

FOREST PEST CONDITIONS IN THE MARITIMES

IN 1973 WITH AN OUTLOOK FOR 1974

by

R. S. Forbes, G. R. Underwood and G. A. Van Sickle

MARITIMES FOREST RESEARCH CENTRE

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ABSTRACT

This Report reviews the status of forest insects and tree diseases in the Maritimes Region in 1973 and gives for some pests, a forecast of conditions for 1974.

Résumé

Ce rapport passe en revue les conditions relatives aux divers insectes et maladies des arbres dans la Région des Maritimes en 1973 et présente un aperçu des conditions prévues pour quelques uns des ces organismes nuisibles en 1974.

FOREWORD

An important objective 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 included in seasonal summary reports and in a national published report made up of regional contributions. To be of maximum value to forest managers, the reports must be issued on time. We can improve the timing of issuance of the seasonal summary reports but we can do little about that for the national published report, which usually does not come out until late in the year following that reported on. This is due to printing delays. The late appearance of this report, representing the highlights of the surveillance part of our program, means that it becomes little more than a historical document, of little use for current and practical decision making.

In an attempt to improve service to forest managers concerned, we are issuing this Information Report now. It embodies the information on regional pest conditions in 1973 (that will appear later in the national published report), some predictions on conditions for 1974, some maps depicting the nature and extent of infestations and infections in 1973, and some illustrations of important pests and damage caused by them.

If this Report meets with general approval and warrants continuation, we shall attempt to issue the 1974 version in 1974. Therefore, we would like to know from those receiving this Report if you want it continued on a yearly basis.

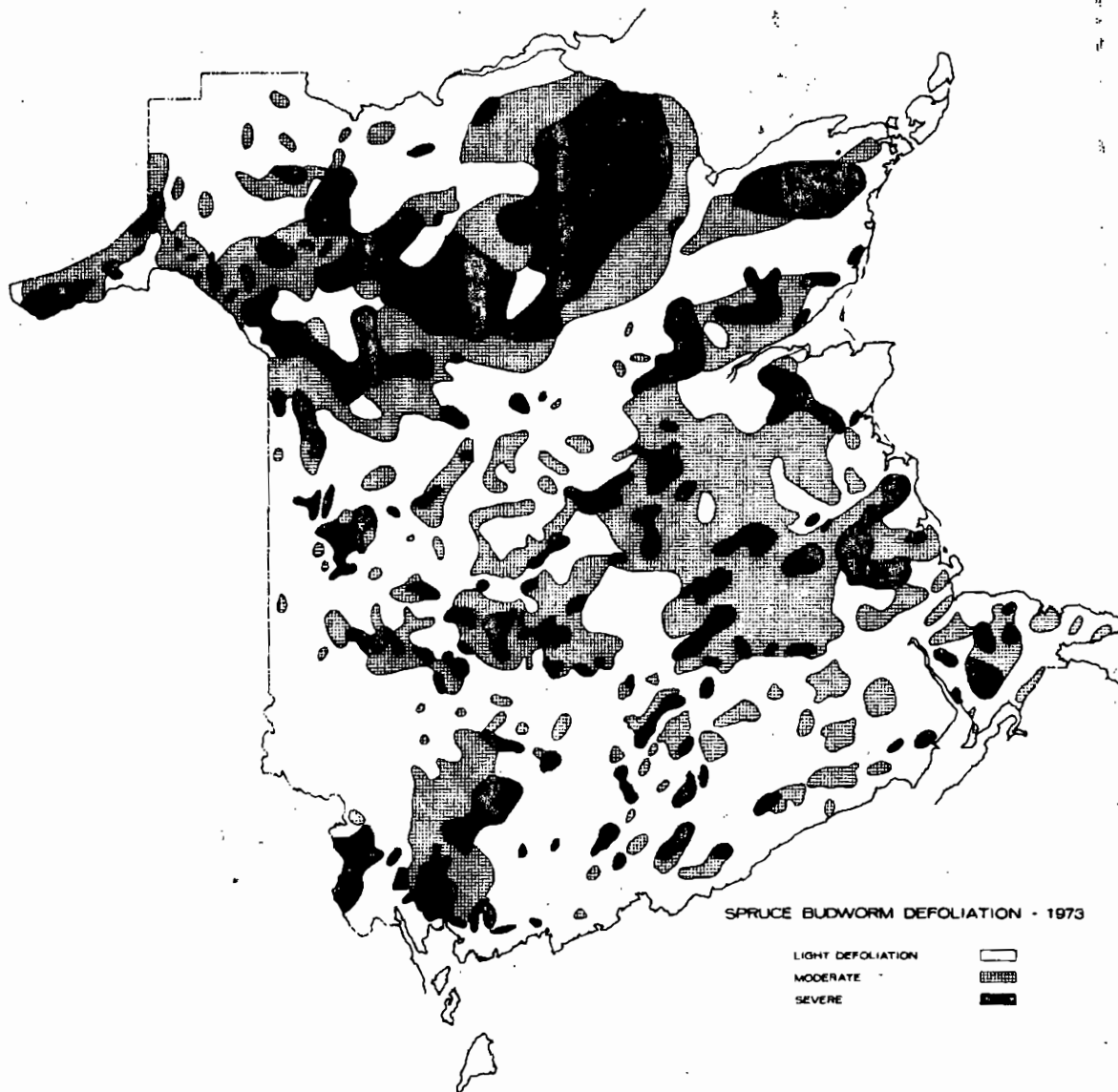
IMPORTANT FOREST INSECTS

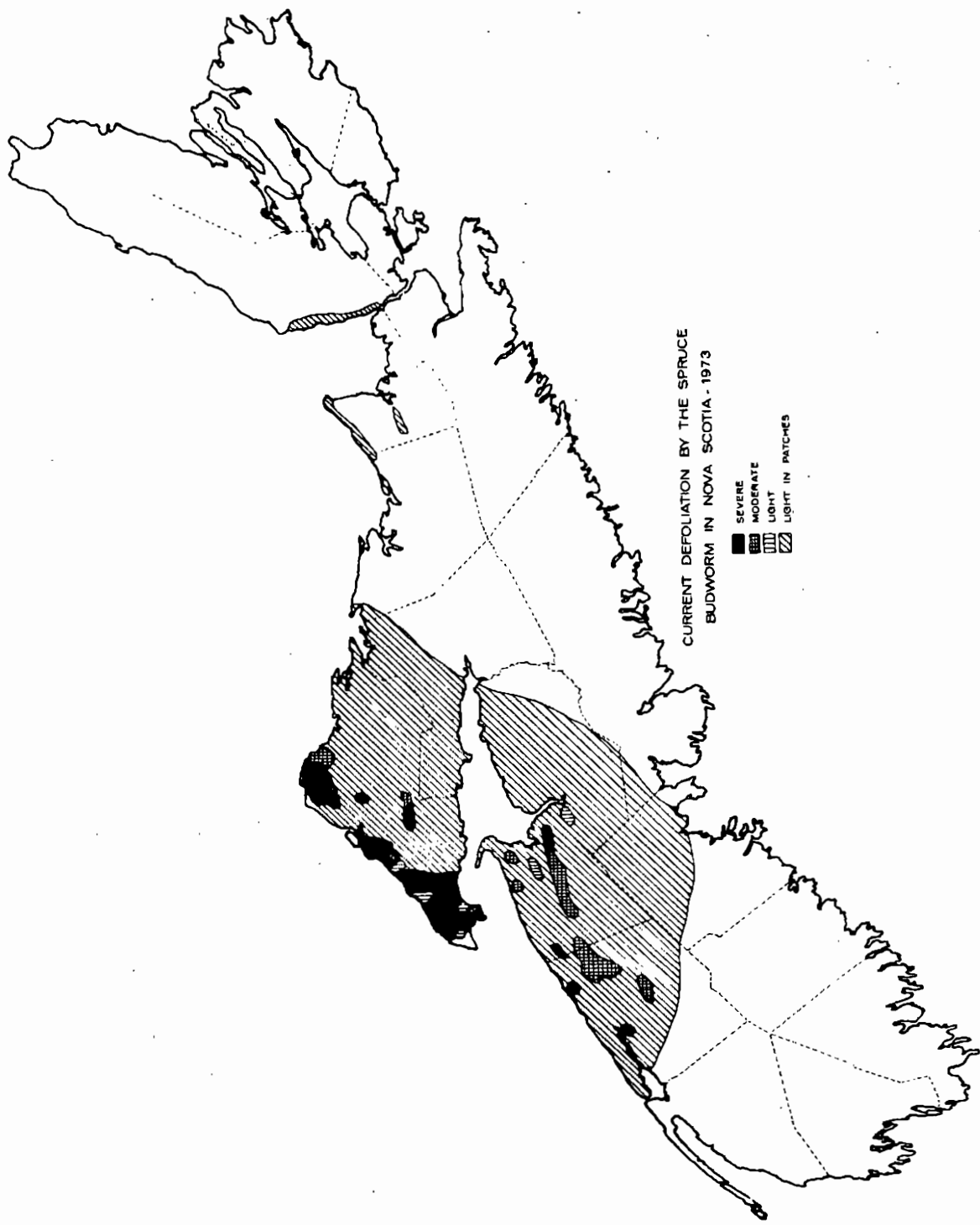
Spruce Budworm, *Choristoneura fumiferana* (Clem.)--In New Brunswick, the aerial survey for spruce budworm defoliation, normally conducted in July, was cancelled due to poor weather. This necessitated extensive ground surveys for defoliation. These surveys showed that the loss of new needles of balsam fir and spruce was severe over 3.5 million acres (an increase of 1.6 million acres over 1972) and moderate over 4.3 million acres (an increase of 1.9 million acres over 1972). The amount of defoliation decreased from 1972 in southern New Brunswick (counties of St. John, Albert, Westmorland, Kings, Queens, and Charlotte) and increased in the northern counties, especially Madawaska County.

About 4.2 million acres were sprayed in New Brunswick by Forest Protection Limited, as compared to about 4.5 million in 1972.

Eleven hundred and five locations in New Brunswick were sampled for spruce budworm egg masses. The total area of infestation is 15.0 million acres, up 1.7 million acres from 1972, and now covering nearly all the productive forest land in the Province. Of this total, 11.0 million acres were classed as high (compared to 4.8 million acres in 1972), 1.5 million acres as moderate, and 2.5 million acres as light. This increase is due largely to spring and early summer weather that favored development and survival of larvae. In terms of egg-mass density, the largest increases were in northwestern, northeastern, and eastern New Brunswick. The smallest increases were in the sprayed areas and in southern New Brunswick.

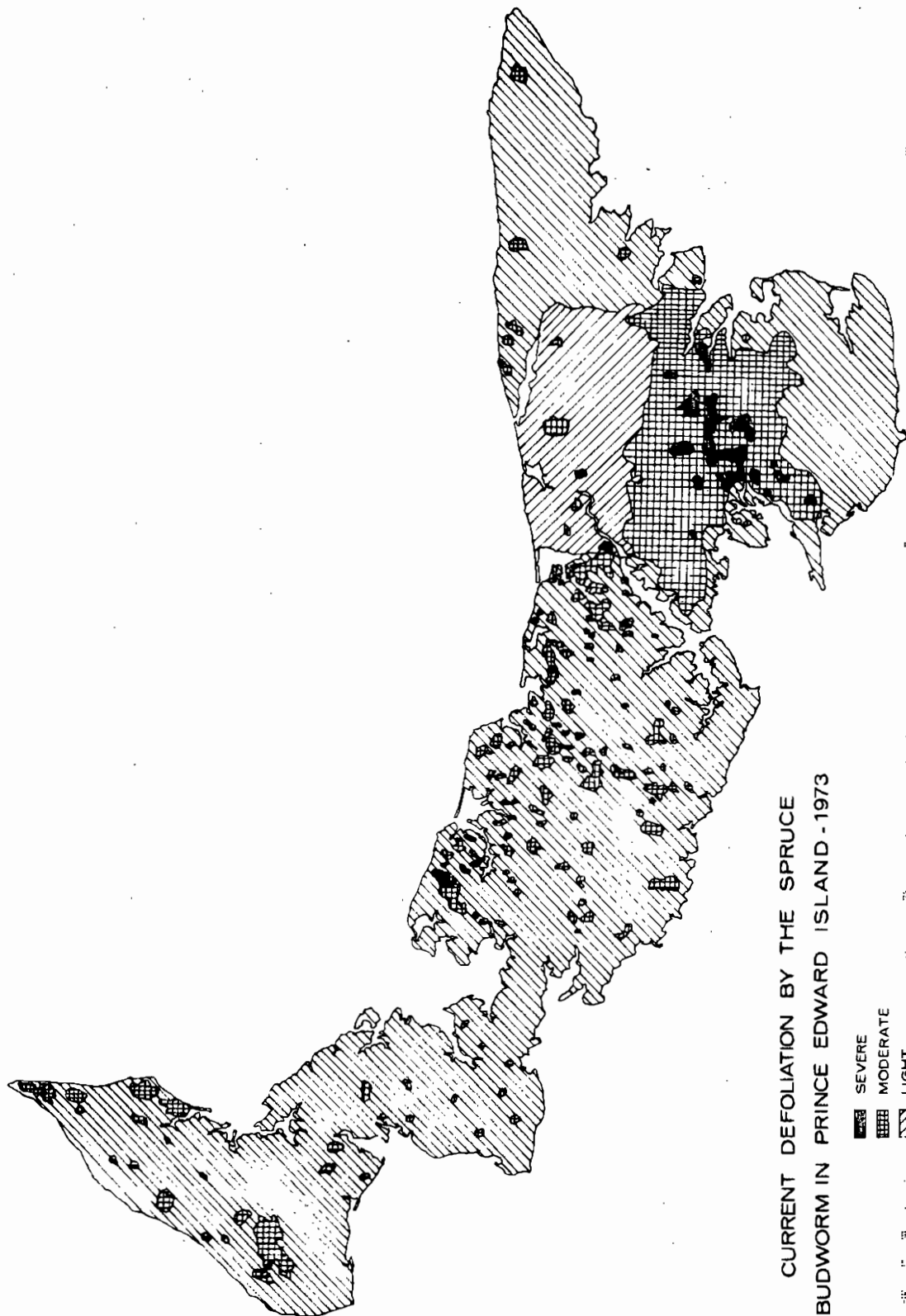
In Nova Scotia, patches of light, moderate, and severe defoliation occurred throughout Annapolis, Kings, and Cumberland counties. In





CURRENT DEFOLIATION BY THE SPRUCE
BUDWORM IN NOVA SCOTIA - 1973

- SEVERE
- ▨ MODERATE
- ▮ LIGHT
- ▧ LIGHT IN PATCHES

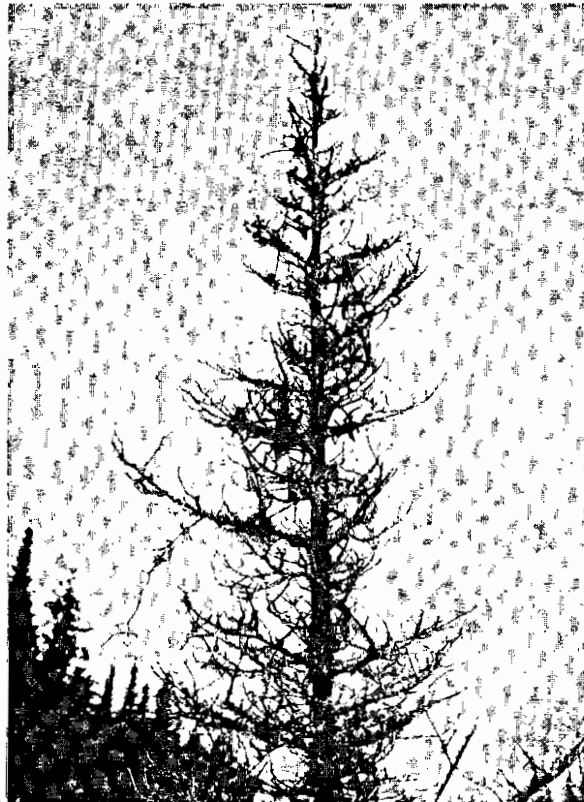


CURRENT DEFOLIATION BY THE SPRUCE
BUDWORM IN PRINCE EDWARD ISLAND - 1973

SEVERE
MODERATE
LIGHT
LIGHT IN PATCHES



Spruce budworm larva on white spruce.



Balsam fir killed by spruce budworm at Clearwater Brook, Plaster Rock - Renous Highway, N.B. Spruce in background.

addition, areas of light defoliation were observed at many locations in Hants and Colchester counties, west of Antigonish and along the northwest coast of Antigonish County, and along the west coast of Inverness County. In Kings and Annapolis counties, defoliation was severe over 22,000 acres, as compared to 153,700 acres in 1972. In Cumberland County, however, defoliation was severe over 198,000 acres, as compared to 132,000 acres in 1972; most of this affected area is south of Joggins to Apple River and north of Amherst. Counts of egg masses were generally high in Cumberland County, where the density increased from 133 egg masses per 100 ft² of foliage in 1972 to 264 in 1973. Egg-mass density declined to low levels in Kings and Annapolis counties but rose sharply in Antigonish County from 16 per 100 ft² in 1972 to 134 in 1973.

In Prince Edward Island, light defoliation occurred in most softwood forests. Pockets of moderate to severe defoliation were observed in all sectors of the Island, the largest of which covered 180,000 acres east of Charlottetown. Of 27 locations sampled for egg masses, all but 3 had high egg-mass counts, indicating generally severe defoliation in 1974.

Spruce Coneworm, *Dioryctria reniculella* (Grt.)--This insect was numerous between 1970 and 1972 in many red spruce stands between the Dungarvon and Cains rivers, New Brunswick. Population levels in this area were reduced, however, from 1.5 pupae per 18 inch branch tip in 1972 to 0.4 in 1973. Defoliation was light except for a few patches of severe south of Doaktown. Elsewhere in the Province, moths were

common in light trap catches at several locations especially Plaster Rock where 2,217 were caught, compared to 0 in 1972.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)--In New Brunswick attacks of the balsam gall midge on balsam fir needles were few and scattered, and populations have dropped to new low levels, as indicated by the following results of sampling.

Year	Number examined	Branch Samples	
		With galled needles	With at least 30% of new needles attacked
1968	1,160	730	175
1969	1,200	590	130
1970	1,169	132	3
1971	889	17	0
1972	1,065	10	0
1973	1,105	0	0

Elsewhere in the Region, except for moderate attacks on a few small trees in Kejimikujik National Park, N.S., population levels were low.

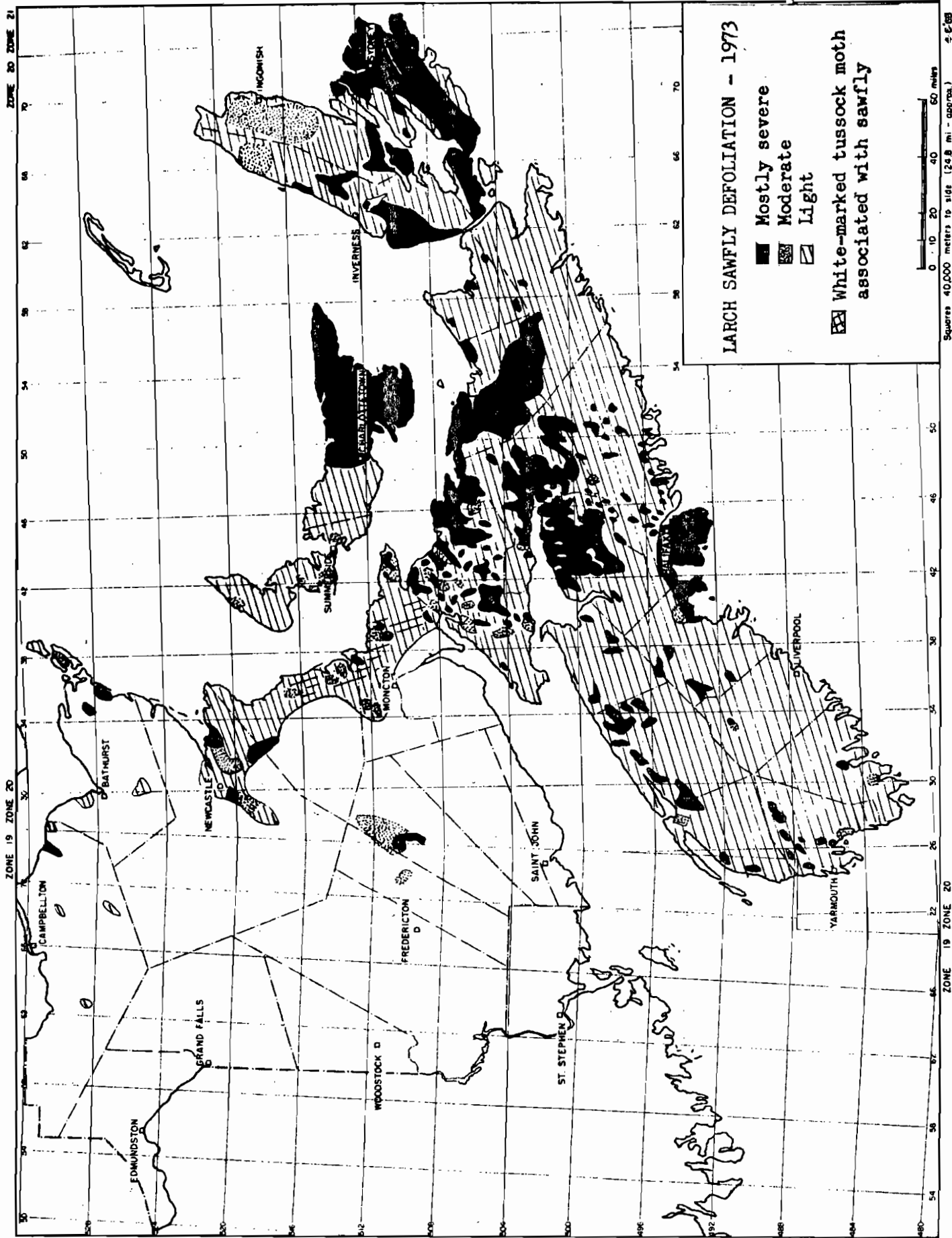
Larch Sawfly, *Pristiphora erichsonii* (Htg.)--Compared to 1972, severe infestations were more widespread in Nova Scotia, remained extensive in the east and patchy in the west of Prince Edward Island, and covered similar acreages in central and eastern New Brunswick.

In Nova Scotia, infestations were severe in most of Cape Breton, Richmond, Pictou, Colchester, Cumberland, and Hants counties, at many places in Halifax, Annapolis, Lunenburg, and Yarmouth counties, and in scattered stands elsewhere (see map). Moderate attacks occurred over large areas of Victoria and Inverness counties, in small areas of Cumberland County, and at scattered points in the western counties. In other parts of the Province, defoliation was light in most stands.

In Prince Edward Island, infestations were mostly severe in the eastern half of Queens County and in Kings County, and mostly light but with patches of moderate and severe in western Queens and Prince counties.

In New Brunswick, patches of moderate and severe defoliation occurred in Westmorland County particularly the eastern half, in Queens County near Cumberland Bay and towards the northeast, in northeastern Sunbury County, in eastern Northumberland County and south into Kent County, in pockets of eastern Gloucester County and near Benjamin River, Restigouche County. Light defoliation occurred in small areas of Restigouche and Gloucester counties, and was general along the east and southeast coast. The spruce budworm caused some of the defoliation of tamarack in coastal areas of Northumberland and northern Kent County, as did the whitemarked tussock moth in such areas of southern Kent and Westmorland County.

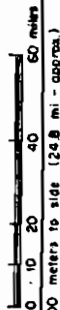
As part of a program of biological control, 850 adults (457 females and 393 males) of the introduced parasite, *Olesicampe benefactor* Hinz were released near College Lake, Halifax County, N.S. These specimens were reared from larch sawfly material collected at or near the Chignecto Game Sanctuary, N.S. where *O. benefactor* was released in 1967.



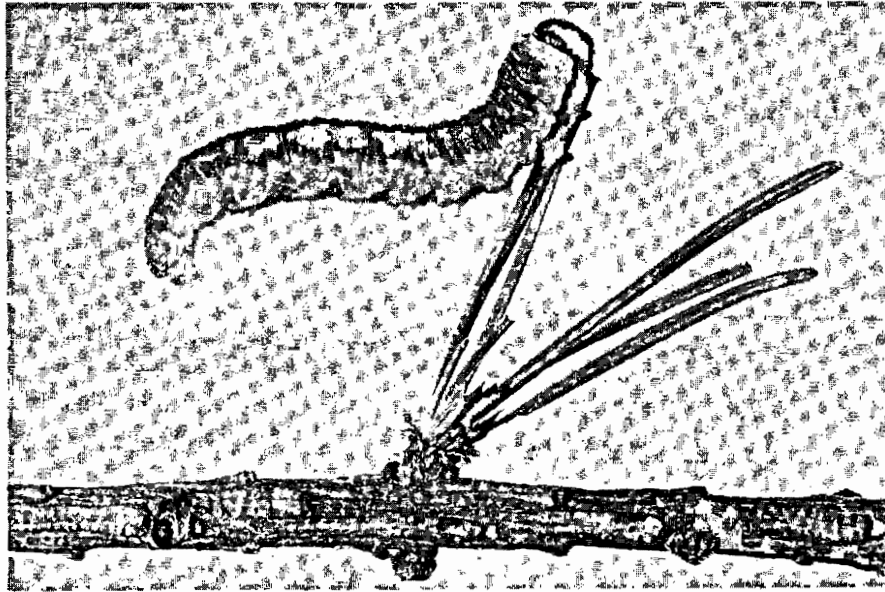
LARCH SAWFLY DEFOLIATION - 1973

- Mostly severe
- ▨ Moderate
- ▧ Light

▩ White-marked tussock moth associated with sawfly



Squares 40,000 meters to side (24.8 mi - approx.) 4-6-73



Larch sawfly larva on tamarack.

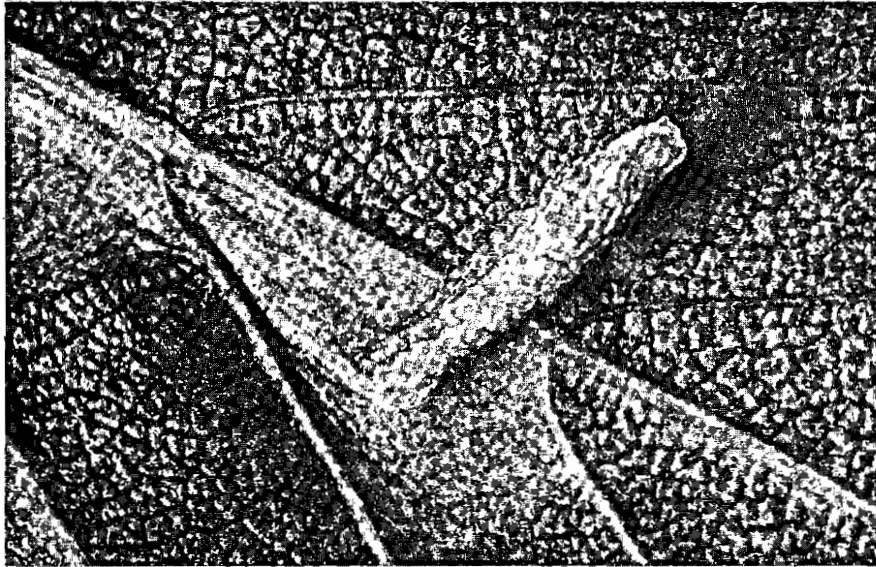


Fall webworm webbing on alder branch.

Larch Casebearer, *Coleophora laricella* (Hbn.)--The sampling of larvae during the winter of 1972-73 indicated that in 1973 casebearer numbers would be low and infestations light, as shown in the table below. These conditions prevailed, but defoliation of tamarack was severe over 1 acre near Weymouth North and in patches along the Upper Ohio River in western Nova Scotia.

District	Number of --			
	Sampling stations	Cases per sample	Deviation from 1972	Infestation class
Western New Brunswick	20	1.8	-0.5	Light
Northeastern New Brunswick	14	2.4	+1.4	Light
Southeastern New Brunswick	8	0.2	-1.6	Light
Prince Edward Island	4	2.7	-1.2	Light
Eastern Nova Scotia	16	2.1	+0.2	Light
Western Nova Scotia	23	1.6	-6.3	Light

Fall Cankerworm, *Alsophila pometaria* (Harr.)--Since 1970, population levels of the fall cankerworm have been low throughout the Region, but in 1973 it became common in many areas. Defoliation of miscellaneous hosts was light to moderate in Fredericton, N.B. and through the Annapolis Valley and in New Glasgow, N. S., moderate to severe in Dartmouth N. S., and severe at Brudenell and North Tryon, P. E. I. where the cankerworm was associated with other defoliators.



Birch casebearer attached to leaf. Larva mines in leaf as far as it can reach from the case. It then detaches case and moves to a new spot on leaf.



Typical birch casebearer damage.

Birch Casebearer, *Coleophora fuscedinella* (Zell.)--Population levels of the birch casebearer remained generally low. However, defoliation of white birch and wire birch trees was severe at places along the Southeast Upsalquitch River and in small patches in northwestern New Brunswick, and moderate at Hall's Harbour, N.S. and on scattered trees east of Summerside, P. E. I.

The sampling of overwintering populations at 88 locations indicates that moderate to severe infestations will occur in 1974 in parts of northern, central, and southeastern New Brunswick, western Prince Edward Island, and Victoria, Cumberland, Colchester, Kings, and Annapolis counties, N.S.

Birch Leafminer, *Fenusa pusilla* (Lep.)--Browning of birch leaves, especially those of wire birch, was slightly more intense than in 1972 in New Brunswick, less intense in Nova Scotia, and about the same in Prince Edward Island. The most severe foliar browning occurred in Carleton, York, Queens, and Westmorland counties, New Brunswick, and in Lunenburg County, Nova Scotia. Moderate leaf browning also occurred in these counties, and in Kent and Albert, N.B. and Queens and Prince, P.E.I.

Forest Tent Caterpillar, *Malacosoma disstria* (Hbn.)--The infestation that covered 19,450 acres of trembling aspens in the Adamsville - Beersville area of Kent County, N.B. in 1969, 2,400 acres in 1970, and 1,000 acres in 1971 and 1972, has completely subsided. Elsewhere in

New Brunswick, defoliation caused by this insect was observed only at Peabody Lake, Northumberland County, where scattered trembling and largetooth aspens were severely defoliated. In western Nova Scotia, all aspen and red oak stands between North Mountain and South Mountain and from Kentville to Berwick were completely defoliated. Elsewhere in the Province, infestations were smaller and less severe, but population levels were higher than in 1972. In Prince Edward Island, trembling aspens were severely defoliated at eight locations in Prince County, and again over 1 square mile near Montague where the forest tent caterpillar was associated with the fall cankerworm and other species.

Satin Moth, *Stilpnotia salicis* (L.)--Ornamental poplars were severely defoliated at Shippigan, New Brunswick; at five places in Cumberland County and at East Noel, Cheticamp, and Brookfield, Nova Scotia; and at five scattered locations in Prince Edward Island. The catch of adults in a light trap at St. Peters, P.E.I. was reduced from about 1,900 in 1972 to about 400, but this was still the largest catch of satin moths from traps operated in the Region.

Lesser Maple Spanworm, *Itame pustularia* Gn.--The lesser maple spanworm, often associated with *Cenopis pettitana* on red maple in New Brunswick and Prince Edward Island, was predominant and caused severe defoliation in patches throughout much of central New Brunswick, especially from Grand Lake north through the Miramichi River watershed and east towards the coast. The high populations in New Brunswick

and the increases over 1972 in this and other parts of the Region are indicated by the following numbers of adults caught in light traps.

Location	Numbers of adults	
	1972	1973
New Brunswick		
Green River	256	6,320
Ashton Hill	12,450	63,827
Fredericton	272	1,058
Canterbury	17	1,335
Oak Bay	3	952
Fundy Park	45	1,103
Prince Edward Island		
Wellington	53	159
Beech Grove Inn	3	38
St. Peters	0	3
Nova Scotia		
Debert	0	7
Kejimkujik	53	364
Lawrencetown	4	3
Georgeville	0	0
Ingonish	-	64

Greenstriped Mapleworm, *Anisota rubicincta* Fabr.--The greenstriped mapleworm was first recorded by the Survey in the Maritimes at St. Peters, Nova Scotia in 1930. A few have been collected in the Region almost every year since, but only twice has it been known to cause serious defoliation. The first of these infestations was observed in 1937 at Doaktown, New Brunswick, where maples were completely defoliated over 10 acres. The second outbreak was first noticed in 1971 at Kent Lake, Halifax County, N.S. where all leaves of red maples were destroyed over 100 acres. In 1972, defoliation recurred on red maples at Kent Lake and was also observed at nearby Grassy Lake over 10 acres. In 1973, infestations were observed, mostly on red maple in Colchester, Pictou, and Halifax counties, and some trees were killed near Kent Lake, as shown below.

Location	Acres of infestation			Acres with dead trees	Total area affected
	Light	Moderate	Severe		
<u>Colchester County, N.S.</u>					
Dickey Lake	0	80	0	0	80
<u>Halifax County, N.S.</u>					
Kent Lake	0	310	15	90	415
Grassy Lake	5	35	100	0	140
Rocky Brook Lake	15	0	50	0	65
<u>Pictou County, N. S.</u>					
Nelson Brook	165	20	305	0	490
Totals	185	445	470	90	1,190

Gypsy Moth, *Porthetria dispar* (L.)--As a result of catching 11 male adults in baited traps in 1971 and three in 1972, the scouting program continued in 1973 in cooperation with the Plant Protection Division, Canada Department of Agriculture. About 180 traps were set out, mostly along main highways and near camping areas and picnic grounds in New Brunswick, Prince Edward Island, and in parts of Cape Breton Island and along the western shore, Nova Scotia. Two male moths were caught in Fundy National Park, one at Bocabec, two at St. Andrews, one at St. Stephen, N.B., and one each at Port Maitland, Darling Lake, and Yarmouth, N.S. No egg masses have yet been found, despite diligent searching at all areas of moth catch.

The discovery in 1973 of egg masses at Machias, East Machias, and Dennysville, Maine, by staff of the Plant Protection and Quarantine Programs, U.S.D.A., brings the known boundaries of the infestation in Maine to within 20 miles of locations in Charlotte County, N.B. where moths have been trapped. As prevailing winds in summer are from the southwest, the moths caught in New Brunswick could have originated from these infestations in Maine.

Detection surveys will continue and intensify in 1974, especially on the mainland and off-shore islands of southwestern New Brunswick.

Fall Webworm, *Hyphantria cunea* (Drury)--Compared to 1972, population levels of the fall webworm were unchanged in New Brunswick and much higher in western Nova Scotia, as shown below. Infestations, perhaps the most severe ever recorded by the Survey in this Region, occurred in parts

of western Nova Scotia where defoliation of miscellaneous deciduous hosts was sometimes complete.

Census area	Nests per mile	
	1972	1973
Edmundston, N. B.	2.0	5.1
Perth, N. B.	4.2	2.8
Fredericton, N. B.	0.5	0.2
St. Stephen, N. B.	2.3	0.9
Cape Tormentine, N. B.	1.6	4.3
Digby, N.S.	22.8	188.2
Bridgewater, N. S.	42.2	137.1
Truro, N. S.	3.6	17.7

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<i>Acleris variana</i> (Fern.) Blackheaded budworm	Fir, balsam Spruce, white, red and black	Maritime Provinces	Numbers low.
<i>Adelges piceae</i> (Ratz.) Balsam woolly aphid	Fir, balsam	East Mountain, Colchester Co. and Mount Thom, Pictou Co., N.S.	Very light stem attacks in most stands.
<i>Altica ulmi</i> Woods Elm flea beetle	Elm, white	Milltown and Upper Little Ridge, Charlotte Co., N.B.	Moderate to severe defoliation on a few trees.
<i>Aphrophora parallela</i> (Say) Pine spittle bug	Pine, Scots	Welsford, Queens Co. and Fords Mills, Kent Co., N.B.	Common in a plantation at Welsford and in a nursery at Fords Mills.
<i>Archips cerasivoranus</i> (Fitch) Uglynest caterpillar	Cherry, choke	Maritime Provinces	Numbers low.
<i>Argyresthia aureoargentella</i> Brower, <i>A. freyella</i> Wlsh., <i>A. thuiella</i> Pack., <i>Pulicallvaria thujella</i> Kft. Cedar leafminers	Cedar, eastern white	Muddy Creek, Prince Co., P.E.I.	Severe leaf browning over 5 square miles.
<i>Cenopsis pettitana</i> (Rob.) A maple leaf roller	Maple, red	Northumberland, Kent Kings, Queen's, and St. John counties, N.B.; Queens Co., P.E.I.	Moderate to severe severe leaf rolling.

Insect	Host(s)	Locality	Remarks
<i>Choristoneura conflictana</i> (Wlk.) Large aspen tortrix	Aspen trembling	Lac Unique and Baker Lake, Madawaska Co., N.B.	Complete defoliation in scattered stands around and between these lakes.
<i>Choristoneura pinus pinus</i> Free. Jack-pine budworm	Pine, jack	Central and south- eastern New Brunswick	Light defoliation by this species and the spruce budworm at Blackville, Cains River, and Chipman. Collected in small numbers in southeastern counties.
<i>Choristoneura rosaceana</i> Harr. Oblique-banded leaf roller	Miscellaneous deciduous hosts	Nova Scotia and Prince Edward Island	Widespread but numbers low.
<i>Croesia semipurpurana</i> (Kft.) Oak leaf-tier	Oak, red	Northumberland, York, Queen's, and Westmorland counties, N.B.; Kings Co., P.E.I.	Infestations small, severe, and scattered.
<i>Diprion hercyniae</i> (Htg.) European spruce sawfly	Spruce, white	Maritime Provinces	Numbers low.
<i>Fenusa ulmi</i> Sumd. Elm leafminer	Elm, white	7 locations in Nova Scotia, 4 in New Brunswick	Moderate to severe leaf mining.

Insect	Host(s)	Locality	Remarks
<i>Hemichroa crocea</i> (Fourc.) Striped alder sawfly	Alder, speckled	Nictaux, Annapolis Co. and Blue Rock, Lunenburg Co., N.S.	Defoliation severe and scattered.
<i>Heterocampa guttivitta</i> Wlk. Saddled prominent	Maple, sugar Beech Birch, white	Crawley Lake, Yarmouth Co. and Tomahawk Lake, Halifax Co., N.S.	Infestations have largely subsided. Defoliation very light and scattered.
<i>Hylobius</i> spp. Root collar weevils	Pine, Scots	Debert, Colchester Co., N.S.	A few trees damaged.
<i>Lambdina fiscellaria fiscellaria</i> (Guen.) Eastern hemlock looper	Fir, balsam Spruce, white and red	Maritime Provinces	Numbers low.
<i>Malacosoma americana</i> (F.) Eastern tent caterpillar	Apple Cherry	Eastern Northumberland County, N.B., Nova Scotia	Infestations common but scattered.
<i>Megacyllene robiniae</i> (Forst.) Locust borer	Locust, black	Trenton and New Glasgow, N.S.	As in 1972, about 15% of young trees infested.
<i>Mindarus abietinus</i> Koch Balsam twig aphid	Fir, balsam	Lakelands, Cumberland Co., N.S.	Light infestation.
<i>Monocharmus</i> sp. A sawyer beetle	Fir, balsam	Inverness, Victoria, and Pictou counties, N.S.	Red flagging common, up to 40% attributed to this insect.

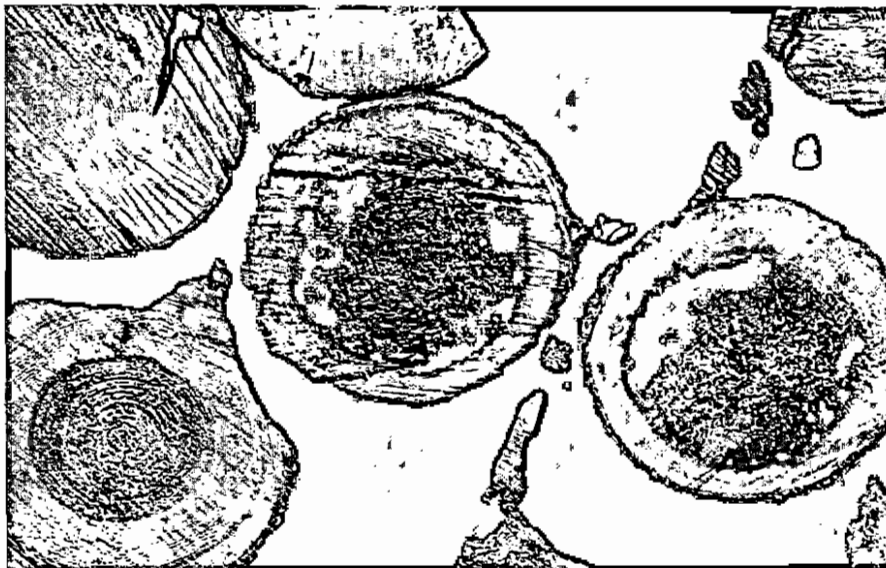
Insect	Host(s)	Locality	Remarks
<i>Neodiprion abietis</i> complex Balsam-fir sawfly	Fir, balsam Spruce, white and black	Maritime Provinces	Numbers low, except at Crowdis Mountain, Victoria Co., N.S. where they averaged 49 larvae per tree.
<i>Neodiprion nanulus nanulus</i> Schedl Red pine sawfly	Pine, red	Garden of Eden Barrens, Guysborough Co., N.S.	Loss of old needles ranged from 5 to 40% over about 9 acres.
<i>Nymphalis antiopa</i> (L.) Spiny elm caterpillar	Elm, white Willow Aspen, trembling	Nova Scotia and New Brunswick	Severe defoliation at many locations.
<i>Operophtera bruceata</i> (Hulst) Bruce spanworm	Maple, red and sugar Birch, white Aspen, trembling Oak, red	Maritime Provinces	Numbers low.
<i>Operophtera brumata</i> (L.) Winter moth	Elm, white Apple Maple, red	Middleton, N.S., North Tryon, P.E.I.	Light to moderate defoliation.
<i>Orgyia leucostigma</i> (J.E. Smith) Whitemarked tussock moth	Tamarack Fir, balsam Spruce, white and red Pine, eastern white Maple, red	Coastal areas of southern Kent and Westmorland counties, N.B.; 16 locations in western Nova Scotia	Defoliation variable on tamarack in New Brunswick, and very light on other hosts in Nova Scotia.

Insect	Host(s)	Locality	Remarks
<i>Paleacrita vernata</i> (Peck) Spring cankerworm	Elm, white Apple	Smiley's Interval and Berwick, N.S.	Defoliation light on elm at Smiley's Interval, and severe in an unsprayed apple orchard at Berwick where the forest tent caterpillar and fall cankerworm were also present.
<i>Phyllocnistis populiella</i> Cham. Aspen leafminer	Aspen, trembling	Taxis River, N.B.	Mining on 25% of leaves of several small trees.
<i>Physokermes piceae</i> (Schrank) Spruce bud scale	Pine, red	Indian Falls, N.S.	Infestations severe over 6 acres in plantation.
<i>Pikonema alaskensis</i> (Roh.) Yellowheaded spruce sawfly	Spruce, black	Upper Stewiacke, N.S.	90% loss of needles on 25 trees.
<i>Pineus piniifoliae</i> (Fitch) Pine leaf aphid	Pine, eastern white Spruce, red	Maritime Provinces	Numbers low.
<i>Pissodes strobi</i> (Peck) White pine weevil	Pine, eastern white	Maritime Provinces	Widespread damage to leaders of young trees.
<i>Pleroneura borealis</i> Felt Balsam shoot-boring sawfly	Fir, balsam	Lakelands, N.S.	Light infestation.

Insect	Host(s)	Locality	Remarks
<i>Pristiphora geniculata</i> (Htg.) Mountain-ash sawfly	Mountain-ash	Maritime Province	Moderate and severe defoliation at scattered locations.
<i>Rhyacionia buoliana</i> (Schiff.) European pine shoot moth	Pine, mugho	Chester, N.S.	Moderate to severe infestation on hedge.
<i>Symmerista albifrons</i> J.E. Smith Red-humped oakworm	Maple, sugar	Cumberland and Colchester counties, N.S.	Severe infestation over about 500 acres between headwaters of South and Mapleton brooks.
<i>Zeiraphera canadensis</i> Mut. and Free. and <i>Zeiraphera</i> spp. Spruce bud moths	Spruce, white and red	Kings, Sunbury, Kent, Queens, and Westmorland counties, N.B.; Annapolis Valley and along the Bay of Fundy coast, N.S.	Shoot damage moderate and scattered.



Hypoxylon canker of aspen kills trees and predisposes others to wind breakage.



Decays of softwoods and hardwoods cause annual losses of more than 20 million cu. ft. in the Maritimes Region. However, as with most perennial diseases, these losses fluctuate little from year to year, so they are not surveyed each year.

IMPORTANT FOREST DISEASES

Perennial Diseases--The occurrence of fungi that cause cankers, decays, and root rots, although dependent on favorable weather for spread, spore germination, and host infection, does not fluctuate dramatically from year to year; therefore, a yearly account of their status is repetitious and often unnecessary. Of such diseases, the globose gall rust (*Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka) (discussed in the 1969 Annual Report) caused some tree mortality and severe branch mortality on about 10% of the Scotspine in a Christmas tree plantation near Port Howe, N.S. Hypoxylon canker of aspen, *Hypoxylon mammatum* (Wahl.) Miller, (see 1968 report) continued to kill trees and predispose others to wind breakage throughout the Region. Infection levels of white pine blister rust, *Cronartium ribicola* J. C. Fischer, (see 1967 report) remain unchanged from previous years.

Dutch Elm Disease,--*Ceratocystis ulmi* (Buism.) C. Moreau--The disease continued to intensify with respect to new infections and mortality, but no significant extension of its range was noted (see 1972 Annual Report). In Nova Scotia, 81 diseased elm trees were discovered at Kentville, bringing to 137 the total number of infected trees found there since 1970; and one diseased tree was found at Brickton, adding to the one found in 1972. No new infections have been found at Liverpool since 1969. In Fredericton, N.B., 377 diseased elm trees have been removed since 1961, 89 of them in 1973. Thus, about 5% of the original population has been infected, compared to 16

to 60% in nearby areas where sanitation is not practiced.

Of 33 apparently healthy trees, selected in 1967 in areas of high tree mortality in New Brunswick as part of a study of resistance to Dutch elm disease, 9 remain unaffected, 6 are living but diseased (1 infected as of 1969, 2 in 1970, and one each in 1971, 1972 and 1973), 15 have been killed by the disease (1-5 years after first showing symptoms), 2 have died from other causes, and one is a suspect that could not be sampled. An additional tree at Derby Junction remains healthy following infection in 1970, the fungus is still viable, but restricted to the 1970 annual ring.

Scleroderris Canker of Pine, *Gremmeniella abietina* (Lagerb.) Morelet (*Scleroderris lagerbergii* Gremmen)--This disease, first detected in the Maritimes in 1971, subsequently was found to be widely distributed in the natural range of jack pine in New Brunswick. In 1972, it was found in Nova Scotia in a red pine plantation on the Garden of Eden Barrens. In 1973, emphasis was again placed on detection surveys, and two new infection centres were found in Nova Scotia: a Scots pine Christmas tree plantation near Port Howe and a red pine plantation at Pleasant Harbour. A few additional red pine and some eastern white pine and Scots pine were found infected on the Garden of Eden Barrens. In New Brunswick, infection was found on jack pine near Redmondville, Little Bald Mountain, and Blackville, on jack pine and red pine trees near Doaktown, and on Scots pine at Parker Ridge, Fords Mills, and South Portage, all locations within a few miles of

stands previously known to be infected.

Nectria Canker, *Nectria cinnabarina* (Tode ex Fr.) Fr.-- This disease caused severe dieback in 1- to 7-year-old black locust plantations that are part of a strip mine reclamation project involving more than 0.5 million trees near Minto, N.B. In 1973-plantations, about 28% of the trees were dead, and 60% of these supported nectria fruiting bodies. In older plantations, recent mortality averaged about 1%, but in some, more than 80% of the trees had branch dieback over 1 to 90% of the crown. Infected trees were shorter and bushier (i.e. more stems) than non-infected trees. As locust suckers easily, extensive "bramble patches" could develop and be difficult to control or eradicate.

Foliar Diseases of Hardwoods--*Ciborinia whetzellii* (Seaver) Seaver-- Ink spot of trembling aspen was more common than in 1972 but intensities remained light except in small stands near Benjamin River, St.-Jean-Baptiste, Kedgwick, St. Quentin, Blackville, and Coles Island, N.B., where leaf browning was severe. Lombardy poplars were also affected at Salisbury and St. George, N.B.

Venturia macularis (Fr.) E. Muell and Arx--This twig and leaf blight was more prevalent on trembling aspen than in recent years. The infection was light except in the Kedgwick-St. Quentin area of New Brunswick, where it was severe. Balsam poplars near Bathurst, Kedgwick, and St. Jacques were also affected.



Dieback of black locust caused by a nectria canker.



Foliar diseases such as this twig and leaf blight of aspen are common, especially in years with a wet spring or summer.

Venturia saliciperda Nuesch.--Willow blight, widespread for the fifth consecutive year, was less noticeable in eastern Nova Scotia than in 1972. Elsewhere, it remained severe, particularly in the Saint John and Nashwaak River valleys, New Brunswick, and in the Annapolis Valley and at Liverpool, Nova Scotia. A canker (*Cryptodiaporthe salicina* (Curr.) Wehm.), combined with the effects of repeated defoliation from willow blight, contributed to the death of some native and weeping willows at a few locations.

Puccinia sparganioides Ell. & Barth.--Ash rust, severe near Bear River, Annapolis Royal, and from Tupperville to Bridgetown, N.S., was usually very light wherever ash was found near the alternate host, cord grass.

Guignardia aesculi (Pk.) V.B. Stew.--For the second consecutive year, foliar browning of horse-chestnut was widespread and severe in Nova Scotia. In Prince Edward Island and southern New Brunswick, leaf blotch of horse-chestnut was conspicuous wherever this tree occurs.

Leaf spots on red maple and sugar maple trees, caused by *Phyllosticta minima* (Berk. and Curt.) Ell. and Ev. or *Phleospora aceris* (Lib.) Sacc., the tar spot, *Rhytisma cecerinum* Pers. ex Fr., and a leaf blister, *Taphrina dearnessii* Jenkins, were common but light at scattered locations in the Region. Anthracnose of maple, *Kabatiella apoarypta* (Ell. & Ev.) Arx was noted at only a few scattered locations in New Brunswick. A leaf blister of yellow birch, *Taphrina carnea* Johans. was found at two locations in

New Brunswick. A leaf spot, *Septoria betulae* (Lib.) West. caused foliar browning in yellow birch and white birch stands in Fundy National Park, similar to that reported in 1970, and was noted for the first time in Kejimikujik National Park, Nova Scotia. Shot hole of cherry caused by *Coccomyces hiemalis* Higgins was collected at five New Brunswick locations, but foliar browning was light.

Needle Rusts--Needle rusts were again widespread, and perhaps because of the long wet spring, were more severe than in recent years. *Pucciniastrum goeppertianum* (Kuehn) Kleb. infections were noted on 5 to 25% of the new needles of balsam fir and on the alternate host, blueberry, near Tracadie, N.B. The balsam fir-fireweed rust (*P. epilobii* Otth.) affected 5 to 40% and occasionally up to 70% of the foliage on Christmas trees near Hacheyville and Parker, N.B. In combination with *Uredinopsis* sp., a fir-fern rust, it also occurred throughout the Cape Breton plateau, N.S., especially along the Highland Road for 30 miles from Hunters Mountain. Infections of *Chrysomyxa ledicola* Lagh. were common on black spruce and occasional on white spruce or red spruce trees growing near Labrador tea, the alternate host. *Coleosporium asterum* (Diet.) Syd. infected only a few of the 1970 and 1971 needles on 5 to 20% of the jack pine or red pine trees at scattered locations in the Region. The larch-willow rust, *Melampsora* sp., was noted only at three New Brunswick locations.

Needle Casts--Needle casts, again observed only occasionally, were caused by a variety of fungi. *Davisomycella ampla* (Davis) Darker and

Lophodermium pinastri (Schrad. ex Fr.) Chev. infections were most common on jack pine in northeastern New Brunswick and at Middle Stewiacke, N.S. The latter fungus also affected eastern white pine and red pine trees at a few locations. *Lirula macrospora* (Hartig) Darker infected about half of the 1970 white spruce needles in a small area of natural forest near Watervale, N.S., and *L. nervata* (Darker) Darker caused moderate browning on balsam fir Christmas trees near Barss Corners, N.S. *Hypodermella laricis* Tub. infections were severe on tamarack near Stanley, N.S., and moderate near St. Quentin, N.B.

Abiotic Injuries--In New Brunswick, reddish brown foliage, typical of winter drying, was severe in scattered red spruce stands in the northeast, near Fundy National Park, along ridge tops near Berwick, and west of Fredericton. Bud mortality on red spruce near the Sevogle Airstrip averaged 28% (range 7-66%). Moderate browning occurred on the ridges between Frosty Hollow and Mount View. The distal half of all needles on red pine trees was affected at the Middle Island Provincial Park near Chatham. In Nova Scotia, winter drying was less noticeable, but foliage browning was severe on Scots pine over a few acres near Frizzleton, and moderate in a red pine plantation at Debert.

Frost injury, much less prevalent than in recent years, was light on young white spruce near Lozier Settlement, St. Isidore and St. Maurice, N.B., and at Dundee, P.E.I., and on balsam fir near Fishing Cove River and at Middle River, N.S.

Hail, and high winds in early June, caused many broken shoots and leaders, bark splits, and defoliation on both hardwood and softwood trees in a 0.5-mile-wide swath from Petitcodiac to Prosser Brook, and on balsam fir Christmas trees at Muniac, N.B. Most black locust trees on a reclaimed strip mine near Minto, N.B. sustained stem and branch lesions and some defoliation.

High winds, accompanied by snow or rain on June 16 and 17, caused many broken branches, severe defoliation, and some wind throw of hardwood trees from Baddeck to Ingonish, from Tracadie to the Strait of Canso, and around Halifax, N.S.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<i>Armillaria mellea</i> (Vahl ex Fr.) Kummer Root rot	Fir, balsam	Grassy Lake, N.S.	Killed 25 young Christmas trees.
<i>Asterosporium betulinum</i> Pk. Twig fungus	Birch, yellow	McDonald Corner, N.B.	New herbarium record.
<i>Cenangium ferruginosum</i> Fr. ex Fr. Twig fungus	Pine, jack	Doaktown, N.B.	New herbarium record.
Cherry blight	Cherry, pin and choke	Cheticamp and Neil's Harbour N.S.	Less prevalent and less serious than in 1972.
<i>Coleosporium pinicola</i> (Arth.) Arth. Needle rust	Pine, jack	Bay du Vin Mills, N.B.	New herbarium record.
<i>Coryneum negundinis</i> Berk. and Curt. Branch canker	Maple, Manitoba	Bathurst, St. Isidore, and Newcastle, N.B.	Severe twig mortality and foliar browning.
<i>Cucurbitaria elongata</i> (Fr.) Grev. Twig fungus	Locust, black	Minto, N.B.	New herbarium record.
<i>Darlua filum</i> (Biv.) Cast. Needle fungus	Pine, jack	Bay du Vin Mills, N.B.	New herbarium record.
<i>Diplodina strobilifera</i> Groves Needle fungus	Pine, red	Juniper, N.B.	New herbarium record.
<i>Drepanopeziza tremulae</i> Rimpau Leaf spot	Aspen, trembling	4 locations in New Brunswick, 2 in Nova Scotia	More common than in recent years.

Organism and Disease	Host(s)	Locality	Remarks
<i>Gnomonia ulmea</i> (Schw.) Thuem. Leaf spot	Elm, white	Coles Island, N.B.	Severe leaf yellowing on all trees.
<i>Goderia multispora</i> Groves Twig fungus	Birch, yellow	McDonald Corner, N.B.	New herbarium record.
<i>Hendersonia piniicola</i> Wehm. Needle fungus	Pine, jack	Centre Napan, N.B.	New herbarium record.
<i>Melanconis nigrospora</i> (Pk.) Wehm. Twig fungus	Birch, yellow	McDonald Corner, N.B.	New herbarium record.
<i>Naemacyclus niveus</i> (Pers. ex Fr.) Sacc. Needle fungus	Pine, jack	Taymouth, N.B.	New herbarium record.
<i>Rhizoctonia solani</i> Kuehn. Damping-off	Pine, red Spruce, red	Kingsclear and Acadia Forest Experiment Station, N.B.	Small patches of mortality in 1-0 seedbeds.
Semi-mature tissue needle blight	Pine, eastern white	Sussex, Magaguadavic Lake, and Kouchibouguac, N.B., Garden of Eden Barrens and West Caledonia, N.S.	Browning of new foliage severe on the Barrens, moderate elsewhere.
Sulphur dioxide Fume damage	Most hardwoods and softwoods	Bathurst, N.B.	Trees cut in affected area.
<i>Sydowia polyspora</i> (Bref. and V. Tav.) E. Muell. Needle fungus	Pine, Scots	Port Elgin, N.B.	New herbarium record.

SUMMARY

In New Brunswick, the loss of new foliage of balsam fir and spruce caused by the spruce budworm was severe over 3.5 million acres and moderate over 4.3 million acres, up 1.6 and 1.9 million acres, respectively, over 1972. In Nova Scotia, defoliation was severe over 22,000 acres in Kings and Annapolis counties and 198,000 acres in Cumberland County, and light at locations in Hants, Colchester, Antigonish, and Inverness counties. In Prince Edward Island, defoliation was moderate to severe in widely scattered pockets and light throughout. In 1974, moderate to severe attacks are expected over 12.5 million acres of New Brunswick (the prediction was 7.5 million acres for 1973), over sizeable areas of Cumberland County, Nova Scotia, and in most softwood forests of Prince Edward Island. Compared to 1972, severe infestations of the larch sawfly were more widespread in Nova Scotia, remained extensive in the east and patchy in the west of Prince Edward Island, and covered similar acreages in central and eastern New Brunswick. Larch casebearer numbers were generally low. Infestations of the forest tent caterpillar were severe and widespread in the Annapolis Valley and less intense and more localized in other parts of Nova Scotia, severe and spotty at nine places in Prince Edward Island, and severe at one location in New Brunswick. Population levels of the lesser maple spanworm became high and defoliation of red maple severe in central New Brunswick. Apart from a few areas of severe attack in northern New Brunswick and one location in each of Nova Scotia and Prince Edward Island, birch casebearer numbers remained low; moderate to severe infestations are expected to occur in many parts of the Region in 1974. Male adults

of the gypsy moth were again trapped at four locations in southern New Brunswick and at three points in Yarmouth County, N.S., but no egg masses were found at these places, despite careful searching.

New infections of and tree mortality by Dutch elm disease were common in areas of known occurrence but there was no marked extension of its range. In Kentville, N.S., 81 diseased trees were discovered, bringing the total to 137 since 1970. In Fredericton, N.B., 89 diseased elms were removed in 1973, making a total of 377 since 1961. Scleroderris canker of pines was found in two new areas in Nova Scotia and on additional trees in the Garden of Eden Barrens, and at several new locations in central New Brunswick, all near stands previously known to be infected. A necrotic canker caused severe dieback in 1- to 7-year old black locust plantations that are part of a strip mine reclamation project near Minto, N. B.

Insect and disease collections totalled 2,830, of which 1,920 were insect and 910 disease. Their respective distribution by provinces was 1,111 and 612 in New Brunswick; 684 and 274 in Nova Scotia; and 125 and 24 in Prince Edward Island. Appreciation is extended to all agencies and individuals who contributed to Survey operations in 1973.