FOREST PEST CONDITIONS IN THE MARITIMES IN 1975 WITH AN OUTLOOK FOR 1976

by

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ABSTRACT

This report reviews the status of forest insects and tree diseases in the Maritimes Region in 1975 and gives, for some pests, a forecast of conditions for 1976.

RESUME

Ce rapport passe en revue les conditions relatives aux divers insectes et maladies des arbres dan la Région des Maritimes en 1975 et présente un aperçu des conditions prévue pour quelques uns des ces organismes nuisibles en 1976.

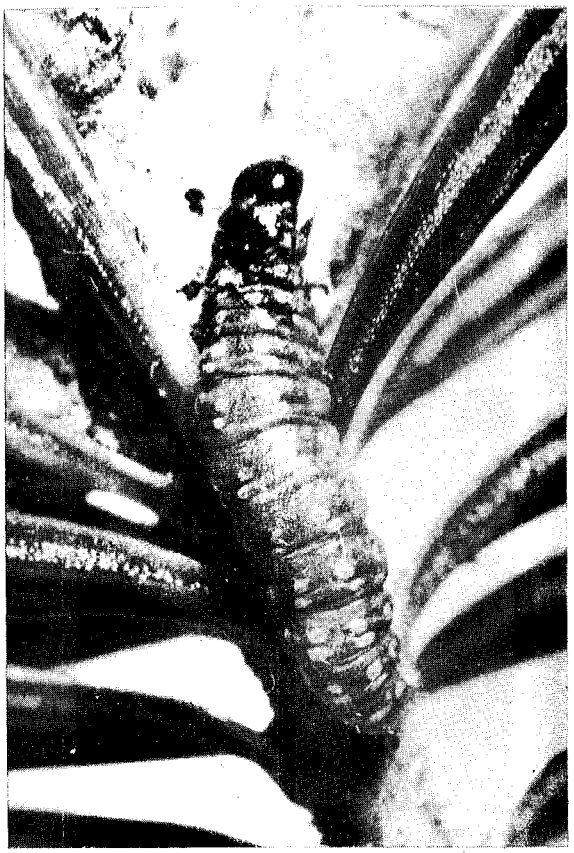
INTRODUCTION

One of the objectives of the Forest Insect and Disease Survey is to report on the status of important forest insects and diseases. In the Maritimes this information is published periodically in "Seasonal Highlights", in "Special Reports" on forest pests of particular interest, and in an "Annual Report".

The regional annual report is published as part of the national Annual Report of the Forest Insect and Disease Survey, but because of delays in publishing the national report, the regional report has been of little use in making current practical decisions on forest management. Therefore, since 1973 the information in the regional report has been published not only in the national report but also as Information Reports by the Maritimes Forest Research Centre. In this report, references previous to 1972 refer to the national report, and references since 1973 refer to the Information Reports.

The status of forest insects and diseases in the Maritimes in 1975 is discussed, and when possible, predictions are made on conditions for 1976.

Information contributed by the Pest Detection Officers of the New Brunswick Department of Natural Resources and the Prince Edward Island Department of Agriculture and Forestry, Forest Service, and by cooperators from the Nova Scotia Department of Lands and Forests and from industry is gratefully acknowledged.



FOREST INSECTS

IMPORTANT FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)[1]--In New Brunswick, defoliation of balsam fir and spruce, evident over the entire Province, was moderate to severe on 3.5 million hectares (8.7 million acres) (Fig. 1), compared with 3.4 million hectares (8.3 million acres) last year. Damage was least in northern New Brunswick, where feeding was generally light to moderate with some severe patches. Repeated moderate to severe defoliation during the past few years has resulted in forests of generally poor condition. Stands of grey balsam fir and spruce are present in most areas, but are particularly evident in the southern one third of the Province.

A survey in August of over 1,000 sampling points showed that, with the exception of Madawaska and Albert counties where egg-mass numbers increased significantly, the level of infestation has decreased by about one third from last year. However, except for Victoria County, populations will still be high enough to cause moderate to severe defoliation over 5 million hectares (12.4 million acres) in 1976 (Fig. 2). Hazard in most of this area has been designated high to extremely high (risk of tree mortality, top killing with further attack) because of the present poor condition of forest stands and the expected continuation of high level infestations.

In Nova Scotia, defoliation was moderate to severe on 877 500 ha (2.2 million acres) (Fig. 3), up 523 900 ha (1.3 million acres) over last year. Of 690 000 ha (1.7 million acres) of severe defoliation, 486 000 ha (1.2 million acres) were on Cape Breton Island, 162 000 ha (400,000

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[1]Based on information from Mr. E.G. Kettela, Maritimes Forest Research Centre.

acres) in Cumberland County, and 42 000 ha (100,000 acres) in Colchester, Pictou, and Antigonish counties. Severe defoliation for the second consecutive year by the spruce budworm combined with last year's attack by the blackheaded budworm and the eastern hemlock looper left stands on the Cape Breton Island plateau weakened and many of them grey. No defoliation was observed in western Nova Scotia, including Annapolis County where the infestation has declined in area and intensity over the past several years.

Based on an egg-mass survey of 162 sampling points in Nova Scotia, it is expected that the outbreak will remain severe on Cape Breton Island in 1976 (for the third consecutive year in many places) in northern Inverness and Victoria counties, and will result in serious deterioration of stands and tree mortality. Patches of moderate to severe defoliation are also expected in parts of Cumberland and Antigonish counties (Fig. 4).

In Prince Edward Island, moderate to severe defoliation of balsam fir and spruce occurred on 243 000 ha (600,000 acres) (Fig. 5), representing at least a 10-fold increase in extent of infestation over last year.

Egg-mass sampling at 62 locations indicates that the infestation will remain extensive and generally moderate to severe in 1976 (Fig. 6).

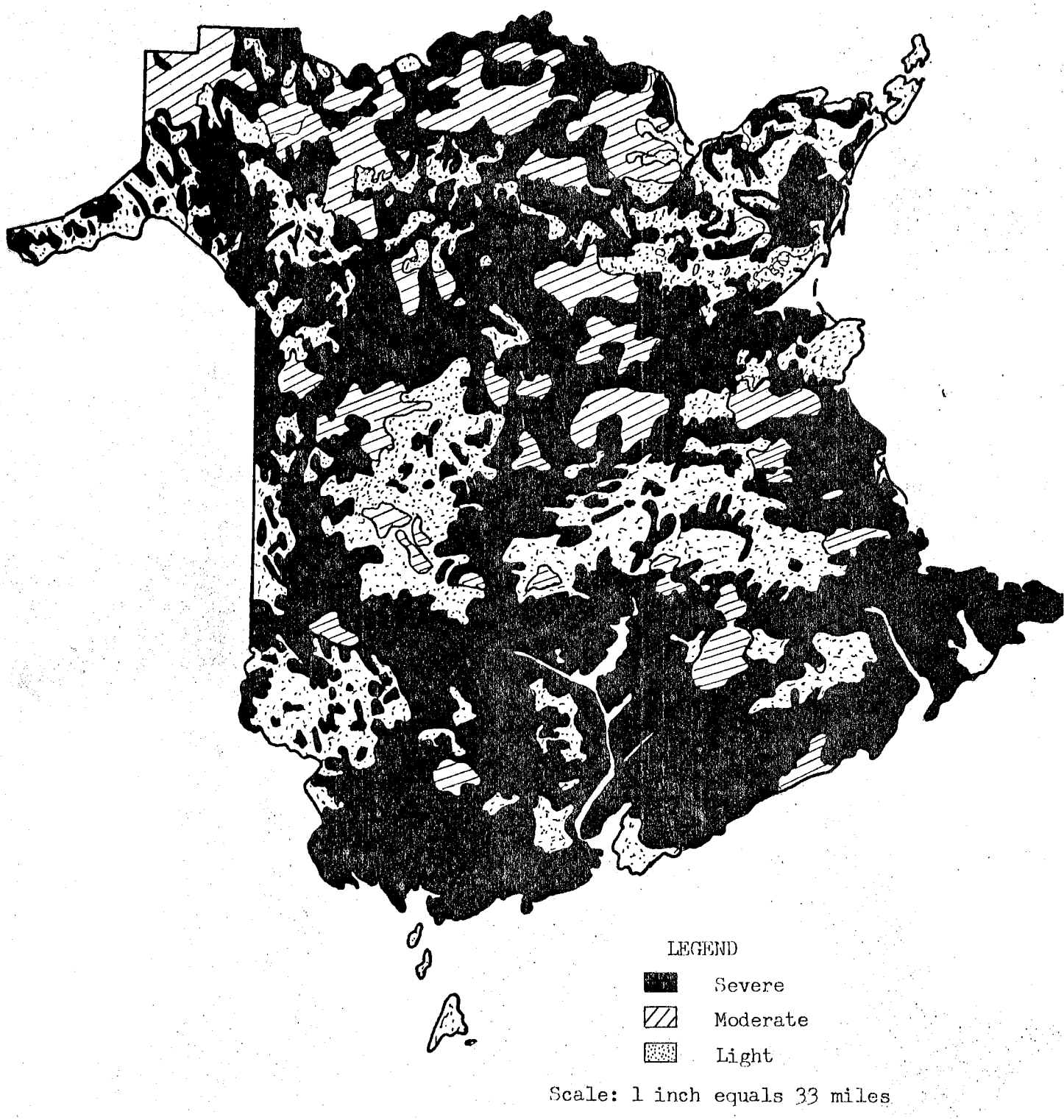


Figure 1. Defoliation caused by spruce budworm in New Brunswick in 1975.

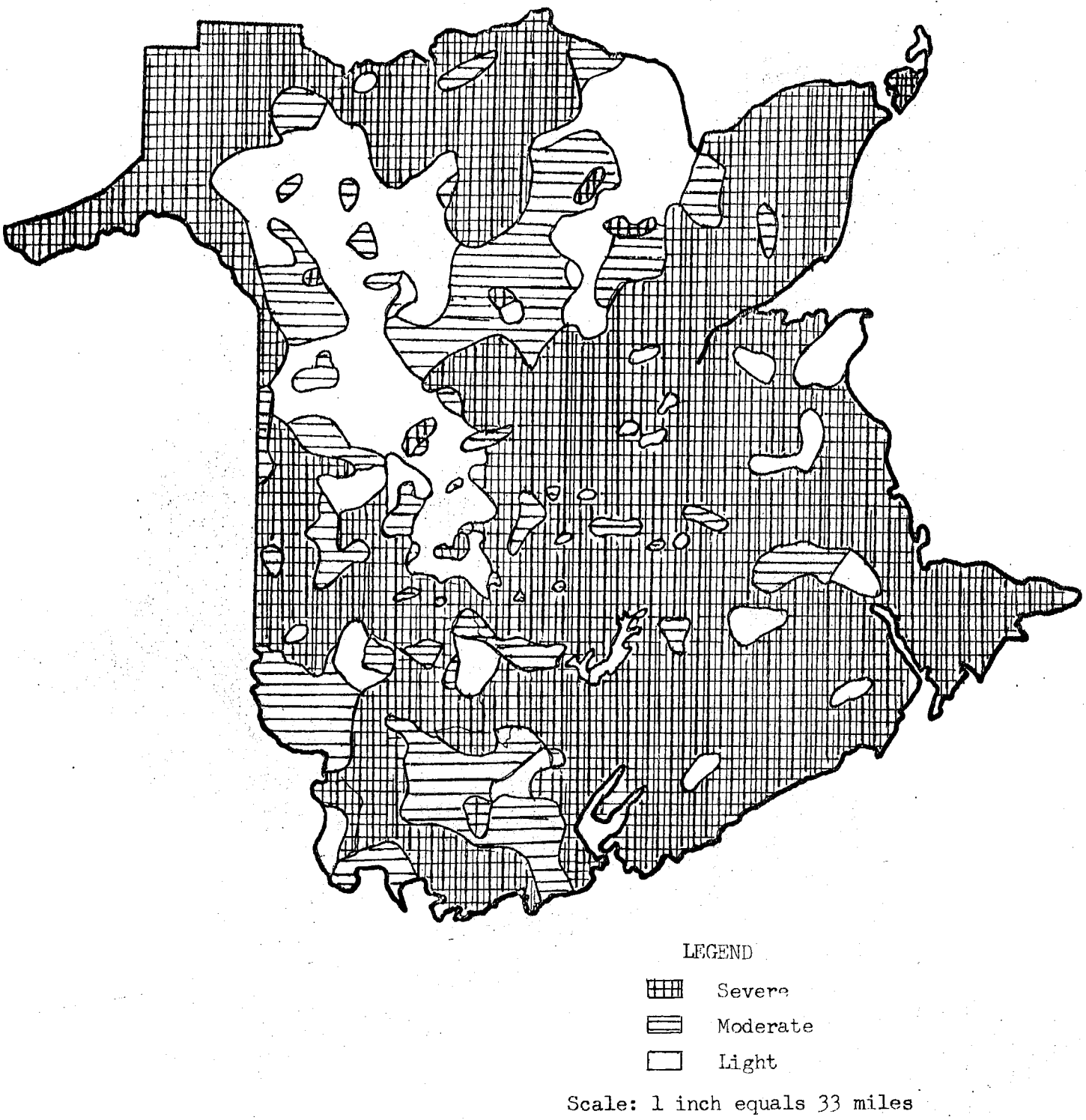


Figure 2. Forecast of spruce budworm infestations in New Brunswick in 1976 based on egg-mass surveys.

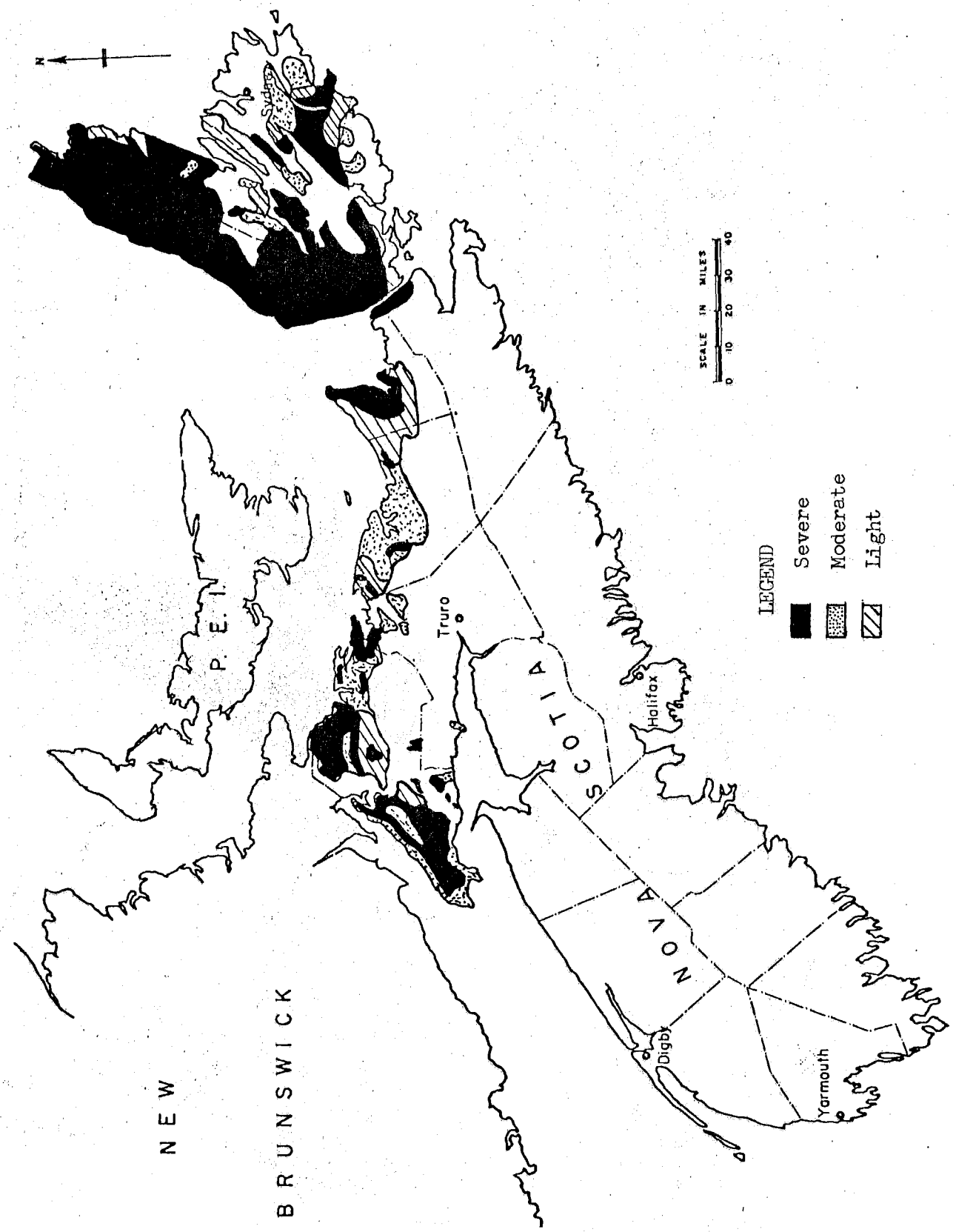


Figure 3. Defoliation caused by spruce budworm in Nova Scotia in 1975.

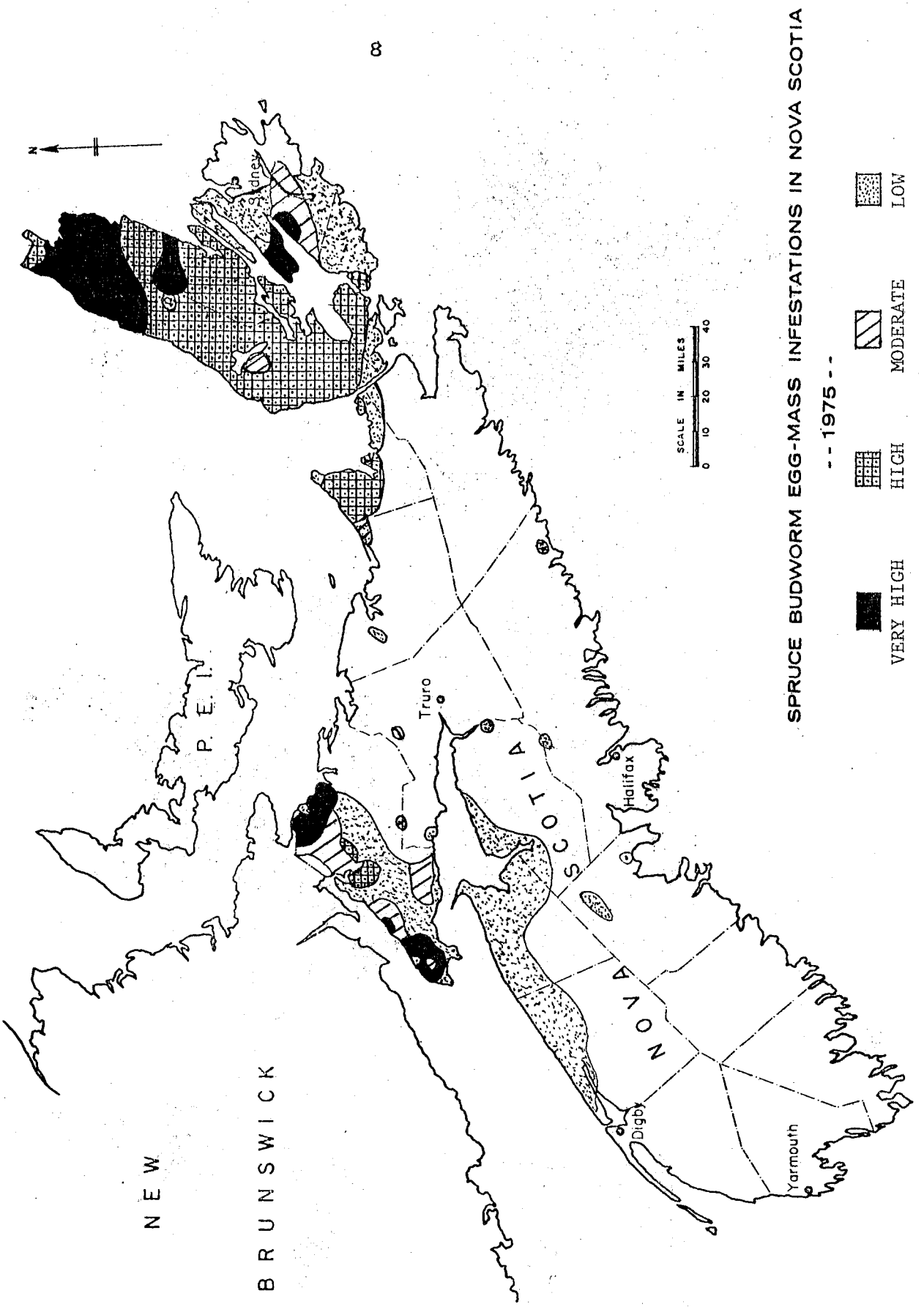


Figure 4. Forecast of spruce budworm infestations in Nova Scotia in 1976 based on egg-mass surveys.

Eastern hemlock looper, *Lambdina fiscellaria fiscellaria* (Guen.)--In Prince Edward Island, severe defoliation of mainly balsam fir was observed at many locations, varying in size from a few hectares to over 800 ha (2,000 acres) (Fig. 7). The main outbreak occurred in northern Kings County where many of the trees were merchantable. Adults were numerous in late summer, suggesting that the infestation will continue in 1976.

In western Nova Scotia, defoliation of balsam fir was severe but patchy over about 3400 ha (8,400 acres) in northern Yarmouth and southern Digby counties, over 93 ha (230 acres) near Lower West Pubnico, and in two small areas near Lower East Pubnico, Yarmouth County (Fig. 8). Catches of adults in light traps suggest that these infestations will continue in 1976. The outbreak reported last year on the Cape Breton highlands subsided and no infestations were observed in 1975.

Whitemarked Tussock Moth, *Orgyia leucostigma* (J.E. Smith)--In New Brunswick, infestations were severe throughout most of the eastern half of Westmorland County, south of the Moncton - Shediac highway. Defoliation was most evident on balsam fir, tamarack, and hardwoods, but field crops were also affected.

This outbreak extended into Nova Scotia where tamarack and hardwoods were completely defoliated over about 1250 ha (3,100 acres) between the provincial boundary and the East Amherst - Tidnish road. The outbreak reported last year near Portapique, Colchester County expanded in 1975; severe defoliation occurred in patches totalling some 1215 ha (3,000 acres) in an area bounded by Sugar Loaf Mountain in the north, Debert on the east, Lorneville and East Mines on the south, and Bass River on the west. Another severe outbreak occurred over about 1090 ha (2,700 acres) in the Whitney Lake-Timber Lake area in eastern

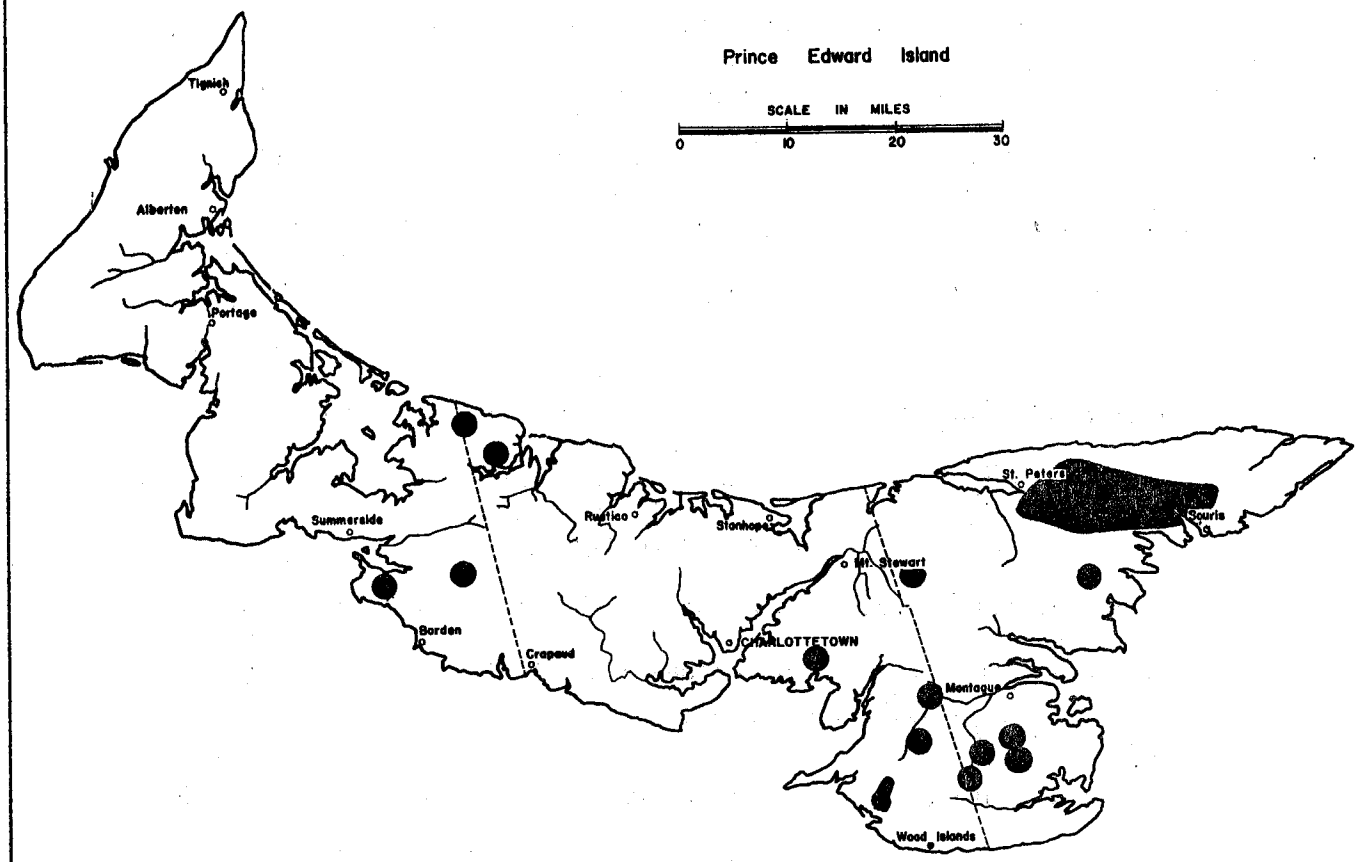


Figure 7. Areas and locations where the HEMLOCK LOOPER caused severe defoliation of balsam fir

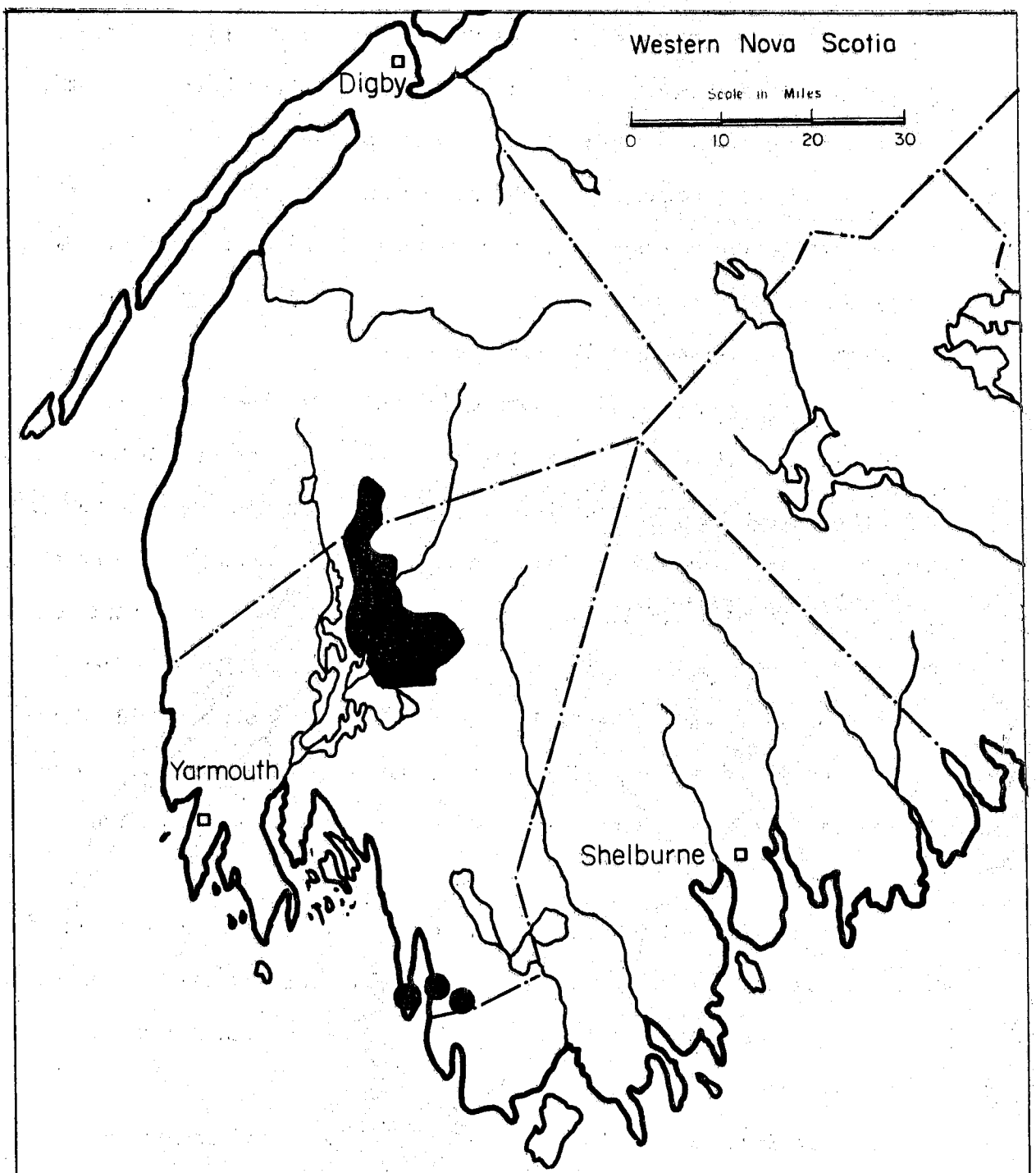


Figure 8. Areas and locations where the HEMLOCK LOOPER caused severe defoliation of balsam fir

Lunenburg County, extending north to Upper Vaughan, Hants County, and including a small corner of Halifax County. Smaller outbreaks occurred in other parts of eastern Lunenburg County, in western Halifax County, and near Amherst. In Prince Edward Island, populations were low.

Egg-mass counts and moth catches in light traps indicate that severe defoliation may recur in 1976 in many of the same areas of New Brunswick and Nova Scotia. New infestations may also occur due to spread of small larvae by winds in early summer.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)--Infestations of larch sawfly persisted over much the same areas as last year but with some changes in intensities (Fig. 9). In New Brunswick, defoliation of tamarack trees was severe on Campobello and Deer Islands, in the area between St. Andrews and St. Stephen, and in a woodlot near Fredericton. Infestations were moderate on Grand Manan Island, near Harvey, York County, at Jemseg and Cumberland Bay, Queens County, Springfield, Kings County, and in an area near Black River, Northumberland County. Defoliation was light in several large patches in the southeast of the Province.

In Prince Edward Island, although many tamarack stands had been defoliated earlier by the spruce budworm, moderate and high populations of the sawfly persisted in the eastern half of the Province. Defoliation was mostly light elsewhere.

In Nova Scotia, infestations were general and severe in intensity, except in Cumberland, northern Colchester, and northwestern Pictou counties, and parts of Cape Breton Island where defoliation was light.

Infestations will probably continue in 1976, except in areas of high spruce budworm populations where lack of food this year may have reduced the population of the sawfly.

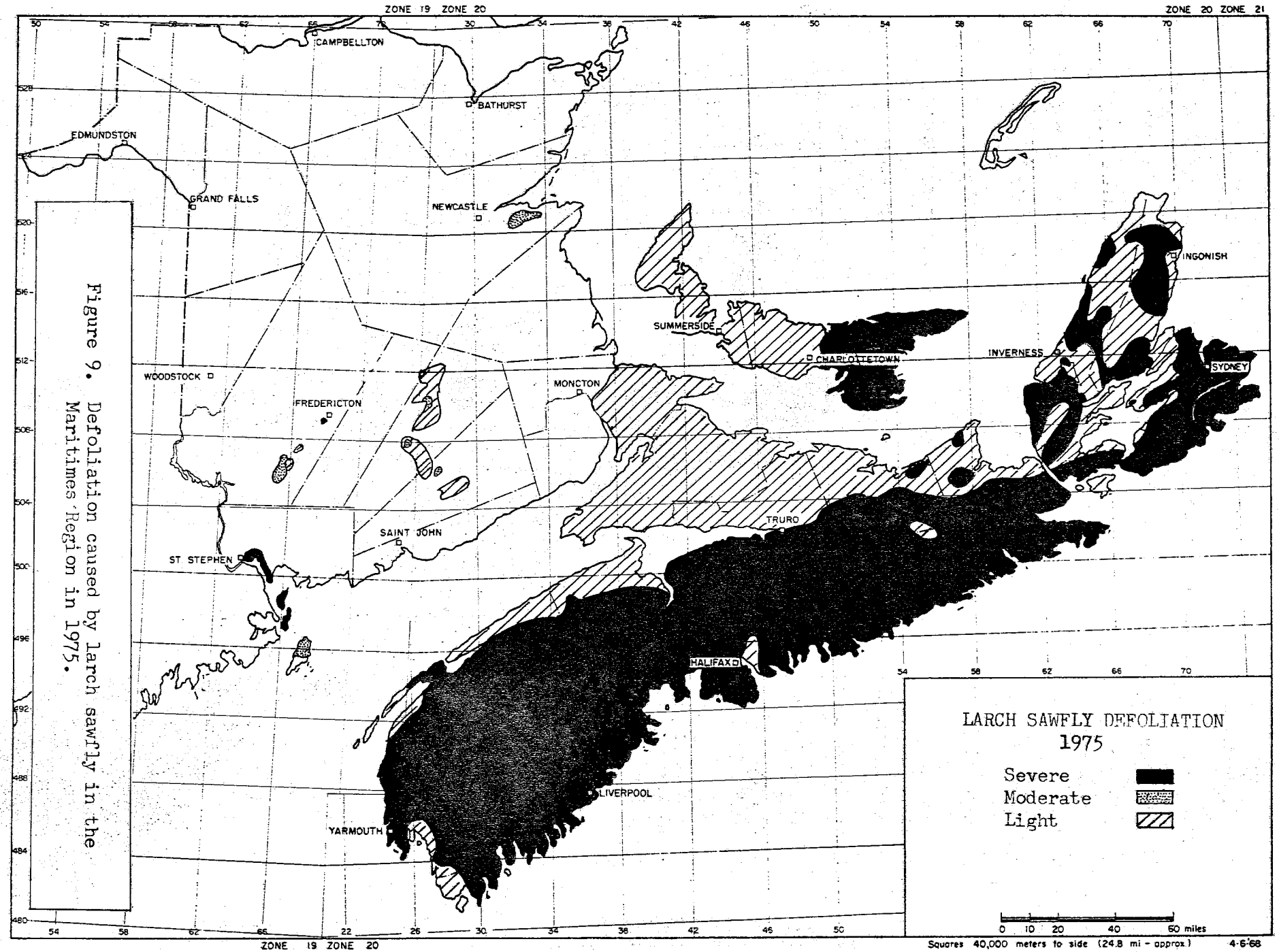


Figure 9. Defoliation caused by larch sawfly in the Maritimes Region in 1975.

Balsam Fir Sawfly, *Neodiprion abietis* (Harr.)--In Nova Scotia a severe but spotty outbreak occurred over about 1010 ha (2,500 acres) in northeastern Colchester County, bounded on the north by East New Annan, on the east by Nuttby Mountain, on the south by McCallum Settlement and on the west by the Chiganois and French rivers. Larvae of the whitemarked tussock moth were also found within the infestation but in smaller numbers than the sawfly. A few miles to the east, near Kemptown, balsam fir trees were severely defoliated over 63 ha (155 acres); here, the sawfly was associated with large numbers of saddleback loopers, *Ectropis crepuscularia* Schiff. Traces of feeding by the sawfly were found near Lindsay Lake, Halifax County.

Spruce Bud Scale, *Physokermes piceae* (Schr.)--Infestations were found in several red, black, and Norway spruce plantations (1-5 m, 3-15 ft high) near St. Quentin, N.B. Random counts of 100 trees in four plantations showed that the percentages of moderately to severely infested trees ranged from 22 to 62. Although the insect is apparently causing no significant damage at this time, its potential is unknown and the development of the infestation will be closely monitored.

European Pine Shoot Moth, *Rhyacionia buoliana* (Schiff.)--First found in Nova Scotia in 1925, this insect has become a serious pest of pine plantations. Moderate to severe infestations in red pine and Scots pine plantations are widely scattered throughout the Province, and few plantations are without some damage. Summarized below are tallies of shoot damage on 24 to 100 red pine trees, 0.9 m to 1.2 m (3 to 4 ft) high, in three plantations in Colchester and Pictou counties.

Year planted	Area (ha)	Shoots destroyed per tree		
		1-5	6-10	>10
		Percent of trees affected		
1967	0.8 (2 acres)	0	54	46
1968	16.2+ (40+ acres)	?	?	95
1969	9.3 (23 acres)	2	20	78

Counts of buds with overwintering larvae indicate that damage comparable to 1975 levels can be expected in 1976.

Infestations in New Brunswick and Prince Edward Island were light and scattered.

Spruce Beetle, *Dendroctonus rufipennis* (Kirby)--Spruce tree mortality continued in Victoria Park, Truro, N.S. where an infestation persisted over about 73 ha (180 acres). Also some mortality was evident near Centreville, Kings County, where about 16 ha (40 acres) of mature white spruce were attacked. Scattered dead trees were noted near Big Baddeck, Victoria County, and East Bay, Cape Breton County, and a few trees were attacked at Glenholme, Colchester County, Walton, Hants County, and at Lunenburg Town.

Larch Casebearer, *Coleophora laricella* (Hbn.)--Defoliation of tamarack was severe over a few hectares at Linkletter, and moderate between Miscouche and Wellington, P.E.I.; moderate at Great Village, Colchester County, and Southampton, Cumberland County, and light at several places in the western half of Guysborough County, N.S.; and light at Bretagneville, Kent County, and near Belledune, Gloucester County, N.B. Elsewhere in the Region, casebearer populations were generally low.

Late fall sampling of overwintering casebearers at 85 locations indicates that slight population decreases will occur in all areas in 1976, except in western Nova Scotia where minor increases are expected.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)--Midge-infested needles on balsam fir were more common in Nova Scotia than in any year since 1969. About 70% of the needles were browned in one Christmas tree plantation near Barss Corners, Lunenburg County, while small trees in natural stands nearby were only lightly infested. Light infestations were common at or near New Ross, Seffernville, and Bezanson Lake, Lunenburg County, at Middlefield, Queens County, Dalhousie and Inglisville, Annapolis County, Robin Hill, Browns Lake, and Lindsay Lake, Halifax County, Kemptown, Colchester County, Guysborough Intervale, Guysborough County, and Crowdis Mountain, Victoria County. No infestations were recorded in New Brunswick or Prince Edward Island.

A midge population build up seems to be occurring in Nova Scotia, where considerable damage may occur in 1976, especially in Christmas tree plantations.

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedd--Observations were continued on the results of spraying larvae with a nuclear polyhedrosis virus last year at the Garden of Eden Barrens, N.S. Analysis of 1975 data showed a reduction in the numbers of egg masses per branch and eggs per egg mass in the sprayed area. This indicates that the virus provides both immediate and long-range population reductions.

Forest Tent Caterpillar, *Malacosoma disstria* (Hbn.)--In Prince Edward Island, population levels were high in Prince County for the second consecutive year. Nearly all trembling aspens within three major

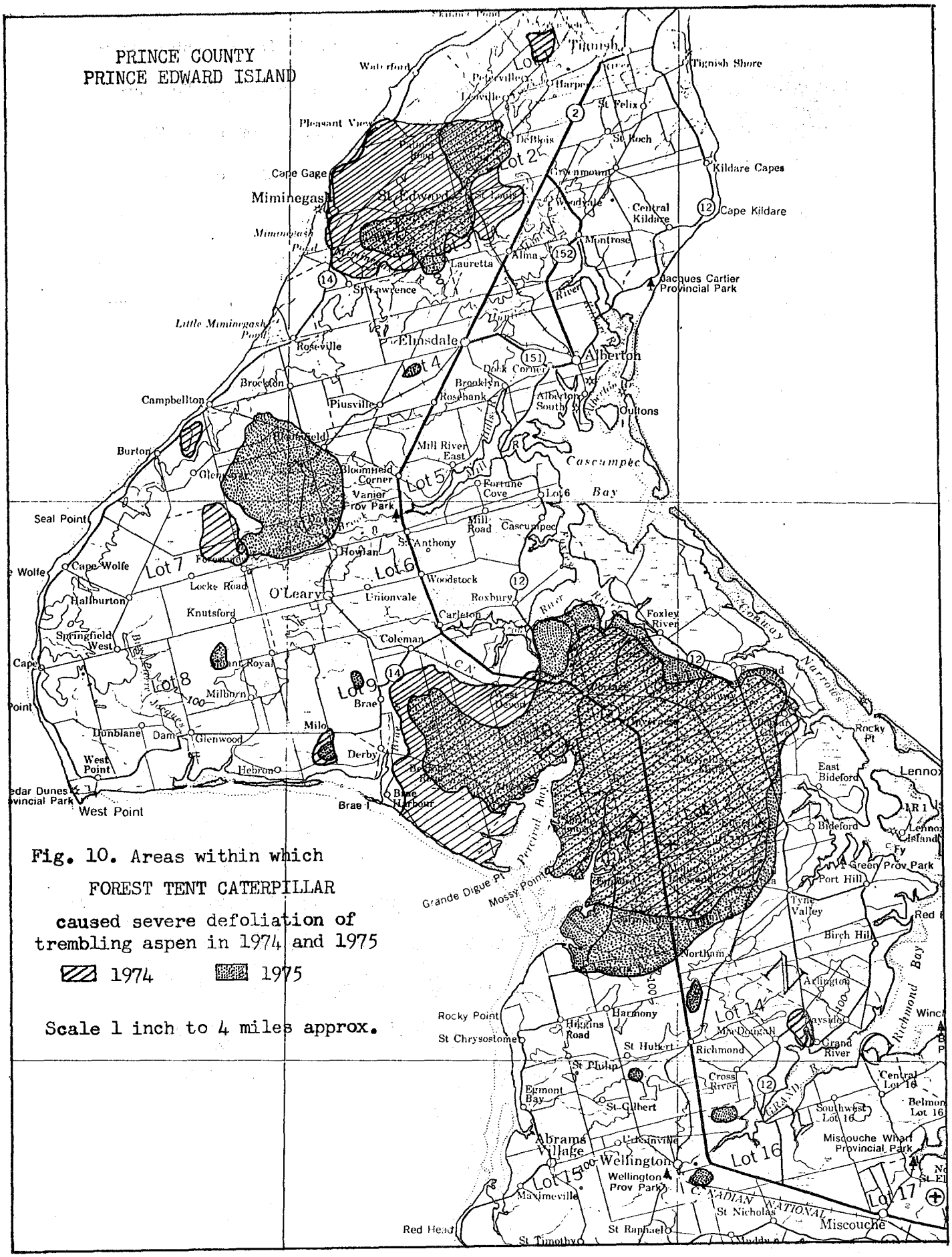
areas were severely defoliated (Fig. 10). The boundaries of the largest infestation, centering around the area between Springhill and Portage, remained about the same as last year while the infestation near St. Louis became smaller. The third large outbreak was centered around Duvar where most of the aspens were severely defoliated for the first time. Eight other smaller areas of defoliation were scattered throughout the County. Most of the trees in the outbreak areas were in the 10 to 18 cm (4 to 10 in) DBH range and averaged about 15 m (50 ft) in height.

There was no evidence of aspen mortality resulting directly from defoliation. An average of 11% of the aspen trees were dead, mostly from infections by Hypoxylon canker. A survey in 1968 in the Province showed an average of 7% mortality of aspen from Hypoxylon canker.

A survey of egg masses in early November indicates a continuation of high larval populations in 1976 in the area just north of St. Louis and in woodlots near Portage, Mount Pleasant, and North Enmore. Light to moderate infestations could occur south of St. Louis, near Milo, and elsewhere within the Beaton Road - McNeills Mill - Port Hill Station triangle. No egg masses were found outside Prince County in Prince Edward Island.

In Nova Scotia, trembling aspen trees in two areas totalling about 90 ha (220 acres) were infested near Cambridge, Kings County, one severely and one moderately. Severe defoliation also occurred in 8 ha (20 acres) of aspen near Kentville, and on a few apple trees at Great Village.

No infestations were reported in New Brunswick, but large catches of adults in a light trap, at Ashton Hill, indicate the possibility of infestations near there in 1976.


PRINCE COUNTY
PRINCE EDWARD ISLAND
Tignish
Tignish Shore
Waterford
Lot 1
Peterville
Harper
Lorne
St Felix
Pleasant View
DeBlois
St Roch
Lot 2
Cape Gage
Miminegash
St Edward
St Louis
Greenmount
Kildare Capes
Woodvale
Central Kildare
Cape Kildare
Montrose
Alma
Lauretta
St Lawrence
Jacques Cartier Provincial Park
Little Miminegash Pond
Roseville
Elmsdale
Lot 4
Alberton
Dock Corner
Brockton
Brooklyn
Rosebank
Alberton South
Outtons
Campbellton
Piusville
Burton
Bloomfield
Mill River East
Cascumpec
Lot 5
Bloomfield Corner
Vanier Prov Park
Fortune Cove
Lot 6
Bay
Seal Point
Mill Road
Cascumpec
St Anthony
Howlan
Cape Wolfe
Lot 7
Lot 6
Woodstock
Locke Road
O'Leary
Unionvale
Roxbury
Halburton
Knutsford
Carleton
Foxley River
Causeway
Springfield West
Coleman
Cape
Point Royal
Lot 8
Lot 9
Milburn
Brae
Dunblane
Dam
Glenwood
Milo
Derby
West Point
Hebron
Brae Harbour
West Point
Grande Digue Pt
Mossy Point
Percival Bay
Rocky Pt
East Bideford
Lennox Island
Bideford
Port Hill
Green Prov Park
Tyne Valley
Birch Hill
Northam
Richmond Bay
Arlington
Lot 14
Rocky Point
Higgins Road
Harmony
St Chrysostome
St Hubert
Richmond
Grand River
St Philip
Cross River
Central Lot 16
Ermont
Bay
St Gilbert
Southwest Lot 16
Belmont Lot 16
Abrams Village
Wellington
Lot 16
Miscouche Wharf Provincial Park
Lot 15
Wellington Prov Park
Maximeville
Lot 17
St Nicholas
Miscouche
Red Head
St Timothy
St Raphael
Fig. 10. Areas within which
FOREST TENT CATERPILLAR
caused severe defoliation of
trembling aspen in 1974 and 1975
1974
1975
Scale 1 inch to 4 miles approx.

Bruce Spanworm, *Operophtera bruceata* (Hlst.)--In Nova Scotia, about 3200 ha (7,800 acres) of sugar maple and beech were infested on the high ground east of the Lynn Road near the Cumberland-Colchester County line, the infestation extending as far east as Simpson Lake and Farmington. Defoliation of trees averaged 50% with the lower crowns and understory trees most severely affected.

In New Brunswick, this spanworm, in association with other insects, caused light defoliation of maples near St. Croix, York County.

Maple Leaf Roller, *Cenopis pettitana* (Rob.)--Moderate to severe infestations, usually on red maple, were again common throughout much of central and southern New Brunswick, especially in Northumberland County.

The number of adults caught in light traps at Canterbury and Plaster Rock increased several-fold from past years, indicating a probable increase in larval populations in the western part of the Province in 1976. Moth catches decreased significantly only in Fundy National Park.

Red maple in many parts of Cumberland County, N.S., were again severely defoliated and some trees west of the Allen Hill Road have many dead branches. Less serious defoliation occurred at locations in the Annapolis Valley, in Pictou County, and in the Margaree-Frizzleton area of Inverness County. In Prince Edward Island, light and occasionally moderate infestations were common, and more widespread than last year.

Lesser Maple Spanworm, *Itame pustularia* (Gn.)--Population levels were highest in Northumberland and Gloucester counties N.B. where the insect was associated with the maple leaf roller and caused moderate to

severe defoliation of red maple over large but scattered areas. Light defoliation was observed in parts of Sunbury, Kent, and Albert counties. Defoliation was negligible in Nova Scotia.

In New Brunswick reduced moth catches from 1974 indicate a general decline in severity of infestations in 1976, but infestations will probably continue in areas near Plaster Rock and north of Newcastle. Moth catches in Nova Scotia were low, and comparable to the 1974 levels.

Saddled Prominent, *Heterocampa guttivitta* Wlk.--Hardwoods, mostly maples, were defoliated in patches totalling about 1250 ha (3,100 acres) along North Mountain from Bridgetown, Annapolis County, west to Roxville, Digby County, N.S. In this area, infestations were severe over about 445 ha (1,100 acres) in four patches, moderate over 120 ha (300 acres) in two patches, and light elsewhere. In Cumberland County, about 445 ha (1,100 acres) were severely defoliated in patches in the Wentworth area from just west of Wentworth Station east over the Colchester County line towards Warwick Mountain, and farther east, in two patches west of North Earltown.

Greenstriped Mapleworm, *Anisota rubicunda* (Fr.)--Infestations on red maple reported last year collapsed near Dickey, Ellen Brown, and Rocky Brook lakes in central Nova Scotia. In Cumberland County, scattered red maples on 120 ha (300 acres) were severely infested near Lower Greenville and on 24 ha (60 acres) at Millvale, near Jackson. A few trees were severely defoliated at Fort Lawrence, and larvae were common in the Chignecto Game Sanctuary.

Fall Cankerworm, *Alsophila pometaria* (Harr.)--Defoliation was severe on white elm, red oak, and red maple over large areas in York,

Sunbury, Kings, Queens, and Westmorland counties, N.B., and in Annapolis and Cumberland counties, N.S. Larvae were more common than last year in parts of western Nova Scotia. In Prince Edward Island, the insect was found in association with other hardwood defoliators, often in apple orchards.

Winter Moth, *Operophtera brumata* (L.)--In Nova Scotia, population levels increased sharply in several localized areas in Pictou County, and at and near Antigonish town. In the western half of the Province, especially in the Annapolis Valley, the insect was usually associated with the fall cankerworm, occasionally causing moderate to severe defoliation, especially on wild apple trees. Severe defoliation of apple, white elm, and often basswood occurred at numerous locations in eastern Albert and southeastern Westmorland counties, N.B., and in Kings, Queens, and eastern Prince counties, P.E.I.

Elm Leaf Miner, *Fenusa ulmi* Sund.--This insect has become a serious pest on English elms in the central part of the Maritimes, and infestations continue to spread. Severe leaf browning occurred at Auburn, New Minas, Kentville, Wolfville, Springhill, and Amherst, N.S., Sackville and Dorchester, N.B., and Eldon, P.E.I. Leaf browning was evident also at Truro and Parrsboro, N.S., College Bridge, Frosty Hollow, Baie Verte, and Port Elgin, N.B., and Summerside and Charlottetown, P.E.I.

Satin Moth, *Stilpnotia salicis* (L.)--This caterpillar was numerous on ornamental poplars at Summerside and Charlottetown, P.E.I., at or near Young's Cove Road, Sussex, Moncton, Frosty Hollow, Shemoque, and Port Elgin, N.B., and at Port Hood, Margaree Forks, Judique, Little Judique, Port Hastings, Barra Head, and Antigonish, N.S. Larval populations were low at Lower Five Islands and Little Bass River, N.S.

Birch Casebearer, *Coleophora fuscedinella* (Zell.)--Severe defoliation of white birch, wire birch, and often alders was scattered throughout the Region. Infestations were most common along the Saint John River and west to the International Border, in parts of St. John, Kings, Restigouche, Gloucester, and Albert counties and throughout Westmorland County, N.B. Infestations were moderate to severe throughout most of Prince Edward Island, and severe in western Cumberland, northern Kings, northeastern Victoria, and mid-western Inverness counties, N.S. The largest infestations occurred near Sand River, Cumberland County (1415 ha, 3,500 acres), and Halls Harbour, Kings County (730 ha, 1,800 acres).

Sampling of overwintering larvae at 87 locations in the Region indicates a continuation of high population levels in 1976 at numerous locations from Baker Brook, Madawaska County across northern New Brunswick through Tide Head to Bathurst, and from Grande Anse to Six Roads Gloucester County, in western York and Carleton counties, and near Moncton. In Prince Edward Island, severe foliar browning of birch is expected to be general. In Nova Scotia, infestations will be severe in northeastern Victoria County, in the Hall's Harbour area of Kings County, and from Lower River Hebert to Apple River, Cumberland County and moderate to severe elsewhere in western Cumberland County and near Broad Cove, Digby County.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)--Leaf browning of wire birch and occasionally white birch was light except for spotty, severe defoliation in south-central New Brunswick, southern Kings County, P.E.I., and Cumberland, north-central Pictou, Annapolis, Queens, and Lunenburg counties in Nova Scotia, and moderate defoliation along the north and east coast and in Charlotte County, N.B., and in the Margaree Valley of Cape Breton Island, N.S.

Birch Skeletonizer, *Bucculatrix canadensisella* (Cham.)--White birch, wire birch, and occasionally yellow birch leaves were severely skeletonized, with many dropping prematurely, throughout most of the lower Saint John River Valley, in most birch stands in southeastern New Brunswick, and in Victoria, Inverness, Antigonish, Pictou, Colchester, Halifax, Hants, and Cumberland counties in Nova Scotia. Many birch stands in Prince Edward Island were moderately or severely infested.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Acleris variana (Fern.) Blackheaded budworm	Fir, balsam Spruce, white, red, black	Maritime Provinces	Numbers generally low.
Archips cerasivoranus (Fitch) Uglynest caterpillar	Cherry, choke	Nova Scotia and New Brunswick	Common. Nests numerous on roadside bushes especially in northwestern Nova Scotia, Cumberland County and adjoining areas of Colchester County. Light trap catches indicate increased numbers for next season in Charlotte Co., N.B. and Colchester Co., N.S.
Archips argyrospilus Wlk. Fruit tree leaf roller	Hardwoods	New Brunswick	Common. Light trap records indicate higher populations for 1976 in parts of York and Northumberland counties.
Bradysia sp. and *Smittia* sp.	Spruce, white	Acadia Forest Experiment Station, Sunbury Co., and Sussex, Kings Co., N.B.	Implicated in the mortality of white spruce seedlings in transplant rolls and peat pots.
Choristoneura pinus pinus Free. Jack-pine budworm	Pine, jack	Kings, Queens, and Northumberland counties, N.B.	Defoliation negligible to trace.
Choristoneura rosaceana Harr. Oblique-banded leaf roller	Miscellaneous deciduous hosts	Maritime Provinces	Numbers low except on some ornamentals in New Brunswick.

OTHER NOTEWORTHY INSECTS (continued)

Insect	Host(s)	Locality	Remarks
Coleophora innotabilis Braun. A casebearer	Aspen, trembling	Kings Co., P.E.I.	Moderate to severe defoliation in stands east of the Montague-Cardigan area to Georgetown and over about 10 km^2 (4 sq. miles) at St. Marys Rd. in association with the large aspen tortrix, *Choristoneura conflictana* Wlk.
Croesia semipurpurana (Kft.) Oak leaftier	Oak, red	York, Sunbury, Queens, Kings, Westmorland and Northumberland counties, N.B.	Infestations moderate to severe
Dichomeris marginella (Fabr.) Juniper webworm	Juniper, ground	Pleasant Valley, Pictou Co., N.S.	Severe damage to a few shrubs in old field.
Dioryctria reniculella Grt. Spruce coneworm	Fir, balsam Spruce, red, white	Maritime Provinces	Common, but numbers low. Light trap catches indicate higher populations in 1976 in parts of York, Charlotte, and Albert counties, N.B.
Diprion hercyniae (Htg.) European spruce sawfly	Spruce, red, white	Maritime Provinces.	Population levels low.
Diprion similis (Hartig) Introduced pine sawfly	Pine, eastern white	Trenton, Pictou Co., N.S.	First record by the survey in the Maritimes Region.
Hyphantria cunea (Drury) Fall webworm	Miscellaneous deciduous hosts	Maritime Provinces.	Nests common in Nova Scotia but fewer than last year in western counties. Nests scattered in eastern Westmorland Co., N.B.; at Charlottetown and near Dalvay and, at a few points in southeast Kings Co., P.E.I.

OTHER NOTEWORTHY INSECTS (continued)

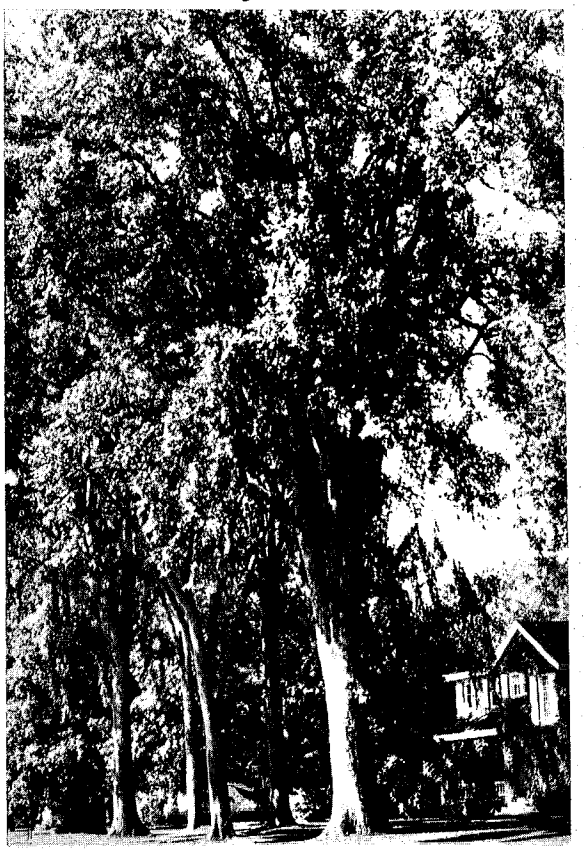
Insect	Host(s)	Locality	Remarks
Hylobius spp. Root collar weevils	Pine, jack, red	St. Sauveur, Little South Tracadie River, Gloucester Co., N.B.	About 25% mortality in a 20 ha (50 acres) pine plantation at St. Sauveur.
Melanolophia canadaria Gn. A looper	Maple, mountain, red	Colchester Co., N.S.	Severe defoliation of mountain maple over much of Fisher Mountain.
Messa populifoliella (Townsend) A leaf-mining sawfly	Poplar, balsam	Portage River, Northumberland Co., and Tremblay, Gloucester Co., N.B.	Leaves mined on a few trees.
Mindarus abietinus Koch Balsam twig aphid	Fir, balsam	Maritime Provinces.	Populations low except in parts of western New Brunswick, where it was more common than in recent years.
Pikonema alaskensis (Roh.) Yellowheaded spruce sawfly	Spruce, black red, white	Nova Scotia	Moderate to severe defoliation of young trees at eight locations.
Pineus coloradensis (Gillette) Hard pine adelgid	Pine, Scots	3 km (2 miles) west of Port Howe, Cumberland Co., N.S.	Common in a plantation but no apparent damage.
Pineus pineoides Chol.	Spruce, black	Black Brook, Victoria Co., N.B.	Present in low numbers in a plantation.
Porthetria dispar (L.) Gypsy moth	Pheromone trap	Maritime Provinces	One male adult caught at Fundy National Park, Albert Co., N.B., from 135 traps set out in Region.

OTHER NOTEWORTHY INSECTS (continued)

Insect	Host(s)	Locality	Remarks
Psilocorsis quercicella Clem. An oak leaftier.	Oak, red	Queens Co., N.S.	Outbreak severe near South Brookfield, and light to moderate extending to the Rossignol Lake area.
Rhynchaenus rufipes (Lec.) A willow beetle	Willow, bayleaf	Coverdale, Albert Co., Dieppe and Moncton, Westmorland Co., N.B., Charlottetown and Cavendish, Queens Co., P.E.I.	Leaf browning severe.
Sciaphila duplex Wlshm. Poplar leaf roller	Aspen, largetooth, trembling	Maritime Provinces	Common but numbers low, except on scattered trees at Salt Springs, Pictou Co., N.S. where defoliation was severe.
Serica tristis Lec. Small leaf beetle	Maple, sugar	Edmundston, Madawaska Co., N.B.	Defoliation on one group of trees.
Scolytus multistriatus (Marsh.) Smaller European elm bark beetle	Pheromone trap	Upper Mills, Charlotte Co., N.B.	First record for the Maritimes Region.
Spilonotia ocellana D. & S. Eye-spotted budmoth and *Zeiraphera improbana* Larch budworm	Tamarack	Between Aulac and Point de Butte, Westmorland Co., N.B.	Light to severe needle browning over about 3100 ha (12 sq. miles).
Symmerista canicosta Francl. Red-humped oakworm	Maple, sugar	Colchester and Cumberland counties, N.S.	The severe infestation (previously reported as *Symmerista albifrons* J.E. Smith) has collapsed, probably due to a Bacillus disease.

OTHER NOTEWORTHY INSECTS (continued)

Insect	Host(s)	Locality	Remarks
Zeiraphera canadensis Mut. and Free and *Zeiraphera fortunana* Kft. Spruce bud moths	Spruce, white	Maritime Provinces	Numbers generally low in New Brunswick and Prince Edward Edward island. Moderate to severe shoot damage in Colchester Co., between Central West River and Salt Springs, Pictou Co., in parts of Cumberland Co., and along the Fundy coast, N.S.



FOREST DISEASES

IMPORTANT FOREST DISEASES

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau--Although Dutch elm disease continued to intensify with respect to new infections and mortality, no significant extension of its range was noted (See 1974 Annual Report). The disease was found at six new locations in Nova Scotia and at seven in New Brunswick, but most of these locations are near previously known pockets of infection (Fig. 11). Dutch elm disease is not yet known to occur in Prince Edward Island.

The new locations and numbers of trees affected are given below.

New Brunswick		Nova Scotia	
Chipman	1	Torbrook	1
Forks	1	Wolfville	2
Havelock	1	Athol	1
Nauwigewauk	1	Stewiacke East	2
Norton	2	Central West River	3
Portage Vale	1		
South Branch	1	New Glasgow	1

In Fredericton, N.B., (preamalgamation limits), where sanitation has been practiced since 1952, 75 diseased elm trees, compared with 131 last year, were removed. A total of 583 diseased trees has been removed in the City since 1961, the first year the disease was found. Thus about 7.8% of the original population has been infected, compared to 55 to 88% in nearby areas where sanitation is not practiced. In 1975, counts, from traps, of the native elm bark beetle, (*Hylugropinus rufipes* Eich.), the principal vector of the disease-causing fungus, indicate that populations in these nearby non-sanitized areas may be

100 times higher than in the Fredericton sanitation area.

Of 33 apparently healthy elms, selected in 1967 in eight areas of high tree mortality in New Brunswick as part of a study of resistance to Dutch elm disease, 8 remain unaffected (unchanged from last year), 5 are living but diseased, 17 have been killed by the disease, and 3 have died from other causes. Four to six years have elapsed since the five living diseased trees were first noted as infected.

Results from 36 traps baited with pheromone attractant (compliments of Dr. J.W. Peacock, U.S. Forest Service) indicate that *Scolytus multistriatus* Marsh., a European elm bark beetle considered to be the principal vector of Dutch elm disease in the United States, is of little significance in the Maritimes Region. Only one adult was collected - at Upper Mills, N.B., the first record of *S. multistriatus* in the Region.

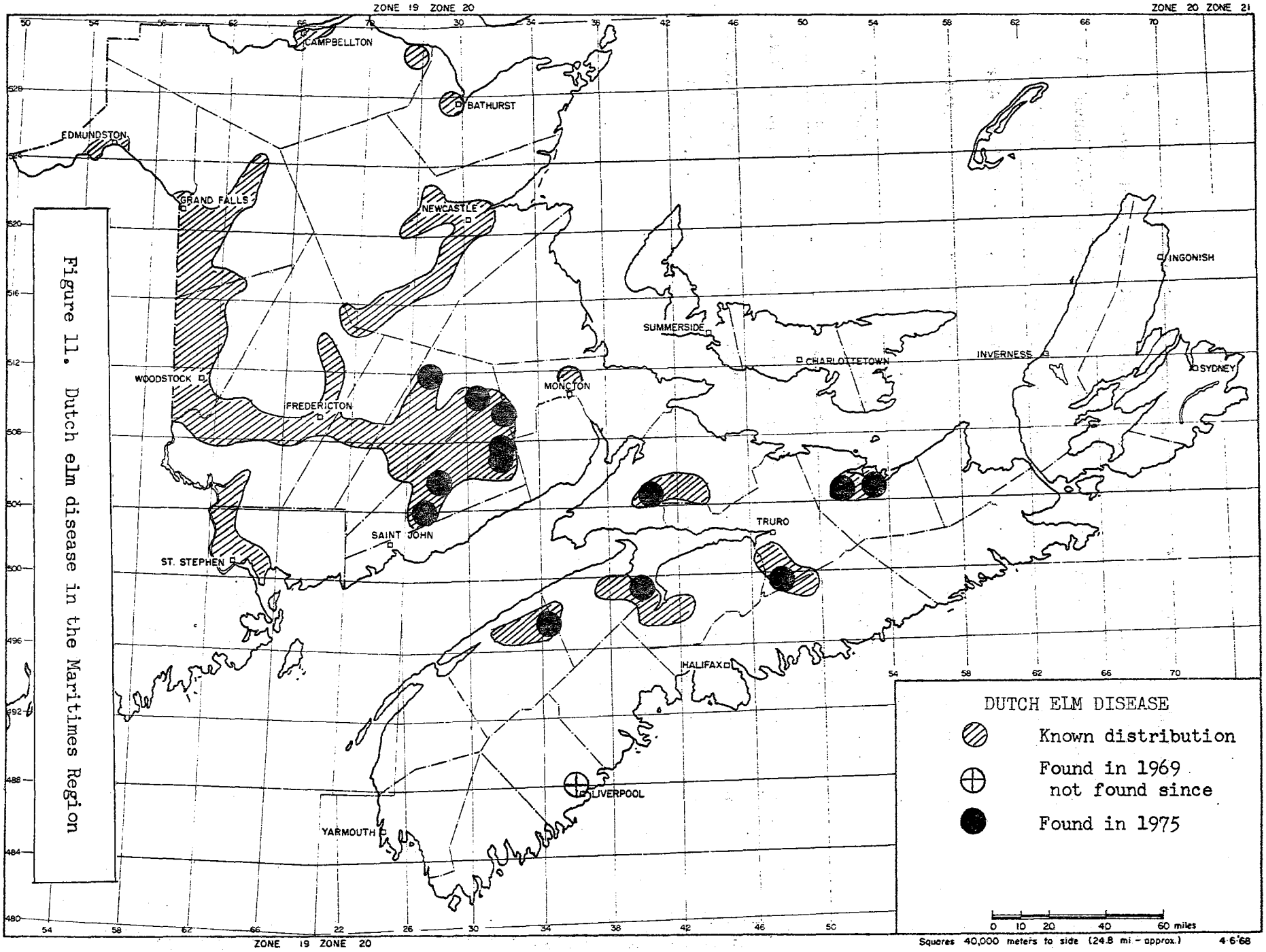


Figure 11. Dutch elm disease in the Maritimes Region

Abiotic Injuries: In New Brunswick winter drying caused foliar browning in 1- to 5-m (3- to 15-ft) high spruce plantations over about 400 ha (1,000 acres) near Black Brook, where incidence of injury varied from 4 to 52% on scattered trees; bud mortality may cause top dieback or forks on 9% and twig mortality on about 33% of the affected trees. Injury was more pronounced on red spruce, and on hybrid trees with red spruce characteristics than on black spruce and black spruce-like hybrids. All Norway spruce at Boston Brook on about 24 ha (60 acres) were affected, and top dieback may occur on about 20%. Moderate browning occurred in a young plantation of Scots pine at Parkers Ridge, on jack pine at Utopia, and on balsam fir at Fawcett Hill. Moderate injury also occurred in a young natural stand (1 ha, 2 acres) of black spruce near Sussex, and on individual coniferous ornamentals at scattered locations. In Nova Scotia, browning occurred on balsam fir over wide areas in Inverness and Victoria counties.

Foliar browning from roadside salt spray and/or winter drying occurred throughout the Region along major highways. Discoloration was most common on the exposed sides of roadside red pine and white pine; spruce, cedar, and balsam fir were occasionally affected. Along coastal areas, light or moderate browning caused by windborne salt spray was found on seaward sides of conifers at scattered locations in Nova Scotia and in the National Park in Prince Edward Island.

Late spring frost injury in New Brunswick was moderate on balsam fir in a 2 ha (6 acre) plantation at Pennfield Ridge, and on a few trees at other widely scattered locations. In Nova Scotia, severe injury

occurred "in pockets" on sugar maple and beech in the Aspy River valley, near McIntosh Brook along the Cabot Trail, and on scattered Douglas fir trees in a plantation at West Leicester; no injury was found in the southwestern part of the Province.

Hurricane-force winds on July 28 caused severe injury to hardwood foliage over wide areas of Pictou, Colchester, and Antigonish counties in Nova Scotia; broken branches were common on forest and ornamental trees, and windthrown trees were numerous in southeast Colchester County. Severe foliar injury occurred on many ornamental trees from the same storm in central Prince Edward Island and at Shediac and Baie Verte in New Brunswick.

Heavy snows broke branches and stems of red pine in several plantations at Spencer Island, N.S.

Drought may have caused mortality of tamarack seedlings, over 4 ha (10 acres) near Upper Stewiacke, N.S., and premature defoliation or discoloration of deciduous trees at scattered locations in eastern Nova Scotia.

Fume Injury--Widespread sulfur dioxide (SO_2) injury, attributed to emissions from a thermal generating station and an oil refinery in close proximity, occurred to the foliage of many tree species in the Champlain Heights and Forest Hills areas of Saint John, N. B. in mid-July. The area affected was roughly 11 km (7 miles) long in the direction of the prevailing wind and 3 km (2 miles) across at the widest point. The symptoms varied from moderate leaf spotting to severe interveinal necrosis. Tree species most severely affected were Norway maple, white birch, yellow birch, flowering crab, white pine, and tamarack.

In north-central New Brunswick emissions of SO_2 from oxidation of waste sulphide material continue to be held at low levels by sealing the wastes in an underground mine (See 1971 and 1972 Annual Reports). During the 1975 growing season, slight injury, typical of SO_2 occurred on alfalfa at only two monitoring plots within 1.6 km (1 mile) of the source. Other alfalfa and eastern white pine planted at intervals up to 9.6 km (6 miles) from the source displayed no noticeable symptoms of SO_2 injury.

Needle Rusts of Conifers--Severe discoloration of needles from spruce budworm attacks made detection of foliar diseases on balsam fir and spruce almost impossible in the Region. However, assessments in balsam fir Christmas tree stands near Tracadie and Hacheyville, N.B. showed less than 5% of new needles affected by *Pucciniastrum* spp., compared to 20% last year. Intensities of rusts on spruce (*Chrysomyxa ledi* (Alb. & Schw.) D. By. and *C. ledicola* Lagh.) growing on or near bogs were low to nil in all widely scattered preselected areas, in contrast to moderate or severe infections of the past few years. Infections on 2-needle pines (*Coleosporium* spp.) also were reduced in intensity.

Shoot Blight of Conifers, *Sirococcus strobilinus* Preuss.--At the Provincial Forest Nursery at Lawrencetown, N.S., about 50% of the Jeffrey pine seedlings were killed in a seedbed. The fungus was also found on a few white spruce trees in an open field at Manassette Lake, Guysborough County. At the Provincial Nursery, near Charlottetown, P.E.I., where the disease caused considerable mortality last year, the fungus was again isolated from black spruce in April. It was not found after control measures were applied. The disease was found in New Brunswick this year.

Scleroderris Canker of Pine, *Gremmeniella abietina* (Lagerb.) Morelet (*Scleroderris lagerbergii* Gremmen)--Widely distributed in the jack pine range in New Brunswick, the disease killed about 5% of the trees in a young jack pine plantation near Deersdale, York County, and it was found in a red pine plantation near Allardville, Gloucester County. No new infections were found in Nova Scotia. The disease has yet to be found in Prince Edward Island.

Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka--The disease caused damage to Scots pine Christmas trees in Cumberland County, N.S.: near Port Howe, where red flags were present in varying intensities on 50% of the trees, some of which were dead or dying; 30% of the trees in a plantation near East Mapleton were affected with 5% dead or dying; and at East and West Leicester where the rust was found on about 5% and 10% of the trees, respectively.

Condition of Tamarack--Tamarack stands were examined at 98 predetermined locations in the Region. Each stand was selected to contain at least 20% tamarack, young or old growth.

At each location, three randomly selected prism plots were established, and tamarack trees were classified as shown below:

Classes	P.E.I.	N.B.	N.S.	Region
% Mortality	33	8	3	7
% of living with >50% dieback	17	7	2	5
% of living with <50% dieback	55	21	15	19
% of living with old dead tops	31	25	13	20

Mortality and injury to tamarack was noticeably higher in Prince Edward Island than the Regional average. Repeated severe defoliation by larch sawfly may be a contributing factor to this condition. Broken and old dead tops are significant because they are major entry courts for decay-causing fungi.

Foliar Diseases of Hardwoods--Ink spot of trembling aspen, *Ciborinia whetzelii* (Seaver) Seaver, was common in New Brunswick, and moderate in intensity on scattered trees in small (<1 ha, <2 acres) patches, except on about 4 ha (10 acres) near Dupuis Corner where it was severe. In Nova Scotia, very light infections were observed at two locations in Cumberland County.

Leaf and twig blight of aspen, caused by *Venturia macularis* (Fr.) E. Muell. & Arx, was common but light in intensity on young trees at scattered locations throughout the region.

Willow blight, caused by *Venturia saliciperda* Nuesch., was severe on many ornamental willows at Atholville, Tide Head, Campbellton, and Bathurst, N.B.; and very light at scattered locations elsewhere.

Cherry blight was less common than last year. Moderate leaf browning occurred on a few pin cherry trees at Frizzleton, between Malignant Cove and Maryvale, and at Sutherland River, N. S., and at East Canaan, N.B.

Anthracnose of maple, caused by *Kabatiella apocrypta* (Ell. & Ev.) Arx, was moderate or severe on scattered ornamental sugar maple trees in the Region. Foliage browning, typical of leaf scorch, was moderate on red maple and beech over about 1 ha (2 acres) near Trousers Lake, light on beech near Bristol, and light on sugar maple at New Denmark, N.B.

Ash rust, *Puccinia sparganioides* Ell. & Barth., occurred in higher intensity than last year on white ash in western Nova Scotia where leaf browning was severe at Shelburne, Milton, Brooklyn, and from Round Hill to Annapolis Royal, and light at Mahone Bay, Bridgewater, Liverpool, and Weymouth.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina morbosa (Schw. ex Fr.) Arx Black knot	Cherry, black, choke, pin	7 locations in New Brunswick, 10 in Nova Scotia	Severe on black cherry at Brooklyn and on pin cherry at Nictaux and Paradise N.S. Common elsewhere.
Armillaria mellea (Vahl) ex Fr.) Kummer Root rot	Currant, alpine Fir, balsam Pine, jack, Scots Spruce, black, Norway, white	4 locations in New Brunswick, 6 in Nova Scotia	Less than 1% of trees killed. New herbarium record on alpine currant.
Chrysomyxa weirii Jacks. Needle rust	Spruce	Fundy National Park, N.B.	Severe browning on one ornamental tree.
Cronartium comptoniae Arth. Stem rust	Pine, jack	Thomson Station, N.S.	Scattered pockets with 10% of trees infected.
Cronartium ribicola J.C. Fischer white pine blister rust	Pine, eastern white	Maritime Provinces	Infection levels unchanged (see 1967 Report).
Cryptodiaporthe salicina (Curr.) Wehm. Twig canker	Willow, weeping	2 locations in Nova Scotia, 1 in New Brunswick.	Found on dead or dying trees.
Davisomycella ampla (Davis) Darker Needle cast	Pine, jack	Chipman, N.B.	Moderate on 20% of trees over 1 ha (2 acres).
Discula quercina (West.) Arx Anthracnose	Ash, white Beech	Nova Scotia and northern New Brunswick.	Moderate on scattered ash trees at Mahone Bay, N.S.; light elsewhere. Common on roadside beech trees near Juniper, N.B.

OTHER NOTEWORTHY DISEASES (continued)

Organism and Disease	Host(s)	Locality	Remarks
Drepanopeziza tremulae Rimpau Leaf spot	Aspen, trembling	Hammtown, N.B.	Trees with leaves completely brown scattered among unaffected trees.
Fusicoccum abietinum (Hartig) Prill. & Del. Red flag.	Fir, balsam	Drummondville to North Framboise, N.S.	8-50 flags on about 25% of roadside trees.
Guignardia aesculi (Pk.) V.B. Stew Leaf blotch	Horse-chestnut	Nova Scotia, Prince Edward Island	Present where host grows. Moderate at two locations in N.S. and three in P.E.I.
Hendersonia pinicola Wehm. Needle cast	Pine, jack	Oxford, N.S. Pollett River, N.B.	Moderate foliage browning.
Hypoxylon mammatum (Wahl.) Miller Hypoxylon canker	Aspen, trembling	4 locations in northern New Brunswick	Low or moderate incidence in some provincial parks. See 1968 Report for regional assessment.
Maple die-back	Maple, sugar	Central and western Nova Scotia	Present on scattered roadside or street trees.
Melampsorella caryophyllacearum Schroet. Witches' broom	Fir, balsam	4 locations in western Nova Scotia	Brooms on 7% of trees examined.
Phacidium abietis (Dearn.) Reid and Cain Snow mold	Fir, balsam	Campobello Island, N.B.	Moderate injury on a few roadside trees and light on others.
Red flag	Maple, sugar	15 locations in Nova Scotia	More common on ornamentals than in previous years.

OTHER NOTEWORTHY DISEASES (continued)

Organism and Disease	Host(s)	Locality	Remarks
Rhabdocline weirii spp. oblonga Parker & Reid Needle cast	Fir, Douglas	East Leicester, N.S.	Severe on about 1% of trees along edge of plantation. New record for Region.