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FOREST PEST CONDITIONS IN THE MARITIMES

IN 1977 WITH AN OUTLOOK FOR 1978

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by

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Fredericton, New Brunswick

Information Report M-X-82

Canadian Forestry Service

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1977

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ABSTRACT

This report reviews the status of forest insects and tree diseases in the Maritimes Region in 1977 and gives, for some pests, a forecast of conditions for 1978.

RESUME

Ce rapport passe en revue les conditions relatives aux divers insectes et maladies des arbres dans la Région des Maritimes en 1977 et présente un aperçu des conditions prévues pour quelques uns des ces organismes nuisibles en 1978.

ACKNOWLEDGEMENTS

Collecting the information and preparing this report was a joint effort of all members of the Forest Insect and Disease Survey, Maritimes Forest Research Centre. While I assume responsibility for the report, I wish to share any credit with my co-workers: C. L. Burlock, L. J. Coady, C. M. Dobson, D. E. Elgee, W. Harrington, K. J. Harrison, C. D. MacCall, K. J. McKnight, O. A. Meikle, W. R. Newell, S. E. Pond, and F. A. Titus. Dr. T. E. Sterner was also a member of the group for most of the field season.

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INTRODUCTION

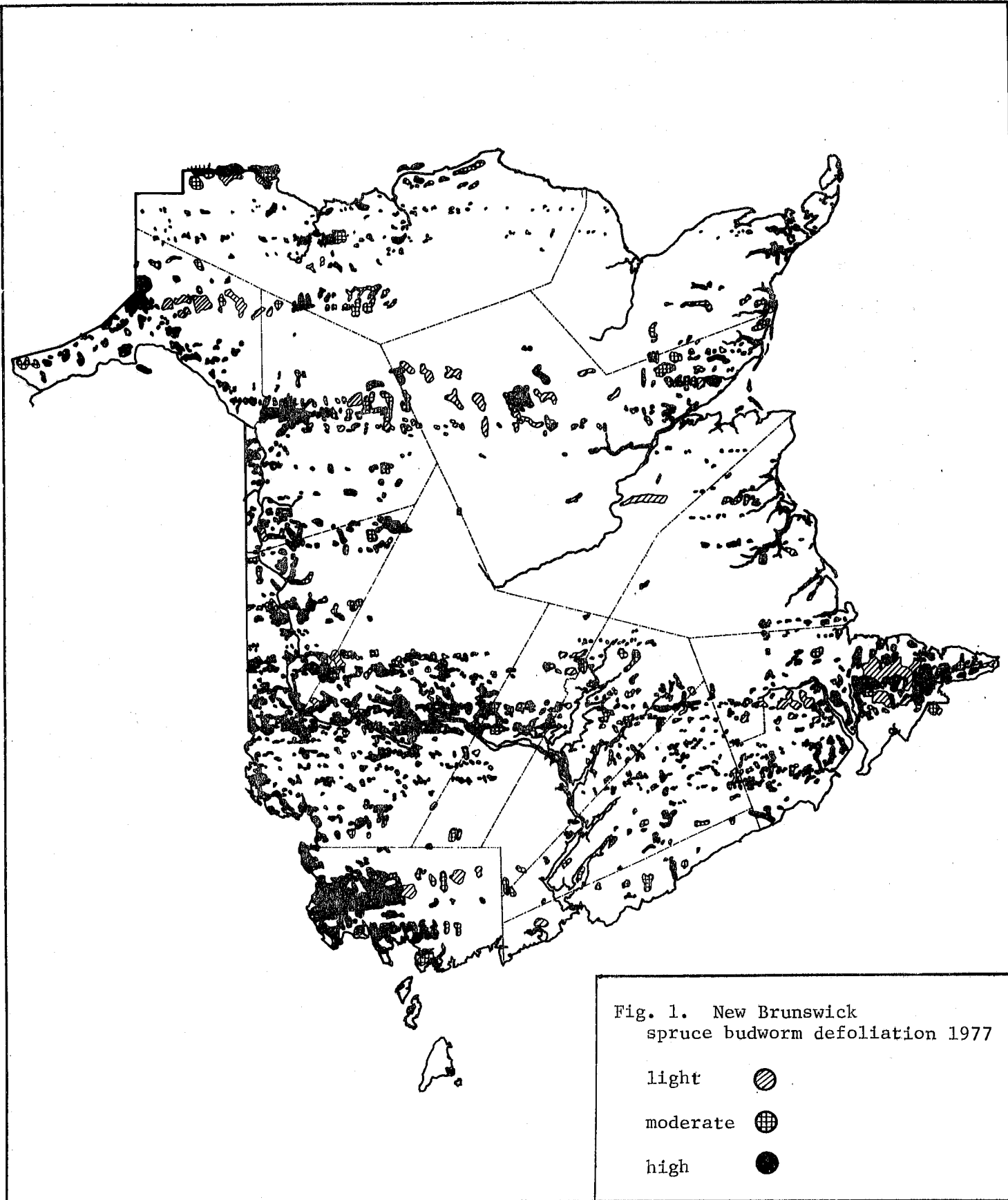
One of the objectives of the Forest Insect and Disease Survey is to monitor forest insect and disease conditions and to report on the status of the important and most common pests. In the Maritimes, this information is published in Seasonal Highlights, Special Reports on pests of particular interest, Information Reports, and in the Annual Report of the Forest Insect and Disease Survey.

This report outlines forest pest conditions in 1977 with an outlook on conditions expected in 1978. It aims to provide forest managers with information on pest conditions early enough to be considered in management decisions before the start of the following season. Only those insects and diseases that were widespread and caused considerable concern are discussed in detail. Others of localized or of lesser importance are presented in tabular form. More information on specific conditions will be provided upon request from the Maritimes Forest Research Centre.

IMPORTANT FOREST PESTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)--Detailed information on forest conditions as a result of spruce budworm infestations in 1977 and the results of spray operations in New Brunswick have been reported by Kettela *et al.* (Marit. For. Res. Cent. Info. Rep. M-X-81, 1977). The following summary is based on that report.

In New Brunswick, defoliation of balsam fir and spruce stands occurred on slightly less than 607,000 ha (1.5 million acres), of which defoliation was severe on about 342,000 ha (845,000 acres), moderate on 132,000 ha (326,000 acres), and light on 121,000 ha (300,000 acres). Most of the severe defoliation occurred in western Charlotte County, along the St. John River Valley from Edmundston to Saint John, in patches throughout southern New Brunswick, particularly in Westmorland County, and in small scattered patches throughout the rest of the Province (Fig. 1). This represents some decrease in defoliation from 1976 but the area of defoliation is significantly smaller than in 1975 when 3.5 million ha (8.7 million acres) were classed as severely or moderately defoliated. An increase in spruce budworm populations is forecast for 1978. Based on egg-mass counts, population levels will be high on about 1.9 million ha (4.7 million acres) and moderate on 1.1 million ha (2.7 million acres), an increase, over 1977, of 526,000 ha (1.3 million acres) for the high population class. The area of high and extreme high hazard to stands (risk of tree mortality and top killing with further attack) is estimated at 2.3 million ha (5.8 million acres), up from 2.0 million ha (5.0 million acres) so rated in 1977.



In Nova Scotia, 769,000 ha (1.9 million acres) of balsam fir, spruce, and tamarack stands suffered severe defoliation on Cape Breton Island. On the mainland, defoliation was severe on about 8,100 ha (20,000 acres), mostly in Cumberland County, moderate on 46,000 ha (114,000 acres), and light on 115,000 ha (283,000 acres) (Fig. 2). Egg-mass counts indicate that defoliation will again be severe in 1978 throughout Cape Breton Island. Some areas of Cumberland, Pictou, Antigonish, and Guysborough counties are also expected to suffer moderate to severe defoliation.

The condition of the forests has been deteriorating on Cape Breton Island as a result of repeated severe defoliation by the spruce budworm. A recent study by the Forest Insect and Disease Survey showed that about 16% of balsam fir on the Highlands and about 9% on the Lowlands are dead and an additional 10% is expected to die in 1978 (Sterner, Embree, van Raalte, Marit. For. Res. Cent. Info. Rep. M-X-80, 1977).

By the fall of 1977 more than half of the balsam fir trees (38 of 67) were dead which had been classified on permanent plots in the fall of 1976 or spring of 1977 as "more than 90% of foliage lost". Of all the dead balsam fir trees (44) examined most (38) were in this class when first classified.

On the Cape Breton Highlands, balsam fir mortality has occurred in young silviculturally spaced areas and was heaviest in stands that had severe current defoliation for the last 3 years, coupled with moderate or severe back-feeding in 1976 and 1977. Mortality ranged from 20 to 69% in the three such stands examined; in areas with less defoliation

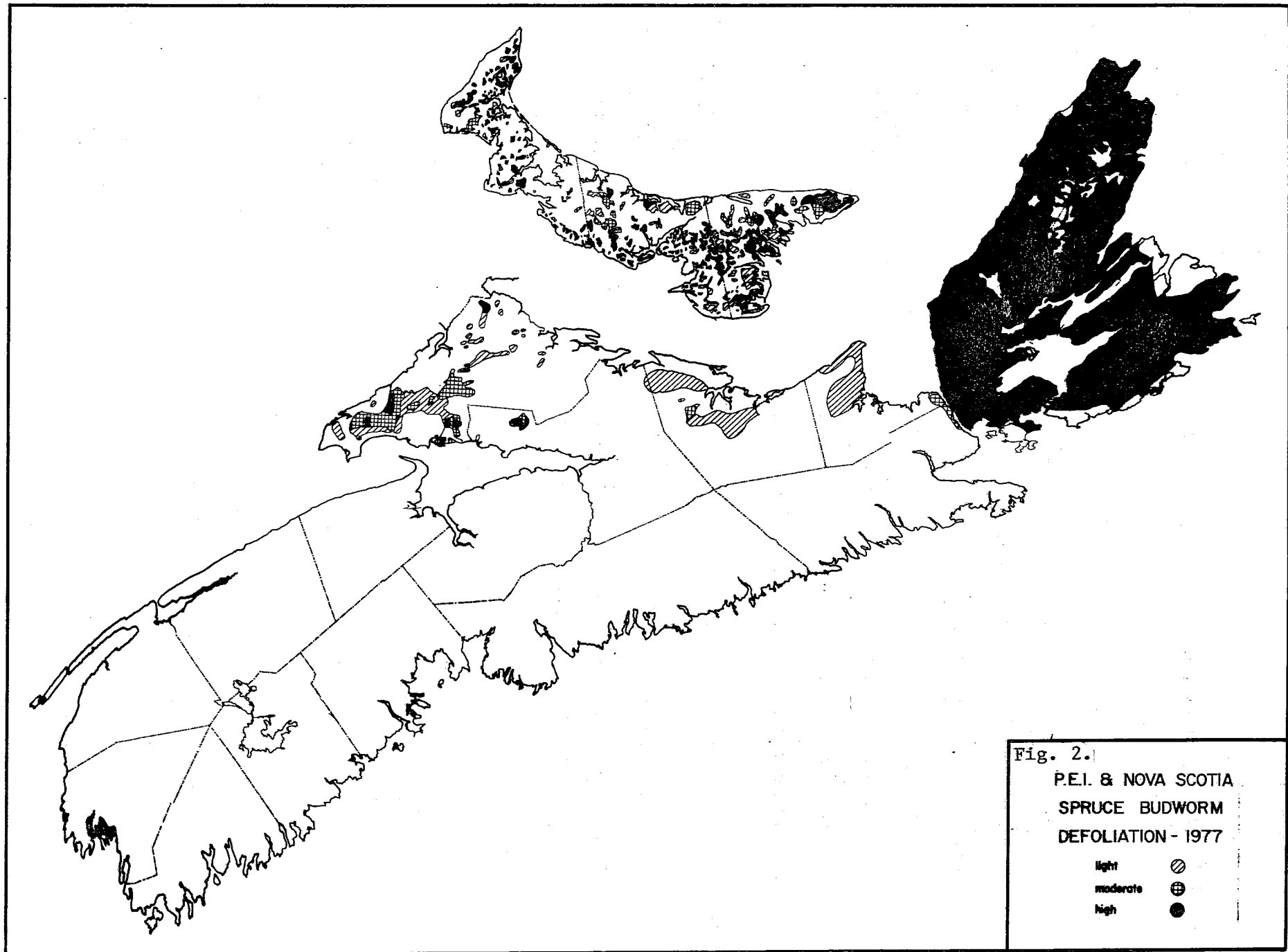


Fig. 2.
P.E.I. & NOVA SCOTIA
SPRUCE BUDWORM
DEFOLIATION - 1977

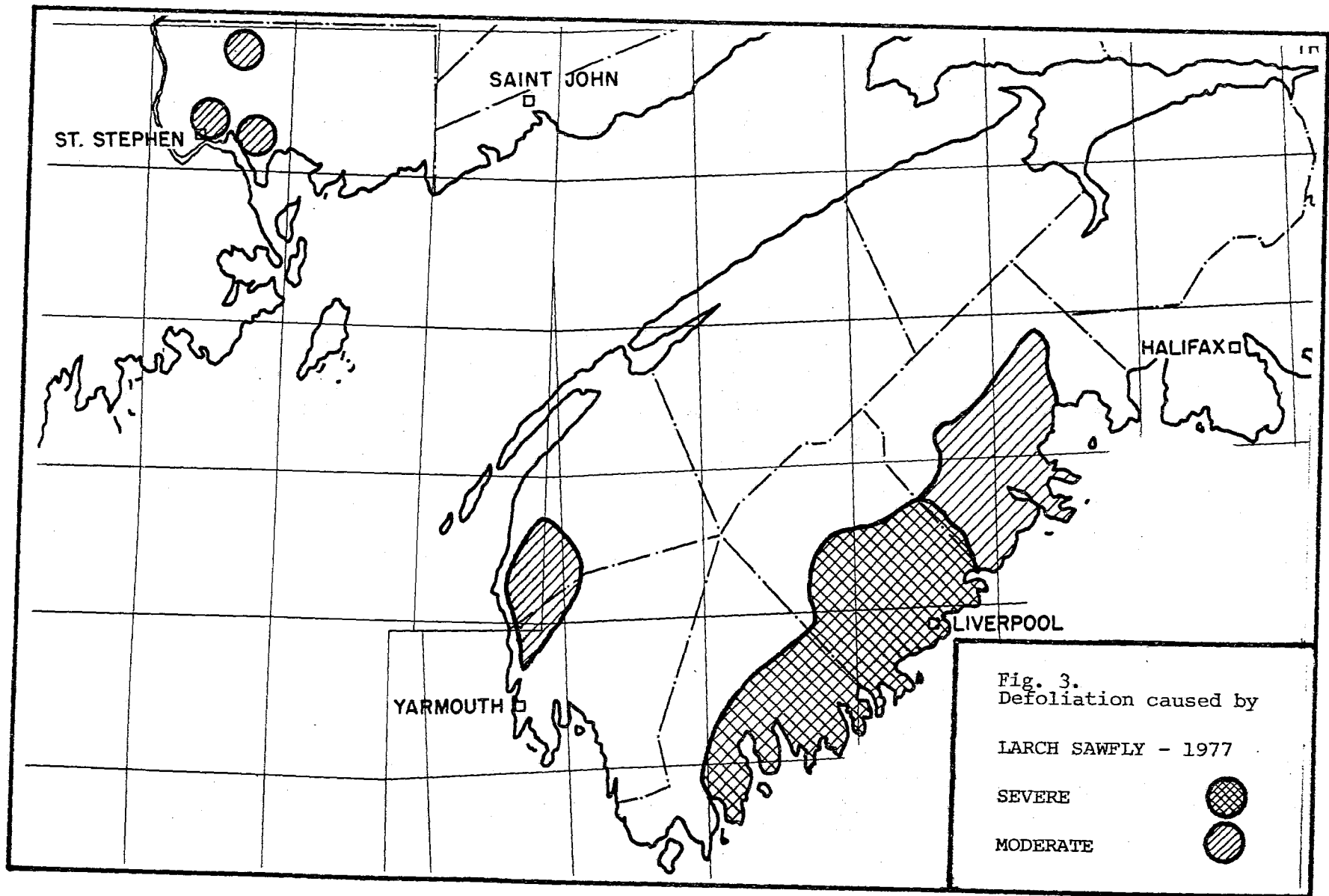
light	⊘
moderate	⊕
high	●

mortality ranged from 0 to 27%. In 1978, further mortality is expected in spaced areas as some stands have from 12 to 33% of the balsam fir trees with more than 90% foliage lost, and bud production on these was lower this year than in 1976.

In Prince Edward Island, 136,000 ha (337,000 acres) of balsam fir and spruce were affected. Of this, defoliation was severe on 69,000 ha (170,000 acres), moderate on 39,000 ha (97,000 acres) and light on about 28,000 ha (70,000 acres) (Fig. 2). In 1978, the spruce budworm population is expected to be lower than in 1977 but still high enough to cause moderate to severe defoliation throughout much of the Province.

Larch Sawfly, *Pristiphora erichsonnii* (Htg.)--This insect was present in larch stands at scattered locations throughout the Region but the size of moderate or severe defoliation has declined for the second consecutive year, especially in Nova Scotia and on Prince Edward Island. This decline follows a period of population build up in the early 1970's which culminated in 1975.

Moderate or severe defoliation occurred only in the coastal regions of Lunenburg, Queens, and Shelburne counties (Fig. 3). Elsewhere in Nova Scotia, defoliation was usually very light. However, on Cape Breton Island, larch stands in most areas of sawfly infestations had very little foliage left because of feeding by the spruce budworm and possibly because of stem attack by the eastern larch beetle. In Prince Edward Island, light defoliation occurred in the Farmington-Mount Hope area of Kings County. In New Brunswick, defoliation was light or moderate in patches only in southwestern Charlotte County.



In 1978, no new large-scale outbreaks are predicted and the area of moderate or severe defoliation may be smaller in southwestern Nova Scotia.

Eastern Larch Beetle, *Dendroctonus simplex* Lec.--This beetle was common in Nova Scotia and southeastern Prince Edward Island (Fig. 4) and contributed to the decline and mortality of larch trees. No mortality was observed in New Brunswick and the beetle was collected only near St. Martins, St. John County. Trees of all ages were affected and dead or dying larch were present in 8 of 10 infested stands assessed in central Nova Scotia and in the three examined on Prince Edward Island (Table 1).

Table 1. Condition of larch examined in beetle infested stands, 1977

Classes	Central N.S. (10 Areas)		P.E.I. (3 Areas)	
	(%)		(%)	
	Trees* infested	Volume (range)	Trees* infested	Volume (range)
Healthy	23.9	20.5 (0-84)	17.5	13.7 (0-68)
Living and infested	30.4	28.8 (0-80)	0	0
Dying and infested	5.8	4.6 (0-47)	0	0
Dead from beetle	29.7	34.5 (0-70)	25.0	30.5 (0-39)
Dead from other causes	10.2	11.6 (0-29)	57.5	55.8 (32-68)
Larch composition of stand	58.8%	80 m ³ /ha	50.6%	58 m ³ /ha

* Percent based on merchantable trees examined.

This build up of beetle population follows a period of several years of moderate or severe defoliation by the larch sawfly in most

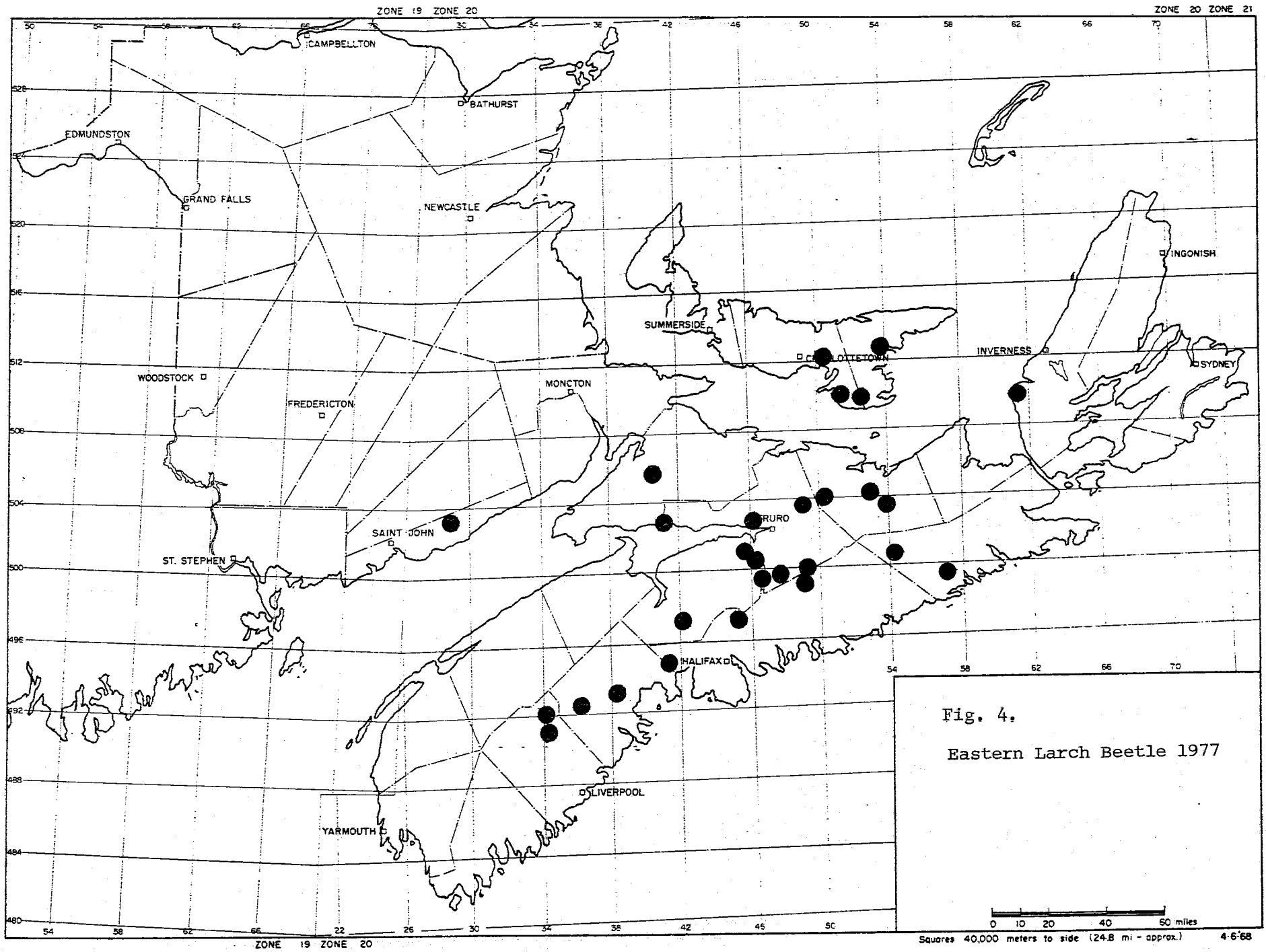


Fig. 4.
Eastern Larch Beetle 1977

larch stands in Nova Scotia and Prince Edward Island. The larch beetle has not been reported as causing damage in the Region for at least 25 years.

In 1978, more trees are expected to die, especially in central Nova Scotia where about 35% of the living trees examined were infested.

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria*

(Guen.)--In Prince Edward Island, this insect caused severe defoliation in the central highlands region of Queens County and in a few patches southwest of Shamrock, Prince County. The total area of infestation was about 220 km² (85 sq mi) within which numerous 4-8 ha (10-20 acre) patches of forest were affected (Fig. 5). Assessment of tree condition in affected stands showed that 78% (50-100%) of the living balsam fir and all of the living hemlock examined were in the "more than 90% complete defoliation" class (Table 2 for merchantable trees); 35% of the buds examined on mid-crown branches of balsam fir in this class were dead. Moderate or severe defoliation by the spruce budworm has occurred in the affected area since 1974, which accounts for the condition of spruce and partly, no doubt, of balsam fir and hemlock. Elsewhere in the Region, no appreciable defoliation was found.

In 1978, defoliation and balsam fir tree mortality are expected to occur in central Prince Edward Island as many of the trees that have presently lost more than 90% of their foliage may die. Defoliation may also occur near West Devon, Prince County, P.E.I. and Stillwater Lake, Guysborough County, N.S. as indicated by 1977's larval populations at these locations.

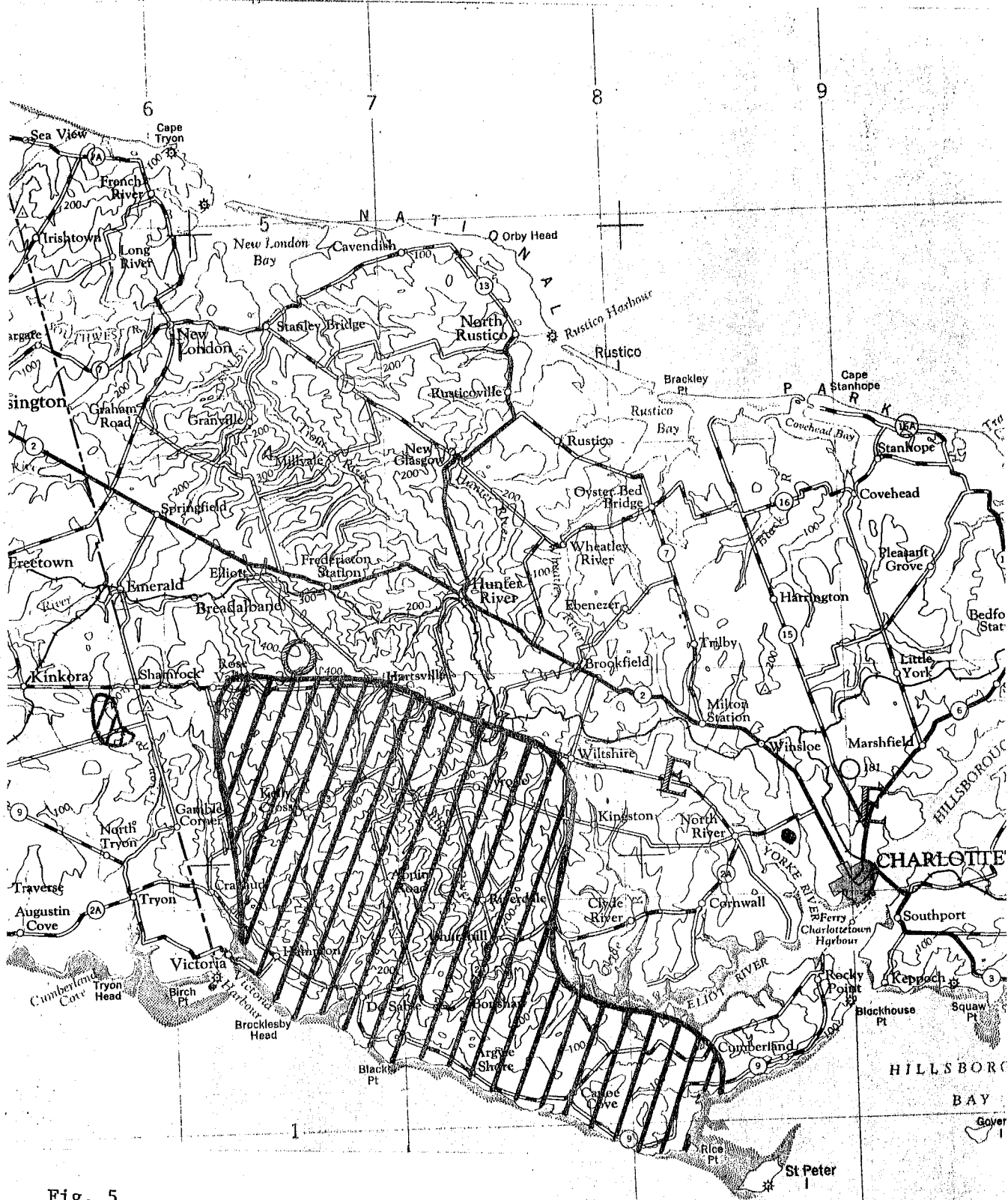


Fig. 5.
Hemlock Looper - P.E.I. - 1977

Infestation area:



Numerous 4-8 ha (10-20A) patches

Scale 1: 250,000

A I T

Table 2. Condition of conifers in the 1977 hemlock looper outbreak area in Prince Edward Island, based on trees of merchantable size (assessed October 1977)

Condition	Balsam fir (%)		Spruce (red & white) (%)		Hemlock ² (%)	
	Stems ¹	Merchantable volume	Stems	Merchantable volume	Stems	Merchantable volume
Mortality						
Dead less than 2 years	14.1	13.2	0	0	8.3	9.8
Dead 2 years or more	2.7	3.1	0	0	0	0
Total	16.8	16.3	0	0	8.3	9.8
Defoliation						
Current only	0	0	17.4	21.9	0	0
Less than 50% complete	0	0	56.5	49.9	0	0
50 to 90% complete	20.1	22.6	26.1	28.2	0	0
More than 90% complete	63.1 ³	61.1	0	0	91.7	90.2
Total	83.2	83.7	100.0	100.0	91.7	90.2
Stand composition based on 5 areas examined		57.0		13.0		8.5

¹Stems examined 4 inches (10 cm) DBH and over.

²Occurred at 1 of the 5 areas examined.

³20.2% of these trees had some current foliage; the other balsam fir in this class had none.

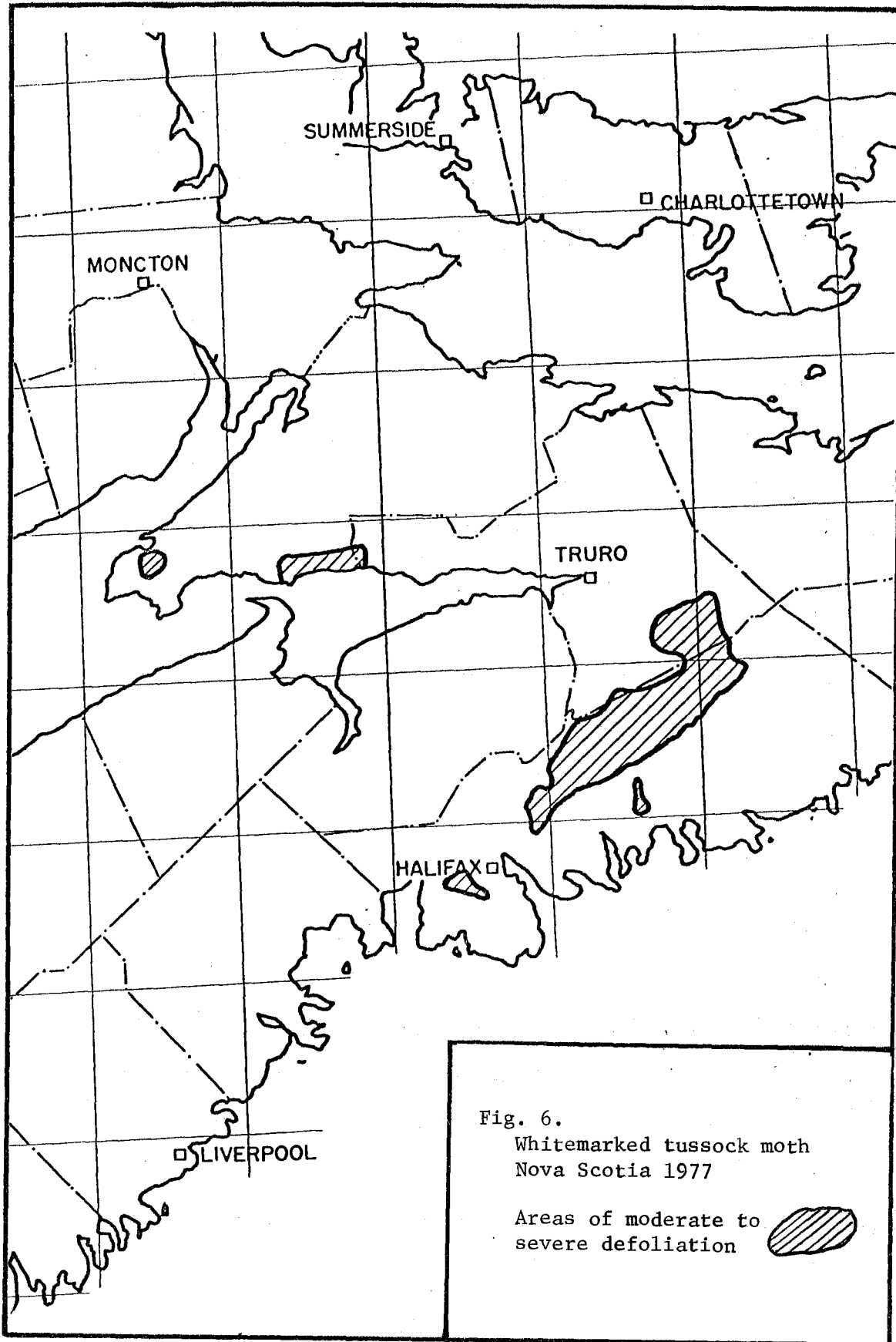
Whitemarked Tussock Moth, *Orgyia leucostigma* (J. E. Smith)--

The status of this insect has changed the most dramatically of all forest pests since last year. Most of the outbreaks reported in 1977 have collapsed. Only few larvae were found and no defoliation was evident in New Brunswick and in Prince Edward Island, except on a few hardwood trees in Victoria County, N.B.

In Nova Scotia, the remaining outbreaks (Fig. 6), resulting in moderate to severe defoliation of both hardwoods and conifers, covered 104,000 ha (256,000 acres) in the Stewiacke-Musquodoboit area and westward to Waverly and Grand Lake; on the central mainland 9,700 ha (24,000 acres) between Parrsboro and Earltown in Cumberland and Colchester counties; and 2,500 ha (6,300 acres) in the Apple River-New Yarmouth area Cumberland County.

Appreciable numbers of egg masses were found only in areas between Waverly and Middle Musquodoboit but a virus disease was present in this population indicating that collapse of most of the remaining outbreaks can be expected in 1978.

Balsam Twig Aphid, *Mindarus abietinus* Koch--Infestations of this insect were common on both cultivated and wild stands of balsam fir throughout the Region. In New Brunswick, several thousand balsam fir Christmas trees could not be marketed this year and undoubtedly the grades of many more trees were lowered because of shoot and needle distortion by this insect. Young balsam fir (1-3 m high) at many scattered locations throughout the Province had from 50-100% of their



shoots infested. Furthermore, many balsam fir Christmas trees were unsightly because of the black sooty mold fungi that developed on the insect residues, especially in central New Brunswick. In southwestern Nova Scotia, moderate or severe shoot injury occurred at several locations on balsam fir grown for Christmas trees, but damage was usually light elsewhere in the Province. Injury was usually light and scattered in Prince Edward Island, except at Rustico Island where moderate damage occurred.

There is no indication that a decrease in insect populations should be expected in 1978.

Balsam Gall Midge infestations, attributed to *Dasineura balsamicola* in past years, were common throughout mainland Nova Scotia on balsam fir but the expected increase did not materialize. Pockets of severely infested trees were found only at Fox River, Cumberland County, between Brookfield and Upper Stewiacke, Colchester County, and near Demsey Corner, Kings County; the infestation was moderate in the West Advocate-Parrsboro area of Cumberland County but the population was low elsewhere in the Province. In New Brunswick, 24% of the needles in natural regeneration were affected at Seal Cove on Grand Manan Island and in small numbers at several other locations in the southern part of the Province. Only a few affected needles were found at a few locations in Prince Edward Island.

If the midge population continues to decrease in 1978, there should be no major problems other than a few localized infestations.

Spruce Bark Beetle, *Dendroctonus rufipennis* (Kirby)--The number of locations where spruce is infested by this beetle increased again in 1977 in Nova Scotia, so did the size of the areas affected.

At Glenholme, Colchester County, in an area of severe blowdown, the infestation has increased to about 50 ha (120 acres); tree mortality is increasing at Amherst Point, Cumberland County in a 17-ha (43-acre) stand; at Truro, in Victoria Park, the outbreak is still spreading, although many infested trees have been cut and removed west of Leper Brook; the infestation still persists at the provincial wildlife park at Upper Clements, Annapolis County. Infestations were widespread throughout Cape Breton Island, affected stands were observed at the following locations:

<u>Cape Breton County</u>	<u>Inverness County</u>
Coxheath	Margaree Forks
East Bay	Margaree Harbour
Blue Eoin	Mason Point
Middle Cape	Cregnish
Grand Narrows	Cregmore
Enow	Long Point
Ross Ferry	
<u>Victoria County</u>	<u>Richmond County</u>
Baddeck Forks	Framboise
Baddeck Bay	Dundee
Middle River	St. George Channel
	West Bay

Also, a few scattered infested or dead trees were found at several locations in Colchester, Lunenburg, and Kings counties.

In Prince Edward Island, a few overmature white spruce trees were infested in the provincial park at Uigg, Queens County and in a fire damaged hedge at Strathgartney.

Both the incidence and severity of attack and subsequent mortality can be expected to increase especially in areas where mature and over-mature trees are under pressure by high numbers of beetles in areas of spruce mortality.

Saddled Prominent, *Heterocampa guttivitta* (Wlk.)--In New Brunswick, the infestations which caused pockets of moderate or severe defoliation in 1976 collapsed. Defoliation on sugar maple was light or very light in the sugar bush areas of Gloucester County but moderate defoliation occurred on beech in one stand near Trudel. Elsewhere in the Region, no noticeable defoliation occurred and only a few larvae were collected at scattered locations in New Brunswick and Nova Scotia. However, 1977's and possibly 1976's defoliation in Gloucester County may have contributed to the reduction in maple sugar production last spring. Pockets of dead and dying beech are common in last year's infested areas (Fig. 7); in some areas, about 70% of the trees (>80% of merchantable beech volume) are dead (Table 3). Most of the beech examined had cankers caused by the beech scale-nectria complex and this may have reduced their ability to survive.

In 1978, no large-scale outbreaks are predicted but probably more beech will die in 1977's infested areas.

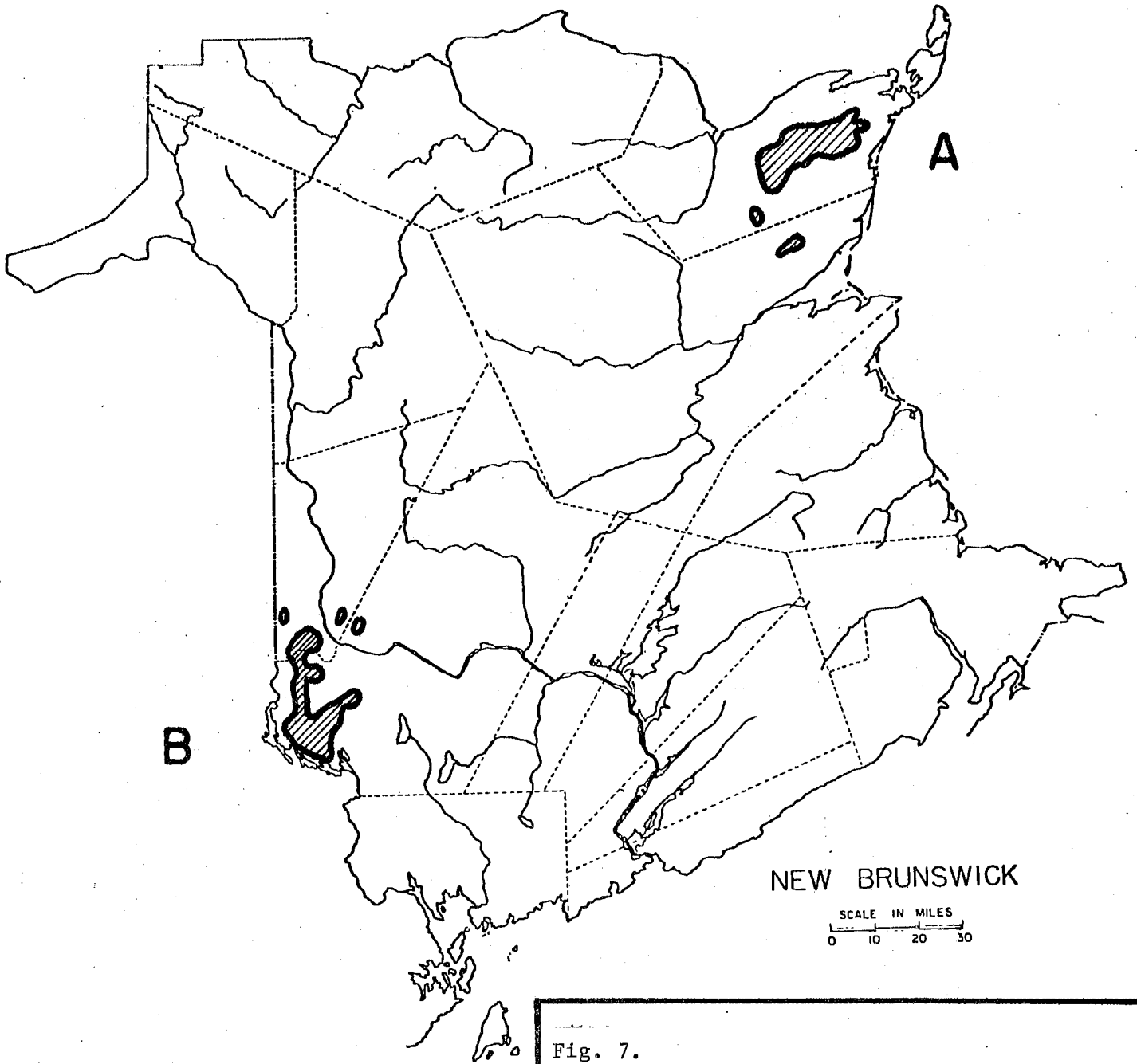


Fig. 7.

Beech mortality in areas of 1976 defoliation by saddled prominent.

A - 20,200 ha (50,000 acres)

B - 14,200 ha (35,000 acres)

} with pockets of dead and dying trees.

Table 3. Condition of hardwood trees defoliated by saddled prominent in 1976

Tree class 1977	Percent merchantable volume and range					
	Beech		Sugar maple		Other hardwoods	
	July	September	July	September	July	September
<u>A: Gloucester County, N.B. - 5 areas examined</u>						
Healthy	-	-	18.5 (0-100)	15.5 (0-100)	37.8 (0-65)	34.1 (0-65)
< 50% dieback	17.6 (0-58)	14.7 (0-58)	77.5 (0-100)	78.9 (0-100)	32.1 (0-37)	35.7 (0-39)
50-90% dieback	16.7 (0-33)	9.0 (0-17)	-	1.6 (0-50)	18.3 (0-34)	18.3 (0-34)
Dying ¹	29.2 (18-51)	26.9 (16-47)	4.0 (0-5)	-	-	-
Dead	36.5 (12-53)	49.4 (21-84)	-	4.0 (0-5)	11.8 (0-25)	11.9 (0-25)
Species composition (Avg. of 5 plots)	41.8% (71 m ³ /ha)		22.7% (38 m ³ /ha)		15.5% (26 m ³ /ha)	
<u>B: Southwestern York and Carleton counties - 4 areas examined</u>						
Healthy	1.8 (0-10)	1.8 (0-10)	69.1 (62-100)	69.1 (62-100)	65.8 (0-100)	65.8 (0-100)
< 50% dieback	16.0 (0-39)	14.3 (0-34)	30.9 (0-38)	30.9 (0-38)	-	-
50-90% dieback	35.2 (20-62)	35.2 (25-62)	-	-	34.2 (0-100)	25.4 (0-100)
Dying	35.9 (0-69)	36.7 (0-69)	-	-	-	8.8 (0-50)
Dead	11.1 (0-25)	12.0 (0-28)	-	-	-	-
Species composition (Avg. of 4 plots)	53.1% (71 m ³ /ha)		13.3% (17 m ³ /ha)		4.7% (6 m ³ /ha)	

¹Trees with only green cambium or green adventitious shoots.

Forest Tent Caterpillar, *Malacosoma disstria* (Hbn.)--In Prince Edward Island, the outbreak continued for the fourth consecutive year over essentially the same areas between Springhill and Portage, near St. Louis, and around Duvar, Prince County. Fall egg sampling indicates defoliation in these poplar stands in 1978. However, disease and parasites are present in the population at a significant level and the outbreak should start to subside next season and the infestation should collapse by 1979. In Nova Scotia, the 8-ha (20-acre) outbreak on trembling and large-tooth aspen near Kentville continued in 1977 but indications are that the insect population will be much reduced next year with consequent lighter defoliation. Apart from these, and a few red oak trees defoliated at Kentville, Kings County, only a few larvae were collected at scattered locations in the Region.

Maple Leaf Roller, *Cenopsis pettitana* (Rob.)--This insect was found at many locations in New Brunswick on sugar and red maple. Patches where moderate or severe leaf rolling occurred were common in Restigouche County and at a few scattered locations in the southern part of the Province. Repeated attacks by this insect may have contributed to branch and top mortality on numerous red maples in the southern part of Canadian Forces Base Gagetown in Queens County. In Nova Scotia, numbers of the insect decreased; moderate injury occurred in a small stand of sugar maple at Margaree Forks, Inverness County and of red maple near Shulie Lake, Cumberland County; elsewhere in the Province and in Prince Edward Island injury was usually very light at scattered locations.

Light trap catches indicate higher populations for 1978 in some areas of York and Northumberland counties in New Brunswick but populations are not expected to rise elsewhere in the Region.

Gypsy Moth, *Porthetria dispar* (L.)--Although, with the exception of 1936, no larvae of this voracious defoliator of hardwoods and conifers have been found in the Region, adult male moths have been captured in pheromone-baited traps every year since 1971. The insect is a major pest in northeastern United States and parts of Ontario, and is causing increasing concern in Quebec. The trapping program is a cooperative project of the Forest Insect and Disease Survey and the Plant Protection Division of Agriculture Canada for detection and early control of the insect.

As shown in the table, most of the positive traps placed at entry points and along tourist routes throughout the southern part of the Region contained only single adult males.

Table 4. Gypsy moth catches in pheromone-baited traps in the Maritimes, 1971-1977

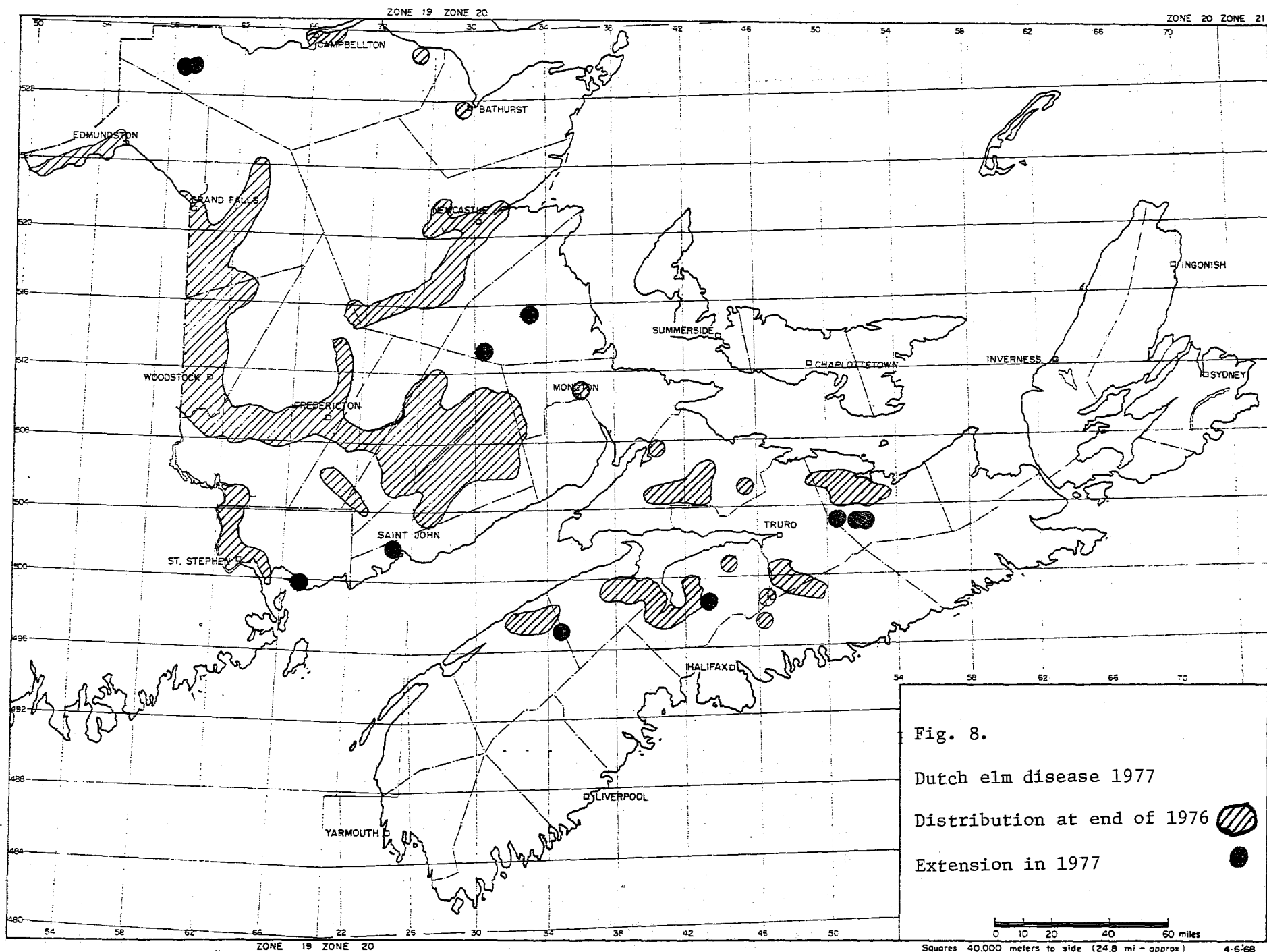
Year	Positive traps						
	New Brunswick				Nova Scotia		
	Traps in Region	Locations	Total no. of males caught	Catch	Locations	Total no. of males caught	Catch
1971	190	2	2	Single	9	9	Single
1972	400	3	3	Single	-	-	-
1973	180	4	6	1 Double	3	3	Single
1974	200	1	1	Single	1	1	Single
1975	135	1	2	1 Double	-	-	-
1976	135	10	11	1 Double	4	4	Single
1977	132	17	19	2 Double	15	41	7 Multiple

The number of positive traps increased sharply in 1976 but most contained only a single male moth. In 1977, there was another sharp increase in the number of positive traps and, in addition, the first multiple catches were recorded in Yarmouth County, N.S. More than half of the 13 positive traps there contained at least two adults, and one trap in the town of Yarmouth had 10 male moths. Although a search again failed to find any egg masses, the theory of blown-in adults has to be reappraised and the possibility of an, as yet, endemic population considered. Special surveys will be conducted in southwestern Nova Scotia in 1978 for gypsy moth larvae to eradicate the infestation if one is present.

Dutch Elm Disease, *Ceratocystis ulmi* (Buisson) C. Moreau---The disease continues to take its toll among the elm tree population in both New Brunswick and Nova Scotia. It has yet to be found in Prince Edward Island.

In Nova Scotia, the disease did not spread appreciably in 1977 but was identified for the first time at 16 new locations on the perimeters and from within the areas of previously known infection (Fig. 8).

In New Brunswick, the disease further intensified over much of the Province, depleting the dwindling shade tree population in municipalities and rural areas, alike. The area of known infection has also increased as diseased trees were found for the first time near Rapids Depot, Restigouche County, City of Saint John, St. George, Charlotte County, and Mortimer and Bass River, Kent County. This leaves Albert as the only county of New Brunswick where the disease has not yet been found.



At Fredericton, where a sanitation program has been in effect since the early 1950's, the number of new infections is about the same as last year. Within the sanitation control area, about 15% of the elms have become infected since 1969. However, outside this area within the City and especially on the north side of the St. John River, the incidence of the disease has reached epidemic proportions and more than 600 dead or dying trees are designated for removal before spring.

The main carrier of Dutch elm disease in the Region, the native elm bark beetle, *Hylurgopinus rufipes* Eichh., was collected at 18 of 25 locations in the Region where tanglefoot bands were placed on elm trees in mid-summer. The results at the 18 locations follow:

	<u>Number of trees banded</u>	<u>Number of <i>H. rufipes</i>/tree</u>
<u>Nova Scotia - 8 locations</u>		
Northeast Margaree, Inverness Co	3	1.3*
New Glasgow, Pictou Co	4	0.2
Jackson, Cumberland Co	3	29.0
Brookdale, Cumberland Co	3	0.3
Windsor, Hants Co	4	0.5
<u>Prince Edward Island - 3 locations</u>		
Springhill, Prince Co	3	1.0*
<u>New Brunswick - 14 locations</u>		
Campbellton, Restigouche Co	4	2.8
Edmundston, Madawaska Co	5	2.0
Grand Falls, Victoria Co	6	5.3
Bathurst, Gloucester Co	5	69.2
Woodstock, Carleton Co	6	13.7
St. Stephen, Charlotte Co	3	4.0
Sussex, Kings Co	3	31.0
Fredericton (Nashwaaksis, no sanitation), York Co	2	1057.5
Fredericton (within sanitation control area)	14	14.9
Estey Bridge, York Co	2	137.5
Cross Creek Station, York Co	3	44.3
Nashwaak Bridge, York Co	2	106.5

* DED has not been found to date

A single smaller European elm bark beetle, *Scolytus multistriatus* (Marsh.) was collected from a pheromone trap at Upper Mills, Charlotte County, N.B. in the same area where the insect was first found in the Region, in 1975.

Of 33 apparently healthy elm trees, selected in 1967 in areas of high tree mortality as part of a study of resistance to Dutch elm disease, 6 remain healthy, 4 are living and infected, 19 have died from the disease, and 4 have died from other causes. Of the 4 living infected trees, the first was confirmed as infected 7 years ago, the second, 6 years ago, the third, 5 years ago, and the fourth tree became infected in 1976.

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet-- Since its discovery in New Brunswick and in Nova Scotia in 1971 and 1972 respectively, the disease has been found throughout much of the range of Jack pine in eastern New Brunswick, and in scattered pine plantations elsewhere in the Province and in Nova Scotia (Fig. 9). Most species of pine occurring in the Maritimes are susceptible to the disease and were found infected at one time or another.

In 1977, the fungus was found for the first time in several red pine and Scots pine Christmas tree plantations in Carleton, Restigouche, Northumberland, and York counties, N.B., affecting the plantations to differing degrees. Jack pine plantations were infected in Kent County at Village St. Croix and near St. Pierre; although no tree mortality is present, the disease is distributed throughout the plantations and many

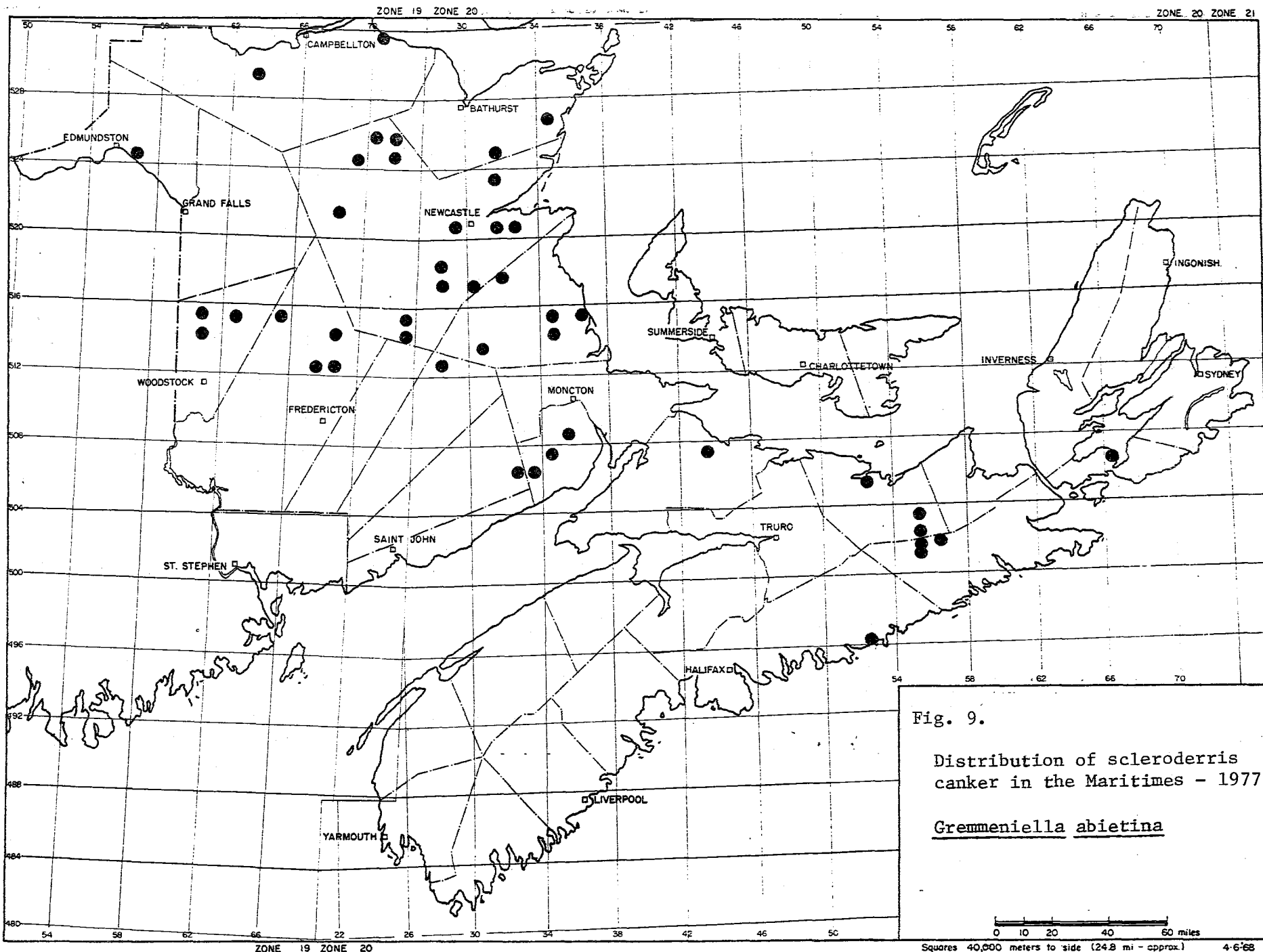


Fig. 9.
 Distribution of scleroderris
 canker in the Maritimes - 1977
Gremmeniella abietina

trees have infected branches up to 1.2 m (4 ft) above ground. The known distribution of the disease in Nova Scotia has not changed in 1977.

The fungus can, and does, cause mortality in plantations and in areas of natural regeneration. Because of the occurrence of this mortality at or about the time of survival evaluations, the effects of the disease are probably overlooked at times, and early mortality from scleroderris canker is "lumped" with other causes. It is suspected that the incidence of scleroderris canker is underestimated in the Region.

A different strain (called the European strain) of scleroderris canker was discovered in parts of New York and Vermont in the United States in the mid-1970's, which is capable of killing mature and nearly mature trees, while the "old" strain (called the North American strain) is a killer of seedlings and young trees. Pole size pine stands may be killed within two or three years and it is recommended that stands with as little as 5% infection by the European strain be clearcut as a salvage and control measure. The European strain of scleroderris canker is not yet known to occur in Canada.

CONIFEROUS FOREST PESTS OF LESSER IMPORTANCE

Organism	Locality	Remarks
Animal damage	Nova Scotia New Brunswick	In Nova Scotia severe girdling by porcupines in a Scots pine plantation at West Leicester, Cumberland Co.; in 6 red pine plantations at Rushy Lake, Yarmouth Co.; moderate to severe damage in pine plantations at Churchill Lake, Yarmouth Co. Extensive damage by rabbits to white birch and balsam fir reproduction on the French Mountain Plateau, Inverness Co. In New Brunswick, severe girdling by porcupines on balsam fir at Fundy National Park, on Scots pine at Geary, Sumbury Co.
Balsam fir sawfly <i>Neodiprion abietis</i> complex	Region	Common in low numbers at scattered locations throughout Nova Scotia, rare in Prince Edward Island and New Brunswick.
European pine shootmoth <i>Rhyacionia buoliana</i> Schiff.	Region	Common on red and Scots pine in Nova Scotia. Approx. 90% of trees infested in a 1 ha (2 acre) plantation near Brookland, Pictou Co.; severe current shoot damage in two small plantations near Earltown, Colchester Co.; less common in Prince Edward Island; populations low in New Brunswick.
Frost damage	New Brunswick Nova Scotia	Late spring frost caused moderate to severe damage to new shoots of balsam fir Christmas trees on Newburne Road, Lunenburg Co., N.S.; moderate damage to balsam fir and white spruce in a Christmas tree plantation near Ford Mills, Kent Co., N.B. and needle droop of black spruce in a plantation at Black Brook, Victoria Co., N.B.
Globose gall rust <i>Endocronartium harknessii</i> (J.P. Moore) Y. Hiratsuka	New Brunswick Nova Scotia	The disease was common and caused tree mortality on Scots pine in a plantation at St. Pierre, Kent Co., N.B., also common in plantations near Ford Mills, Kent Co., N.B. Infection was moderate to severe on Scots pine at Carrington, Cumberland Co., N.S. on 20% of trees in a plantation, and light on an additional 10% of the trees.

CONIFEROUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Gray mold <i>Botrytis cinerea</i> Pers. ex Fr.	Prince Edward Island	Found on white spruce in seed beds at Beech Grove Nursery, Charlottetown, Queens Co.
Larch casebearer <i>Coleophora laricella</i> (Hbn.)	Region	Severe defoliation of scattered tamarack reproduction near Marinette, Halifax Co., and moderate at Wittenbury, Colchester Co., N.S., low in the remainder of the Province. Populations low in New Brunswick and Prince Edward Island.
Needle rust of balsam fir <i>Pucciniastrum epilobii</i> Oth	New Brunswick Nova Scotia	In balsam fir Christmas tree stands, 6% and 3% of needles affected at Hacheyville and at Trout Stream, Gloucester Co., respectively; at South Nelson and Reynolds, Northumberland Co., N.B. incidence was 1%. Moderate infection on scattered balsam fir at Salem, Cumberland Co., N.S.
Needle rust of balsam fir <i>Pucciniastrum goeppertianum</i> (Kuehn) Kleb.	Region	Infection moderate to severe on scattered balsam fir at Murphy Cove and West Ship Harbour, Halifax Co., N.S., moderate at Salem, Cumberland Co, N.S. and Carleton, Prince Co., P.E.I.; trace to light elsewhere.
Needle rust of pine <i>Coleosporium asterum</i> (Diet.) Syd.	Nova Scotia	Infection moderate to severe on jack pine at Dog Lake, Yarmouth Co.
Needle rusts of spruce <i>Chrysomyxa ledi</i> d By. <i>Chrysomyxa ledicola</i> Lagh. and <i>Chrysomyxa</i> sp.	Region	Infection severe on black spruce up to 0.6 m (2 feet) in height at Geary, Sunbury Co., N.B.; moderate in a small stand of black spruce at Lindsay Lake, Halifax Co., N.S.; light elsewhere.
Ocean salt spray	Nova Scotia and New Brunswick	Moderate to severe foliage discoloration of conifers along Wallace Bay, Cumberland Co., N.S., of red pine at Middle Island Provincial Park, Northumberland Co., N.B.

CONIFEROUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Ragged spruce gall aphid <i>Pineus similis</i> (Gill.)	Region	Severe damage on red spruce at scattered locations in Colchester, Lunenburg, Yarmouth, and Annapolis counties, N.S.; light injury to red, white, and Norway spruce in Prince Edward Island; widespread in white spruce plantations in Madawaska and Victoria Co., N.B.
Red pine sawfly <i>Neodiprion nanulus nanulus</i> Schedl.	Nova Scotia Prince Edward Island	Common in red pine plantations at Inglisville, Annapolis Co., East Kemptville, Yarmouth Co., and in scattered Christmas tree stands in Lunenburg Co.; a few colonies at Garden of Eden Barrens, Pictou Co., and Lawrencetown, Annapolis Co., N.S.; light to moderate defoliation in a 0.8-ha (2-acres) plantation at Georgetown, Kings Co., P.E.I.
Roadside salt spray	Region	Moderate to severe foliage discoloration of roadside trees common, especially of pines along heavily travelled roads throughout the Region.
Saddleback looper <i>Ectropis crepuscularia</i> (Schiff.)	Region	The outbreak near Lindsay Lake, Halifax Co., N.S. reported in 1976, subsided.
Sawyer beetles <i>Monochamus</i> spp.	Nova Scotia	Dead branch tips, 3 to 10 per tree, caused by feeding of adult sawyer beetles on about 2% of balsam fir trees in a 40-ha (100-acres) Christmas tree stand near Burke Lake, Halifax Co.
Shoestring root rot <i>Armillaria mellea</i> (Vahl ex Fr.) Kummer	Nova Scotia	Generally distributed and causing mortality of scattered trees in Christmas tree stands, plantations and cutover areas. Balsam fir trees, previously weakened by balsam woolly aphid attack, were killed near Shortt Lake, Colchester Co.

CONIFEROUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Shoot blight <i>Sirococcus strobilinus</i> Preuss	Nova Scotia	Caused moderate foliage discoloration on red pine at Rushy Lake and Dog Lake, Yarmouth Co. Seedlings were infected at the Provincial Forest Nursery at Lawrencetown. The fungus was found for the first time in the Region on old spruce cones at Newport, Hants Co.
Snow damage	New Brunswick	Heavy snow caused severe branch breakage in a Scots pine plantation south of Armond and in a red pine plantation at Gordonsville, Carleton Co.
Sooty mold	New Brunswick	Associated with outbreaks of balsam twig aphid (<i>Mindarus abietinus</i> Koch.) in balsam fir Christmas tree plantations and natural stands. In northwestern New Brunswick many trees had a black appearance due to the presence of the fungus.
Spruce coneworm <i>Dioryctria reniculelloides</i> (Mut. & Mun.)	Region	There was a marked increase in populations on Cape Breton Island, in eastern mainland counties of Nova Scotia and in Prince Edward Island. At several locations, coneworms outnumbered spruce budworms in samples. Population low in New Brunswick.
Spruce bud scale <i>Physokermes piceae</i> (Schr.)	Region	Populations low in Nova Scotia and Prince Edward Island. In New Brunswick, common on red spruce near Gunetes, Queens Co., and on black spruce at Kinnear Ridge, Kings Co.; in spruce plantations in the Black Brook area of Victoria Co. levels of current shoot collar infestation varied from 1 to 72%.

CONIFEROUS FOREST PESTS OF LESSER IMPORTANCE (concluded)

Organism	Locality	Remarks
Sulphur dioxide injury	New Brunswick	On July 23, 1977, emissions of sulphur dioxide from Fraser Companies Limited at Edmundston, Madawaska Co., caused severe injury to all species of trees, shrubs, and garden crops in an area 30-60 m wide (100-200 ft) and approx. 1.6 km (1 mi) long to the east of the mill. Symptoms ranged from moderate leaf spotting to severe browning of entire leaves. Slight discoloration on potted alfalfa within 1.6 km (1 mi) southeast of SO ₂ source near South Little River, Gloucester Co.; no visible injury on spruce in a 1977 New Brunswick Natural Resources plantation that is approx. 1.6 km (1 mi) southeast of the source.
Sweetfern blister rust <i>Cronartium comptoniae</i> Arth.	Nova Scotia	Less than 10% of trees infected in lodgepole pine in plantations in Queens and Shelburne counties.
Winter drying	Region	Foliage discoloration of conifers occurred at numerous locations. Trees were affected to varying degrees. In a 2.8-ha (7-acres) Scots pine plantation east of Frizzleton, Inverness Co., N.S. many trees have dead tops as a result of repeated severe damage to overwintering buds.
Yellowheaded spruce sawfly <i>Pikonema alaskensis</i> (Roh.)	Nova Scotia New Brunswick	Varying degrees of defoliation on scattered young spruce trees at 20 locations in Nova Scotia; numbers low in New Brunswick.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE

Organism	Locality	Remarks
Animal damage	Nova Scotia	Extensive damage by rabbits to white birch and balsam fir reproduction on the French Mountain Plateau, Inverness Co.
Anthracnose of hardwoods <i>Discula quercina</i> (West.) Arx	Region	Light to moderate foliage discoloration on beech in southwestern New Brunswick. Elsewhere, isolated patches of discoloration of varying degrees on ash and oak.
Anthracnose of maples <i>Kabatiella apocrypta</i> (Ell.&Ev.) Arx	Region	Anthracnose, combined with wind defoliated maples on hilltops in northern Carleton and southern Victoria counties; elsewhere in northwestern New Brunswick maple foliage appeared ragged and this condition varied from light to moderate in intensity. Moderate browning and leaf drop occurred in Fundy National Park at Maple Grove, at the Chignecto Campground, and between Point Wolfe and Bennett Lake; browning was moderate on hilltops east of Fundy National Park in the Riverside area of Albert Co., and near Walton Lake and Schoales Dam, Kings Co., N.B. Discoloration was variable on maple shade trees elsewhere in the Region.
Ash rust <i>Puccinia sparganioides</i> Ell.&Barth.	Nova Scotia Prince Edward Island	Damage severe on white ash over 8 ha (20 acres) at Pleasant Lake and on a few trees at Lake Trefry and moderate on scattered trees at Argyle, Yarmouth Co., N.S. Light foliage discoloration at Ellerslie, Prince Co., P.E.I.
Aspen casebearer <i>Coleophora innotabilis</i> Braun.	Prince Edward Island	Small patches of defoliation ranging in size from a few trees to less than 2 ha (1 acre) in trembling aspen stands throughout much of the Province.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Birch casebearer <i>Coleophora fuscedinella</i> (Zell.)	Region	In Nova Scotia, moderate to severe loss of white birch foliage occurred over about 80 ha (200 acres) near Broad Cove, Digby Co., and at various locations in Cumberland, Victoria, Cape Breton, and Richmond counties; light to moderate browning near Lake Charlotte, Halifax Co.; elsewhere in Nova Scotia populations were low; light to moderate browning common in Prince Edward Island, severe browning is confined to scattered patches. In New Brunswick severe defoliation of alder occurred near Pennfield Corner and of white birch at Dark Harbour, Grand Manan Island, Charlotte Co., populations were low to moderate elsewhere.
Birch leafminer <i>Fenusa pusilla</i> (Lep.)	Region	Light foliage browning common, especially on wire birch; patches of moderate or severe leaf browning occurred in central and western Nova Scotia, in the Wood Island-Charlottetown-Georgetown area on Prince Edward Island and at scattered locations throughout New Brunswick.
Birch skeletonizer <i>Bucculatrix canadensisella</i> (Cham.)	Region	Moderate to severe infestations occurred in parts of Cumberland and central Pictou counties, throughout Antigonish, Guysborough, western Halifax, Lunenburg, Queens, and Hants counties as well as all of Cape Breton Island, in Nova Scotia. In Prince Edward Island, moderate to severe injury occurred in east-central and southern Kings and southeastern Queens counties. Skeletonizing of birches was moderate near Wood Lake, St. John Co., N.B. Elsewhere in the Region injury was light or very light on birch.
Black knot <i>Apiosporina morbosa</i> (Schw. ex Fr.) Arx	Region	Common on cherries throughout the Region, the intensity varies from trace to severe.
Browning of birch foliage	New Brunswick	Moderate foliage browning was general on birch in southern New Brunswick between St. Martins and Lepreau but the cause is unknown.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Bruce spanworm <i>Operophtera bruceata</i> (Hlst.)	Region	Populations declined on sugar maple and beech in the Lynn-East Mapleton to Simpson Lake area of Cumberland Co., N.S., reported in 1976. Populations were low elsewhere in the Region.
Cherry blight	Nova Scotia Prince Edward Island	Severe wilting occurred at many isolated locations on the northern half of mainland Nova Scotia, on Cape Breton Island and in Prince Edward Island.
Cherry scallop-shell moth <i>Hydría prunivorata</i> Ferg.	Nova Scotia	The outbreak which caused severe browning of black cherry foliage near Turf Lake, Halifax Co. in 1976 collapsed.
Dieback of alder	New Brunswick	Numerous patches of alders are dead and dying between Aulac and Cape Tormentine in the Cap Pele area of Westmorland Co. and near Cornhill, Kings Co. Cause as yet undetermined.
Elm leaf beetle <i>Pyrrhalta luteola</i> Mull.	New Brunswick	Moderate browning of elms common throughout the St. Stephen-Milltown area in Charlotte Co., light browning common in Fredericton.
Elm leafminer <i>Fenusa ulmi</i> Sund.	Region	Browning of English elm foliage still common; the severity of discoloration decreased in Nova Scotia, but once again increased in the Charlottetown area in Prince Edward Island.
Fall cankerworm <i>Alsophila pometaria</i> (Harr.)	Region	The 1976 outbreaks collapsed in Nova Scotia, light defoliation occurred at localities in Cumberland and Pictou counties. In New Brunswick, severe defoliation occurred in an abandoned apple orchard at Burton, Sunbury Co.; the 1975-76 outbreak at Hardings Point, Kings Co., decreased in intensity, 62% mortality occurred in egg masses in rearing, - 43% from parasitism and 19% from other factors. In Prince Edward Island, populations decreased from the 1976 levels.
Frost damage	Nova Scotia	Late spring frost caused complete loss of foliage of red oaks 3 m (15 ft) or less in height and to the lower crowns of larger trees along a 1.6 km (1 mi) stretch at West Clifford, Lunenburg Co., and between Dalhousie and Springfield, Annapolis Co.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Greenstriped mapleworm <i>Dryocampa rubicunda rubicunda</i> (F.) and Pinkstriped oakworm <i>Anisota virginiensis</i> (Drury)	Nova Scotia New Brunswick	The greenstriped mapleworm caused light to moderate defoliation of scattered red maple trees in the Chignecto Game Sanctuary in Nova Scotia. In New Brunswick, this insect and the pinkstriped oakworm caused severe defoliation of maple and birch over a 10 km ² area west of McDougall Lake, a 2.5 km ² area west of Second Falls, Charlotte Co. and to small patches of trees scattered throughout a 26 km ² area near Bald Mountain, Kings Co.
Hypoxyton canker <i>Hypoxyton mammatum</i> (Wahl.) Miller	Region	Common and widespread throughout the Region (see 1976 report). Trembling aspen in Provincial Parks at Mactaquac, Les Jardines, Lake George, and Beechwood in New Brunswick have been severely affected, many with dead or broken crowns.
Ink spot of aspen <i>Ciborinia whetzellii</i> (Seaver) Seaver	Region	Foliage browning was common and widespread throughout the Region, generally of light to moderate intensity; on small clumps of trees at Graham Corner, York Co., and Speerville, Carleton Co., N.B.; 90 to 100% of the leaves were affected.
Large aspen tortrix <i>Choristoneura conflictana</i> (Wlk.)	Region	Severe leaf rolling of trembling aspen on St. Marys Rd., Kings Co., P.E.I.; moderate at Neils Harbour, Victoria Co., N.S.; found at acattered locations in New Brunswick.
Leaf and twig blight of aspen <i>Venturia macularis</i> (Fr.) E.Muell.&Arx	Region	Common at scattered locations throughout the Region but discoloration was generally light. Infection was severe on a group of trembling aspen trees at New Horton, Albert Co., moderate at Parker Ridge, York Co., St.-Luc, Kent Co., and Red Bank, Northumberland Co., N.B.
Leaf blotch of horse-chestnut <i>Guignardia aesculi</i> (Pk) V. B. Stew.	Region	Common throughout the range of the host. Severe browning occurred at various locations in Inverness, Victoria, Antigonish, Queens, and Yarmouth counties, N.S.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Leaf rust of aspen <i>Melampsora medusae</i> Thuem.	Prince Edward Island	Severe on scattered hybrid populations at the Beech Grove Nursery near Charlottetown.
Leaf spots	Region	Many species of leaf spot causing fungi were collected or reported on a variety of hosts throughout the Region. Although some were common, only <i>Drepanopeziza tremulae</i> Rimpau caused appreciable foliage discoloration of aspen at Alcida, Gloucester Co., Jeanne Mance, Northumberland Co., and at Parker Ridge, York Co., N.B.
Lesser maple spanworm <i>Itame pustularia</i> (Gn.)	Region	Populations low; at Priceville, New Brunswick, where about 50% of the maple trees were reported dead or dying in 1976, the numbers increased to 68% of trees dead, and 26% dying in 1977, as a result of repeated severe defoliation in past years.
Maple decline	Region	Continuing throughout the Region, mainly confined to cities, towns, villages, and areas adjacent to well-travelled highways. Twig and branch mortality and death of trees has been increasing in the past 20 years. Road salting, traffic, and pollution, combined in some areas with wind blown ocean salt spray are probable factors contributing to the decline of maples in these areas.
Native elm bark beetle <i>Hylurgopinus rufipes</i> (Eich.)	Region	See under Dutch elm disease.
Oak leafroller <i>Pseudexentera cressoniana</i> Clem.	Nova Scotia	Red oak trees were severely defoliated over 28 ha (70 acres) at South Nictaux, Annapolis Co., and in four areas between Lake Rossignol and West Clifford of Queens and Lunenburg counties over about 10,100 ha (25,000 acres).

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Oak leaf shredder <i>Croesia semipurpurana</i> (Kft.)	Region	Severe defoliation on a few red oak trees north of Murray River, Kings. Co, P.E.I.; varying degrees of defoliation at scattered locations in Carleton, York, Sunbury, Queens, and Westmorland counties, N.B.; light injury to about 30% of trees in a stand near Lawrencetown, Nova Scotia.
Obliquebanded leafroller <i>Choristoneura rosaceana</i> (Harr.)	New Brunswick	Light trap catches indicate an increase in the presently low populations in 1978 in the Ashton Hill area of Northumberland Co.
Poplar leafmining sawfly <i>Messa populifoliella</i> (Townsend)	New Brunswick	Leaf mining light to moderate on balsam poplar in some areas of northwestern Madawaska Co. and light in a hybrid poplar plantation at Bristol, Carleton Co.
Poplar leafroller <i>Sciaphila duplex</i> Wlsh.	Nova Scotia Prince Edward Island	Severe loss of trembling aspen foliage over 12 ha (30 acres) at Lawrencetown, Annapolis Co., 2 ha (5 acres) south of Hants Co. and in scattered stands in the Oxford area along the Trans-Canada Highway, Cumberland Co., light to moderate leaf rolling in various parts of Cumberland, Pictou, and Victoria counties, N.S. Moderate to severe injury around Alliston, Kings Co., P.E.I.
Satin moth <i>Stilpnotia salicis</i> (L.)	Nova Scotia New Brunswick	Severe defoliation of silver poplar at Pugwash, Cumberland Co., Monastery, Antigonish Co., Estmere, Victoria Co., Belle Cote and Margaree Forks, Inverness Co., N.S.; also present at Hexham, Northumberland Co. and Jacquet River, Restigouche Co., N.B.
Smaller European elm bark beetle <i>Scolytus multistriatus</i> (Marsh.)	Region	See under Dutch elm disease.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (continued)

Organism	Locality	Remarks
Spring cankerworm <i>Paleacrita vernata</i> (Peck) and Winter moth <i>Operophtera brumata</i> (L.)	Nova Scotia	Severe defoliation of some hardwood trees at Kentville, Kings Co. from combined population of spring cankerworm and winter moth; light defoliation of white elm at Brooklyn, Hants Co.
Sulphur dioxide injury	New Brunswick	On July 23, 1977, emissions of sulphur dioxide from Fraser Companies Limited at Edmundston, Madawaska Co., caused severe injury to all species of trees, shrubs, and garden crops in an area 30-60 m wide (100-200 ft) and about 1.6 km (1 mi) long to the east of the mill. Symptoms ranged from moderate leaf spotting to severe browning of entire leaves. Slight discoloration on potted alfalfa within 1.6 km (1 mi) southeast of SO ₂ source near South Little River, Gloucester Co.; no visible injury on spruce in a 1977 New Brunswick Natural Resources plantation that is about 1.6 km (1 mi) southeast of the source.
Twig and branch galls on poplar	New Brunswick	Galls, probably of bacterial origin, were common in all five hybrid poplar plantations in York Co. (Springfield (2), Newburg, Bristol, Biggar Ridge). Incidence appears to vary among the hybrids within the same plantation indicating varying degrees of susceptibility (or resistance) to the causal agent.
Uglynest caterpillar <i>Archips cerasivoranus</i> (Fitch.)	Region	Present in most areas of Nova Scotia where choke cherry is found but most common in Cumberland, Colchester, Pictou, Annapolis, and Queens counties; less common in New Brunswick and Prince Edward Island.

DECIDUOUS FOREST PESTS OF LESSER IMPORTANCE (concluded)

Organism	Locality	Remarks
Willow blight <i>Venturia saliciperda</i> Nuesch.	Region	Present throughout the Region but much less common than in 1976. Leaf browning severe on single ornamental willows at Lac Baker, Madawaska Co., N.B., moderate at Moncton; at Springhill, Cumberland Co., River John and Poplar Hill, Pictou Co., N.S.; light to moderate on young willows in northwestern New Brunswick.
Willow flea weevil <i>Rhynchaenus rufipes</i> (Lec.)	Region	Severe leaf browning of willow at Wittenburg, Colchester Co., Beauford, Halifax Co., N.S.; Charlottetown, Montague, Kings Co., P.E.I.; and at Fredericton, N.B.
Winter moth <i>Operophtera brumata</i> (L.)	Nova Scotia Prince Edward Island	Widely distributed throughout, the insect caused little defoliation and feeding usually occurred in conjunction with other insects. Moderate to severe loss of miscellaneous deciduous foliage occurred at and around the Kentville Research Station but winter moth accounted for less than 10% of larvae in samples in Pictou County. The insect together with fall cankerworm defoliated apple trees at several locations.