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ANNUAL DISTRICT REPORT FOREST INSECT AND DISEASE SURVEY NEWFOUNDLAND 1972

by L.J. CLARKE, E.C. BANFIELD, W.J. SUTTON, D.M. STONE, D.S. O'BRIEN, K.E. PARDY and J.W. MARSHALL

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FOREWORD

This report documents the forest insect and disease conditions throughout the Province in 1972 and provides predictions for 1973. The most important insects and diseases are discussed in detail, the least important are shown in tabular form. A total of 1,200 insect and disease collections were submitted for identification from the 10 Ranger Districts, Fig. 1.

An aerial survey was conducted to determine the extent and intensity of all insect outbreaks and special surveys were conducted to appraise damage caused by the spruce budworm in western and central Newfoundland.

A total of 19 permanent sample plots were established in western and central Newfoundland. They are the first of a series of such plots that are being located in the major forest types of the Island. They will be sampled annually to determine changes in insect and disease conditions and to evaluate the impact of resultant damage on infested stands.

At the request of the Laurentian Forest Research Centre, L.J. Clarke assisted Dr. L.J. Jobin in organizing a system for monitoring hemlock looper infestations and in defining areas for aerial spraying on Anticosti Island. The other survey technicians assisted in a variety of research projects conducted at the Newfoundland Forest Research Centre. These included studies to determine the rate of deterioration of balsam fir killed by the hemlock looper, evaluation of the impact of the balsam woolly aphid on fir stands, and a census of population levels of the masked shrew, an introduced predator of forest insects.

The only staff change was the transfer of Mr. J.D. Rowe, from Pathology to the Survey Section.

ANNUAL DISTRICT REPORT

FOREST INSECT AND DISEASE SURVEY

NEWFOUNDLAND 1972

by

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

INTRODUCTION

Cold and sunny weather prevailed in May but temperatures were above normal during June and the first half of July. Weather conditions were normal for the remainder of the summer and fall. Although a heavy frost severely damaged agricultural crops in the Deer Lake - Cormack area on July 18, no damage was observed in forest stands.

The hemlock looper outbreak, that began in 1966, terminated in 1971. In 1972, larval numbers were low in all areas sampled and no defoliation was observed. However, numerous hemlock looper moths were reported in two separate areas in the Salmonier Valley. There was no observed extension in the boundaries of balsam woolly aphid outbreaks in western and eastern Newfoundland but infestations had spread in several areas in central Newfoundland. The usually unimportant spruce budworm reached outbreak proportions in 1972 and caused light, moderate and severe defoliation to balsam fir and white spruce over a total area of 1,599,372 acres in western and central Newfoundland. The birch casebearer was found

for the first time on the Burin Peninsula. Birch leaf miner damage increased in western Newfoundland. Two parasites, Priopoda nigricolla (Thomson) and Grypocentrus albipes (Rthe), of this leaf miner were introduced from Europe and released at the Pasadena Forestry Field Station in August. The birch skeletonizer again caused severe defoliation to birch in central and eastern Newfoundland and new outbreaks were recorded on the Northern Peninsula. High numbers of black-headed budworm, balsam-fir sawfly, yellow-headed spruce sawfly, satin moth and mountain-ash sawfly were also collected in various areas throughout the Island.

Needle rusts of fir and spruce and leaf and twig blight of aspen were the most important foliar diseases recorded in 1972.

PERMANENT SAMPLE PLOTS

In 1972, the Forest Insect and Disease Survey established the first of a series of permanent sample plots for the annual detection of changes in insect and disease conditions and for evaluating the effect of resulting damage in affected stands. In the event trees are killed by either insects or diseases these plots will also be used to study the progress of stand deterioration.

Nineteen plots were selected using aerial photographs and Newfoundland Forest Inventory type maps. They were located in major forest types across the Island (Fig. 2). The size of the plots varied from 1/10 to 1/2 acre depending on stand uniformity and insect and/or disease conditions. The centre of each plot was marked with a stake and all trees (commercial species) 3.5 inches and over were tagged and measured for d.b.h., age, height and crown width. Insect defoliation, disease and visible

CAPTION FOR FIG. 2 - F.I. & D.S. PERMANENT PLOTS

INSECT AND DISEASE PLOTS

	Place Name	Grid
12.	Gander Bay Road	2168544
11.	Glenwood	2166542
14.	Birchy Bay	2166546
15.	Norris Arm	2163544
16.	Bishops Falls	2161543
17.	Rattling Brook	2160541
25.	Millertown Jct. Road	2155541
24.	Lake Ambrose	2152538
36.	Wiley Brook	2150540
34.	Birchy Lake	2151545
32.	Westport Road	2153551
48.	Sandy Lake	2149546
49.	Junction Brook	2147545
44.	Georges Lake	2142540
43.	Whites Road	2140538
42.	Fishels River	2138535
41.	Codroy Pond	2136532
26.	Crooked Lake	2156544

MASKED SHREW - LARCH SAWFLY PLOTS

A.	Paddys Pond	2235525
B.	Terra Nova National Park	2171536
C.	Halls Bay	2156545
D.	Wiley Brook	2150540

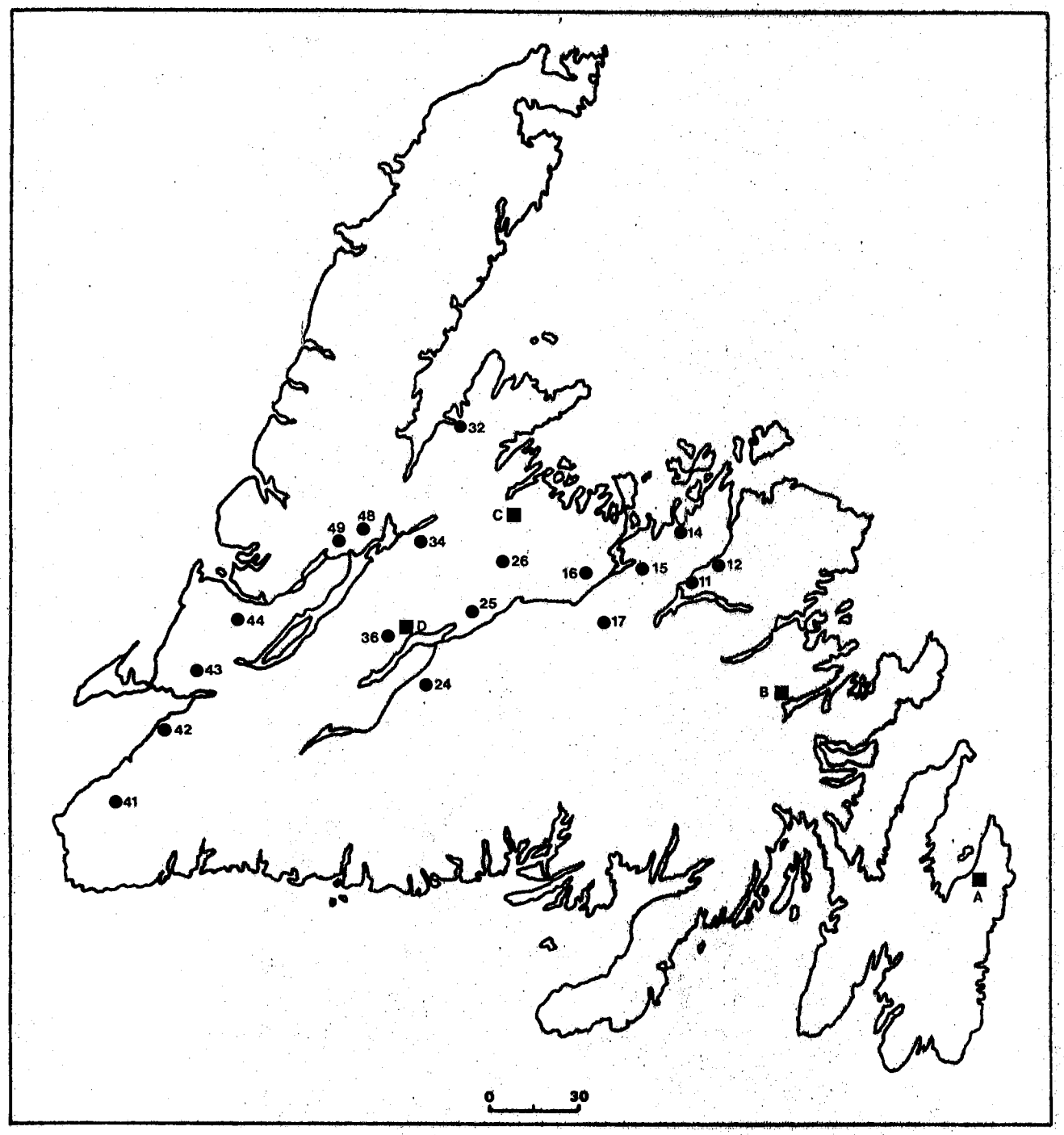

Fig. 2. Permanent sample plots 1972

defects in the trees were recorded. Plots will be remeasured every 5 years to record stand changes. All stand information is maintained in a permanent file - card system. Standard F.I.D.S. insect and disease samples were collected from 9 balsam fir trees (where present) and from 3 of each of other tree species. The same sampling system will be applied in each plot annually.

IMPORTANT FOREST INSECTS

Eastern Hemlock Looper, Lambdina fiscellaria fiscellaria (Guen.) - The most recent looper outbreak which began in 1966 terminated in 1971. Although infestations were forecast to occur on the Baie Verte and Northern peninsulas in 1972, none were found, presumably because the loopers were killed by fungi, Entomophthora spp. The disease was observed in most infestations examined in the previous year. A summary of larval collections follows:

No. collections 1973	No. of larvae per tree		
	Min.	Avg.	Max.
78	0.3	0.5	3.3

Although no defoliation was observed large numbers of moths were seen in two stands of mature fir on the Salmonier Line. The stands were located 8 miles and 15 miles from the Trans Canada Highway. A total of 431 eggs were recovered from 55 samples of moss and birch bark, collected in the two areas. Examination of these eggs showed 92% viability, indicating that the infestation will continue in this area in 1973. The Newfoundland Forest Service was advised that the fir stands throughout the area are overmature and highly vulnerable to mortality from looper attack. Harvesting was recommended over spraying to protect the valuable stands.

Spruce Budworm, Choristoneura fumiferana (Clem.) - The infestations of this insect recorded at Codroy Valley, Twin Lakes and Gambo in 1971 terminated in 1972. However, larvae were numerous in many other areas causing the largest outbreak on record for Newfoundland.

No. collections 1973	No. of larvae per tree		
	Min.	Avg.	Max.
255	0.3	7.2	250

Aerial surveys were conducted in July to map the outbreak and to assess the intensity of defoliation. Defoliation was observed from Codroy Pond north to Hawkes Bay in western Newfoundland and east to Gull Pond, near Badger in central Newfoundland. Of the estimated 1,599,373 acres defoliated (Fig. 3), about 900,000 acres were in the moderate to severe category (Fig.4).

An egg-sampling survey was conducted in August to assist in predicting population levels for 1973. A helicopter transported technicians to designated locations where branch samples were collected from balsam fir, black spruce and white spruce. The branches were measured, placed in paper bags and brought to the laboratory to examine the needles for eggs. Results of the survey (Table 1) show that egg distribution is extensive but that numbers of egg masses are high (more than 240 egg masses per 100 sq. ft. of foliage) in only three of the 83 areas sampled. Therefore, the outbreak is not expected to increase significantly, in extent or intensity, from the 1972 level. Records show that previous spruce budworm outbreaks seldom lasted for more than 5 years and were confined to coastal areas. It is known that climatic conditions play an important role in controlling budworm populations and cold, wet weather during the spring and early summer could cause the immediate collapse of present outbreak. An undetermined disease was also

Fig. 3. 1972 Spruce budworm

Fig. 4. 1972 Spruce Budworm medium and severe

Table 1.- Results of Egg Sampling Survey August 1972

	Plot No.	Location	No. egg masses per 100" foliage	Mean No. eggs per mass	Defoliation category
AIR PLOTS				WESTERN NEWFOUNDLAND	
	1	Old Mans Pond	16	18.3	L
	2	" " "	36	17.5	L
	3	Goose Arm	38	18.6	L
	4	Penquin Arm	0	0	-
	5	Bonne Bay	9	20.0	L
	6	Lomond River	11	22.5	L
	7	Rocky Pond	0	0	-
	8	Deer Lake	10	10.0	L
	9	" "	123	13.7	M
	10	Glide Lake	20	20.0	L
	11	Grand Lake	12	20.0	L
	12	Hinds Brk.	132	13.7	M
	13	Island Pond	106	20.6	M
	14	Grand Lake	345	13.3	S
	15	" "	34	17.0	L
	16	Red Indian Lake	24	15.0	L
	17	Little Grand Lake	0	0	-
	18	" " "	25	7.5	L
	19	Glover Island	59	20.0	L
	20	Lewaseechjeech Brk.	0	0	-
	21	Barachois Brk.	0	0	-
	23	Island Pond	52	17.0	L
	27	Spruce Brk.	34	18.8	L
	28	Serpentine Lake	18	11.7	L
	29	" "	8	20.0	L
	30	Cooks Brk.	0	0	-
ROAD PLOTS					
	1	Codroy Pond	0	0	-
	2	Crabbes River	0	0	-
	3	Lockleven	0	0	-
	4	Jeffrey's Stn.	8	20	L
	5	Robinson's R. Rd.	0	0	-
w. spruce	7	Steel Mtn. Rd.	141	13.3	M
b.fir	7	" " "	17	12.5	L
	8	Barachois Prov. Park	74	16.7	L
	9	Camp 33 Rd.	9	15.0	L
	10	Pasadena	629	17.9	VS
	11	Pynns Brk.	34	18.0	L
	12	Junction Brk.	0	0	-
	13	Book Brk.	0	0	-
	22	Barachois Pond (E. end)	173	16.9	M
	24	Gallants Rd.	0	0	-
	25	Cold Brk.	23	17.5	L
	26	Cache Valley Rd.	11	10.0	L

Table 1.- Results of Egg Sampling Survey August 1972 (Concl'd)

AIR PLOTS		CENTRAL NEWFOUNDLAND		
Plot No.	Location	No. egg masses per 100" foliage	Mean No. eggs per mass	Defoliation category
1	2 mi Chain Lakes	0	0	-
2	5 mi SW Sheffield Lake	101	21.6	M
3	2 mi SE Sheffield Lake	126	21.3	M
4	4 mi E Sheffield Lake	43	18.6	L
5	Burnt Berry Brk.	93	18.0	L
6	2 mi N Three Corner Pond	93	16.6	L
7	2 mi SW Three Corner Pond	66	13.0	L
8	2 mi SW of S end Gull Pond	15	24.0	L
9	1 mi N Nutmeg Hill	204	15.6	M
10	4 mi N Nutmeg Hill	149	14.1	M
11	6 mi S of S end West Pond	162	16.7	M
12	1 mi SW 2nd Burnt Berry Pond	151	20.9	M
13	4 mi SW of West Pond	122	18.4	M
14	5 mi N.E. Sheffield Lake	346	23.0	S
15	1 mi SE Gull Pond	67	19.3	L
16	1.5 mi SE Gull Pond	57	18.4	L
17	1 mi W King's Pt.	196	14.7	M
18	5 mi SW King's Pt.	44	15.3	L
19	Marks Lake	12	10.0	L
20	NW End North Twin Lake	30	10.0	L
21	South Twin Lake (E side)	0	0	-
ROAD PLOTS				
1	1 mi E Birchy Lake Narrows	140	15.4	M
2	E end Birchy Lake	8	25.0	L
3	3 mi E end Indian Pond	108	22.1	M
4	1 mi W Springdale Jct.	20	7.5	L
5	3 mi N of Gull Pond	44	13.3	L
6	Crooked Lake	135	14.4	M

Egg Mass Infestation Categories
(egg masses per 100 sq. ft. foliage)

1 - 99	-	Low
100 - 239	-	Medium
240 - 399	-	High
400+	-	Very high

common and played an important role in terminating previous outbreaks in western Newfoundland. An unidentified fungus was discovered on a few specimens collected at Birchy Lake in 1972.

Balsam Woolly Aphid, Adelges piceae (Ratz.) - There were no appreciable changes in the boundaries of infestations of the aphid. Dead trees occurred in aphid infested stands in the Norris Arm North area. However, these trees had been defoliated by the hemlock looper in 1969 and were probably in a weakened condition. An additional 10 acres of infested fir occurred along the Badger-Buchans road in the infestation reported in 1965, and new, light injury was observed along the Halls Bay road near the junction of the Gull Pond road.

Sampling in balsam woolly aphid plots, fertilized in 1968, was discontinued in 1972. Results of the 5-year study are reported in Information Report N-X-81, Newfoundland Forest Research Centre.

Balsam-fir Sawfly, Neodiprion abietis complex - The infestations in the Trout Brook and the Georges Lake areas increased in size from 40 square miles in 1971 to 210 square miles in 1972. It now extends from Stephenville Crossing to Corner Brook. Defoliation in this outbreak ranged from 10% near Bottom Brook to a high of 80% near Whites Road. In central and eastern Newfoundland, the infestation at Swanger Cove, Bay d'Espoir collapsed. However, the size of the infestation increased from 1000 acres in 1971 to 1400 acres in 1972 in the Marystown - Salt Pond area. Larval numbers in the latter infestation averaged 41 per tree and defoliation was estimated at 5%.

No. collections 1973	No. of larvae per tree		
	Min.	Avg.	Max.
46	0.3	57	1000

European Spruce Sawfly, Diprion hercyniae (Htg.) - Larvae collections indicated that population levels of this sawfly remained the same as in 1971. In western Newfoundland larval collections of 24 per tree sample were recorded on white spruce in the South Brook Valley. Numbers increased from 1.7 in 1971 to 1.9 throughout the Island. No increase in numbers is predicted in 1973.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
119	0.3	1.9	24

Black-headed Budworm, Acleris variana (Fern.) - In the Georges Lake area of western Newfoundland, larval collection of this budworm ranged from 150 to 180 larvae per tree; defoliation reached a high of 25% in balsam fir stands near Spruce Brook. Population levels ranging from 17-55 larvae per tree were recorded at St. Andrews and Tompkins in the Codroy Valley and defoliation was estimated at 20%. In eastern Newfoundland population levels of 6 larvae per tree caused an estimated 10% defoliation along a 2-mile section of the Burin Peninsula highway near Marystown. Population levels are forecast to increase in all areas in 1973.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
119	0.3	1.9	24

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.) - In 1972, larval numbers averaged 145 per tree on regeneration black spruce in a 10-square mile area on the Indian Bay - Big Pond woods road. Defoliation was estimated at 30%, about 10% less than in 1971, the first year of the outbreak. Larvae were collected from this outbreak and used to determine percent parasitism. Results are not complete at the time of writing but a significant parasitism is indicated, suggesting a reduction in the intensity of the sawfly outbreak in 1973.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
27	0.3	7.4	240

Larch Sawfly, Pristiphora erichsonii (Htg.) - Population levels in the outbreak near South Branch were reduced from 19 larvae per tree in 1971 to 12 per tree in 1972. Light defoliation was recorded in this area for both years.

The 2-square mile outbreak at the Junction of the Cooks Harbour and St. Anthony roads, on the Northern Peninsula continued for the 5th consecutive year. In 1972, defoliation was estimated at 25%, about the same as for 1971.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
13	0.3	7.5	87

The masked shrew, Sorex cinereus cinereus Kerr., is now established throughout the Island. The results of annual trapping in permanent sample plots from 1966 to 1972 are shown in the following table:

	* Shrews per acre						**
Census plot	Sept. 1966	Sept. 1967	Sept. 1968	Oct. 1969	Sept. 1970	Sept. 1971	Sept. 1972
Halls Bay	8.71	11.33	3.35	2.87	2.85	2.46	2.18
Wiley Brook	-	-	-	-	4.96	3.57	2.61
Glovertown	0.00	0.00	0.44	1.39	Plot discontinued		
Terra Nova	0.00	0.00	0.67	2.87	3.40	2.86	3.05
Paddy's Pond	-	-	-	-	0.00	0.61	1.31

* Five day trapping period

** Ten day trapping period recommended by Bider and Sarrazin NX78, 1972.

Birch Casebearer Coleophora fuscedinella (Zell.) - In 1972, this casebearer was found throughout the Province. In western Newfoundland, defoliation was light from the Codroy Valley to Georges Lake, from Bonne Bay to Portland Creek, and on the Baie Verte Peninsula. It was moderate from Georges Lake to Bonne Bay and from Deer Lake to Cormack. In an area

from Cormack to Hampden defoliation increased from moderate in 1971 to severe in 1972. In central Newfoundland defoliation was light to moderate in all areas, except for a few locations near Red Indian Lake, Grand Falls and Bay d'Espoir, where it was severe. In eastern Newfoundland conditions were about the same as the previous year with about 5% defoliation occurring on birch stands between Gambo and Clarenville, Fig. 5.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
84	0.3	4	23

In addition to parasites introduced in 1971, 57 adults of a hymenopterous parasite, Campoplex spp. were introduced from Europe during the summer of 1972 and released near Badger.

Birch Leaf Miner, Fenusa pusilla (Lep.) - This leaf miner was found along the Trans Canada Highway and secondary roads throughout central Newfoundland. It was most conspicuous and caused severe browning of white birch foliage from Halls Bay to Grand Falls and along the Bay d'Espoir road. In western Newfoundland leaf-browning was moderate along highways on the Northern and Baie Verte peninsulas and light in the Stephenville area. The first birch leaf miner reported on the Avalon Peninsula was collected from ornamental white birch in 1970. In 1972 leaf miners were recorded on natural growing white birch in the St. John's area.

No. collections	No. of larvae per tree		
	Min.	Avg.	Max.
56	1	28	200

Although the parasites appeared active and healthy when released, it is too early to determine if the introductions were successful.

Fig. 5. Birch casebearer defoliation, 1972

In 1972, Mr. J.M. Jones of the Biology Department of Memorial University, conducted preliminary studies, at Pasadena, on the life history, habits and natural control factors of the birch leaf miner. In an attempt to improve the parasite complex of the miner, two European parasites Priopoda nigricolla (Thomson) and Grypocentrus albipes (Ruthe) were introduced and released on infested white birch at Pasadena. Details of the releases are shown in the following table.

Pripoda nigricolla (Thomson)

Date	Living		Dead		Total	
	male	female	male	female	male	female
Aug. 10, 1972	68	60	17	4	51	56
Aug. 16, 1972	40	39	2	3	38	36
Aug. 23, 1972	10	22	0	0	10	22
Totals	118	121	19	7	99	114
Mortality	10.8%					
Grypocentrus albipes (Ruthe)						
Aug. 10, 1972	5	9	1	0	4	9
Mortality	6.1%					

Birch Skeletonizer, Bucculatrix canadensisella Cham. - Defoliation by this skeletonizer decreased on birch between Bay d'Espoir and St. John's. However, a new infestation was recorded on the Avalon Peninsula from Paddy's Pond to Cape Broyle. In western Newfoundland, on the Northern Peninsula, outbreaks occurred on white birch in the Parsons Pond and Port au Choix areas. Stands were moderately to severely defoliated where only a few larvae had been recorded in 1971. Defoliation by the birch skeletonizer occurs in late August and September, after the growing season is finished, therefore the damage has very little effect on the growth of birch stands.

OTHER NOTEWORTHY INSECTS

Species	Host(s)	Locality	Average per tree	No. of collections
Acmaeops pratensis (L.) Long-horned beetle	bF	21.4 mi. S. of T.C.H. on Bay d'Espoir Rd.	0.3	1
Acmaeops proteus (Kby.) Long-horned beetle	bS	1.2 mi. N. of Badger	0.3	1
Acronicta dactylina Grt. Owlet moth	wB	0.2 mi. E. T.C.H. Grand Lake Brook	0.3	1
Acronicta grisea Wlk. Gray dagger moth	wB,sal	Districts 103, 104, 108	0.4	4
Acronicta leporina Linn. Poplar dagger moth	wB	0.2 mi. E. T.C.H. Grand Lake Brook	0.3	1
Adoxus obscurus Linn. Leaf beetle	Dogwood	3 mi. N.E. of Lewisporte	100	1
Agriotes limosus Lec. Little brown click beetle	bF, bS	4.2 mi. E. of west access Bishop's Falls	0.3	2
Anatis mali Say Eye-spotted lady beetle	wB, bS	5.6 mi. E. of Badger 2.5 mi. E. of South Brk.	0.3	2
Anomogyna perquiritata Morr. Dagger moth	bF, bS	2.0 mi. N. of St. Jones Within Georges Pond woods road, 5 mi. N.E. of Kepenkeck Lake	0.6	3

OTHER NOTEWORTHY INSECTS - CONT'D.

Species	Host(s)	Locality	Average per tree	No. of collections
Anoplodera canadensis (Oliv.) Long-horned beetle	tL	5.3 mi. W. of Grand Falls	0.3	1
Anoplodera chrysocoma (Kby.) Long-horned beetle	bF	Serpentine Lake	0.3	1
Anoplonyx luteipes Cress. Marlatt's larch sawfly	tL	All districts	1.7	43
Archips rosanus Linn. European leaf roller	wB,rM	St. John's	2.8	2
Biston cognataria Gn. Pepper and salt moth	wB,Sal	Districts 103, 104, 108	0.5	4
Callidium violaceum (L.) Long-horned bettle	bF	Admirals Beach	12.0	1
Campaea perlata Gn. Fringed looper	bF,wB,Sal	Districts 103, 104, 107, 108	0.4	6
Caripeta divisata Wlk. Spruce looper	bS,wS	1 mi. S. Jeffrey's, 1.5 mi. S.W. of Badger, New Bay Rd., District 108	0.4	7
Cephalcia provancheri (Huard). Web-spinning sawfly	bS,wS	13.3 mi. S. Lake Ambrose 1 mi. S. of S.W. Gander River Bridge	1.0	3

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
Cephalcia sp. Web-spinning sawfly	bF	4.5 mi. N.E. Shanadithit Brk., 5.2 mi. W. of Buchan's Jct.	0.3	1
Chrysomela falsa Brown Willow leaf beetle	W	Districts 104, 106	9.7	5
Cimbex americana Leach Elm sawfly	wB	0.2 mi. E. T.C.H. Grand Lake Brook	0.6	1
Corythucha pergandei Heid. Alder lace bug	Sal	2 mi. N. Parsons Pond, 3.0 mi. E. of Gambo Pond	100.0	2
Croesus latitarsus Nort. Dusky birch sawfly	wB	13.1 mi. W. Grand Falls	0.3	1
Ctenicera triundulata Rand Click beetle	bF,bS	0.8 mi. S.W. Millertown Jct. Rd., 8.0 mi. N. of Badger	0.4	3
Dendriodes concolor Newn. Fire-colored beetle	wB	1.2 mi. E. of Buchan's Jct.	0.3	1
Dimorphopteryx melanognathus Roh. Birch-alder sawfly	wB,Sal	Districts 104, 106, 108	2.0	7
Dioryctria reniculella (Grote) Spruce coneworm	bF,bS,wS	All districts	1.0	46
Ectropis crepuscularia (Schiff.) Flat-faced looper	bF,tL	Districts 106, 107, 108	1.5	6

OTHER NOTEWORTHY INSECTS - CONT'D.

Species	Host(s)	Locality	Average per tree	No. of collections
Eucordylea atrupictella (Dietz.) Spruce micro moth	bF,bS	Fishels River Rd., Eastport	0.3	2
Eupithecia sp. Brown spruce looper	bF,bS,tL	Districts 102, 103, 105, 106, 107, 108, 109, 110	0.4	55
Fenusa dohrnii (Tischb.) European alder leaf miner	Sal	East Arm, 5 mi. E. Glenwood, Districts 105, 106	25.1	18
Feralia jocosa (Guen.) Red-marked caterpillar	bF,bS	All districts	0.5	38
Griselda radicana Wlshm. Red-striped spruce shoot moth	bF,bS,wS	Come By Chance, Districts 103, 107, 108	0.9	14
Halisidota maculata Harr. Spotted tussock moth	Sal	Whites Rd., 8.3 mi. S.W. Buchans	0.5	2
Herculia thymetusalis Wlk. Spruce needleworm	bS	1 mi. N. Snowshoe Pond, Districts 106, 108	0.7	5
Heterarthrus nemoratus (Fall.) Birch leaf mining sawfly	wB	Districts 103, 104, 105, 106, 107	43.9	12
Hylobius spp. Root collar weevils	bF,bS	5.6 mi. E. of Badger District 108	0.5	5
Hypagyrtis piniata Pack. Conifer looper	bF,tL	Clarenville, 1 mi. S. of Sweet Bay	0.3	3
Mindarus abietinus Koch Balsam twig aphid	bF	Head Bay d'Espoir	54.0	4

Species	Host(s)	Locality	Average per tree	No. of collections
Nadata gibbosa J.E. Smith Green oak caterpillar	wB	Tompkins, Districts 106, 108, 109	0.4	6
Nematus limbatus Cress. Willow sawfly	W	Rocky Pond, Trout Brk., Bottle Pond Rd., 18.5 mi. W. of Grand Falls	12.3	4
Nepytia canosaria Wlk. False hemlock looper	bF,wS	Goobies, Burlington Rd., Districts 104, 107, 108	1.4	13
Nycteola cinereana N. & D. Poplar leaf tier	W,wB,Sal	North West Brk., Georges Brk., 13 mi. N. Cormack, District 106	0.6	6
Nyctobia limitaria Wlk. Green balsam looper	bF,bS,wS	Districts 104, 106, 107, 108, 109	0.5	28
Nymphalis antiopa L. Mourning cloak butterfly	tA,W	Glovertown, 0.5 mi. N. of Bear Lake 2 mi. W. of Grand Falls, 8.6 mi. W. of Grand Falls	38.6	4
Orgyia antiqua (L.) Rusty tussock moth	bF,wS,wB tL, Pin Cherry	St. John's, Winterland, Gilles Pt., 0.3 mi. S.W. of South Branch, Birchy Lake, District 108.	0.9	10
Ortholepis pasadamia Dyar Birch micro moth	wB	Clarenville, 6.7 mi. S.W. of Badger, Bishops Falls, Millertown Jct. Rd.	1.3	4
Papilio glaucus canadensis R. & J. Tiger swallowtail	aMo	Alexander Bay Station	1.0	1

OTHER NOTEWORTHY INSECTS - CONT'D.

Species	Host(s)	Locality	Average per tree	No. of collections
Parorgyia plagiata Wlk. Pine tussock moth	bF,bS	Millertown Jct. Rd., 3 mi. W. of Corner Brook, Robinsons River Rd., 21.4 mi. S. of T.C.H. on Bay d'Espoir Rd.	0.5	4
Phratora purpurea purpurea Brown Aspen leaf beetle	tA	Square Pond Prov. Park, Carmanville	7.7	2
Phyllocnistis populiella Cham. Poplar serpentine miner	tA	6.0 mi. W. of Alexander Bay Station Rd.	1.3	1
Pikonema dimmockii (Cress.) Green-headed spruce sawfly	bS,wS	Districts 102, 103, 104, 105, 106, 107, 108, 109	0.5	76
Polygonia faunus Edw. Green comma	wB	7.0 mi. W. of Salmon Brk.	2.0	1
Pristiphora geniculata (Htg.) Mountain-ash sawfly	aMo	Dildo Run Prov. Park, Jacksons Arm. Rd., Alexander Bay Station, Districts 106, 107, 108	26.8	15
Pristiphora lena Kinc. Little spruce sawfly	bS,wS	Districts 102, 103, 104, 106, 107	0.5	17
Protoboarmia porcelaria indicataria Wlk. Dotted-line looper	bF,bS	0.2 mi. S.W. Wiley Brk., Fishels	0.3	2
Pyrrhalta decora (Say) Gray willow leaf beetle	W	West end of Gander Lake	23.5	2

OTHER NOTEWORTHY INSECTS - CONT'D.

Species	Host(s)	Locality	Average per tree	No. of collections
Scoliopteryx libatrix Linn. Willow scalloped owlet	W	4 mi. W. Hampden Jct.	1.0	1
Semiothisa sp. A looper	bF,tL	All districts	0.6	36
Sicya macularia Harr. Lumpy looper	W	North Pond, 3 mi. W. of Bunyans Cove, 3.2 mi. E. of Grand Falls, Aspen Brk. Rd., Dildo Run Prov. Park.	0.5	5
Solenobia walshella Clem. Bagworm	bF,bS,wS	Districts 103, 104, 106	1.9	20
Stilpnotia salicis Linn. Satin moth	bPo,W,tA	St. John's, Clarenville, Stephenville Crossing, 4 mi. W. McIsaacs Brk.	40.0	6
Syneta sp. A leaf beetle	bF,bS	Millertown Jct. Rd., 8.0 mi. N. Badger, Mary March Prov. Park.	0.3	3
Syngrapha alias Ottol. Spruce false looper	bF,bS	3.5 mi. E. Birchy Narrows, Districts 103, 106, 108	0.52	9
Syngrapha rectangula Kby. False looper	bF,bS	4.5 mi. E. of Lethbridge	0.3	2
Syngrapha selecta Wlk. Spruce false looper	bF,bS	Wiltondale, 15.8 mi. E. of Deer Lake, 1.2 mi. E. of Buchans Jct. 0.3 mi. S. of T.C.H. on Bay d' Espoir Rd.	0.5	5

OTHER NOTEWORTHY INSECTS - CONCLUDED.

Species	Host(s)	Locality	Average per tree	No. of collections
Syngrapha sp. False looper	bF	Amherst Cove, Whites Rd.	0.3	2
Trichiosoma triangulum Kby. Giant birch sawfly	wB	0.3 mi. S.W. of South Brk.	1.0	1
Zeiraphera canadensis Mut. & Free Yellow spruce budworm	bF,bS,wS	Carters Rd., Glenburnie,	0.4	4
		3 mi. W. of Kings Cove, Robinsons River	0.4	4
Zeiraphera improbana (Walker) Larch needle worm	tL	Districts 102, 103, 104, 106, 107, 108, 109	1.9	40

IMPORTANT FOREST DISEASES

The needle rusts, Pucciniastrum goepertianum (Kuhn) Kleb. Hylander of balsam fir, and Chrysomyxa ledicola and C. ledi (Alb. and Schw.) D By. of black spruce, were the most common diseases found throughout the Island in 1972. Approximately 5% of the needles on most fir regeneration were infected in cut-over areas along the Crabbes River Road. In central Newfoundland this disease occurred near Grand Falls on approximately 40% of young fir but only 1% of the needles were infected. It also occurred on 30 acres of fir along the Sandy Lake Road where 62% of the trees were infected.

The needle rusts of spruce were reported on all of the intermediate and co-dominate black spruce trees in a 10-acre area, 5 miles west of Shoal Harbour River, in eastern Newfoundland. An estimated 50% of the needles of these trees were infected. In central Newfoundland, 100% of the black spruce, in a 4 acre stand, were infected on the Sandy Lake Road, 13 miles from Grand Falls. Similar damage was recorded on 100% of the trees in a 10 acre spruce stand 6 miles north of the Sandy Lake Dam. Needle rust also occurred on 10-20% of the new shoots of black spruce along the Trans-Canada Highway between Lake O'Brien and Notre Dame Junction. In western Newfoundland, 60% of the spruce was infected in two areas on the Northern Peninsula; a 1,280-acre area near Pistolet Bay, and a 10-acre area near Doctors Brook. Sitka spruce seedlings in the Pelleys Bog plantation near Stephenville Crossing were 100% infected and about 70% of the needles damaged.

Leaf and Twig Blight of Poplar, Pollaccia radiosa (Lib.) Bald. & Cif. - This disease occurred in the same general areas as in 1971. From 60% to 100% of aspen regeneration was infected in the area between Deer Lake and Springdale and in the Millertown to Grand Falls area. The most severe damage occurred in the Exploits Valley, west of Grand Falls, where 100% of the shoots were infected in some stands.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Ciborinia whetzelii (Seav.) Seaver Ink spot	Aspen, trembling	Grand Falls	30% of trees over 2 acres
Coleosporium asterum (Diet.) Syd. Needle rust	Pine, Jack	Bonavista	100% of trees and 10% needles infected over 1 sq. mi. plantation.
Frost damage	Fir, balsam	Grand Falls and Badger	Low incidence over 3 acres at Grand Falls and 50 acres at Badger
Frost damage	Spruce, black	Badger and Springdale	Low incidence at Badger and moderate over 20 acres at Springdale.
Hypodermella laricis Tubeuf. Needle cast	Tamarack	Gambo	20% of shoots infected on roadside trees near Gambo.
Melampsora paradora Diet. Holw. Leaf rust	Willow	Gambo	Low incidence.
Melampsorella caryophyllacerum Schroet. Needle rust	Spruce, Sitka	Pasadena	Two trees with 10% of shoots and 1% needles infected.
Melampsoridium betulinum Leaf rust	Birch, white	Bay d'Espoir St. Albans and Shoal Harbour	Low incidence in all localities.

OTHER NOTEWORTHY DISEASES - CONCLUDED.

Organism and Disease	Host(s)	Locality	Remarks
Pollacia elegans Serv. Leaf and twig blight	Poplar, balsam	Gallants	Severe on three trees
Animal browsing Snowshoe hare	Aspen, trembling	Grand Falls	30% of trees over 2 acres
Winter drying	Fir, balsam	Bay d'Espoir	Low incidence

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