

FOREST INSECT AND DISEASE SURVEYS IN  
THE EASTERN REGION OF ONTARIO, 1976

C. A. BARNES

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

MARCH 1977

*Copies of this report may be obtained  
from:*

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

# Frontispiece



Severe defoliation of red pine trees by web-spinning sawfly, *Cephalcia frontalis*.



Typical mortality of white elm by the Dutch Elm disease, *Ceratocystis ulmi*.

## SURVEY HIGHLIGHTS

Hot dry weather in mid-April followed by cold unseasonable temperatures appeared to have been instrumental in reducing populations of early insect defoliators. The forest tent caterpillar, spruce budworm and satin moth showed evidence of population reductions. Nevertheless, populations of the forest tent caterpillar were sufficiently high to defoliate large areas of trembling aspen, sugar maple and other susceptible hardwoods over a wide area. The redheaded pine sawfly and the jack pine sawfly remained at high levels, necessitating control measures by the Ontario Ministry of Natural Resources (OMNR) and private landowners. European pine sawfly declined, particularly around Ottawa and in Prince Edward County. Cedar leafminers caused tip mortality to red juniper in Prince Edward County and white cedar near Belleville. The larch sawfly, fall webworm, fall cankerworm, pine web-spinning sawfly, needle midge, oak leafminer and basswood looper proved to be more troublesome than usual.

Cool, wet summer weather favored leaf spot diseases such as anthracnose, which was common at many points in the Region.

Dutch elm disease surveys showed that mortality rates among the surviving trees were higher than in 1975. Periodic nursery inspections revealed a complex of problems. Heavy infection of balsam poplar foliage by *Septoria populicola* Pk. created abnormally early leaf fall. Red pine tree mortality was noted at widely separated locations, and was presumed to have been caused by the 1975 drought. Emphasis was again placed on determining the relative abundance of needle rusts on conifers.

C. A. Barnes  
Technician

#### ACKNOWLEDGMENTS

The excellent cooperation received from the Ontario Ministry of Natural Resources and the forest industry as a whole is gratefully acknowledged.

## TABLE OF CONTENTS

	<i>Page</i>
INSECTS. . . . .	1
Fall Cankerworm, <i>Alsophila pometaria</i> . . . . .	1
Cedar Leafminers, <i>Argyresthia freyella</i> , <i>A. thuiella</i> , <i>Pulicalvaria thujaella</i> . . . . .	1
Pine Webspinning Sawfly, <i>Cephalcia</i> sp. prob. <i>frontalis</i> . . .	1
Spruce Budworm, <i>Choristoneura fumiferana</i> . . . . .	1
Pine Needle Midge, <i>Contarinia baeri</i> . . . . .	2
Oak Leaf Shredder, <i>Croesia semipurpurana</i> . . . . .	2
Birch Leafminer, <i>Fenusa pusilla</i> . . . . .	2
Fall Webworm, <i>Hyphantria cunea</i> . . . . .	2
Pine Engraver Beetle, <i>Ips pini</i> . . . . .	3
Forest Tent Caterpillar, <i>Malacosoma disstria</i> . . . . .	3
Redheaded Pine Sawfly, <i>Neodiprion lecontei</i> . . . . .	5
Jack Pine Sawfly, <i>Neodiprion pratti paradoxicus</i> . . . . .	5
European Pine Sawfly, <i>Neodiprion sertifer</i> . . . . .	5
White Pine Weevil, <i>Pissodes strobi</i> . . . . .	6
Larch Sawfly, <i>Pristiphora erichsonii</i> . . . . .	6
Oak Leafminer, <i>Profenusa lucifex</i> . . . . .	6
Other Forest Insects. . . . .	6
TREE DISEASES. . . . .	10
Anthracnose, <i>Marssonina juglandis</i> . . . . .	10
Dutch Elm Disease, <i>Ceratocystis ulmi</i> . . . . .	10
Pine Needle Rust, <i>Coleosporium asterum</i> . . . . .	10
Leaf Spot Disease, <i>Septoria populicola</i> . . . . .	12
Nursery Diseases. . . . .	12
Abiotic Damage. . . . .	12
Other Forest Diseases . . . . .	13

## APPENDIX

## INSECTS

### Fall Cankerworm, *Alsophila pometaria* (Harr.)

Damage by this obnoxious pest showed a sharp increase. Heavy infestations were commonly observed on ornamentals and roadside trees within the National Capital Commission Green Belt Forest, at many points from Arnprior south to Perth, and at scattered locations near Picton, Belleville and Trenton. Defoliation of white elm (*Ulmus americana* L.), red oak (*Quercus rubra* L.), sugar maple (*Acer saccharum* L.) and other hardwood species was conspicuous and in many instances the unsightly silken tents remained on infested trees. Light infestations occurred at widely separated points in the Brockville and Tweed districts.

### Cedar Leafminers, *Argyresthia freyella* Wlshmn., *A. thuiella* Pack., *Pulicalvaria thujaella* (Kft.)

The current outbreak of cedar leafminers, which began in 1969, virtually collapsed in 1976. After many years of moderate-to-severe defoliation it was pleasing to note that mortality of eastern white cedar (*Thuja occidentalis* L.) trees was less than anticipated. With minor exceptions, previously infested trees rebounded well, and only occasional tree and branch mortality occurred.

Small scattered pockets of moderate-to-heavy infestation persisted north of Marmora and light infestations were noted near Belleville (See Appendix, Fig. A1).

In Prince Edward County *A. freyella* caused severe tip damage of red juniper (*Juniperus virginiana* L.). Although this damage was widespread, the most notable infestation occurred near Black River and Picton.

### Pine Web-spinning Sawfly, *Cephalcia* sp. prob. *frontalis* Westw.

This insect seldom causes severe damage to infested trees, but in 1976 many red pine (*Pinus resinosa* Ait.) plantations in the Ottawa and Lanark districts became severely defoliated (see Frontispiece). The larvae spin webbing about themselves and feed by drawing mainly one-year-old needles into the nest. As the larvae develop, frass and bits of needles adhere to the feeding nests, causing the defoliated portions to appear "dirty". Buds developed normally on infested trees and, barring a recurrence of infestation, trees should develop normally in 1977.

### 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-260). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1976 and gives infestation forecasts for the province for 1977.

Pine Needle Midge, *Contarinia baeri* Prell

This pest proved troublesome in many Scots pine (*Pinus sylvestris* L.) Christmas tree plantings in the Lanark District. Damage was generally confined to the needles on the leading shoot and upper whorl of branches. Up to 25% of the trees in some plantations showed damage sufficient to reduce their market value. In the past, infestations were usually short-lived and trees under attack tended to recover from severe defoliation in two to three years. It is thought that infestations are controlled naturally by a small hymenopterous parasite (*Tetrastichus* sp.) which may parasitize more than 90% of midge populations.

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

Although the amount of defoliation caused to red oak decreased over all, heavy infestations persisted for the fourth consecutive year in Lavant Township, Lanark District, and for the second consecutive year in Nepean Township, Ottawa District (see Appendix, Fig. A2). The light-to-moderate infestations reported in 1975 in Denbigh Township and easterly to the Ottawa River decreased in 1976 and only small scattered pockets of light infestation were observed.

Birch Leafminer, *Fenusa pusilla* (Lep.)

As in the past five years, white birch (*Betula papyrifera* Marsh.) and wire birch (*B. populifolia* Marsh.) were once again heavily infested by this leaf-mining sawfly near Cornwall, Long Sault and Morrisburg, Cornwall District. The heaviest infestation occurred on trees located along the Long Sault Parkway, in parks managed by the St. Lawrence Seaway Authority, and east of Cornwall along Highway 401 near Curry Hill. Damage to leaf tissue ranged upward to 75%. Pockets of light infestation were common elsewhere in the Region.

Fall Webworm, *Hyphantria cunea* Dru.

For the fourth consecutive year infestations of this late summer defoliator of hardwoods occurred at many points. The most obvious infestations were in the Ottawa, Cornwall, Lanark and Brockville districts. In Tweed and Napanee districts many small localized infestations were noted. The favored hosts, black ash (*Fraxinus nigra* Marsh.)

and white elm were in many instances completely defoliated and covered by unsightly webbing. Ornamentals in many cities, towns and villages were infested, prompting many calls from concerned property owners.

Pine Engraver Beetle, *Ips pini* Say

A combination of thinning operations and drought contributed to the buildup of this insect in red pine plantations in the Limerick Forest, Brockville District, and on the Cotnam property, Lanark District. This bark beetle is generally considered incapable of killing trees, except where the trees have been weakened by other factors or are growing in close proximity to large amounts of brood material, where emerging populations are extremely high.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Although 1,120 km<sup>2</sup> (700 sq. mi.) of forested land were infested, damage was less severe than anticipated. Infestations were expected to cover an area from Marmora east to Perth but in mid-April unseasonably high temperatures gave rise to an early hatch of eggs. This was followed by cold, inclement weather which is thought to have caused considerable mortality of young larvae. Two large infestations occurred, one each in the Tweed and Lanark districts. The first covered an area of approximately 800 km<sup>2</sup> (500 sq. mi.) in the central part of the Tweed District where trembling aspen (*Populus tremuloides* Michx.) was the principal host. Defoliation, though spotty, ranged upward to 80%. The second, approximately 160 km<sup>2</sup> (100 sq. mi.) in size, severely defoliated trembling aspen, red oak and sugar maple in the western part of the Lanark District (see Appendix, Fig. A3). Many small pockets adjacent to the main infestations were noted in Marmora, Rawdon, Madoc, Elzevir and Lake townships, Tweed District and in Bathurst and Drummond townships, Lanark District.

Dissection of cocoons following moth emergence showed that parasitism by *Sarcophaga aldrichii* Park ranged from a low of 49% to a high of 76% (Table 1). In July, moth flights were extremely heavy in the Perth, MacDonalds Corners, and Sharbot Lake areas. This, as well as high egg densities, indicates a continuation and expansion of infestation in 1977 (Table 2). A further indication of expanding infestations is reflected in the number of moths captured in a light trap located near Sharbot Lake. Moths were so abundant that quantitative measurements were difficult. Well over 7,000 were captured in 1976 compared with 344 in 1973, 421 in 1974, and 1,686 in 1975.

Table 1. Results of forest tent caterpillar cocoon dissection at nine locations in 1976 (100 cocoons examined at each location).

Location (Twp)	Parasitized (%)	Diseased (%)	Adult emergence (%)
Tweed District			
Kaladar	76	9	15
Kenebec	51	5	44
Marmora	72	2	28
Olden	60	7	33
Hungerford	64	5	31
Palmerston	49	11	40
Lanark District			
South Sherbrooke	59	5	36
Drummond	64	3	33
Dalhousie	65	18	27

Table 2. Summary of forest tent caterpillar egg-band counts and infestation forecasts in three districts in 1976 (based on the examination of one to three trees at each location).

Location (Twp)	Avg. DBH (cm) <sup>a</sup>	No. of trees examined	No. of egg bands per tree	Forecast for 1977
Tweed District				
Marmora	12.7	1	37	heavy
Madoc	12.7	1	56	"
Hungerford	10.1	1	128	"
Kaladar	12.7	1	124	"
Olden	12.7	1	83	"
Lanark District				
North Sherbrooke	38.1	10	42	"
Lanark	10.1	3	5	moderate
Drummond	12.7	1	61	heavy
Brockville District				
Oxford	12.7	3	0	nil

<sup>a</sup> 1 cm = 0.39 in.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Although population levels of this sawfly on red pine were high in 1976, spray operations carried out by OMNR and private landowners were quite extensive and in many instances were successful in keeping numbers down and damage low. Trees in infestations not treated with chemicals suffered severe defoliation at many points. The most serious infestation was located in a jack pine (*Pinus banksiana* Lamb.) plantation in Marlborough Township, Ottawa District, where the infestation and subsequent defoliation were extreme. Tree mortality was observed and more is anticipated. Several other heavy infestations were noted at scattered locations in the Region.

The heavy infestation reported near Marmora in 1975 declined to a low level in 1976. The aerial application of Malathion in 1975 was so effective that no colonies were observed in 1976.

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

As in past years, infestations were confined to plantation, hedgerow and windbreak jack pine in Cornwall, Brockville, Lanark and Ottawa districts. Heavy infestations were common at scattered locations in Ramsay Township, Lanark District and North Augusta, Athens and Merrickville, Brockville District. Many of these infestations were sprayed with Malathion with apparently good results. In Cornwall, Lanark and Ottawa districts several small localized infestations were noted with moderate-to-heavy defoliation of hedgerows and windbreak trees. Small, scattered, heavy infestations were noted near Denbigh in the Tweed District, Bells Corners in the Ottawa District and at many locations in the Brockville and Cornwall districts. The heavy infestation that occurred near Monckland Station in 1975 declined to a low level in 1976.

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

New distribution records were established when occasional colonies of larvae were recorded on Mugho pine (*Pinus mugho* Turra var. *mughus* Zenari) near the Kemptville nursery and at scattered locations in the Brockville District. Beyond this the sawfly proved to be less important than usual. Jack pine, red pine and Scots pine trees were lightly defoliated in Sandbanks Provincial Park, Prince Edward County, where the insect was controlled using Nuclear Polyhedrosis Virus in 1975.

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

Varying degrees of damage were noted. The heaviest infestation observed was in a 3-3.5 m (10-12 ft) high white pine (*Pinus strobus* L.) plantation in the LaRose Forest, Cornwall District, where 13 of 100 trees examined had infested leading shoots. Damage was less severe this year in white pine plantings near Tweed where the weevil has been a chronic problem. Some localized infestations were noted in the National Capital Commission Green Belt Forest and elsewhere in the Region. Control measures using Methoxychlor in solution combined with the clipping and pruning of infested shoots were carried out at many locations with varying degrees of success.

### Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Infestations of this pest continue to intensify. In the LaRose Forest, Cornwall District, defoliation of European larch (*Larix decidua* Mill.) was severe. In the Lanark District, several heavy infestations were observed on native larch (*Larix laricina* [Du Roi] K. Koch) near MacDonalds Corners, west of Almonte, and near Lanark.

### Oak Leafminer, *Profenusa lucifex* Ross

Severe leafmining accompanied by premature leaf fall was evident on bur oak (*Quercus macrocarpa* Michx.) at several locations in the Kingston, Belleville and Gananoque areas. The most severe damage occurred along Highway 33 north of Kingston and along The Thousand Islands Parkway. Light infestations were noted near the Howe Island turnoff and near Trenton.

Table 3. Other forest insects

Insect	Host(s)	Remarks
<i>Adelges abietis</i> Linn.	WS	new shoots on occasional trees heavily infested near Tatlock, Lanark District
<i>Altica ulmi</i> Woods	Siberian elm	heavy infestations on ornamental trees near Kemptville
<i>Amphipyra pyramidoides</i> Gn.	Ba	small numbers on roadside trees near Perth

(continued)

Table 3. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Anisota finlaysoni</i> Riotte	bO	occasional colonies on roadside trees near Gananoque
<i>Anomogyna elimata</i> Gn.	Bu	small numbers on hedgerow trees north of Lanark
<i>Archips cerasivoranus</i> Fitch	cCh	Heavy infestations were observed at many points. The most notable of these were on roadside trees near Chesterville, Hawkesbury, Lanark, Ottawa and Bells Corners.
<i>Argyrotaenia quercifolia</i> Fitch	rO	small numbers near Bells Corners
<i>Argyresthia laricella</i> Kft.	eL	population levels low near Oxford Station
<i>Atimia confusa</i> Say	rJ	common in trap logs near Picton, Prince Edward County
<i>Callidium frigidum</i> Casey	rJ	small numbers in trap logs
<i>Cenopis pettitana</i> Roh.	sM	scattered pockets of heavy infestation at many points in Ottawa and Lanark districts
<i>Choristoneura conflictana</i> Wlk.	tA	small localized pocket of light infestation near Denbigh, Tweed District
<i>Choristoneura rosaceana</i> Harr.	Ba	small numbers on roadside trees near Lanark
<i>Coleophora betulivora</i> McD.	wB	populations low on shoreline trees in Plantagenet and Alfred twp, Ottawa District
<i>Coleophora laricella</i> Hbn.	eL, tL	moderate-to-heavy infestations on understory trees near Kaladar; light infestations near Kemptville

(continued)

Table 3. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Datana integerrima</i> G. & R.	bW	some defoliation on hedge-row near Smiths Falls
<i>Gargaphia tiliae</i> Walsh	Ba	severe skeletonizing on leaves of understory trees near Otty Lake, Lanark District
<i>Malacosoma americanum</i> F.	cCh, pCh, Haw	moderate-to-heavy infestations on roadside shrubs at many locations
<i>Messa nana</i> Klug.	wB	moderate infestation on fringe trees near Kaladar
<i>Nematus populi</i> Marl.	tA	occasional colonies on understory trees near Sharbot Lake
<i>Nymphalis antiopa</i> L.	Hybrid poplar	fringe trees lightly infested near North Augusta, Brockville District
<i>Ocnerostoma</i> sp.	rP	fringe and open-growing trees moderately infested by needle miner at Rideau Provincial Park
<i>Orthosia hibisci</i> Gn.	wB, wiB, Bu, Ba, rO	common on beating tray samples at many locations
<i>Petrova albicapitana</i> Busck.	jP	pitch nodules common through most of jack pine plantation in Torbolton Forest
<i>Phigalia titea</i> Cram.	Bu, wE	small numbers of larvae on occasional trees near Bells Corners and Lanark
<i>Phratora purpurea purpurea</i> Brown	tA	adults common on this host near Sharbot Lake
<i>Phloeosinus canadensis</i>	rJ	in trap logs in low numbers near Picton

(continued)

Table 3. Other forest insects (concluded)

Insect	Host(s)	Remarks
<i>Pikonema alaskensis</i> Roh.	wS	light-to-moderate infestations noted near Lanark and Tatlock junction
<i>Plagiodera versicolora</i>	W	adults common on fringe trees near Cherry Valley
<i>Pleroneura brunneicornis</i> Roh.	bF	primitive sawfly common on new shoots near Kaladar; lower population levels near Denbigh
<i>Pseudexentera cressoniana</i>	rO	small numbers observed
<i>Pulicalvaria piceaella</i> Kft.	wS	hedgerow trees lightly to moderately infested near Cherry Valley, Dirleton and Kemptville
<i>Rhabdophaga swaini</i> Felt.	wS	common on fringe trees near Outlet Provincial Park
<i>Stilpnotia salicis</i> Linn.	Silver poplar	complete collapse of infestations; none found in 1976
<i>Towneyella numismaticum</i> P. & McD.	jP	tortoise scale common but at low levels near Ompah, Denbigh and Burritts Rapids
<i>Zeiraphera destitutana</i> (Walker)	wS	small numbers at all sample points

## TREE DISEASES

Anthracnose, *Marssonina juglandis* (Lib.) Magn.

Severe leaf damage, some of it resulting in heavy defoliation, occurred on butternut (*Juglans cinerea* L.) at two widely separated locations. The most obvious damage occurred on butternut north of Lanark where many trees were severely defoliated. Moderate-to-heavy damage occurred along Concession XII in Fitzroy Township. Light defoliation was noted on black walnut (*Juglans nigra* L.) near Smiths Falls.

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

In 1976 damage levels and mortality of white elm trees was again widespread (see Frontispiece).

Over the past 4 years several mortality plots have been evaluated. In 1976 too few trees remain in some plots to give an accurate statistical comparison (see footnote, Table 4). In three of the remaining plots checked in 1976, the mortality rate appears to be on the increase, as 30% of the remaining trees died compared with 7% in 1975.

In mid-summer general surveys and observations showed severe symptoms at many points in the Region, indicating that mortality may equal or exceed in 1977 that reported in 1976.

In an attempt to save white elm trees of high aesthetic value, injection treatments were made by the National Capital Commission and by private organizations for concerned property owners.

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

This needle rust was commonly observed, but only light damage was evident. The heaviest damage levels found were in a jack pine plantation near the village of Ompah, Tweed District. Elsewhere light defoliation was common in Nepean and Fitzroy townships, Ottawa District and in Anglesea Township, Tweed District (Table 5). In late summer, rust levels were high on the secondary host, goldenrod (*Solidago canadensis* L.), near Bells Corners, Ottawa District.

Table 4. Summary of white elm mortality caused by Dutch elm disease in eight plots in the Eastern Region from 1973 to 1976

Location (Twp)	No. of trees examined	Living trees			
		1973	1974	1975	1976
Cornwall District					
Lancaster	40	37	35	29	19
Lanark District					
Lanark	40	31	27	24	14
North Sherbrooke	40	28	21	15	11
Montague	40	19	13	6	2
Napane District					
Camden	40	25	19	13	- <sup>a</sup>
Rawdon	40	27	24	- <sup>a</sup>	- <sup>a</sup>
Sophiasburgh	25	19	14	8	- <sup>a</sup>
Ottawa District					
Osgoode	40	23	21	6	4
Tweed District					
Hungerford	40	19	11	- <sup>a</sup>	- <sup>a</sup>

<sup>a</sup> These plots were not evaluated in 1975 and 1976 since either mortality is complete or the trees have been removed.

Table 5. Summary of pine needle rust damage at five points in 1976 (counts based on the evaluation of 150 trees at each location).

Location (Twp)	Tree species	Tree height (m) <sup>a</sup>	Damage level 1976
Ottawa District			
Nepean	rP	4	light
Nepean	jP	5	light
Fitzroy	rP	1	light
Tweed District			
Clarendon	jP	5	light
Anglesea	rP	4	light
Brockville District			
Oxford	rP	3	nil

<sup>a</sup> 1 m = 3.28 ft

### Leaf Spot Disease, *Septoria populicola* Pk.

This leaf spot disease of balsam poplar (*Populus balsamifera* L.) caused heavy browning and severe defoliation at many points. It occurs commonly, usually in varying degrees of intensity. In 1976 outbreaks and damage were widespread. Although this disease causes leaves to wither and drop prematurely, most damage occurs late in the growing season; therefore damage to host trees is minimal. Defoliation was highest near Prescott, Kemptville and Winchester and west of Ottawa.

### Nursery Diseases

A disease of major importance in nurseries in the United States and more recently in nurseries in southern Ontario, *Cylindrocladium floridanum* Sob and Seymour, was identified in 1975 from soil samples submitted from several nursery compartments at the Kemptville Forest Station. These compartments were watched carefully in 1976 and all seedlings with suspect symptoms were submitted for analysis. The causal agent was not found, but continued vigilance is planned.

In 1976 white pine seedlings and Scots pine windbreaks were lightly damaged by pine needle cast (*Lophodermium* sp.).

In compartment 62 several leaf blotch diseases were identified. Browning of the leaves of hybrid poplar (*Populus* sp.) by *Colletatrichum gloeosporioides* Penz. was moderate. Other leaf diseases causing varying degrees of damage were *Marssonina populi* Lib. & Magn. and *Melampsora medusae* Thuem.

*Fusarium* sp. was common in rootlets of red pine in compartment 54; several patches of red pine mortality occurred. A seedling blight caused by *Pestalotia funerea* Desm. was common in compartment 11.

### Abiotic Damage

Red pine trees 12-15 m (40-50 ft) in height were found to have been killed in patches at three widely separated locations, apparently as a result of the 1975 drought conditions. Pockets of mortality were noted in the LaRose and Limerick forests and at two locations near Lanark. Two insects, the red turpentine beetle (*Dendroctenus valens* Lec.) and the pine engraver beetle (*Ips pini* Say) were present in these dead trees.

Damage caused by adverse winter conditions was negligible. Light hail damage was observed in a small white pine planting near Iroquois, Cornwall District.

Salt injury to trees along highways was most noticeable on hills and near corners where the salt seemed to have been concentrated.

Table 6. Other forest diseases

Organism	Host(s)	Remarks
<i>Armillaria mellea</i> (Vahl ex Fr.) Kummer	rP	dead trees in Limerick Forest; common in region
<i>Ciborinia whetzelii</i> (Seaver) Seaver	Hybrid poplar	common but at low levels of infection near St. Isadore, Cornwall District
<i>Cylindrosporella caryae</i> (Peck) Petr.	Hi	common on many trees along the Thousand Islands Parkway
<i>Cylindrosporium</i> sp.	bPo	severe damage on roadside trees near Berwick, Cornwall District
<i>Cytospora</i> sp.	rJ, rS, nM	associated with dieback on Norway maple ( <i>Acer platanoides</i> L.) near Long Sault and on red juniper near Picton; light branch mortality on red spruce ( <i>Picea rubens</i> Sarg.) at Central Research Forest near Ottawa
<i>Lophodermium</i> sp.	wP, rP	Light needle damage near Gourget
<i>Lophodermium pinastri</i> (Schrad. ex Hook.) Chev.	rP, jP	medium defoliation in a red pine plantation near Bourget; jack pine plantation in Limerick Forest lightly damaged
<i>Venturia populina</i> (Vall.) Fabric. (=) <i>Pollaccia elegans</i> Serv.	bPo	medium-to-heavy defoliation on fringe trees near Dirleton, Ottawa District

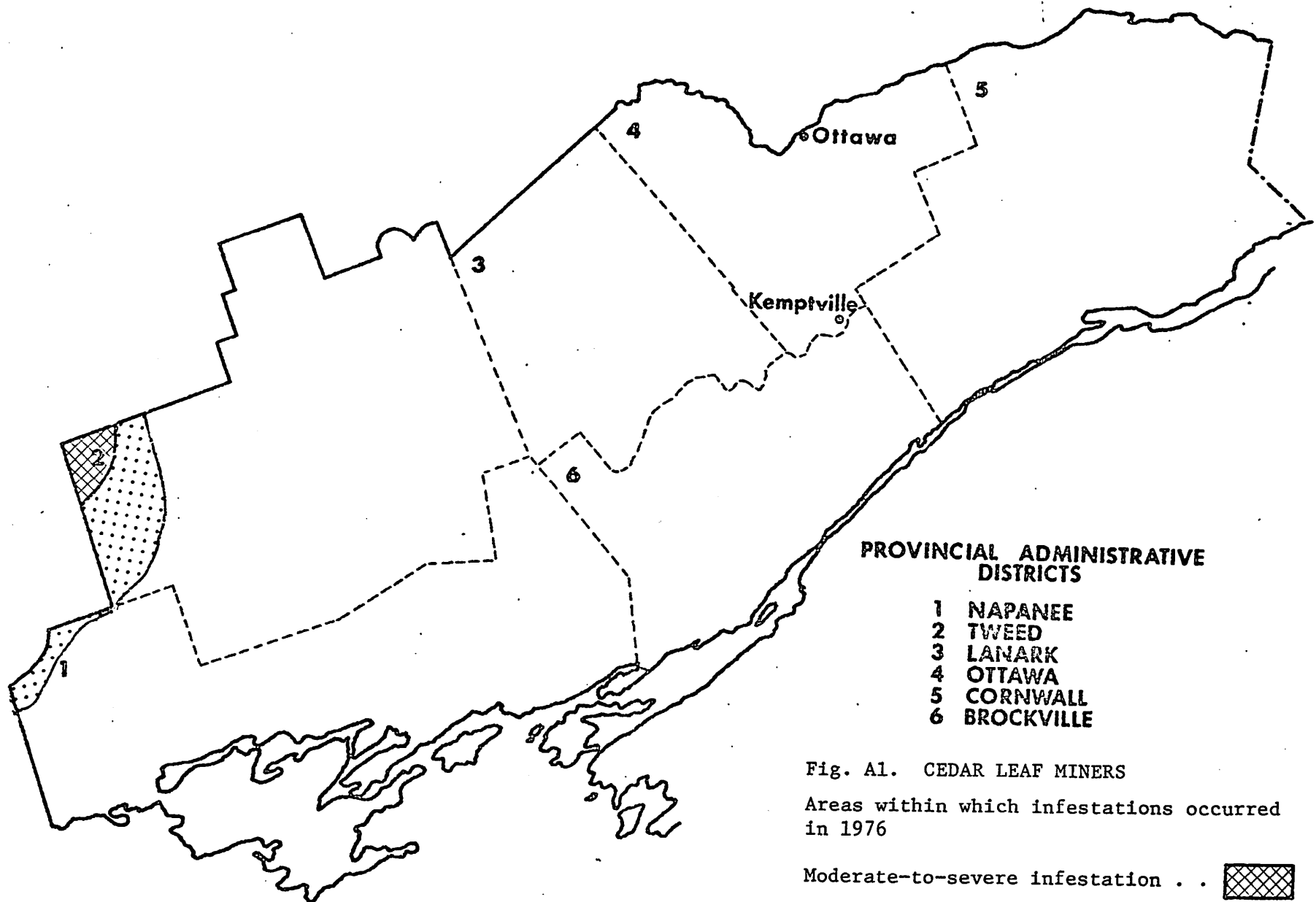
(continued)

Table 6. Other forest diseases (concluded)

Organism	Host(s)	Remarks
<i>Venturia macularis</i> (Fr.) Müller & Ark. = <i>Pollaccia</i> <i>radiosa</i> (Lib.) Bald. & Cif.	tA	damage intensity variable on leading shoots of regeneration
Rodent damage	various	light damage to planta- tion pine and roadside shrubs at many locations
Semimature tissue needle blight	wP	low levels of damage in planting near Iroquois, Cornwall District

## APPENDIX

# EASTERN REGION





## PROVINCIAL ADMINISTRATIVE DISTRICTS

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

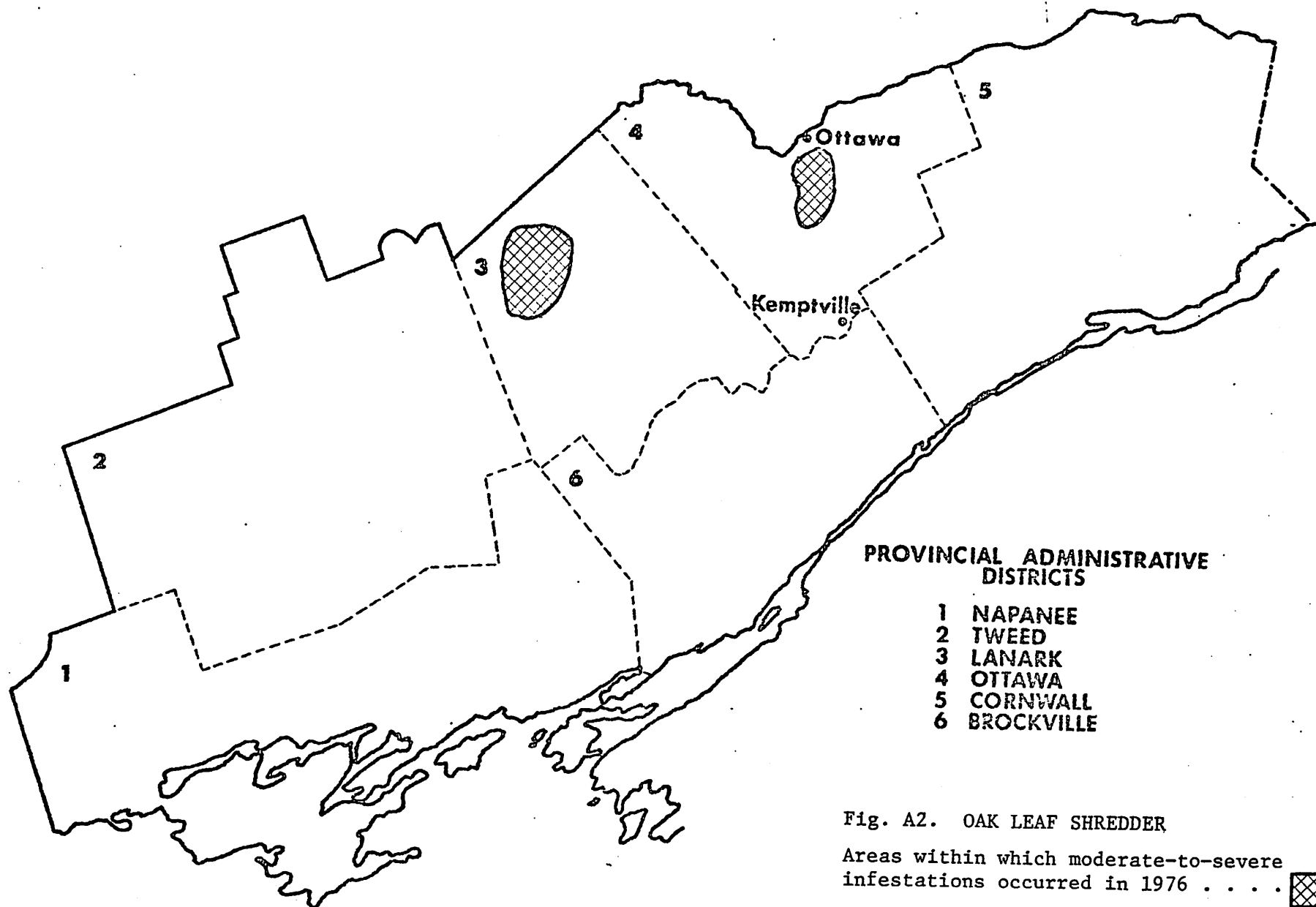
Fig. A1. CEDAR LEAF MINERS

Areas within which infestations occurred in 1976

Moderate-to-severe infestation . . . 

Light infestation . . . . . 

# EASTERN REGION



# EASTERN REGION

