

**ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
NEWFOUNDLAND
1971**

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by

L.J. Clarke, E.C. Banfield, W.J. Sutton,
D.M. Stone and D.S. O'Brien

**NEWFOUNDLAND FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
INFORMATION REPORT N-X-71**

FEBRUARY, 1972



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FEBRUARY, 1972

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FOREWORD

As in previous years this report documents the results of detection and appraisal surveys conducted by the Forest Insect and Disease Survey field staff to determine insect and disease conditions throughout the Province. The more important species are discussed in detail and the less important in tabular form.

The most important forested areas of the Island were examined and a total of 602 insect and 22 disease samples was collected from the 10 Ranger Districts (Fig. 1). An aerial survey was conducted over the forested areas of the Island and over the principal forests of Labrador to map damage caused by forest insects and diseases or other disturbance such as porcupine injury.

In 1971 surveys were conducted on a somewhat reduced scale because of the involvement of field staff on a special survey to estimate the impact of the balsam woolly aphid on immature balsam fir stands. Results of the survey have been reported separately by Page et al., Internal Report N-48. Other studies in which survey staff were involved included estimating overwintering population levels of the birch case-bearer, estimating cull conditions in aphid infested stands, studies to determine the rate of balsam fir killed by the hemlock looper, and in conducting the annual census of shrew numbers in permanent plots. The results of these studies will be described by the pertinent researchers in separate reports.

The only staff change was the addition of Mr. K. Richardson as Disease Survey Officer.

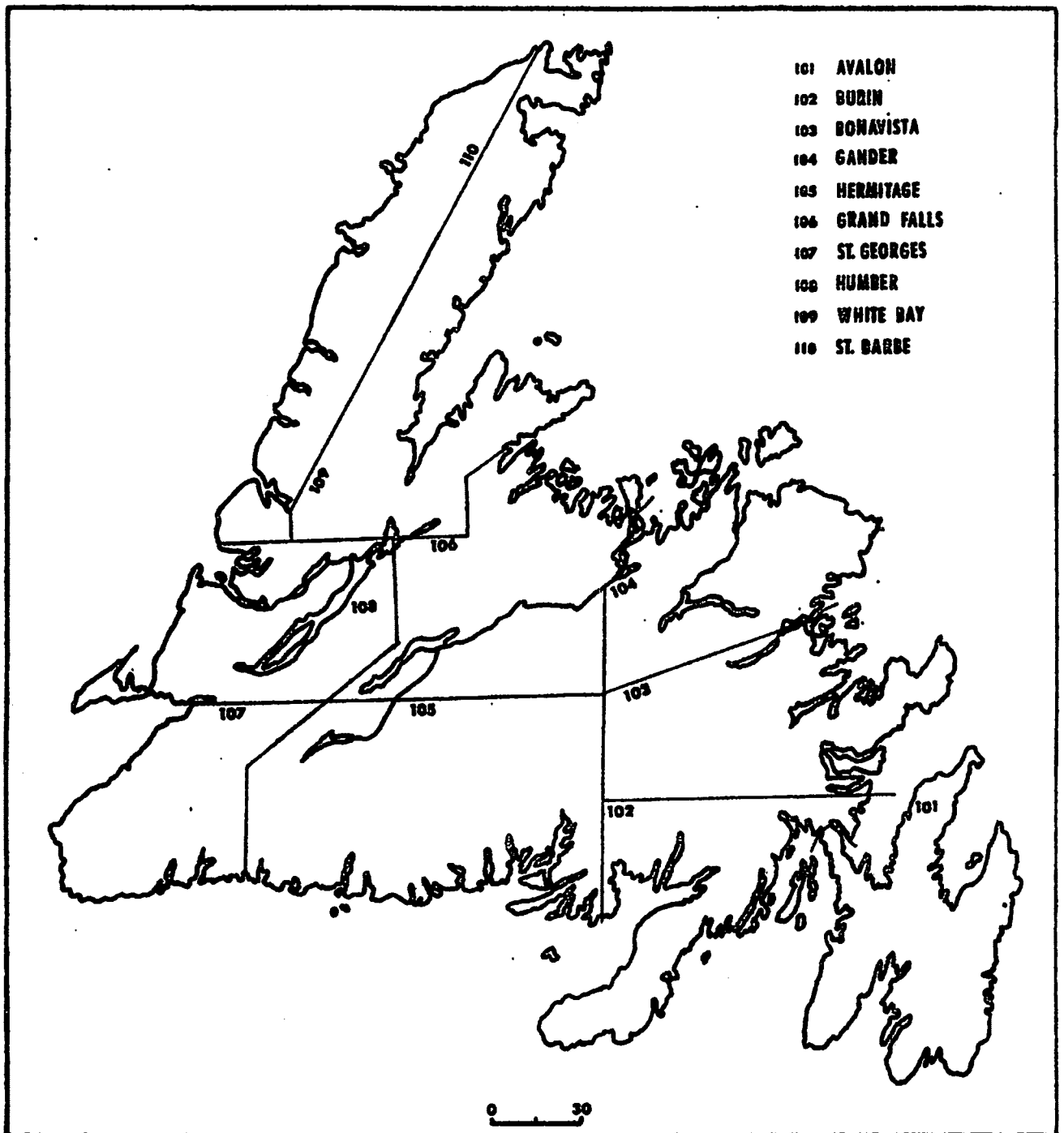


Fig. 1 - Survey Ranger Districts in Newfoundland.

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INTRODUCTION

Normal weather conditions prevailed throughout May, June, August and September. Temperatures were below normal and precipitation above normal during July.

The hemlock looper continued to decline with only 60,000 acres of defoliation recorded as compared to 384,000 acres in 1970. Balsam woolly aphid numbers were low throughout the Island and the only appreciable change in the boundaries of known infestations was a 16 mile extension of damage in the stands along the Gander Bay road. New extensive infestations of the birch casebearer were discovered near Bonne Bay in western Newfoundland and throughout central Newfoundland. A few casebearers were collected for the first time as far east as Clarenville in eastern Newfoundland. A parasite Campoplex spp. was introduced in an attempt to reduce the numbers of this pest and releases were made in a site on the White River road near Cormack in western Newfoundland. Severe defoliation, by the birch skeletonizer, was recorded in eastern Newfoundland. This is the first record of severe damage by this insect since 1954.

There were no major outbreaks of foliar diseases in the Province but leaf and twig blight of poplar and yellow witches broom of balsam fir were common in western and central areas. An intensive ice storm caused considerable damage to all tree species in the Deer Lake-Grand Lake area. This was the most severe ice storm recorded by the Survey for western Newfoundland.

IMPORTANT FOREST INSECTS

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Guen.) -

The outbreak of the looper, which began in 1966, continued to weaken in 1971 with only 60,000 acres defoliated as compared to 384,000 acres in 1970 (Fig. 2). The largest infestations occurred in the Birchy Lake-Baie Verte area, where light to severe defoliation was recorded in approximately 46,000 acres. Light to moderate defoliation was also recorded over a 1,300-acre-area on the south side of Lake Ambrose. Sampling in this area in June, showed 15% of the larvae per tree infected with a fungal disease, and only a few larvae were found when the stands were again sampled in July. Disease was also observed in the infestation in the Baie Verte area. Moderate to severe defoliation was recorded in 11,000 acres at Portland Creek, and light to moderate defoliation in a 1,300-acre-area at Ten Mile Lake on the Northern Peninsula. Of the 60,000 acres defoliated in 1971 only 1,000 acres in the Baie Verte area and 1,300 acres at Ten Mile Lake were defoliated for the first time, indicating a further reduction in the size of the looper outbreak in 1972.

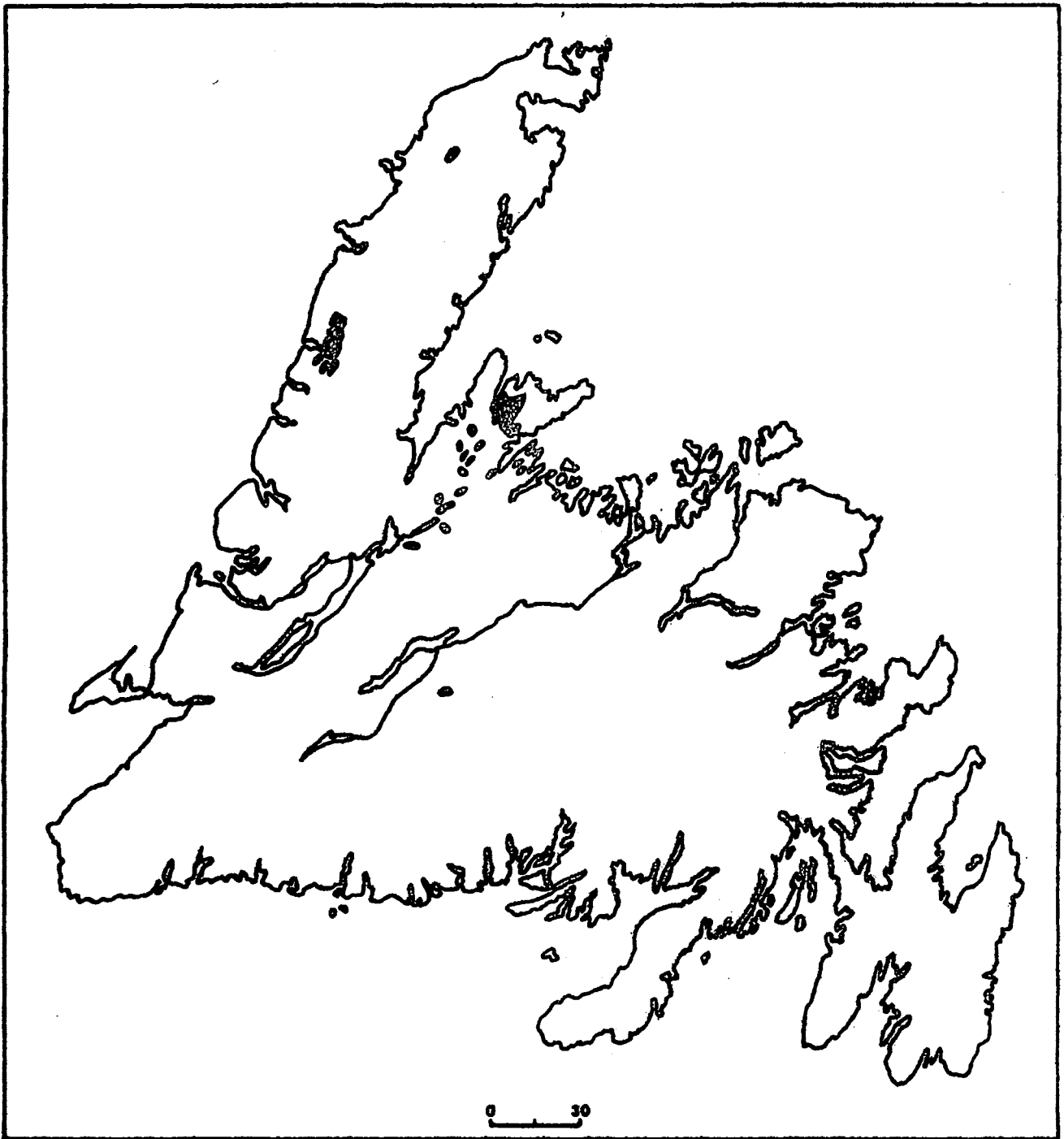


Fig. 2 - Eastern Hemlock Looper Infestations 1971.

An increase in the incidence of two fungi of the genus Entomophthora, and an increase in the recovery of parasitic insects was recorded in all looper infestations sampled in 1971. These increases helped to reduce or eliminate looper populations throughout most of central Newfoundland.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
77	0.33	0.96	127.3

Balsam Woolly Aphid, *Adelges piceae* (Ratz.) - The only appreciable change in the boundaries of known infestations of this insect was the addition of a 25,600-acre-area for a distance of 16 miles along the Gander Bay road between Second Pond and Main Point. No surveys were conducted to estimate population levels of the aphid but results of estimates obtained in intensive aphid studies indicated that numbers were low in most areas of the Island. This condition has persisted during the past 3 years.

Balsam-fir Sawfly, *Neodiprion abietis* complex - Outbreaks of this sawfly were recorded in the same general areas as in 1970. In central and eastern Newfoundland 10% defoliation occurred in a 150-acre-area fir stand near Swanger Cove, Bay D'Espoir, and on 1,000 acres in the Marystown-Creston area. In western Newfoundland, the outbreak at Trout Brook increased from 11 square miles to 40 square miles. This increase developed when the Trout Brook outbreak coalesced with an outbreak in the Georges Lake-Gallants area. An average of 40% defoliation was recorded in young fir stands.

<u>No. Collections</u>	<u>No. of larvae per tree sample</u>		
	Min.	Av.	Max.
31	0.33	0.96	300.0

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

crease in population levels of this budworm occurred in collections from western and central Newfoundland. Past records show that outbreaks of this insect begin to increase when hemlock looper outbreaks terminate. In western Newfoundland, 5% defoliation occurred in scattered balsam fir stands from Corner Brook to St. Andrews. Approximately 10% defoliation was recorded in an area 3 miles west of Corner Brook, where 8 larvae per tree were collected; only 7 larvae per tree were collected in the St. Andrews area. In central Newfoundland, 3 larvae per tree were collected in the Springdale area. No defoliation was recorded on black spruce, one of the favoured hosts of the budworm.

<u>No. Collections</u>	<u>No. of larvae per tree sample</u>		
	Min.	Av.	Max.
55	0.33	1.0	7.7

Spruce Budworm, *Choristoneura fumiferana* (Clem.) - Island wide

distribution of this budworm was recorded in 1971. Outbreaks have occurred periodically in western Newfoundland but they have caused little damage and usually terminated in 1 or 2 years. In 1971, defoliation, averaging 10%, was recorded in a 10-acre-area of balsam fir in the Codroy Valley and in a 20-acre-area of black spruce and fir in the Twin Lakes area near Badger. Defoliation of 10% was also recorded in a 20-acre-area of balsam fir near Gambo.

<u>No. Collections</u>	<u>No. of larvae per tree sample</u>		
	Min.	Av.	Max.
94	0.33	2.00	13.7

European Spruce Sawfly, *Diprion hercyniae* (Htg.) - Population levels of this insect increased in western Newfoundland and collections of 18 larvae per tree caused 10% defoliation on black spruce in a small area 3 miles west of Corner Brook.

No defoliation was observed in a stand of black spruce at Junction Brook near Deer Lake, where 4 larvae per tree were collected.

Numbers increased from 1.4 larvae per tree sample in 1970 to 1.8 larvae per tree in 1971 in the Bay l'Argent and Bishop Falls areas of eastern and central Newfoundland.

<u>No. Collections</u>	<u>No. Larvae per tree sample</u>		
	Min.	Av.	Max.
41	0.33	1.70	24.0

Yellow-headed Spruce Sawfly, *Pikonema alaskensis* (Roh.) - Population levels of this insect fluctuate from year to year and usually occur in outbreak numbers on regeneration spruce in burnt-over areas. In 1971, 40% defoliation occurred on black spruce regeneration and 10% on isolated mature trees in a 10 square mile burnt-over area on the Indian Bay Big Pond woods road. The parasite *Drino bohémica* Mesn., a species introduced in 1943 to reduce European spruce sawfly numbers was reared from collections of yellow-headed spruce sawfly. This is the first record of this parasite being reared from this sawfly in Newfoundland.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
15	0.33	0.67	66.7

Larch Sawfly, *Pristiphora erichsonii* (Htg.) - In 1971, population levels of this sawfly increased from 19 to 23 in previously recorded outbreaks at South Branch in western Newfoundland. An estimated 15% defoliation was recorded in the Codroy Valley area. The outbreak at the junction of the Cooks Harbour-St. Anthony roads continued for the fourth consecutive year. No collections were made in this area in 1971, however, a survey in late summer showed 20% defoliation of immature and mature tamarack in the area. In central Newfoundland, larval populations decreased from 13 per tree sample in 1970, to 8 per tree in 1971, but caused 20% defoliation in two separate 950-acre-stands on the north and south sides of Red Indian Lake.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
8	0.33	9.56	40.0

The masked shrew *Sorex cinereus cinereus* Kerr., introduced in 1958 to help control a number of forest pests including the larch sawfly, now occurs over 95% of the Island. Population levels in the shrew census plots in central and eastern Newfoundland remained the same as in 1969 and 1970: 0.14 shrews per trap day. However, the census plot established on the Avalon Peninsula in 1970 yielded only 0.03 shrews per trap day. This was the first year that shrews were trapped in this plot.

Birch Casebearer, Coleophora fuscedinella (Zell.) - The accidentally introduced birch casebearer now occurs in most white birch stands in western and central Newfoundland and has spread as far east as Clarenville (Fig. 3). In western Newfoundland, defoliation of white birch was 20% in the stands from Georges Lake to Port Aux Basques, Lomond to Bellburns, and Roddickton to Main Brook, and 50% in stands between Georges Lake and Springdale. In central Newfoundland, defoliation was 30% from Hall's Bay to Badger and from Bishop's Falls to Gambo, and 70% from Victoria Lake to Noel Pauls Brook and from Red Indian Lake to Bishop's Falls. In eastern Newfoundland, 5% browning was reported from Gambo to Clarenville.

In an attempt to strengthen the weak complex of native insect parasites, a total of 402 adults of a hymenopterous parasite, Campoplex spp. was introduced from Europe during the past summer. These were released under caged conditions in an infested birch stand near Cormack in western Newfoundland. Observations, following release, showed that many of the caged parasites deposited eggs within the casebearer larvae, indicating that the introduction may be successful.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
10	0.33	5.77	28.5

Birch Leaf Miner, Fenusa pusilla (Lep.) - Population levels of the birch leaf miner were greatly reduced in central Newfoundland. In an area around Red Indian Lake, where browning of birch foliage was severe in 1970, only light damage occurred in 1971. However, severe browning was recorded along the Halls Bay and Badger-Buchans roads. Light browning occurred in the Stephenville area of Newfoundland.



Fig. 3 - Birch Casebearer Distribution 1971.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
19	0.9	21.58	100.0

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. - Aerial surveys and ground checks showed an average of 60% defoliation and browning on mature and immature white and yellow birch from Bay D;Espoir north to Gambo, and east to Paddy's Pond near St. John's (Fig. 4). This is the only record of an infestation of this insect since 1954.

<u>No. Collections</u>	<u>No. larvae per tree sample</u>		
	Min.	Av.	Max.
2	16.67	16.67	16.67

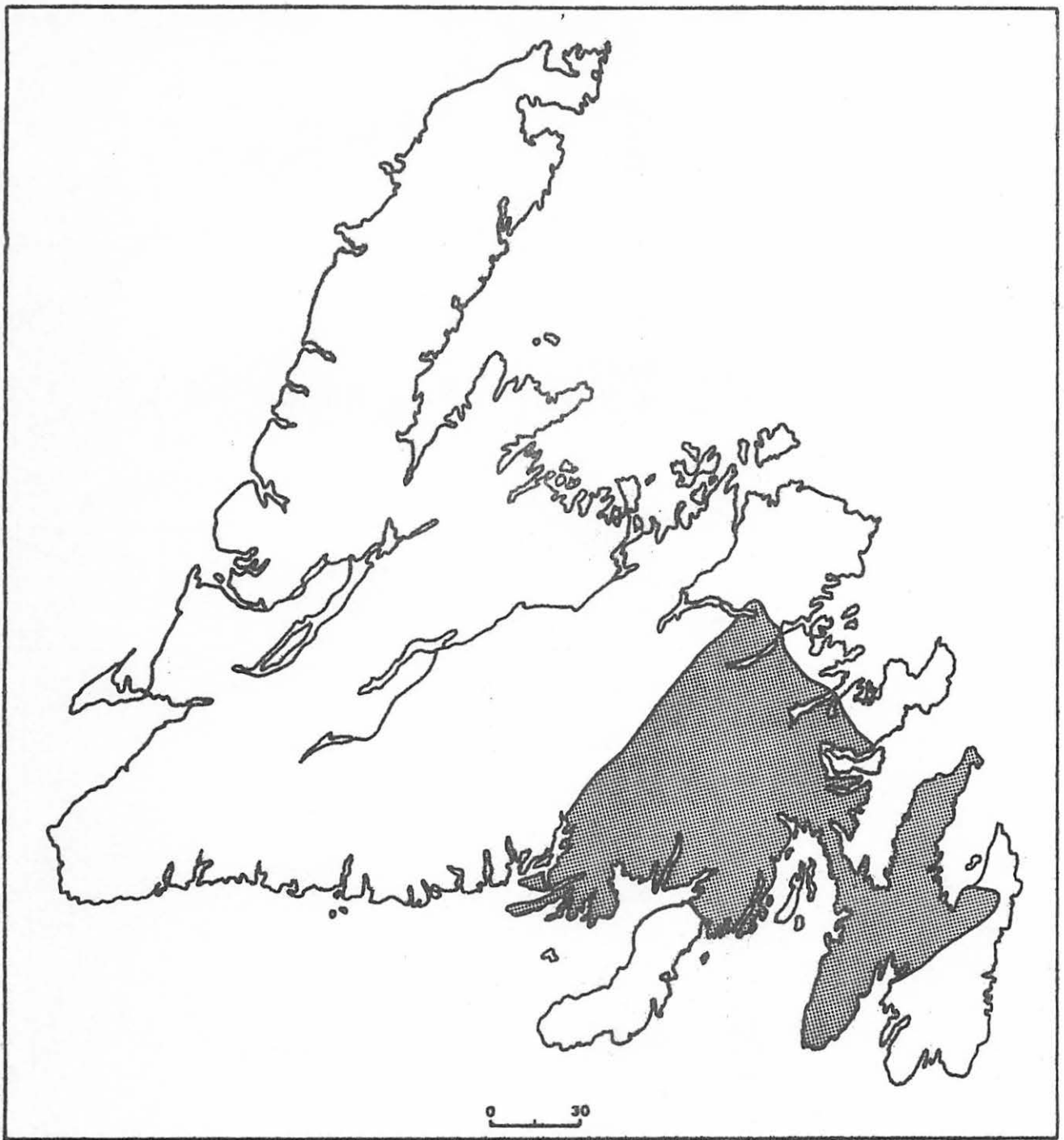


Fig. 4 - Birch Skeletonizer Infestations 1971.

OTHER INSECTS COLLECTED

Species	Host(s)	Locality	Average per tree sample	No. of Collections
<u>Acronicta dactylina</u> (Grt.) A noctuid	bF	Portland Creek	0.3	1
<u>Acronicta grisea</u> Wlk. A noctuid	wB	Lewisporte	1.0	1
<u>Anomogyna perquiritata</u> <u>beddeki</u> Hamp. A noctuid	bF	South Branch	0.3	1
<u>Anoplodera mutabilis</u> (Newn.) A wood borer	bS	Crooked Lake	1.0	1
<u>Anoplonyx luteipes</u> (Cress.) Marlatt's larch sawfly	tL	3 mi. E. of Bay l'Argent Jct., Dark Cove, Districts 103, 106, 107, 108 and 110.	1.7	25
<u>Brachyrhinus singularis</u> (Linn.) Clay-coloured root weevil	bF,wS	Brooklyn, Jct. of Salmonier Line and T.C.H.	0.3	2
<u>Campaea perlata</u> (Guen.) Fringed looper	wB,yb,Sal	Camp 33 Rd., Grand Lake, Britannia, 2.5 mi. E. of Lethbridge Jct.	0.6	3
<u>Caripeta divisata</u> Wlk. Gray spruce looper	bS,bF	Jct. of Benton Rd. & T.C.H., Northern Arm, 8 mi. W. of Burlington, 3 mi. W. of Springdale Jct. on T.C.H.	0.5	5
<u>Chrysomela falsa</u> Brown Willow leaf beetle	W	Port Blandford, Gull Pond, Catamaran Provincial Park.	39.3	3
<u>Chrysomela mainensis</u> <u>mainensis</u> Bech. Alder leaf beetle	Sal	N.E. end Birchy Lake, Jct. of R39 and T.N.N. Park boundary.	2.6	2

<u>Coleophora laricella</u> (Hbn.) Larch casebearer	tL	2 mi. N. of Little Bay East, Jct. of St. Bernard's and Bay l'Argent Rds.	17.5	2
<u>Ctenicera triundulata</u> Rand. A click beetle	bS	Noel Pauls Brook.	0.3	1
<u>Dendroides concolor</u> Newm. Fire-colored beetle	wB	Square Pond Prov. Park.	0.3	1
<u>Dioryctria reniculella</u> (Grote) Spruce coneworm	bS,wS	Crabbs River Rd., Searston, Reidsville, Districts 103 and 106	0.8	10
<u>Ectropis crepuscularia</u> (Schiff.) Saddleback looper	bF,bS	Trinity, Baie Verte, Hungry Hill, Catamaran Park, Rogerson Lake, Barachois Pond, 3 mi. N. of Lake Ambrose.	0.5	8
<u>Epizeuxis</u> sp. A noctuid	bF	3 mi. S.E. of Searston.	0.3	1
<u>Eucosma</u> sp. A shoot moth	bS	7 mi. N. of Lockston Prov. Park	0.3	1
<u>Eucordylea atrupictella</u> Dietz. A spruce needle miner		Rocky Pond, 2 mi. E. of South Twin Lake.	1.0	2
<u>Eupithecia</u> sp. A brown spruce looper	bF,bS,wS,tL	Districts 103, 104, 106, 107, 108, 109.	0.4	21
<u>Fenusa dohrnii</u> (Tischb.) European alder leaf miner	Sal	1.5 mi. N. of Lewisporte, 3.5 mi. S. on Bay D'Espoir Rd.	62.5	2
<u>Feralia jocosa</u> (Guen.) Green-striped caterpillar	bS,bF,tL	Districts 102, 103, 105, 106, 107, 108.	0.5	23
<u>Gracillaria alnivorella</u> Cham. A leaf miner	Sal	Tom Joe Brook.	1.3	1

<u>Griselda radicana</u> (Wlsh.) A micro-moth	bS,bF,tL	1.5 mi. S.W. of Frederickton, Jct. of Twin Lakes Rd. & T.C.H., Rocky Pond.	0.3	1
<u>Hylobius</u> spp. Root collar weevils	bF	6.5 mi. from T.C.H. on Gallants Rd.	0.3	1
<u>Ichthyura apicalis</u> Wlk. A notodonid	W	Lewisporte.	8.0	1
<u>Limenitis arthemis</u> Dru. White admiral	W	1/4 mi. E. of T.C.H. on Pynns Brook Road.	3.0	1
<u>Mindarus abietinus</u> Koch Balsam twig aphid	bF	Salmonier, 3 mi. W. of Long Beach, 3.5 mi. E. of Knights Cove.	6.7	3
<u>Monochamus scutellatus</u> (Say) White-spotted sawyer	tL	6.5 mi. S. of T.C.H. on Howley Rd.	1.0	1
<u>Nadata gibbosa</u> (J.E. Smith) Green oak caterpillar	wB	4.5 mi. S.W. of Silverdale.	1.0	1
<u>Nematus limbatus</u> (Cress.) Willow sawfly	W	Lewisporte.	1.0	1
<u>Nematus</u> sp. A sawfly	W	Jonathans Pond Prov. Park, 2.3 mi. E. of Gander.	14.0	2
<u>Nepytia canosaria</u> (Wlk.) False hemlock looper	bF	Brent Cove Rd., 4 mi. W. of Baie Verte Rd., 13 mi. N. of Bellburns, District 102.	0.5	7
<u>Nycteola cinereana</u> N. and D. A web maker	bF,wB,yB,Sal	Winter Brk., Lost Pond, South Brk. Valley, Barachois Pd.	0.4	4

<u>Nyctobia limitaria</u> (Wlk.) Green balsam looper	bF,bS,wS	Baie Verte Pen., Trinity, Catamaran Prov. Park, Southwest Arm, Twin Lakes, Salmonier Line, Shoal Pt., 3 mi. W. of Corner Brook, White's Rd., Reidville Rd., 4.5 mi. S.W. of Silverdale.	0.6	22
<u>Orgyia antiqua</u> (L.) Rusty tussock moth	Sal, wB Japanese birch	Stephenville Crossing, Winter Brk., Epworth Jct., Plate Cove East, 5 mi. S.W. of Baie Verte.	0.1	5
<u>Papilio glaucus canadensis</u> R. and J. Tiger swallowtail	wB,W	1 mi. S. of Hawkes Bay, Pynn's Brk.	0.8	2
<u>Parorgyia plagiata</u> (Wlk.) Pine tussock moth	bF,bS	Birchy Lake, 6 mi. W. of Baie Verte on Bear Cove Rd.	0.3	2
<u>Phratora purpurea purpurea</u> Brown A leaf beetle	W	Catamaran Provincial Park.	0.3	1
<u>Phyllocnistis populiella</u> (Chamb.) Aspen leaf miner	tA	2 mi. W. of Sir Richard Squires Provincial Park.	0.6	1
<u>Pikonema dimmockii</u> (Cress.) Green-headed spruce sawfly	bS,wS	4 mi. S.W. of Goobies, Exploits Dam, Springdale Rd., Districts 103, 107, 108 and 109.	1.0	18
<u>Pissodes dubius</u> Rand. Balsam bark weevil	bF	Winter Brook.	0.3	1
<u>Pristiphora geniculata</u> (Htg.) Mountain-ash sawfly	Mo	St. John's, Bonne Bay Rd., Brent's Cove Rd.	25.0	10
<u>Pristiphora lena</u> K. A spruce sawfly	bS,wS,tF	4.0 mi. S.W. of Goobies, Districts 103, 106, 107, 108 and 109.	1.5	19

<u>Protoarmia porcelaria</u> <u>indicataria</u> Wlk. Dotted line looper	bF,yB	Bottom Bk. Rd., Steel Mtn. Rd., Birchy Lake, Winterland.	0.5	4
<u>Sciaphila duplex</u> Wlsh. Poplar leaf roller	tA	2 mi. W. of Squires Memorial Park.	0.2	1
<u>Semiothisa</u> sp. A looper	bS,wS,bF,tL	Throughout Province.	1.7	28
<u>Sicya macularia</u> Harr. A looper	wB, Sal	South Bk. Valley, Jct. S.W. Brook and Lethbridge Rds.	1.5	2
<u>Solenobia walshella</u> Clem. A bagworm	bF,bS,wS	Little Salmonier, Garden Cove Rd., Bonavista Peninsula, District 104.	0.5	11
<u>Syneta</u> sp. A leaf beetle	tL	Hatchet Cove.	0.3	1
<u>Syngrapha alias</u> (Ottol.) Spruce climbing cutworm	bF,bS	Lost Pond, Logging School Rd., Felix Cove, South Bk. Valley, Bottom Bk. Rd., Camp 180 Rd., Robinson's River Rd.	0.4	7
<u>Syngrapha rectangula</u> (Kby.) Angulated cutworm	bF	North Branch Rd.	0.3	1
<u>Syngrapha selecta</u> (Wlk.) Verdigris autograph	bF,bS	Lake Ambrose, Camp 180 Rd.	0.7	2
<u>Syngrapha</u> sp. A cutworm	bS	9.7 mi. E. of Junction Bk.	0.3	1
<u>Zeiraphera canadensis</u> M. & F. Spruce bud moth	wS	Reidsville.	0.7	1
<u>Zeiraphera fortuna</u> Kft. Yellow spruce budworm	wS	1 mi. N. of Felix Cove.	0.3	1
<u>Zeiraphera improbana</u> (Wlk.) Larch needle worm	tL	5 mi. E. of Colinet, Campbellton, Gander Bay Rd., South Branch Howley Rd., Districts 103 and 106.	1.4	19

IMPORTANT FOREST DISEASES

Leaf and twig blight of poplar, *Pollaccia radiosa* (Lib.) Bald.

and Cif. and *P. elegans* Serv., was widespread on trembling aspen. More than 90% of the terminal shoots of aspen regeneration were infected in stands between Deer Lake and White Bay. In central Newfoundland, 60% of the terminal shoots of aspen regeneration were infected in stands near Springdale, Lewisporte and West Lake in the Badger area. In eastern Newfoundland infection was recorded on about 50% of the shoots of an intermediate-aged aspen stand at Plate Cove, Bonavista Peninsula. No infection was found on any of the mature trees examined.

Ice Damage -- On February 14, 1971, an ice storm caused considerable damage to all species of trees and to power and telephone lines. Damage to balsam fir, black spruce, tamarack and white birch was observed along the Trans Canada Highway from the Baie Verte Junction to Corner Brook. The most severe damage occurred in the Pasadena-Deer Lake area. Broken tops of fir, spruce, tamarack and birch was estimated at 5% between Baie Verte Junction to Deer Lake, 25% between Deer Lake and Grand Lake and 15% along the Humber River near Steady Brook. A small stand of mature white birch at Pasadena and a stand of immature balsam fir at Grand Lake was damaged 30% and 50% respectively.

OTHER DISEASES COLLECTED

Organism	Host(s)	Locality	Remarks
Anthraco nose	wB, Mom	Bonavista	Low to high infection on white birch; moderate on maple.
<u>Apiosporina morbosa</u> (Schw.) Arx Black knot	pCh	All areas	Moderate to severe infection.
<u>Armillaria mellea</u> (Vahl. ex Fr.) Kummer Armillaria root rot	bF, bS, tL	All areas	Common in plantations and burnt areas.
<u>Chrysomyxa ledicola</u> Lagerh. Needle rust	wS	Bay D'Espoir	Moderate in under-story trees.
Frost damage	bF	West end of Grand Lake	Moderate damage in immature stand.
<u>Gymnosporangium cornutum</u> Arth. ex kern Leaf rust	Mo	Bonavista	Severe infection.
<u>Hypodermella laricis</u> Tub. Needle cast	tL	Bonavista	Moderate to low infection.
<u>Isthmiella faullii</u> (Dark.) Dark. Needle cast	bF	White Bay	Moderate infection.
<u>Melampsora abietis-capraearum</u> Tub. Leaf rust	W	Bonavista	Severe infection.
<u>Melampsora medusae</u> Thuem. Needle rust	tL	Humber	Low infection.

<u>Melampsorella caryophyllacearum</u> Schroet. Yellow witches broom	bF	Hungry Hill-Noel Pauls Brook	Severe infection.
<u>Melampsorium betulinum</u> (Fr.) Kleb. Leaf rust	wB	Bonavista	Low, medium and severe infection levels throughout locality.
<u>Phyllosticta minima</u> (Berk. & Curt.) Ell. & Ev. Purple eye spot	rM	Duntara, Gander	High in Duntara, low in Gander.

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Birch skeletonizer	1,8
Black-headed budworm	4
Black knot	15
Brachyrhinus singularis	9
Brown spruce looper	10
Bucculatrix canadensisella	8

C

Campaea perlata	9
Campoplex spp.	1,7
Caripeta divisata	9
Choristoneura fumiferana	4
Chrysomela falsa	9
Chrysomela mainensis mainensis	9
Chryso-myxa ledicola	15
Clay- colored root weevil	9
Click beetle	10
Coleophora fuscadinella	7
Coleophora laricella	10
Ctenicera triundulata	10
Cutworm	13

D

Dendroides concolor	10
Dioryctria reniculella	10
Diprion hercyniae	5
Dotted line looper	13
Drino bohémica	5

E

Eastern hemlock looper	1,2,4
Ectropis crepuscularia	10
Entomophthora	3
Epizeuxis sp.	10
Eucosma sp.	10
Eucordylea atrupictella	10
Eupithecia sp.	10
European alder leaf miner	10
European spruce sawfly	5

F

False hemlock looper	11
Fenusa dohrnii	10
Fenusa pusilla	7
Feralia jocosa	10
Fire-colored beetle	10
Fringed looper	9
Frost damage	15

G

Gracillaria alnivorella	10
Gray spruce looper	9
Green balsam looper	12
Green-headed spruce sawfly	12

Green oak caterpillar	11
Green-striped caterpillar	10
Griselda radicana	11
Gymnosporangium cornutum	15

H

Hylobius spp.	11
Hypodermella laricis	15

I

Ice damage	2,14
Ichthyura apicalis	11
Isthmiella faullii	15

L

Lambdina fiscellaria fiscellaria	2
Larch casebearer	10
Larch sawfly	6
Larch needle worm	13
Leaf beetle	12,13
Leaf miner	10
Leaf rust	15,16
Leaf and twig blight	2,14
Limenitis arthemis	11

M

Marlatt's larch sawfly	9
Melampsora abieti-capraearum	15
Melampsora medusae	15
Melampsorella caryophyllacearum	16
Melampsoridium betulinum	16
Micro-moth	11
Mindarus abietinus	11
Monochamus scutellatus	11
Mountain-ash sawfly	12

N

Nadata gibbosa	11
Needle cast	15
Needle rust	15
Nematus limbatus	11
Nematus sp.	11
Neodiprion abietis	3
Nepytia canosaria	11
Notodonid	11
Nycteola cinerea	11
Nyctobia limitaria	12

O

Orgyia antiqua	12
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P

Papilio glaucus canadensis	12
Parorgyia plagiata	12
Phratora purpurea purpurea	12
Phyllocnistis populiella	12
Phyllosticta minima	16
Pikonema alaskensis	5
Pikonema dimmockii	12
Pine tussock moth	12
Pissodes dubius	12
Pollaccia elegans	14
Pollaccia radiosa	14
Poplar leaf roller	13
Pristiphora erichsonii	6
Pristiphora geniculata	12
Pristiphora lena	12
Protoarmia porcelaria indicataria	13
Purple eye spot	16

R

Root collar weevil	11
Rusty tussock moth	12

S

Saddleback looper	10
Sciaphila duplex	13
Semiothisa sp.	13

Shoot moth	10
Sicya macularia	13
Solenobia walshella	13
Spruce climbing cutworm	13
Spruce bud moth	13
Spruce budworm	4
Spruce coneworm	10
Spruce needle miner	10
Spruce sawfly	12
Syneta sp.	13
Syngrapha alias	13
Syngrapha rectangula	13
Syngrapha selecta	13
Syngrapha sp.	13

T

Tiger swallowtail	12
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V

Verdigris autograph	13
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W

Web maker	11
White admiral	11
White-spotted sawyer beetle	11
Willow leaf beetle	9
Willow sawfly	11
Wood borer	9

Y

Yellow-headed spruce sawfly	5
Yellow witches broom.....	2,16
Yellow spruce budworm	13

Z

Zeiraphera canadensis	13
Zeiraphera fortunana	13
Zeiraphera improbana	13