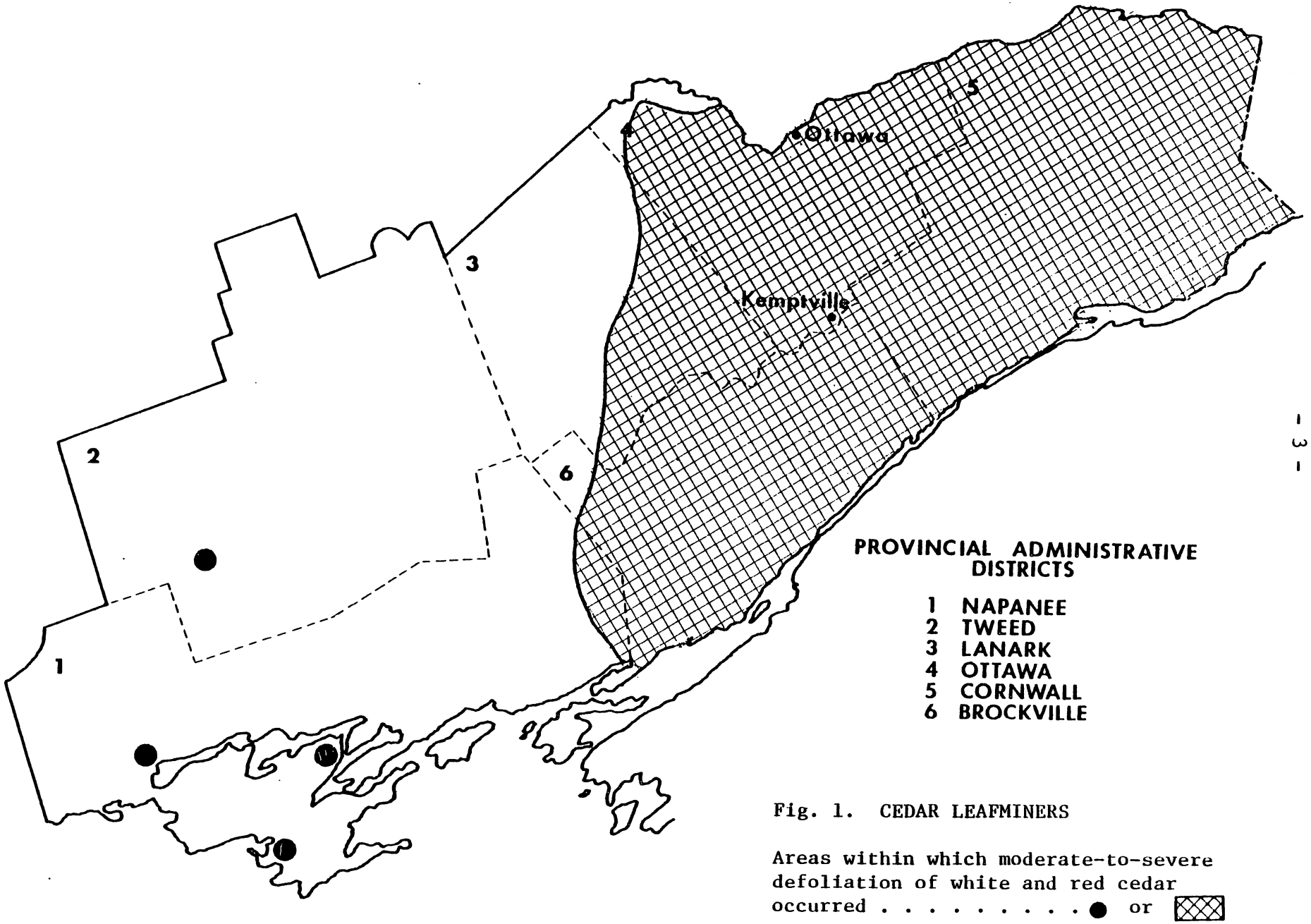

Fig. 1. CEDAR LEAFMINERS

Areas within which moderate-to-severe defoliation of white and red cedar occurred . . . . . ● or ▨

Birch Leafminer, *Fenusa pusilla* (Lep.)

Understory gray birch (*Betula populifolia* Marsh.) and white birch (*Betula papyrifera* Marsh.) were severely defoliated in many parts of the eastern half of the Region. The most notable damage occurred on gray birch at many points in the National Capital Commission Green Belt Forest near Ottawa, at scattered locations in LaRose Forest, and east of Cornwall in Lancaster and Charlottenburgh townships, Cornwall District. In Lanark District white birch was moderately defoliated at several locations in Lavant and Dalhousie townships. Elsewhere, leafmining was common, but generally at low levels.

Fall Webworm, *Hyphantria cunea* Dru.

After two years of declining populations, increases in population levels occurred at many points in the Region in 1979. The most notable increase occurred on black ash (*Fraxinus nigra* Marsh.) and white elm (*Ulmus americana* L.) along County Road 5 near Fitzroy Harbour. Defoliation was extensive. Nests of this insect were common at many other locations, particularly on red oak (*Quercus rubra* L.), shagbark hickory (*Carya ovata* [Mill.] K. Koch) and white elm along the Thousand Island Parkway in Brockville and Napanee districts. Light-to-moderate infestations were common at several points in the Ottawa and Cornwall districts and near Outlet and Sandbanks provincial parks in Prince Edward County. Elsewhere nests of this insect occurred commonly at scattered locations.

Pine Root Collar Weevil, *Hylobius radicis* Buch.

Light-to-moderate infestations of this weevil occurred in a Bell tree farm Scots pine plantation near Kaladar in the Tweed District in 1979. Quantitative surveys showed that approximately 6% of the trees were infested. The northern pine weevil (*Pissodes approximatus* Hopk.), usually considered a pest that attacks previously damaged trees, was also found infesting these trees. Lindane in solution was applied; however, the success or failure of this control measure is not known.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Infestations of the forest tent caterpillar peaked in 1976 and 1977. In 1978 there was a sharp decline in population levels and only scattered pockets of heavy infestation remained. Egg counts carried out in the fall of 1978 indicated that two areas, encompassing less than 50 ha (125 ac) in Olden Township, Tweed District and in Mountain Township, Cornwall District would be infested in 1979. However, these infestations failed to develop and there was a total collapse in population levels. Occasional larvae were noted at widely separated locations.

For several years a light trap was operated near White Lake in the Tweed District; in 1979 this trap was transferred to the cottage site near Kemptville. Both locations were close to existing infestations. An indication of how populations decline rapidly is summarized in Table 2.

Table 2. Decline of forest tent caterpillar populations in the Eastern Region.

Location (Twp)	Total no. of moths captured in light trap						
	1973	1974	1975	1976	1977	1978	1979
Tweed District							
Olden	344	431	1686	7000+	8100+	10900+	-
Brockville District							
Oxford	-	-	-	-	-	-	16

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

For the second consecutive year there were moderate infestations at many points in the Region. The most noteworthy infestations were located in jack pine plantations in Ramsay Township, Lanark District, on peripheral jack pine trees in Dalhousie and Lavant townships, Lanark District and on open-growing jack pine trees near Mazinaw Lake and near Denbigh, Tweed District. Approximately 20% of the old foliage was destroyed. Light infestations were common in Cramahe and East Camden townships, Napanee District, at several locations in the Limerick Forest, Brockville District and on occasional trees in Finch Township, Cornwall District. Defoliation in all instances did not exceed 10%.

Redheaded Pine Sawfly, *Neodiprion lecontei* Fitch

In 1979 heavy infestations of this sawfly caused considerable defoliation at numerous locations in the Tweed District. Heavy infestations were observed north of Sharbot Lake along Highway 509 where a 4 ha (10 ac) red pine plantation was severely defoliated. Mortality to fringe trees was noted. Elsewhere in the Tweed District populations were common in red pine plantations near Madoc and Marmora. Scattered, spotty infestations were observed in Gloucester Township and were sprayed with Malathion in solution; complete success was achieved. Colonies were common at numerous locations elsewhere in the Region. No larvae were observed in red pine plantations that were treated with Nuclear Polyhedrosis Virus in the Lanark and Tweed districts in 1978.

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

In 1979 several plantations of Scots pine and red pine were moderately defoliated at widely separated locations. The most notable infestation occurred in a 200 ha (500 ac) Scots pine and red pine plantation in Outlet and Sandbanks provincial parks in Prince Edward County, Napanee District. This plantation was sprayed in 1975 with Nuclear Polyhedrosis Virus and until 1979 had been relatively free from infestations of this pest. Approximately 20% of the old foliage was destroyed. Other areas of moderate-to-severe defoliation were noted on ornamentals and roadside trees near Napanee, Kingston and Tweed, at scattered locations within the National Capital Commission Green Belt Forest near Ottawa and on occasional trees in the Limerick Forest near Oxford Station. Light infestations were noted at many points elsewhere in the District.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

There was a general decline in population levels in 1979. Although numerous oviposition sites were noted, larvae failed to develop to maturity. A small localized infestation persisted near Kemptville, and European larch (*Larix decidua* Mill.) was severely defoliated. In the Prescott and Russell County Forest near Finch, native and European larch were moderately defoliated, as was the case in 1978. These two infestations have persisted for the past few years and have caused some tree mortality. Occasional colonies of larvae were observed at many locations in the remainder of the Region; however, defoliation was negligible.

Hickory Leafroller, *Pseudexentera caryana* McD.

In 1979 heavy infestations of this leafroller caused severe defoliation of shagbark hickory at numerous locations along the St. Lawrence River from Adolphustown in the west to Gananoque in the east. Defoliation was severe, particularly near Eastview in the greater Kingston area. By mid-June foliage was starting to reappear and little permanent damage to the trees is expected.

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

In 1979 there were heavy infestations of this leafroller on aspen at widely separated locations. These infestations caused up to 90% defoliation and were observed at scattered locations in Finch, Clarence and Cambridge townships, Cornwall District, in Fitzroy, Huntley and Torbolton townships, Ottawa District, and at scattered locations in North Augusta and Oxford townships, Brockville District. It is expected that populations will remain high in 1980.

Satin Moth, *Stilpnotia salicis* Linn.

Although populations of this insect increased at many locations, infestations were generally confined to ornamentals and hedgerow Lombardy poplar (*Populus nigra* var. *italica* Muenchh.) and silver poplar (*Populus alba* L.). Severe defoliation of Lombardy poplar occurred at several locations in the Ottawa area: along the Fallowfield road, along Highway 7 near Bells Corners and south on Highway 31. Approximately 90% defoliation was noted. Ornamental silver poplar were moderately defoliated near the town of Brockville and the village of Williamsburg. It is evident that populations of this insect are increasing, particularly near the city of Ottawa (Fig. 2).

Table 3. Other forest insects.

Insect	Host(s)	Remarks
Agromyza sp. Leafminer	cPo	moderate infestation of leafminers on hedgerow trees near Brighton
Amphibolips inanis O.S. Oak apple gall	rO	common on hedgerow trees along Brown Bay road, Wolfe Island and on Cowle's property, Lanark District
Aphrophora cribrata (Wlk.) Pine spittlebug	wP	open growing trees heavily infested at several points in Dalhousie Township, Lanark District
Archippus packardianus Fern. Spruce needle moth	wS	new shoot insects common at many points in the Region
Archippus strianus Fern. Lined spruce needle moth	bF	occasional larvae on balsam fir south of Denbigh
Arge pectoralis Leach Birch sawfly	wB	numerous colonies of this sawfly on understory trees near Kemptville
Argyrotaenia juglandana (Fern.) Hickory leafroller	sHi	leafrollers common on this host along shoreline of St. Lawrence River near Kingston

(continued)

Table 3. Other forest insects (continued).

Insect	Host(s)	Remarks
Bucculatrix canadensisella Chamb. Birch skeletonizer	wB	trace infestations occurring in Brockville and Ottawa districts This skeletonizing insect appears in large numbers covering vast areas approximately every 10 years.
Cecidomyia reeksi Vock. Jack pine resin midge	jP	heavy damage to tips by this midge on burnt land tract near Almonte in Ramsay Township
Cecidomyia sp. Midge	rO	early leaf fall caused by feeding damage along main rib of leaf; heavy near Marmora
Cenopis acerivorana MacK. Maple leafroller	sM	common on scattered trees in National Capital Commission Green Belt Forest near Ottawa, but at low levels
Cenopis pettitana Rob. Basswood leafroller	Ba	hedgerow trees moderately defoliated by this leafrolling insect near Yarker, Napanee District
Choristoneura rosaceana Harr. Obliquebanded leafroller	hPo	occasional larvae on plantation trees near North Augusta; defoliation negligible
Coleophora laricella Hbn. Larch casebearer	tL, eL	light-to-moderate infestations near Madoc, Tweed District and near Finch, Cornwall District
Compsolechia niveopulvella Cham. Poplar leafroller	tA	occasional larvae on understory trees near Fitzroy Harbour, Ottawa District
Corythucha sp. Lace bug	Ba	lacewings extremely heavy on roadside trees near Merrickville, Brockville District

(continued)

Table 3. Other forest insects (continued).

Insect	Host(s)	Remarks
Curculionidae	hPo, scP	light stem and root damage caused by these small borers in a hybrid poplar plantation near Finch and in a Scots pine plantation near Kaladar
Datana integerrima G. & R. Walnut caterpillar	blWa	hedgerow trees heavily infested by the walnut caterpillar near Smiths Falls
Eriophyes sp. Gall mite	wAs	leaf galls common on most trees in Sandbanks Park near Picton
Eucosma gloriola Heinr. Eastern pineshoot borer	rP, scP	light shoot damage near Sharbot Lake and Kemptville
Eupareophora parca (Cresson) Spiny ash sawfly	wAs	sawflies common on small trees in Limerick Forest
Fenusa ulmi Sund. Elm leafminer	wE	severe mining of leaves near Metcalfe, Ottawa District
Gracillaria cuculipennella Clem. Privet leafminer	wAs	leaftiers common on small trees near North Augusta
Lithocolletis hamadryadella (Clem.) Oak leafblotch miner	wO	severe damage by leafminers on scattered trees near Kingston and Merrickville and along the Thousand Island Parkway
Malacosoma americanum F. Eastern tent caterpillar	cCh	populations declined throughout the Region; diseased larvae noted at many locations
Nematus sp.	bLoc	defoliation heavy on plantation locust in Ramsay Township, Lanark District
Neodiprion nanulus nanulus Schedl Red pine sawfly	rP	colonies observed commonly at several locations in the Region, particularly in Lanark, Ottawa, Brockville and Cornwall districts; defoliation in all instances less than 5%

(continued)

Table 3. Other forest insects (continued).

Insect	Host(s)	Remarks
Pemphigus sp.	cPo	leafminers common on hedgerow trees near Brighton
Periclista albicola Konow Oak sawfly	rO	slug sawflies common on scattered trees in N.C.C., Bells Corners
Phratora purpurea purpurea Brown Aspen leaf beetle	tA	common on small trees near Kingston
Pikonema alaskensis Roh. Yellowheaded spruce sawfly	wS	light and moderate infestations observed at many locations; plantation spruce defoliated near Lavant Station, Lanark District, and near the village of Russell, Cornwall District; common at many other locations
Pissodes approximatus Hopk. Northern pine weevil	scP	common in the root collar of trees previously damaged by the root collar weevil; collected near Flinton, Tweed District
Pleroneura brunneicornis Roh. Balsam shoot boring sawfly	bF	bud mining sawfly caused light-to-moderate damage of buds on regeneration balsam near Denbigh, Tweed District
Polydrusus impressifrons Gyll. Green weevil	tA	small numbers of green weevils on small trees near Fitzroy Harbour, Ottawa District
Proteoteras aesculana Riley Maple twig borer	sM	light-to-moderate damage by the maple twig borer in compartment 1, Kemptville nursery
Psilocorsis reflexella Clem. Poplar leaftier	tA	these leafrollers caused moderate defoliation on occasional trees near Constance Bay, Ottawa District

(continued)

Table 3. Other forest insects (concluded).

Insect	Host(s)	Remarks
Rhynchaenus rufipes Lec. Willow flea weevil	W	willow flea beetle caused moderate leaf mining in C61A Gloucester Township, Ottawa District
Sparganothis sulfureana Clem. Needletier	rP	moderate infestation of needletier on this host in Ottawa-Carleton Forest near Dwyer Hill, Ottawa District
Tetralopha expandens Wlk. Oak webworm	rO	nests of this insect common on roadside trees near Howe Island landing, Napanee District
Zeiraphera fortunana Kft. Yellow spruce budworm	wS	yellow spruce budworm caused light defoliation to hedgerow spruce at nursery

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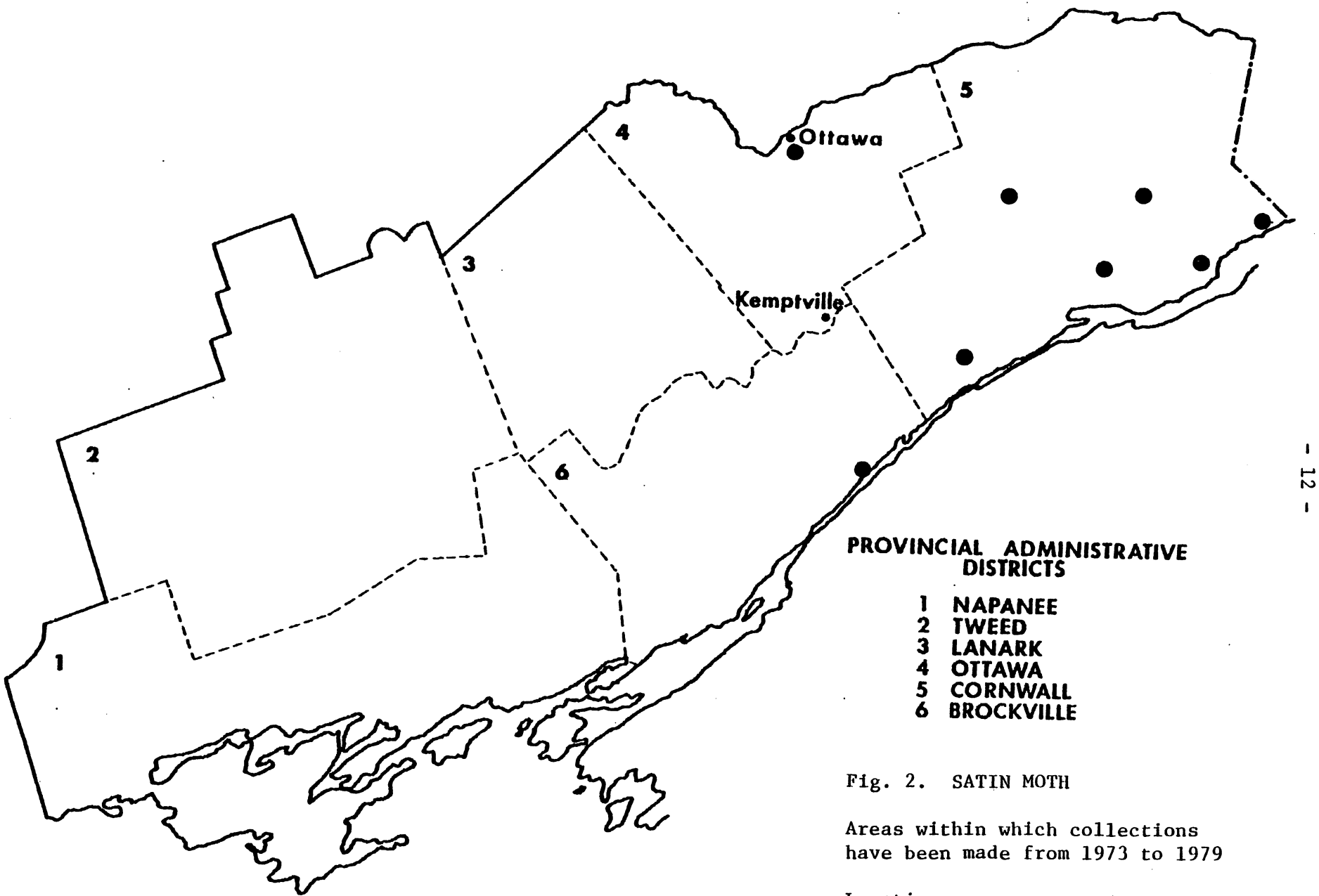

PROVINCIAL ADMINISTRATIVE DISTRICTS

1 NAPANEE
2 TWEED
3 LANARK
4 OTTAWA
5 CORNWALL
6 BROCKVILLE

Fig. 2. SATIN MOTH

Areas within which collections have been made from 1973 to 1979

Locations . . . . . ●

TREE DISEASES

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

Although a high incidence of this rust on red pine and jack pine trees was recorded, generally low infection levels occurred at scattered locations in the Napanee, Brockville, Lanark and Tweed districts. In Cornwall and Ottawa districts the needle rust was observed, but only at trace levels. Counts based on the examination of 150 red pine and jack pine trees, 5 m or less in height, are summarized in Table 4.

Table 4. Summary of damage caused by the needle rust of pine (*Coleosporium asterum*) at five locations in the Eastern Region in 1979.

Location (Twp)	Tree species	Avg ht of trees (m)[a]	Avg DBH of trees (cm)[b]	Trees affected (%)	Foliar damage (%)
Lanark District					
Lanark	jP	5.0	3.5	90	5
Lanark	rP	2.0	2.1	28	5
Tweed District					
Clarendon	jP	5.0	4.0	90	5
Brockville District					
Oxford	rP	3.0	2.5	100	5
Napanee District					
Cramahe	rP	5.0	6.0	0	0

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Scleroderris Disease, *Gremmeniella abietina* (Lagerb.) Morelet

As in the past two years extensive stand examination of red pine plantations, hedgerows and ornamentals was carried out at many locations from the Quebec border to the village of Brighton (Fig. 3). The purpose of these surveys is to ensure early detection of any incursion by the European race of Scleroderris disease into Ontario. Twenty-one collections

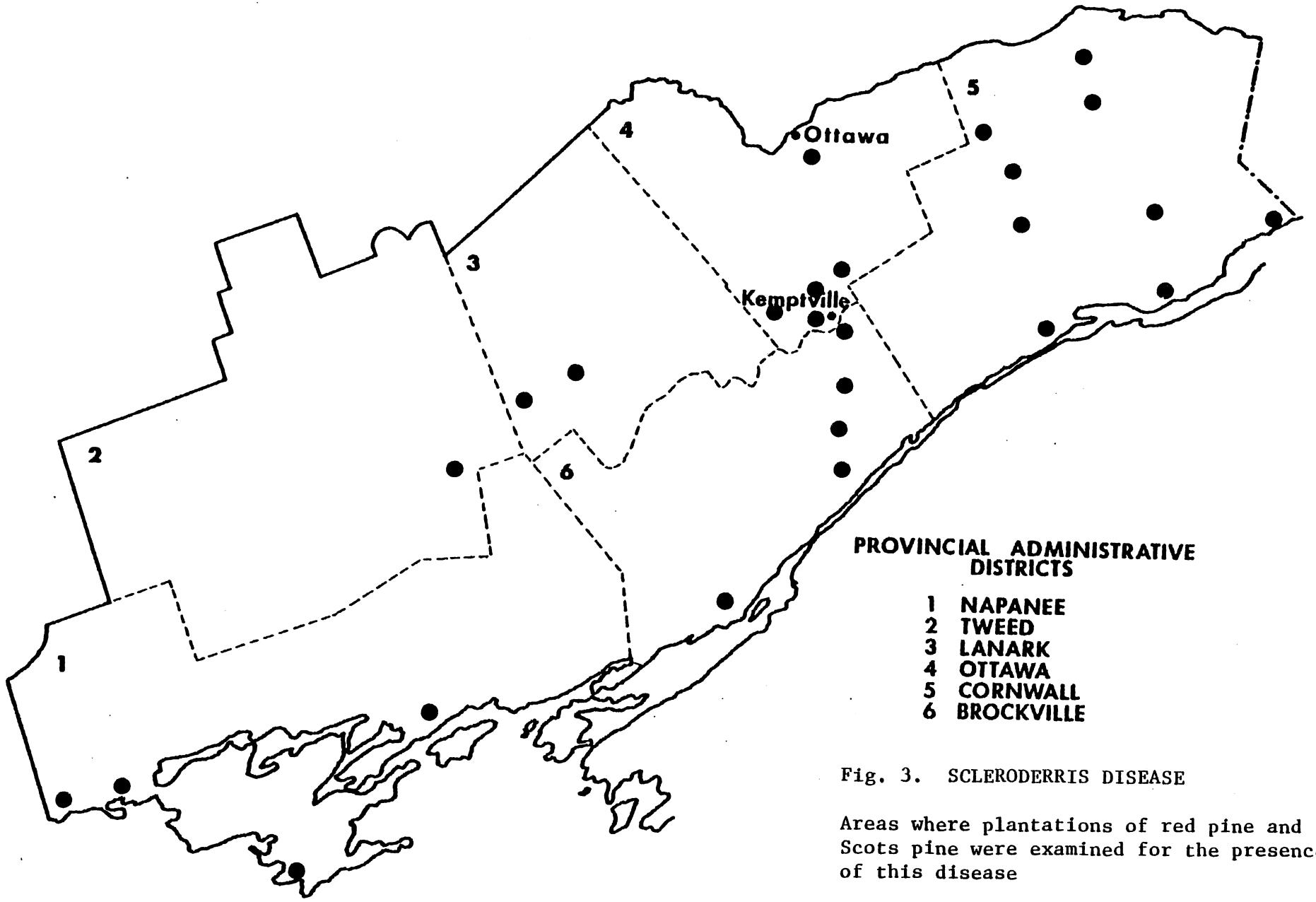

Fig. 3. SCLERODERRIS DISEASE

Areas where plantations of red pine and Scots pine were examined for the presence of this disease

Locations . . . . . ●

from widely scattered locations were submitted to the Forest Disease Survey Unit for examination and laboratory analysis. All samples were negative for Scleroderris disease. The European race was found initially in the Lake Placid area of New York and later in Canada in the province of Quebec. It has since been found as far east as New Brunswick. Surveys are expected to continue in 1980.

Leaf Anthracnose of Maple, *Kabatiella apocrypta* (Ell. & Ev.) Arx

This leaf spot disease occurred at damaging levels throughout the Region in 1979. The heaviest infections were observed in the Napanee and Brockville districts, where in most stands of sugar maple (*Acer saccharum* Marsh.) a degree of damage was noted. Heavy foliar damage was also recorded, particularly along the Ottawa River in the Ottawa District, at many points along Highway 401 and the St. Lawrence River in the Cornwall District, and at scattered locations in the Tweed and Lanark districts. In all infected areas, early leaf fall was attributed to this disease, and there were numerous calls from concerned citizens. Counts based on the examination of 150 sugar maple trees at each sample point are summarized in Table 5.

Table 5. Summary of damage caused by maple leaf anthracnose (*Kabatiella apocrypta*) at three locations in the Eastern Region in 1979.

Location (Twp)	Avg ht of trees (m)[a]	Avg DBH of trees (cm)[b]	Trees affected (%)	Defoliation (%)
Napanee District				
Thurlow	10	12	100	75
Lanark District				
Lavant	15	17.3	20	20
Tweed District				
Olden	10	12.0	10	10

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Leaf Spot, *Marssonina brunnea* (E. & E.) Sacc.

Although this leaf spot disease was common on hybrid poplar in the Cornwall, Ottawa and Brockville districts in 1979, foliar damage levels were generally low (Table 6).

Table 6. Summary of damage caused by the leaf spot disease (*Marssonina brunnea*) on hybrid poplar at three locations in the Eastern Region in 1979.

Location (Twp)	Avg ht of trees (c)[a]	Avg DBH of trees (cm)[b]	Trees affected (%)	Foliar damage (%)
Brockville District				
Augusta	1.5	2.3	55	10
Ottawa District				
Gloucester	2.5	2.5	100	10
Cornwall District				
Osnabruck	4.0	3.5	100	15

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Limestone Chlorosis

This condition, characterized by the dying back of the upper crown of red pine trees, is becoming widespread in the Eastern Region (see Frontispiece). Red pine in the 25- to 35-year class show damage symptomatic of this condition at scattered locations in the Prescott and Russell County Forest in Cornwall District; in the Limerick Forest, Brockville District; in the Lanark County Forest and in private plantings in the Lanark District. Limestone usually was present at depths of from 45 to 60 cm below the surface level. This site character is associated with alkaline soils, whereas red pine prefers a fairly acid soil. Confirmation of limestone deposits was obtained by digging soil pits.

Maple Decline

In many areas of the Eastern Region there has been moderate branch dieback on sugar maple trees (see previous reports). This condition is particularly evident along roadsides and on exposed sites. Although no satisfactory conclusion has been reached as to cause, it is felt that severe defoliation by the forest tent caterpillar, combined with three years of drought, contributed to tree decline. Similar mortality of sugar maple has occurred at numerous points in the Parry Sound and Owen Sound districts. For 1979 it appears that the decline has stabilized. No extension of boundaries was recorded.

Oak Decline

In 1977, two 100-tree plots were established in the Lanark District as a five-year study on oak decline. A sampling technique consisting of five categories was devised: 1 - healthy, 2 - 20% branches dead, 3 - 40% branches dead, 4 - 60% branches dead and 5 - tree dead. Initially, the majority of the trees fell into categories 1 and 2. In 1978, this was also the case, but with more of the trees in the number 2 category. As yet no mortality had been recorded. In 1979, a substantial number of the trees fell into categories 3 and 4 and tree mortality has been recorded for the first time (Table 7). Examination of the trees over the past three years has revealed the presence of the root rotting fungus, *Armillaria mellea* (Vahl ex Fr.) Kummer, a trunk rot, *Fomes igniarius* (L. ex Fr.) Kickx, and a butt rot *Fomes connatus* (Weinm. ex Fr.) Gill. Also noted was damage caused by wood borers and sapsuckers.

Snow and Ice Breakage

Snow and ice caused varying degrees of branch damage to small red pine trees at several locations in 1979. Moderate damage to red pine branches occurred in plantations located in Marlborough Township, Ottawa District and in the Lanark County Forest, Lanark District where approximately 10 to 15% of the red pine trees, particularly on the periphery of the plantations, had moderate branch damage. In Tweed District, red pine trees were also moderately damaged in a plantation in Olden Township, where 16% of the trees examined had many branches broken (Table 8). At the Provincial Forestry Station in Kemptville, hybrid poplar stool beds and white cedar seedlings were severely damaged or killed by early melting snow, followed by freezing temperatures. The most severe damage was in low lying areas within the compartment. Similar damage was common elsewhere in the Region.

Table 7. Oak dieback classes for trees at two locations in the Eastern Region.

Location (Twp)	Year	Avg ht of sample trees (m)[a]	Avg DBH of sample trees (cm)[b]	Dieback class 0	1	2	3	4	5
Lanark District									
Joe Lake	1977	12	24	-	46	38	12	4	0
	1978	"	"	-	21	59	13	7	0
	1979	"	"	2	3	51	32	8	4
Flower Station Road	1977	14	19	-	28	60	11	1	0
	1978	"	"	-	14	72	10	4	0
	1979	"	"	1	4	73	18	2	2

Note: A "0" category was added in 1979 to represent trees with no dieback.

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Table 8. Summary of damage caused by snow and ice breakage at two locations in the Eastern Region in 1979.

Location (Twp)	Avg ht of sample trees (m)[a]	Avg DBH of sample trees (cm)[b]	No. of trees affected	Damage level
Tweed District				
Olden	1	2	24	Moderate
Ottawa District				
Marlborough	2	2.5	20	Moderate

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

Nursery Report

Mortality of young eastern white cedar seedlings in Compartment 4 was due to accumulated snow, which melted early, combined with later freezing temperatures, particularly in low lying areas.

In Compartment 8, white pine seedlings were moderately damaged by Cylindrocladium root rot (*Cylindrocladium floridanum* Sob & Seymour). *Fusarium* sp., *Cladosporium* sp. and bacteria were also cultured from the damaged seedlings. In Compartment 19, off-color red pine seedlings were noted throughout the compartment. Several seedlings were sent to the Disease Survey Unit for culture; however, only secondary organisms such as *Fusarium* sp. and *Alternaria* sp. were cultured from the seedlings.

In Compartment 35 a few red pine seedlings were damaged. This problem appeared similar to that of hail punctures; however, in most instances wounds encircled the lower part of the stem. This effectively closed off the vascular system, and the trees died.

Several samples of dying red pine trees were submitted. Some were cultured, but the pathogens isolated from compartments C 18, 19 and 35 were of little consequence.

Table 9. Other forest diseases.

Organism	Host(s)	Remarks
Alternaria sp. Soil fungus	hyPo	cultured from samples submitted from Domtar plantations near Long Sault and from OMNR plantations near Kemptville
Armillaria mellea (Vahl ex Fr.) Kummer Armillaria root rot	rP, tL	moderate infection levels of armillaria root rot at several locations in the LaRose and Prescott and Russell County forests
Arthrobotrys sp. Sooty mould	hyPo	sooty mould common on dying hybrid poplar rootlets in nursery
Cephalosporium sp. Vascular wilt	hyPo	common in root systems of hybrid poplar in nursery beds

(continued)

Table 9. Other forest diseases (continued).

Organism	Host(s)	Remarks
Ciborinia whetzelii (Seaver) Seaver Ink spot	tA	ink spot disease of poplar, common in east end of Region
Cronartium ribicola J.C. Fischer White pine blister rust	wP	common, with varying degrees of damage throughout the Region
Cytospora chrysosperma (Pers.) Fr. Canker	eCo	common in hybrid poplar and eastern cottonwood plantations in Brockville and Ottawa districts; branch and stem damage common at both locations
Cytospora kunzei Sacc. Canker	wS, nS colS	many hedgerows of Norway and white spruce infected by this canker; common in Cornwall, Ottawa and Brockville districts; ornamental blue spruce also damaged in Ottawa and adjacent areas
Cytospora sp. Canker	scP	roadside Scots pine lightly damaged on D 15 property near Finch, Cornwall District
Endocronartium harknessii (J.P. Moore) Y. Hiratsuka Gall rust	jP	gall rust common on jack and Scots pine at several locations in eastern part of Region
Gymnosporangium clavipes (Cke. & Pk.) Cke. & Pk. Gall rust	rJ	cedar gall rust common in Prince Edward County and near Belleville and Kingston
Gymnosporangium juniperi-virginianae Schw. Cedar apple rust	rJ	common through Napanee District
Marssonina martini (Sacc. & Ell.) Magn. Leaf spot	bO	light leaf infection on ornamental trees near Ottawa
Phomopsis sp. Globose gall	Hi	heavy infection of this gall on bitternut hickory near Belleville

(continued)

Table 9. Other forest diseases (concluded).

Organism	Host(s)	Remarks
Phyllosticta catalpae Ell. & Mart Leaf spot	Catalpa	leaf spot common on ornamentals near Ottawa
Phyllosticta sp. Leaf rust	Haw	severe rust infections on scattered trees on Wolfe Island
Polyporus squamosis Mitcheli ex Fr. Trunk rot	wAs	severe trunk rot on roadside trees near Merrickville
Polyporus sulphureus Bull. ex Fr. Stem rot	wAs	common on roadside trees near Brockville
Sclerophoma pithya (phyla) (Thuem.) Hoehn. Canker	scP, rP	collected from trees that had dead tops and branch mortality in Cornwall, Brockville and Ottawa districts
Steganosporium ovatum (Pers. ex Merat) Hughes Canker	sM	common throughout the Region; associated with branch dieback of this host