

ANNUAL DISTRICT REPORTS
FOREST INSECT AND DISEASE SURVEY

MARITIMES REGION

1968

by

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FOREST RESEARCH LABORATORY

FREDERICTON, NEW BRUNSWICK

INFORMATION REPORT M-X-18

Forestry Research Service

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ANNUAL DISTRICT REPORTS
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1.0 INTRODUCTION

(G. V. Moran).

Field work in 1968 got off to an early start because of the warm dry spring experienced throughout most of the Region. Growth in some areas was 10 to 14 days earlier than in 1967. Clear nights, however, were accompanied by record minimum temperatures and frost was common well into June. Records were broken for total hours of sunshine at numerous locations in July and precipitation was well below normal. August and September were generally cool and dry, September being the driest on record in the Fredericton area.

Better survey coverage was made possible in 1968 in New Brunswick through the establishment of an additional district and an additional field technician position. Survey district boundaries (Fig. 1-1) were adjusted to coincide with changes made in those of New Brunswick Forest Service Districts. Field headquarters of Survey District 3, northeastern N. B., was moved to a more central location at Chatham. As in 1967, one district technician was assigned to the Aerial Spray Project as an observer for about 10 days during aerial surveys for spruce budworm defoliation and all rangers assisted in egg-mass and defoliation surveys on the ground. Most of the information on spruce budworm in the district reports for New Brunswick is based on data accumulated by the Aerial Spray Project.

Light traps were set up at the same 22 locations as in 1967 (Fig. 1-2) and were operated by personnel of the New Brunswick Forest Service (16), Nova Scotia Department of Lands and Forests (1), National Parks (1), and the Green River Project (1), an individual (1) and by Survey staff (2).

Assistance was supplied by district technicians in a number of studies including decay in maple, fume damage, Polyporus abietinus, flowers and cones on conifers, mistletoe, fall webworm, and balsam woolly aphid.

Infestations of the spruce budworm, Choristoneura fumiferana (Clem.), increased considerably in intensity and extent in New Brunswick (Fig. 1-3 and 1-4) and continued in Inverness County, Nova Scotia. Defoliation by the larch sawfly, Pristiphora erichsonii (Htg.) occurred over larger areas in New Brunswick and Nova Scotia but in New Brunswick was slightly less severe in older infestations (Fig. 1-5). The birch casebearer, Coleophora fuscedinella (Zell.), caused extensive foliar browning of birches in New Brunswick and occurred in widely separated localities in Nova Scotia (Fig. 1-6). Severe infestations of the balsam gall midge, Dasineura balsamicola (Lint.), continued in New Brunswick but occurred only on a few trees at scattered locations in central Nova Scotia (Fig. 1-7). Defoliation by the fall cankerworm, Alsophila pomataria (Harr.), was much less noticeable than in 1967 in western Nova Scotia, and population levels of the winter moth, Operophtera brumata (L.), remained low in the same area. Dutch elm disease Ceratocystis ulmi (Buism) C. Moreau, continued its gradual spread

in New Brunswick but has not yet been found elsewhere in the Region. Frost injury, especially to young conifers, was widespread, and winter drying of foliage was prevalent on red spruce in parts of central New Brunswick. Needle rusts were common in 1968 and in some areas infected a considerable percentage of the cones of spruce.

Sampling stations and plots maintained by the Survey in the Region in 1968 increased by 53 from 1967. The types and numbers of these are listed by districts in Table 1-1. An additional 85 stations were sampled regularly by co-operating personnel of provincial forest services in New Brunswick and Nova Scotia.

We would like to acknowledge the valuable assistance given by co-operators and their departments and by personnel of industry and the National Parks.

Table 1-1. Sampling Stations and Plots in the Maritimes Region, 1968
(Changes from 1967 in brackets)

Item	Total in district ^a							Regional total
	1	2	3	4	5	6	7	
Sampling stations								
Beating	19	20	8	11	40	58	41	197(+38)
Larch casebearer	14	11	10	13	15	13	13	88
Forest tent egg	4	27	6	5	1	9	1	53(+12)
Winter moth	0	0	0	0	9	3	0	12
Total stations	37	58	24	29	65	83	55	350(+50)
Plots								
Beech scale	2	0	0	0	2	2	0	6(-1)
Balsam woolly aphid	2	0	0	2	2	3	3	12
Birch dieback	1	0	0	0	0	0	0	1(-1)
Forest tent defol.	1	3	0	0	1	3	0	8(+4)
Winter moth defol.	0	0	0	0	2	1	0	3(+1)
Total plots	6	3	0	2	7	8	3	30(+3)
Grand total	43	61	24	31	72	91	58	380(+53)

a 1-Southwestern New Brunswick
2-Northwestern New Brunswick
3-Northeastern New Brunswick
4-Southeastern New Brunswick
and Prince Edward Island

5-Western Nova Scotia
6-Central Nova Scotia
7-Eastern Nova Scotia

Section 1, Appendix A

Classifications of Trees Used on Plots

Balsam Woolly Aphid Plots

1. Uninfested.
- 2A. New stem attack, light.
- 2B. New stem attack, medium.
- 2C. New stem attack, severe.
- 3A. Dead from stem attack, red foliage.
- 3B. Dead from stem attack, bare branches.
- 4A. Twig attack, distinct but light.
- 4B. Twig attack, some dying branches.
- 4C. Twig attack, many dead branches.
5. Dead from twig attack.

Beech Scale Plots

1. Uninfested.
2. Trees with dots or streaks of white wool only.
3. Trees with most of bark streaked or covered with wool but not dying.
4. Trees apparently dying (considerable patches of dead bark and yellowish foliage).
- 5A. Living trees with cankers, uninfested.
- 5B. Living trees with cankers, lightly infested.
- 5C. Living trees with cankers, heavily infested.
6. Trees dead.

Expression of Degrees of Infestation and Defoliation

and of Intensity and Incidence of Tree Diseases

Trace	- up to 5%
Light	- 10 to 20%
Moderate	- 30 to 60%
Severe	- 70 to 100%

Figure 1-1

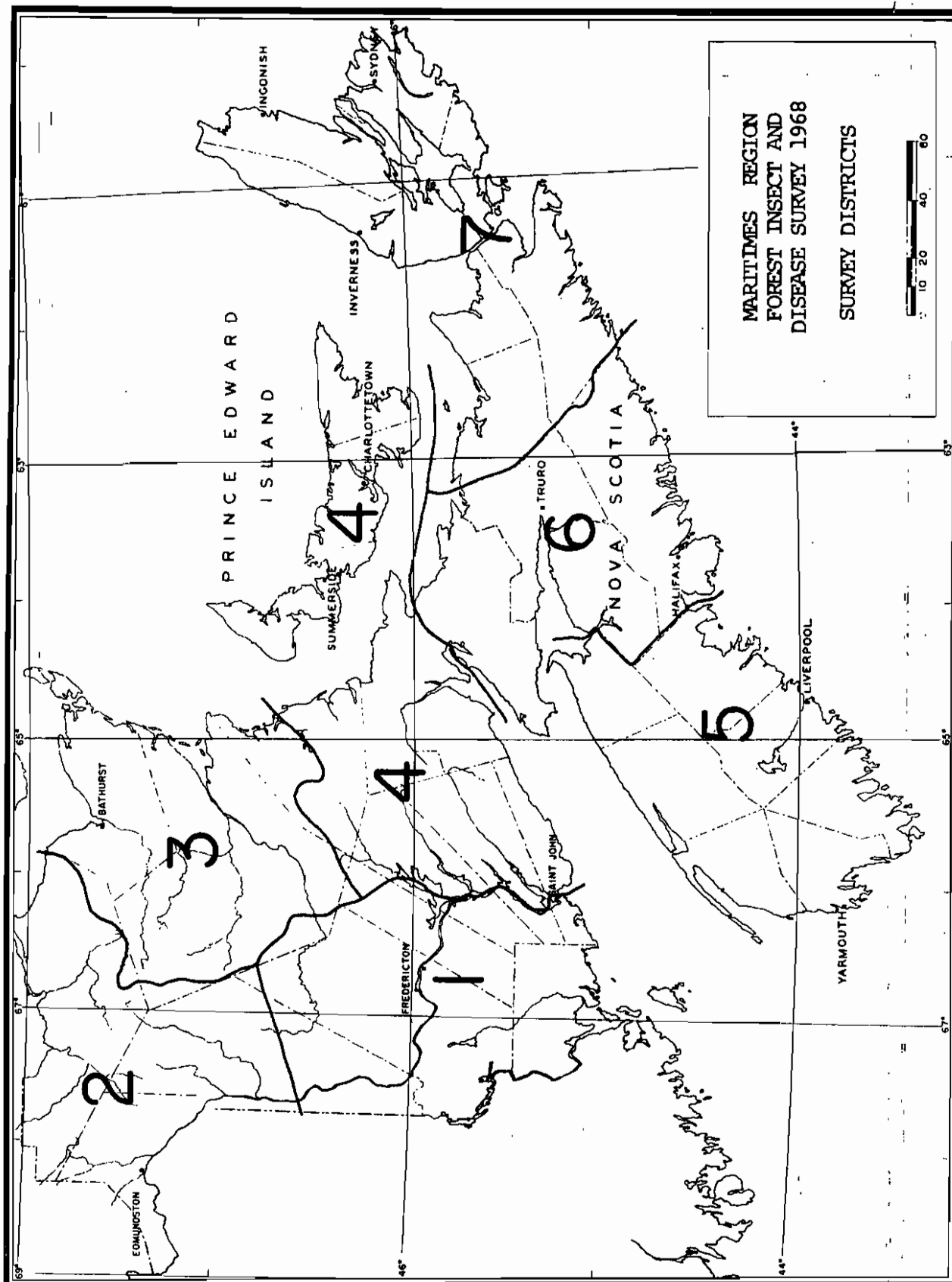


Figure 1-2

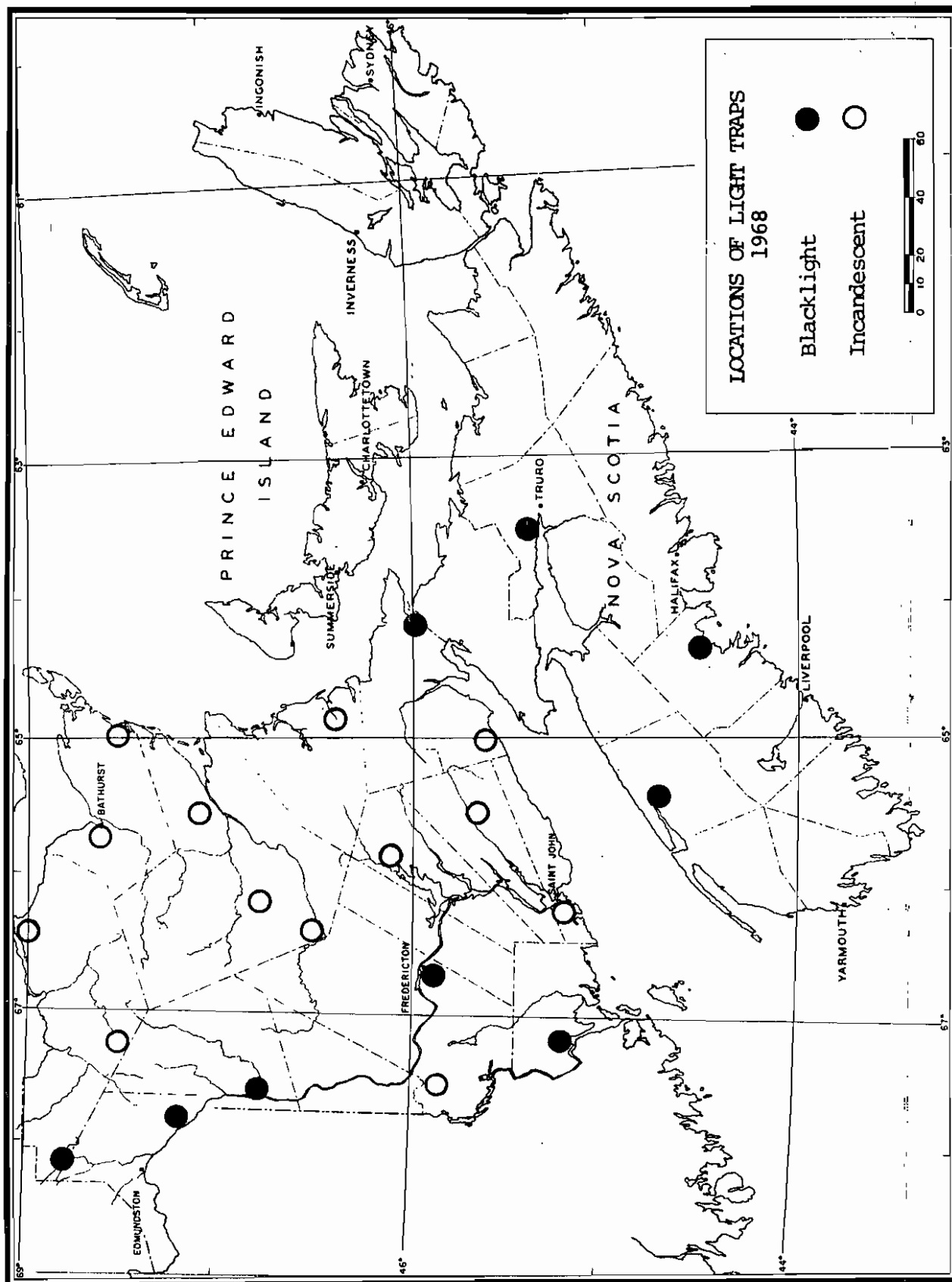


Figure 1-3

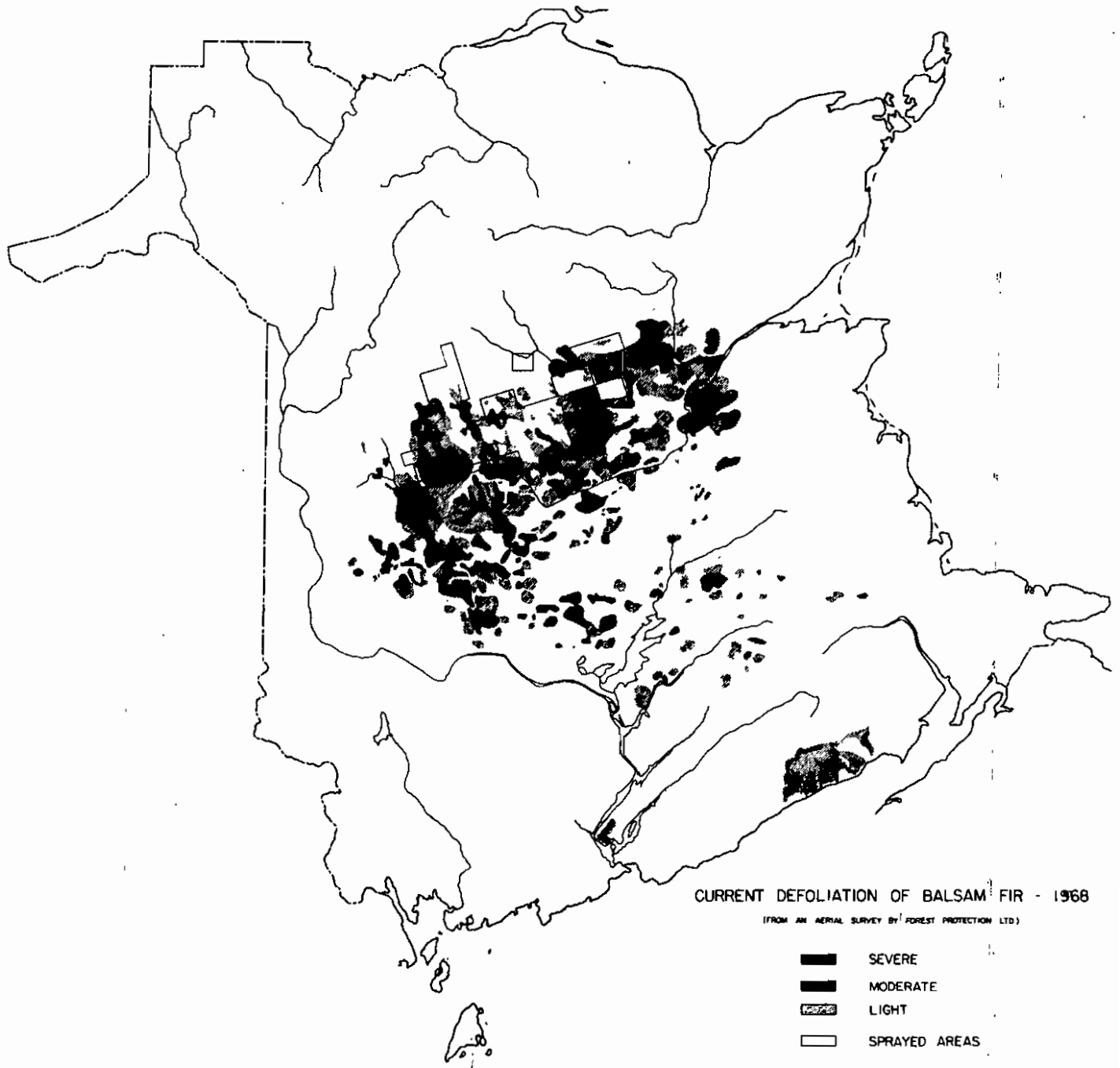


Figure 1-4

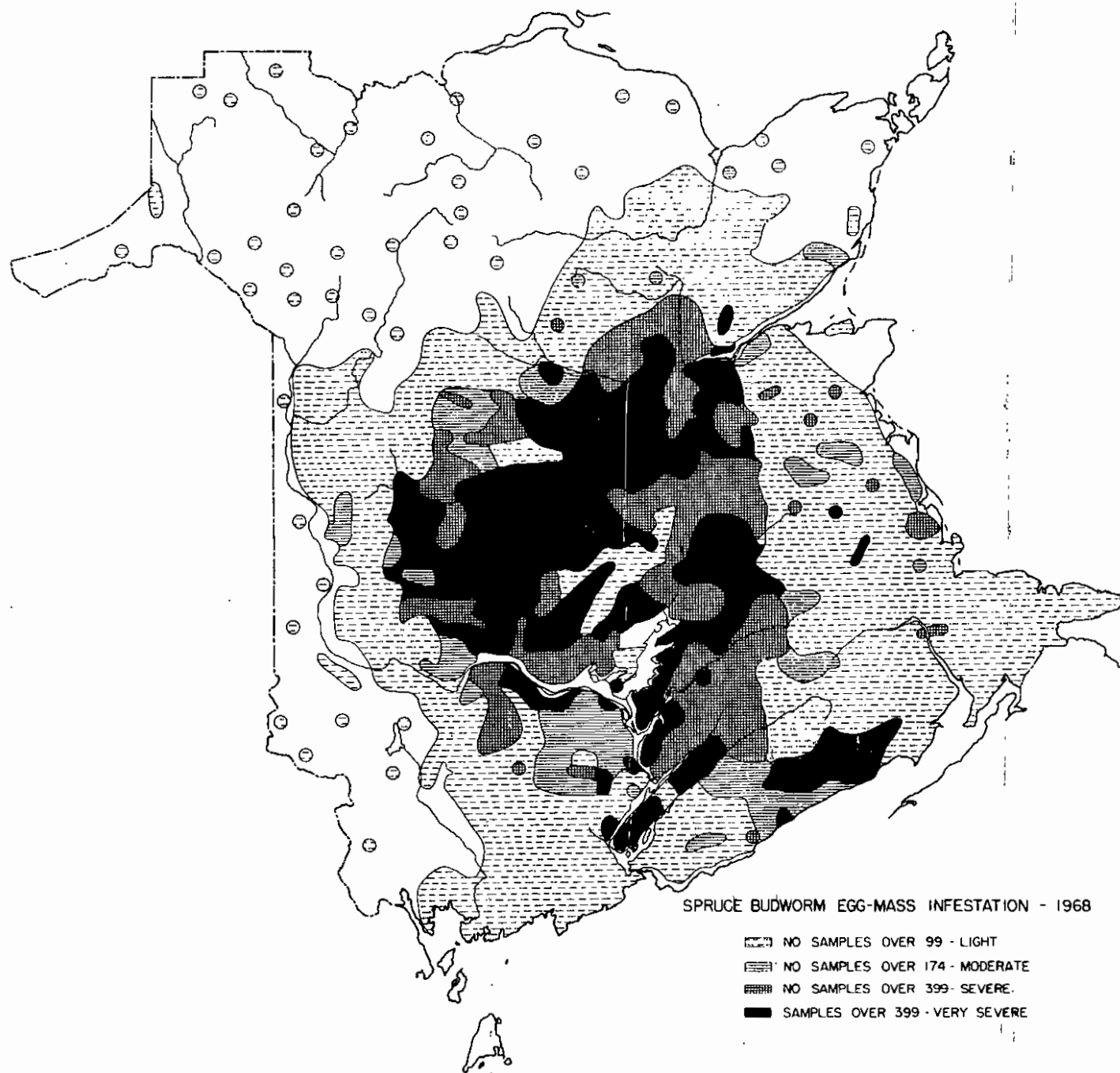


Figure 1-5

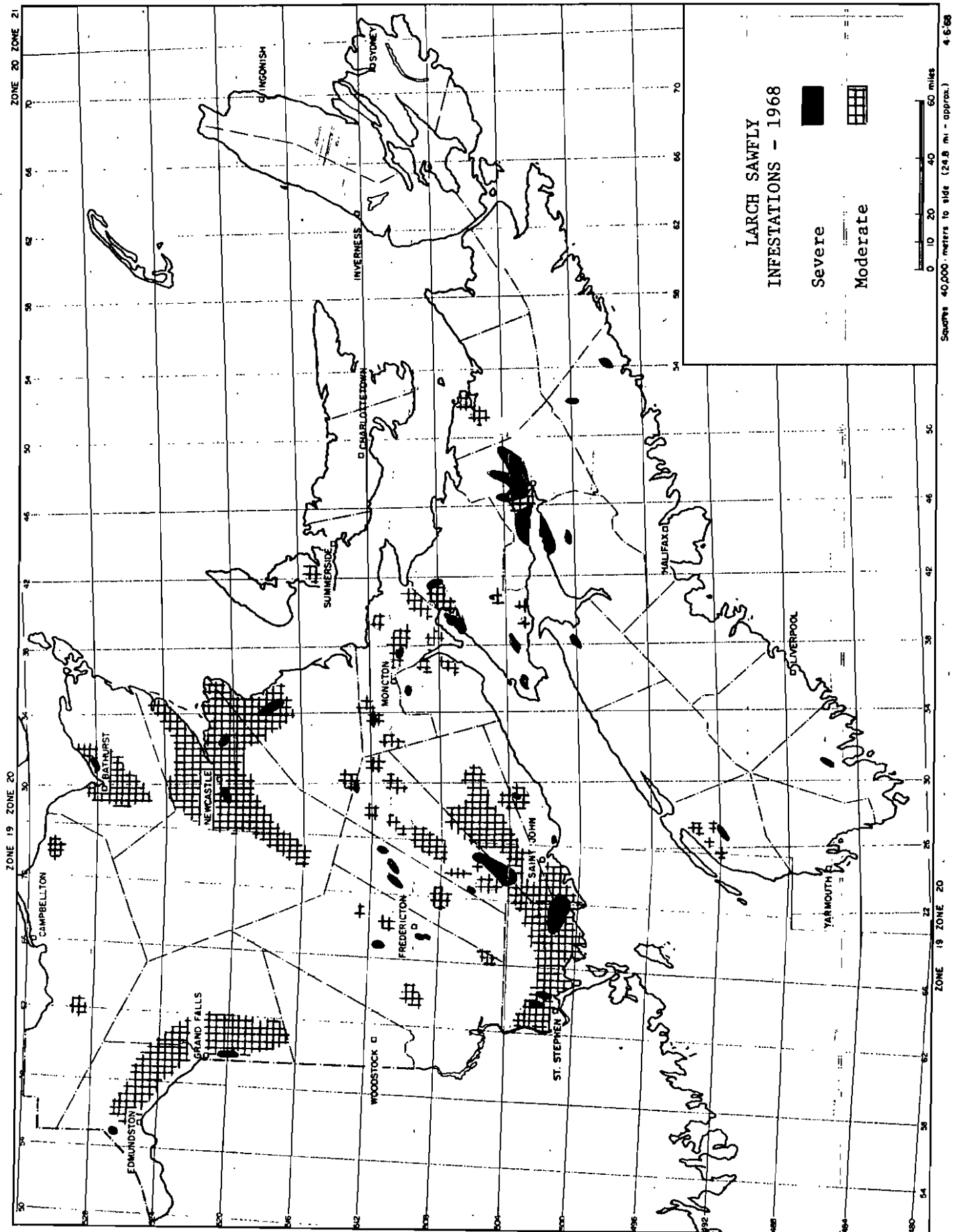


Figure 1-6

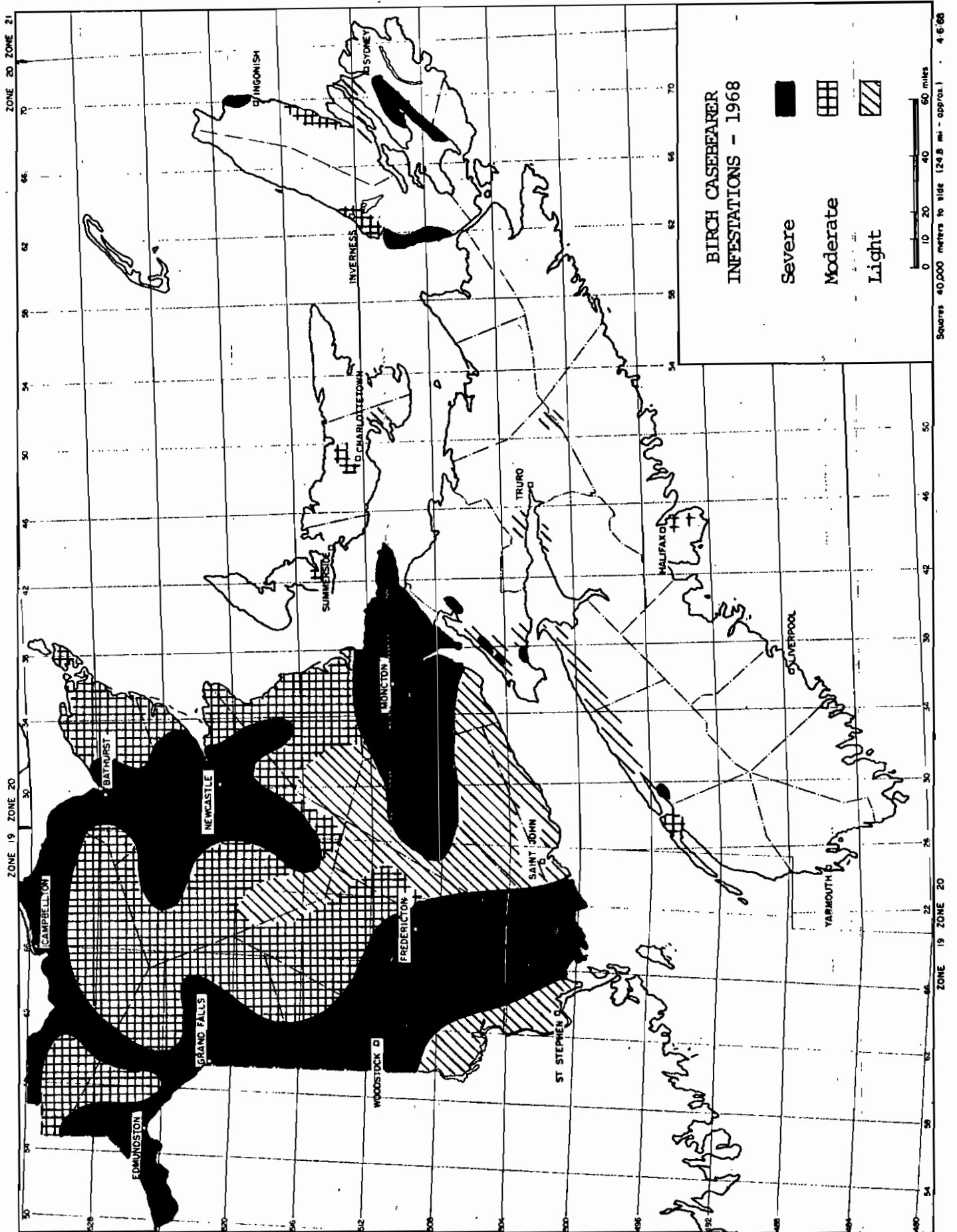
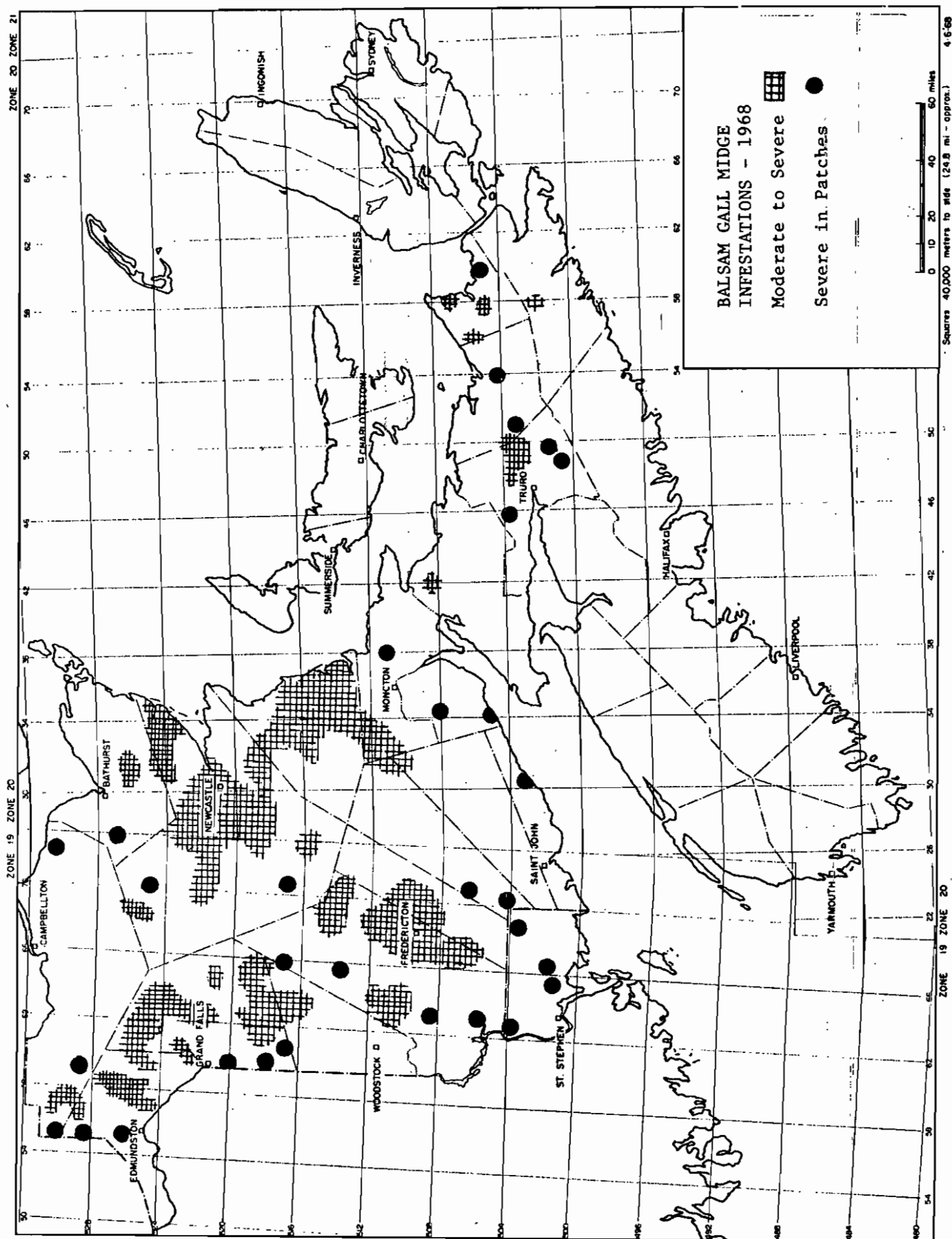


Figure 1-7



ANNUAL DISTRICT REPORT

SOUTHWESTERN NEW BRUNSWICK

1968

by

C. M. Dobson

2.0 SOUTHWESTERN NEW BRUNSWICK

(C. Dobson)

Introduction

Population levels of spruce budworm and birch casebearer increased in the district in 1968. Larch sawfly infestations subsided somewhat in areas where severe defoliation has been common in recent years, but were more widespread. Slight increases in balsam woolly aphid populations occurred in the southern part of the district. Satin moth infestations subsided in some areas but increased in others, particularly at Cloverdale, Carleton County.

Dutch elm disease continued to kill trees but did not extend beyond the limits where it was found in 1967. Winter drying of conifers was widespread, particularly on red spruce in northern York County.

A total of 992 collections were submitted from the district in 1968. Of these, 455 insect and 168 disease collections were taken by the district technician, the remainder by other departmental personnel, personnel of other Federal departments, provincial co-operators, industry, and individuals.

Insect ConditionsSpruce Budworm, *Choristoneura fumiferana* (Clem.)

Larval populations increased considerably at four permanent sampling stations, increased slightly at three, were lower at seven, and were unchanged at six (Table 2-1). The greatest increases occurred on white spruce at Juniper, McGivney, and Norrad Bridge, up 59.6, 58.0 and 27.4 larvae per tree sampled respectively. The greatest decrease (-40.3) occurred on white spruce at Hainesville. The average number of larvae per tree sampled for all sample stations was 16.3 in 1968 compared to 2.8 in 1967. Provincial co-operators collected 726 larvae from 185 spruce and fir trees averaging 3.9 larvae per tree sampled (Table 2-2).

Severe defoliation of balsam fir occurred in numerous scattered areas on the Southwest Miramichi, Nashwaak, and Little River watersheds in Carleton, York, and Sunbury counties. Areas of severe defoliation covering 10 to 25 square miles occurred: between South Burnthill and North Burnthill brooks, Carleton County; near McKeil Lake; on McLean Brook; on Trout Brook between Todd Mountain and the Southwest Miramichi River; on the Southwest Miramichi River extending from Halfmoon through Deersdale to the Forks; between Stanley and Covered Bridge; west of the Royal Road from Hamtown Corner through the South Tay Valley to North Tay; and on the upper stretches of the South Bartholemew River.

In Carleton County, small patches of severe defoliation occurred 4 miles north of Juniper on Juniper Brook; at two locations on McKeil Brook; on the upper stretches of the North Becaguimec River and near the north boundary of the Becaguimec Game Refuge.

Moderate defoliation was common in the Burnthill area, at Juniper, Nashwaak Lake, on the North Becaguimec River near the York County line, and in the Becaguimec Game Refuge.

In York County, small patches of severe defoliation occurred: along Burnthill Brook; in the Miramichi Lake area; on the Taxis River at Hovey and Brewer brooks; on the Lower, Middle, and Upper Hayden brooks; at 20 locations between Nashwaak Narrows and Deersdale; south of Grand John Brook; west of McLean and Ryan brooks; at Currieburg; north of Williamsburg; on Arnold Brook between Cross Creek and the C. N. Railway line; west of Cross Creek Station; at McGivney; on Burnt Land Brook; North of MacCallum Brook; on McBean Brook; Manzer Brook, and north Penniac Stream; west of Becaguimec Lake and in four areas on the Royal Road between East Nashwaaksis stream and the Kingsley - Birdtown road.

Moderate defoliation occurred along Clearwater Brook from the Victoria County line to the Southwest Miramichi River including the Sisters Brook area and Hayesville area; on Rocky Brook; between McKeil Brook and Burnthill Brook; on the Taxis River watershed southeast to McGivney; from the Southwest Miramichi River along Napadogan Brook and Grand John Brook to North Tay, on the Keswick and the West Keswick rivers, and at Becaguimec Lake; on the East Nashwaaksis and West Nashwaaksis streams; east of the Nashwaak River at Glencoe; on MacKenzie Brook, at Taymouth and McBean Brook; between Lower Durham and Bear Brook and the Sunbury County line; and on the Penniac stream near the Sunbury County line.

In Sunbury County, severe defoliation occurred on the Little River at Fort Brook, on Bear Brook, near the northern boundary of the Burpee Game Refuge, and on Baltimore Creek.

Moderate defoliation occurred on Fork Brook from the York County line to Little River at Ripples and in three small areas in the Acadia Forest Experiment Station.

In Queen's County, severe defoliation occurred at Linton and near Newcastle Bridge.

In Northumberland County, moderate defoliation was common in the upper stretches of the North Bartholomew River, on Porter Brook and Longs Brook, and at Bettsburg.

Egg-mass counts averaging 713 egg masses per 100 sq. ft. of balsam fir foliage and indicating very severe infestations in 1969 were common over much of the Southwest Miramichi, Nashwaak, and Keswick river drainages in York and northeastern Carleton counties; in the Dungarvan River, South Bartholomew River, Porter Brook and Bettsburg areas of Northumberland County; and on the Little River watershed in Sunbury County north from Burpee Game Refuge to Bantalor.

Counts averaging between 399 and 713 egg masses per 100 sq. ft. indicating severe defoliation of 1969 foliage occurred northeast from Acadia Forest Experiment Station to Hardwood Ridge and Midland, Queen's County; and at Public Landing, Kings County.

Counts averaging between 240 and 399 egg masses per 100 sq. ft. of foliage, also indicating 70% or more defoliation of new foliage in 1969,

occurred: east from Beaverbrook Lake to the upper drainage areas of the Dungarvon River; in an area extending from the Victoria County line through Burnthill, McKeil Lake, Miramichi Lake and Napadogan to the forks of Napadogan Brook and Northwest Napadogan Brook; between McCallum Brook and Lower Durham; from Durham Bridge to the St. John River and east from Marysville through Sunbury County (including Acadia Forest Experiment Station) to the Queen's County line; east from Fredericton through Lincoln, Waasis, and Oromocto to Burton; and at Hampstead and River George, Queen's County.

Moderate infestations occurred: along the upper reaches of the Burnthill Brook and the southern reaches of Clearwater Brook to approximately 2 miles north of the Southwest Miramichi River; between South Johnville and Coldstream; at Cloverdale and Sisters Brook; between Becaguimec Lake and Grand John Brook; east from Millville through Barton to North Tay; in the lower Mactaquac drainage area; and south from Kingsclear and McKinley Ferry to Rooth Station and Three Tree Creek.

Light infestations were common throughout the remainder of the district, except in western Carleton County, southwestern York county, and western Charlotte County, where egg masses were found only at 11 scattered locations.

Balsam Woolly Aphid, *Adelges piceae* (Ratz.)

Stem and twig attacks, and bare 'gouty' tops were common in a 1-acre area at Whittier Ridge, Charlotte County. Elsewhere in the district, light stem attacks were more common and widespread in 1968 than in recent previous years.

The number of trees infested by stem attack on plot 3-5 at Fredericton increased from 2.7% in 1967 to 10.3% in 1968; the number of uninfested trees was approximately the same as in 1967 (Table 2-3).

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

Varying degrees of infestation of this gall maker on balsam fir needles occurred throughout the district (Fig. 1-7). Summaries of the results of surveys by counties follow:

Carleton.--Infestations were generally light except at Welch Siding and near Juniper where some stands were severely infested.

York.--Severe and moderate infestations were common in the Napadogan, Taxis River, Millville, Fredericton, Beaver Dam, and Canterbury areas. Other areas supported mostly light infestations.

Sunbury.--Generally light except moderate to severe at Oromocto, and in the Burpee Game Refuge, Tracy, and Little Lake areas.

Queen's.--Severe infestation occurred near Clarendon and Enniskillen.

Charlotte.--Severe infestations occurred at Elmsville, Waweig, and Mile 6 on the Pomeroy Bridge to St. George road, and moderate at Porter Settlement. Light infestations were common in most other areas.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Ground surveys showed that population levels, although down slightly from those of 1967, remained high and infestations were more widespread than in 1967 in all counties except Carleton.

Mortality of numerous tamarack trees in stands severely defoliation during recent years occurred at Browns Flats and Central Greenwich, Kings County; near Welsford, Queen's County; between Moores Mills and Tower Hill and St. Andrews and Bayside, and north of New River Station, Charlotte County.

Conditions by counties were as follows:-

Carleton.--Light defoliation occurred at Florenceville and Centerville.

York.--Severe defoliation was common along the Royal Road between Hamtown Corner and the Kingsley Road, and in the University Woodlot, Fredericton. Moderate infestations occurred at Lake George, Woodlands, along the Killarney Road, and in patches between Nashwaak Bridge and Boiestown. Defoliation was generally light with scattered trees moderately or severely defoliated between Longs Creek and the Charlotte County line.

Sunbury.--Patches of severe defoliation occurred northeast of Acadia Forest Experiment Station and near North Minto and Hardwood Ridge. Moderate defoliation occurred in patches and on individual trees east of Oromocto along the Shirley Road.

Queen's.--Defoliation was severe throughout a 10-acre stand east of Route 7 in Base Gagetown, and moderate at Jerusalem, along the Drummond and Olinville roads, and at Gagetown, Gunters, and Welsford.

Kings.--Severe defoliation occurred between Browns Flats and Westfield.

St. John.--Defoliation averaged 70% or more over large areas near Lepreau in the western part of the County.

Charlotte.--Infestations were severe at Lower Tower Hill and Watt Junction, and moderate in patches between St. Andrews and St. Stephen, and in the New River Beach area.

Larch Casebearer, *Coleophora laricella* (Hbn.)

Counts of overwintering larvae showed that population levels were higher than in 1967 at nine sampling stations and slightly lower at five (Table 2-4). The greatest increases occurred at Waasis and Hanwell Road, up from 7.3 and 1.1 per 100 fascicles in 1967 to 67.6 and 38.1 respectively in 1968. Lesser increases occurred at Holmesville, Finder, Blissville, and Oak Bay. Defoliation, expected to be moderate to severe in several areas in June, did not exceed trace except at Oak Bay and Waasis where it was light. Bird predation, recorded at locations where casebearers were most numerous during winter sampling, was apparently responsible for a considerable reduction in larval population levels (Fig. 2-1).

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Population levels remained low in 1968, the average number of

larvae per tree sample for all Survey sampling stations being 1.0 compared to 1.3 in 1967. The largest collection, 2.1 larvae per tree sample was taken at Ripples (Table 2-5). Collections submitted by cooperators contained a total of 65 larvae compared to 101 in 1967 (Table 2-6).

Black-headed Budworm, *Acleris variana* (Fern.)

Fifty-four larvae were collected from balsam fir or white spruce at 23 locations, averaging 0.8 larva per tree sampled, the same as in 1967.

Balsam Shoot-boring Sawfly, *Pleroneura borealis* Felt

Balsam fir reproduction was severely infested in a 0.5-acre area at Oromocto. Light infestations occurred on open growing reproduction at Hampstead, Queen's County; and on two trees at Meductic, Carleton County. Trace infestations occurred on the Wilsey Road, York County; Ripples and Hoyt, Sunbury County; near Hamilton Mountain and on the Lawfield Road at Base Gagetown; and at Coldstream, Carleton County.

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Buds damaged by this midge were again common on white and red spruce trees in southwestern New Brunswick. The results of counts of galled buds taken at two locations were:

<u>Location</u>	<u>Galled buds per 100 sq. ft.</u>	
	<u>1967</u>	<u>1968</u>
Porter Cove, North. Co.	No count	111
Maple Grove, York Co.	89	383

Fall Cankerworm, *Alsophila pometaria* (Harr.)

Severe defoliation of elms, red maples, and a few wire birches occurred along both sides of the Oromocto River from Oromocto to French Lake. In addition to the above mentioned species, red oaks were severely defoliated along the Rusagonis River between the Oromocto River and Rusagonis.

Defoliation of elms, red maples, and a few birches, severe in 1967, was generally moderate along the Church Road, Sunbury County, but a few scattered trees were again severely defoliated. Widely separated elms were moderately defoliated also along Route 2 between Lower St. Marys and Jemseg.

Small numbers of larvae occurred in collections taken by the beating method from apple, oak, aspen, elm, and wire birch at a total of 11 locations in York, Sunbury, Queen's, and Charlotte counties.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

Birch leaf miner infestations persisted on wire birch and occasional white birch trees in southwestern New Brunswick. Leaf browning was severe, in patches between Lakeville Corner and Ripples, and at Barkers Point and New Market. Moderate browning occurred at Lower St. Marys, Fredericton

Junction, Sunpoke Lake, Hoyt, and Thomaston Corner, and in numerous smaller patches elsewhere in York County, and in Charlotte County. Light browning occurred near Thomaston Corner and Smithfield Settlement, York County.

Birch Casebearer, Coleophora fuscedinella (Zell.)

Severe defoliation of white birch and occasionally wire birch was general along the St. John River valley through Carleton, central York, and the southern half of Sunbury counties, in western Queen's and Kings counties, and in all but the western extremities of Charlotte County.

Moderate browning occurred in northeastern Carleton, northern York, and central Sunbury counties. Light defoliation was common elsewhere in York and Charlotte counties.

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Large larval colonies were collected from apple and flowering crab at Fredericton, from red oak at Blissville, Sunbury County, and from trembling aspen at Lake George. Small numbers of larvae were collected from apple at Dumphries, York County, trembling aspen at Gagetown, and wire birch at Porter Settlement, Charlotte County. Defoliation was negligible.

A Leaf Roller on Maple, Cenopis pettitana (Rob.)

Up to 75% of the leaves of red maple were infested north of Douglas, York County, and between Deersdale and Juniper in York and Carleton counties.

Moderate rolling of red maple foliage occurred at Acadia Forest Experiment Station, between Cross Creek and Napadogan, York County, and on one tree at Richmond Corner, Carleton County. Elsewhere, larvae were common on red maples and occasional on sugar maples, but infestations were of trace and light intensity. A total of 16 collections were submitted, 13 from red maple, 2 from sugar maple, and 1 from basswood.

Fall Webworm, Hyphantria cunea (Drury)

Population levels remained relatively low in 1968. Nests containing 150 and 50 larvae respectively were collected from chokecherry at Stickney, Carleton County and from raspberry at Clark's Corner, Queen's County.

Roadside nest census were taken from Tweedside to Route 3 (3 miles - 4 nests per mile) and from Parker Ridge to Greenhill (13.8 miles - 0 nests).

Ugly-nest Caterpillar, Archips cerasivoranus (Fitch)

Nests were more common on roadside cherry bushes than in 1967. Nests counts per 1000 sq. ft. were taken at Harvey (79), Durham Bridge (220), Traceyville (41), Oak Bay (15), and St. Stephen (95). Nests merged to form continuous webbing on cherry bushes over 100 sq. ft. at Brockway and 0.5 mile east of Oak Bay. Nests were very common and in some places formed large

continuous webs on roadside bushes between St. Stephen and Oak Ridge, Charlotte County.

Alder Flea Beetle, *Altica ambiens alni* (Harris)

Foliar browning of alders was common in all counties, but not as extensive as in 1967. Severe browning occurred at Centreville, Lower Durham, Tay Creek, Traceyville, Hoyt, Oromocto, and Welsford in patches between Long Creek and Harvey and in the St. Stephen area.

Cedar Leaf Miners, *Argyresthia aureoargentella* Brower, *A. freyella* Wlshm., *A. thuella* (Pack.), and *Pulicalvaria thujaella* (Kft.)

Severe browning of cedar foliage occurred throughout most of southwestern Carleton County from Centreville through Lakeville, and from Woodstock to Hartland. Small areas of severe and moderate browning occurred between Moores Mills and Lawrence Station, and at Scotchtown (Queen's County).

Light foliar browning occurred at Good Corner, Carleton County, Kingsclear, York County, on the Martinon by-pass, St. John County, and near Chamcook and Oak Hill, Charlotte County.

Satin Moth, *Stilpnotia salicis* (L.)

Satin moth infestations were more widespread in natural stands of poplars in 1968 than in 1967. Some infestations increased in intensity and area, others decreased. Severe defoliation of aspen was common but patchy over about 4 square miles at Cloverdale, Carleton County, compared to 250 acres in 1967. At Kingsley, York County, only a small number of large tooth aspen were moderately defoliated where balsam poplar were severely defoliated on a 40-acre area in 1967.

Moderate defoliation occurred in a trembling aspen stand at McKenzie Corner, Carleton County, at Penio Brook near North Lake, York County, and in five small patches in aspen stands near Crabbe Mountain.

At Tracey Mills, Carleton County, light defoliation was observed in a hedgerow 0.5 mile south of the 1967 infestation which had subsided. The infestation at Lindsay decreased in size but defoliation was common in a smaller area.

Severe defoliation of ornamental poplars occurred at Ashland, Carleton County, and Hawkins Corner and Silverwood, York County.

Other Noteworthy Insects

Insect	Host	Location	Remarks
<u>Fenusa ulmi</u> Sund. Elm leaf miner	Elm	St. Andrews	Severe foliar browning on 5 trees and moderate on 3. Trace to light on other elms in same area.
<u>Malacosoma americana</u> F. Tent caterpillar	Cherry and apple	York, Sunbury, and Queens counties	Nests common throughout.
<u>Neurotoma inconspicua</u> Nort. A phamphiliid.	Cherry pin	Deersdale-Juniper area	Severe defoliation on 1 tree, light on 16.
<u>Pristiphora geniculata</u> (Htg.) Mountain-ash sawfly	Mountain-ash	District	Severe defoliation at Fredericton and on scattered trees elsewhere.

Tree Diseases

Storm Damage

Many wire birches were bent and broken by heavy snow during the winter of 1967-68. This was most evident at Thomaston Corner and on the Hanwell Road where hundreds of trees were damaged. Between 300 and 400 red pine trees were broken by heavy snows and wind in a plantation near Princess Park, Queen's County.

Frost Injury

Frosts in late May and in the second week of June killed about 40% of the new shoots of mature balsam fir at locations on the Deersdale-Beaverbrook Lake road, and in a 2-acre area of open-growing balsam fir trees at Limekiln. Numerous balsam fir southeast of Boiestown on the Bantalor Road, and 4 miles east of Stanley had about 20% of their new shoots killed. Mortality of the new shoots of pruned balsam fir in a plantation at Acadia Forest Experiment Station varied between 10 and 50% and similar damage occurred on numerous open-growing white spruce at Stanley, Hanwell Settlement, and Beaverdam.

Winter Drying of Conifers

Foliar browning of red spruce growing in small groups and in patches of up to 100 acres occurred over much of northern York County. Only the 1967 foliage was affected. This condition was especially noticeable over large areas on the north slope of Todd Mountain, and on the north, south, and east slopes along the Clearwater, Burnthill and Sisters brooks. Moderate browning of eight balsam fir trees was observed at Wirral, Queen's County.

Animal Damage

Porcupines and squirrels chewed and pruned twigs and branches on approximately 75 aspens at Letite, Charlotte County, and on six aspens near Lower Woodstock. Porcupines killed numerous spruce and fir trees in a 1-acre area on the Zionville Road near Taymouth, and in patches of up to 50 trees at McDougall Lake, Mount Pleasant, and near Clarence Lake, Charlotte County.

Needle Rusts

Chrysomyxa ledi de Bary caused infections of severe intensity on 90% of the black spruce trees in a 2-acre area near Geary, Sunbury County, and, with C. ledicola Lagh., caused infections of light intensity on the new shoots of 50% of the black spruce trees up to 12 ft. in height at Magaguadavic Lake. Infections of C. ledi were found on approximately 4% of red spruce cones examined near Canterbury and on less than 1% of white spruce cones at Bonny River, Charlotte County.

C. ledicola infections were of moderate intensity on 80% of the black spruce trees at Noonan Stream, Sunbury County and on numerous 3- to 4-ft. high trees in the University woodlot, Fredericton.

Infections of Chrysomyxa spp. occurred on occasional needles of the new shoots of red spruce at Otter Brook, Sunbury County, and on the Drummond Road, Queen's County, and of white spruce at Bonny River, Charlotte County.

C. pirolata Wint. was found on less than 2% of red spruce cones examined at Otter Brook, Sunbury County.

Pucciniastrum epilobii Otth. caused infections of light intensity on balsam fir regeneration at Milltown, Charlotte County, and of trace intensity on balsam fir trees at eight locations in the district.

Pucciniastrum goeppertianum (Kuehn) Kleb. causing 'brooms' on blueberry, was collected at Bonny River and Waweig, Charlotte County, and Thomaston Corner, York County.

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

Diseased elms were not found beyond the previously known limits of incidence but were found for the first time at York Mills and St. Croix, York County, and Meredith, Charlotte County. Three infected trees were found at Milltown, the first in this area since 1963. In Fredericton 33 diseased trees were found in 1968 compared to 16 in 1967, bringing to 97 the total found since 1961.

Counts of apparently healthy and suspect trees were made at 19 locations (Table 2-8). Based on these counts the percentage of suspect trees to healthy trees was 12.3. Percentages by counties were: Carleton, 23; York, 12; Sunbury, 6; and Queen's, 1.

As part of a study of possible resistance to Dutch elm disease initiated in 1967, trees tagged at Boiestown and Woodstock were examined in July. At Boiestown, one of two trees tagged was infected.

In the following table the number of dead, suspect, and healthy trees counted in 1968 are compared with those recorded in approximately the same areas in 1962.

Location	1968				1962		
	Healthy:	Infected			Healthy:	Infected	
		Living:	Dead:	Total: (%)		Dead:	%
Upper Woodstock	16	18	51	81.2	28	6	18
Lower Woodstock	35	45	89	79.3	26	64	71

Hypoxyylon Canker of Poplar, Hypoxyylon mammatum (Wahl.) Miller

Surveys were carried out from 1966 to 1968 to determine the distribution and intensity of this fungus.

A total of 1920 trembling aspens were examined of which 265 or 13.7% were infected (Table 2-9). Percentages of infected trees by counties were as follows: Carleton, 18.5; York, 14.2; Sunbury, 2.0; Queen's, 30.0; and Carleton, 6.0.

Cankered largetooth aspen were found for the first time in the district at Welsford, Queen's County, and Bayside, Charlotte County. The results of counts taken in largetooth aspen stands follow:

Location	U.T.M. grid	Registration number	:Examined:	Total trees		
				Cankered		
				Living:	Dead:	Infected (%)
Sunbury County						
Minto	1972570	0033	60	0	0	0
Burpee						
Game Refuge	1970509	0228	40	1	1	5
Queen's County						
Welsford	1970503	0105	20	1	1	10
Charlotte County						
McDougall	1967502	0669	60	0	0	0
Lake,						
Bayside	1964500	1728	100	1	1	2

Other Noteworthy Diseases

Organism and Disease	Host (s)	Locality	Remarks
<u>Ciborinia whetzellii</u> (Seaver.) Seaver Ink spot	Aspen, trembling and largetooth	Common through- out district	Leaf browning light, except moderate at Rusagonis and Fredericton Jct.
<u>Coleosporium asterum</u> (Diet.) Syd. Needle and leaf rust	Pine, red	Princess Park Queen's County	Heaviest on 3- and 4-year- old foliage.
<u>Cronartium comptoniae</u> Arth. Blister rust	Sweetfern	Drummond Rd. Queen's County	Trace infection.
<u>Cryptodiaporthe populea</u> (Sacc.) Butin Branch canker	Poplar, Lombardy	Milltown, Charlotte County	Moderate, one tree.
<u>Melampsora medusae</u> Thuem. Foliage rust	Tamarack	Traceyville, Sunbury County	Found on trembling aspens in same area.
<u>Pucciniastrum vaccinii</u> (Wint.) Jorst. Foliage rust	Hemlock, eastern	Milltown, Charlotte County	Trace on regeneration.
<u>Rhytisma ilicis canadensis</u> Schw. Leaf spot	False holly	Magaguadavic Lake York County	Present on all leaves of host examined.
<u>Uredinopsis struthiopteridis</u> Stoerm. ex Diet. Foliage rust	Fir, balsam	U.N.B. Woodlot and Magagua- davic Lake	New Herbarium host record.
<u>Venturia tremulae</u> Aderh. Leaf and twig blight	Aspen, trembling and largetooth	York and Charlotte counties	Present on about 25% of trees examined.

Table 2-1. Spruce Budworm Larval Sampling Records at Permanent Sampling Stations and Random Locations in Southwestern New Brunswick, 1968

Location	Tree sp. ^a	Total specimens	Mean per tree sample	Deviation from 1967
<u>Permanent sampling stations</u>				
Carleton County				
Ashland	wS	24	8.0	0.0
	bF	9	3.0	-2.3
Biggar Ridge	bF	0	.0	-.7
Glassville	wS	3	1.0	+1.0
Juniper	wS	201	67.0	+59.6
	bF	95	31.7	+24.0
Kirkland	wS	1	.3	-1.7
Charlotte County				
Waweig	wS	0	0.0	0.0
Sunbury County				
Ripples	wS	1	0.3	-0.7
	bF	38	12.7	+4.4
York County				
Hainesville	wS	3	1.0	-40.3
	bF	2	.7	-3.7
Hanwell Road	wS	0	.0	.0
Maplewood	wS	4	1.3	-1.4
	bF	4	1.3	+1.0
McGivney	wS	200	66.7	+58.0
Thomaston Corner	wS	0	.0	.0
Upper Brockway	wS	0	.0	.0
Norrad Bridge	wS	101	33.7	+27.4
<u>Random Samples</u>				
Charlotte County				
Bayside	4wS	4	1.0	-
Queen's County				
Clarendon 2 mi. W	3tL	5	1.7	-
York County				
Bantalor Rd. M1 8.5	2bF	61	30.5	-
Napadogan	2bF	223	111.5	-

^a Each station consisted of three trees and was sampled once.

Table 2-2. Spruce Budworm Larval Sampling Records at Cooperators' Sampling Stations in Southwestern New Brunswick, 1968

Location	Total trees	Tree sp.	Total specimens	Mean per tree sample
Carleton County				
Lindsay Spring	3	wS	3	1.0
(Glassville)	3	bF	1	.3
Charlotte County				
Clarence Ridge	9	wS	0	0.0
	9	bF	1	.1
Utopia Woodlot	9	rS	0	.0
	9	bF	0	.0
Queen's County				
Enniskillen Rd.	6	wS	0	0.0
	6	bF	0	.0
Hamilton Mountain	9	wS	2	.22
	9	bF	0	.0
Lawfield & Shirley Road	6	wS	1	0.13
	6	bF	0	.0
Welsford	6	wS	0	.0
	6	bF	0	.0
Sunbury County				
Minto, 2 mi. W.	12	rS	115	9.58
	9	bF	348	38.7
York County				
Boiestown	6	wS	10	1.7
	6	bF	17	2.8
Canterbury	9	wS	0	.0
	12	bF	0	.0
Limekiln, Stanley	8	wS	148	18.5
O'Leary Rd.	9	bF	77	8.5
Beaver Dam	9	wS	0	.0
	9	bF	3	.33

Table 2-3. Condition of Trees on Balsam Woolly Aphid Plot No. 3-5 O'Dell Park, Fredericton, 1961 to 1963 and 1965 to 1968

Year	Percentage of trees in class ^{a,b,c}							Dead other causes
	1	2A	3B	4A	4B	4C	5	
1961	17.8	26.9	4.8	10.9	10.2	0.7	3.4	25.3
1962	24.7	7.5	4.1	15.9	8.9	2.1	4.1	30.1
1963	35.6	10.9	4.1	8.2	6.2	.0	4.1	30.9
1965	32.9	10.2	4.1	4.8	5.5	.7	4.8	37.0
1966	19.8	14.2	4.1	8.2	2.1	.0	4.8	45.9
1967	31.4	2.7	4.1	6.8	1.3	.0	4.8	47.9
1968	32.2	10.3	4.1	3.0	.0	.0	4.8	49.4

^a See Appendix A, Section 1 for explanation of classes.

^b Classes 2B, 2C, & 3A contained no trees.

^c Percentages based on 146 trees for each year.

Table 2-4. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Southwestern New Brunswick, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Carleton County				
Carlisle	0.70	1.28	-	T
Holmesville	.69	8.81	T	T
Charlotte County				
Oak Bay	2.33	11.58	T	L
Queen's County				
Welsford	1.31	2.70	T	T
Sunbury County				
Acadia Station	0.98	0.65	-	T
Blissville	2.05	13.68	T	T
Waasis	7.25	67.64	T	L
York County				
Canterbury	1.09	2.61	T	T
Hanwell	1.14	38.14	T	T
McGivney	.96	.60	-	T
Nevilles Field ^b	8.57	5.75	-	-
Pinder	2.78	18.24	-	-
St. Croix	6.68	5.95	T	T
Woodlands	4.55	1.36	-	T

^a T= Trace, L= Light, -= no estimate.

^b Fredericton.

Table 2-5. European Spruce Sawfly Larval Sampling Records at Permanent Sample Stations and Random Locations in Southwestern New Brunswick, 1968

Location	Total trees ^a	Sawfly larvae collected	
		June-July	ⁿ Aug.-Sept.
<u>Permanent sampling stations</u>			
Carleton County			
Juniper	6	0	7
Glassville	6	1	2
Ashland	6	0	0
Kirkland	6	2	4
Charlotte County			
Waweig	6	1	0
Sunbury County			
Ripples	6	3	10
York County			
Maplewood	6	2	1
Hainesville	6	0	4
Hanwell Road	6	1	3
McGivney	6	0	0
Norrad Bridge	6	0	1
Thomaston Corner	6	0	4
Upper Brockway	6	0	0
<u>Random Samples</u>			
Charlotte County	6	7	-
York County	6	-	14
	3rS	-	2

^aCollections from white spruce except as otherwise noted.

Table 2-6. European Spruce Sawfly Larval Sampling Records at
Co-operators' Sampling Stations in Southwestern
New Brunswick, 1968

Location	Total trees	Tree sp.	Total specimens	Larvae per tree sample
Carleton County				
Lindsay Spring	3	WS	4	1.3
Charlotte County				
Clarence Ridge	9	WS	9	1.0
Utopia Woodlot	9	rs	6	.7
Queen's County				
Enniskillen Road	15	WS	17	1.1
Hamilton Mountain	12	WS	1	.1
Lawfield Road	9	WS	10	1.1
Welsford	6	WS	0	.0
Sunbury County				
Minto, 2 mi. W.	15	rs	2	.06
York County				
Boiestown	6	WS	0	0.0
O'Leary Road	18	WS	13	.7
Canterbury	9	WS	3	.3

Table 2-7. Common Insects Collected from Permanent Sampling Stations in Southwestern New Brunswick, 1968

Species	Host	Larvae per tree sample	Deviation from 1967
<i>Accleris variana</i> (Fern.)	WS	0.75	+0.05
<i>Caripeta divisata</i> Wlk.	WS	.60	+ .1
<i>Choristoneura fumiferana</i> (Clem.)	WS	19.9	+12.4
	bF	29.8	+25.6
<i>Dioryctria reniculella</i> Grote	WS	1.75	-
<i>Diprion hercyniae</i> (Htg.)	WS	1.0	-.3
<i>Elaphria versicolor</i> Grote	WS	.83	-
<i>Eucordylea atrupictella</i> Dietz.	WS	.5	-
	bF	.3	-
<i>Eupithecia transcanadana</i> MacKay	WS	.6	-.2
<i>Griselda radicana</i> Wlshm.	WS	.5	-.7
<i>Hydriomena divisaria</i> (Wlk.)	WS	.44	+.04
<i>Hypagyrtis piniata</i> (Pack.)	WS	.3	-
	bF	.3	-
<i>Neodiprion abietus</i> (Harr.)	WS	.3	-
	bF	.5	.0
<i>Pikonema alaskensis</i> (Roh.)	WS	1.6	+.8
<i>Pikonema dimmockii</i> (Cress.)	WS	1.1	+.4
<i>Protoboarmia porcelaria indicitaria</i> Guen.	WS	.95	.15
<i>Semiothisa dispuncta</i> complex	WS	1.7	+.5

Table 2-8. Incidence of Dutch Elm Disease on Living Trees in Southwestern New Brunswick, 1968

Location	U.T.M. grid	Regist. number	Trees examined	Trees infected	
				Number	Percentage
Carleton County					
Juniper to Coldstream	1962514	1099	86	10	11.6
Bristol to Victoria Co. line	1960515	982	227	31	13.7
Centreville through Lakeville to T.C.H.	1960513	983	157	36	19.7
Meduxnekeg River N. to Woodstock line	1961511	980	51	9	17.6
Stickney	1961513	981	83	27	32.5
Lower Woodstock	1960511	966	80	45	56.3
York County					
Millville to Keswick	1966510	1100	288	38	13.2
^a Penniac to Durham Bridge	1968510	946	392	70	17.9
^a Marysville to Penniac	1968509	947	234	22	9.4
Nashwaak Bridge to Stanley	1967512	1098	250	18	7.2
^a Route 2, Princess Margaret Bridge to Sunbury Co. line	1968508	948	163	12	7.4
Meductic to Skiff Lake	1961508	984	248	5	2.0
Meductic	1961509	979	58	26	44.8
Sunbury County					
^a Lincoln to Airport	1968508	949	197	10	5.1
^a Route 2, York Co. line to Burton Ferry	1969508	945	187	4	2.1
Burton Ferry to Queen's Co. line	1970508	944	380	40	10.5
Route 28, York Co. line to Fredericton Junction	1968506	1095	28	1	3.6
Route 28, Jct. Geary Rd. to Queen's Co. line	1969504	1096	153	6	3.9
Queen's County					
Welsford to Fowlers Corner	1970503	1097	26	1	3.8

^a Counts taken on both sides of road.

Table 2-9. Incidence of Hypoxylon Canker in Trembling Aspen in Southwestern New Brunswick, 1966, 1967, and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected %
				Cankered		
				Living	Dead	
<u>1966</u>						
York County						
U.N.B. Woodlot	1968508		60	10	2	20
Sunbury County						
Noonan Brook	1969509		60	5	10	25
Queen's County						
Camp Medley	1971507		60	10	4	23.3
1966 Sub-totals and average			180	25	16	22.8
<u>1967</u>						
Carleton County						
Eel River	1961508	746	100	5	7	12
1967 Sub-totals and average			100	5	7	12
<u>1968</u>						
Carleton County						
Juniper	1963515	1652	100	1	0	1
Royalton	1959514	1696	100	7	14	21
Coldstream	1961513	1653	100	12	16	28
Lower Woodstock	1961510	1697	100	6	17	23
York County						
Canterbury	1961508	1677	100	6	6	12
Hanwell Rd	1967507	1462	100	13	12	25
Lower Durham	1967511	771	100	1	0	1
McAdam	1963505	1651	100	8	14	22
Stanley	1967512	1615	100	5	6	11
Sunbury County						
Minto	1972510	0034	60	1	0	1.7
Beaverdam	1968507	1730	100	1	1	2
Queen's County						
Drummond Rd. Base	1970506	1703	100	4	13	17
Gagetown						
Gunters	1971507	0216	20	16	4	25

Table 2-9 (continued).

Charlotte County

Lawrence Station	1964502	1647	60	2	3	8.3
Porter Settlement	1962503	1650	100	4	4	8
Meredith	1963503	671	20	0	0	0
Whittier Ridge	1965502	1726	100	3	2	5
Waveig	1963401	1638	80	8	1	11.3
McDougall Lake	1967502	668	100	0	0	0

1968 Sub-totals and average		1640	99	113	12.9
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TOTALS to 1968 and average		1920	129	136	13.7
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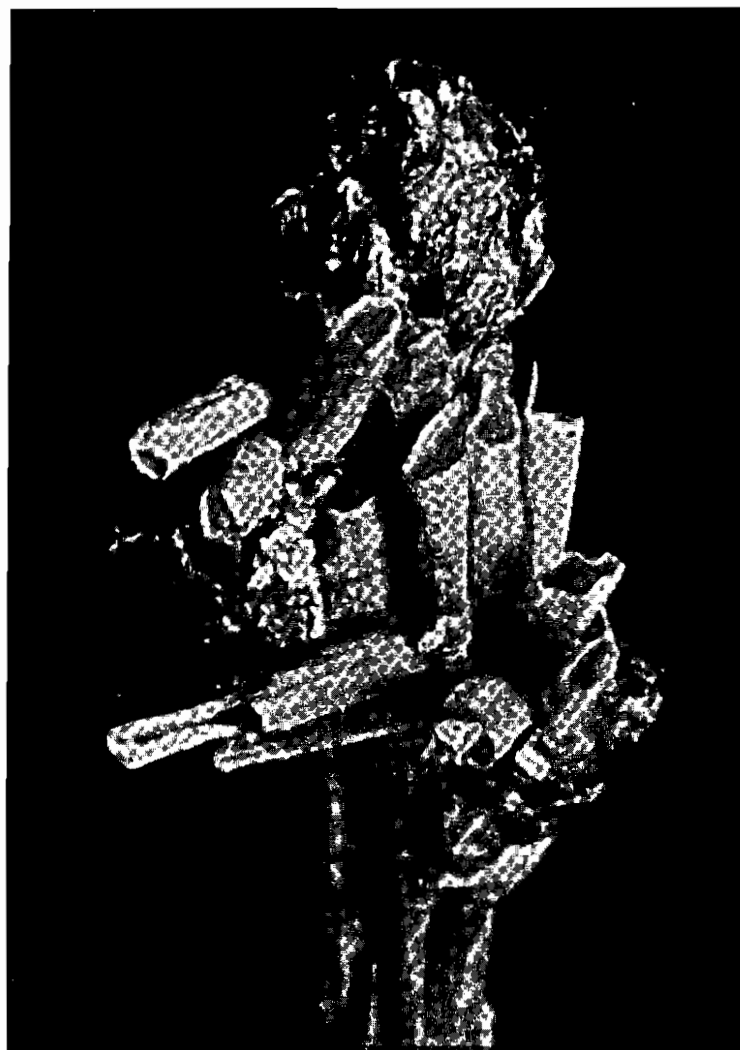


Figure 2-1. Results of bird predation on
overwintering larch casebearer larvae.
Pinder, York Co., N. B. March 1968

ANNUAL DISTRICT REPORT

NORTHWESTERN NEW BRUNSWICK

1968

by

D. S. Durling

3.0 NORTHWESTERN NEW BRUNSWICK

(D. Durling)

Introduction

Infestations of the birch casebearer increased in intensity in areas where white birch was common and severe foliar browning often resulted. Spruce budworm increased in numbers at several points and larch sawfly defoliation was again noticeable along the St. John River valley in Madawaska and Victoria counties. Moderate to severe infestations of the balsam gall midge were recorded at more locations than in 1967. Additional mortality of elms occurred within the distribution range of the Dutch elm disease and the beech bark disease was found for the first time in central Madawaska County.

Totals of 319 insect and 214 disease collections were submitted by the district technician and 97, almost all of insects, were received from provincial forest service co-operators.

Insect Conditions

Spruce budworm, *Choristoneura fumiferana* (Clem.)

A total of 17 larval collections were taken in the district including five from cooperators. Average numbers of larvae per tree sampled were low (Table 3-1). Small patches of moderate and severe defoliation of balsam fir occurred in southeast Victoria County near Stanley Mountain and defoliation was light in a small area on the headwaters of Clearwater Brook.

Budworm egg masses were collected at 65 of the 191 locations sampled in the district. Infestations were moderate at 8 and light at 41 of the points sampled in Victoria County indicating a continuation of generally light to moderate infestations in the southeast corner of the County in 1969. Light egg-mass infestations occurred at a total of 16 locations scattered throughout Madawaska, Restigouche, and northwestern Northumberland counties.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

More than 70% of the new needles of young balsam fir trees were infested with this gall maker throughout Victoria County, in most of Madawaska County, and in northwestern Restigouche County (Fig. 1-7). Light to moderate attacks were common elsewhere.

The locations, by counties, where severe infestations occurred, were:

Madawaska--At Lake, Yellow, Alex, Hunters, Winding Eddy, and Pemouet brooks, West Iroquois and North Restigouche rivers, and near the Green River tower and Green River.

Restigouche--Kedgwick road, Union and Indian brooks and Wild Goose Lake.

Victoria--Perth-Plaster Rock road, seven locations; Plaster Rock-Nictau road, six locations; Nictau-St. Quentin road, four locations; and Plaster Rock-Renous road to county line, five locations.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Spruce sawfly larvae were collected in small numbers at all sampling stations (Table 3-2). The largest collection, a total of 16 larvae from three white spruce, was taken at L'Eglise, Madawaska County.

Black-headed Budworm, *Accleris variana* (Fern.)

Population levels of the black-headed budworm increased slightly but remained low. A total of 18 larval collections were taken from balsam fir and white spruce. The highest average numbers of larvae per tree sampled occurred at Jardine Brook (27.0) and Riley Brook (22.3) but varied between 0.3 to 3.0 at other points.

The results of larval sampling for the 3-year period, 1966 to 1968, are:

Year	Collections	Trees sampled	Specimens	Larvae per tree sample
1966	6	21	6	0.2
1967	13	39	32	.8
1968	18	46	149	3.2

Larch sawfly, *Pristiphora erichsonii* (Htg.)

The status of the larch sawfly remained much the same as in 1967. Severe defoliation of tamarack occurred in stands of less than 100 acres at California Settlement and near St. Jacques. Defoliation varied from light to moderate in patches in most stands between Edmundston and Perth and in smaller patches at Blackland, Robinsonville, Lawson Brook, and Little Belledune Point (Fig. 1-5).

Larch Casebearer, *Coleophora laricella* (Hbn.)

Counts of casebearers overwintering on tamarack trees indicated that population levels had increased from 1967 at all sampling points (Table 3-3). Average numbers of larvae per 100 fascicles were highest at Blackland (23.6) and Little Belledune Point (14.9). This represented a ten-fold increase from 1967 at Blackland. Defoliation estimates taken about the time of pupation showed that feeding resulted in negligible foliage browning except at Blackland where it was light.

Birch Casebearer, *Coleophora fuscadinella* (Zell.)

Severe foliar browning and often total defoliation of white and wire birch, in natural stands and of those used as shade trees, was the cause of

numerous inquiries from northwestern New Brunswick. Severe infestations were general throughout the valleys of the main St. John and Tobique rivers and from St. Leonards through Kedgwick and Campbellton to Belledune (Fig. 1-6). Defoliation elsewhere was moderate with few birch trees escaping.

Fall Webworm, *Hyphantria cunea* (Drury.)

Collections of webworm larvae were submitted from Baker Brook, Kedgwick River, Perth, and Hillside (8 miles east of Perth). Scattered webs were observed at other points. At Hillside 43 nests, with 25% interference, occurred on one stretch of infested roadside shrubs.

Satin Moth, *Stilpnotia salicis* (L.)

Moderate defoliation of balsam poplar and silver poplar shade trees by the satin moth occurred at Blackland, Campbellton, Edmundston, and 8 miles east of St. Leonard on Route 17. Infestations observed in natural stands of aspens near Perth in 1967 subsided in 1968. Cocoons of a braconid parasite were numerous on the stems of infested trees in Campbellton.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Populations of this caterpillar reached a very low level in northwestern New Brunswick in 1968. No defoliation was observed and no egg masses were found at any of the 25 locations sampled.

Ugly-Nest Caterpillar, *Archips cerasivoranus* (Fitch)

Population levels of this caterpillar were low in 1968. Small groups of nest occurred on roadside cherry bushes at Ledges Road, Madawaska County, Three Brooks and Arthurette, Victoria County, and Benjamin Road and Black Point, Restigouche County.

Tree Diseases

Frost Injury

Frost killed about 75% of the new shoots of young white spruce in a 2-acre area at Ledges, Madawaska County and a 1-acre area at Union Brook, Restigouche County. Elsewhere in the district scattered young spruce and balsam fir with frost-killed shoots were common.

Storm Damage

High winds during the month of August blew trees down at scattered locations throughout Restigouche County. Sixty balsam fir at Falls Brook and forty white spruce on the Southeast Upsalquitch road were uprooted.

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

Elm trees infected with Dutch elm disease were found for the first time near Baker Brook, Madawaska County, and two additional trees were infected in Campbellton. Counts of living elms were taken in 10 localities

to determine the percentages of trees diseased or suspected of being so.
The results follow:

Location	U.T.M. grid	Regis no.	Trees examined	Trees infected	
				Number	Percentage
Madawaska County					
Baker Brook	1953523	0967	70	14	20.0
Restigouche County					
Campbellton	1967531	0682	127	2	1.6
Jacquet R. Bridge	1972531	0785	67	2	3.0
Flatlands	1965531	1277	36	14	38.9
Victoria County					
Limestone	1959519	639	27	15	55.5
South Aroostock	1959518	642	61	13	21.3
Riley Brook, 2.4 mi. N.	1963522	643	72	46	63.9
Andover	1959518	645	79	21	26.6
Bonacord	1960517	745	244	62	27.7
Plaster Rock	1962519	748	80	21	26.3

Needle and Cone Rusts of Conifers

Needle rusts were common on the new foliage of spruce and balsam fir at widely separated locations and in some instances infected white spruce cones. The results of sampling for these fungi and for those infecting cones were:

Fungi and hosts	Location	Remarks
<u>Chrysomyxa ledi</u> de Bary		
White spruce cones	Val d'Amour and S. Kedgwick Brook McCormack fire tower Nictau Gate Upper Siegas	Present on 5% of cones examined. Infections on 80% of cones. On 60% of cones. On 6% of cones.
White spruce needles	Black Brook and 1 mile S.	Trace intensity and incidence.
Black spruce needles	Blackland	Present on 75% of new needles on 10 trees.

Fungi and hosts Cont'd	Location	Remarks
<u>Chrysomyxa ledicola</u> Lagh		
Red spruce needles	Union Brook	Trace intensity on 1 tree.
Black spruce needles	Serpentine	Traces of infection.
Labrador tea	Serpentine and 10 miles N. E. of St. Leonards	Alternate host.
<u>Chrysomyxa pirolata</u> Wint.		
White spruce cones	Upper Dundee and Balmoral Gate	About 5% of cones infected.
<u>Pucciniastrum epilobii</u> Otth.		
White spruce cones	Blackland and Big Nictor Lake	Infections on 1 or 2 needles on 13% of shoots on 3 trees.
Fireweed	4 locations in Restigouche Co.	Traces of infection on alternate host.
<u>Pucciniastrum goeppertianum</u> (Kuehn) Kleb.		
Blueberry	Serpentine	Alternate host.

Needle Casts

Isthmiella faullii (Darker) Darker. Needle browning was moderate on ten young balsam fir trees on the Stewart Highway, Madawaska County. Traces of browning of old foliage of several balsam fir trees occurred at Upper Dundee and on the Southeast Road near Charlo River, Restigouche County.

Lirula nervata (Darker) Darker. Moderate needle browning occurred on single trees at Robinson Fire Tower and near Big Nictor Lake, Restigouche County, and was severe on one tree at Charlo River.

Hypoxyton Canker of Poplar, Hypoxyton mammatum (Wahl.) Miller

The results of surveys made in 1966, 1967, and 1968 to determine the impact of this fungus in trembling aspen stands are shown in Table 3-5. The percentage of infected trees was highest (24%) at Tobique Narrows, and the average for the district was 10.9%.

Other Noteworthy Diseases

Organism	Host(s)	Locality	Remarks
<u>Armillaria mellea</u> (Vahl ex Fr.) Kummer	Fir, balsam	Connors Bk. Rd. Restigouche Co.	Associated with recently dead trees in three patches of 10-15 semi-mature trees.
Root rot			

Organism Cont'd	Host(s)	Locality	Remarks
<u>Ciborinia whetzelii</u> (Seav.) Seav. Ink spot	Aspen, trembling	Northwestern New Brunswick	Light to moderate foliar browning at scattered locations.
<u>Nectria coccinea</u> var. <u>faginata</u> Lohm., Wats., & Ayers Beech bark disease	Beech	4 locations in Restigouche County and 1 in Madawaska	Infections light. Known distribution range extended to northeast.
<u>Venturia tremulae</u> Aderh. Aderh. Leaf and twig blight	Aspen, trembling	Lac Unique and St. Jacques, Madawaska Co., Val d'Amour, Restigouche Co., Stewart Hwy. Victoria Co.	Trace infections on up to 10 trees at each location.

Table 3-1. Spruce Budworm Larval Sampling Records at Permanent Sampling Stations and Random Locations in Northwestern New Brunswick, 1968

Location	Total trees	Total specimens	Mean per tree sample	Deviation from 1967
<u>Permanent sampling stations</u>				
Madawaska County				
Connors	3WS	0	0.0	0.0
Glazier Lake	3WS	0	.0	.0
Glazier Lake	3bF	0	.0	.0
Upper Siegas	3WS	0	.0	.0
L'Eglise	3WS	0	.0	.0
Restigouche County				
Blackland	3WS	1	0.3	+0.3
Glenlivet	3WS	1	.3	.0
Simpson Field	1bF	3	3.0	+3.0
Charlo River	3WS	0	.0	.0
Kedgwick Forks	3WS	0	.0	.0
Kedgwick River	3WS	0	.0	.0
Union Brook	3WS	0	.0	.0
Victoria County				
Salmonhurst	3WS	0	0.0	0.0
South Tilley	3WS	0	.0	.0
Riley Brook	3WS	2	0.6	+0.3
Three Brooks	3WS	1	0.3	+0.3
Jardine Brook	1WS	8	8.0	+8.0
<u>Random Samples</u>				
Madawaska County				
Pelletier Brook	1WS	1	0.3	
Northumberland County				
Serpentine Road	1WS	6	6.0	
Restigouche County				
Dawsonville	1WS	1	1.0	
Victoria County				
Grand Falls	1WS	1	1.0	
Yone	1WS	1	2.0	
Riley Brook	1WS	1	.3	

Table 3-2. European Spruce Sawfly Larval Sampling Records at
Permanent Sampling Stations and from Random Locations
in Northwestern New Brunswick, 1968

Location	Total trees ^a	Sawfly larvae collected ^b	
		June 26-July 23	Sept. 5-11
<u>Permanent sampling stations</u>			
Madawaska County			
Glazier Lk.	3	3(0)	0(5)
Connors	3	4(0)	0(4)
L'Eglise	3	0(4)	16(12)
Upper Siegas	3	11(0)	0(5)
Restigouche County			
Dalhousie Jct.	3	0(1)	4(9)
Kedgwick Rd.	3	1(1)	0(2)
Glenlevit	3	7(0)	0(2)
Blackland	3	10(0)	0(1)
Union Bk.	2	0(0)	1(1)
Simpson Field	3	0(1)	3(2)
Victoria County			
Riley Bk.	3	4(5)	4(18)
Three Bk.	3	5(2)	7(2)
Jardine Bk	3	1(0)	5(2)
<u>Random Samples</u>			
Restigouche County			
Balmoral Gate	2	6	-
Victoria County			
Grand Falls	1	2	-
Gladwin	2	1	-
Yone	2	1	-

^aWhite spruce

^b1967 figures in brackets.

Table 3-3. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Northwestern New Brunswick, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Madawaska County				
Green River	0.44	1.46	N	N
St. Jacques	.97	5.86	N	T
Stewart Hwy.	.0	.69	N	N
Restigouche County				
Glenlivet	0.32	2.20	N	N
Little Belledune Pt.	4.67	14.90	T	T
St. Quentin	2.06	3.30	T	N
Blackland	2.28	23.60	-	L
Victoria County				
Burntland Bk.	0.25	1.49	T	N
Dover Hill	3.25	7.19	-	T
Gillespie Sett.	.29	2.72	T	N
Three Bks.	.92	5.55	-	T

^a T= Trace, L= Light, N= Nil, -= no estimate.

Table 3-4. Common Insects Collected from Permanent Sampling Stations in
Northwestern New Brunswick, 1968

Species	Host	Larvae per tree sample	Deviation from 1967
<i>Accleris variana</i> (Fern.)	bF	0.3	+0.3
	WS	4.8	+3.8
<i>Caripeta divisata</i> Wlk.	bF	1.0	.0
	WS	.5	- .1
<i>Choristoneura fumiferana</i> (Clem.)	WS	1.2	+0.9
	bF	3.0	+2.7
<i>Diprion hercyniae</i> (Htg.)	WS	1.9	+ .8
<i>Eupithecia transcanadana</i> MacKay	WS	.3	- .4
<i>Griselda radicana</i> Wlshm.	WS	3.4	+3.1
<i>Hydriomena divisaria</i> (Wlk.)	WS	1.3	+ .9
<i>Lambdina fuscicollis fuscicollis</i> Gn.	WS	.5	+ .2
<i>Neodiprion abietis</i> (Harr.)	WS	.5	+ .5
<i>Palthis angulalis</i> Kft.	WS	.6	+ .1
<i>Pikonema alaskensis</i> (Roh.)	WS	.4	- .2
<i>Pikonema dimmockii</i> (Cress.)	WS	1.0	+ .6
<i>Semiothisa dispuncta</i> complex	WS	3.0	+ .5
	bF	3.3	+2.7

Table 3-5. Incidence of Hypoxylon Canker in Trembling Aspen in Northwestern New Brunswick, 1966, 1967, and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>1966</u>						
Victoria County Tobique Narrows			100	14	10	24.0
<u>1967</u>						
Restigouche County						
Val d'Amour	1967531	1010	100	4	7	11.0
Kedgwick	1962527	625	100	9	4	13.0
Glenlivet	1965531	565	40	-	1	2.5
1967 Sub-totals and average			240	13	12	
<u>1968</u>						
Madawaska County						
Green Mtn. Road	1956524	693	100	2	5	7.0
Green River	1956523	897	80	6	2	8.0
Restigouche County						
Robinsonville	1965530	895	100	2	7	9.0
Flatlands	1965531	970	80	-	3	2.7
St. Jean de Baptise	1963528	687	100	10	3	13.0
Victoria County						
Nictau Lake	1964523	625	60	-	5	8.3
1968 Sub-totals and average			520	20	25	8.6
TOTALS to 1968 and average			860	47	47	10.9

ANNUAL DISTRICT REPORT

NORTHEASTERN NEW BRUNSWICK

1968

by

C. L. Burlock

4.0 NORTHEASTERN NEW BRUNSWICK

(C. L. Burlock)

Introduction

Much of the area in New Brunswick severely infested with spruce budworm in 1968 falls within this district, and defoliation was more extensive than in 1967. Larch sawfly infestations were more common than in 1967 and moderate or severe defoliation occurred in many larch stands. Infestations of the balsam gall midge were widespread and of concern to those involved in the Christmas Tree industry. Dutch Elm disease was found for the first time at five additional locations in Northumberland County.

Totals of 298 insect and 216 disease samples were submitted by the district technician and 174, mostly of insects, by co-operators.

Assistance in the form of field surveys was given in projects dealing with fume damage, decay in maple, Polyporus abietinus, flowers and cones of spruce and fir, and others.

Insect Conditions

Spruce Budworm, Choristoneura fumiferana (Clem.)

Larval numbers increased at all beating stations in Northumberland and Gloucester counties (Table 4-1). Larval sampling records at co-operators sampling stations are shown in Table 4-2.

Severe defoliation of the 1968 growth of balsam fir occurred in Northumberland County in large areas along the Dungarvon River, Big Hole Brook, and Renous River near the mouth of McGraw Brook, and in smaller areas along the North Branch of the Little Southwest Miramichi River, and the South Branch of the Little Sevogle River. Scattered patches of severe defoliation occurred at Millerton, Strathdam, and Quarryville, and south of the Miramichi River at Grey Rapids, White Rapids, MacKenzie Brook, Semiwagan River and South Nelson (see Fig. 1-3).

Moderate defoliation of balsam fir occurred from the Lower North Branch of the Little Southwest Miramichi River east to Whitney, Sillickers and Millerton, and south to McGraw and Nicholson brooks; also along the Little South Renous, Dungarvon, and Bartholomew rivers, between the Southwest Miramichi and Barnaby rivers, and north and south of the Miramichi River at McNamee, Blissville, and Weaver.

Light defoliation was common in areas adjacent to those described above.

Egg masses, collected at 243 of the 284 locations sampled in the district, were high in number throughout a large part of south-central Northumberland County where generally severe defoliation can be expected in 1969 (Fig. 1-4). This area is bounded by a line running roughly from

Newcastle north to Wayerton, southwest to McKendrick Lake, west to Louis Lake on the Plaster Rock - Renous Game Refuge, south along the district boundary to McNamee, southeast to the Cains River watershed, northeast along the district boundary to Nainville and north to Barnaby River and Newcastle.

Egg masses, in numbers sufficient to indicate moderate infestations in 1969, occurred in patches near Renous and Kennedy lakes, east of North Rogersville, at Kent Junction, Kent Lake, Aldouane Station, South Nelson, Chatham, and Lower Neguac. Egg-mass infestations were moderate also at individual sample points elsewhere. Egg-mass counts indicated light infestations in the remaining central portion of Northumberland County and extending north into central Gloucester County. Egg-masses were rare elsewhere in northeastern New Brunswick.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Defoliation of tamarack by this sawfly was severe in stands of less than 100 acres at East Bathurst, Derby Junction, and Redmondville, and near St Louis de Kent. Moderate defoliation was widespread in central and eastern Northumberland, central Gloucester, and northeastern Kent counties (Fig. 4-1).

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Populations levels of this sawfly on spruce remained low. The results of larval sampling at stations by survey staff and by co-operators are shown in Tables 4-3 and 4-4.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

More than 70% of the new needles of young balsam fir trees were attacked by gall midge at numerous locations in eastern Northumberland and northern Kent counties (Fig. 1-7). Infestations affecting 30% to 60% of the new needles were common on balsam fir elsewhere in Northumberland County and in central Gloucester.

Larch Casebearer, *Coleophora laricella* (Hbn.)

Counts of overwintering larch casebearer larvae at 10 sampling stations indicated noticeable increases from 1967 at all locations except Weaver Siding, Northumberland County, where population levels were lower (Table 4-5).

Severe foliar browning of tamarack, the first recorded in New Brunswick since 1952, occurred in roadside stands near Bathurst.

Birch Casebearer, *Coleophora fuscedinella* (Zell.)

Moderate and severe infestations of birch casebearer were more widespread than in 1967. Extensive areas of severe defoliation of white birch and wire birch occurred in central Northumberland County, and in Gloucester and northeastern Kent counties, and light to moderate in most birch stands elsewhere in the district (Fig. 1-6). Occasional small stands of birch were completely defoliated. Partial refoilation was evident later in the season but branch and twig mortality is expected to be common in 1969.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

This leaf miner was again common in birch stands and numerous patches of light and moderate foliar browning of wire birch and white birch occurred throughout the district.

Ugly-nest Caterpillar, *Archips cerasivoranus* (Fitch)

Population levels of this insect increased from 1967 and infestations occurred on roadside cherry bushes at numerous points in the district. At Newcastle, however, no larvae were found in an area infested in 1967. The results of nest counts per 1000 square feet of roadside at eight locations were:

Location	Nests per 1000 sq. ft.
Belledune	4
Newcastle, 0.5 mile E.	20
Parker Station	6
Chatham, 0.75 mi. W. of golf course	25+
Whitney	16
Richibucto	182
Petit Rocher North	200+
Rexton	Continuous webbing

A Leaf Roller on Maple, *Cenopsis pettitana* (Rob.)

Moderate infestations of this leaf roller occurred on red maple in all parts of the district. Severe leaf rolling and some defoliation of trees which earlier bore heavy seed crops resulted in extensive areas of bare-topped maples in the Parker Station, Millerton, and Red Bank areas of Northumberland County.

Fall Webworm, *Hyphantria cunea* (Drury)

Nests of this insect were observed on roadside alder bushes along the shore road from Kouchibouguac to Escuminac, and at Lameque, and on willow and cherry bushes at Lugar and Lincour settlements, Gloucester County. Defoliation was moderate. A nest census along 6.5 miles of roadside from Point Sapin north to the county line resulted in an average count of 28 nests per mile.

Tree Diseases

Frost Injury

Frost early in the growing season killed up to 75% of the new shoots of spruce and fir regeneration in natural stands and plantations in central Kent and Northumberland counties. About 50% of the new shoots turned red on spruce and fir regeneration near the Key Mine road, Gloucester County, and along Moose Brook in Restigouche and Gloucester counties.

Sweetfern Blister Rust, Cronartium comptoniae Arth.

Counts made in jack pine stands showed that an average of 3% of the stems were infected with this rust (Table follows). The highest incidence of infection, 14%, occurred near the Pabineau Road in Gloucester County.

Location	Infected sweetfern present?	Age of		Total trees	
		Stand	: Canker	Examined	: Infected
Gloucester County					
Red Pine Gate	No	21	20	200	4
Pabineau Road	Yes	35	28	100	14
Popple Depot	No	25	18	100	1
Bertrand	-	Y.g. ^a	-	100+	1
Northumberland County					
Grand Lake Rd., Mile 8.8	Yes	19	16	100	2
Wayerton	Yes	16	14	100	1
Little Bartibog	Yes	71	64	100	3
Lower Napan	-	30+	28	100	3
St. Laurent	-	Y.g. ^a	-	100	1

a - Young growth

In addition to the above, infected sweetfern occurred at the following locations:

Location	Registration no.
Little Shippigan	710
Pabineau	881
Renous	872
Bartibog	889
St. Louis de Kent	864

Needle Rust of Balsam Fir, *Pucciniastrum epilobii* Oth. and *P. goeppertianum* (Kuehn) Kleb.

Needle rust infections of light to moderate intensity on the new foliage of sapling-sized balsam fir and witches' brooms on nearby blueberry occurred at Middle River, Gloucester County. A semi-mature balsam fir tree, near the Kirkwood school, Northumberland County, had between two and eight needles per shoot infected by *P. goeppertianum* on about 75% of the new shoots examined.

Hypoxylon Canker of Poplar, *Hypoxylon mammatum* (Wahl.) Miller

Cankers resulting from infections by this fungus, could be found in most trembling aspen stands in the district. Counts taken in 1967 and 1968 in Gloucester, Northumberland and Kent counties show that of 2,200 trees examined, 106 were infected but living and 113 were dead from infections, an average of 10.0% affected by hypoxylon Table 4-6).

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

The distribution limits of Dutch elm disease were extended to the northeast in Northumberland County. Infected trees were found at Blackville, Lyttleton, Red Bank, Whitney, and near the Enclosure Picnic Site at Derby Junction. *Cephalosporium* wilt was found on 6 of 17 elms sampled for Dutch elm disease. No infected trees were found in Gloucester County. Counts of living elms were taken at four locations in Northumberland County to determine the percentage of trees suspected of being infected. The results of the survey were:

Location	U.T.M. grid	Regis no.	Total trees		
			Examined	Suspect Number	Percentage
Doaktown	1971515	767	152	7	4.6
Blissfield	1972516	770	157	7	4.5
Sevogle	2028521	842	56	8	14.3
Renous	2028518	871	83	0	0.0

Other Noteworthy Diseases

Organism	Hosts	Locality	Remarks
<i>Davisomyces ampla</i> (Davis) Darker Needle cast	Pine, jack	Grand Lake Road and Portage Lake Road	Light infections on 10% of the trees.

Organism	Cont'd	Hosts	Locality	Remarks
<u>Hypodermella</u> <u>laricis</u> Tub. Needle cast		Tamarack	Redmondville	First herberium specimen from Northumberland County. Less than 5% of fascicles infected.
<u>Peridermium</u> <u>harknessii</u> J. P. Moore Gall rust		Pine, jack	Grand Lake Road, Portage Lake, and Caraquet	Trace infections except at Caraquet where one tree was moderately infected.
<u>Taphrina</u> <u>robinsoniana</u> Gies. Catkin hypertrophy		Alder	Derby Jct. and Burnt Church	Common in scattered stands
<u>Uredinopsis</u> sp. Needle rust		Fir, balsam	Redmondville	Two needles per shoot were infected of the ten shoots examined.

Table 4-1. Spruce Budworm Larval Sampling Records at Permanent Sampling Stations in Northeastern New Brunswick, 1968

Location	Total specimens ^a	Mean per tree sample	Deviation from 1967
Gloucester County			
Bass River Road	4	1.3	+1.3
Bathurst	17	5.7	+5.4
Northumberland County			
Blackville (early)	250	83.3	+77.0
Parker (Parker Sta.)	187	62.3	+62.0
Renous	121	40.3	+3.6
Little Bartibog	8	2.7	+2.7
Carrolls	50	16.7	+5.4
Redmondville	4	1.3	+1.3

^a Each station consisted of three white spruce trees and was sampled once.

Table 4-2. Spruce Budworm Larval Sampling Records at Cooperators' Sampling Stations in Northeastern New Brunswick, 1968

Location	Total trees	Tree sp.	Total specimens	Av. per tree sample
Gloucester County				
Frank Hyde Bk.	3	bF	2	0.6
Lower Val Doucet	3	rS	2	.6
Rosehill	8	WS	12	1.5
Trembley	3	bF	1	.3
Northumberland County				
Blackville	1	sPop	3	0.3
Bradelbane	12	bF	92	7.7
	9	WS	195	21.7
Dunphy	6	WS	41	6.8
Fraser-Burchill Rd.	6	bF	25	4.2
Gregan	6	bF	6	1.0
	9	rS	5	.6
Mathewes Sett.	6	bF	27	4.5
	6	WS	28	4.7
	3	tL	3	1.0
McGraw Brook	12	bF	32	2.7
	12	rS	84	7.0
	3	eC	5	1.7
New Jersey	6	bF	19	3.2
	6	WS	5	.8
Parkers Hollow	6	bF	21	3.5
	6	rS	81	13.5
	1	WP	1	1.0
Rolf Road	3	WS	4	1.3
Wayerton	3	WS	6	2.0
St. Paul Road	7	bF	37	5.3
	8	WS	42	5.2
Kent County				
St Louis de Kent	9	bF	45	5.0
	6	WS	23	3.8

Table 4-3. European Spruce Sawfly Larval Sampling Records at Permanent Sampling Stations in Northeastern New Brunswick, 1968

Location	Sawfly larvae collected ^a	
	July 3-5	Sept. 11-19
Gloucester County		
Bass River Rd.	0	2
Bathurst	0	4
Northumberland County		
Blackville	6	0
Parker	12	1
Renous	0	0
Little Bartibog	0	0
Carrolls	0	0
Redmondville	4	1

^a Three white spruce trees sampled each time.

Table 4-4. European Spruce Sawfly Larval Sampling Records
at Cooperator's Sampling Stations in Northeastern
New Brunswick, 1968

Location	Total trees	Tree sp.	Total specimens	Larvae per tree sample
Gloucester County				
Lower Val Doucet	14	WS	3	0.2
Upper Nigadoo	6	WS	4	.7
Northumberland County				
Frank Hyde Brook	3	WS	2	0.7
New Jersey	3	WS	4	1.3
Rolf Rd.	3	WS	4	1.3
Kent County				
St. Louis	6	WS	16	2.7

Table 4-5. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Northeastern New Brunswick, 1967 and 1968

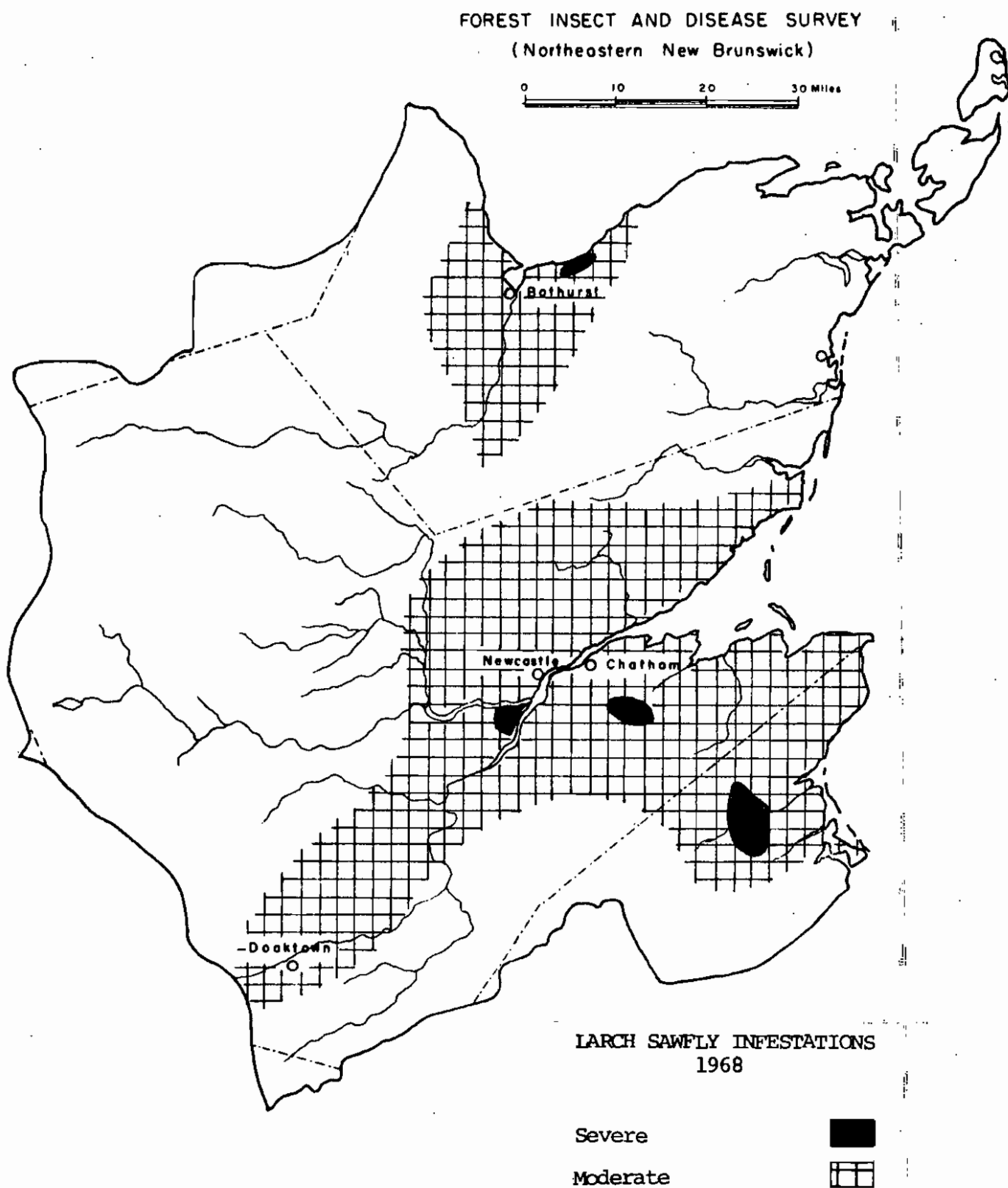
Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Gloucester County				
Six Roads	1.89	6.80	T	L
Tracadie	17.07	32.50	T	L-M
Pokeshaw	.63	4.03	T	L
Bathurst 7 mi.S	2.92	8.56	T	L
Northumberland Co.				
Bartibog Bridge	4.22	7.37	T	L
Redmondville	6.36	10.22	T	M
Little Bartibog	.93	4.02	T	M
Weaver Station	.93	.60	L	L
Derby Jct.	.94	1.34	T	M
Carrolls	.33	.53	T	L

^a T= Trace, L= Light, M= Moderate.

Table 4-6. Incidence of Hypoxylon Canker in Trembling Aspen in Northeastern New Brunswick, 1966, 1967, and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>1967</u>						
Gloucester County						
Bertrand	2034529	1056	160	6	11	10.6
Belledune Pt.	2028531	805	40	1	0	2.5
Northumberland County						
Rogersville	2032518	467	100	15	2	17.0
Doaktown	1971516	407	60	5	1	10.0
Red Bank	2028520	1030	40	4	4	20.0
Chaplin Road	2029522	1057	100	5	1	6.0
1967 Sub-totals and average			500	36	19	11.0
<u>1968</u>						
Gloucester County						
Bertrand	2034529	524	100	5	16	21.0
Upper Nigadoo	2029529	528	100	0	1	1.0
Caraquet	2035529	530	100	7	13	20.0
Lugar	2028528	1448	100	2	0	2.0
Pokemouche	2035527	1485	100	2	2	4.0
Bass River	2030527	1610	100	5	6	11.0
Key Anaconda Road	2029525	400	100	3	3	6.0
Bass River Road	2030527	326	100	18	9	27.0
Northumberland County						
Loggieville	2032521	533	100	6	11	17.0
Bartibog	2031523	398	100	3	0	3.0
44 mi. Bathurst Rd.	1970524	156	100	2	7	9.0
Bubar Bk.	1965523	271	100	0	12	12.0
Storytown	1971515	1487	100	4	0	4.0
Enclosure	2030520	1588	100	0	2	2.0
Renous	2028518	1611	100	1	0	1.0
Kent County						
St. Louis	2034517	112	100	9	4	13.0
Richibucto	2035516	856	100	3	8	11.0
1968 Sub-totals and average			1700	70	94	9.6
TOTALS to 1968 and average			2200	106	113	10.0

Figure 4-1



ANNUAL DISTRICT REPORT

SOUTHEASTERN NEW BRUNSWICK

AND

PRINCE EDWARD ISLAND

1968

by

C. D. MacCall

5.0 SOUTHEASTERN NEW BRUNSWICK AND PRINCE EDWARD ISLAND

(C. D. MacCall)

Introduction

Insects of major concern in the district in 1968 were the spruce budworm, birch casebearer, satin moth, larch casebearer, larch sawfly, and balsam gall midge. Marked increases occurred in the degrees of defoliation caused by spruce budworm and birch casebearer, and the satin moth infestation in aspen stands near Anagance spread eastward. Larch casebearer outbreaks occurred in eastern Prince Edward Island. Larch sawfly and balsam gall midge infestations continued in much the same areas and degrees of intensity as in 1967.

Tree diseases of note in 1968 included: the Dutch elm disease, found at three new locations in New Brunswick; needle rust infections, common on spruce and balsam fir; and frost, that killed the new shoots of balsam fir and white spruce regeneration at many places.

Insect collections by survey field staff totalled 468 and disease samples 245. Provincial forest service co-operators submitted 109 insect and 4 disease collections.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Spruce budworm larval numbers increased at eight sampling stations and decreased at one (Table 5-1). Average numbers of budworm larvae per tree from 23 samples taken by co-operators are listed in Table 5-2.

Moderate and severe defoliation of balsam fir occurred between Alma and Arnold Lake, on the Kingston peninsula, and in small patches in Queen's and northeastern Kings counties (Fig. 1-3). The approximate acreages of moderate and severe defoliation by counties were: St. John, 24,000; Queen's, 23,900; Albert, 14,000; Kings, 12,000; and Westmorland, 1,000. A few acres of moderate and severe defoliation also occurred in the small portions of Sunbury and Northumberland counties that fall into District 4. The loss of new foliage was light on 65,000 acres.

Spruce budworm egg masses were collected at 227 of the 233 locations sampled in southeastern New Brunswick and at 21 of the 30 points on Prince Edward Island.

Egg-mass numbers were high and defoliation of at least 70% of the 1969 foliage of balsam fir can be expected in the western half of southeastern New Brunswick north of Hampton, in Fundy National Park, and extending west to include part of the Northwest Salmon River, and on the Kingston peninsula. Severe defoliation can be expected also in small patches at Salmon River and St Martins, St John County; Lower Coverdale, Albert County; near Smith Lake, Westmorland County; and St Anthony, St Paul, Beersville, Normandie, and Harcourt, Kent County.

On Prince Edward Island, egg mass infestations were moderate and defoliation of 30% or more of the 1969 foliage of balsam fir can be expected.

at Cavendish, Goose River and Hermanville. Defoliation of less than 20% of the 1969 foliage can be expected in several balsam fir stands elsewhere.

Balsam Woolly Aphid, *Adelges piceae* (Ratz.)

Balsam fir branch tips collected during spruce budworm egg-mass surveys were examined for evidence of this aphid. Infestations were light or moderate at seven of the 233 locations examined in 1968, compared with 15 of 224 locations in 1967.

The low incidence of stem attacks continued in 1968 and the trees on two plots in Fundy National Park remained uninfested.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Defoliation of tamarack was again widespread but infestations were generally less severe. Many areas severely defoliated in 1967 were moderately infested in 1968. Ground and aerial surveys showed that moderate defoliation with small patches of severe occurred in Queen's, Kings, Westmorland, central St John, eastern Albert, and the southwestern tip of Kent counties (Fig. 1-5). Mortality of larch trees from successive attacks of sawfly occurred near Dorchester, east of St John, and on the Kingston peninsula.

On Prince Edward Island, moderate defoliation was observed on a few larch trees west of Portage, Prince County, and light at scattered points elsewhere.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Spruce sawfly populations remained at a low level in 1968. Average numbers of larvae per tree sampled at sampling stations are shown in Table 5-3.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

There was little changed from 1967 in the distribution and intensity of gall midge infestations. Estimates of the percentages of galled needles on the new shoots of balsam fir trees at 263 locations in New Brunswick showed that 70% or more of the needles were infested at the 26 places listed in the following table. On Prince Edward Island, infestations were light at scattered locations (Fig. 1-7).

New Brunswick

Albert County

Goose River Rd.
Near Parkindale
Chester

Kent County

St Anthony
Ward Corner
Near Coal Branch Lake
St Cyrille
St Fabien
Ste Irene

Kent County Cont'd

McLean
Near Pine Ridge
Emmerson
South of Rexton
East of Ste Nicolas
Jollietville

Kings County

North of Havelock

Queen's County

Near Hector Brook
East of Cherryvale

Westmorland County

Lutz Mountain
Price
Canaan Station
Canaan River
West of Canaan
North Branch
Dufourville
Malakoff

European Pine Shoot Moth, *Rhyacionia buoliana* Schiff

Shoot moth infestations were more prevalent in planted pines in central and eastern Prince Edward Island than elsewhere. Numbers of infested shoots per tree varied between four and eight on red pines up to 8 feet high at Goose River, 48 Roads, and North River. Collections taken prior to adult emergence were retained for parasite studies. In other areas, three infested shoots per 100 trees were found on young Austrian pines near Alberton, P. E. I., and a few red pines were lightly infested at Fundy National Park.

Birch Casebearer, *Coleophora fuscadinella* Zell.

Birch casebearer infestations increased from scattered light to moderate in central southeastern New Brunswick in 1967 to widespread moderate and severe in 1968. Severe foliar browning occurred in wire birch and white birch throughout a large area extending across southern Kent, Westmorland, the northern half of Albert, and eastern Kings and Queen's counties. On Prince Edward Island, defoliation was moderate near Wellington, Harrington, and Uigg (Fig.1-6).

Severe defoliation of alder occurred at Lower Jemseg, Queen's County, Collina, Kings County, and from Port Elgin to Cape Tormentine, Westmorland County.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

There was no noticeable change from 1967 in the status of the birch leaf miner. Small patches of severe foliage browning with associated areas of lesser defoliation occurred in wire birch and white birch stands in the central part of the district. Light infestations were common elsewhere.

Fall Webworm, *Hyphantria cunea* (Drury)

Population levels of the fall webworm, low since 1963, increased slightly in 1968. In addition to counts of webs along roadsides in the two areas listed below, scattered nests were observed at 17 widely separated points in the district.

Location	Distance in miles	Average nests/mile		
		1966	1967	1968
Sussex Bypass, N.B.	4.8	0.2	0.0	0.5
Tignish to Elmsdale, P.E.I.	11.0	1.0	2.4	5.8

Satin Moth, *Stilpnotia salicis* (L.)

Patches of moderate and severe defoliation by the satin moth occurred on trembling aspen and largetooth aspen in an area about 10 miles square between Anagance and Petitcodiac and south to Elgin. This was probably an extension of the outbreak that occurred near Anagance in 1967 and which was confined to about 15 acres. Defoliation was moderate to severe on ornamental poplars at Midland, Chipman, Buctouche, Youngs Cove, and Salisbury, N. B., and light at Murray River, P. E. I. Moderate to severe defoliation was recorded in 1967 on 12 Carolina poplars at Cascumpeque, P. E. I. Collection taken at that time contained diseased larvae. These trees were examined again in mid-June 1968. No larvae were found, defoliation was nil, and there was no evidence of parasites which have been common in other areas where infestations have subsided.

Larch casebearer, *Coleophora laricella* (Hbn.)

Moderate and severe larch casebearer outbreaks occurred in tamarack in Prince Edward Island from Lake Verde, Queens County, east to include the western half of Kings County. Light defoliation occurred in a small area near Miscouche, Prince County. Population levels remained low elsewhere in the district. The results of counts of overwintering larvae at 13 sampling stations and defoliation estimates taken in June are listed in Tables 5-4 and 5-5.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Forest tent caterpillar larvae were found in small numbers at seven locations in 1968 compared to two locations in 1967. Light defoliation of several red oak shade trees occurred at Riverview where defoliation was severe in 1967. Pupal parasitism at Riverview was 14% in 1968.

Sequential counts of egg masses were taken at five sampling stations. Positive results were obtained only at Herbert Siding where a light infestation is expected to occur in 1969.

Fall Cankerworm, *Alsophila pometaria* (Harr.)

A total of 32 larval collections of this looper were taken from various hardwood species. Collections by counties were: Kent (2), Kings (2), Queens (4), and Westmorland (9) in New Brunswick; and Kings (4), Prince (6), and Queens (4), in Prince Edward Island. Defoliation was very light.

Winter Moth, Operophtera brumata (L.)

Larvae were found in small numbers on basswood shade trees at Charlottetown and Marshfield, P. E. I. Defoliation was very light.

A Leaf Roller on Maple, Cenopsis pettitana (Rob.)

Infestations of leaf roller were light on red maple and sugar maple in central Kent County in 1968. A few rolled leaves could be found in most other parts of the district.

Ugly-nest Caterpillar, Archips cerasivoranus Fitch

Nests of this insect occurred in small numbers on roadside cherry bushes at several locations. A few nests submitted in August contained a microsporidian disease. Five egg-mass collections were taken early in the season.

Additional Species Collected

Numbers of common insects collected at permanent sampling stations are listed in Table 5-6.

Tree Diseases

Frost Injury

Frost injury to balsam fir and white spruce was widespread in southeastern New Brunswick and occurred at scattered locations on Prince Edward Island. Mortality of 75 to 100% of the new shoots on regeneration occurred in cut-over areas, plantations, and hedges in central Kent County. Many patches of less than 1 acre of these conifers elsewhere in southeastern New Brunswick had up to 50% of new shoots killed.

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

The known distribution of this disease was changed slightly in 1968 with the discovery for the first time of infected trees at Cambridge, Codys and Wiggins Cove. Infected and dead elms increased in number at Moncton and one recently infected tree was reported in Sussex where the disease has been present since 1966. An incidence count of living trees taken between Robertson Point and Youngs Cove, a distance of 13 miles, showed 43 healthy elms and one group of nine trees which were suspected of being infected.

Cephalosporium wilt occurred in elm trees at Hillsborough and Port Elgin, N. B. and at Mount Pleasant, P. E. I. where it caused foliage browning and dieback of about 10% of the crowns.

Hypoxylon Canker of Poplar, Hypoxylon mammatum (Wahl.) Miller

Cankered trees were present in most trembling aspen stands examined in the district. Counts of infected and non-infected trees were made in eight stands selected at random and in which the trees averaged

4 inches d.b.h. The number of trees infected varied from 2% at Goose River to 24% at Brookfield, P. E. I. (Table 5-7). The average for the district was 12%. A stand of largetooth aspen at Cocagne had one living tree infected in 60 examined. No infected trees were found in largetooth aspen stands examined near Moncton, N. B., and Murray River, P. E. I.

Needle Rusts

The incidence of needle rusts increased noticeably in 1968.

Infections of Chrysomyxa ledi de Bary and C. ledicola Lagh. were of moderate to severe intensity on the new needles of white spruce at Flat River, P. E. I. and Upper Pointe de Butte N. B., and light on a few black spruce trees near High Bank, P. E. I., and Cumberland Bay, N. B. Trace infections were observed on a few white spruce and red spruce trees at scattered locations elsewhere in the district.

Infections of C. ledi (de Bary) on white spruce cones at 10 locations varied from 1% to 60% with an average of 12% infected for all areas. A light infection of C. pirolata Wint. was observed on black spruce cones at Goose River, P. E. I.

Pucciniastrum epilobii Otth and P. goeppertianum (Kuehn) Kleb. infections were very light on new needles of balsam fir regeneration at numerous locations. Infected needles were submitted from 13 locations in southeastern New Brunswick and from five in Prince Edward Island. Witches' brooms caused by rust infections were of light intensity on blueberry at St. Martins and Fairfield, St. John County; and near Bennett Lake and on the Tower road, Albert County.

Other Noteworthy Diseases

Organism	Host	Locality	Remarks
Animal damage	Spruce, red and black Tamarack Fir, balsam	Southeastern New Brunswick	Porcupines caused partial or complete girdling of 5 to 50% of trees over one acre or less at scattered points.
<u>Ciborinia whetzellii</u> (Seav.) Seav. Ink spot of aspen	Aspen, trembling	Throughout district	Foliar browning light at several points.
<u>Cronartium comptoniae</u> Arth. Sweet fern blister rust	Pine, Jack	Berwick and Springdale, N. B.	4/100 trees infected 1/125 trees infected
<u>Cryptodiaporthe populea</u> (Sacc.) Butin Branch canker	Poplar, Lombardy and Carolina	5 locations in N.B. and 5 in P.E.I.	Branch mortality 5 to 20% on 1 to 5 trees at each location.

Other Noteworthy Diseases Cont'd

Organism	Host	Locality	Remarks
<u>Cytospora</u> sp. (Schw.) M. Sacc. Tip blight	Poplar, balsam and Lombardy	Buctouche, Elgin and Sussex Lombardy	Very light infections on few trees.
<u>Delphinella balsamea</u> (Waterm.) E. Muell. Tip blight	Fir, balsam	Alma, Albert County, Shepody road near park entrance and Londonderry, Kings County	Trace and light shoot mortality on less than 10% of trees on 1 acre or less.
<u>Dibotryon morbosum</u> (Schw.) Theiss- & Syd. Black knot	Cherry, pin	Throughout district	Current and previous infections common and light, occasionally severe.
<u>Gloeosporium apocryptum</u> Ell. & Ev. Anthracnose	Maple, sugar	Buctouche, N.B. and Souris, P.E.I.	Light infections on a few shade trees.
<u>Gloeosporium aridum</u> Ell. & Holw. Anthracnose	Ash, black	Cambridge and Robertson Point, Queens County, N.B.	Light infections on several trees.
<u>Guignardia aesculi</u> (PK.) V.B. Stew. Leaf blotch	Horse- chestnut	4 locations in P.E.I. and 3 in N.B.	Foliage browning moderate at Souris P.E.I. and light elsewhere.
<u>Melampsora epitea</u> Thuem. Leaf rust	Willow	Narrows and Mill Cove, Queens County, Meadow Brook, West. County and Buctouche, Kent County.	Light infections.
<u>Nectria coccinea</u> var. <u>faginata</u> Lohm. Wats & Ayers Beech bark disease	Beech	Throughout district	Light and moderate fruiting on few trees at 4 locations examined.
<u>Pucciniastrum vaccinii</u> (Wint.) Jorst. Needle rust	Hemlock, eastern	7 locations in N.B.	Less than 3 needles per shoot infected.

Other Noteworthy Diseases Cont'd

Organism	Host	Locality	Remarks
Storm damage	Pine, jack Spruce, red and black	Canaan Station Berwick, Springdale and Mechanic Settlement	10 to 20% of trees, on about 0.5 acre at each location, had broken stems and tops. Damage occurred in December 1967.
<u>Taphrina carnea</u> Johanson Leaf blister	Birch, yellow	Fundy National Park	Light discoloration of foliage on up to 50% of the trees in some stands.
<u>Venturia saliciperda</u> Nuesch. Willow blight	Willow	Edgetts Landing and Lutz Mountain, N.B. and St. Eleanor P.E.I.	Light and moderate shoot damage.
<u>Venturia tremulae</u> Aderh. Leaf and twig blight	Aspen trembling	8 locations in district	Trace and light infections on reproduction and sapling growth.

Table 5-1. Spruce Budworm Larval Sampling Records at Permanent Sampling Stations in Southeastern New Brunswick, 1968

Location	Total specimens ^a	Mean per tree sample	Deviation from 1967
Albert County			
Bennett Lake	81	27.0	-11.7
Shale Hill	7	2.3	+ 2.3
Hillside	25	8.3	+ 7.3
Kent County			
Salmon River Rd. ^b	19	6.3	+ 5.0
Salmon River Rd. ^c	150	50.0	-
Kings County			
Berwick	2	0.7	+ 0.7
Schoales Dam	30	10.0	+ 2.7
Queens County			
Robertson Point	28	9.3	+ 9.3
Narrows Road	8	2.7	+ 1.4
Sunbury County			
Salmon Creek	300	100.0	+90.7

^a Each station consisted of three white spruce except where indicated and was sampled once.

^b Sample on balsam fir, at Little Forks Cache.

^c Near County Line.

Table 5-2. Spruce Budworm Larval Sampling Records at Cooperators' Sampling Stations in Southeastern New Brunswick, 1968

Location	Total trees	Tree sp.	Total specimens	Mean per tree sample	Deviation from 1967
Kent County					
Buctouche	6	WS	17	2.8	+1.1
	6	bF	4	.6	+ .1
Kings County					
Schoales Dam	6	WS	13	2.1	-0.7
	3	bF	6	2.0	- .2
Queens County					
Cherryvale	6	WS	31	5.1	-4.2
Upper Gaspereau	6	WS	51	8.5	-1.2
	6	bF	176	29.3	-24.0
Westmorland County					
Fawcett	6	WS	7	1.1	-0.7
	9	bF	12	1.3	+0.8
Steeves Mountain	9	WS	58	6.4	-1.6
	6	bF	5	0.8	-10.2

Table 5-3. European Spruce Sawfly Larval Sampling Records at Permanent Sampling Stations in Southeastern New Brunswick, 1968

Location	Larvae per tree sampled ^a	
	June 25-July 5	Sept. 4-18
Albert County		
Bennett Lake	0.0	1.3
Shale Hill	.3	3.3
Kent County		
Salmon River Rd. ^b	0.0	1.7
Kings County		
Berwick	0.3	1.3
Schoales Dam	.7	6.7
Queens County		
Robertson Point	0.7	1.0 ^d
Narrows	1.0	3.3 ^d
Sunbury County		
Salmon Creek	1.3	1.7
Westmorland County		
Gayton	0.3	1.0

^a Three white spruce trees examined each time.

^b Near County line.

Table 5-4. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Southeastern New Brunswick, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Kent County				
Cocagne	2.84	0.86	T	T
Kings County				
Folkins	12.30	5.69	T	T
Hatfield Point	1.82	8.21	T	T
Queens County				
Coles Island	23.74	6.87	L	L
Goshen	10.55	10.08	T	T
New Canaan	24.23	7.41	L	L
Robertson Point	1.54	7.02	T	T
St. John County				
Garnet	0.0	1.67	N	N
Westmorland County				
Frosty Hollow	5.40	1.40	N	N

^a T= Trace, L= Light, N= Nil.

Table 5-5. Larch casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Prince Edward Island, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Kings County				
Pooles Corner	7.52	74.43	T	M
Prince County				
Miscouche	9.57	80.10	N	L-M
O'Leary	2.90	7.67	N	T
Queens County				
Milton	4.43	8.28	T	T

^a T= Trace, L= Light, M= Moderate, N= Nil.

Table 5-6. Common Insects Collected in Southeastern New Brunswick and on Prince Edward Island, 1968

Species	Host	Total larvae	Larvae per tree sample
Acleris variana (Fern.)	WS	34	1.1
	bF	1	.3
Caripeta divisata Wlk.	WS	4	.3
	bF	2	.7
	tL	1	.3
	jP	3	1.0
Choristoneura fumiferana (Clem.)	WS	870	12.9
	bF	222	20.1
Dioryctria reniculella Grote	WS	27	1.5
	bF	2	.3
Diprion hercyniae (Htg.)	WS	90	1.5
	rS	1	.3
	bF	3	1.5
Elaphria versicolor Grote	WS	5	.3
	bF	2	.3
Eupithecia filmata Pears.	WS	1	.3
Griselda radicana Wlshm	WS	1	.3
	rS	1	.3
Hydriomena divisoria Wlk.	WS	11	.8
Neodiprion abietis (Harr.)	WS	1	.3
	bF	1	.3

Table 5-7. Incidence of Hypoxylon Canker in Southeastern New Brunswick and Prince Edward Island in 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>New Brunswick</u>						
Kent County						
Cocagne South	2037512	365	100	4	3	7
Hebert Siding	2033512	123	100	4	15	19
Kings County						
South Branch	2032506	1631	100	6	3	9
Westmorland County						
Moncton	2035510	364	100	0	17	17
Sub-total and average			400	14	38	13
<u>Prince Edward Island</u>						
Kings County						
Murray River	2053509	325	100	6	5	11
Goose River	2053514	306	100	2	0	2
Prince County						
Portage	2041516	319	100	3	5	8
Queens County						
Brookfield	2047513	308	100	5	19	24
Sub-total and average			400	16	29	11

ANNUAL DISTRICT REPORT

WESTERN NOVA SCOTIA

1968

by

D. B. Marks

6.0 WESTERN NOVA SCOTIA

(D. B. Marks)

Introduction

Significant decreases occurred in population levels of the forest tent caterpillar, winter moth and fall cankerworm in 1968. Infestations of European pine shoot moth continued severe in Scots and red pine plantings throughout the Annapolis Valley and outbreaks occurred in Kings and Lunenburg counties. The status of other forest insect pests remained relatively unchanged from 1967.

Foliage diseases of maple, horsechestnut, poplar and willow were again prevalent throughout the district. A noticeable decline occurred in the intensity of ash rust and willow blight from that of recent past years. Shoestring root rot was collected from balsam fir in Kings and Lunenburg counties and from tamarack in Yarmouth County.

Insect collections by Survey staff totalled 452 and disease samples 231. A total of 27 herbarium records were submitted, of which three were the first collected in Nova Scotia. Co-operators submitted 182 collections, mostly of insects.

Insect Conditions

Balsam Woolly Aphid, *Adelges piceae* (Ratz.)

Severe stem attacks of this aphid occurred again on balsam fir in the Islands Park at Shelburne and caused tree mortality. In the remainder of the district only light stem and twig attacks occurred. The results of the reclassification of trees in two balsam plots are compared with those of 1966 and 1967 in the following table.

Location	Year	Percentage of trees in class ^{a,b}						Dead other causes
		1	2a	4a	4b	4c	5	
Medway River Annapolis Co.	1966	53.1	-	4.5	4.5	10.6	9.1	18.2
	1967	48.5	-	4.6	3.0	9.1	12.1	22.7
	1968	48.5	-	4.6	3.0	7.6	12.1	24.2
Rossignol Lake Queens Co.	1966	43.3	1.0	8.3	4.1	4.1	10.3	28.9
	1967	37.5	4.2	8.3	2.1	5.2	10.4	32.3
	1968	37.4	9.1	2.0	1.0	3.0	11.1	36.4

a See Appendix A, Section 1, for explanation of classes

b Classes 2b, 2c, 3a, and 3b contained no trees

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Spruce sawfly numbers increased slightly throughout the district. Better coverage of spruce stands was obtained through the establishment of an additional eighteen beating stations. The highest average numbers of sawfly larvae per tree sample occurred at Magnetic Hill, Annapolis County (10.5), Lansdowne, Digby County (9.3), and Gardner Mills (7.5) and Lily Pond (5.3), Yarmouth County (Tables 6-1 and 6-2).

Larch Casebearer, *Coleophora laricella* (Hbn.)

The results of winter sampling for larch casebearer larvae at fifteen sampling stations and defoliation estimates taken in early July are shown in Table 6-3. Population levels remained low and defoliation did not exceed trace.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

This sawfly could be found in most tamarack stands throughout western Nova Scotia (Table 6-4). The boundaries of severe defoliation in Digby and Shelburne counties remained unchanged from 1967 (Fig. 6-1). A severe infestation occurred again on ornamental European larch trees at the Research Station in Kentville where complete defoliation resulted. Conditions by counties were:

Annapolis.--Light defoliation occurred again in mixed coniferous stands south of Perott Settlement and at nearby Lake La Rose.

Digby.--Moderate and severe infestations occurred in much the same areas as in 1967. Scattered patches of moderate to severe defoliation occurred at Weymouth North, North Range, 4 miles east of Riverdale, south of St. Bernard, near Doyle Lake Brook and on the New France road. Elsewhere in the county light defoliation persisted in small scattered patches.

Kings.--A severe infestation persisted on ornamental larch trees on the grounds of the Kentville Research Station. Elsewhere in the County light defoliation occurred at South Alton, East Hall's Harbour, Evangeline Beach, the junction of the Ross Creek and Mountain roads and in the Country Home Woodlot, west of Kentville.

Lunenburg.--As in 1967, the occurrence of sawfly larvae was widespread but population levels declined slightly. Light defoliation of scattered trees occurred west of Martin River, north of New Ross at Harriston Mill Yard, and at Aldersville near the Kings County line.

Queens.--Light infestations persisted at Danesville and in areas adjacent to the Buckfield road 1 mile west of the La Belle road junction.

Shelburne.--Severe defoliation of tamarack occurred northeast of Welshtown near Birchtown Lake in the same area severely infested in 1967. Scattered trees in mixed stands along the Upper Clyde - Middle Ohio road were lightly defoliated. Small numbers of utilized shoots occurred throughout the remainder of the County but defoliation was negligible.

Yarmouth.--Light defoliation occurred at numerous widely separated locations.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Larval populations of this budworm continued at very low levels with only three larvae being taken; two from balsam fir 5 miles north of Kemptville, Yarmouth County, and one from balsam fir at Chester Grant, Lunenburg County. Numbers are expected to increase substantially in 1969 along the North Mountain area of Annapolis and Kings counties as indicated by high egg-mass counts in 1968 (Table 6-5 and Fig. 6-2).

Balsam Gall Midge, Dasineura balsamicola (Lint.)

Balsam gall midge infestations were light at Jeremy Bay, Annapolis County; Gaspereau Lake, Kings County; Chester Grant, Lunenburg County; Harmony Lake Road, Queens County; and 4 miles south of Lake Ellenwood, Yarmouth County. Occasional galled needles occurred elsewhere in the district.

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

This introduced insect continued to be a serious pest, and caused various degrees of damage to Scots pine and red pine plantings throughout the Annapolis Valley. Scattered infestations also continued in Lunenburg and Yarmouth counties. An outbreak of shoot moth occurred in Clairemont Park near Kingston where the new growth on practically all young Scots pine and red pine trees were infested. An infestation occurred also at Conquerall Bank, Lunenburg County, where 5000 red pine trees 3 feet in height had all leaders killed by this insect.

Winter Moth, Operophtera brumata (L.) and
Fall Cankerworm, Alsophila pometaria (Harr.)

Estimates of defoliation of red oak indicated a sharp decrease from 1967 in population levels of winter moth and fall cankerworm. No new outbreaks occurred in forest stands and with the exception of the

Bridgewater area, infestations collapsed in all locations where they were reported in 1967 (Figures 6-3 and 6-4). With few exceptions both species were present in endemic numbers throughout the district, but winter moth slightly outnumbered fall cankerworm on shade trees in towns and villages. Winter moth were also relatively more numerous on unsprayed apple orchards in Kings County. The percentages of each species found on red oak at sampling stations are shown in Table 6-6, and at random locations in Table 6-7. Conditions by counties were:

Annapolis.--Moderate defoliation of about 100 red oak trees occurred in the center of the 1967 severe cankerworm infestation at Lequille. Defoliation was trace or light near Mulgrave, Mud and Munroe Lakes, and Lequille, where severe infestations of mainly cankerworm occurred in 1967. Small numbers of winter moth caused light defoliation of white elms in Lawrencetown, Bridgetown and Annapolis Royal. Elsewhere in the County endemic numbers of both species caused only a trace of defoliation.

Digby.--Both species occurred in small numbers throughout the County. Defoliation did not exceed trace. Fall cankerworm occurred on red oak at Bear River and winter moth on scattered apple trees on the Pines Hotel property near Digby.

Kings.--Population levels of winter moth varied throughout the County. A few mixed populations occurred but in all cases fall cankerworm numbers were low. The only severe defoliation found was caused by winter moth and occurred in an apple orchard on the headland south of Paddy Island. Moderate defoliation, attributed entirely to winter moth, occurred at Upper Dyke in an unsprayed apple orchard. Winter moth caused light defoliation of shade trees at Hantsport, Wolfville, Habitant, and Grand Pre. Mixed populations caused a trace of defoliation at Aylesford, Kentville, and Kings-ton. The infestation of cankerworm, severe in 1967 near Gaspereau Lake, apparently collapsed and only a trace of defoliation occurred.

Lunenburg.--Red oak trees in the Bridgewater area were severely defoliated for the second consecutive year, mainly by cankerworm. Two separate infestations occurred, one north of Bridgewater on the west side of the La Have River near Cookville and the second east of the La Have River near Dayspring. Elsewhere in the County the many widely scattered infestations of fall cankerworm reported in 1966 and 1967 apparently collapsed, and only a trace of defoliation occurred in 1968. Winter moth populations were at low levels throughout forested areas of the County, but this species caused moderate defoliation of scattered apple trees in Chester and trace defoliation of deciduous shade trees in Mahone Bay, Lunenburg, and Bridgewater.

Queens.--Fall cankerworm caused moderate defoliation of red oak on an island and adjacent peninsula near the north end of Molega Lake and light

defoliation 2 miles west of Liverpool on Highway 3. Mixed populations of mainly cankerworm caused moderate defoliation at Pleasantfield. Elsewhere in the County the 1967 cankerworm infestations collapsed and only trace defoliation was observed. Small numbers of winter moth caused light defoliation of shade trees in Fort Point Park at Liverpool and trace defoliation of white elm trees in South Brookfield.

Shelburne.--The many cankerworm infestations reported in 1967 collapsed leaving only small numbers of larvae throughout the County. Aerial surveys of areas defoliated in 1966 and 1967 showed that red oak had thin crowns probably the result of twig and branch mortality, a typical condition after repeated defoliation by this insect. Winter moth population levels were low throughout the County except at Shelburne where moderate defoliation of elms occurred.

Yarmouth.-- Light defoliation of scattered apple trees by the winter moth occurred at Hebron and in the N.S.L.F. park near the Tusket River bridge. Elsewhere in the County only one or two larvae of either species were found at widely separated locations.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Patches of moderate and severe browning of wire and white birch foliage occurred throughout the district. Locations where defoliation estimates were taken and the degree of foliar browning observed are listed in Table 6-8.

Birch Casebearer, Coleophora fuscedinella (Zell.)

This casebearer completely defoliated a 20-acre stand of white birch at Shaw's Point near Clementsport, Annapolis County. Defoliation varied from trace to moderate in the Digby Neck area and along North Mountain from Granville Ferry to Blomidon. Small numbers of larvae were found elsewhere in the district.

Spring Cankerworm, Paleacrita vernata (Peck.)

Infestation pockets persisted in Kentville where this insect caused light to moderate defoliation. Elsewhere in the district individual larvae were found in association with fall cankerworm and/or winter moth at Shelburne and Aylesford. The infestation at the Kentville Research Station, light in 1967, terminated following the application of insecticide.

Root Collar Weevil, Hylobius sp.

Red and lodgepole pines in the Beaver Dam Lake plantation, Shelburne County, were attacked by root collar weevil. About 25 trees of each species were killed and other trees were in a weakened condition. Root collar weevils also killed two white pine trees near Gold River.

Other Noteworthy Insects

Insect	Host	Location	Remarks
<u>Fenusa ulmi</u> Sund. Elm leaf miner	Elm	Wolfville, Port Williams, and Church Street, West Paradise Kentville and west of Port Williams	Foliar browning severe for fifth consecutive year. Severe on Morse Estate for second year. New infestations.
<u>Malacosoma disstria</u> Hbn. Forest tent caterpillar	Oak, red	Bridgewater and Kingston Hortonville, Kentville and Lunenburg	Infestations of 1967 collapsed leaving only scattered colonies. Scattered colonies only.
<u>Neodiprion abietis</u> complex Balsam fir sawfly	Fir, balsam	Annapolis, Digby and Queens counties	Trace defoliation only.
<u>Stilpnotia salicis</u> (L.) Satin moth	Poplar, silver	12 locations in Annapolis Valley from Wolfville to Digby, and at Bridgewater	Severe defoliation usually confined to scattered ornamentals.

Tree Diseases

Shoestring Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kummer

The presence of this fungus in western Nova Scotia was confirmed in 1968. Dead trees occurred at three locations: approximately 100 balsam fir were killed in patches over a 10-acre area in a Christmas tree management plot at New Ross; one balsam fir was killed near the Salmon Tail River bridge, Kings County; and two dead tamarack trees at Mespark Lake, Yarmouth County, exhibited typical symptoms with resin flow from basal cankers.

Sweetfern Blister Rust, *Cronartium comptoniae* Arth.

Counts of infected pine stems were made in two plantations in Shelburne County and one in Queens. Near the Roseway River on the Silvery Lake Road, 5% of 1500 short leaf pine trees showed rust symptoms. At Beaver Dam Lake 22% of the jack pine examined were infected, and at South Brookfield, 16%.

Globose Gall Rust, *Peridermium harknessii* J. P. Moore

This disease has resulted in unsightly trees with heavy gall formations, tufted foliage and branch mortality at two locations in the district. An average of five galls per branch occurred on 5% of the trees in a Scots pine shelter belt on a golf course near Kentville and two galls per branch on 7% of the Scots pines in a shelter belt at Mahone Bay.

This rust is known to occur on scattered trees in Annapolis, Kings, Lunenburg, and Queens counties.

Chlorotic Condition of Red Spruce Foliage

This condition continued to occur throughout the district. Natural shedding of spruce needles together with needle cast fungi were responsible for varying degrees of red foliage. Dieback, not normally associated with either natural shedding or needle cast, has occurred following the chlorotic condition. Permanent plots were established for a study of decadence of tagged trees.

Hypoxyylon Canker of Poplar, *Hypoxyylon mammatum* (Wahl.) Miller

Symptoms of this disease occurred on trembling aspen in most stands throughout the district. The results of counts taken in 1966 and 1968 to determine the infection impact of this fungus on trembling and largetooth aspen are shown in Tables 6-9 and 6-10.

The highest percentages of infected trembling aspen occurred in Kings and Shelburne counties where cankers were found on 40% or more of the trees. At Coldbrook, Kings County, 98% of largetooth aspen examined were infected. The averages for the district were 30% of trembling aspen and 57% of largetooth aspen infected.

Anthracnose of Hardwood

Gloeosporium apocryptum Ell. & Ev. Varying degrees of leaf discoloration occurred on scattered maples in most villages and towns in western Nova Scotia. Severe foliar browning of ornamental and roadside maples occurred through the Annapolis Valley. Only traces of these symptoms were observed under forest conditions.

Gloeosporium aridum Ell. & Holw. This fungus caused moderate leaf browning on several white ash near Habitant and trace infections on white ash in a mixed stand on the Parkers Cove Road, Annapolis County, and in Wolfville where moderate discoloration occurred in 1967.

Gloeosporium fagicola Pass. Anthracnose infections were of moderate incidence and intensity along roadsides near the junction of Highway 1 and the New Ross Road. All beech foliage on scattered trees in a mixed stand at Jeremy Bay, Kejimikujik National Park, showed traces of browning.

Leaf Blotch of Horse-chestnut, Guignardia aesculi (Pk.) V.B. Stewart

This fungus occurred on all horse-chestnut trees in the district. Severe leaf blotching occurred on almost all host trees at Plympton and Tiverton Village, Digby County, and moderate on most horse-chestnut at Grand Pre, Annapolis Royal, and Westport Village on Brier Island.

Beech Bark Disease, Cryptococcus fagi (Baer.) and Nectria coccinea var. faginata Lohm. Wats. & Ayers

Little change from 1967 occurred in the condition of beech trees on plots at Annis Lake and Bayview (Table 6-11).

Attacks of the beech scale, severe in recent years at South Milford, Annapolis County and 10 Mile Lake, Queens County, diminished to trace in 1968. Elsewhere in the district infestations were trace to light.

Other Noteworthy Diseases

Organism and disease	Host	Location	Remarks
<u>Ceratocystis ulmi</u> (Buism.) C. Moreau Dutch elm disease	Elm	Western Nova Scotia	No infected trees found during extensive scouting
<u>Cronartium ribicola</u> J.C. Fischer White pine blister rust	Pine white	Lunenburg, Queens, and Kings counties	Counts of infected trees taken at 5 locations
<u>Venturia saliciperda</u> Nuesch and	Willow	Western Nova Scotia	Intensity of infections decreased from 1967.
<u>Physalospora miyabeana</u> Fukushi Willow blight			Foliar blight moderate on most willows at Wolfville and severe on scattered trees near Digby

Table 6-1. European Spruce Sawfly Larval Sampling Records at
Permanent Sampling Stations in Western Nova
Scotia, 1968

Location	Tree sp.	Sawfly larvae collected ^a	
		July 4-13	Sept. 6-30
Annapolis County			
Lequille	WS	3	17
Round Hill	WS	18	10
Magnetic Hill	WS	13	50
Mt. Hanly	WS	2	4
Parker's Cove	WS	5	2
Digby County			
Broad Cove	WS	3	3
Lansdowne	WS	25	31
Barton	rS	3	19
Thibault Road	rS	10	16
Patrice Road	rS	3	9
Kings County			
South Alton	WS	9	2
Harbourville	WS	0	2
Blomidon	WS	8	10
Hall's Harbour	WS	3	9
Bishopville	WS	1	9
Lunenburg County			
Chelsea	rS	1	5
Bezanson Lake	WS	5	4
Goat Lake	WS	10	0
Goat Lake	rS	2	2
Queens County			
Brooklyn	rS	1	6
Beech Hill	rS	8	13
Rossignol Road	WS	4	6
Rossignol Road	rS	1	2
Pleasant River	WS	3	4
Shelburne County			
Silvery Lake Road	rS	2	11
Upper Ohio	rS	4	8
Beaver Dam Lake	WS	3	17
Yarmouth County			
Forest Glen	WS	5	15
Gardner Mills	WS	13	32
Skinner Lake	rS	2	24
Lily Pond	WS	3	29
East Kemptville	WS	4	9

^a Three trees sampled each time.

Table 6-2. European Spruce Sawfly Larval Sampling Records at Co-operator's Sampling Stations in Western Nova Scotia, 1968

Location	Tree sp.	Sawfly larvae collected ^a			
		June	July	Aug.	Sept.
Annapolis County					
Springfield ^b	WS	1	10	2	9
Digby County					
Lake Jolly 2 mi. W	WS	10	9	3	1
Riverdale 4 mi. E	RS	1	-	-	-
Kings County					
Lake George Access Rd.	RS	1	4	-	-
Lake Paul Highway	RS	3	-	-	-
Lunenburg County					
Croft Road at Crescent Beach	WS	-	5	-	-
Chester Grant near Fire Depot	RS	1	-	-	-
West Clifford	RS	-	1	-	-
Queens County					
Milton ^c	RS	1	1	-	-
Yarmouth County					
Kemptville r mi. N.	WS	1	3	-	-
Lake Ellenwood 4 mi. S.	WS	1	1	-	-

^a Three trees sampled each time.

^b 7 miles N on Route 10.

^c 6 miles N on Route 8.

Table 6-3. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Western Nova Scotia, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Annapolis County				
New Albany	0.6	0.6	T	T
South Milford	.0	.3	N	T
Digby County				
Bloomfield	0.3	0.0	T	N
Springdale	.0	.0	T	N
Kings County				
Blue Mountain	1.9	1.2	T	T
Aylesford	.6	1.8	L	L
Lunenburg County				
East River	0.0	1.5	T	T
Bridgewater	.0	.0	N	T
Danesville	0.3	.0	T	T
Queens County				
Greenfield	1.8	4.3	T	T
Shelburne County				
Barrington	0.0	0.9	N	T
Allendale	.0	.3	T	T
Yarmouth County				
Pleasant Valley	64.7	1.7	L	T
Chebogue	.0	.0	N	N
Pubnico	1.4	.0	T	T

^a T= Trace, L= Light, N= Nil.

Table 6-4. Larch Sawfly Defoliation Estimates in Western Nova Scotia, 1968

Location	Defoliation ^a
Annapolis County	
Perotte Settlement, 3 mi. S.	T
Lake LaRose	T
Digby County	
Riverdale, 4 mi. E.	M
Roxville, 1 mi. S. Marshallstown Rd.	T
Rossway, N. side Route 17	M
North Range School grounds	M
Weymouth North	M
S. of St. Bernard near Well Jct.	M
Doyle Lake Brook on New France Rd.	S
Hassett Graveyard	T
New Tusket	T
Kings County	
East Halls Harbour	T
Country Home Woodlot	T
Acadian Tent Village	T
Blomidon (Ross Creek & Mtn. Road Jct.)	T
Kentville Research Station	S
South Alton, 0.3 mi. S.	T
Lunenburg County	
Gravel Pit Rd., W. of Martin River	T
New Ross Village, N. on Route 12	T
Harriston Mill Yard	T
Aldersville, W. side of Route 12	T
Queens County	
Danesville near County Line	T
Shelburne County	
Upper Clyde, 1 mi. N.	T
Welshtown	S
Yarmouth County	
Richfield near County Line	T
East Pubnico on Oak Park Road	T
Argyle Head	T
Mespark Lake Road, W. of N.W. Cove	T
Springhaven, 0.5 mi. W.	T
Lake Ellenwood, 4.5 mi. S.	T

^a L=Light (10 - 20%), M=Moderate (30 - 60%), S=Severe (70 - 100%),
T=Trace (0 - 5%).

Table 6-5. Spruce Budworm Egg-mass Counts per 100 sq. ft. of Balsam Fir Foliage in Western Nova Scotia, 1968

Location	Foliage examined in 1968, sq. ft.	Sound egg masses per 100 sq. ft.	
		1967	1968
<hr/>			
Annapolis County			
Inglisville	15.4	- ^a	243
Lequille, 1.4 mi.S.	14.6	0	73
Magnetic Hill	9.0	-	12
Middleton Reservoir	4.8	33	438
Stronach Mountain	3.5	-	909
Digby County			
Smiths Cove	6.9	0	30
Kings County			
Amethyst Cove	6.8	-	18
Black Rock	13.6	0	115
Blue Mountain	8.5	0	58
Look Off	10.5	-	0
Morristown, 2.5 mi.S.	10.1	-	0
Viewmount	13.7	-	90
Lunenburg County			
Goat Lake	10.5	0	20
Meisners Section	9.4	0	0
Rhodenizer, at Rte.#10	8.5	0	0
Queens County			
Jct. Harmony and McGowan Lake rds.	7.3	0	30
Rte. #8 at Townsite rd.	8.4	0	13

Table 6-6. Infestation Intensities of Winter Moth and Fall Cankerworm at Red Oak Sampling Stations in Western Nova Scotia, 1962-1968

Location	Percentage by species, 1968		Infestation class ^a							
	Winter moth	Fall cankerworm	62	63	64	65	66	67	68	
<hr/>										
Lunenburg County										
Cookville	0	100	L	N	N	L	L	L	L	
New Germany	0	0	L	L	N	L	L	N	N	
West Northfield	0	100	L	L	N	L	L	N	L	
Chester Basin	0	100	L	L	N	L	L	L	L	
Mahone Bay	0	0	L	L	N	-	L	N	N	
<hr/>										
Queens County										
Mill Village Rd.	0	100	L	L	N	L	L	N	L	
Mill Village	0	0	M	L	N	L	L	L	N	
Pleasant River	100	0	L	N	N	L	N	L	L	
Middledale, 3 mi. N.	5	95	L	L	-	L	M	S	M	

^a N=Nil, L=Light (10 - 20%), M=Moderate (30 - 60%), S=Severe (70 - 100%), - = No record.

Table 6-7. Proportions of Winter Moth and Fall Cankerworm Larvae Present in Random Hand-picked Samples in Western Nova Scotia, 1968

Location	Host	Percentage of species present		Defoliation ^a
		Winter moth	Fall cankerworm	
Annapolis County				
Lawrencetown on Main St.	wE	100	0	T
Bridgetown on Main St.	wE	100	0	T
Annapolis Royal	wE	100	0	T
Lake LaRose Rd.	rO	0	100	T
Digby County				
Bear River Village	rO	0	100	T
Pines Hotel Property	Ap	100	0	T
Kings County				
Kingston on Main St.	rM	50	50	T
Hantsport at County Line	bPo	100	0	L
Grand Pre, DeWolf Property	wE	100	0	L
Wolfville, Acadia Campus	wE	100	0	L
Habitant Graveyard	rM	100	0	L
Blomidon Look Off	Ap	100	0	T
Kentville on E. Main St.	rO	91	9	L
Upper Dyke, Vaughn Henshaw Property	Ap	100	0	M
Lunenburg				
Dayspring, E. of Transport Wharf	rO	0	100	S
Beech Hill, 3.6 mi. N. of Route 3	rM	0	100	T
New Elm, near Union Church	rM	0	100	L
Mill Lake Rd. and Route 3 Jct.	Ap	0	100	T
Chester Causeway and Bridge	Ap	100	0	M
Lunenburg, Bluenose Golf Course	Ap	100	0	T
Chester Basin	rO	0	100	T
Queens				
Liverpool, 2 mi. W. on Route 3	rM	0	100	L
Liverpool, Fort Point Park	wE	100	0	L
Shelburne				
Shelburne, Main St.	Ap	100	0	M
Jordan Falls, 4 mi. E. on 9 mi. Road	rM	20	80	L

Table 6-7. .. Continued.

Location	Host	Percentage of Species present		Defoliation ^a
		Winter moth	Fall cankerworm	
Yarmouth				
Hebron Corner near P.O.	Ap	100	0	T
N.S.L.F. Park Tusket River Bridge	Ap	100	0	L

^a T=Trace (up to 5%), L=Light (10 - 20%), M=Moderate (30 - 60%),
S=Severe (70 - 100%).

Table 6-8. Classification of Browning of Wire Birch
Foliage by the Birch Leaf Miner in
Western Nova Scotia, 1968.

Location	Intensity ^a
Annapolis County	
Tupperville	S
Granville Ferry	S
Deep Brook	M
Hampton	M
Inglisville	S
Lawrencetown	S
Albany Cross	S
Digby County	
Corberrie	L
Salmon River	M
Grosses Coques	M
Smiths' Cove	S
Kings County	
Kentville	S
Etna	S
Lake George	M
Gaspereau Lake, Route 12	M
Aylesford	S
Harborville	M
Lunenburg County	
Seffernville	M
Forties Settlement	M
East River	M
Chester Basin	S
Mahone Bay	S
Blockhouse	L
Italy Cross	M
Baker Settlement	S
New Germany	L
Queens County	
Port Mouton	L
Milton	M
Middlefield	L
West Caledonia	S
Pleasant River	M
Shelburne County	
Jordan Falls	L
Birchtown	L
Upper Ohio	S
Clyde River on Route 3	M

Table 6-8. Continued.

Location	Intensity ^a
Yarmouth County	
Brazil Lake	M
Hebron	L
North Kemptville	M
East Kemptville	S
Pearl Lake	S
Carleton Corner	M
Mespark Lake Rd.	M
Great Pubnico Lake	S

^a L=Light, M=Moderate, S=Severe

Table 6-9. Incidence of Hypoxylon Canker in Trembling Aspen in Western Nova Scotia, 1966, and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>1966</u>						
Annapolis County						
Middleton	2033497	66-560	100	8	21	29
Kings County						
Coldbrook	2037499	66-944	105	32	19	47
2 miles west of White Rock	2038498	66-1099	100	26	17	43
Sub-totals 1966 and average			305	66	57	40
<u>1968</u>						
Annapolis County						
New Albany, Trout Lake	2033496		110	23	3	24
Digby County						
Broad Cove	2027494		60	7	1	13
Lunenburg County						
Aldersville	2038496		103	21	9	28
Queens County						
New Elm Rd., Pleasant River	2035492		100	16	0	16
Eighteen Mile Brook	2034490		76	12	4	21
Shelburne County						
Roseway Lake	2030489		100	28	13	41
Sub-totals 1968 and average			549	107	30	25
TOTAL to 1968 and average			854	173	87	30

Table 6-10. Incidence of Hypoxylon Canker in Largetooth Aspen in Western Nova Scotia, 1967

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>1967</u>						
Kings County						
Centreville	2037499	67-2-0199	34	16	0	47
Coldbrook	2037499	67-2-0857	120	10	108	98
Queens County						
1 mile east of Mill Villiage	2037489	67-2-0928	100	8	2	10
TOTALS 1967 and average			254	34	110	57

Table 6-11. Condition of Trees on Beech Bark Disease Plots in Western Nova Scotia, 1964 to 1968

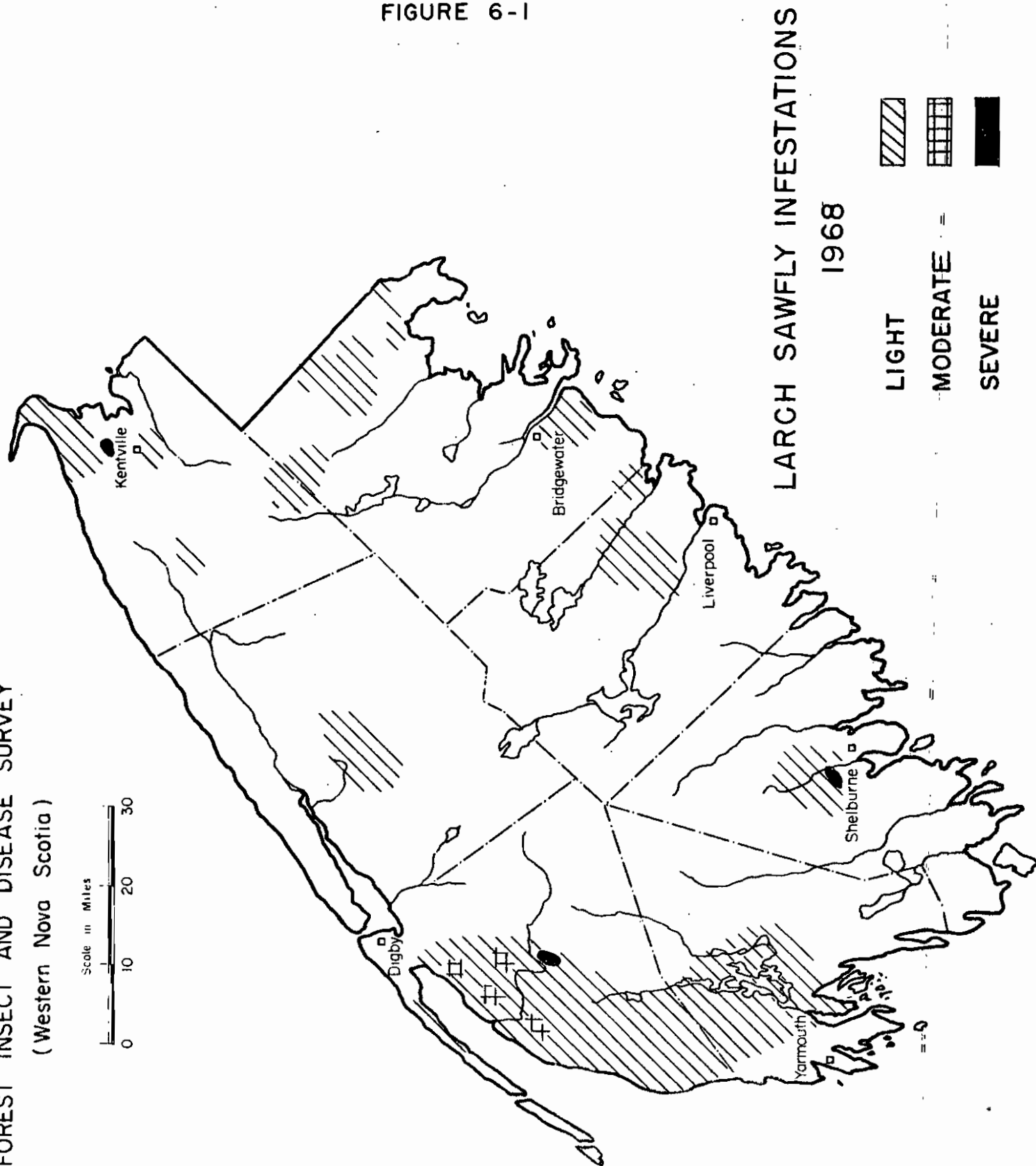
Location	Date	Percentage of trees in class ^a						Dead other causes
		1	2	4	5B	5C	6	
Queens County								
Annis Lake	1964	0.0	0.0	11.2	69.8	0.9	15.6	2.6
	1965	.0	.0	12.9	63.8	2.6	18.1	2.6
	1966	.0	.0	11.2	58.6	6.0	21.6	2.6
	1967	.0	.0	11.2	55.2	6.9	24.1	2.6
	1968	.0	.0	9.5	51.7	10.3	25.9	2.6
Digby County								
Bayview	1964	1.3	15.0	5.0	77.5	0.0	1.3	0.0
	1965	1.3	13.7	6.2	77.5	.0	1.3	.0 ^b
	1966	.0	6.3	6.3	61.2	.0	3.7	22.5
	1967	.0	3.8	6.2	61.3	.0	6.2	22.5
	1968	.0	1.3	3.7	61.3	2.4	8.8	22.5

^aClasses 3 and 5a contained no trees.

^b18 trees cut.

FOREST INSECT AND DISEASE SURVEY
(Western Nova Scotia)

FIGURE 6-1



FOREST INSECT AND DISEASE SURVEY (Western Nova Scotia)

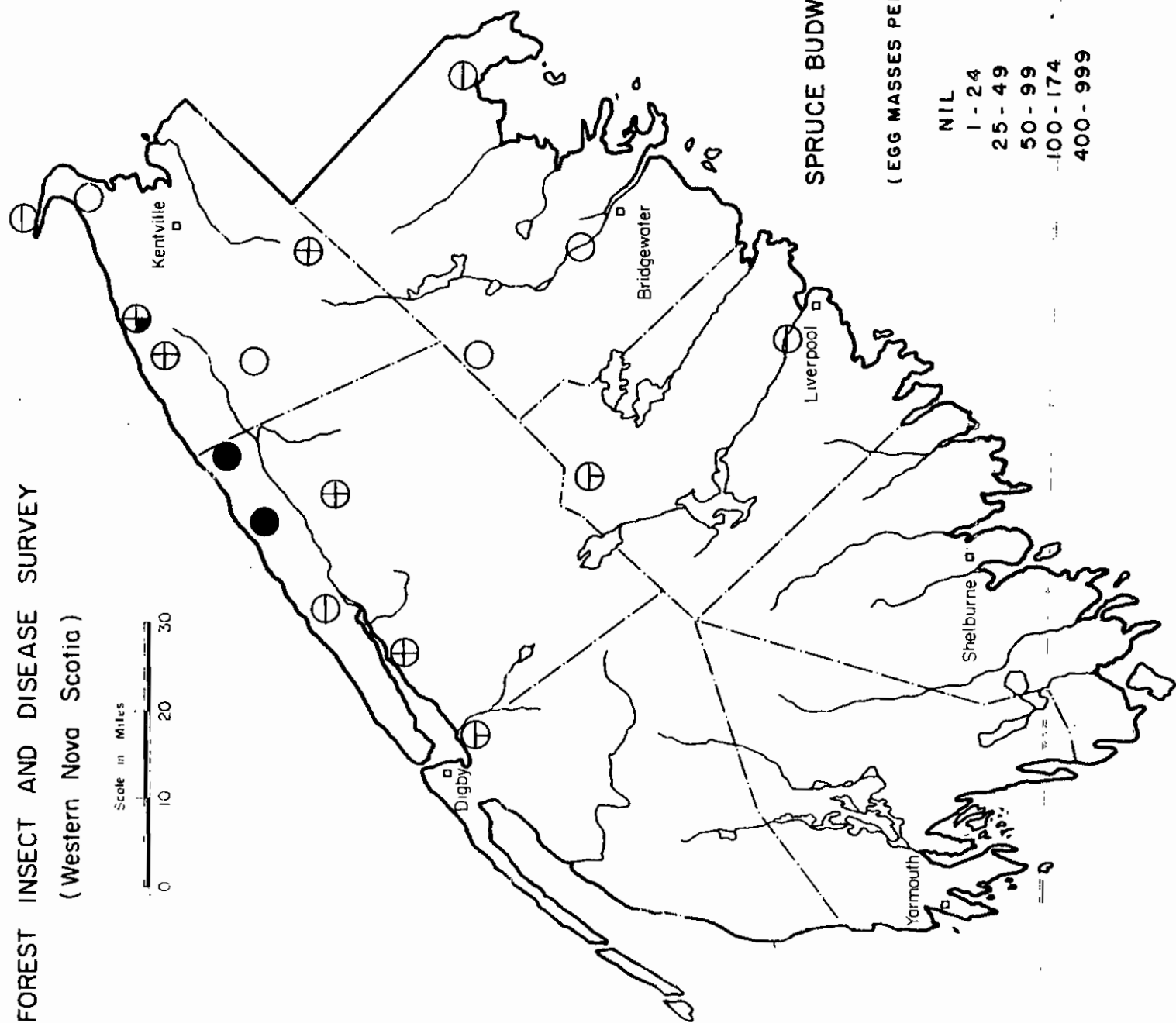


FIGURE 6-2

FOREST INSECT AND DISEASE SURVEY
(Western Nova Scotia)

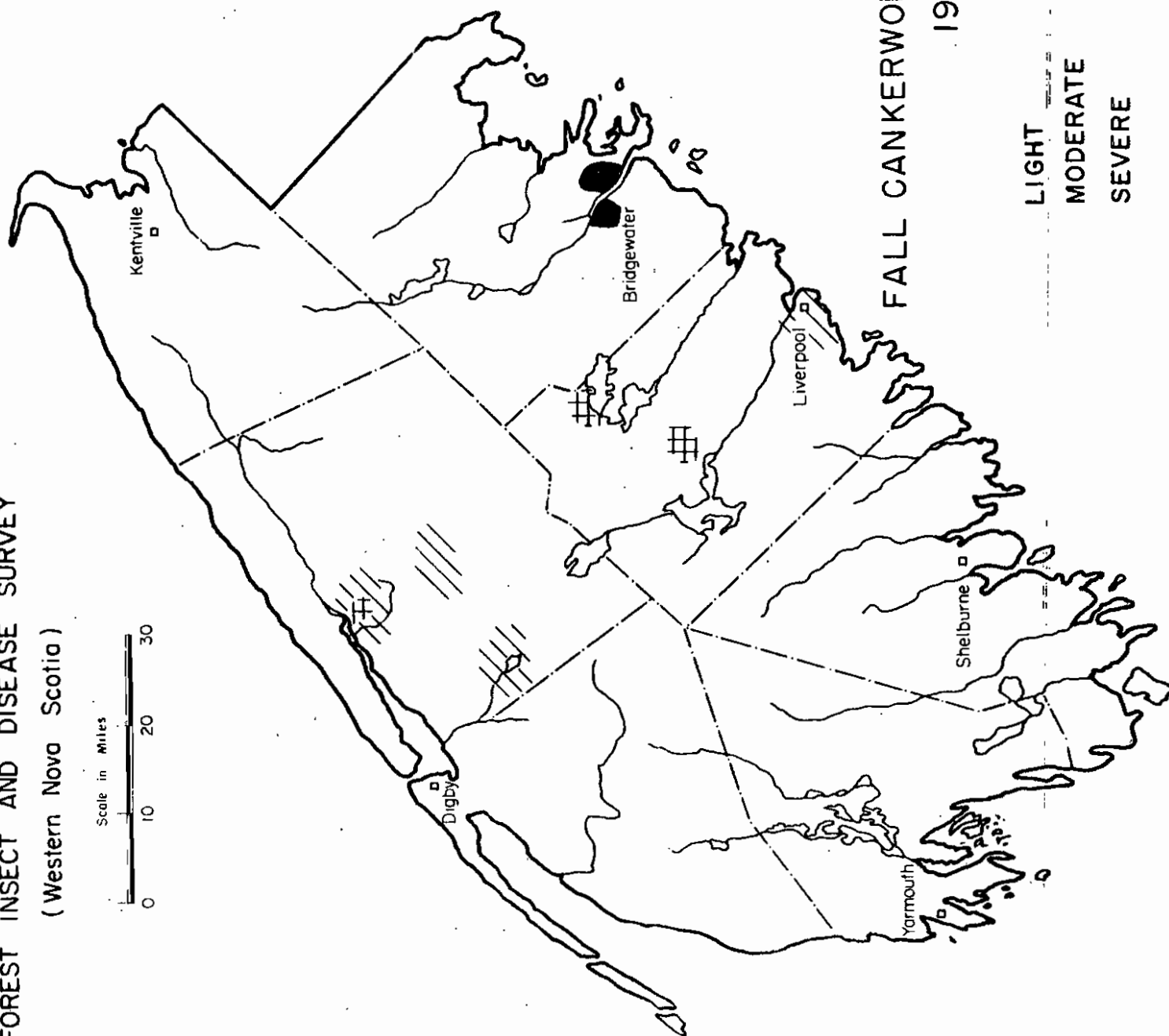
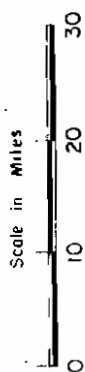


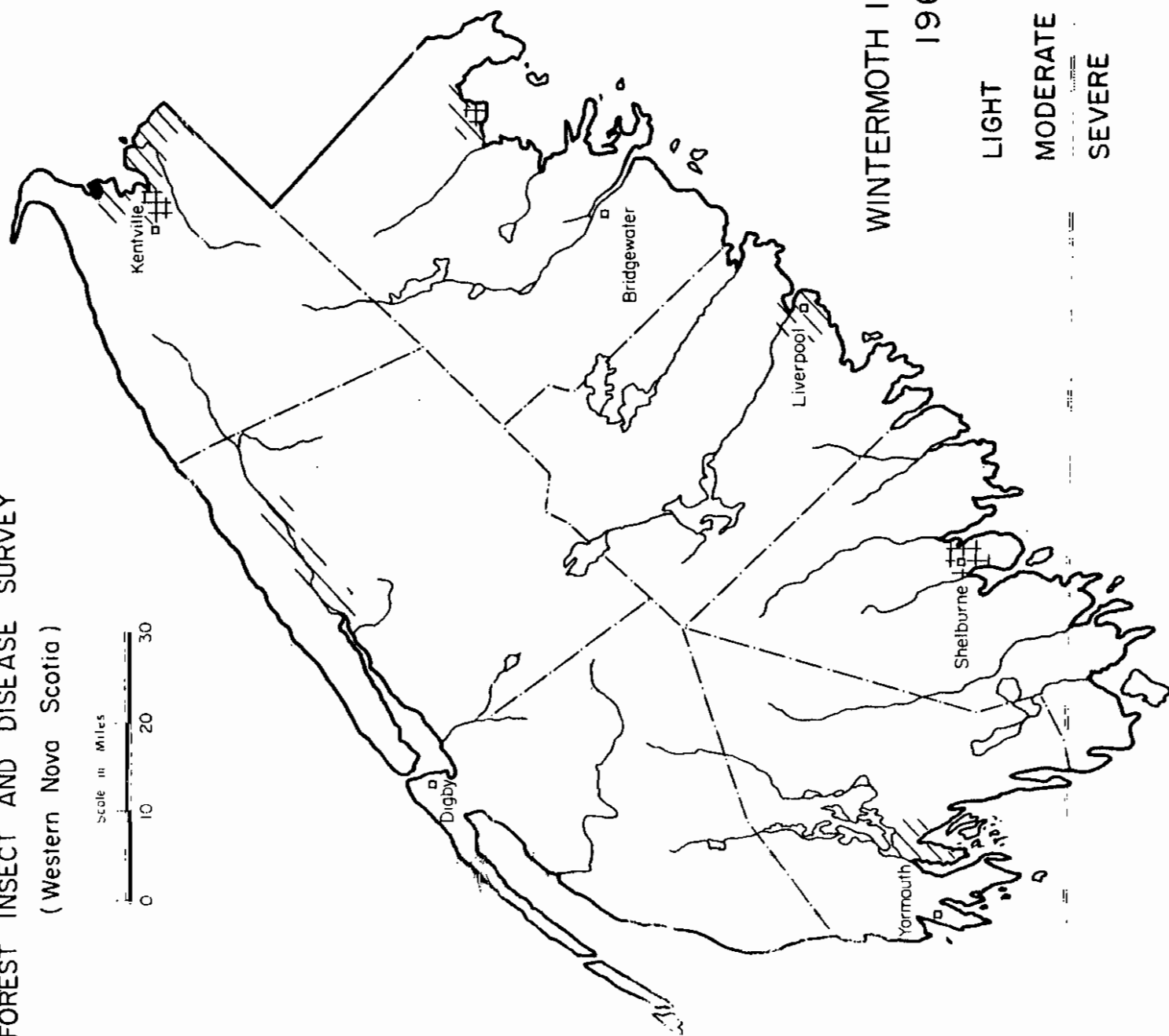
FIGURE 6-3

FALL CANKERWORM INFESTATIONS
1968



FOREST INSECT AND DISEASE SURVEY (Western Nova Scotia)

Scale in Miles
0 10 20 30



WINTERMOTH INFESTATIONS

1968



FIGURE 6-4

ANNUAL DISTRICT REPORT

CENTRAL NOVA SCOTIA

1968

by

W. Harrington

7.0 CENTRAL NOVA SCOTIA

(W. Harrington)

Introduction

There was little change from 1967 in the status of major insects and diseases in central Nova Scotia. Migrations of spruce budworm adults into western Cumberland County resulted in an increase in the number of locations at which egg masses were found. The larch sawfly continued to be a serious pest in all counties. Severe defoliation of balsam fir by the balsam fir sawfly occurred in the same general areas of Colchester and Halifax counties as in 1967. Damage caused by the balsam gall midge was confined mainly to eastern Colchester County. Browning of English elm foliage, the result of feeding by the elm leaf miner, occurred at Windsor and Economy. Frost injury to the new shoots of white spruce and balsam fir reproduction was common but generally light.

A total of 805 insect and disease samples was submitted by the district technician and 111 by co-operators.

Insect Conditions

Balsam Woolly Aphid, *Adelges piceae* (Ratz.)

The results of the reclassification of the trees on three balsam woolly aphid plots are compared with those for 1966 and 1967 in the following table. Recovery from twig attacks, evident to all three locations, was most noticeable at McCallums Settlement where uninfested trees (class 1) have increased from 28.6% in 1966 to 45.8% in 1968. Light stem attacks (class 2a) increased slightly at all three locations. Mortality resulting from twig attacks (class 5) increased slightly at Sheet Harbour, but remained unchanged at McCallums Settlement and Riversdale. Several trees were windblown on each plot.

Location	Year	Percentage of trees in class ^{ab}							Dead ^c other causes
		1	2a	3b	4a	4b	4c	5	
Colchester County									
McCallum's Settlement	1966	28.6	1.4	-	32.9	7.1	4.3	10.0	15.7
	1967	31.4	.0	-	32.9	5.7	4.3	10.0	15.7
	1968	45.8	5.7	-	15.7	4.3	1.4	10.0	17.1

Balsam Woolly Aphid, *Adelges piceae* (Ratz.) continued.

Location	Year	Percentage of trees in class ^{ab}							Dead ^c other causes
		1	2a	3b	4a	4b	4c	5	
Riversdale	1966	2.9	7.4	-	4.4	5.9	10.3	45.6	23.5
	1967	4.4	7.2	-	4.4	2.9	8.7	46.3	26.1
	1968	5.8	8.8	-	2.9	1.4	8.7	46.3	26.1
Halifax County									
Sheet Harbour	1966	3.2	1.9	0.6	4.4	7.6	10.6	25.4	46.2
	1967	5.1	1.3	.6	7.0	5.1	7.5	26.6	46.8
	1968	6.8	4.9	.6	3.1	4.3	4.9	27.8	47.6

^aSee Section 1, Appendix A, for explanation of classes.

^bClasses 2b, 2c, 3a contained no trees.

^cIncludes trees which were cut, windblown, suppressed, etc.;

Balsam fir trees at five other locations, were classified also but the results varied considerably (see table below) because the first three areas were balsam fir sawfly defoliation plots where living trees of all sizes were classified, while the last two locations were mortality plots where only the intermediate, dominant and co-dominant trees, living and dead, were classified.

Location	Percentage of trees in class ^a				
	1	4a	4b	4c	5
Colchester County					
Folly Lake, 1 mi. S.	74.1	3.7	11.1	11.1	0
Halifax County					
Tangier, 0.75 mi. N.	77.8	3.7	7.4	11.1	0
River Lake, 3.7 mi. S.	59.3	14.8	7.4	18.5	0
Marshall Falls, 0.5 mi. W.	0	0	0	87.5	12.5
Shoaly Lake	0	0	34.8	32.6	32.6

^aClasses 2a, 2b, 2c, 3a, and 3b contained no trees.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Extensive larval sampling produced only one larva at Salem and at Tidnish Bridge, and two at Truemanville, Cumberland County.

Egg-mass sampling was carried out on spruce and fir foliage in all counties, but because of a large influx of budworm adults into the Cape D'or area, sampling was intensified in Cumberland and western Colchester counties (Table 7-1). Although egg masses were found at 16 of 24 locations sampled in 1968 compared with 5 of 16 locations sampled in 1967, defoliation in 1969 is not expected to exceed light. (Fig. 7-1).

Balsam fir Sawfly, Neodiprion abietis complex

Severe defoliation in the Tangier-Third Lake area of Halifax County extended from 2 miles north of Tangier to the coast, and occurred near River Lake to the north of the 1967 infestation. Light feeding occurred throughout the remainder of the area infested in 1967.

The area of severe defoliation south of Folly Lake, Cumberland County, continued to increase and extended from the south end of Folly Lake south to Probert, and from the high ground between the east and west branches of the Folly River, westward to the east branch of the Great Village River and to Carter Lake. Light defoliation occurred from Londonderry to Sutherlands Lake. Only a few larvae were found between Hart Lake and Folly Lake.

Estimates of the loss of old and new foliage of dominant, intermediate, and advanced growth balsam fir trees (nine of each class) were made at each of two locations in the Tangier area and at one location south of Folly Lake. The results were as follows:

Mooseland road, 3.7 miles south of River Lake.

Dominant trees.- Loss of old foliage trace on six of the trees and light on three. No loss of new foliage.

Intermediate trees.- Loss of old foliage nil on two of the trees, trace on three, light on three, and moderate on one. Loss of new foliage nil on eight and trace on one.

Advanced growth.- Loss of old foliage nil on three trees, light on four, and moderate on two. No loss of new foliage.

Mooseland road, 0.75 mile north of pavement at Tangier.

Dominant trees.- Loss of old foliage light on two trees, moderate on three, and severe on four. Loss of new foliage nil on six and trace on three.

Intermediate trees.- Loss of old foliage moderate on one of the trees and severe on eight. Loss of new foliage nil on three and trace on six.

Advanced growth.- Loss of old foliage light on one tree, moderate on three, and severe on five. Loss of new foliage nil on seven and trace on two.

Folly Lake, 1 mi. south.

Dominant trees.- Loss of old foliage severe on all (9) of the trees. Loss of new foliage nil on one, trace on seven, and light on one.

Advanced growth.- Loss of old foliage severe on all of the trees. Loss of new foliage nil on two, trace on six, and light on one.

Defoliation at Higgins Mountain, Cumberland County, ranged from trace to severe over an area of about 2 square miles.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Small numbers of this sawfly were collected in all counties of central Nova Scotia. Average numbers of larvae per tree at permanent sampling stations are shown in Table 7-2. An additional 19 samples containing a total of 99 sawfly larvae were submitted by co-operators.

Larch Casebearer, *Coleophora laricella* (Hbn.)

Noticeable defoliation of tamarack trees by this casebearer occurred in Colchester, Cumberland and Halifax counties. The largest area affected was at West Brook, Cumberland County, where the foliage of all tamarack trees immediately northwest and southeast of Route 2 was severely browned. Severe defoliation also occurred at Athol and 3 miles south of Tidnish Bridge, Cumberland County; in a 1-acre stand 1 mile northwest of Earltown, Colchester County; and in three small tamarack stands near Dean, Halifax County.

Moderate browning was recorded along the Athol road 1 mile north of Southampton, Cumberland County, and 2 miles southeast of Bayhead, Colchester County.

Counts of overwintering casebearers indicated increases in numbers at 10 of 13 stations (Table 7-3). The greatest increases occurred at Beaverbrook and Fort Ellis, where average numbers of casebearers per 100 fascicles increased by 17.4 and 11.2. Defoliation at these stations at the end of the feeding period was only trace to light. Casebearer eggs were collected at Dean and West Brook.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Population levels of this sawfly continued to increase in tamarack stands between Bass River and Kemptown, Colchester County. One new outbreak occurred northeast of Sheet Harbour, Halifax County. Little change occurred in the intensity or extent of defoliation in other areas (Figure 7-2 and Table 7-4). Conditions by counties were:

Colchester.--The infestations at Bass River and Kemptown increased in size and included all tamarack stands between these two points as well as those along the headwaters of Baird Brook and the east branch of the North River. Defoliation was mainly moderate to severe. Scattered colonies of larvae occurred on tamarack throughout the remainder of the County.

Cumberland.--Infestation boundaries showed little change from 1967. High population levels occurred: between Harrison Settlement and Shulie Lake; between the Allen Hill road and the road from Apple River to West Advocate; in areas adjacent to Truemanville, Warren, and Hastings, and in the vicinity of Barronsfield and Minudie Point. Moderate feeding was confined to tamarack stands between Warren and Minudie Point, at Newville Lake, near Parrsboro, and south of East Branch. Trace to light feeding was noticeable throughout the remainder of the County.

Halifax.--The area of severe attack north of Beaver Lakes was much the same as in 1967 extending along Route 24 from 4.2 miles north to 4.7 miles north of Beaver Lakes. Tamarack trees in this stand have thin crowns and dead branches as a result of repeated defoliation. Severe defoliation occurred from west of Marshall Falls Flowage near Seven Mile Stream, east to the vicinity of northeast Salmon River, being most noticeable about 0.5 mile west of Marshall Falls Flowage, along the eastern side of the Flowage north of Lochaber Mines, near White Lake, north and northeast of Cross Lake, and between Cross Lake and northeast Salmon River. Little foliage loss occurred elsewhere in the County.

Hants.--Larvae were numerous in tamarack stands between Route 15 and the Minas Basin from Lower Selmah to Densmore Mills, and in one localized area at Upper Kennetcook. Scattered colonies of larvae were present throughout the remainder of the County.

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Damage to spruce buds by this insect occurred throughout central Nova Scotia. The results of counts of infested buds per 100 square feet of white spruce foliage carried out on three trees at each of six locations follow:

Location	Foliage examined (square feet)	Galled buds per 100 sq.ft. of foliage
Colchester County		
East Village	5.0.	60
Kempton	8.0	70
Nuttby	2.2	178
Cumberland County		
Wallace Station	1.7	182
Harrison Settlement	4.3	47
Sutherlands Lake	4.5	44

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

This midge was present in the new needles of balsam fir, in all four counties. Severe and moderate attacks were generally confined to eastern Colchester County (Fig. 1-7 and Table 7-5).

Pine Root Collar Weevil, *Hylobius radicis* (Buch.)

Twelve ornamental Scots pine trees at Lower Onslow, Colchester County, were infested with this weevil. One tree was killed and one showed signs of decadence; the remaining 10 trees appeared healthy.

Pine Sawfly, *Neodiprion virginianus* complex

Larvae of this sawfly were numerous in one small stand of advanced growth jack pine. Defoliation was generally below 20%, but two trees lost 90% of their old foliage.

White-marked Tussock Moth, *Orgyia leucostigma* J.E. Smith

Endemic numbers of this tussock moth were collected in all four counties. This represents an increase from 1967 in both distribution and intensity.

Winter Moth, *Operophtera brumata* (L.) and
Fall Cankerworm, *Alsophila pometaria* (Harr.)

Winter moth larvae caused moderate defoliation of hardwoods at Truro, Bible Hill, and North River, Colchester County; Nappan, Cumberland County; and 3 miles southwest of Hantsport, Hants County. Elsewhere in the district winter moth and fall cankerworm numbers remained low.

Sequential sampling was carried out on red oak trees at three sampling stations but no winter moth or fall cankerworm larvae were found. Fall cankerworm egg masses were collected near Hantsport, Hants County.

Spring Cankerworm, *Paleacrita vernata* (Peck)

Larvae were numerous on white elm trees at Windsor and Mount Denson, and in areas adjacent to the Nova Scotia Lands and Forests picnic area at Smiley's Intervale. Light feeding was noted at Brooklyn, Hantsport, St. Croix, and Summerville, Hants County.

Ugly-nest Caterpillar, *Archips cerasivoranus* (Fitch)

Nests of this insect were common on chokecherry bushes in Colchester, Cumberland, Halifax, and Hants counties. Nest counts per 1000 square feet were made at Maccan (60 nests), Mapleton (3), and Southampton (46), and at Lantz where nests had merged to form a continuous web.

Eggs were collected at North River, Central North River, and Nuttby, Colchester County.

Fall Webworm, *Hyphantria cunea* (Drury)

There was an increase from 1967 in the number of locations where nests of this insect were observed. Nests were most numerous 4 miles east of Amherst, and at Admiral Rock, where the average numbers of nests per mile were 28 and 15 respectively. The results of nest census taken in a number of areas are shown in Table 7-6. Average number of nests per mile is based on twice the number found on one side of the road.

Birch Casebearer, *Coleophora fuscedinella* (Zell.)

The intensity and extent of birch casebearer infestations were determined through ground and aerial surveys. Severe damage to white birch and wire birch foliage occurred in Cumberland County in stands adjacent to Route 9 northeast and southwest of Sand River; at Brookville, where defoliation extended east and west for a distance of 1 mile between Route 9 and Greville Bay, and in areas southeast and northeast of Amherst where repeated, combined attacks of the birch casebearer and the birch leaf miner have caused noticeable twig and branch mortality.

Moderate defoliation occurred in Halifax County at Jollimore and Princess Lodge.

Trace to light defoliation was recorded at Economy and Stewiacke Cross Roads, Colchester County; 2 miles southwest of Joggins, and at Shulie, East Fraserville and Sand River, Cumberland County; Timberlea, Halifax County; and Noel, Hants County.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Forest tent caterpillar caused moderate defoliation of red oak trees 1 mile east of Hantsport. Larvae were numerous on trembling aspen and apple trees at Lower Selmah and Stirling Brook but only light loss of foliage resulted. Colonies of caterpillars were present on a few trees at Truro, Windsor, Nappan, and West Wentworth.

Trembling aspen or red oak foliage was examined for egg masses at ten locations. Eggs were found only near Oxford and Hantsport.

Other Noteworthy Insects

<u>Insect</u>	<u>Host</u>	<u>Location</u>	<u>Remarks</u>
<u>Fenusa ulmi</u> Sund. Elm leaf miner	Elm, English	Windsor and Economy	Severe foliar browning
<u>Nymphalis antiopa</u> (L.) Mourning-cloak butterfly	Willow Elm	Falmouth, 4 miles south	Defoliation 70 to 90%
<u>Profenusa thompsonii</u> (Konow) Leaf mining sawfly	Birch	Higgins Mtn. and Shulie, Cumb. Co.	Not common
<u>Rhyacionia buoliana</u> (Schiff.) Pine shoot moth	Pine, Scots, jack, and red	Central N.S.	Not numerous but collected in all four counties

Tree Diseases

Frost Injury

Varying degrees of frost injury to the new shoots of spruce and balsam fir occurred throughout the district. The results of observations made at seven locations follow:

Colchester County

Glenholme.--Generally less than 20% of the new shoots were killed on 10% of the white spruce and balsam fir reproduction, except up to 70% in a few patches.

Upper Stewiacke.--Less than 10% of the new shoots killed on most white spruce reproduction.

Tatamagouche Mountain.--Up to 80% of the new shoots killed on 20% of the white spruce reproduction on 10 acres.

Lily Lake.--Up to 30% of the new shoots killed on 70% of the white spruce and balsam fir saplings and reproduction.

Cumberland County

Tidnish Bridge Road.--Up to 60% mortality of new shoots on 20% of the white spruce and balsam fir reproduction on 2 acres near the La Planche River crossing.

Sutherlands Lake.--Less than 20% shoot mortality on most reproduction.

Hants County

Noel.--Light frost injury on balsam fir reproduction.

Drought Damage

Browning of hardwood foliage, presumably the result of lack of moisture, occurred on the high ground from Earltown to Mapleton. Small foliage, common on hardwoods in natural stands and on ornamental shade trees, was most noticeable on trembling aspen and white elm.

Cone Rust, Chrysomyxa pirolata Wint.

Fifty randomly selected spruce cones at each of four locations were examined for symptoms of rust. Results at Otterbrook, Centre Rawdon, and Moose River were negative, but at Debert 6% of the cones selected from black spruce were infected.

Sweetfern Blister Rust, Cronartium comptoniae Arth.

In Cumberland County, cankers caused by this rust were found on the branches of 3 of 40 jack pine trees examined on the north Grenville road; on 6.3% of jack pines examined at Thomson Station; and on 16.9% of two needle pine seedlings examined on the Chignecto Game Sanctuary. Although the trees were young making species identification difficult, it was believed that most, if not all, of the affected seedlings were lodgepole pine. A canker occurred on one Scots pine tree in a 1-acre plantation at Middle Stewiacke and on two jack pine trees 4 miles northeast of the Stanley Airport. One collection of infected sweetfern, the alternate host, was submitted from Thomson, Cumberland County.

Needle Rusts

Chrysomyxa ledi D.By. was found on the current foliage of white spruce trees at Tatamagouche Mountain, Nuttby, Kemptown, Upper Stewiacke, and Salem; and infected the cones of white spruce trees at Middle Musquodoboit, Noel, and Tatamagouche Mountain. The incidence of needles affected on any one tree was generally less than 5%.

Chrysomyxa ledicola Lagh. caused severe discoloration of the new needles on white spruce in a 40-acre stand north of Upper Musquodoboit near the Colchester-Halifax county line; on scattered seedlings and saplings on 2 acres at Tangier; in an area of approximately 4 acres at Little Bass River; in a 0.5-acre stand at Masstown; and in 1-acre stands at Barronsfield and Earltown. Collections of infected Labrador tea, the alternate host, were submitted from Saltsprings and Masstown.

Coleosporium asterum (Diet.) Syd., infections were more widespread than in 1967. Observations were made at the following locations.

Colchester County

Debert.--Less than 10% of the needles affected on all jack pine.

Tidnish Road.--Needle rust on up to 60% of the old foliage of advanced growth jack pine on 2 acres.

Harrison Settlement.--Up to 10% of the needles were infected on all jack pine.

Colchester County continued

Chignecto Game Sanctuary.--Approximately 80% of the Scots pine had less than 5% needle discoloration.

Halifax County

Sandwich Point.--Low numbers of infected needles were observed on jack pine throughout the stand.

Elmsvale.--Less than 1% of the old needles of red pine trees showed symptoms of infection.

Goodwood.--Intensity of infections on Scots pine needles ranged from 10% to 30%.

Hants County

Stanley Airport (4 miles northeast).--Discoloration of jack pine needles was severe on seedlings, moderate on saplings, and light on young growth.

One collection of infected aster, an alternate host, was submitted from Portapique Mountain, Colchester County.

Pucciniastrum epilobii Oth. and P. goeppertianum (Kuehn) Kleb. Infected needles were noticeable in almost all balsam fir stands in central Nova Scotia. Intensity of infections was generally less than 20% except at Kempton where needle discoloration, on an area of about 10 acres, averaged 40%. Two collections of infected fireweed, an alternate host, were submitted, and witches' brooms on blueberry were common in all four counties. Collections were submitted from seven locations in Halifax County, three in Colchester and one in each of Cumberland and Hants counties.

Globose Gall Rust, Peridermium harknessii J.P. Moore

Globose galls occurred on 6% of the Scots pine at Hubbards Beach where one tree supported over 100 galls. Infections occurred on 87% of the jack pine at Southampton, Cumberland County, and on 30% at Peggy's Cove, Halifax County. The occasional globose gall occurred on jack pine at Oxford and Thomson, and in the Chignecto Game Sanctuary, Cumberland County.

Ash Rust, Puccinia sparganioides Ell. & Barth.

This rust was evident on white ash trees at Tatamagouche Mountain and Wentworth Mountain, from Maitland to South Maitland,

at Hantsport, and 3 miles south of Hantsport, Incidence of infected leaves was generally less than 10% except from Maitland to South Maitland where severe browning and distortion of leaves occurred on all white ash trees.

Hypoxylon Canker of Poplar, *Hypoxylon mammatum* (Wahl.) Miller

The results of surveys made in 1966, 1967 and 1968, to determine the distribution and impact of this disease, are shown in Table 7-8. The incidence of canker infection varies considerably from place to place. The highest percentage of trees infected (63%) occurred at Lower Selmah, Hants County. The average for the district was 12.8%.

Anthrachnose of Maple, *Gloeosporium apocryptum* Ell. & Ev.

Dieback and mortality of ornamental sugar maple trees, apparently initiated by this organism, is becoming increasingly noticeable. Sugar maple trees at three locations in Colchester County were classified as: 1-uninfected, 2-with anthracnose but not showing dieback, 3-apparently dying, 4-dead. The number of trees in each class at each location were:

Location	Trees in class--			
	1	2	3	4
Maple Ave., Bass River	27	36	39	9
Five Islands	21	18	26	5
Economy	17	9	10	4

Beech Bark Disease, *Cryptococcus fagi* (Baer.) and *Nectria coccinea* var. *faginata* Lohm. Wats., and Ayers.

The condition of beech trees on two plots in 1968 is tabulated and compared with previous years in Table 7-7. Trees lightly attacked by beech scale and severely cankered, class 5, continued to be the most common class. There has been a gradual increase in the number of trees in class 4 (apparently dying) especially at Greenfield where the percentage rose from 4.5 in 1964 to 25.0 in 1968.

Ink Spot of Aspen, *Ciborinia whetzellii* (Seav.) Seav.

This ink spot on trembling aspen leaves occurred, for the third consecutive year, over an area of approximately 30 acres near Debert, Colchester County. Leaf browning was spotty but on some trees up to 40% of the foliage was affected.

Other Noteworthy Diseases

Organism and disease	Host	Location	Remarks
<u>Ceratocystis ulmi</u> (Buism.) C. Moreau Dutch elm disease	Elm	Central Nova Scotia	No infected trees found in district.
<u>Chrysomyxa arctostaphylyi</u> Diet. Yellow witches' broom	Spruce, black	Upper Tantallon Halifax County	Seven brooms on one tree.
<u>Cronartium ribicola</u> J. C. Fischer White pine blister rust	Pine, white	Central Nova Scotia	Counts of infected trees at 5 locations showed 43% living infected, 6% dead.
<u>Delphinella balsamiae</u> (Waterm.) E. Muell. Tip blight	Fir, balsam	Otterbrook and Castlereigh, Colchester County	Shoot mortality moderate to severe on one tree at each place.

Table 7-1. Spruce Budworm Egg-Mass Counts per 100 Sq. Ft. of White Spruce and Balsam Fir Foliage in Central Nova Scotia, 1968

Location	Tree sp.	Foliage examined sq. ft.	Sound egg masses per 100 sq. ft.
Colchester County			
Greenfield	bF	4.9	0
Nuttby	bF	6.5	0
Stewiacke	wS	5.8	0
Tatamgouche Mountain	wS	3.2	0
Lynn road	bF	11.3	23
Simpson Lake	bF	7.9	14
Cumberland County			
Harrison Sett.	bF	17.2	5
Lower River Hebert	wS	7.1	42
Salem	wS	6.3	42
Wallace Ridge	wS	5.2	0
Sand River	bF	10.3	28
Ragged Point	bF	10.7	10
Truemanville	wS	9.2	20
Squally Point	bF	15.8	62
Advocate Harbour	bF	18.0	61
Tidnish Bridge	bF	3.0	48
Cape D'Or	bF	8.1	24
Shulie Lake	bF	26.6	63
Apple River	bF	15.6	56
Halifax County			
Musquodoboit Harbour	bF	11.6	0
Port Dufferin	bF	5.8	0
Sheet Harbour	bF	6.8	0
Hants County			
Admiral Rock	wS	12.0	101
Noel	wS	5.8	28

Table 7-2. European Spruce Sawfly Larval Sampling Records at Permanent Sampling Stations in Central Nova Scotia, 1968

Location	Tree sp.	Larvae per tree sample	
		July 4-17	Sept. 6-26
Colchester County			
Masstown	rS	0.0	1.0
Great Village	WS	.0	2.3
Greenfield	rS	.0	.3
Portapique Mountain	WS	.7	.7
Nuttby	WS	.3	.5
Kempton	WS	.7	.0
Upper Stewiacke	WS	.7	.0
Portapique	WS	.0	3.0
Lower Five Islands	WS	6.3	.0
Tatamagouche Mountain	WS	.3	.7
Cumberland County			
Allen Hill road	rS	0.7	0.0
Harrison Sett.	WS	.3	4.0
Truemanville	WS	.7	2.7
Moose River	rS	.3	.3
Mapleton	WS	.7	1.0
Lower River Hebert	WS	.7	1.0
Salem	WS	1.0	1.0
Fraserville	rS	.0	3.3
Tidnish Bridge	WS	.3	.0
Lakelands	rS	1.7	1.0
Lakelands	WS	1.7	.0
Wallace Ridge	WS	.3	1.3
Halifax County			
Myers Point	WS	4.3	4.0
Necum Teuch	WS	2.0	2.7
West Newdy Quoddy	WS	.7	.7
Tangier	WS	.3	3.0
Spry Bay	WS	7.7	8.0
Clam Harbour	WS	1.0	1.0
Chezzetcook	rS	.7	.7
Moose River	rS	.7	.0
Hubbards	bs	1.1	.0
Hants County			
Admiral Rock	WS	0.7	0.3
Ardoise	WS	.7	.7
Gore	WS	1.7	2.0
Noel	WS	.3	5.0

Table 7-3. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Central Nova Scotia, 1967 and 1968.

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Colchester County				
Greenfield	0.3	2.1	T	T
Kempton	1.1	3.7	T	T
Great Village	.0	1.4	N	T
Upper Stewiacke	2.1	8.2	T	L
Belmont	.3	6.5	T	T
Debert	1.5	6.0	T	T
Beaverbrook	1.7	19.1	T	L
Five Islands	4.8	10.0	T	T
Fort Ellis	9.0	20.2	L	L
Cumberland County				
East Branch	0.3	2.2	T	T
Southampton	-	31.0	N	T
Halifax County				
Hubley	0	0	N	T
Hubbards 2 mi.E	0	0	N	N

^a L= light (10 - 20%),
T= trace (up to 5%), N= nil, -- no estimate.

Table 7-4. Larch Sawfly Defoliation Estimates in Central Nova Scotia, 1968

Location	Defoliation ^a
Colchester County	
Carrs Brook	L
Glenholme	M
Denmark	Sc.
Kempton, 2 mi. SW.	M-S
Highland Village	S
Great Village	S
Onslow Mountain, 4 mi. N.	S
Cumberland County	
North Springhill Rd.	L
West Brook	M
Halfway River	M
East Pugwash	Sc.
Parrsboro	M
Wharton	L
West Apple River	L
Head of Amherst	M
Port Howe	Sc.
Lower River Hebert	S
Hastings	S
Sand River	L
Tidnish	L
Shulie	L
Spicer Cove	L
Apple River, 1 mi. S.	S
Mapleton	L
Coldspring Head	L
Halifax County	
Hubbards	Sc.
Kelly Lake airport	L
Hants County	
Falmouth	Sc.
Noel	S
Shubenacadie	L
Urbania	L
Upper Kennetcook	S

^a T=trace (0 - 5%), L=light (10 - 20%), M=moderate (30 - 60%), S=severe (70 - 100%), Sc. = scattered.

Table 7-5. Intensities of Balsam Gall Midge Attacks
in Central Nova Scotia, 1968

Location	Intensity ^a
Colchester County	
Otterbrook, 5 mi. N	S ^b
East Village	L
East Mountain	M
3 miles south of Folly Lake	S
Stewiacke Cross Roads	S
Landsdowne Road	M
Great Village	L
Portapique	L
Lower Five Islands	L
Kempton	M
Summit	M
Upper Stewiacke, 4 mi. S	L
Cumberland County	
Head of Amherst	S
Port Howe	L
Salt Springs	L
Wentworth Mountain	L
Wallace Ridge	L
Moose River	T
Lakelands	N
Mapleton	N
Salem	N
Fraserville	T
Shulie	T
Allen Hill Road	T
Lower River Hebert	L
Halifax County	
River Lake	L
Popes Harbour	L
Spry Bay	L
Oldham road	N
Hubbards	N
Necum Teuch	L
West Newdy Quoddy	M
Clam Harbour	L
Hants County	
Densmores Mills	L
Ardoise	T

^a S=severe, M=moderate, L=light, T=trace, N=nil.

^b On scattered trees.

Table 7-6. Fall Webworm Nest Census in Central Nova Scotia in 1968

Location	Miles Surveyed	Mean nests per mile
Colchester County		
Onslow Mountain to Trans-Canada Highway	2.4	0.8
Denmark to 2 mi. S.	2.0	3.0
Shubenacadie to 3 mi. N.	3.0	10.0
Upper North River - Central North River	3.0	.7
Broofield - Middle Stewiacke Corner	7.2	3.1
Middle Stewiacke to 5.5 mi. E.	5.5	4.7
Upper Stewiacke	.5	0
Stewiacke to 2 mi. N.	2.0	1.0
Alton - Hilden	7.0	.9
Stewiacke East - West St. Andrews	3.7	1.7
Cumberland County		
Saltsprings to 1.5 mi. NE.	1.5	1.3
Port Philip to 315 mi. SW.	3.5	1.2
Amherst, 4 to 4.5 mi. E.	.5	28.0
Wallace Bridge	1.0	6.0
Nappan	1.0	4.0
Hants County		
Stanley Airport to 1.3 mi. NE.	1.3	4.6
Cheese Factory Corner - Nine Mile River	5.5	1.8
Admiral Rock	.8	15.0

Table 7-7. Condition of Trees on Beech Bark Disease Plots in Central Nova Scotia, 1964 to 1968

Location	Date	Percentage of trees in class ^{a,b}						Dead other causes
		2	4	5A	5B	5C	6	
Colchester County								
East Folly Mtn.	1964	4.2	5.3	0.0	65.3	4.2	17.9	3.1
	1965	3.2	7.4	.0	61.0	4.2	21.1	3.1
	1966	2.1	7.3	.0	57.3	7.3	22.9	3.1
	1967	2.1	7.4	.0	53.7	7.4	26.3	3.1
	1968	2.1	11.6	.0	48.4	6.3	27.4	4.2
Greenfield	1964	0.0	4.5	6.8	68.2	2.3	10.2	8.0
	1965	.0	5.7	6.8	65.9	2.3	11.3	8.0
	1966	.0	10.2	.0	69.3	1.1	11.5	7.9
	1967	.0	14.8	.0	62.5	.0	14.8	7.9
	1968	.0	25.0	.0	48.9	.0	18.2	7.9

a See Appendix A, Section 1, for explanation of classes.

b Classes 1 and 3 contained no trees.

Table 7-8. Incidence of Hypoxylon Canker in Trembling Aspen in Central Nova Scotia, 1966, 1967, and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected
				Cankered		
				Living	Dead	
<u>1966</u>						
Colchester County Debert	2046502		80	16	4	25
Hants County Gore	2044499		99	0	1	1
Sub-totals 1966 and average			179	16	5	12
<u>1967</u>						
Colchester County Brentwood	2047500	969	100	11	32	43
Cumberland County						
Westchester Stn.	2045505	843	100	0	2	2
South Brook	2040504	910	100	3	11	14
Little Forks	2040506	903	100	10	10	20
Springhill Jct.	2041505	906	100	1	4	5
Valley Road	2042505	908	100	0	2	2
Oxford	2043506	907	100	6	5	11
Jct. Trans Canada and Thompson Rd.	2043506	899	100	2	7	9
West Wntworth	2045505	902	100	4	4	8
Hants County						
McDonald Road	2046499	964	100	2	1	3
Admiral Rock	2046500	965	100	1	0	1
Lower Selmah	2045501	961	100	53	10	63
North Noel	2044500	967	100	1	3	4
Kennetcook	2044499	968	100	0	0	0
Sub-totals 1967 and average			1400	94	91	13
<u>1968</u>						
Cumberland County Rose	2044504	227	60	8	9	28
Hants County						
Summerville	2040499	473	80	4	6	13
Ellerhouse	2042497	474	100	0	0	0
Sub-totals 1968 average			240	12	15	11
TOTALS to 1968 average			1819	122	111	12.8

FOREST INSECT AND DISEASE SURVEY
(Central Nova Scotia)

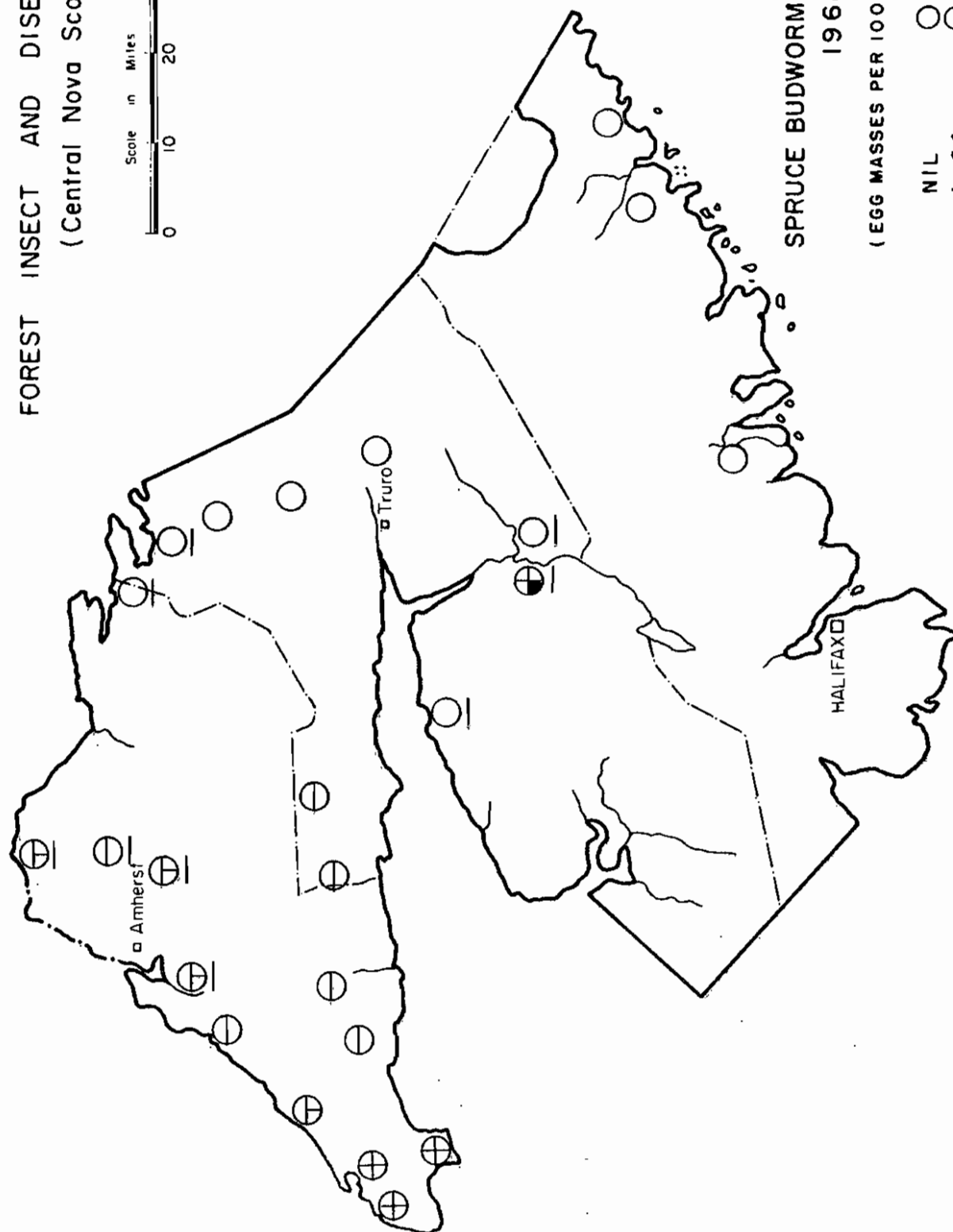
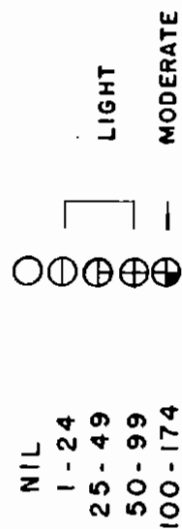


FIGURE 7-1

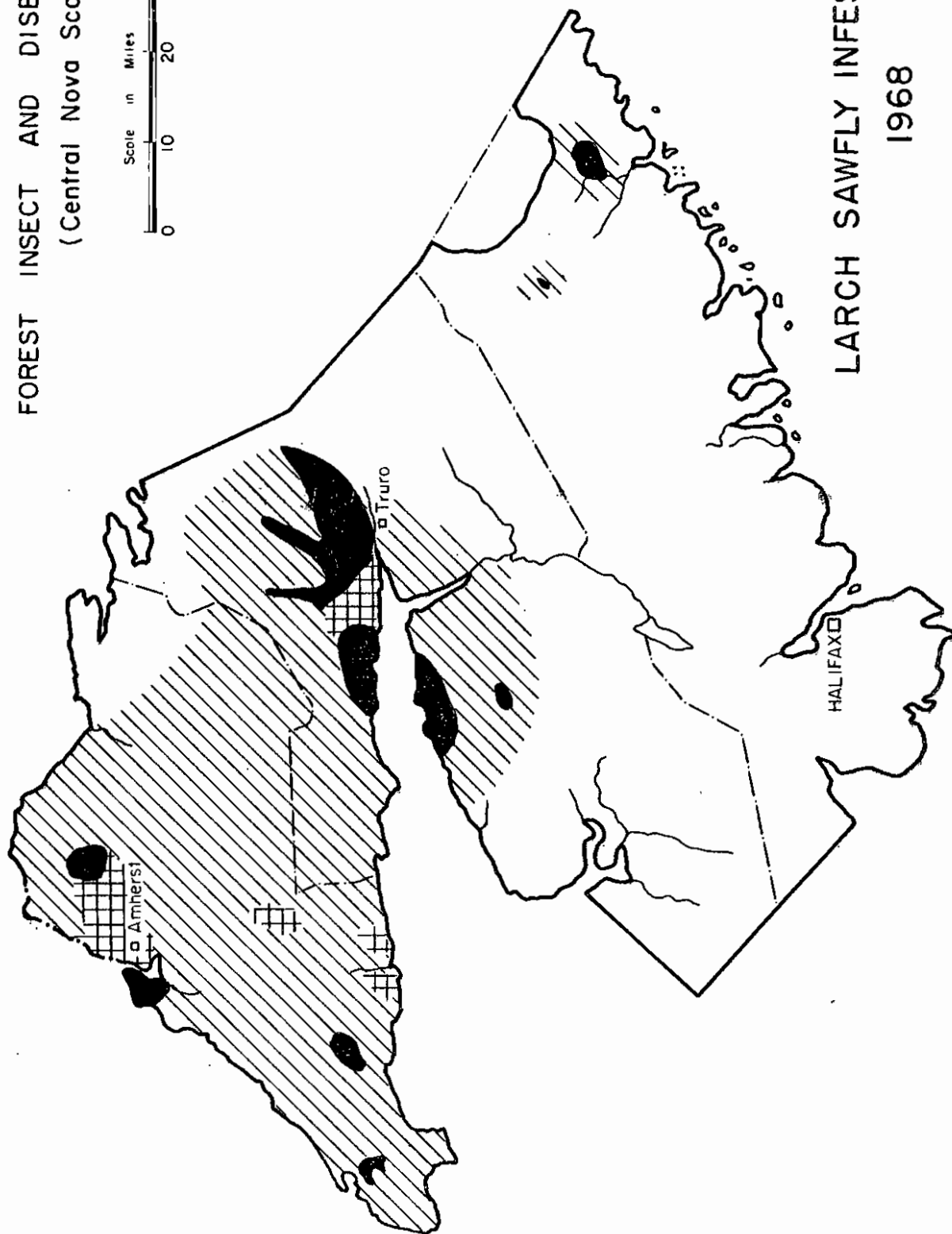
SPRUCE BUDWORM INFESTATIONS
1968
(EGG MASSES PER 100 SQ FT OF FOLIAGE)



SPRUCE SAMPLES UNDERLINED

FOREST INSECT AND DISEASE SURVEY
(Central Nova Scotia)

Scale in Miles
0 10 20 30



LARCH SAWFLY INFESTATIONS
1968

LIGHT
MODERATE
SEVERE

ANNUAL DISTRICT REPORT

EASTERN NOVA SCOTIA

1968

by

L. J. Coady

8.0 EASTERN NOVA SCOTIA

(L. J. Coady)

Introduction

Forest insects of major concern in eastern Nova Scotia in 1968 were the spruce budworm, larch sawfly, forest tent caterpillar, and winter moth. Spruce budworm defoliation was confined to Inverness County, where severe attacks occurred near Southwest Mabou and Port Hood on balsam fir and near Strathlorne on white spruce. The larch sawfly was active again in most tamarack stands examined, but defoliation was noticeable only in northwest Pictou County. A localized infestation of the forest tent caterpillar caused severe defoliation of trembling aspen and apple trees near Westmount, Cape Breton County. A decline in the severity of attacks by the winter moth was evident in Pictou and Antigonish counties. Larvae of the white-marked tussock moth were more common than in recent past years.

No major disease outbreaks were observed in 1968. Frost killed the new shoots of balsam fir and white spruce at numerous locations. Lack of moisture during late summer resulted in foliage browning of sugar maple and beech in Antigonish County near the Pictou County line. Needle rusts on balsam fir, and, to a lesser degree white spruce, were the most prevalent foliage diseases in 1968.

Totals of 573 insect and 223 disease collections were submitted by Survey staff during 1968.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Spruce budworm infestations continued in southwest Inverness County increasing in severity and extent from 1967 in some locations, but decreasing at others (Tables 8-1 and 8-2). The total area of light to severe infestation was about 73 square miles, a decrease of about 27 square miles from 1967. Aerial and ground surveys showed that infestations occurred in four separate areas: (1) through Port Hood, Mabou, Glencoe, and Judique Intervale; (2) from a point 4 miles south of Strathlorne to Southwest Margaree; (3) at Milford; and (4) near Port Hastings (Figure 8-1). A summary of conditions by areas follows:

Area 1, the largest infestation, encompassing about 64 square miles, extended roughly along the coast from Judique Intervale and Mabou in the west to Glencoe Mills in the east. Defoliation was patchy and loss of new growth varied from light on white spruce at Judique Intervale to severe on balsam fir and white spruce at Southwest Mabou and Port Hood.

In area 2, where white spruce predominated, defoliation of the new needles of older trees fell into two categories: to Inverness from 4 miles south, it was 70% while in the remaining 11 square miles to the

73
27
46

north it was light. Damage to the north of Strathlorne was less noticeable than in 1967 because of increased foliage production on white spruce and because population levels of the budmoths Zeiraphera ratzeburgiana and Zeiraphera spp. were much lower than in 1967.

Areas 3 and 4. Very light defoliation of the current foliage of white spruce occurred over 5 square miles near Melford and a 0.5-square-mile area at Port Hastings.

Budworm egg masses were found on foliage from 38 of the 76 locations sampled in 1968 compared with 28 positive counts from 68 locations in 1967 (Table 8-3 and Map, Figure 8-2). Egg-mass numbers suggest that defoliation will be moderate to severe in patches on balsam fir and white spruce along the west coast of Inverness County between Judique and a point 4 miles north of Inverness Town, and light to moderate on white spruce in northeast Antigonish County.

Balsam Woolly Aphid, *Adelges piceae* (Ratz.)

The results of the reclassification of trees on two balsam woolly aphid plots are summarized and compared with those for 1967 in Table 8-4. Plot data and general observations indicate that twig injury continued as the more common form of attack. Recovery from twig injury, evident to a small degree on both plots and in balsam fir stands at other locations in the district, is usually most noticeable on the younger trees released by the removal of dominant trees. A slight increase in stem attacks occurred on the plot at Trafalgar but this form of infestation did not occur at Gairlock Mountain. Light to moderate stem attacks were found at Grove Point, Cape Breton County; near Aspen, Guysborough County; and at Greens Brook, Pictou County.

Balsam Gall Midge, *Dasineura balsamicola* (Lint.)

The balsam gall midge was again common throughout most of eastern Nova Scotia but infested trees were less conspicuous than in 1967 and occurred only at scattered locations in Pictou and Antigonish counties (Fig. 1-6).

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Defoliation of tamarack by this insect was almost negligible, except for moderate feeding in a 0.5-acre area at Central West River and between Caribou and Cole Point, Pictou County. Light defoliation persisted in a 0.1-acre area at Seafoam and in a 1-acre area at Lower Mt. Thom, Pictou County.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)

Populations of this sawfly remained at a low level in 1968. Numbers of larvae collected at sampling stations by Survey staff and by co-operators are shown in Tables 8-5 and 8-6.

Larch Casebearer, Coleophora laricella (Hbn.)

Browning of tamarack foliage following casebearer feeding was negligible except at Bras d'Or, Victoria County, and Eden Lake, Pictou County, where moderate defoliation occurred on a few trees.

Counts of overwintering casebearers showed that numbers increased at all but one of 13 sampling stations. The greatest increase occurred at Eden Lake, Pictou County, where the average number of casebearers rose from 7.0 per 100 fascicles in 1967 to 46.5 in 1968 (Table 8-7).

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

This shoot moth was collected at four widely separated points: Afton, Antigonish County; Westmount, Cape Breton County; and Blue Mountain and Lismore, Pictou County. Infestations were light and confined to ornamental mugho pines and young plantations of Scots pine or red pine.

Winter Moth, Operophtera brumata (L.) and
Fall Cankerworm, Alsophila pometaria (Harr.)

Population levels of the winter moth have declined markedly since 1966. At Antigonish, Pictou, New Glasgow, and Stellarton, winter moth, in association with the fall cankerworm, caused only light defoliation of a few ornamental trees. Hosts included apple, white elm, linden, and Manitoba maple. Elsewhere within the known area of distribution, only occasional larvae were found.

The fall cankerworm was responsible for 80% defoliation of a few apple and white elm at Sydney River, Cape Breton County.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Foliar browning of wire birch and white birch was common. Defoliation of wire birch at many places in Pictou and Antigonish counties was moderate, although small groups of trees lost up to 80% of their foliage. Elsewhere in the district attacks were light.

Birch Casebearer, Coleophora fuscadinella (Zell.)

The status of this species in eastern Nova Scotia changed little from 1967 (Figure 8-3). Stands of white birch showed moderate to severe defoliation: between Barachois Brook and a point 3.6 miles northwest of Neil's Harbour, Victoria County; between Sydney River, Cape Breton County, and Soldiers Cove, Richmond County; and between Creignish and Dunvegan, Inverness County. Light to moderate defoliation occurred in patches between Baddeck and South Gut St. Anns, Victoria County, and between Bras d'Or and Sydney, Cape Breton County.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

A further decline in infestations of this leaf skeletonizer occurred. Larvae were collected only near Heatherton, Antigonish County, where the foliage of young white birch was severely browned over in a 1-acre area.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Forest tent caterpillars caused severe defoliation of apple and young trembling aspen over about 3 acres in the Point Edward - Westmount district of Cape Breton County. An egg-mass survey in the area indicates an increase in the intensity of the infestation in 1969. Numbers of egg bands on trees 2 to 3 inches in diameter averaged 2.8 per 18-inch branch tip. Few larvae were collected from apple at Antigonish and from hawthorne at Stellarton but defoliation was negligible.

Spruce Bud Midge, *Rhabdophaga swainei* Felt

This insect was again found causing light damage in most stands of young white spruce and red spruce. The results of counts of damaged buds made at 10 locations follow:

Location	Tree sp.	Foliage examined (sq.ft.)	Galled buds per 100 sq. ft. of foliage
Antigonish County			
Aulds Cove	WS	8.7	11.1
Heatherton	WS	14.5	6.9
Cape Breton County			
East Bay	WS	7.7	38.9
Guysborough County			
Lincolntonville, 2 mi. S.	WS	7.4	27.5
Inverness County			
Glenora Falls, 4 mi. N.	WS	7.2	27.7
Creignmore	RS	2.8	214.3
Pictou County			
Lr. Mt. Thom, 3 mi. W.	WS	12.1	66.1
Central West River	WS	8.3	24.0
Blue Mountain	WS	6.2	32.2
Victoria County			
Inverness-Victoria Co. line, 0.6 mi. E.	WS	9.8	10.2

Balsam-fir Sawfly, Neodiprion abietis complex

As in 1967, larvae of this sawfly occurred in numbers sufficient to cause moderate defoliation of the old foliage of balsam fir in an area of about 0.5 square mile at Indian Harbour Lake, Guysborough County.

White-marked Tussock Moth, Orgyia leucostigma (J.E. Smith)

This insect was found only in small numbers but was more common than in 1967, particularly in southwestern Inverness County and southern Victoria County.

A Leaf Roller on Maple, Cenopsis pettitana (Rob.)

The light infestation of leaf roller observed since 1964 at Ross Section, Inverness County, increased in intensity in 1968. Of 45 ornamental sugar maple trees attacked, leaf rolling was severe on 11, moderate on 11, and light on 23.

Fall Webworm, Hyphantria cunea (Drury)

Population levels of this insect were slightly higher than in 1967, but remained generally light. Tents were most abundant near Seal Island, Victoria County, and Guysborough, Guysborough County, where they averaged 50.0 and 53.6 per roadside mile. The results of a roadside nest census taken in 13 locations are shown in Table 8-8.

Ugly-nest Caterpillar, Archips cerasivoranus (Fitch)

Nests were common on roadside cherry bushes throughout north Pictou, southwest Inverness, and at scattered points in Cape Breton and Victoria counties. The results of nest counts per 1000 square feet at seven locations follow:

Location	Nests per 1000 sq. ft.	
	1967	1968
Cape Breton County		
Little Bras d'Or	- ^a	16
Coxheath	-	6
Inverness County		
Creignmore	52	- ^b
Margaree Valley	10	63
Pictou County		
Pictou, 1 mi. S.W.	- ^b	10
Toney River	-	3
Caribou River	-	16

a. No count made

b. Too numerous to count, nests merged into continuous web

Tree Diseases

Frost Injury

Frosts in late May and early June caused widespread damage to trees in eastern Nova Scotia. Severe loss of the new growth was observed on 25 young red oak trees at Blue Mountain, Pictou County, and moderate on scattered sugar maple shade trees at Ross Section, Inverness County. Injury was light in pockets of beech and sugar maple trees over a 1-square-mile area at Cape North, Victoria County. Up to 20% of the new shoots of balsam fir and white spruce reproduction were killed at many locations throughout the district.

Winter Drying of Conifers

Foliage discoloration, less noticeable than in 1967, was light on 1-year-old white pine needles near Central West River and Sutherlands River, Pictou County, and on balsam fir regeneration in exposed locations on the plateaus of French Mountain and MacKenzie Mountain, Inverness County.

Needle Rusts

Pucciniastrum epilobii Otth and P. goeppertianum (Kuehn) Kleb. Infections occurred on the new needles of balsam fir at many locations in eastern Nova Scotia. Infection of the needles leading to early defoliation was severe on a few young balsam fir trees at Whycocomagh Mountain, Inverness County, and Indian Harbour Lake, Guysborough County. Elsewhere less than 5% of the needles were affected.

Infections caused by Chrysomyxa ledicola Lagh. were observed on 70 to 80% of the 1968 needles of white spruce on areas of 0.5 acre at Stillwater, Guysborough County, and 1 acre at Moose River, Pictou County.

The intensity of C. ledi De Bary infections on spruce declined in 1968. Although infections were observed at many locations in the district, less than 5% of the new needles of white spruce, black spruce and red spruce were affected.

Red Flag of Balsam Fir

Dead branch tips on balsam fir, resulting from branch cankers caused by Fusicoccum abietinum (Hartig) Prill. and Delacr., occurred near Barachois Brook and West Branch North River on the central Victoria County plateau. Less than 5% of the balsam fir trees were affected and dead branch tips averaged about three per tree. This condition occurred mainly on saplings along roadsides and edges of stands rather than within stands.

Hypoxyton Canker of Poplar, *Hypoxyton mammatum* (Wahl.) Miller

Counts were made in aspen stands to determine the incidence of hypoxyton canker in eastern Nova Scotia (Table 8-9). The highest percentages of cankered trees occurred at Lower Barney River (35.5%) and Caribou River (29%), and near Malignant Cove (34%).

Large-tooth aspen at two locations in Pictou County were examined for hypoxyton infections in 1968. The results were as follows:

Location	Registration number	Total trees-	
		Examined	: Living cankered
Scotsburn (2051505)	617	86	3
Caribou (2051506)	907	100	1

Other Noteworthy Diseases

Organism and Disease	Host(s)	Location	Remarks
Cherry blight	Cherry, pin.	Eastern Nova Scotia	Generally more common than in 1967. Light, except at Malignant Cove where shoot mortality was moderate.
<i>Ciborinia whetzelii</i> (Seaver) Seaver Ink spot of aspen	Aspen, trembling	Maryvale, Ant. Co., Mill Creek, Millville and Leitches Creek, C.B. Co., Cole Point, Pict. Co.	Light foliage browning on occasional trees.
<i>Cryptodiaporthe populea</i> (Sacc.) Butin Canker	Poplar, lombardy	Thorburn, Pict. Co.	On dead branches of living tree.
<i>Cryptodiaporthe salicina</i> (Curr.) Wehm. Canker	Willow	Sydney River, C.B. Co., Grand Etang, Inv. Co.	Branch mortality severe on one tree at each location.

Other Noteworthy Diseases continued.

Organism and Disease	Host(s)	Location	Remarks
Drought damage	Maple, sugar Beech	Near Marshy Hope, Ant. Co.	Moderate foliage browning over 1-square mile.
<u>Gloeosporium</u> <u>aridum</u> Ell. & Holw. Anthracnose	Ash, white	Antigonish, Cape Breton, Inverness and Pictou counties	Leaf browning light except on two trees at Big Pond Centre.
<u>Guignardia</u> <u>aesculi</u> (Peck) J.B.Stew. Leaf blotch	Horse- chestnut	Mabou, Why- cocomagh, Port Hast- ings and Baddeck	Severe foliar browning at Mabou, moderate else- where.
<u>Melampsora</u> <u>medusae</u> Theum. Leaf rust	Aspen, trembling Tamarack	Southwest Mabou and Thorburn	Infections light in 1-acre or less.
<u>Puccinia spargan-</u> <u>ioides</u> Ell. & Barth. Ash rust	Ash, white	Cape Breton (2) Inverness (3), Pictou (1), and Victoria (1) counties	Represents easterly extension of known range.
<u>Delphinella bal-</u> <u>samae</u> Waterm. Tip blight	Fir, balsam	Melford, Inverness County	Infections of light intensity and incid- ence along 7 miles of roadside.
<u>Venturia saliciperda</u> Nuesch and	Willow	2 locations in each of Antigonish and Inverness counties and 1 each in Cape Breton and Pictou	Moderate shoot blight on occasional trees.
<u>Physalospora miyabeana</u> Fukushi Willow blight			

Table 8-1. Spruce Budworm Larval Sampling Records at Permanent Sampling Stations in Eastern Nova Scotia, 1968^a

Location	Tree sp.	Total specimens	Mean per tree sample	Deviation from 1967
Antigonish County				
Malignant Cove	WS	3	1.0	-4.0
Inverness County				
Grand Etang	WS	1	0.3	0.0
Port Hastings	WS	28	9.3	-7.0
Creignish	WS	17	5.6	-2.7
Port Hood	WS	415	138.3	+67.7
Strathlorne	WS	923	307.6	+179.0
Scotsville	WS	23	7.6	-74.7
Ainslie Glen	WS	84	28.0	+26.4
Orangedale ^b	WS	7	2.3	- ^c
Orangedale ^b	bP	2	.6	-
Victoria County				
Kelly Mountain	WS	2	0.6	-0.4
Ingonish Centre	WS	1	.3	+ .3
North Aspy	WS	13	4.3	+4.3

^a In addition to these stations, 78 trees at 26 additional stations were sampled, but produced negative results. Each station consisted of three trees and was sampled once.

^b Co-operator's sampling station.

^c Not sampled in 1967.

Table 8-2. Spruce Budworm Larvae Collected in Random Samples
by Counties in Eastern Nova Scotia, 1968

County	Tree sp.	Collections	Total trees	Specimens
Antigonish	WS	4	17	18
Guysborough	WS	1	3	1
Inverness	WS	19	49	628
	bF	8	20	380

Table 8-3. Spruce Budworm Egg-mass Counts per 100 Sq. ft. of White Spruce and Balsam Fir Foliage in Eastern Nova Scotia, 1968

Location	Tree sp.	Foliage examined in 1968, sq. ft.	Sound egg masses per 100 sq. ft.	
			1967	1968
Antigonish County				
Aulds Cove	WS	5.3	0	119
Ballantyne Cove	WS	1.8	56	556
Cape George	WS	13.7	0	108
Cape George, 3mi.W.	WS	5.4	30	22
Doctors Brook	WS	11.8	0	42
Malignant Cove	WS	3.5	0	0
Morristown	WS	11.9	0	96
Cape Breton County				
Irishvale	bF	6.6	- ^a	0
Marion Bridge	bF	5.4	-	0
Shunacadie	bF	5.2	-	0
Guysborough County				
Eight Island Lake	bF	9.2	-	0
Inverness County				
Cheticamp River	WS	9.5	333	60
Creignish	WS	8.3	49	12
Forest Glen	bF	9.0	0	56
French Mountain	bF	9.6	0	0
Frizzleton, 2.3 mi.N.	bF	11.9	0	0
Frizzleton, 5 mi.N.E.	bF	11.3	0	0
Glencoe Mills	bF	13.6	85	273
Grand Etang	WS	4.1	333	60
Inverness, 4 mi.N.	WS	5.9	68	242
Judique	WS	2.5	372	672
Judique, 5.2 mi.E.	bF	5.3	12	18
Judique, 8.1	bF	9.1	14	0
MacKenzie Mountain	bF	3.8	84	0
Margaree Forks	WS	4.9	15	48
Margaree Harbour	WS	5.6	34	0
Northeast Margaree	WS	7.1	0	0
Southwest Margaree	WS	12.2	115	73
McGregor Brook	bF	7.6	62	0
Melford	WS	7.8	0	183
Melford, 2 mi.W.	bF	7.8	-	129
	WS	13.5	0	60
Port Hastings	WS	7.4	209	100
Port Hood	WS	2.4	494	792
Presquile	WS	2.7	30	0
Scotsville	WS	8.7	39	36
Southwest Mabou	bF	5.3	-	1635
St. Ninian	bF	27.8	-	227

Table 8-3 (continued)

Location	Tree sp.	Foliage examined in 1968, sq. ft.	Sound egg masses per 100 sq. ft.	
			1967	1968
Inverness County				
St. Patrick Channel	WS	9.1	162	217
Strathlorne	WS	5.9	833	438
Strathlorne Station				
4 mi. E.	bF	7.3	27	138
Whycocomagh	WS	5.3	0	21
Pictou County				
Lismore	WS	3.7	0	34
Sunnybrae, 1.3 mi.E.	bF	6.0	7	0
Richmond County				
Oban	bF	13.6	-	14
Victoria County				
Barachois Brook	bF	8.8	0	0
Barachois River	WS	4.3	0	0
Bay St. Lawrence	WS	2.3	0	0
Cape North	WS	7.2	0	0
Clyburn Brook	WS	3.0	0	26
Crowdis Mountain	bF	7.1	0	0
Frizzleton, 10 mi.E.	bF	8.6	0	22
Gairlock Mountain	bF	10.0	0	0
Hunters Mountain	WS	5.8	20	14
Ingonish Beach	WS	4.5	180	0
Ingonish Centre	WS	3.3	216	0
Keltic Lodge	WS	4.1	0	0
Little River	WS	6.0	0	22
Mary Ann Falls	WS	3.8	0	0
	bF	4.0	0	19
Middle River	WS	5.8	31	0
New Campbellton	WS	9.0	0	0
North Aspy	WS	3.2	0	0
North River	bF	8.1	28	17
North River 2 mi. E.	bF	6.8	0	0
4 mi.N.	b			
on E. side	bF	5.4	0	0
North River Bridge,				
15 mi. N.W.	bF	10.4	0	0
12 mi. N.W.	bF	5.9	0	36
6 mi. N.W.	bF	8.8	0	0
Middle Branch North				
River, 3 mi. N.	bF	8.5	0	0
0.6 mi. N.	bF	11.8	0	10

Table 8-3 (continued).

Location	Tree sp.	Foliage examined in 1968, sq. ft.	Sound egg masses per 100 sq. ft.	
			1967	1968
Ottawa Brook	bF.	25.9	-	0
South Inoonish	wS	5.0	0	0
Warren Brook, 4 mi. N.	wS	3.3	0	0
Warren Lake	wS	4.2	0	0
Wreck Cove	wS	4.1	0	0

a Area not sampled.

Table 8-4. Condition of Trees on Balsam Woolly Aphid Plots in Eastern Nova Scotia, 1967 and 1968

Location	Date	Percentage of trees in class ^{a,b}							Dead other causes
		1	2A	3B	4A	4B	4C	5	
Pictou County									
Trafalgar ^c	1967	37.0	7.0	7.0	18.0	11.0	4.0	3.0	13.0
"	1968	38.0	10.0	7.0	14.0	11.0	4.0	3.0	13.0
Victoria County									
Gairlock Mtn. ^d	1967	16.8	0.0	0.0	14.0	16.8	10.3	21.5	20.6
"	1968	18.7	.0	.0	15.9	15.9	6.5	22.4	20.6

^a See Appendix A, Section 1, for explanation of classes.

^b Classes 2B, 2C, and 3C contained no trees.

^c Based on 100 trees.

^d Based on 107 trees.

Table 8-5. European Spruce Sawfly Larval Sampling Records at Permanent Sampling Stations in Eastern Nova Scotia, 1968

Location	Sawfly larvae collected ^a	
	July 2-25	Sept. 5-13
Antigonish County		
Monastery	0	1
Malignant Cove	0	1
Antigonish	0	1
Cape Breton County		
George River Sta.	1	0
Albert Bridge 2 mi. N.W.	1	0
Beaver Cove	1	0
Guysborough County		
Trafalgar	4	0
Inverness County		
Grand Etang	1	0
Scotsville	2	5
Margaree Forks	0	1
Port Hood	0	1
Ainslie Glen	0	1
Strathlorne	0	1
Pictou County		
French River	3	0
New Lairg	1	0
Pleasant Valley (rS)	1	0
Scotsburn	1	1
Moose River	2	0
Brookland	0	2
Pleasant Valley	0	2
Richmond County		
Lynch River	4	0
Grand River	4	0
Victoria County		
Baddeck	1	0
Kelly Mountain	0	1
Little River	0	1

^a Three white spruce trees sampled during each period except red spruce where indicated.

Table 8-6. European Spruce Sawfly Larval Sampling Records at Co-operators' Sampling Stations in Eastern Nova Scotia, 1968

Location	Tree sp.	Total trees	Sawfly larvae	
			July	Aug.
Antigonish County				
Big Marsh	WS	3	6	-
Salt Springs, 1 mi SE.	WS	6	-	5
Guysborough County				
Watnash	WS	3	1	-
Pictou County				
Blue Mountain	WS	3	6	-
Churchville	WS	3	6	-
Richmond County				
Lynch River Rd.	WS	6	1	8
Cannes	WS	3	-	1

Table 8-7. Larch Casebearer Larval Sampling Records and Defoliation Estimates at Sampling Stations in Eastern Nova Scotia, 1967 and 1968

Location	Larvae/100 fascicles		Defoliation ^a	
	1967	1968	1967	1968
Antigonish County				
Antigonish	1.4	7.9	N	T
Heatherton	.7	1.5	N	N
Cape Breton County				
East Bay	4.8	5.6	N	T
Guysborough County				
Guysborough	0.6	0.8	N	T
Gegoggin	.0	.3	N	N
Inverness County				
Northeast Margaree	0.0	0.6	N	N
Port Hawkesbury	.3	1.2	N	N
Judique	5.6	13.0	N	T
Pictou County				
Eden Lake	7.0	46.5	N	M
Mt. Thom	1.8	8.1	N	T
Richmond County				
Barra Head	8.1	2.0	T	N
Victoria County				
Big Bras d'Or	1.1	10.1	L	L
Baddeck	1.9	3.9	N	T

^a T= Trace, L= Light, M= Moderate, N= Nil.

Table 8-8. Fall Webworm Nest Census in Eastern Nova Scotia, 1966 - 1968

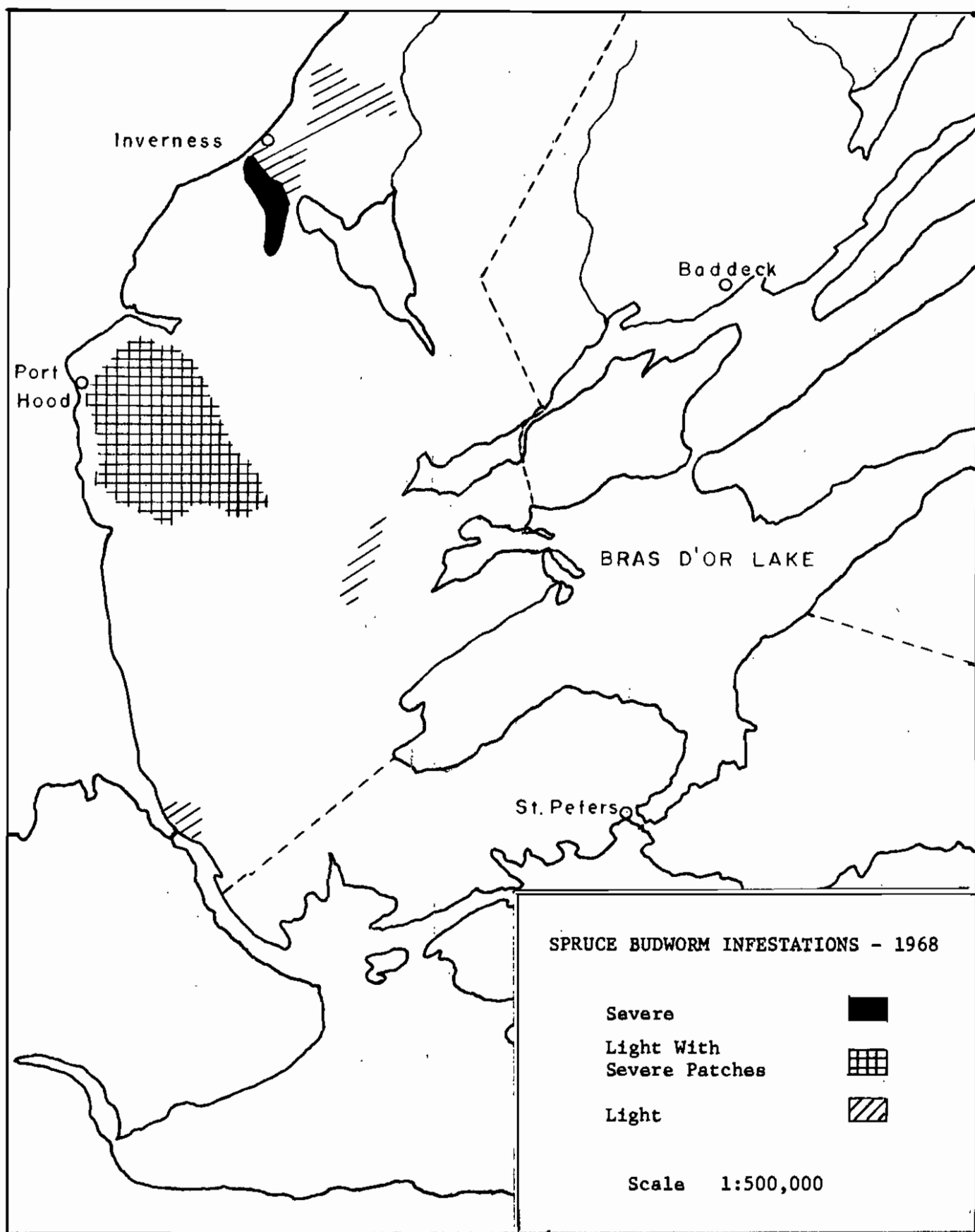
Location	Miles surveyed	Mean nests/mile		
		1966	1967	1968
Antigonish County				
Havre Boucher Bridge - Monastery	8.2	0.5	0.5	1.4
Afton - Monastery	6.5	.6	.9	6.1
Afton - Lower South River	10.3	.2	.2	.2
Cape Breton County				
Little Bras d'Or	4.5	0.8	0.8	0.8
Guysborough County				
Milford Have Bridge - Guysborough Village	2.5	0.0	0.0	53.6
Aspen - Stillwater	8.8	- a	-	.9
Inverness County				
Margaree Forks - Northeast Margaree	5.6	.0	.0	.0
MacKenzie Mountain	2.8	0.7	2.1	2.1
Margaree Forks - Cheticamp	23.4	.6	2.3	3.8
Pictou County				
Egerton R.R. - Pictou				
Antigonish County line	14.7	-	3.8	6.1
Alma - Central West River	6.2	14.0	-	17.0
Victoria County				
North River - St. Ann	11.5	0.5	0.0	0.0
Seal Island Bridge	1.4	-	81.4	50.0

a - No count made.

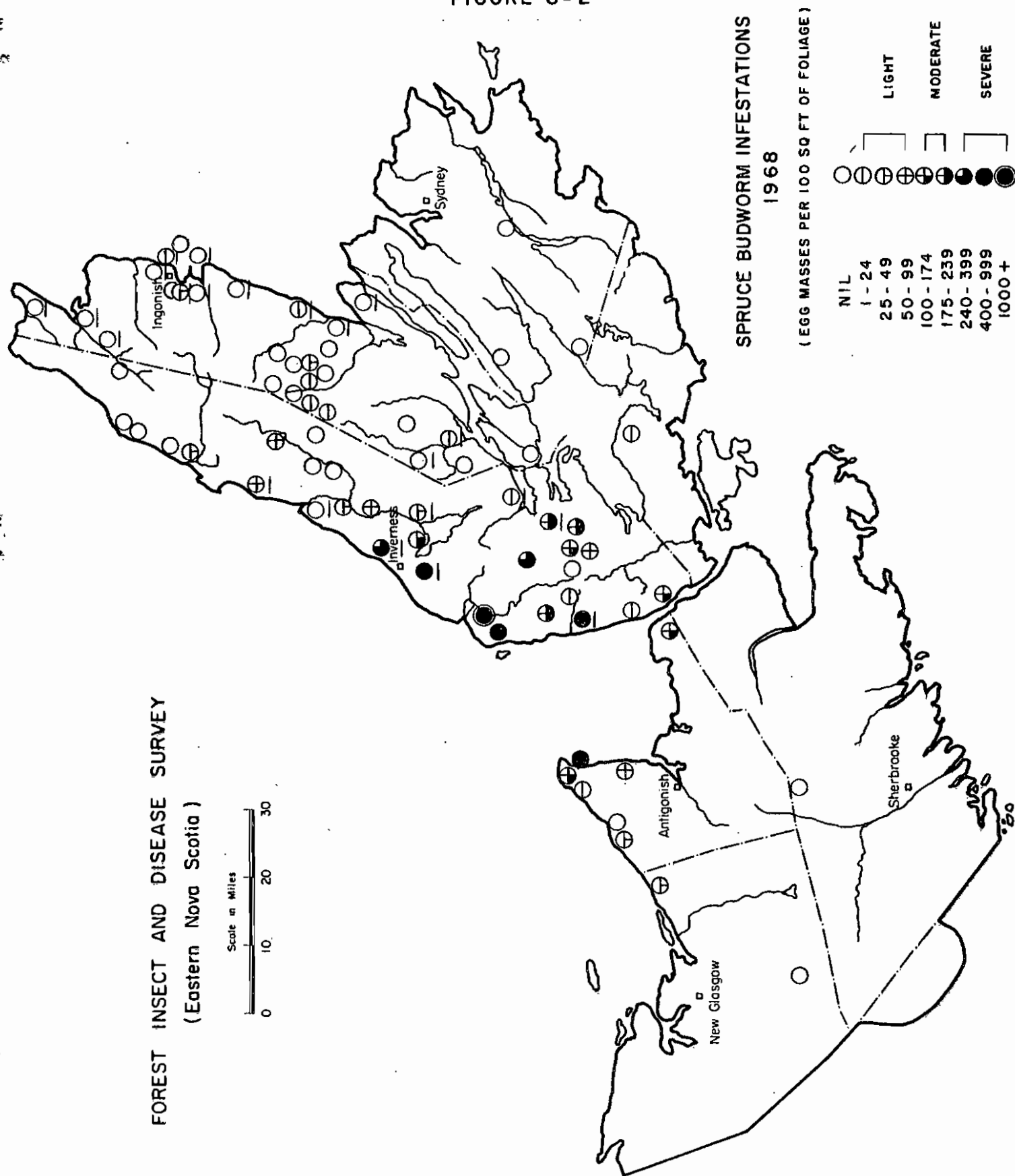
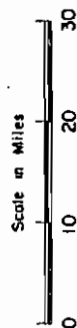
Table 8-9. Incidence of Hypoxylon Canker in Trembling Aspen in Eastern Nova Scotia, 1966, 1967 and 1968

Location	U.T.M. grid	Regist. number	Examined	Total trees		Infected (%)
				Cankered		
				Living	Dead	
<u>1966</u>						
Antigonish County						
Malignant Cove 3 mi. S	2057506	405	100	15	19	34
Pictou County						
Caribou River	2051506	801	100	18	11	29
Durham	2051505	228	100	17	3	20
Lower Barney River	2055505	538	104	24	13	35.5
Sub-totals 1966 and average			404	74	46	29.7
<u>1967</u>						
Antigonish						
Tracadie, 1 mi. SW.	2060505	597	100	3	5	8
Malignant Cove, 3 mi. NE.	2057505	767	100	10	17	27
Pictou County						
Thorburn, 2 mi. NW.	2053504	520	100	2	2	4
Sub-totals 1966 and average			300	15	24	13.0
<u>1968</u>						
Antigonish						
Purlbrook, 0.9 mi. NE.	2057504	242	100	1	3	4
Heatherton, 3 mi. W	2057504	252	100	4	2	6
Inverness County						
Margaree Forks	2064513	236	100	4	10	14
Pictou County						
Scotsburn, 1 mi. E.	2051505	608	100	2	6	8
Alma, 4 mi W.	2051504	369	100	1	4	5
Victoria						
Vic. Co. Line 5.1 mi. NE. of Inverness	2065510	231	100	0	1	1
Sub-totals 1968 and average			600	12	26	6.3
TOTALS to 1968 and average			1304	101	96	15.1

Figure 8-1



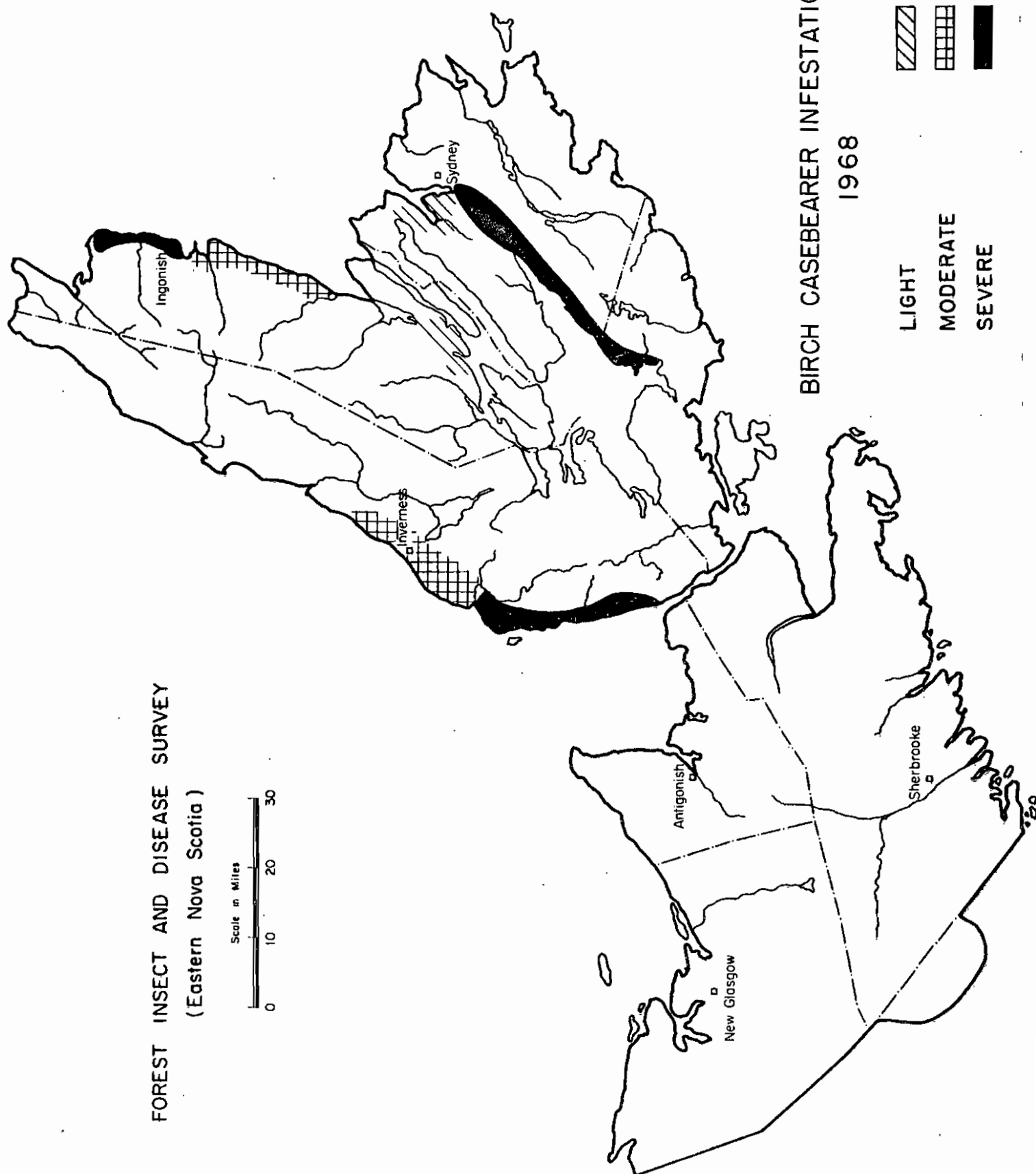
FOREST INSECT AND DISEASE SURVEY (Eastern Nova Scotia)



FOREST INSECT AND DISEASE SURVEY
(Eastern Nova Scotia)

Scale in Miles
0 10 20 30

FIGURE 8-3



BIRCH CASEBEARER INFESTATIONS
1968

LIGHT
MODERATE
SEVERE

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<i>Archips cerasivoranus</i>	17, 37, 48, 63, 106, 127
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<i>Argyresthia freyella</i>	18
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