

Environment
Canada

Forestry
Service

ANNUAL DISTRICT REPORT FOREST INSECT
AND DISEASE SURVEY NEWFOUNDLAND 1973

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NEWFOUNDLAND FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
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FOREWORD

The District Reports contain the basic data collected annually on population levels, size of infestations, and intensity of damage for all forest pest species in the Province. Much of this information is prerequisite for the preparation of other reports and publications prepared periodically by the Survey. A total of 1,271 insect and disease samples were collected from the 10 Ranger Districts (Fig. 1).

Activities during 1973 included the regular monitoring and sampling surveys of the Island, an aerial survey of the Island and Labrador, the annual population census of the masked shrew, and a number of special programs and surveys. These latter included the establishment of seven permanent sample plots in the major forest types of the Island, an extensive spruce budworm monitoring program, a survey to determine the extent of "winter kill" in the Bonne Bay area, and a detailed cruise of four areas to determine the impact of spruce budworm defoliation on stands previously damaged by the hemlock looper. Survey technicians also assisted in the release of a fungus to test its effect in controlling hemlock looper infestations and in studies to determine the rate of deterioration of balsam fir killed by the hemlock looper.

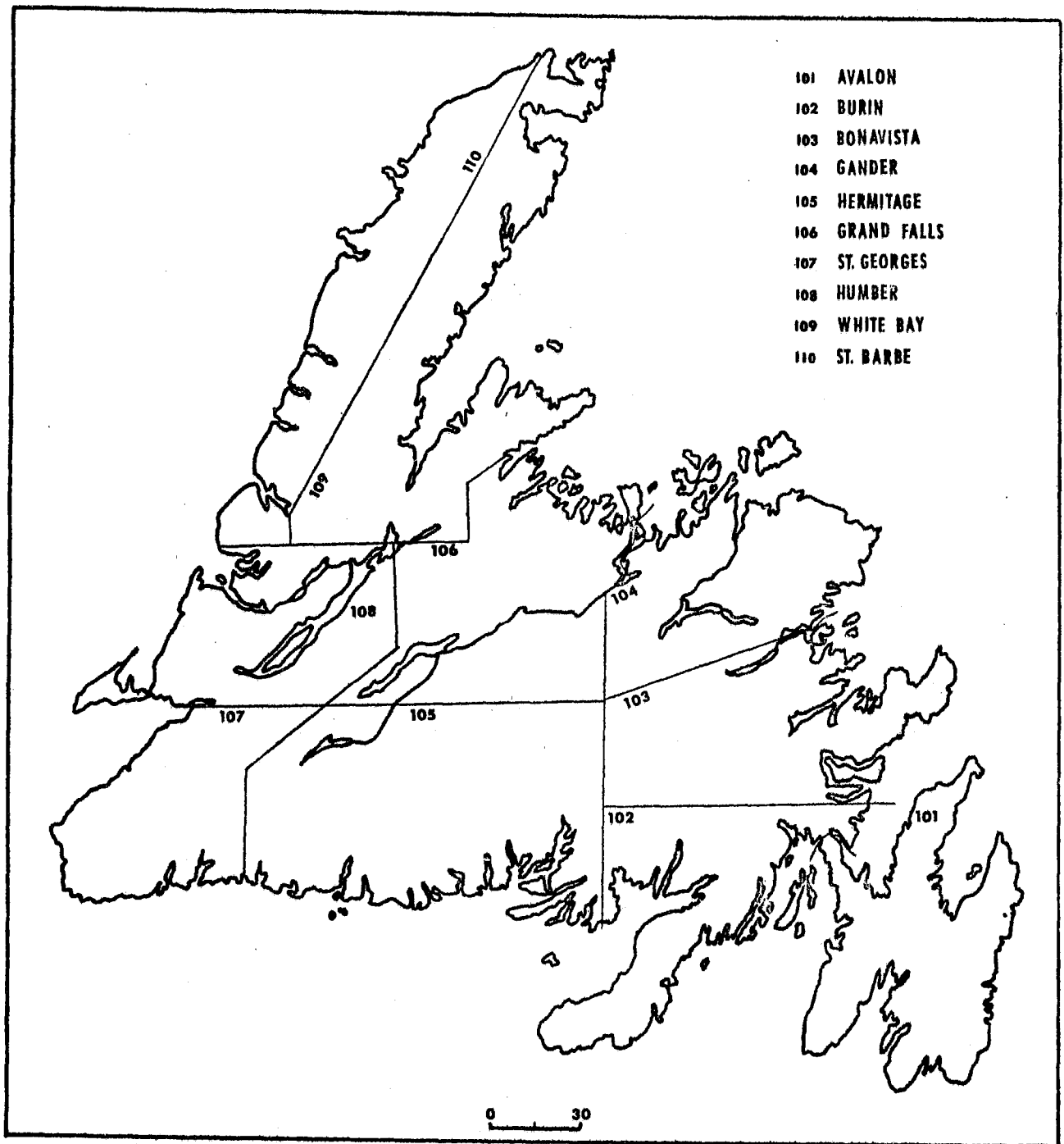


Fig. 1 Forest Insect and Disease Survey Districts -
Island of Newfoundland.

ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
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by

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INTRODUCTION

In 1973, cold wet weather persisted throughout the Island until early June, normal temperatures were experienced from then until the end of July and the month of August was the second coldest on record. From May until September, precipitation throughout the Island was much higher than normal and the total rainfall in June was the highest ever recorded. Table 1 shows the monthly averages of temperatures and precipitation for the last five years as recorded at the Ministry of Transport weather stations located at Deer Lake, Gander and St. John's.

The spruce budworm continued to be the major forest insect pest and the infested area increased from 1,599,373 acres in 1972 to 3,535,795 acres in 1973. The majority of the increase occurred in central Newfoundland where infestations now extend from Halls Bay to Gambo. In western Newfoundland

Table 1. Average temperatures and total precipitation for Newfoundland 1969-1973.

Year	Location	Temperatures ($^{\circ}$ F)								Precipitation (inches)			
		May		June		July		August		May	June	July	August
		Min	Max	Min	Max	Min	Max	Min	Max				
1969	St. John's	34	47	45	64	49	64	52	66	5.22	2.33	3.90	8.28
1970	"	35	53	42	59	51	68	52	67	4.31	3.68	3.49	4.00
1971	"	38	56	43	60	51	67	55	70	1.67	3.69	5.78	5.92
1972	"	32	50	50	68	49	66	51	66	4.11	3.84	0.76	4.65
1973	"	35	49	43	60	57	73	50	62	4.82	6.25	2.60	7.54
1969	Gander	34	50	44	67	49	69	51	69	4.98	2.42	2.02	3.18
1970	"	34	54	42	63	51	72	54	70	2.57	2.59	3.87	5.21
1971	"	40	60	43	62	51	70	54	71	0.98	2.27	3.13	3.13
1972	"	31	50	45	67	50	71	50	68	5.25	3.86	1.78	2.46
1973	"	35	50	43	62	57	74	48	64	3.87	5.76	2.33	6.38
1969	Deer Lake	33	51	42	68	48	71	51	72	3.74	2.69	2.96	5.13
1970	" "	35	54	41	66	50	75	50	73	3.61	3.10	2.00	5.16
1971	" "	37	62	40	65	48	73	50	72	1.65	2.39	2.48	5.36
1972	" "	30	51	42	66	47	74	45	70	3.72	4.02	1.59	3.67
1973	" "	35	54	43	64	56	76	46	69	2.62	6.02	3.42	5.23

1
2
1

the extent and intensity of defoliation was less than anticipated, possibly because of a disease caused by two species of fungi of the genus Entomophthora. The disease appears to be the same one that attacks the eastern hemlock looper.

Two small infestations of the hemlock looper, reported in 1972 on the Avalon Peninsula, collapsed in 1973. Infestations of the blackheaded budworm and the balsam fir sawfly continued on the Island and both species were recorded for the first time in Labrador. The larch casebearer caused severe browning of tamarack stands in both western and eastern areas of the Island.

The boundaries of birch casebearer infestations remained about the same as in 1972 and the birch skeletonizer caused severe defoliation of white birch on the Northern Peninsula, and parts of eastern Newfoundland for the third consecutive year. An outbreak of the fall webworm was reported in an area near Stephenville. This insect was last reported on the Island in 1955.

Shoot and leaf blight of aspen was common in western and central areas of the Island. Winter drying caused severe damage to balsam fir and white spruce and late spring leaf scorch of maple was recorded for the first time in Newfoundland. Emission products from the electro-chemical plant at Long Harbour caused considerable fume damage to surrounding vegetation.

IMPORTANT FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.) - The present outbreak of the spruce budworm began in 1971 when about 10% defoliation occurred in three small areas on the Island (Fig. 2). These areas included 10 acres of balsam fir in the Codroy Valley, 20 acres of balsam fir and black spruce at Twin Lakes, near Badger, and 20 acres of balsam fir near Gambo. In 1972, the outbreak expanded and covered a total of 1,599,373 acres of which about 900,000 acres were moderately to severely defoliated (Fig. 3 and 4). The area of the outbreak expanded again in 1973 and covered 3,495,154 acres throughout the Island. However, the intensity of damage was reduced in 1973 and only 226,150 acres were moderately to severely defoliated. Larval numbers for 1971 to 1973 are as follows:

<u>Year</u>	<u>No. of Collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1971	44	0.3	3.7	33.7
1972	204	0.3	6.5	70.3
1973	249	0.4	9.2	117.2

The above results indicate that population levels have increased over the past three years.. However, the reason for the 1973 decrease in the area of moderate to severe defoliation is unknown, but it may be related to the common occurrence of a fungal disease caused by Entomophthora spp. This disease was most prevalent in stands that had been defoliated for more than one year.

The distribution and intensity of defoliation in the various Ranger Districts are illustrated in Figs. 5, 6, 7, and 8.

Observations from ground and aerial surveys indicate that, in general, most spruce budworm defoliation occurred on new foliage. However some tree mortality was observed, especially in stands previously severely defoliated during the 1966-71 outbreak of the hemlock looper. Line cruises were conducted in three such areas to estimate the extent of tree mortality. Results of these cruises are shown in Table 2.

Table 2. Results of cruise data to determine stand conditions in three areas moderately to severely defoliated by the spruce budworm in 1972 and/or 1973

Birchy Lake (23 chains)

Avg. DBH (Merch.)	5.0"	
" Hgt (")	37'	
Merch. vol. per acre living	1808.8 cu. ft	70%
" " " " dead	775.2 " "	30%
Total merch. vol. per acre	2584.0 " "	
Merch. cds. per acre living	21.3	70%
" " " " dead	9.1	30%
Total cds. per acre	30.4	
Merch. stems per acre living	276	66%
" " " " dead	142	34%
Total merch. stems per acre	418	
Avg. Def	84%	
Avg. Age	44 mos. yrs.	

Damage History

<u>Hemlock Looper</u>	<u>Spruce Budworm</u>
1969-L*	1972-S
1970-S	1973-S
1971-S	

Cont'd.

Table 2 - Continued

Twin Lakes (26 chains)

Avg. DBH (Merch.)	5.8"	
" Hgt (")	35'	
Merch. vol. per acre living	888.4 cu. ft	59.8%
" " " " dead	597.2 " "	40.2%
Total merch. vol. per acre	1485.6 " "	
Merch. cds. per acre living	10.5	59.8%
" " " " dead	7.0	40.2%
Total merch. cds. per acre	17.5	
Merch stems per acre living	97	51%
" " " " dead	92	49%
Total merch. stems per acre	189	
Avg. Def	74%	
Avg. Age	50 yrs.	

Damage History

<u>Hemlock Looper</u>	<u>Spruce Budworm</u>
1969-M*	1973-S
1970-S	

Kings Point #1 (31 Chains)

Avg. DBH (Merch.)	5.5"	
" Hgt (")	28'	
Merch. vol. per acre living	597.2 cu. ft	100%
" " " " dead	0.0 " "	0%
Total merch. vol. per acre	597.2 " "	
Merch. cds. per acre living	7.0	100%
" " " " dead	0.0	0%
Total Merch. cds. per acre	7.0	
Merch. stems per acre living	134	100%
" " " " dead	0	0%
Total merch. stems per acre	134	
Avg. Def	75%	
Avg. Age	39 yrs.	

Damage History

<u>Hemlock Looper</u>	<u>Spruce Budworm</u>
1971-L*	1972-M
	1973-S

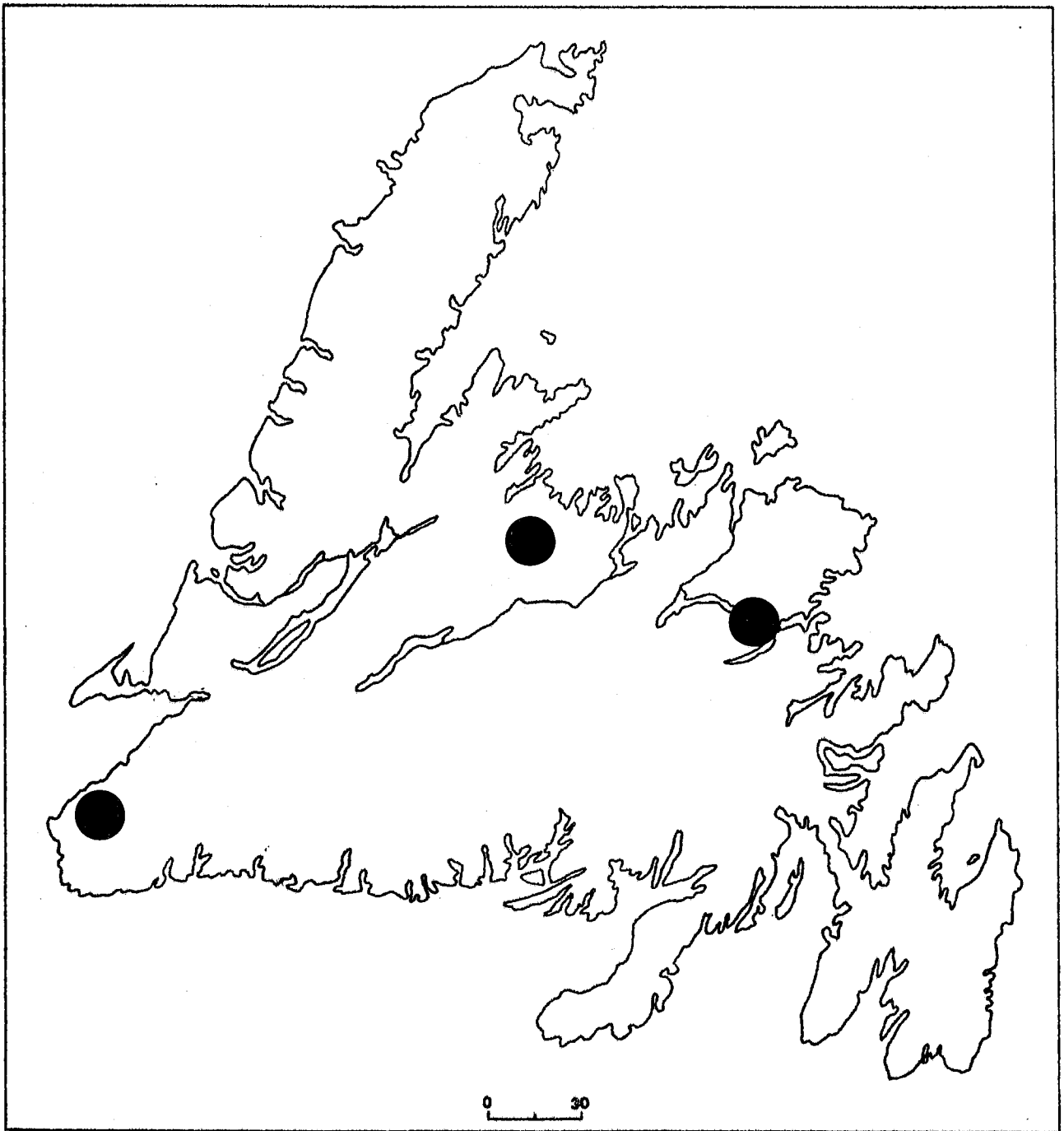


Fig. 2 Spruce budworm infestations in Newfoundland, 1971.



Fig. 3 Spruce budworm defoliation 1972 - 1,599,373 acres
defoliated.

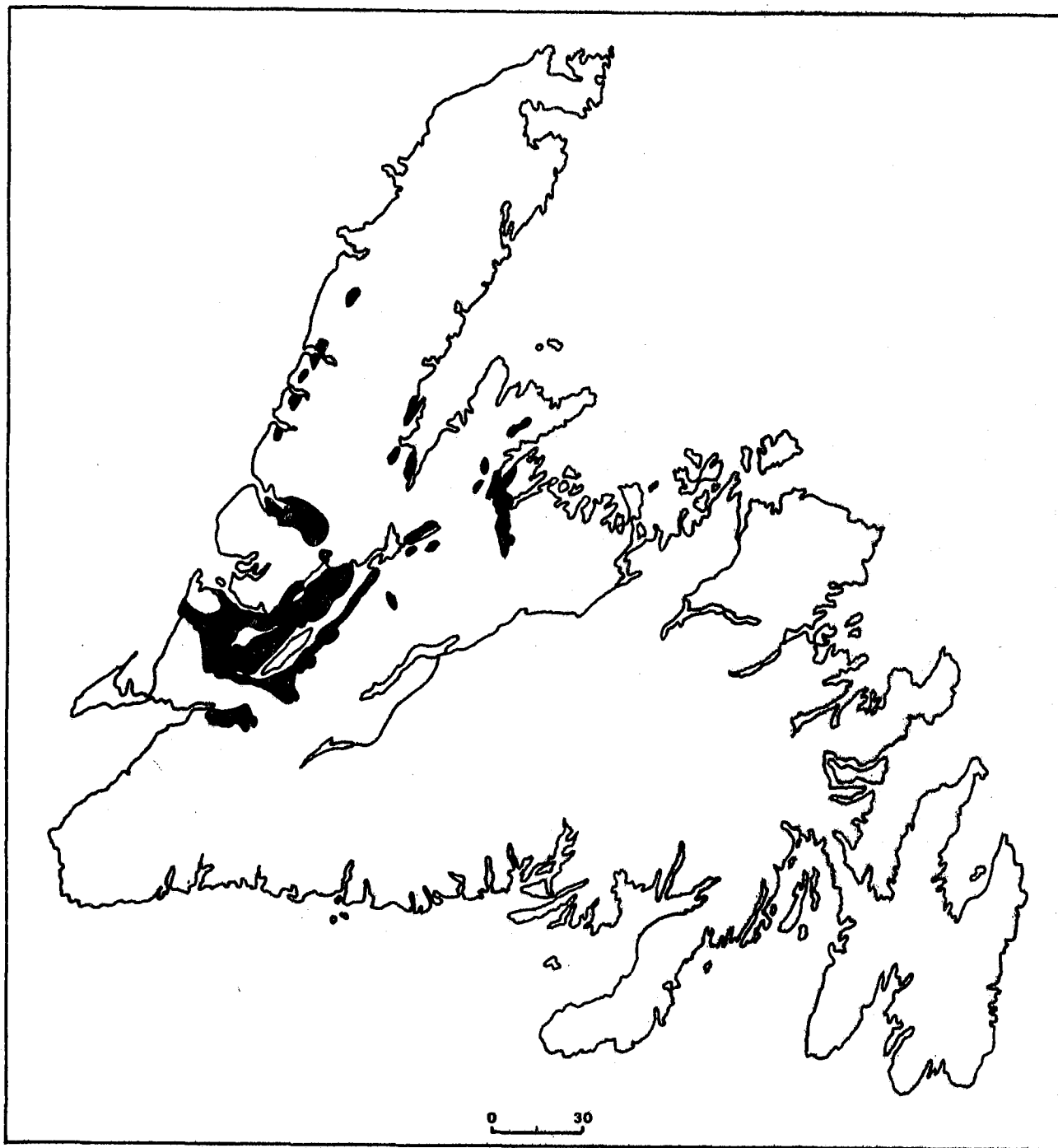


Fig. 4 Spruce budworm defoliation 1972 - 900,000 acres with moderate and severe defoliation.

Table 2 - Concluded

Kings Point #2 (39 chains)

Avg. DBH (Merch.)	5.1"	
" Hgt (")	34'	
Merch. vol. per acre living	1438.7 cu. ft	95.1%
" " " " dead	74.1 " "	4.9%
Total merch. vol. per acre	1512.8 " "	
Merch. cds. per acre living	16.9	95.1%
" " " " dead	0.9	4.9%
Total merch. cds. per acre	17.8	
Merch. stems per acre living	302	93.2%
" " " " dead	22	6.8%
Total merch. stems per acre	324	
Avg. Def	66%	
Avg. Age	73 yrs.	

Damage History

<u>Hemlock Looper</u>	<u>Spruce Budworm</u>
1970-L*	1972-M
	1973-S

Barachois Park (10 chains)

Merch. stems per acre living	734	97%
" " " " dead	22	3%
Total stems per acre	756	
Avg. Def	77.5%	

Damage History

<u>Hemlock Looper</u>	<u>Spruce Budworm</u>
1967-S*	1972-S
1968-S	1973-S

* Defoliation




L - Light
M - Moderate
S - Severe

In August, 128 locations were sampled for spruce budworm egg masses (Table 3).

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Spruce Budworm Defoliation

Districts 107 and 108

-  Light, 865,427 acres
-  Medium, 65,267 acres
-  Severe, 47,218 acres

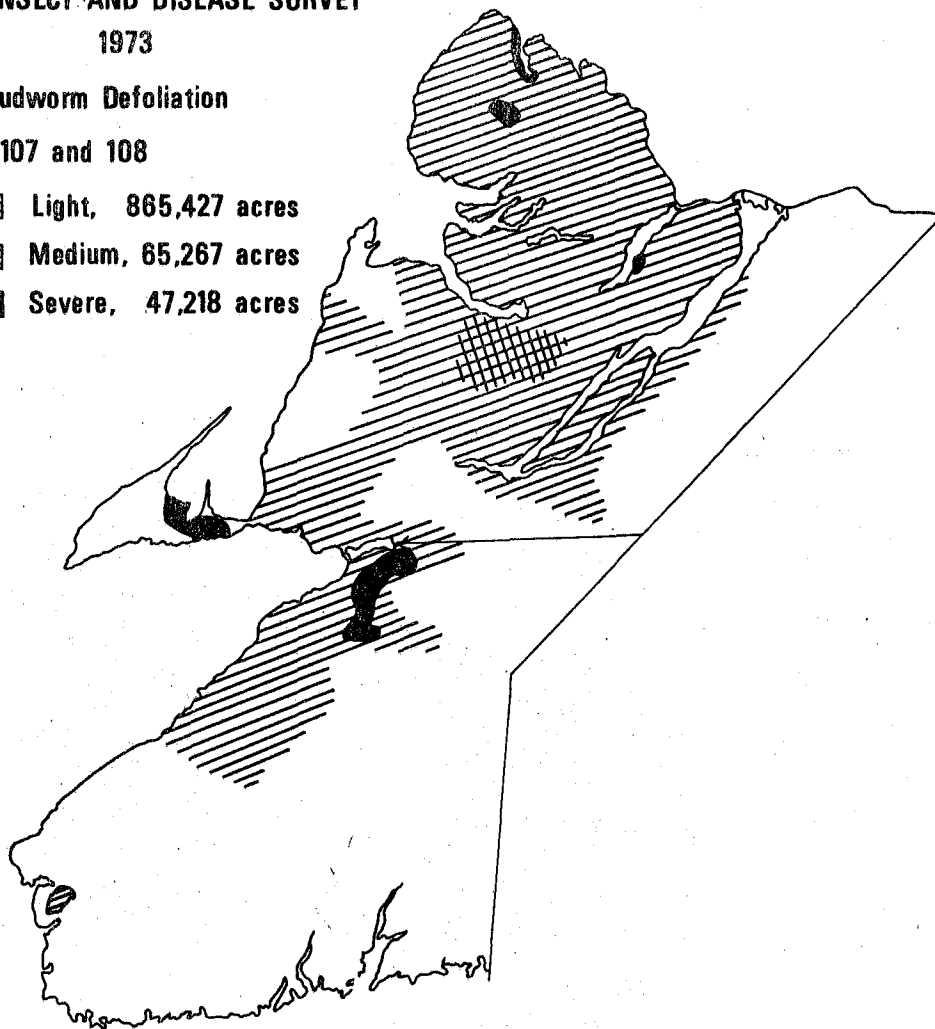





Fig. 5

**FOREST RESEARCH CENTRE
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FOREST INSECT AND DISEASE SURVEY
1973**

**Spruce Budworm Defoliation
Districts 109 and 110**

-  Light, 772, 084 acres
-  Medium, 91,678 acres
-  Severe, 13,362 acres

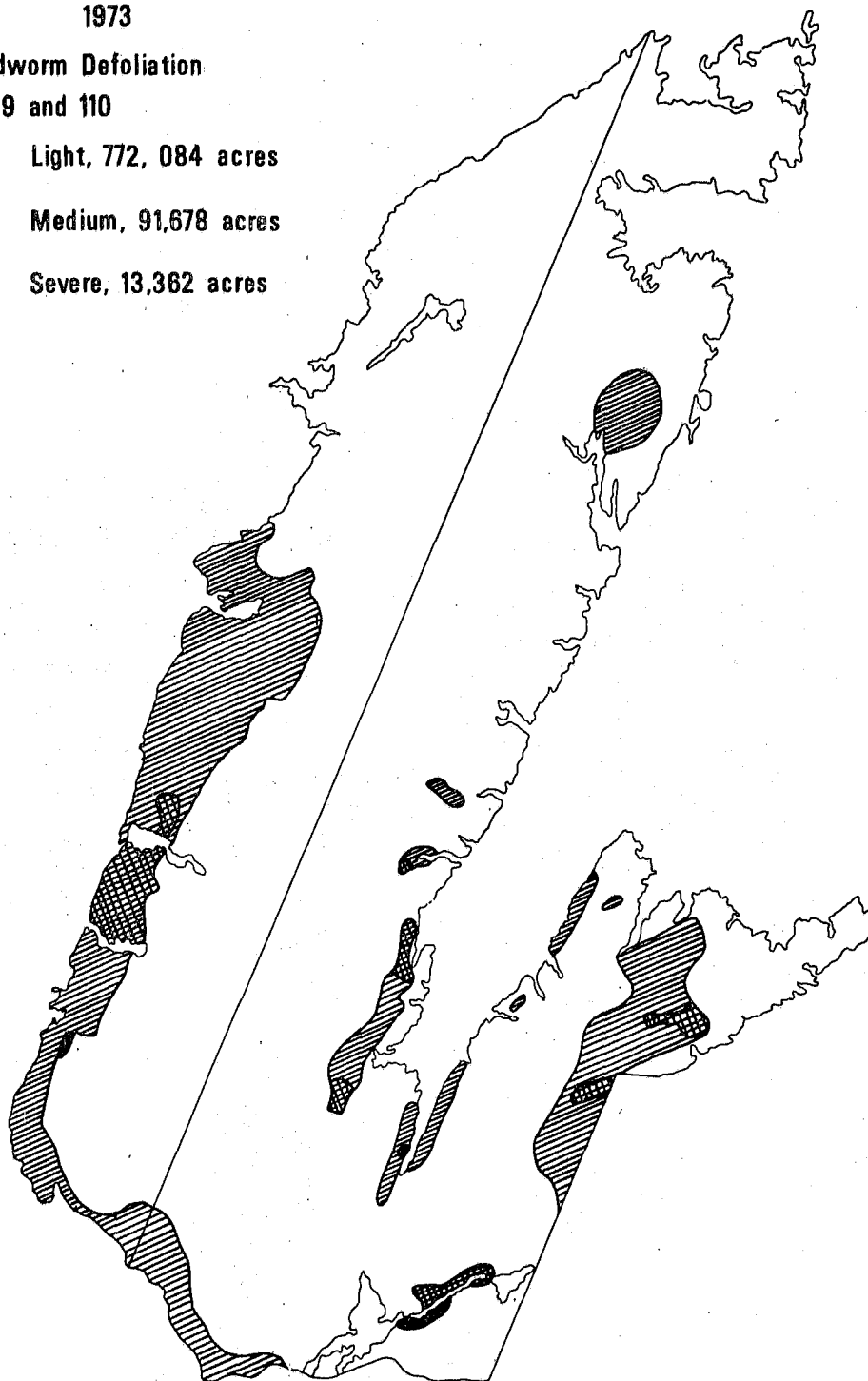





Fig. 6

**FOREST RESEARCH CENTRE
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FOREST INSECT AND DISEASE SURVEY
1973**

Spruce Budworm Defoliation

Districts 105 and 106

	Light, 1,313,682 acres
	Medium, 5,000 acres
	Severe, 34,324 acres

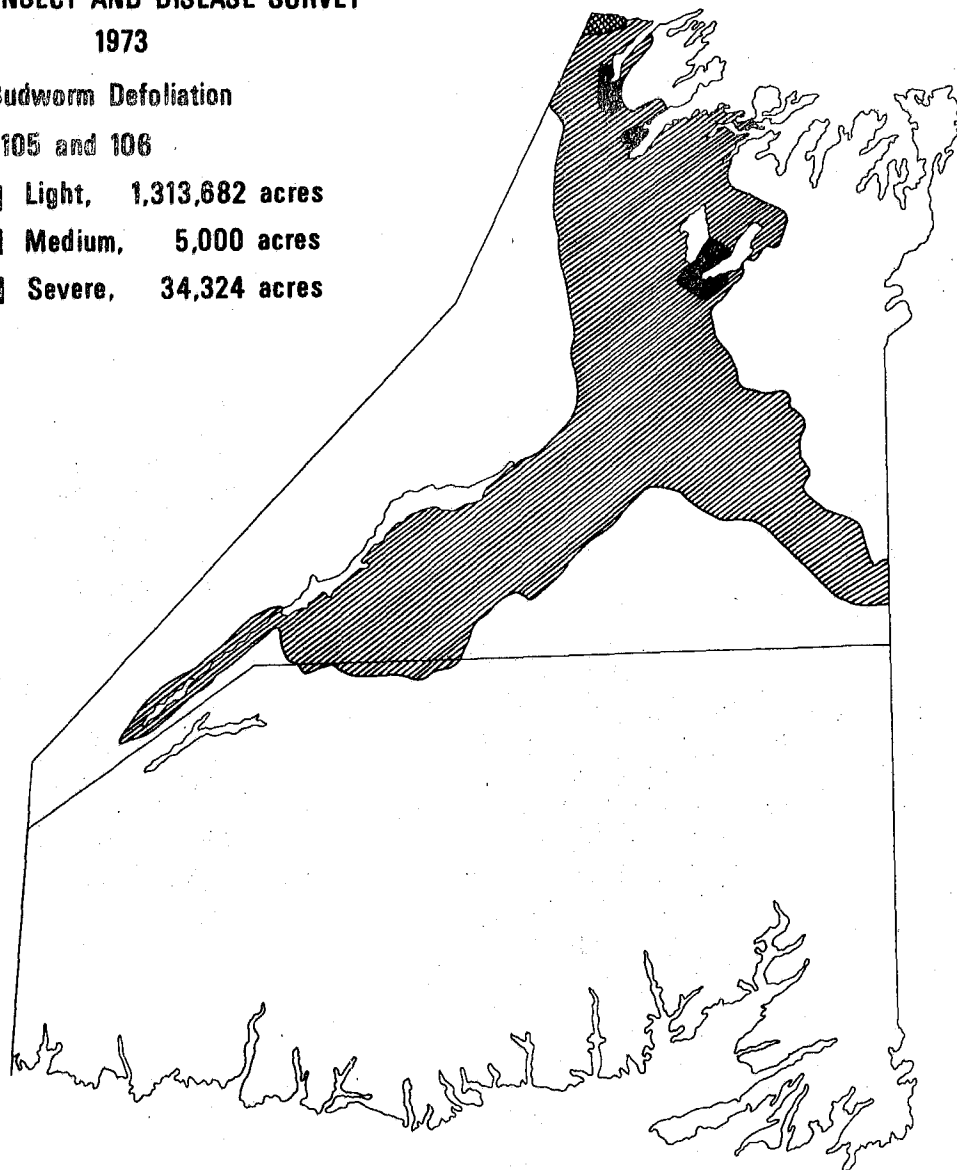


Fig. 7

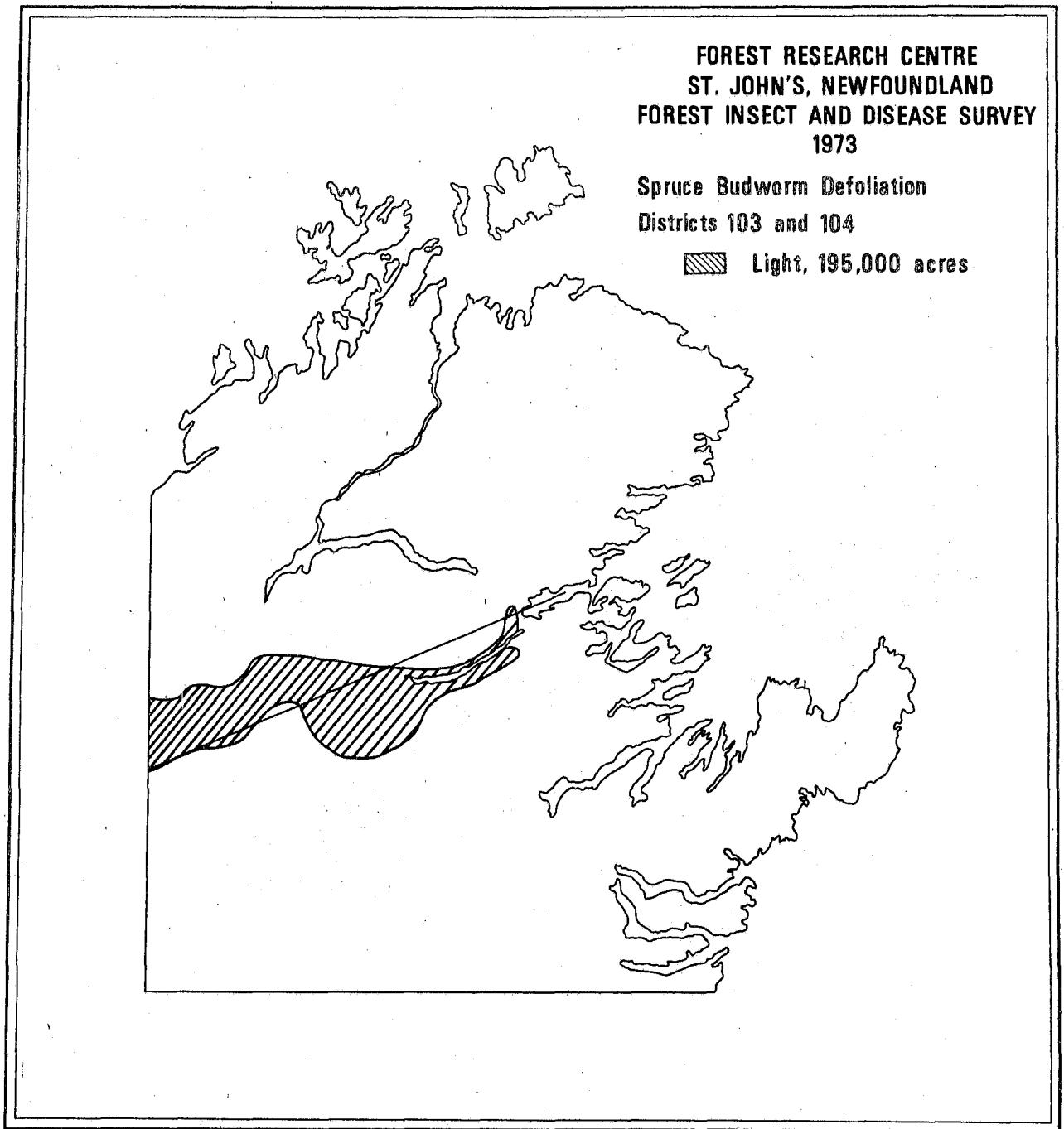


Fig. 8

Table 3. Results of spruce budworm egg mass sampling 1973.

Plot locations	No. egg masses per 100 ft ² foliage	Mean No. eggs per mass	Egg mass category*
<u>Western</u>			
Corner Brook Lake	22	10.0	L
Grand Lake	55	11.7	L
Little Grand Lake	0	0	-
Lewaseechjeech Brk.	89	18.0	L
Paddle Pond	0	0	-
Lloyds River	35	22.0	L
Lloyds Lake	18	15.0	L
Lloyds Lake	113	16.0	M
6 mi. W. Lloyds Lake	0	0	-
Barachois Brk.	22	10.0	L
Flat Bay Brk.	0	0	-
Barachois Brk.	47	10.0	L
Southwest Brk.	0	0	-
Bottom Brk.	0	0	-
Hare Hill	73	15.0	L
Northeast Brk.	0	0	-
Blue Hill Brk.	0	0	-
Serpentine Lake	36	10.0	L
Serpentine Lake	0	0	-
Old Man's Pond	0	0	-
Penguin Arm	41	11.0	L
Trout River Pond	168	7.3	M
2 mi. N. Goose Arm	35	7.5	L
Big Bonne Bay Pond	37	12.5	L
Adies Brk.	0	0	-
4 mi. N. Humber River	17	15.0	L
Kitty's Brk.	0	0	-
Grand Lake	129	10.0	M
3 mi. S. Glide Lake	114	10.0	M
Burnt Berry Brk.	259	9.2	S
Lake Bond	0	0	-
Gull Pond (Baie Verte)	59	9.7	L
Middle Arm	0	0	-
Springdale	0	0	-
Pauls Lake	18	12.0	L
South Pond	19	20.0	L
West Pond	74	13.0	L
Indian River	70	12.0	L
Sheffield Lake	109	9.0	M
T.C.H. 2 mi. W. Hampden Jct.	39	7.5	L
S.E. corner Big Bonne Bay Pond	41	7.5	L
Jct. Cormack & Bonne Bay Rds.	22	5.0	L
Glenburnie	0	0	-
Bellburns	13	10.0	L
Romaines	44	10.0	L
Pasadena	112	7.9	M
Rocky Barachois Brk.	23	10.0	L
Wiltondale	52	9.0	L

Cont'd

Table 3. Continued

Plot locations	No. egg masses per 100 ft ² foliage	Mean No. eggs per mass	Egg mass category*
Blow-me-down Prov. Park	59	9.7	L
Old T.C.H. 5 mi. fr.			
N.E. end Birchy Lk.	0	0	-
Baie Verte Rd., 7 mi. fr. T.C.H.	14	3.0	L
Lady Slipper Rd.	94	8.4	L
1.5 mi. S.E. McIvers	95	11.5	L
Man of War Cove	44	4.0	L
Point au Mal	67	12.5	L
Baie Verte Jct.	0	0	-
Jct. Lomond & Woody Point Rds.	12	15.0	L
Lost Pond	25	3.0	L
Frenchmans Cove	59	8.0	L
Cox's Cove	196	6.6	M
2 mi. S. Crabbes River	31	10.0	L
South Branch	0	0	-
T.C.H., 1 mi. E. Boot Brk.	0	0	-
Fishells River Rd.	0	0	-
Camp 180 Rd.	0	0	-
2 mi. S. North Branch River	0	0	-
Mummichog Prov. Park	44	5.0	L
Tompkins	0	0	-
N.E. end Codroy Pond	0	0	-
South Brk.	47	12.5	L
Spruce Brk.	51	5.0	L
Pinchgut Lake	21	10.0	L
T.C.H. 3 mi. W. Sheffield Brk.	17	5.0	L
Crooked Feeder	0	0	-
Pynns Brk.	94	8.3	L
Jct. Goose Arm & North Lk. Rds.	58	7.0	L
Ship Cove	111	9.0	M
T.C.H. 5 mi. W. Birchy Narrows	13	15.0	L
Steel Mtn. Rd. 1 mi. fr. T.C.H.	25	5.0	L
T.C.H., 5 mi. W. Baie Verte Jct.	0	0	-
1 mi. N. Sally's Cove	22	10.0	L
Deer Arm Brk.	22	20.0	L
Lobster Cove	0	0	-
N.E. end Birchy Lk.	0	0	-
Barachois Prov. Park	358	8.8	S ✓
West Bay Centre	51	20.0	L
Burlington Rd., 7 mi. fr.			
Baie Verte Rd.	102	10.0	M
Portland Creek	0	0	-
Jct. Reidville & Bonne Bay Rds.	44	6.0	L
4 mi. N. St. Pauls	14	10.0	L
Three Mile Rock	144	9.4	M
Crescent Lk. Rd.	0	0	-
Whites Rd.	43	10.0	L
Belldowns Pt.	211	8.7	M
Cormack Rd., 0.5 mi. W. Little Falls	14	10.0	L
Cache Valley Rd.	0	0	-

Cont'd

Table 3. Concluded

Plot locations	No. egg masses per 100 ft ² foliage	Mean No. eggs per mass	Egg mass category*
<u>Central</u>			
1.5 mi. N.E. Phillips Head	0	0	-
6 mi. N. Phillips Head	0	0	-
9.1 mi. N. Phillips Head	0	0	-
4.2 mi. N. Northern Arm (Pt. Leamington Rd.)	0	0	-
8.5 mi. N. Northern Arm (Pt. Leamington Rd.)	42	5.0	L
2.0 mi. N.W. Pt. Leamington	47	13.0	L
6.0 mi. N.W. Pt. Leamington	0	0	-
0.4 mi. W. Glovers Hr. Jct.	64	11.8	-
1.0 mi. S. Leading Tickles	0	0	-
4 mi. S.W. Badger	0	0	-
3.6 mi. N. on Millertown Jct. Rd.	124	11.7	M
2.4 mi. S.W. Millertown Jct.	25	10.0	L
Jct. Noel Pauls Brk. and Exploits River	0	0	-
2.4 mi. S.W. Buchans Jct. (Millertown Rd.)	0	0	-
0.2 mi. S. Exploits Dam	0	0	-
3 mi. S. Exploits Dam	0	0	-
7.4 mi. S. Exploits Dam	0	0	-
Jct. Lake Ambrose and Victoria Lake Rds.	0	0	-
8.0 mi. W. Jct. Lake Ambrose Rd.	0	0	-
1.0 mi. W. Lake Ambrose Jct.	0	0	-
17.9 mi. W. Lake Ambrose Jct.	25	10.0	L
2.0 mi. S. Lake Ambrose Jct.	0	0	-
Jct. Noel Pauls Brk and Pudops Dam Rd.	0	0	-
T.C.H., 4 mi. W. Badger	18	5.0	L
T.C.H., 8.2 mi. W. Badger	800	7.6	S
T.C.H., 20.5 mi. W. Badger	0	0	-
1.1 mi. W. Gull Pond Rd.	33	7.5	L
5.0 mi. W. Gull Pond	103	12.5	M
T.C.H., 6 mi. E. Baie Verte Jct.	44	10.0	L
0.2 mi. N. Jct. Kings Pt. and Springdale Rds.	287	8.2	S
1 mi. S. Kings Pt.	206	8.8	M
10 mi. N.E. Kings Pt.	172	12.9	M

*Egg Mass Category

L - 1-99 per 100 ft² foliage
M - 100-239 " " "
S - 240 + " " "

Results for both 1972 and 1973 egg sampling are summarized below:

	<u>0</u>	<u>Light</u>	<u>Moderate</u>	<u>Severe</u>	<u>Total samples</u>
1972	12 ¹⁵	36	16	19 ³	83 ⁷⁰ ✓ OK
1973	51 ✓	58 ✓	15	4 ✓	128 ✓

The above data indicate the probability of some weakening of the spruce budworm outbreak in 1974.

Blackheaded Budworm, *Acleris variana* (Fern.) - Population levels of this insect have increased in all areas of the Island over the past two years. The size of infestations and intensity of defoliation were difficult to determine because of the occurrence of spruce budworm feeding in the same areas. However, blackheaded budworm larvae were numerous in many collections and the insect was collected for the first time in Labrador.

In 1973, an infestation covering about one square mile was reported along the Logging School Road near Little Georges Lake in western Newfoundland. Larval numbers averaged 78 per tree and defoliation was about 30%. At Birchy Lake, larval numbers ranged from 6 to 10 per tree and defoliation was about 5%. In the Hampden and Lomond areas larval numbers ranged from 3 to 7 per tree and defoliation was negligible. In the Spruce Brook area, where this insect was common in 1972, larval numbers dropped from 180 per tree to only 7 per tree, and defoliation was reduced from 25% to 10%. Larval collections made in western Newfoundland from 1970 to 1973 are summarized as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1970	25	0.3	0.5	1.3
1971	29	0.3	1.1	7.7
1972	96	0.3	2.4	60.0
1973	55	0.1	3.1	78.6

The last outbreak of this insect in central Newfoundland occurred in 1965 and covered an area of 500 square miles. No estimates of larval population levels were recorded but defoliation of balsam fir and black spruce ranged from 20% to 80%. This outbreak collapsed in 1968 and no tree mortality was observed. In 1973 larval numbers averaged 10.5 per tree along the Sandy Lake - Noel Pauls, Lake Ambrose, Millertown Junction and Dawes Pond roads. Defoliation in these areas averaged 10% of the current year's foliage of balsam fir and black spruce. Larval collections in central Newfoundland in 1973 are summarized as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	65	1.0	3.6	31.0

In eastern Newfoundland an infestation covering about 900 acres of black spruce was reported near Southwest Arm in the Terra Nova National Park. Larval numbers in this area averaged 34 per tree and defoliation of the current growth in the upper crowns of infested trees was about 30%. Larval collections were also made from balsam fir stands near Marystown on the Burin Peninsula. Collections in eastern Newfoundland in 1972 and 1973 are summarized as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1972	46	0.3	1.0	17.0
1973	71	0.3	4.0	50.0

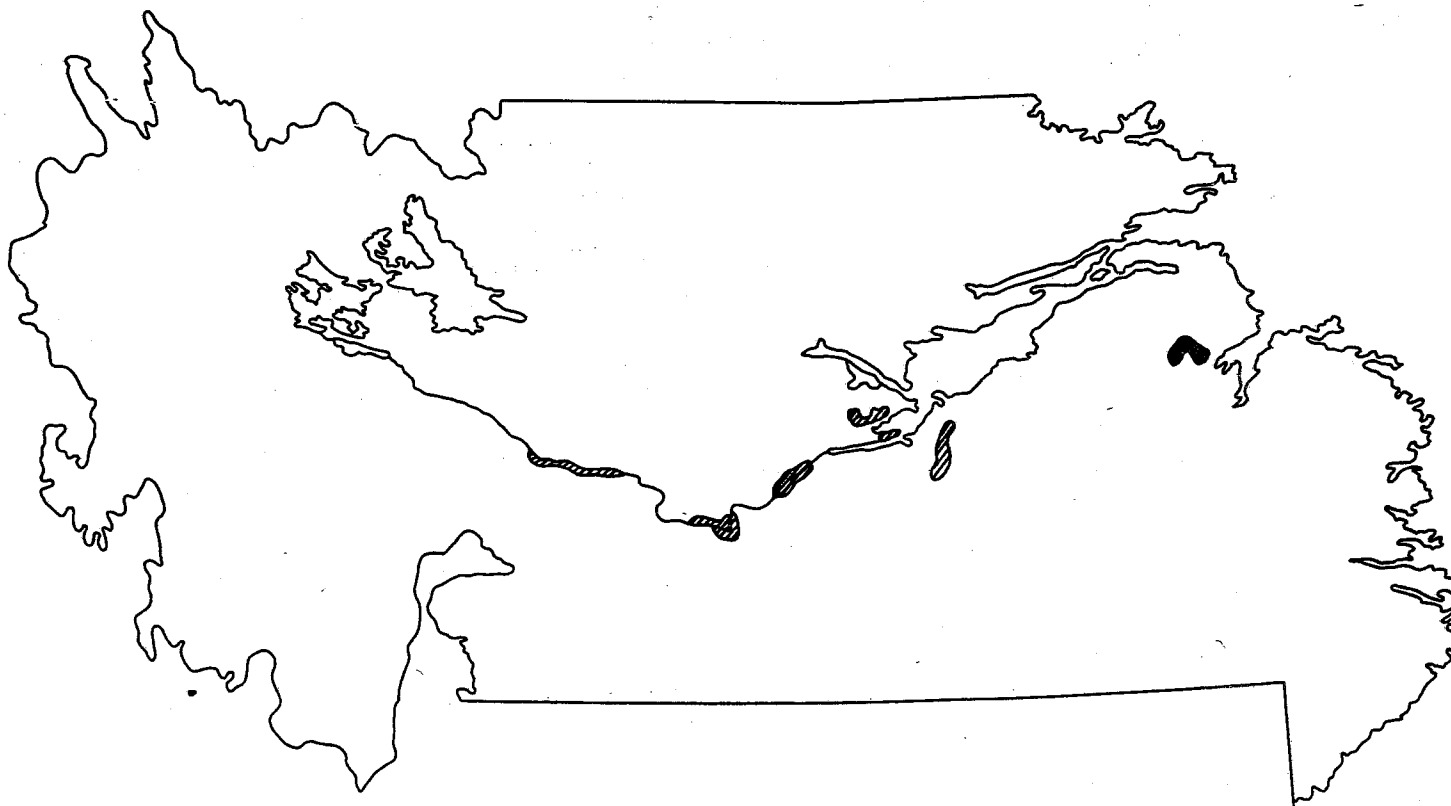
This insect was collected for the first time in Labrador in 1973. Defoliation was observed on both balsam fir and black spruce. Boundaries of the infestations are shown in Fig. 9 and the extent and intensity of defoliation occurred as follows:

**FOREST RESEARCH CENTRE
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FOREST INSECT AND DISEASE SURVEY
1973**

**Black-headed Budworm and Balsam Fir Sawfly Defoliation
LABRADOR**

Black-headed Budworm  Light

Black-headed Budworm and Balsam Fir Sawfly  Medium-Severe



Location	Area (acres)	Defoliation (%)
Sandwich Bay	20,480	60*
Kenamu River	32,640	35
Grand Lake	8,677	20
Goose Bay	65,563	25
Hamilton River	23,680	35

* Stands in the Sandwich Bay area were also attacked by the balsam fir sawfly

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

Outbreaks of this insect have been recorded in Newfoundland every 7 to 10 years since 1912. The most recent outbreak began in 1966 on the west coast and spread into central Newfoundland in 1967 causing severe defoliation and extensive tree mortality. In 1968 and 1969 some 2,500,000 acres of infested spruce-fir forest were successfully sprayed with the insecticide fenitrothion and the outbreak collapsed in 1971.

In western Newfoundland, larval populations increased from 0.6 in 1972 to 1.1 per tree in 1973 in the Codroy Pond to Gallants area. Results of larval collections from 1969 to 1973 are summarized as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1969	108	0.3	1.3	70.0
1970	33	0.3	0.3	1.3
1971	16	0.3	0.8	2.0
1972	38	0.3	0.6	3.3
1973	29	0.3	1.1	4.3

In central Newfoundland population levels remained low for the second consecutive year and only eight larvae were collected throughout the area. Larval collections for 1972 and 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1972	12	1.0	0.4	4.0
1973	7	1.0	0.2	2.0

In the fall of 1972 an infestation of the looper was forecast for the Salmonier Valley area of eastern Newfoundland. This forecast was based on the occurrence of a large number of moths and an average of about 10 eggs per moss and/or bark sample collected near Whiskey and Whelans ponds. These stands are 8 miles and 15 miles south of the Trans Canada Highway. In June 1973, larval numbers ranged from 49 to 159 per tree sample and 30% of the new foliage was destroyed in balsam fir stands at Whelans Pond. In late June, looper larvae were artificially infected with a native fungus of the genus Entomophthora, and introduced into these stands. This disease apparently controlled the looper infestation as studies conducted by Dr. I.S. Otvos (Woody Points 5(6): 2-3) showed that the disease spread through the looper population in both areas. Later surveys also showed that the intensity of defoliation did not increase. Larval collections in eastern Newfoundland in 1972 and 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1972	21	0.2	0.4	1.0
1973	8	0.33	87.6	519.0

Balsam Woolly Aphid, *Adelges piceae* (Ratz.) - The rate of spread of this insect and the extent of damage has decreased considerably since the mid-sixties. The only appreciable increase in the intensity of damage has occurred in central Newfoundland. In 1973, damage was pronounced in three areas: near Point Leamington; between Lewisporte and Norris Arm Junction along the Trans Canada Highway; and along the Badger-Buchans road about 10 miles south of Badger. In the infestation near Point Leamington crown mortality was evident in about 30% of the stand. In the other two areas about 5% crown mortality, and moderate to severe "gout" was recorded. There was also some evidence of light "gout" in a small stand of fir near Burnt Pond on the Bay d'Espoir Road.

Balsam Fir Sawfly, *Neodiprion abietis* Complex - This sawfly has been present in the Georges Lake - Gallants area of western Newfoundland since 1954. However, the location of individual infestations within the area has varied from year to year. In 1973, infestations in these areas virtually collapsed, soon after hatching; possibly because of starvation as defoliation was estimated at 80% in the stands infested in 1972. Some cocoons were found in one small stand near Gallants where defoliation averaged about 40% in 1972.

In eastern Newfoundland, the outbreak on the Burin Peninsula extended from Mooring Cove Junction to Marystown and east to Lewins Cove. This is the fourth consecutive year of this outbreak and it now covers approximately 6,000 acres. The most serious defoliation, about 80%, occurred in immature fir stands near Marystown where larval numbers averaged 330 per tree.

In 1973, this insect was recorded for the first time in Labrador. The infestation occurred near White Bear River, Sandwich Bay, and covered 20,480 acres of mature balsam fir. Defoliation was estimated at 60% but part of this damage was caused by the blackheaded budworm. The 1973 sawfly collections throughout the Island were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	22	0.3	66.9	333.3

European Spruce Sawfly, *Diprion hercyniae* Htg. - Samples of this sawfly are collected throughout the Island during most years but numbers are usually low except in isolated stands. In 1973, collections in isolated stands of black spruce from Steady Brook to Birchy Narrows in western Newfoundland ranged from 4 to 40 per tree.

In central Newfoundland, the highest larval numbers recorded were 7 per tree in a black spruce stand near Badger.

In eastern Newfoundland infestations were scattered and larval numbers averaged only 1.0 per tree. The 1973 collections from all areas were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	75	0.3	1.5	40.0

Yellow-headed Spruce Sawfly, *Pikonema alaskensis* (Roh.) - In 1973, larval collections and the intensity of defoliation indicated a reduction in the activity of this sawfly throughout the Island. No defoliation was observed in western Newfoundland.

In central Newfoundland, the infestation that began in 1971 on black spruce regeneration in the Indian Bay Big Pond area, virtually collapsed in 1973. However, a few scattered trees were infested and defoliation on these was estimated at 15%. In July 1973, 15 one-square foot moss filled traps were placed under infested trees to collect sawfly cocoons for parasite studies. However, all but one of the traps were destroyed, presumably by berry pickers. The one remaining trap contained only two cocoons. The 1973 collections from all areas are as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	12	0.3	4.9	53.0

Larch Sawfly, *Pristiphora erichsonii* (Htg.) - In 1973, population levels of this insect continued to be low in all areas and only two small infestations were observed; one at South Branch, and the other at the junction of the Cooks Harbour and St. Anthony roads. At South Branch, larval numbers were only 9 per tree as compared to 19 per tree in 1972; defoliation was only 10%. At the junction of the Cooks Harbour and St. Anthony roads, the outbreak has continued for six consecutive years and now covers an area of about 2-square miles. Defoliation in 1972 was 25% but was not estimated for 1973. Larval collections for 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	5	0.3	2.8	8.3

Trapping of the masked shrew, Sorex cinereus cinereus Kerr., was continued in four permanent sample plots to determine the annual fluctuations in population levels of this insectivorous predator. The trapping was conducted over a 10-day period from September 25 to October 5. Results show that the numbers of shrews per acre averaged 3.8, a slight increase over 1972. The larch sawfly has been absent from the sample plots for a number of years. Trapping records from 1966 to 1973 are as follows:

Estimated number of shrews per acre								
Census plot	Sept 1966	Sept 1967	Sept 1968	Oct 1969	Sept 1970	Sept 1971	Sept* 1972	Sept* 1973
Halls Bay	8.71	11.33	3.35	2.87	2.85	2.46	2.18	3.48
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	3.92
Paddys Pond	Plot established in 1970				0.00	0.61	1.31	3.93
Wiley Brook	Plot established in 1970				4.96	3.57	2.61	3.92
*Ten day trapping period								

Birch Casebearer, Coleophora fuscedinella (Zell.) - In 1973, the boundaries of birch casebearer infestations remained the same as in 1972. In western Newfoundland up to 60% defoliation was observed in a number of areas as follows: Robinsons River to Fischells River; Flat Bay Brook to Carters Road; Barachois Park to Southwest Brook; Corner Brook to Deer Lake; Cormack Road to Hampden and in the Lomond area.

In central Newfoundland, severe browning (80% to 90%) was recorded throughout most of district 106, except for a few areas between Bishops Falls and Leading Tickles and Cottrells Cove, where it ranged from 25% to 80%. In the Bay d'Espoir area, where severe browning was reported in 1972, only light browning was recorded in 1973.

In eastern Newfoundland, only light browning was recorded. It was highest (10% to 15%) in the western end of Terra Nova National Park and along the Trans Canada Highway from Gambo to the junction of the Bay d'Espoir Road. Collections in 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	49	0.3	12.6	63.0

Birch Leafminer, Fenusa pusilla (Lep.) - Browning of birch foliage by the birch leafminer was observed throughout the Island. However, on the Avalon Peninsula the only appreciable damage occurred on ornamental trees in the city of St. John's and in the surrounding populated areas.

In western Newfoundland about 50% browning of foliage was recorded on birch saplings along the road from Stephenville to Corner Brook and along the Goose Arm and Howley roads.

In central Newfoundland 25% to 70% browning was observed on the foliage of white birch regeneration along the right-of-way of the Trans Canada Highway and many secondary roads in all districts.

In Labrador, 75% browning of white birch foliage was recorded for the first time in the Otter Creek, Goose Bay and Happy Valley areas. Collections throughout the Island in 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	67	1.0	11.7	66.7

Larch Casebearer, *Coleophora laricella* Hbn. - This insect has not been common on the Island since 1966, however numerous infestations were observed in 1973.

In western Newfoundland, severe defoliation, averaging 80%, occurred in larch stands in a 100 square mile area from Pasadena to Deer Lake and east to Grand Lake (Fig. 10). An estimated 10% defoliation was also recorded in the Goose Arm and Howley areas.

In central Newfoundland, a one-acre infestation was reported near Michaels Harbour, Notre Dame Bay; defoliation was about 10%.

In eastern Newfoundland, a small outbreak covering about one square mile was reported in the Georges Brook - Clarenville area. Larval numbers have increased considerably on the Avalon Peninsula. The most serious defoliation occurred between Blaketown and Hearts Content and was estimated as high as 80%. A two-acre area was located near South River, Conception Bay, with defoliation estimated at 75%. About 5% browning of immature tamarack was recorded along the Markland - Colinet Road (Fig. 11). Collections in all districts in 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	27	0.05	2.2	11.4

Mountain Ash Sawfly, *Pristiphora geniculata* (Htg.) - This sawfly caused considerable defoliation of mountain ash throughout the Island, especially in parks and on ornamental trees on private property.

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1973**

Larch Casebearer Defoliation

District 108

-  Light
 Severe

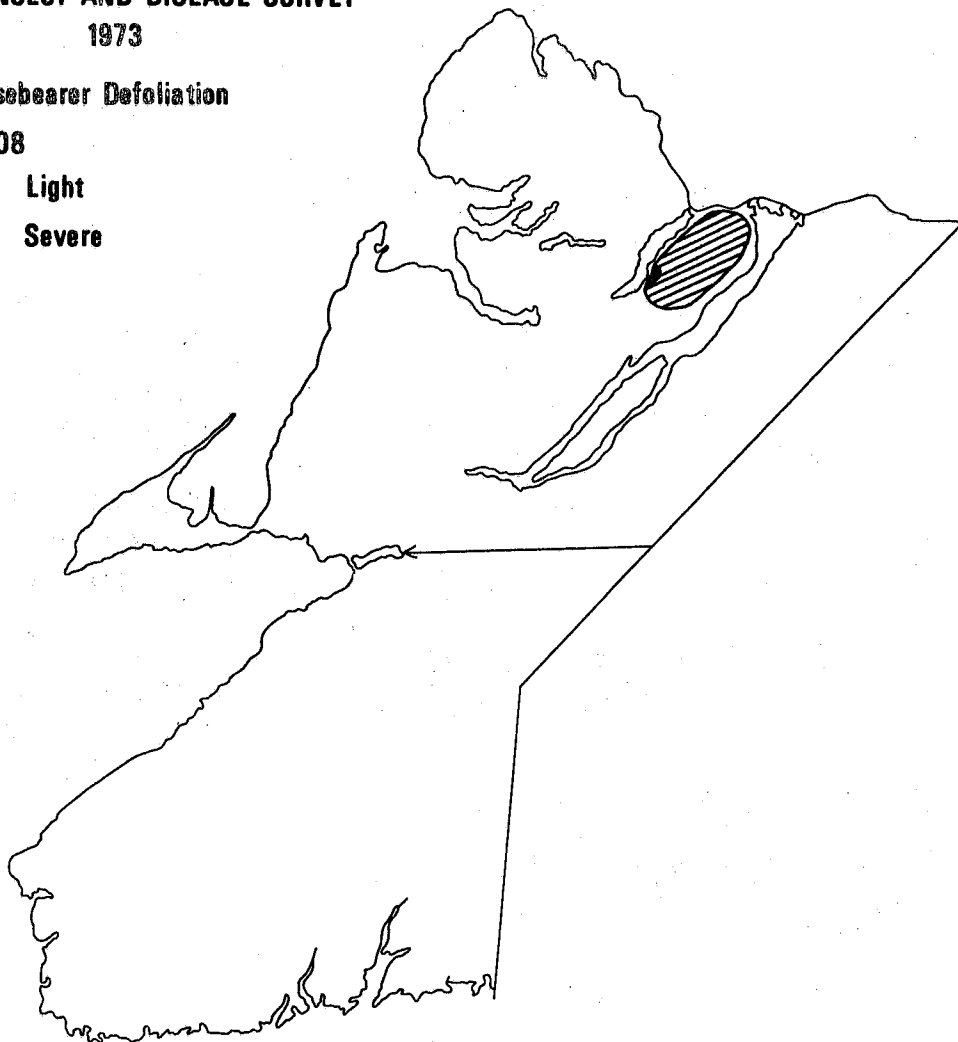


Fig. 10

FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1973

Larch Casebearer Defoliation

District 101

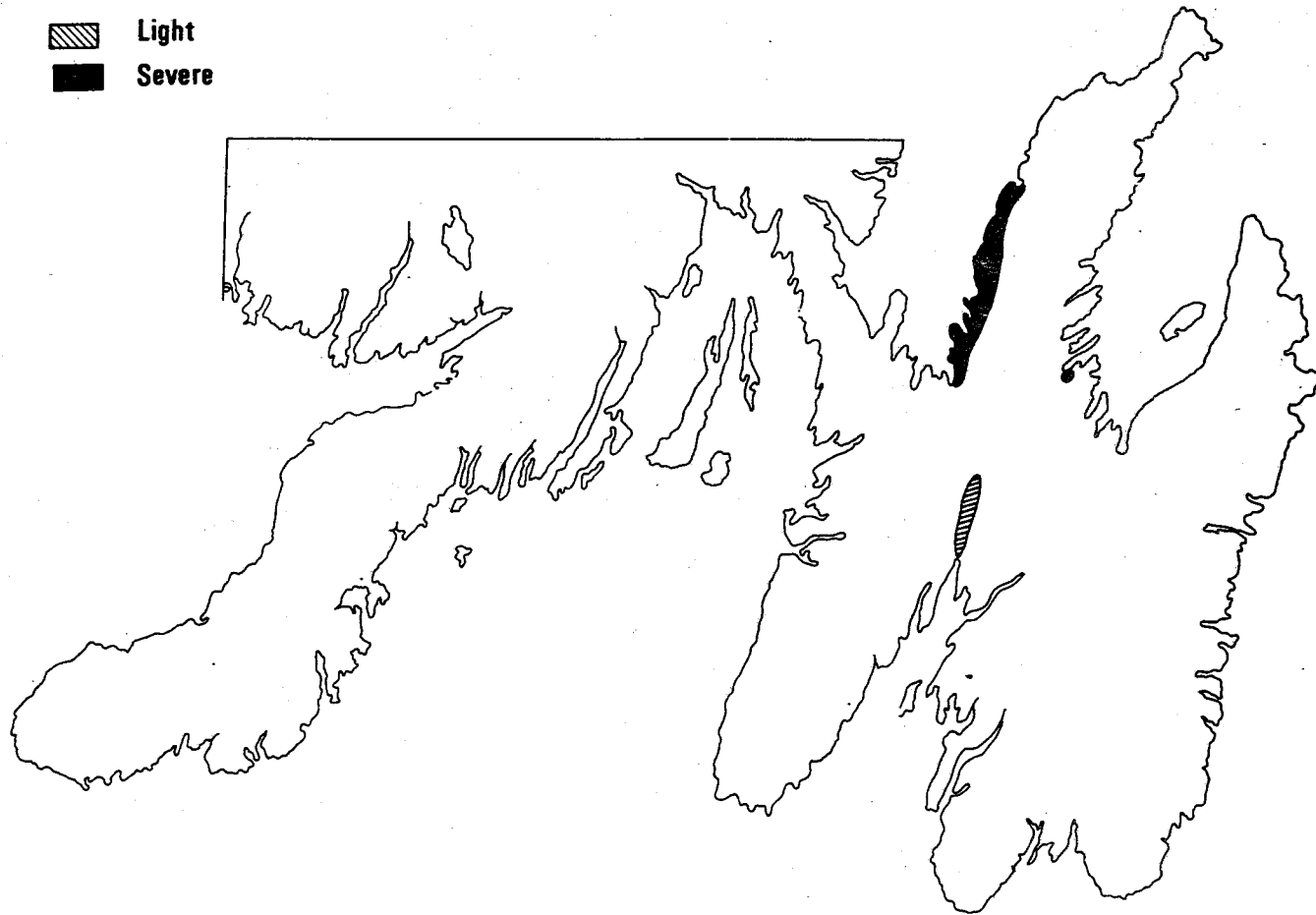


Fig. 11

In western Newfoundland, larval numbers averaged 122 per tree in the Bonne Bay and North Lake areas where defoliation reached 100%. In the Lomond River area larval numbers averaged 59 per tree and caused 80% defoliation.

In central Newfoundland, larval numbers averaged 41 per tree and defoliation ranged from 10% to 30% throughout all districts.

In eastern Newfoundland, this sawfly caused up to 90% defoliation of mountain ash in both Pippy and Bowring parks, and on private property, for the past five years. In 1973, City officials conducted a successful spraying operation to alleviate defoliation in Bowring Park. Collections in all districts in 1973 were as follows:

<u>Year</u>	<u>No. of collections</u>	<u>No. larvae per tree</u>		
		<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
1973	13	8.5	53.3	136.5

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. - In 1973, two infestations of this insect were reported, one in western and the other in eastern Newfoundland; both had been active in 1972.

In western Newfoundland the infestation at East Arm, Bonne Bay, covered approximately 200 acres and defoliation ranged from 80% to 100%.

In eastern Newfoundland 40% defoliation was reported from Bay d'Espoir north to Gambo. From Gambo east to Paddys Pond and south to Cape Broyle defoliation was about 40%.

Fall Webworm, *Hyphantria cunea* Dru. - Until 1973, the only previous infestation of this insect was recorded in the Stephenville area between 1952 and 1955. This caused severe defoliation of apple, plum, birch, alder, pin cherry and mountain ash. In 1973, a new infestation caused 80% defoliation of birch, alder, and pin cherry over an area of about 17 square miles along Whites Road from Black Duck to Stephenville Crossing and along the Hansen Road to Stephenville.

OTHER NOTEWORTHY INSECTS

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Acronicta dactylina</u> (Grt.) Owlet moth	Sal	29.1 mi. S. of T.C.H. on Bay d'Espoir Rd.	1.3	1
<u>Acronicta grisea</u> Wlk. Gray dagger moth	wB,pCh,Mo	49.3 mi. S. of T.C.H. on Bay d'Espoir Rd., 12.5 mi. S.W. of Buchans Rd., 20.2 mi. N. of T.C.H. on Gander Bay Rd., 11.5 mi. N. of T.C.H. on Gander Bay Rd., Alexander Bay Station	0.5	5
<u>Anacampsis innocuella</u> Zell. Poplar leaf roller	tA,Sal,bPo	Deer Lake, Clarenville, Districts 105 & 106	7.8	24
<u>Anomogyna perquiritata</u> (Morr.) Gray spruce cutworm	bS	Notre Dame Junction Provincial Park	0.1	1
<u>Anoplodera canadensis</u> (Oliv.) Long-horned beetle	Sal	Pilleys Tickle causeway	0.3	1
<u>Anoplodera mutabilis</u> (Newm.) Long-horned beetle	bS	2.7 mi. from Sandy Lake Rd. on Noel Paul Rd.	0.3	1
<u>Anoplodera tibialis</u> Lec. Long-horned beetle	bS,tL,Mo, bF	26.4 mi. S. of Jct. Lake Ambrose and Victoria Lake Rds., 2.0 mi. N. of T.C.H. on Botwood Rd., Alexander Bay Station, Pinchgut Lake	0.4	4
<u>Anoplonyx luteipes</u> (Cress.) Marlatt's larch sawfly	tL	Salmon River, 0.3 mi. E. of Michaels Hr., Goose Arm, Howley, Districts 103 & 106	1.3	19
<u>Brachyrhinus singularis</u> (Linn.) Clay-coloured root weevil	wB,wS,Sal	Alexander Bay Station, 1 mi. S. of Torbay, Middle Cove, Dunville	0.6	4
<u>Campaea perlata</u> (Gn.) Fringed looper	wB,yB,Sal, pCh	Camp 33 Rd. (Grand Lake), Glenwood, Lewisporte, Winterland, 29.1 mi. S. of T.C.H. on Bay d'Espoir Rd.	0.4	5

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Caripeta divisata</u> Wlk. Grey spruce looper	wS,bF,bS,Sal	Grand Lake Rd., Steel Mtn. Rd., Logging School Rd., Portland, Eastport, Saltons Brook, Badger, Aspen Bk. Prov. Park, Lomond River, Bonne Bay Rd.	0.5	12
<u>Cephalcia</u> sp. A web-spinning sawfly	bS,bF,wS	Logging School Rd., Dawes Pond Rd., District 103	0.3	3
<u>Choristoneura conflictana</u> (Wlk.) tA Large aspen tortrix		Clareville, District 106	4.3	7
<u>Chrysomela falsa</u> Brown Willow leaf beetle	W,tA	District 106	6.4	4
<u>Chrysomela mainensis mainensis</u> Bech. Alder leaf beetle	Sal	Flat Bay Brook	30.0	1
<u>Corythucha pergandei</u> Heid. Alder lace bug	Sal,wB	Frenchmans Cove, 4.3 mi. N. of Northern Arm, 1.3 mi. S. of Brighton, Districts 103 & 104	30.1	7
<u>Croesus latitarsus</u> Nort. Dusky birch sawfly	wB	St. Andrews, Pippy Park (St. John's)	1.3	2
<u>Ctenicera resplendens aeraria</u> Rand. A click beetle	wS	Middle Cove	1.0	1
<u>Dendroides concolor</u> Newm. Fire-coloured beetle	Sal	2.4 mi. E. of Sandy Pond Jct. (TNNP)	0.3	1
<u>Dimorphopteryx melanognathus</u> Roh. Birch-alder sawfly	Sal	7.2 mi. S.W. of Badger, 10.0 mi. S.W. of Buchans Rd. on Star Lake Rd., Lomond River, Bonne Bay Rd.	0.3	3

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Dimorphopteryx</u> sp. A sawfly	wB,Sal,tA	Aspen Bk. Park, 10.1 mi. N.E. of Kings Point, District 104	0.6	6
<u>Dioryctria reniculella</u> (Grote) Spruce coneworm	bS,bF,wS	Trout River, Glenburnie, Lomond, East Arm, Flat Bay Rd., Districts 103, 106 & 108	0.7	23
<u>Ectropis crepuscularia</u> (Schiff.) Flat-faced looper	bF,wB,Sal	St. Fintans Rd., South Branch, Tompkins	0.4	3
<u>Elasmostethus cruciatus</u> Say Stink bug	Sal	7.2 mi. S.W. of Badger, 3.3 mi. from Buchans Rd. on Star Lake Rd., Georges Brook	1.7	3
<u>Eucordylea atrupictella</u> Dietz. Spruce micro moth	bS,bF,wS	Flat Bay Rd., Lomond, Great Rattling Bk. Rd., Dunville, District 103	0.5	6
<u>Eupithecia filmata</u> Pears. Early brown looper	bS	Culls Harbour	0.3	1
<u>Eupithecia</u> sp. Brown spruce looper	bS,bF,tL,wS	All districts	0.5	30
<u>Eupithecia transcanadata</u> Mack. Conifer looper	bF	5.0 mi. N. of Northern Arm, Northwest Bk., Winterland, Lethbridge Jct., Georges Bk.	0.5	5
<u>Evodinus monticola</u> (Rand.) Long-horned beetle	bF	1.5 mi. E. of Long Harbour Jct. on T.C.H.	0.3	1
<u>Fenusa dohrnii</u> (Tischb.) European alder leafminer	Sal	Districts 103, 104, 105 & 106	6.6	41

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Feralia jocosa</u> (Guen.) Red-marked caterpillar	bF,wS,bS	Districts 102, 103, 104, 106, 107 & 108	0.5	38
<u>Griselda radicana</u> Wlshm. Red-striped spruce shoot moth	wS,bS	Bonne Bay Rd., 12 mi. N.W. of Wiltondale, Star Lake Rd., Districts 103, 104, 107 & 108	1.3	14
<u>Harpiteryx xylostella</u> (Linn.) European honeysuckle leaf roller	Honeysuckle, lilac	Pippy Park (St. John's)	59.0	2
<u>Hemichroa crocea</u> (Four.) Striped alder sawfly	Sal	Cottrell's Cove	17.0	1
<u>Herculia thymetusalis</u> Wlk. Spruce needleworm	bF	Goose Arm Rd.	0.1	1
<u>Heterarthrus nemoratus</u> (Fall.) Birch leaf mining sawfly	wB	Waterville, District 106	12.1	7
<u>Hylobius</u> sp. Root collar weevil	wS,bS,bF, P,scP	5.1 mi. E. of Badger, Grand Falls, Coxs Cove, Southwest Bk. Rd., Camp 180 Rd. (Jeffreys), Tilton Barrens Pine Plantation	0.5	9
<u>Mindarus abietinus</u> Koch Balsam twig aphid	bF	St. Albans, Bonavista Peninsula, Burin Peninsula, Southport Rd., Chapel Arm	28.9	9
<u>Monochamus scutellatus</u> (Say) White-spotted sawyer	P,bS,wS	Carters Rd., Grand Falls, Pippy Park (St. John's)	0.8	3
<u>Nadata gibbosa</u> (J.E. Smith) Green oak caterpillar	tA,Sal,tL, wB	Districts 103, 104 & 106	0.4	8

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Nematus limbatus</u> (Cress.) Willow sawfly	W	Spruce Bk. Rd., Millertown Jct. Rd., 2 mi. E. of Birchy Narrows on T.C.H.	9.0	3
<u>Neptyia canosaria</u> (Wlk.) False hemlock looper	bF, wB, wS	Camp 180 Rd., North Bk. Rd., Tompkins, Bay d'Espoir Rd., Pt. Leamington, Creston North, Queens Cove, 12 mi. N. of Wiltondale	0.6	8
<u>Nycteola cinerana</u> N. & D. Poplar leaf tier	W, wB, tA, bF, rM, moM, Mo	Districts 103, 104 & 106	1.5	10
<u>Nyctobia limitaria</u> (Wlk.) Green balsam looper	bF, bS, tL	Districts 103, 105, 106, 107 & 108, 2 mi. S. of Hampden	0.5	33
<u>Nymphalis antiopa</u> (L.) Mourningcloak butterfly	wB, W	Crabbes River Park, Gallants, TNNP, Hampden, Pt. Leamington	30.2	5
<u>Orgyia antiqua</u> (L.) Rusty tussock moth	wB, Sal, wS, Po, bF, tL	Districts 102, 103, 106, 107 & 108	0.4	15
<u>Ortholepis pasadamia</u> Dyar Birch micro moth	wB	N.W. Gander River Rd., Torbay, St. John's East	4.6	3
<u>Papilio glaucus canadensis</u> R. & J. Tiger swallowtail	tA, Sal	29.1 mi. S. of T.C.H. on Bay d'Espoir Rd., Smallwood Memorial Prov. Park	0.3	2
<u>Parorgyia plagiata</u> (Wlk.) Pine tussock moth	tL, bF	Logging School Rd., Fishells River Rd., Exploits Dam, 11.0 mi. N. of T.C.H. on Gander Bay Rd.	0.2	4
<u>Phratora purpurea purpurea</u> Brown Aspen leaf beetle	tA, bF, W, Sal	Smallwood Memorial Prov. Park, District 106	1.6	9

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Phyllocnistis populiella</u> (Chamb.) Aspen leaf miner	tA,bPo	Jct. T.C.H. and South Twin Lake Rd., Goose Arm Rd., Crabbes River Prov. Park	4.2	3
<u>Pikonema dimmockii</u> (Cress.) Greenheaded spruce sawfly	wS,bS	Howley, Trout River, Districts 103, 104 & 106	0.6	27
<u>Pontania</u> sp. Leaf rolling sawfly	bPo	Crabbes River Prov. Park	8.0	1
<u>Pristiphora lena</u> K. A spruce sawfly	wS	0.8 mi. W. of Clifton	0.3	1
<u>Protoarmia porcelaria</u> <u>indicataria</u> Wlk. Dotted line looper	bF	North Branch, Tote Bk. (Bay d'Espoir Rd.)	0.2	2
<u>Sciaphila duplex</u> Wlshm. Poplar leaf roller	tA,Apple,wS	9.7 mi. W. of Grand Falls (Sandy Lake Rd.), Thorburn Lake, Clareville	5.0	3
<u>Scoliopteryx libatrix</u> Linn. Willow scalloped owlet	W	Jct. Hampden and Sops Arm Rd., Burnt Point (TNNP)	1.0	2
<u>Semiothisa</u> sp. A looper	tL,bF,bS, wS	Lady Slipper Rd. (Corner Brook), 3 mi. W. of Baie Verte Jct., North Lake Rd., Districts 103, 104, 105 & 106	1.2	29
<u>Sicya macularia</u> Harr. Lumpy looper	wB,Sal,aMo	Lochleven, North Branch, South Branch, Bellevue Beach Park, District 106, Snooks Hr.	0.5	10
<u>Solenobia walshella</u> Clem. A bagworm	bF,bS	5 mi. E. of Kings Pt., District 104	0.6	9

OTHER NOTEWORTHY INSECTS - CONT'D

Species	Host(s)	Locality	Average per tree	No. of collections
<u>Stilpnotia salicis</u> (Linn.) Satin moth	tA,sPo	Deer Lake, District 109, Clareville, Port Blandford, 2 mi. W. of Grand Falls, 6.3 mi. E. of South Brook, St. John's	13.8	12
<u>Syneta</u> sp. A leaf beetle	bF	8.5 mi. N. of T.C.H. on Aspen Bk. Rd.	0.7	1
<u>Syngrapha alias</u> (Ottol.) Spruce climbing cutworm	bF	Steel Mtn. Rd., 3 mi. W. of Clareville, Snooks Hr., 2.5 mi. E. of St. Catherines, Districts 104, 106 & 108	0.2	19
<u>Syngrapha selecta</u> (Wlk.) Verdigris autograph	bS,bF,tL	3.2 mi. E. of Bay d'Espoir Rd. on T.C.H., 3 mi. W. of Clareville, Jct. Sandy Pond Rd. and T.C.H., N.W. Gander River Rd.	0.3	4
<u>Trichiosoma triangulum</u> Kby. Giant birch sawfly	wB	49.3 mi. S. of T.C.H. on Bay d'Espoir Rd.	0.3	1
<u>Xylotrechus undulatus</u> (Say) Spruce zebra beetle	P	Grand Falls	0.3	1
<u>Zeiraphera canadensis</u> M. & F. Spruce bud moth	wS,bS	9.0 mi. S.W. of Star Lake Bk., TMNP, 1 mi. W. of Glenburnie, East Arm, 12 mi. N.W. of Wiltondale, Districts 101, 107 & 108	2.2	34
<u>Zeiraphera fortunana</u> Kft. Yellow spruce budworm	wS,bS,bF	9.0 mi. S.W. of Star Lake Bk., St. Phillips, Torbay, Bauline Line, Middle Cove, Portugal Cove Rd.	1.5	7
<u>Zeiraphera improbana</u> (Wlk.) Larch needle worm	tL	Tilton Barrens, 1 mi. N. of Colinet, Districts 103 & 106	1.4	17

IMPORTANT FOREST DISEASES

Shoot and Leaf Blight of Aspen, *Pollaccia radiosa* (Lib.) Bald. & Cif. -

In 1973, this disease was recorded on young trembling aspen in several areas throughout the Island. In western Newfoundland it was reported at Birchy Lake and seven miles west of Hampden Junction on the Trans Canada Highway. About 75% of the immature aspen trees in both areas were infected. About 20% of young aspen trees near Deer Arm Brook, Bonne Bay, were also infected with this disease.

In central Newfoundland about 90% of the trees were infected in a young stand of aspen at Northern Arm near Botwood, about 60% in a young stand near South Brook, and 20% in a young stand near Benton.

Leaf Spot and Blight of White Birch, *Cylindrosporium betulae* Davis -

A high incidence of this disease was recorded on the Northern Peninsula. Up to 90% of the foliage of birch was affected in stands beginning at Rocky Harbour and extending north covering approximately 300 square miles (Fig. 12). Damaged leaves are yellow and withered with curled edges.

Needle Rust of Balsam Fir, *Pucciniastrum epilobii* Oth., and Needle Rusts of Black Spruce, *Chrysomyxa ledicola* and *C. ledi* d'By - In 1973, all three of these needle rusts were reported throughout the Island, and in the Dominion Lake area of Labrador.

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ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1973

Leaf Spot on White Birch
Districts 109 and 110

■ Severe

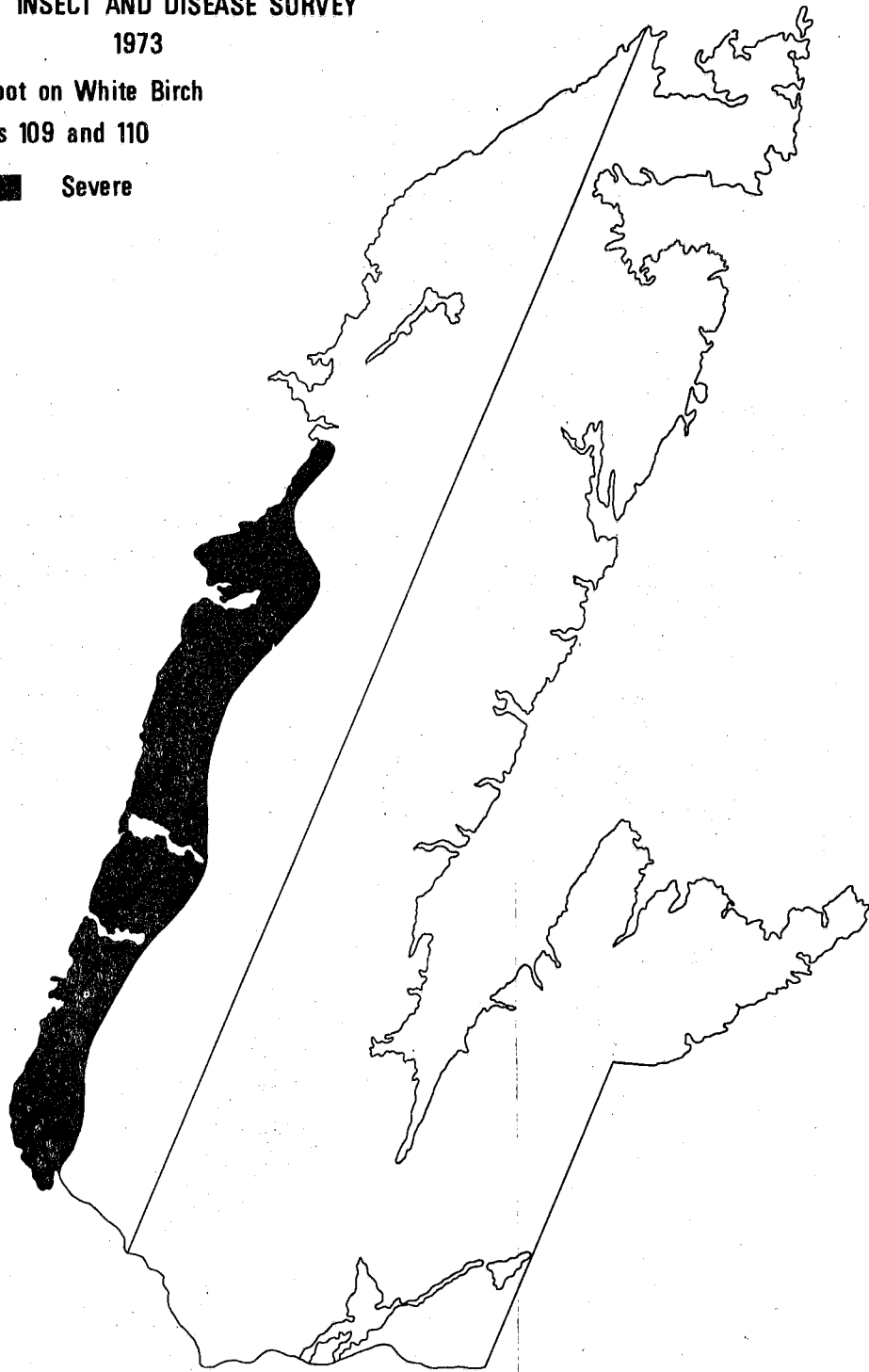


Fig. 12

In western Newfoundland 15% browning of black spruce occurred along the Trans Canada Highway from the Logging School Road to Pinchgut Lake and about 60% browning of Sitka spruce occurred in a plantation on Pelleys Bog near Stephenville Crossing. In central Newfoundland severe browning was reported on black spruce at Point of Bay, near Botwood. Needle rust of balsam fir was reported between Lake Ambrose and Victoria Lake where browning was light to medium. In eastern Newfoundland light browning of balsam fir was reported throughout the Burin Peninsula and in the David Smallwood Memorial Park at Gambo. In Labrador the rust caused 10% browning of the foliage of black spruce at Dominion Lake.

Late Spring Leaf Scorch of Hardwoods - This type of damage occurs in the spring when continuous periods of cool, humid weather are interrupted by a few hours of hot, sunny conditions. These abrupt weather changes cause a characteristic browning and curling of the margins and apical portions of the young leaves of hardwood trees. In 1973, such damage was recorded for the first time in Newfoundland and was most common on mountain maple and European mountain ash in eastern and western areas of the Island.

Winter Drying - This non-infectious disease occurs in early spring when soils are frozen and trees are unable to replace water lost through transpiration. The symptoms usually appear in late May and June. In 1973 this condition was common on various coniferous species in many areas of the Island.

In western Newfoundland, about 20% of the needles of balsam fir, black spruce and white spruce were affected along the Trans Canada Highway from Doyles to Corner Brook. Damage was higher, reaching nearly 100%, on the foliage of some

trees along the road between Cormack and Plum Point on the Northern Peninsula. Approximately 50% of the foliage was killed in a 200 acre area of fir regeneration at North Lake on the Goose Arm Road. Damage to the foliage of native conifers on Japanese larch, red pine and Scots pine in and around the plantation at Pellys Bog, Stephenville Crossing, ranged from 20% to 100%.

In central Newfoundland, 50% browning occurred on balsam fir near Grand Falls.

In eastern Newfoundland, 50% of the foliage of balsam fir was affected near Lethbridge and 20% browning was recorded on Scots pine on the Avalon Peninsula. Browning ranged from 20% to 80% on balsam fir and black spruce along the roadside between Markland and Whitbourne and along the Salmonier Line.

Frost Damage - A late frost in June caused widespread damage to new shoots of balsam fir, black spruce and white spruce in western and central Newfoundland. In western Newfoundland 95% of the new shoots of balsam fir were killed near Bottom Brook and Middle Brook and light damage was recorded on Sitka spruce, Norway spruce, and white spruce in a plantation near Cormack. In central Newfoundland 95% of the shoots of balsam fir were killed near Badger and up to 75% near Millertown Junction, Sandy Lake, and at Rattling Brook along the Bay d'Espoir Road. About 80% of the new shoots of black spruce and white spruce were damaged near Badger, Bay d'Espoir and Grand Falls.

Fume Damage - Extensive damage occurred to balsam fir, black spruce, white spruce, larch and several species of shrubs near the ERCO phosphorus plant at Long Harbour, Placentia Bay. The damage symptoms are browning of the foliage

and tree mortality. No insect, fungi or any other pathogen appears to be associated with this damage, and indications are that it was caused by the toxic effects of emission products from the ERCO plant. Coniferous trees were the most severely damaged. Although the damage was observed as far as 4.4 miles from the plant, tree mortality was only observed within $2\frac{1}{2}$ miles of the plant. Up to 90% of the trees were killed in the immediate vicinity of the plant.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina morbosa</u> (Schw. ex Fr.) Arx Black knot of cherry	pCh	Notre Dame Jct. Prov. Pk., New Bay Rd.	Medium incidence
<u>Cercospora salicina</u> Ell. & Ev. Leaf spot	pCh	Little Falls	Low incidence
<u>Ciborinia whetzelii</u> (Seav.) Seaver Ink spot	tA	Winter Tickle, near Roberts Arm	High incidence
<u>Coleosporium asterum</u> (Diet.) Syd. Needle rust	rP,wP,sP	Howley Rd., Steady Bk., Grand Falls and Tilton	Low to high incidence
<u>Cytospora chrysosperma</u> (Pers.) Fr. Canker	Po	Grand Falls	Trace (ornamentals)
<u>Fusicoccum abietinum</u> (Hartig) Prill. & Del. Red flagging	bF	Elliot's Cove	Low incidence
<u>Gloeosporium apocryptum</u> Ell. & Ev. Large leaf spot	moM	Northern Arm	Medium incidence
<u>Gymnosporangium cornutum</u> Arth. ex Kern Leaf rust	aMo	Notre Dame Jct. Prov. Pk., Glenwood	Low to high incidence
<u>Hypodermella laricis</u> Tub. Needle cast	tL	Jct. Star Lake & Buchans Rd.	Low incidence
<u>Isthmiella crepidiformis</u> (Darker) Darker Needle cast	bS	Shoal Hr., Georges Bk.	Low incidence

OTHER NOTEWORTHY DISEASES - CONT'D

Organism and Disease	Host(s)	Locality	Remarks
<u>Isthmiella faulii</u> (Darker) Darker Needle cast	bF	Lethbridge, Rocky Hr., Cormack, Millertown Jct., Coxs Cove, Blow-me-Down Prov. Pk., Summerside	Low incidence
<u>Lirula macrospora</u> (Hartig) Darker Needle cast	bS	Paddys Pond	Trace
<u>Lophodermium pinastri</u> (Schrad. ex Fr.) Chev. Needle cast	sP,wP	Catalina, Grand Falls, Badger, Jct. Portugal Cove & Parkers Pd. Rd.	Low to high incidence
<u>Melampsorella caryophyllacearum</u> Schroet. Yellow witches broom	bF	Deer Pk. Rd.	Trace
<u>Mycosphaerella</u> sp. Leaf spot	Labrador tea	Paddys Pond	Low incidence
<u>Phyllosticta minima</u> (Berk. & Curt.) Ell. & Ev. Purple eye spot	rM,mom	Bonne Bay Rd., Lady Slipper Rd., Jamestown	Low incidence
<u>Pollaccia radiosa</u> (Lib.) Bald & Cif. Leaf and twig blight	tA	East Arm, Bonne Bay	Low incidence

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