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Fisheries & Environment

Forestry Service

1976 ANNUAL DISTRICT REPORT FOREST INSECT AND DISEASE SURVEY NEWFOUNDLAND

by: L.J. Clarke, E.C. Banfield, W.J. Sutton, D.M. Stone, D.S. O'Brien, K.E. Pardy, G.C. Carew and E.C. Salter

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

This report gives a detailed account of the major forest insects and diseases of Newfoundland and Labrador in 1976 and tabulates the other noteworthy pests of the region.

RÉSUMÉ

Ce rapport donne un exposé détaillé des principaux insectes et maladies des forêts de Terre-Neuve et du Labrador en 1976. Il liste les autres agents nuisibles qui sont importants pour la région.

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INTRODUCTION

Variable weather conditions occurred throughout the Province in 1976. In May, wet, cool and overcast conditions prevailed in western Newfoundland while in eastern and central Newfoundland and in Labrador warm, dry and sunny weather was experienced. June temperatures were normal and precipitation above normal. July and August were warm and dry on the Island but well below normal in late July and August in Labrador. In September conditions were warm and wet throughout the region (Table 1).

Traditionally, the annual District Reports dealt primarily with the insect and disease conditions in the forests of the province. In 1975 an Urban Forestry program was initiated to advise the public on insect and disease problems in the various communities. The more important pests found are listed in tabular form in the latter section of this report.

Five ranger technicians conducted regular and special surveys in 12 survey districts on the Island and Labrador (Fig. 1). A total of 961 insect and disease collections with 20 new insect species were recorded throughout the region. Eighty-five of these samples were attributed to the Extension Forestry Officer. Approximately 50 hours were flown to assess tree damage caused by insect and disease pests. An additional 100 hours were flown in hibernacula and egg mass surveys throughout the Island and Labrador and an additional 821 samples were collected during these surveys. The forestry division of the Provincial Department of Forestry and Agriculture provided aircraft time and assisted in the budworm sampling and counting. The National and Historic Parks Branch of the Department of Indian Affairs and Northern Development collected samples for the spruce budworm egg mass survey in the National Parks.

Table 1.- Average temperatures and total precipitation for Newfoundland 1971-1976

Year	Location	Temperature (°C)*								Precipitation (cm)			
		May		June		July		August					
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	May	June	July	August
1971	St. John's	3	13	6	16	11	19	13	21	4.24	9.37	14.68	15.04
1972	"	0	10	10	20	9	19	11	19	10.44	9.75	1.93	11.81
1973	"	2	9	6	16	14	23	10	17	12.24	15.88	6.60	19.15
1974	"	-2	14	-1	28	1	26	5	24	10.87	6.12	9.12	14.40
1975	"	-2	22	0	26	2	29	5	27	22.02	11.18	1.93	14.53
1976	"	-2	22	0	28	-1	27	1	28	4.09	10.65	7.76	5.48
1971	Gander	4	16	6	17	11	21	12	22	2.49	5.77	7.95	7.95
1972	"	-1	10	7	19	10	22	10	20	13.34	9.80	4.52	6.25
1973	"	2	10	6	17	14	23	9	18	9.83	14.63	5.92	16.21
1974	"	-3	14	-2	28	1	26	4	27	7.11	10.64	5.05	5.26
1975	"	-4	21	-2	25	5	34	5	29	17.93	2.44	6.20	6.03
1976	"	-3	25	-1	30	3	29	4	33	3.91	8.52	7.07	1.94
1971	Deer Lake	3	17	4	18	9	23	10	22	4.19	6.07	6.30	13.61
1972	"	-1	11	6	19	8	23	7	21	9.45	10.21	4.04	9.32
1973	"	2	12	6	18	13	24	8	21	6.65	15.29	8.69	13.28
1974	"	-4	14	-4	31	0	29	-1	31	3.56	2.21	8.99	6.27
1975	"	-6	22	-3	27	1	33	0	31	6.60	4.72	3.71	8.10
1976	"	-5	28	0	29	4	32	-2	33	7.18	5.60	3.02	4.88

*Shown in Absolute Readings.

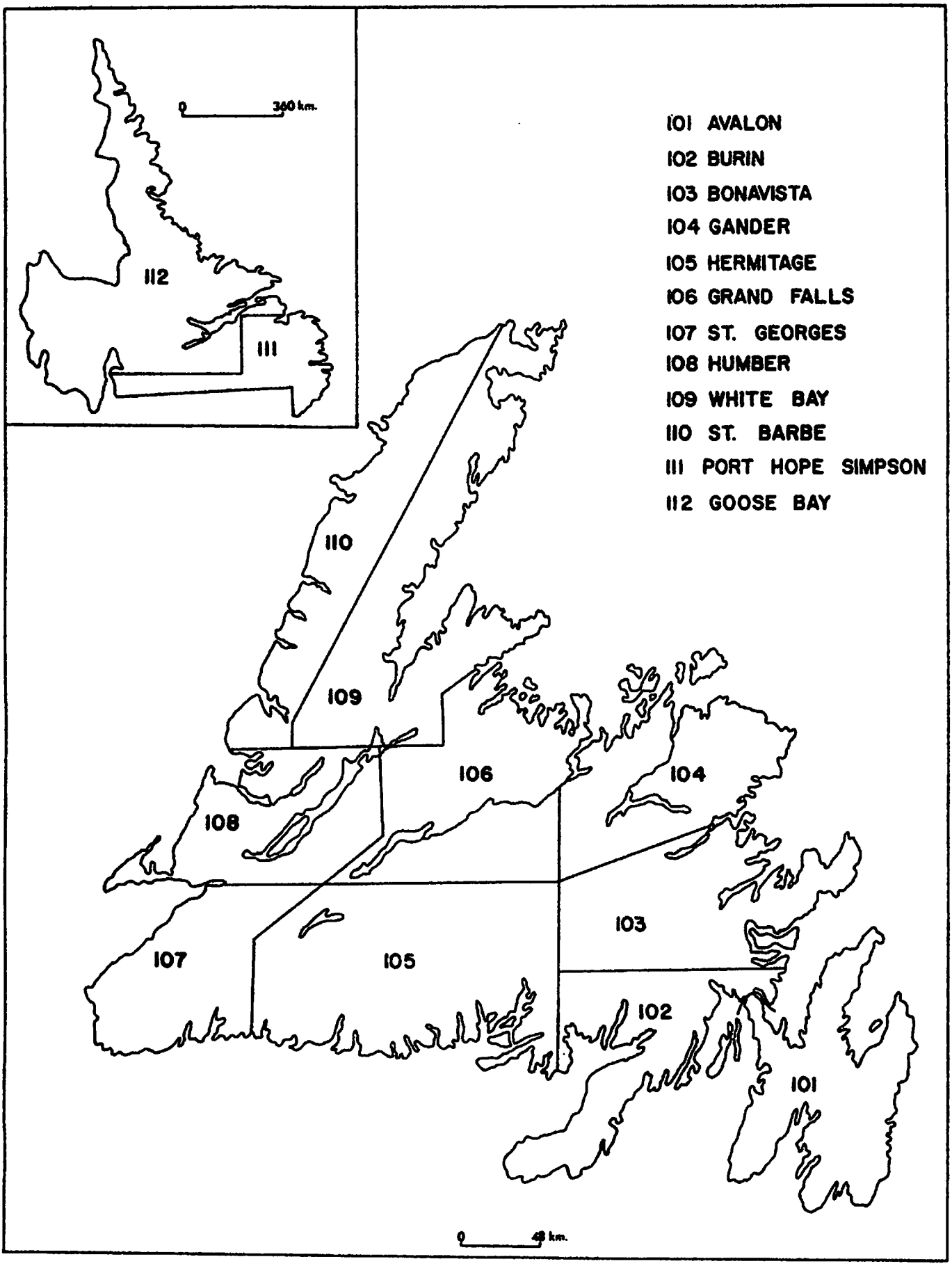

Fig. 1. Forest Insect and Disease Survey Districts.

Forest Insect and Disease Survey personnel also classified insect and disease conditions in permanent sample plots throughout the Island; instructed forestry students from the College of Trades and Technology on insect conditions in the Province; conducted the annual census of the masked shrew and advised private property owners on the control of insects and diseases on ornamental trees.

The spruce budworm was the major forest pest during the season and caused serious tree mortality. The blackheaded budworm, eastern hemlock looper and balsam fir sawfly population levels also increased and caused severe tree defoliation in several areas throughout the Province. The larch sawfly was responsible for top killing of tamarack stands in the Lake Melville area. The larch casebearer caused severe damage of tamarack in the Terra Nova National Park and on the Avalon Peninsula. The birch casebearer numbers increased this year and caused severe damage of white birch throughout the infested area. The large aspen tortrix caused severe defoliation of aspen in areas of western and central Newfoundland. The ugly nest caterpillar was recorded in the Flat Bay Brook area and was reared in Newfoundland for the first time. The satin moth, fall webworm and tussock moth caused severe damage in localized infestations throughout the Island.

The most common diseases in 1976 were broom rusts of balsam fir and black spruce, Witches' broom of black spruce, ink spot, shoot and leaf blight of aspen and Dothichiza canker of lombardy poplar. Non-infectious diseases such as frost damage, winter drying, heat injury and roadside damage were more common than in 1975.

IMPORTANT FOREST INSECTS

Spruce Budworm, Choristoneura fumiferana (Clem.) — Weather conditions in early summer were favourable for budworm development and survival and the outbreak spread and intensified especially in central and eastern Newfoundland. The outbreak now covers about 2 549 998 ha including 1 057 775 ha in the moderate and severe defoliation class and 142 791 ha in the severe plus class (Table 2, Figs. 2-6). Tree mortality occurred in about 248 876 ha in stands severely defoliated by the budworm for two or more years and damaged in the past by the balsam woolly aphid, hemlock looper and balsam fir sawfly. In Labrador stands were infested by both the spruce budworm and blackheaded budworm in an area of about 150 760 ha of which 68 796 ha were in the moderate to severe category (Fig. 7).

In addition to mature stands, the outbreak spread to younger stands in 1976 and severe defoliation occurred in many areas of regeneration. The alarming prospect of significant tree mortality within these young stands prompted all forest agencies in the Province to conduct a cooperative

Table 2.- 1976 spruce budworm infestations in productive forests insular Newfoundland.

Map sheet	Light	Moderate	Severe	Severe[1] +'old	Total infestation
Bay of Islands	2 609* (6,447)**	2 392 (5,911)	2 054 (5,076)	1 274 (3,148)	8 329 (20,582)
Port Saunders	45 267 (111,857)	22 699 (56,090)	44 528 (110,031)	4 757 (11,755)	117 251 (289,733)
Stephenville	57 600 (142,332)	17 125 (42,317)	120 175 (296,958)	34 365 (84,918)	229 265 (566,525)
Port aux Basques	9 619 (23,769)	5 038 (12,449)	23 801 (58,813)	5 038 (12,449)	43 496 (107,480)
Sandy Lake	382 325 (944,744)	34 241 (84,611)	174 780 (431,890)	65 079 (160,813)	656 425 (1,622,058)
Red Indian Lake	193 779 (478,838)	57 383 (141,796)	142 499 (352,122)	19 273 (47,624)	412 934 (1,020,380)
Belleoram	17 582 (43,446)	4 971 (12,284)	1 646 (4,067)	- -	24 199 (59,797)
Bonavista	108 314 (267,649)	8 480 (20,955)	21 601 (53,377)	525 (1,297)	138 920 (343,278)
Botwood	142 057 (351,030)	40 097 (99,082)	201 153 (497,059)	5 882 (14,535)	389 189 (961,706)
Gander Lake	390 280 (964,401)	86 552 (213,874)	46 560 (115,052)	6 039 (14,923)	529 431 (1,308,250)
St. John's	- -	- -	- -	559 (1,381)	559 (1,381)
Goose Bay	66 973 (165,494)	18 568 (45,882)	28 532 (70,504)	- -	114 073 (281,880)
Lake Melville	14 991 (37,044)	8 446 (20,870)	9 740 (24,068)	- -	33 177 (81,982)
Minipi Lake	- -	2 677 (6,615)	833 (2,058)	- -	3 510 (8,673)
Total	81 964 (202,538)	29 691 (73,367)	39 105 (96,630)	- -	150 760 (372,535)
Grand Total	1 431 396 (3,537,051)	308 669 (762,736)	817 902 (2,021,075)	142 791 (352,843)	2 700 758 (6,673,705)

[1] = Severe defoliation of current foliage and damage to older foliage.
* = Hectares
** = Acres

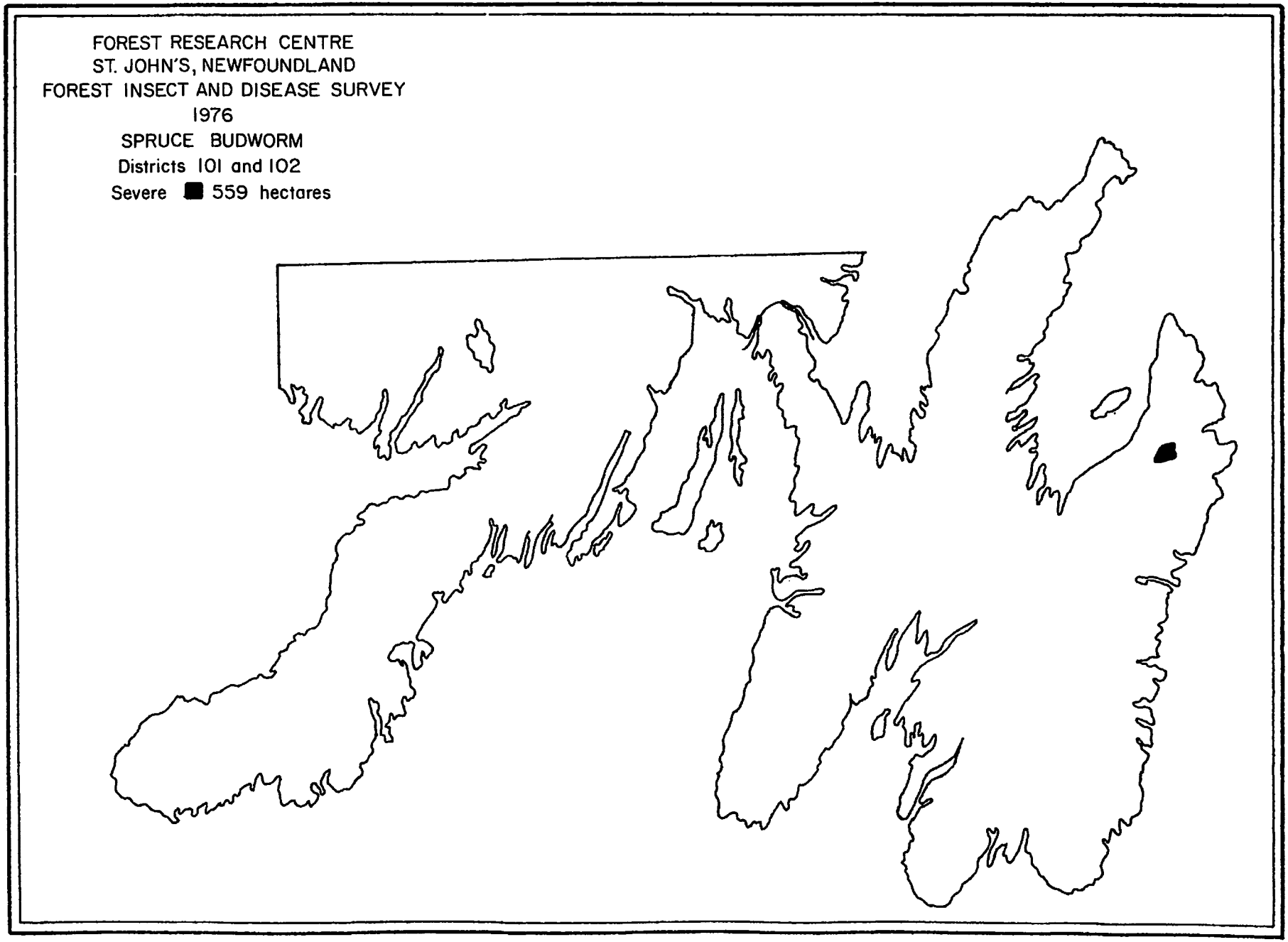
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
SPRUCE BUDWORM
Districts 101 and 102
Severe 559 hectares

Fig. 2

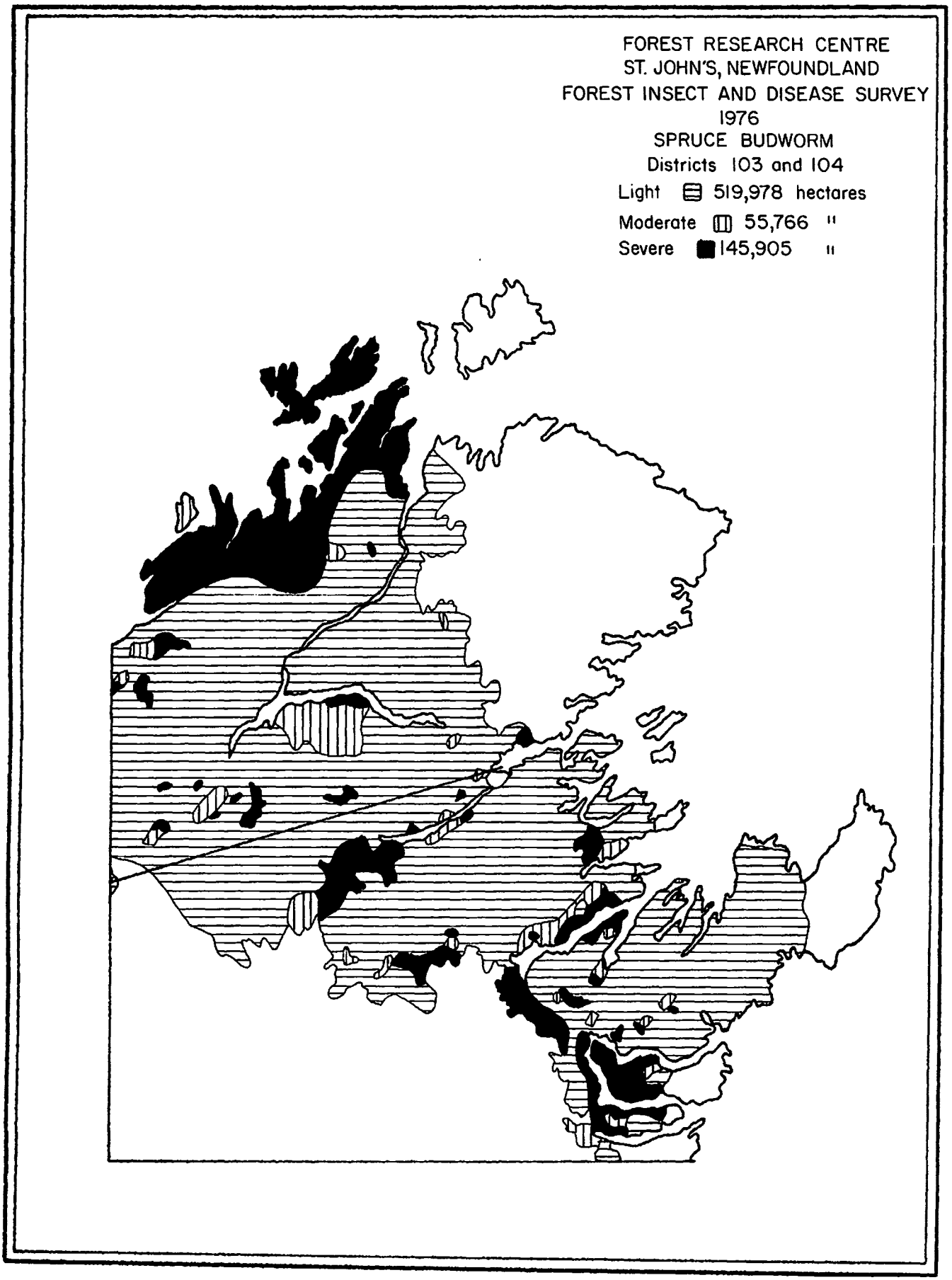
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
SPRUCE BUDWORM
Districts 103 and 104
Light 519,978 hectares
Moderate 55,766 "
Severe 145,905 "

Fig. 3

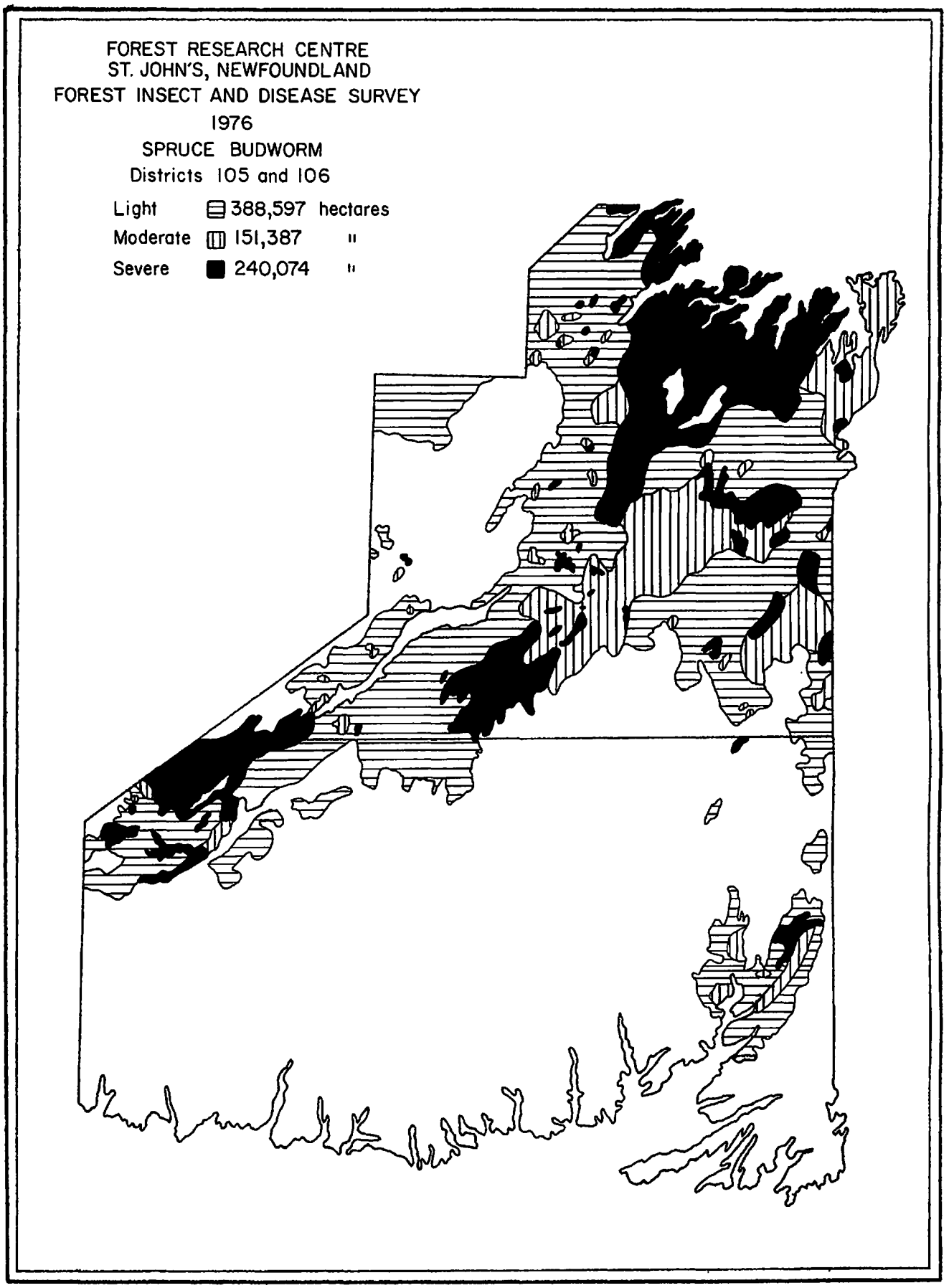
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
SPRUCE BUDWORM
Districts 105 and 106
Light 388,597 hectares
Moderate 151,387 "
Severe 240,074 "

Fig. 4

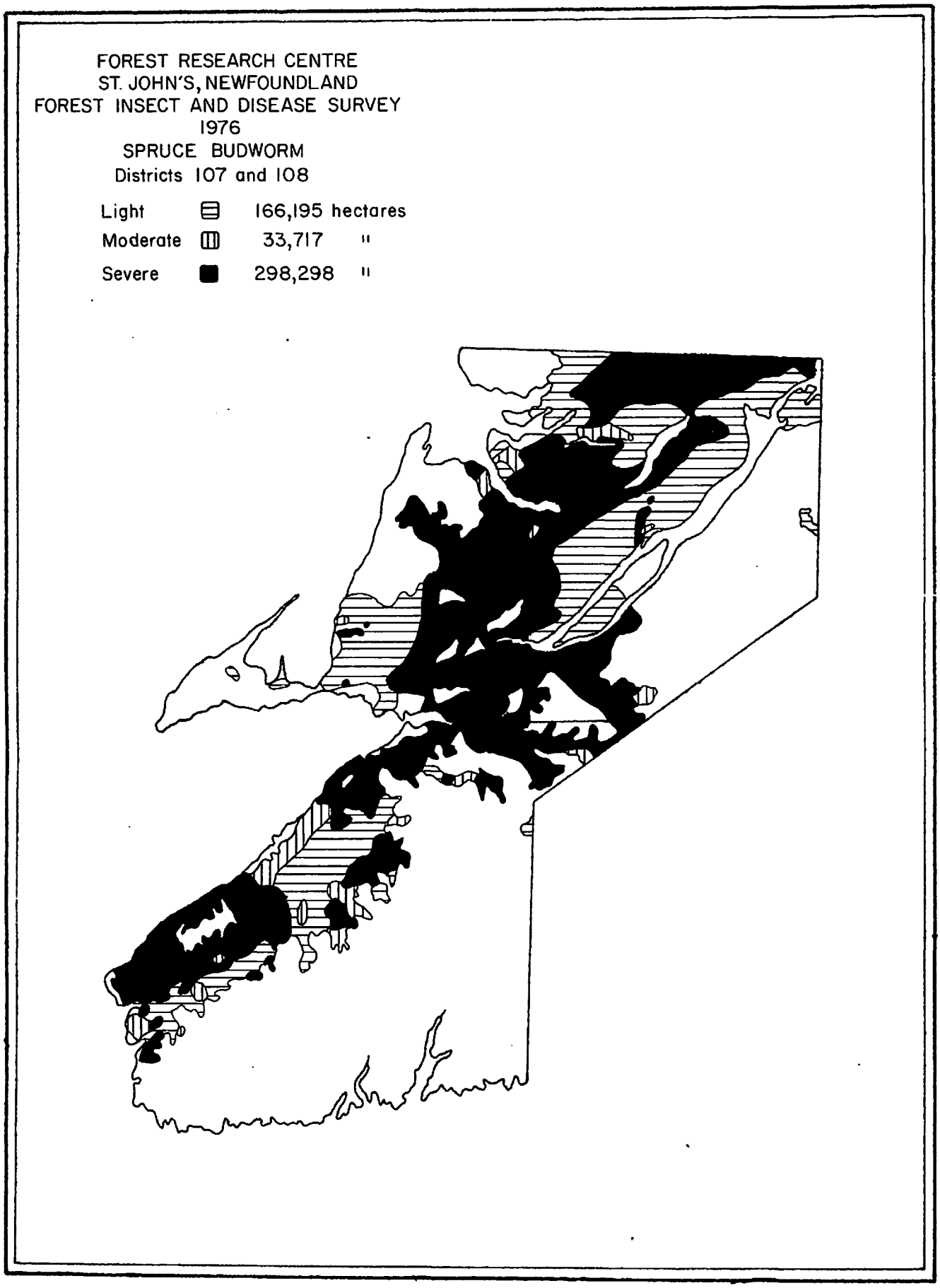
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
SPRUCE BUDWORM
Districts 107 and 108
Light 166,195 hectares
Moderate 33,717 "
Severe 298,298 "

Fig. 5

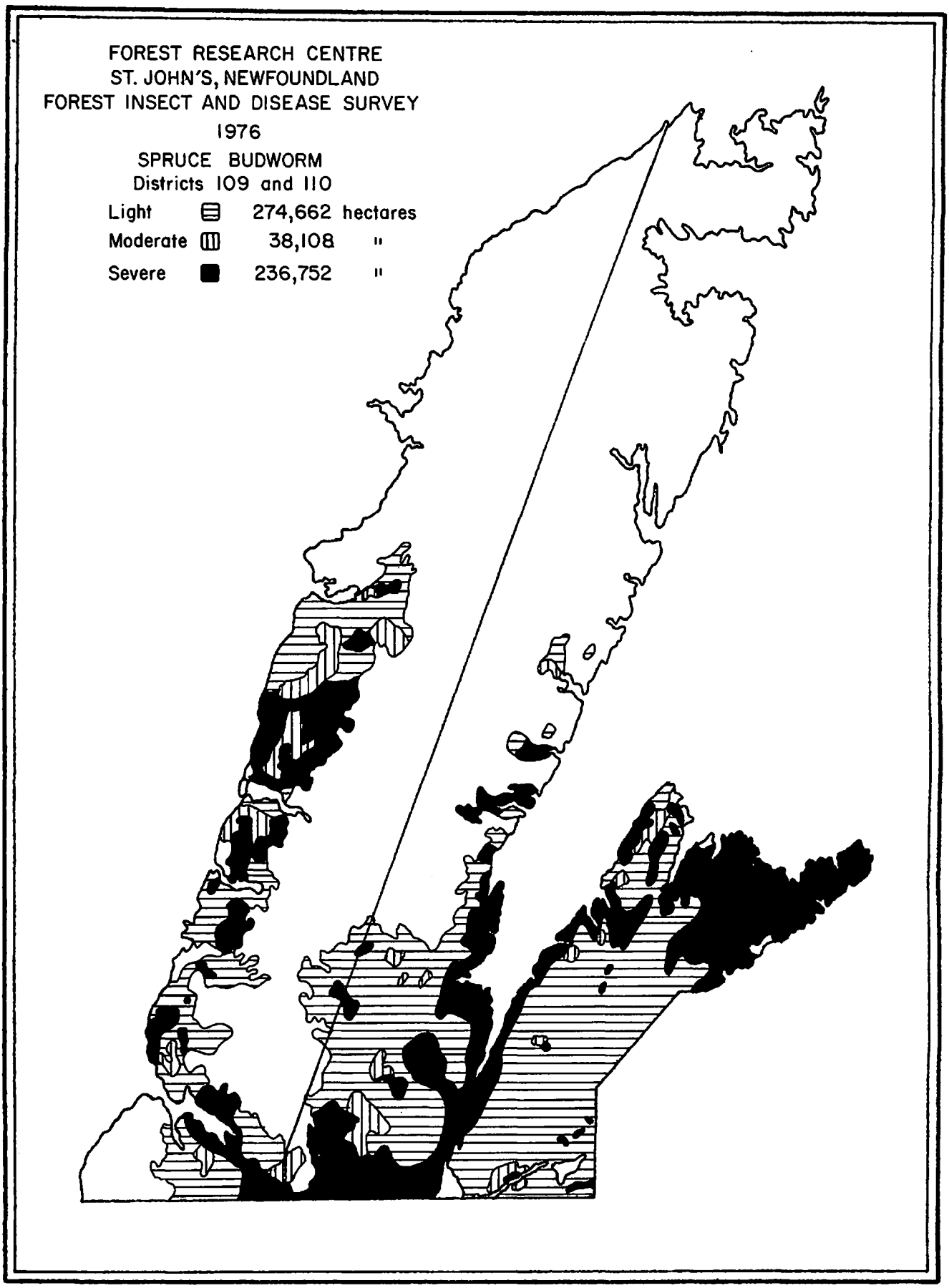
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
SPRUCE BUDWORM
Districts 109 and 110
Light 274,662 hectares
Moderate 38,108 "
Severe 236,752 "

Fig. 6

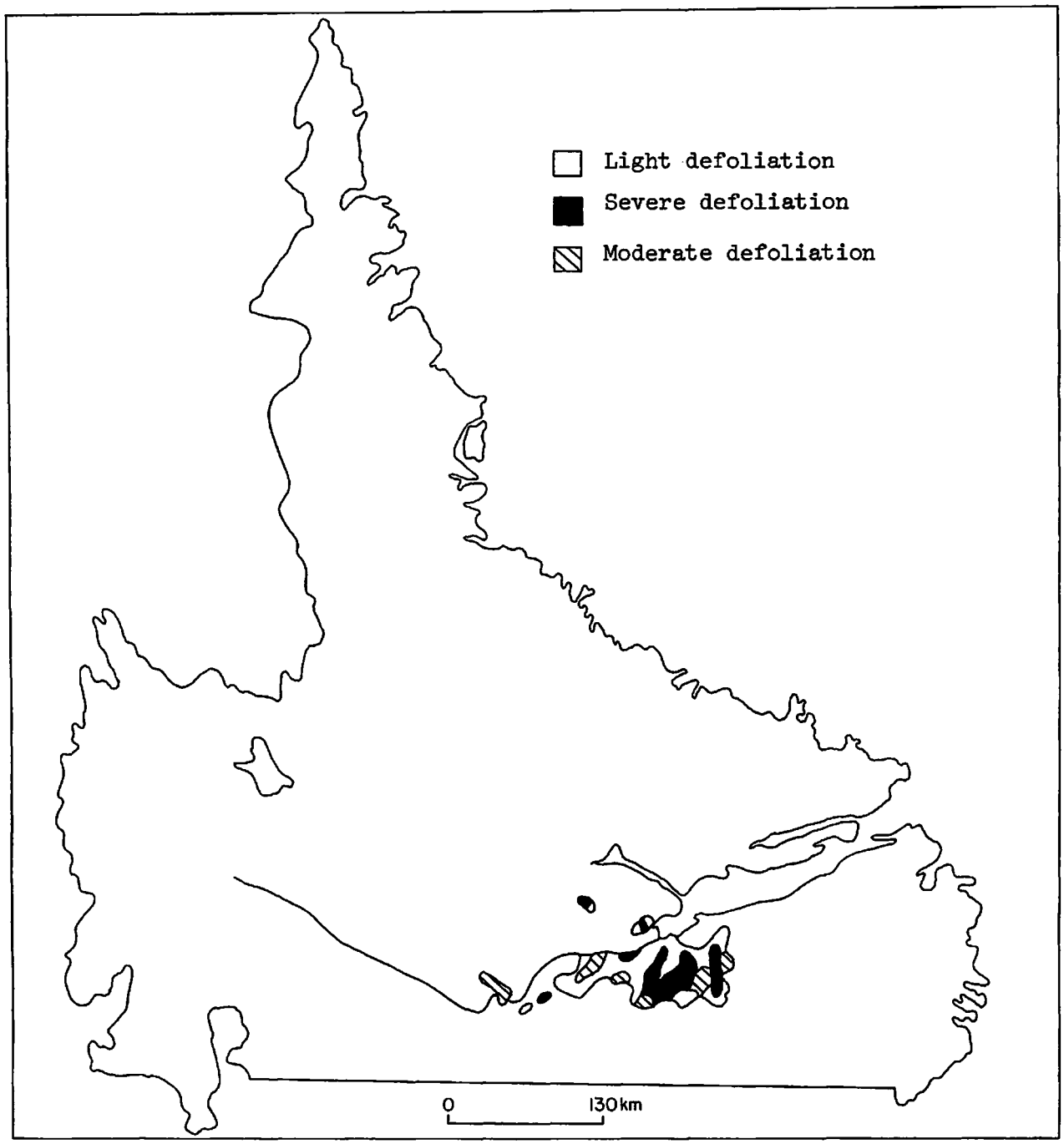

Fig. 7 - 1976 spruce budworm and blackheaded budworm defoliation in Labrador.

survey to assess the potential damage. Results of these surveys show that tree mortality by the spruce budworm was occurring at 2 to 10% in immature stands throughout the Island.

In 1976 larval numbers in random beating samples increased from an average of 29.3 per tree sample in 1975 to 70.8 per tree sample in 1976 (Table 3). Budworm larval and pupal parasitism increased from 15% in 1975 to 30% in 1976 with pupal parasitism as high as 50% in some of the older infested areas. Over 30 species of parasites have been reared from the budworm but the most common species were two larval parasites, Glypta fumiferanae and Apanteles fumiferanae, and two pupal parasites, Phaeogenes hariolus and Apechthis ontario. The latter two species have shown the greatest increase in numbers during the present outbreak. Spruce budworm egg parasitism caused by Trichograma sp. was less than 5%.

Two fungi, Entomophthora egressa and E. sphaerosperma, have also been found in the present outbreaks of the spruce budworm and blackheaded budworm. Combined infections by the two fungi averaged 30% in 1975 but was less effective in 1976 due to the dry, warm weather in July and August.

The annual budworm egg mass survey was conducted in September in sample points located throughout the Island and Labrador. The number of egg masses per 10 m^2 of foliage, locations and forecast for 1977 are shown in Table 4.

The forecast for 1977 was based on the aerial defoliation survey and the egg mass survey and indicates the outbreak will increase by about 1 000 000 ha for a total of 3 500 000 ha representing about 90% of the productive forest area. The areas of moderate to severe defoliation are expected to remain as in 1976 in western Newfoundland but a major increase is expected in central and eastern Newfoundland for a total of 1 500 000 ha in both areas (Fig. 8). The total area of moribund was 257 000 ha. The amount of tree mortality will vary considerably with stand age and history of damage.

In Labrador egg mass samples were collected at 20 locations and results show a decrease in the infested area and severe damage is expected in the Mud Lake and Goose River areas. This reduction in larval populations was believed to be caused by the inclement weather experienced during the egg laying period in 1975. Diseased larvae and pupae occurred in all infested areas in 1976 but the dry, warm weather minimized the effect of the disease on budworm numbers.

Year	No. of collections	No. of larvae per tree sample		
		Min.	Avg.	Max.
1976	427	0.2	70.8	333

Table 3.- Average number of spruce budworm larvae collected in ranger districts.

District	No. trees sampled	No. larvae collected	No. larvae per tree
Eastern 101-102-103-104	468	33,656	71.9
Central 105-106	136	23,230	170.8
Western 107-108	494	30,230	61.2
Northern 109-110	302	14,675	48.6
Labrador 111-112	53	1,076	20.3
Total	1453	102,867	70.8

Table 4.- Results of spruce budworm egg mass sampling 1976.

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Western			
Tilt Cove Jct.	639	S	H
Harbour Round Jct.	555	S	H
Nippers Harbour Jct.	1142	S	H
8.0 km E. Woodstock Jct.	950	S	H
Woodstock Jct.	800	S	H
Puddle Pond	0	S	-
4.8 km S. Silver Pond	341	S	H
Southwest Bk.	498	S	H
" "	444	S	H
" S	708	S	H
4.8 km W. Silver Pond	89	S	H
Battle Pond	0	S	-
E. end Little Grand Lake	213	S	L
6.4 km N. Little Grand Lake	42	S	L
W. end Little Grand Lake	1302	S	H
Red Indian Bk.	0	L	-
Glover Island	0	L	-
W. side Grand Lake	428	S	H
8.0 km S. Pinchgut Lake	143	S	L
3.2 km S.W. Corner Brook Lake	726	S	H
1.6 km S. " " "	582	L	H
Glover Island	148	0	L
9.6 km N.E. Corner Brook Lake	642	L	M
3.2 " " " " "	386	L	M
Pinchgut Lake Rd.	1045	S	H
1.6 km N.E. Pinchgut Lake	356	S	M
Pinchgut Lake	639	S	H
Logging School Rd.	521	S	H
Jct. Stag Hill Rd. & T.C.H.	500	S	H
3.2 km W. Eastern Lake	0	S	-
Steady Brook Lake	56	L	L
South Brook Valley Rd.	667	S	H
" " " "	343	S	M
1.6 km S.W. Island Pond	0	L	-
W. side Grand Lake	0	L	-
South Brook Valley Rd.	143	L	L
Irishtown	1370	S	H
Summerside	224	S	L
6.4 km S. Flatwater Pond	104	L	L
3.2 km S. Cross Country Pond	814	L	H
6.4 km W. Burlington.	356	S	M
9.6 km N.W. "	38	S	L
Burlington Rd.	255	S	L
South Bk. (Baie Verte Pen.)	68	S	L

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
South West Bk. (Baie Verte Pen.)	1142	L	H
4.0 km N. Flatwater Pond	537	S	M
4.0 km S. LaScie Rd.	141	S	L
LaScie Rd.	821	S	H
South Bk. (Baie Verte Pen.)	357	S	H
6.4 km E. Ming's Bight Jct.	917	S	H
Jct. Ming's Bight & LaScie Rd.	366	S	H
Ming's Bight Rd.	355	S	H
South Bk. (Baie Verte Pen.)	667	S	H
Fleur de Lys Rd.	598	S	H
6.4 km N.W. Baie Verte	643	L	H
Wild Cove Rd.	1065	L	H
Seal Cove	357	S	H
Jct. Wild Cove Rd.	883	L	H
Jct. Seal Cove & Baie Verte Rd.	595	S	H
Southern Pond	1071	S	H
Gull Pond	417	L	H
East Pond	378	L	H
Western Arm	344	M	H
9.6 km S.E. Western Arm	390	L	M
3.2 km E. Westport	0	L	-
4.8 km S.E. Purbeck's Cove	1061	L	H
Wild Cove Pond	516	L	H
Wild Cove Rd.	361	L	H
" " "	525	L	H
Micmac Lake	694	L	H
Black Lake	445	L	M
Jct. Baie Verte Rd. & T.C.H.	700	S	H
Baie Verte Prov. Park	1040	L	H
8.0 km W. Baie Verte Jct. (T.C.H.)	519	S	M
Sheffield Lake	1533	L	H
" "	560	L	H
" "	400	L	H
Birchy Lake	672	L	H
" "	933	L	H
4.8 km N. Chain Lakes	90	L	L
3.2 km N.E. Kitty's Bk.	65	L	L
Birchy Lake	417	L	M
Kitty's Bk.	190	S	L
Goose Bk.	121	L	L
" "	32	L	L
Hind's Bk.	0	0	-
Howley Rd.	463	L	H
Howley Rd. Jct.	0	S	-
1.6 km N. Mary Ann Pond	258	S	L

Cont'd ...

Table 4.- Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Crooked Feeder (T.C.H.)	48	S	L
9.6 km N.E. Reidville	?	S	H
4.8 km N. Mary Ann Pond	417	S	H
4.8 km S. Big Falls	1374	S	H
8.0 km E. Howley Jct. (T.C.H.)	625	S	H
Sandy Lake	535	L	M
9.6 km E. Big Falls Prov. Park	340	S	H
1.6 km E. " " " "	571	S	H
Little Falls	649	S	H
6.4 km E. Adies Lake	327	S	M
Hampden Rd.	625	S	M
Jct. Sop's Arm & Hampden Rd.	631	S	H
Sop's Arm Rd.	467	L	H
6.4 km S. Hampden	450	S	H
Sop's Arm Rd.	489	L	H
Birchy Basin	1459	S	H
3.2 km N.E. Birchy Basin	769	L	H
Sop's Arm Rd.	514	S	H
" " "	511	S	H
6.4 km W. Hampden	385	S	H
9.6 km N. Hampden	1337	S	H
Sop's Arm Rd.	518	S	H
" " "	128	S	L
8.0 km S. Sop's Arm	303	S	L
Sop's Arm Rd.	750	S	H
Sop's Arm	444	S	H
Jackson's Arm Rd.	0	S	-
" " "	543	S	H
3.2 km S. Great Coney Arm	600	S	H
Main River area	0	L	-
" " "	0	L	-
Main River	62	L	L
4.8 km S. Main River	0	L	-
11.2 km S. " "	73	L	L
Upper Humber River	0	L	-
" " "	0	M	-
" " "	432	L	M
East Adies River	0	L	-
Whites River	967	L	H
Adies Lake	166	M	L
White River Rd.	1154	S	H
1.6 km S. Adies Pond	575	S	H
Deadwater Bk.	1000	S	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Cormack Rd.	500	S	H
Cormack	753	S	H
Bonne Bay Big Pond	420	S	M
Bonne Bay Rd.	538	S	H
" " "	370	S	M
Deer Lake	2116	S	H
8.0 km E. Deer Lake (T.C.H.)	709	S	H
1.6 km S. Humber Canal	53	S	L
4.8 km E. Glide Lake	237	L	L
4.8 km S.E. " "	33	L	L
Glide Lake	430	S	H
3.2 km N.W. Glide Lake	0	S	-
Little Harbour	508	S	M
Pynn's Bk.	2240	S	H
3.2 km S.E. Pynn's Bk.	518	S	M
6.4 km S. Glide Lake	133	S	L
4.8 km E. Pasadena	48	S	L
Pasadena	831	S	H
Deer Lake	381	L	M
1.6 km E. Old Man's Pond	67	S	L
Hughes Bk.	236	S	L
4.8 km N. Summerside	0	S	-
Frenchman's Pond	370	S	H
Old Man's Pond	367	S	H
" " "	400	L	H
" " " (Otter Bk.)	667	S	H
End Goose Arm Rd.	584	L	H
8.0 km N. Old Man's Pond	720	S	H
Goose Arm Bk.	1000	S	H
Goose Arm Rd.	400	S	H
" " "	428	S	M
North Lake Rd.	467	S	H
North Arm Rd.	438	S	H
" " "	80	S	L
6.4 km N.E. Penguin Arm	40	S	L
4.8 km N.E. North Arm	357	L	H
4.8 km E. Sandy Pond	607	L	M
Trout River Pond	92	L	L
Governor's Pond	1000	L	H
Lomond River	667	S	H
Bonne Bay Little Pond	444	S	H
Lomond River	678	S	H
8.0 km E. Lomond	102	L	L
S. boundary Gros Morne Nat. Park	700	S	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Bonne Bay Rd.	381	S	H
Glenburnie	340	L	M
6.4 km N.E. Glenburnie	0	L	-
East Arm (Bonne Bay)	784	S	H
Deer Arm	669	L	H
10.2 km N. Norris Point	917	M	H
Deer Pond	356	M	M
Lobster Cove	518	S	H
Baker's Bk. Pond	408	L	H
6.4 km E. Green Point	167	S	L
St. Paul's Inlet	73	L	L
Upper Humber River	0	0	-
9.6 km S. Main River	77	L	L
St. Paul's Big Pond	147	L	L
St. Paul's Inlet	754	S	H
Cow Head	848	L	H
Shallow Bay	444	L	H
8.0 km S.E. Belldown's Pt.	475	S	M
8.0 km S. Parson's Pond	357	S	H
Fleur de Lys Rd.	400	S	H
" " " "	750	S	H
" " " "	1207	S	H
6.4 km W. Coachmans Cove	971	M	H
Little Lobster Harbour	95	S	L
9.6 km N. Great Harbour Deep	0	L	-
Great Harbour Deep River	41	0	L
" " " "	0	0	-
8.0 km S.W. Great Harbour Deep	76	0	L
Little Harbour Deep	0	S	-
" " " River	606	S	H
" " " "	0	L	-
9.6 km N. Great Cat Arm	0	0	-
Great Cat Arm	429	S	H
Cat Arm River	1214	S	H
9.6 km N.W. Cat Arm	0	0	-
14.4 km W. Great Cat Arm	0	0	-
Cat Arm River	0	0	-
9.6 km N. Parsons Pond	0	M	-
Portland Creek	0	M	-
Brian's Pond	375	S	M
8.0 km N. of Daniel's Hr.	753	S	H
6.4 km S.E. Bellburns	143	S	L
Bellburns	1106	S	H
9.6 km N.E. Bellburns	808	S	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Hawke Bay Logging Rd.	0	S	-
Western Blue Pond	1047	S	H
Flat Pond	767	S	H
9.6 km S. River of Ponds Lake	686	S	H
9.6 km N. Bellburns	303	S	L
Eastern Blue Pond	654	S	H
Hawke Bay Logging Rd.	416	S	H
River of Ponds	0	0	H
4.8 km E. River of Ponds	0	0	-
6.4 km S. Hawke Bay	681	S	H
4.8 km S.W. Hawke Bay	0	L	-
9.6 km N. Eastern Blue Pond	667	L	H
Western Bk. Pond	481	S	M
East River	0	L	-
6.4 km S. Eddies Cove West	0	0	-
Squid Cove	0	L	-
6.4 km N. Castors River	0	L	-
Leg Pond	0	M	-
" "	457	M	H
Middle Gulch Bk.	0	L	-
4.8 km S. Roddickton Rd.	114	0	L
Roddickton Rd.	0	0	-
Beaver Bk.	0	L	-
Cloud River	0	0	-
Northwest Arm	476	M	H
Beaver Bk.	500	L	H
Roddickton Rd.	619	L	H
6.4 km N. Roddickton	449	M	H
Bide Arm	0	L	-
6.4 km E. Roddickton	55	M	L
Conche Rd.	726	M	H
" "	368	L	M
4.0 km S. Coles Pond	560	L	H
Ten Mile Lake	0	0	-
" " "	59	0	L
Roddickton Rd.	469	0	H
" "	0	0	-
Salmon River	143	L	L
Main Brook Rd.	0	L	-
Southwest Bk.	0	L	-
9.6 km N.W. of Second Salmon Pond	0	L	-
16.0 km W. of Main Brook	394	L	M
11.2 km N.E. Round Lake	126	0	L
11.2 km N. Round Lake	0	0	-
North Arm Rd.	520	0	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Old Woman Rd.	520	0	H
Cox's Cove Rd.	0	0	-
Frenchman's Cove	584	S	H
Benoits Cove	720	M	H
Balan Pt.	343	M	H
Penguin Arm	171	M	L
Gillams	425	S	M
Gillams Bk.	139	S	L
Clarks Bk.	80	S	L
Serpentine Lake Rd.	381	S	H
" " "	1040	S	H
Serpentine Lake	333	S	M
3.2 km S. Serpentine Lake	125	S	L
Blue Hill Bk.	369	S	M
" " "	246	S	L
Serpentine River	119	S	L
Logging School Rd.	833	S	H
Little Cooks Pond	770	S	H
Logging School Rd.	0	S	-
Pinchgut Lake	583	S	H
Spruce Bk.	758	S	H
Blue Hill Bk.	403	S	M
Spruce Bk.	2215	S	H
George's Lake	393	S	H
Pinchgut Lake area	667	S	H
1.6 km S. Big Gull Pond	400	M	H
Rocky Pond	483	S	M
Spruce Brook	1489	S	H
Gallants	313	S	L
4.8 km N.W. Gallants	350	S	H
North Brook	1643	S	H
Landowns Pond	1219	S	H
Crooked Lake	857	S	H
3.2 km S. Phillips Bk.	375	L	H
Cache Valley	400	L	H
Fox Island River	708	L	H
Romaines Bk.	786	L	H
Fox Island River	398	S	H
Victors Bk.	0	0	-
6.4 km E. Mainland	54	0	L
Harry's Bk.	225	L	L

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
4.8 km N. Lower Cove	132	0	L
3.2 km S. Boswarlos	0	L	-
Fox Island River Rd.	1091	L	H
Blanche Bk.	367	L	H
Cold Bk.	347	L	H
3.2 km S.E. Crooked Lake	867	S	H
Long Gull Pond	485	S	M
Whites Rd.	2641	S	H
Camp 33 Rd.	701	S	H
3.2 km W. Hare Hill	121	S	L
3.2 km S. " "	573	S	M
8.0 km S. Grand Lake	763	S	H
Bottom Bk. Rd.	611	L	H
" " "	650	S	H
" " "	583	S	H
St. George's River	603	S	H
4.8 km E. Mattis Point	462	S	H
Barachois Prov. Park	1111	S	H
" " "	588	S	H
Southwest Bk. Rd.	656	S	H
" " "	350	S	H
" " "	525	S	H
" " "	0	S	-
Little Barachois Bk.	325	S	M
" " "	345	S	M
Barachois Brook	654	S	H
Flat Bay Rd.	494	S	M
Steel Mtn. Rd.	341	S	H
" " "	716	S	H
" " "	372	S	H
Flat Bay Bk.	373	M	H
" " "	472	S	H
Fischells River	117	0	L
Fischells River (Plot #755)	0	L	-
" "	404	S	H
Middle Bk.	522	S	H
Fischells River	683	S	H
6.4 km W. Fischells River (T.C.H.)	740	S	H
Robinsons River	648	M	H
" "	956	L	H
" "	0	L	-
" "	98	L	L
" "	364	S	M

Cont'd ...

Table 4. - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Barachois Bk.	727	S	L
" "	57	L	L
Crabbes River Rd.	67	L	L
" " "	438	L	H
" " "	637	L	H
Jeffery's Rd.	334	M	M
Jct. St. Fintan's & T.C.H.	614	L	H
Butter Bk.	400	S	H
Highlands River	632	S	H
Crabbes River	64	L	L
" "	76	S	L
" "	746	S	H
8.0 km W. Codroy Pond	0	S	-
3.2 km E. " "	639	S	H
Codroy Pond	1680	S	H
North Branch River	855	S	H
" " "	1017	S	H
" " "	3383	S	H
Coal Brook	6309	S	H
South Branch	6890	L	H
4.8 km N.E. O'Regan's	2446	S	H
3.2 km S. Upper Ferry	618	M	H
Mummichog Prov. Park	2277	L	H
Eastern			
Bay Bulls Rd.	320	0	M
Blackhead Rd.	0	0	-
Flatrock	252	L	L
Bauline Line	0	L	-
Old Bauline Line	0	L	-
St. Phillips	0	L	-
St. Thomas	125	L	L
Paddys Pond	28	S	L
Cochrane Pond Rd.	220	S	L
3.2 km W. Paddys Pond	71	0	L
Foxtrap Jct. & T.C.H.	33	0	L
Butterpot Prov. Park	166	0	L
4.8 km N. Holyrood	62	0	L
1.6 km S. T.C.H. (Holyrood Rd.)	0	0	-
4.8 km S.W. T.C.H. (Salmonier Rd.)	0	L	-
Father Duffy's Well " "	0	L	-

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Whelan's Pond Rd.	36	L	L
Mt. Carmel	0	S	-
St. Catherines	0	L	-
Forest Field	0	0	-
Markland	0	0	-
Dildo Pond	115	L	L
Dildo	0	0	-
Hopeall	0	0	-
Cavendish	0	0	-
Hearts Delight	500	0	M
4.0 km E. Long Hr. Jct. (on T.C.H.)	67	L	L
5.3 km E. Bellevue Jct. " "	80	S	L
Thornlea	236	S	L
Bellevue Rd.	1672	S	H
" "	1537	S	H
Bellevue	0	S	-
St. Jones Within	981	L	H
Hatchet Cove	778	S	H
Adeytown	725	S	H
Lady Cove	705	S	H
" "	1067	S	H
3.2 km S.W. Brittania	1166	L	H
3.2 km N. Elliotts Cove	961	S	H
Elliotts Cove	7642	S	H
Aspen Cove	2359	S	H
Random Island	4335	S	H
Harcourt	1944	S	H
E. of Waterville	633	L	H
Lethbridge Access Rd.	726	M	H
" " "	0	L	-
Gull Pond	200	L	M
Lethbridge	0	L	-
Bonavista Hwy.	787	L	H
Trinity Hwy.	43	L	L
Lockston Prov. Park	1851	L	H
Stock Cove	490	L	H
King's Cove	704	L	H
Cabot Hwy.	1716	L	H
Summerville	360	L	M
Sweet Bay	837	L	H
Portland	500	L	H
Musgravetown	1786	L	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Platter's Beach (TNNP)	1488	S	H
Bread Cove "	640	S	H
Dumpling Cove "	400	S	H
Minchin Isle "	1667	S	H
Shag Pt. "	455	L	M
Park Hr. "	600	L	H
Big Minchin Pond "	1600	S	H
Jack's Pond "	1992	S	H
Bread Cove "	133	M	L
Ochre Hill "	1120	L	H
Terra Nova Rd. "	0	L	-
Rocky Pond "	383	L	L
Park Hq. "	933	L	H
Newman Sound "	0	L	-
Minchin Cove "	500	L	H
South Big Cove "	500	L	H
Buckley Pt. "	528	M	H
Swale Island "	1500	L	H
North Broad Cove "	578	M	H
Old Eastport Rd. "	700	L	H
Alexander Bay "	1173	S	H
South West Arm "	100	S	L
Blue Hill Rd. "	2080	S	H
Blue Hill "	7500	S	H
Port Blandford	1341	S	H
" "	1917	L	H
Bunyan's Cove	470	L	H
Charlottetown (TNNP)	1333	S	H
" "	667	M	H
White Pt. "	2133	M	H
6.4 km E. Charlottetown Jct. (TNNP)	915	M	H
Tidewater Pt. (TNNP)	2182	M	H
S. Boundary "	778	L	H
" " "	1055	L	H
Dunphy's Pond "	1000	L	H
6.4 km E. Terra Nova	272	L	L
Terra Nova Rd.	1467	L	H
Blue Hill Fire Rd. (TNNP)	1200	L	H
Alexander Bay	83	L	L
Chain Pond	80	L	L

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
4.8 km S.W. Terra Nova	1958	L	H
Terra Nova River	1312	L	H
Northwest Pond	0	M	-
Terra Nova River	1077	L	H
Mollyquajeck Lake	0	S	-
3.2 km S. New Pond	0	M	-
3.2 km W. Lake St. John	833	L	H
8.0 km " " " "	0	L	-
Newton Lake	667	0	H
6.4 km W. Deer Pond	91	L	L
Deer Pond	515	L	H
" "	476	L	H
" "	1073	S	H
Triton Bk.	6615	S	H
9.6 km W. Deer Pond	3015	M	H
4.8 km S. Southwest Pond	74	L	L
Triton Bk.	933	S	H
" "	338	S	H
1.6 km E. Dead Wolf Pond	1222	S	H
Riverhead Bk.	473	S	H
Gambo Pond	818	S	H
" "	1000	M	H
Mint Bk.	943	L	H
Gambo Pond	348	S	H
Mason's Pond	494	L	H
4.8 km S.W. Gambo	1696	L	H
Central			
Carmanville	927	0	H
Eastern Arm	513	0	H
Beaver Hill	476	L	H
Gander Bay	2031	L	H
Weirs Pond	914	0	H
Gander Bay Rd.	446	L	M
Weirs Pond	408	L	H
Second Pond	4641	L	H
" "	1896	L	H
Jonathan's Pond Prov. Park	338	L	H
Gander River	1538	L	H
Bellman's Pond	1469	L	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Burnt Lake	1143	S	H
" "	857	L	H
Wing's Pt.	1368	S	H
Rodger's Cove	1364	S	H
Horwood Jct.	952	S	H
Boyd's Cove	667	S	H
Chapell Island	525	S	H
Summerford	432	S	H
Carter's Cove	857	S	H
6.4 km N. Birchy Bay	692	S	H
Birchy Bay	725	S	H
Duder Lake	143	L	L
Ten Mile Lake	91	L	L
Long Pond	428	S	H
N. of Salmon Pond	1086	L	H
" " " "	692	L	H
Glenwood	699	L	H
"	714	L	H
Dans Pond	923	S	H
S. of Loon Bay	800	S	H
Comfort Cove	1313	S	H
Campbellton	515	S	H
Burnt Bay	444	S	H
Notre Dame Park	889	L	H
S. of Norris Arm	0	L	-
" " " "	619	S	H
Rattling Bk.	733	M	H
Jumpers Bk.	543	L	H
Norris Arm	617	L	H
Bay of Exploits	1219	S	H
S. of Lewisporte	500	S	H
S.W. of Lewisporte	381	S	H
Brown's Arm	995	S	H
Laurenceton	1515	S	H
Phillip's Head	500	M	H
Indian Cove	857	M	H
Cottrell's Cove	521	M	M
Mill Cove Pond	401	S	H
West Arm	390	M	H
Mill Pond	0	M	-
4.8 km N. Northern Arm	553	M	M
Northern Arm	0	M	-

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
4.8 km S.E. Lewis Lake	960	L	H
4.8 km E. New Bay Pond	428	L	H
New Bay Pond	95	L	L
New Bay Pond	875	L	H
Grand Falls	1342	S	H
8.0 km S. Frozen Ocean Lake	952	M	H
Peace Pond	867	M	H
Mary Anne Lake	367	L	H
Goose Lake	143	S	L
Rocky Pond	133	S	L
North Twin Lake	1000	S	H
" " "	928	S	H
" " "	889	M	H
" " "	786	S	W
South Twin Lake	476	S	H
" " "	727	S	H
Mark's Lake	857	M	H
South Twin Lake	952	S	H
Seal Bay Bk.	469	S	H
3.2 km N. South Twin Lake	625	S	H
4.8 km S.E. Wild Bight	444	S	H
Gambo	417	L	H
Lower Dark Cove	1316	S	H
Square Pond	1076	L	H
24.0 km E. Gander	374	L	H
Soulis Pond	1047	L	H
2.6 km S. Home Pond	1905	L	H
Benton	669	L	H
9.6 km E. Gander	625	L	H
Rodney Pond	743	M	H
" "	714	M	H
Joe Batt's Pond	889	L	H
6.4 km E. Glenwood	0	L	-
Northwest Gander River Rd.	792	L	H
" " " "	611	L	H
" " " "	667	L	H
3.2 km N. Hunt's Pond	1905	M	H
Hunt's Pond	800	M	H
Little Dead Wolf Pond	1428	L	H
Southwest Gander River	667	L	H
" " " Rd.	695	L	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Northwest Gander River Rd.	0	L	-
" " " "	167	L	L
Southwest " " "	1142	L	H
Dead Wolf Bk.	600	S	H
Southwest Gander River	1286	M	H
Watcher's Bk.	560	L	H
Caribou Lake	368	M	L
4.8 km S.W. Wild Bight	933	S	H
Marks Lake	524	S	H
North Twin Lake	1444	S	H
Sops Lake	1024	S	H
Kippens Pond	762	S	H
South Brook Rd. (Halls Bay)	272	S	L
Crescent Lake " "	263	S	L
Robert's Arm	230	S	L
Southwest Gander River	1562	M	H
Northwest Gander River Rd.	0	L	-
" " " "	103	L	L
Southwest " " "	308	L	L
" " " "	597	L	H
Great Gull River	643	L	H
Northwest Gander River	816	L	H
Webber Pond	200	L	L
3.2 km W. Webber Pond	667	L	H
6.4 km N. " "	444	L	H
Crowe Lake	833	L	H
6.4 km N. Crowe Lake	0	L	-
3.2 km " Frozen Ocean Lake	959	S	H
Burnt Lake	3143	L	H
" "	1143	L	H
Tote Hill	709	L	H
Grand Falls	1181	M	H
Lemotte's Lake	781	M	H
Leech Bk.	308	S	L
Aspen Bk.	778	M	H
Tom Joe Bk.	1100	M	H
West Lake	2421	M	H
Caledonia Bk.	1400	M	H
Sandy Bk.	83	M	L
3.2 km E. Diversion Lake	0	L	-
North Great Rattling Bk.	370	L	M
South " " "	340	L	M
Great Rattling Bk.	67	M	L
" " "	428	S	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Miquel's Lake	1214	S	H
Great Rattling Bk.	971	M	H
" " "	815	M	H
Miquel's Lake	739	M	H
Northwest Gander River	619	S	H
" " "	329	L	M
" " "	1238	L	H
Bay D'Espoir Rd.	0	L	-
" " "	350	L	H
Third Berry Hill	91	L	L
Little Gull Lake	122	L	L
Bay D'Espoir Rd.	580	0	H
Conne River Pond	444	0	H
Eastern Steady (Bay D'Espoir Rd.)	404	L	H
Twillick Bk.	1094	L	H
Bay D'Espoir Rd.	500	S	H
" " "	714	S	H
Milltown	855	L	H
3.2 km N.W. Head Bay D'Espoir	432	L	H
St. Veronica's	350	M	H
Swanger Cove	815	L	H
6.4 km N.W. St. Veronica's	794	L	H
Sandy Lake	700	L	H
" "	0	M	-
3.2 km N. Sandy Lake	338	M	M
Tom Joe Bk.	352	M	M
West Bk.	0	M	-
Tom Joe Bk.	1212	M	H
Pamehac Bk.	1852	M	H
" "	1600	M	H
8.0 km S.W. Badger	392	L	H
Jct. Millertown Jct. Rd.	764	L	H
4.0 km. N. Buchan's Rd.	448	L	M
4.8 km " " "	0	L	H
9.6 " " "	1470	L	H
14.4 km " " "	1285	M	H
Little Red Indian Pond	722	S	H
Buchan's Rd.	346	L	H
4.8 km E. Badger Lookout	1022	M	H
Buchan's Rd.	490	L	M
" "	0	L	-
" "	769	L	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Noel Paul's Bk.	467	L	H
" " "	667	L	H
" " "	690	M	H
" " "	633	M	H
" " "	1143	S	H
" " " area	417	S	H
3.2 km S. Exploits River	62	M	L
Millertown	190	L	L
Mary March Prov. Park	204	L	L
Harpoon Bk.	51	L	L
" " area	77	S	L
Noel Paul's Bk.	866	S	H
" " "	900	S	H
Tally Pond	8087	S	H
Noel Paul's Bk.	1575	S	H
Lake Ambrose	959	S	H
" " (Plot No. 338)	1302	S	H
4.8 km N. Lake Ambrose	577	S	H
4.8 km S. Hungry Hill	1261	S	H
Hungry Hill	625	L	H
1.6 km S. Exploits Dam	763	L	H
Red Indian Lake	1216	L	H
Star Lake Rd.	1205	L	H
Hinds Lake	368	L	M
8.0 km S. Hinds Lake	1240	0	H
Star Lake Rd.	643	L	H
Red Indian Lake	500	L	H
Bobby's Pond	2195	L	H
Beaver Lake	989	S	H
Lake Douglas	1742	S	H
Noel Paul's Bk.	311	S	L
Snowshoe Pond	1487	L	H
3.2 km S. Quinn Lake	0	L	-
1.6 km E. Barren Lake	537	S	H
Victoria River	430	L	M
3.2 km E. Harbour Round	0	L	-
Red Indian Lake	956	L	H
" " "	741	L	H
Victoria River	0	L	-
3.2 km N. Rodeross Lake	0	L	-
Victoria River	2267	L	H
Long Lake	100	L	L
Shanadithit Brook	0	L	-
Star Lake Bk.	506	M	H

Cont'd ...

Table 4 - Continued

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
Lloyd's River	1000	S	H
Tulk's Bk.	76	S	L
E. end Victoria Lake	0	0	-
S. side " "	0	L	-
Victoria Lake area	125	S	L
Tulk's Bk.	333	S	M
Lloyd's River	643	S	H
3.2 km E. Lloyd's Lake	620	S	M
W. side Victoria Lake	0	S	-
Portage Lake	637	S	H
3.2 km S. Lloyd's Lake	375	S	H
4.8 km S. Puddle Pond	417	S	H
Joe's Lake	621	M	H
Catamaran Prov. Park	650	S	H
4.0 km E. Crooked Lake	500	S	H
Crooked Lake	944	S	H
Dawes Pond	537	L	H
South Bk. (Halls Bay)	444	L	H
Little Glodes Pond	937	L	H
Three Corner Pond	777	L	H
" " "	80	L	L
Dawes Pond	606	L	H
Crooked Bog	531	S	M
" "	27	S	L
Great Gull Lake	980	S	H
Burnt Pond	501	S	H
Great Gull Lake	364	L	H
1.6 km N. Great Gull Lake	367	M	H
Rocky Pond	428	S	L
South Bk. (Halls Bay)	96	M	L
S. end South Pond	122	S	L
Barney's Bk.	500	L	H
West Bk.	893	L	H
" "	227	L	L
Burnt Berry Bk.	138	L	L
" " "	514	L	M
S. end West Pond	654	S	M
3.2 km N. West Pond	400	L	H
Burnt Berry Bk.	440	M	M
9.6 km W. Springdale Jct. (T.C.H.)	104	L	L
Burnt Berry Pond	625	L	H
Burnt Berry Bk.	378	S	H
Springdale	571	L	H
Davis Pond	668	L	M
1.6 km S.W. Davis Pond	207	L	L
4.8 " " " "	524	L	H

Cont'd ...

Table 4 - Concluded

Plot location	No. egg mass per 10 m^2 foliage	1976 Defoliation*	Egg mass category**
King's Point Rd.	544	L	M
4.8 km S. of Gull Pond	857	L	H
Gull Pond	47	L	L
King's Point Rd.	476	L	H
7.2 km N.E. King's Pt.	602	S	M
14.4 " " " "	480	S	H
Middle Arm Ridge	477	L	M
6.4 km N.E. Gull Pond	40	L	L
Labrador			
Goose River	358	L	M
Churchill River	375	M	H
Goose River	0	L	-
Mud Lake	344	L	H
Muskrat Island	174	S	L
McKenzie River	0	S	-
Tomiels River	0	0	-
" "	0	0	-
McKenzie River	0	0	-
Caroline River	0	0	-
" "	0	0	-
Traversepine River	0	0	-
" "	0	L	-
" "	0	M	-
Mud Lake	0	0	-
Churchill River	0	L	-
" "	0	L	-
Kenamu River	495	S	M
" "	0	L	-
" "	0	S	-

*L = Light
M = Moderate
S = Severe

**L = Low
M = Medium
H = High

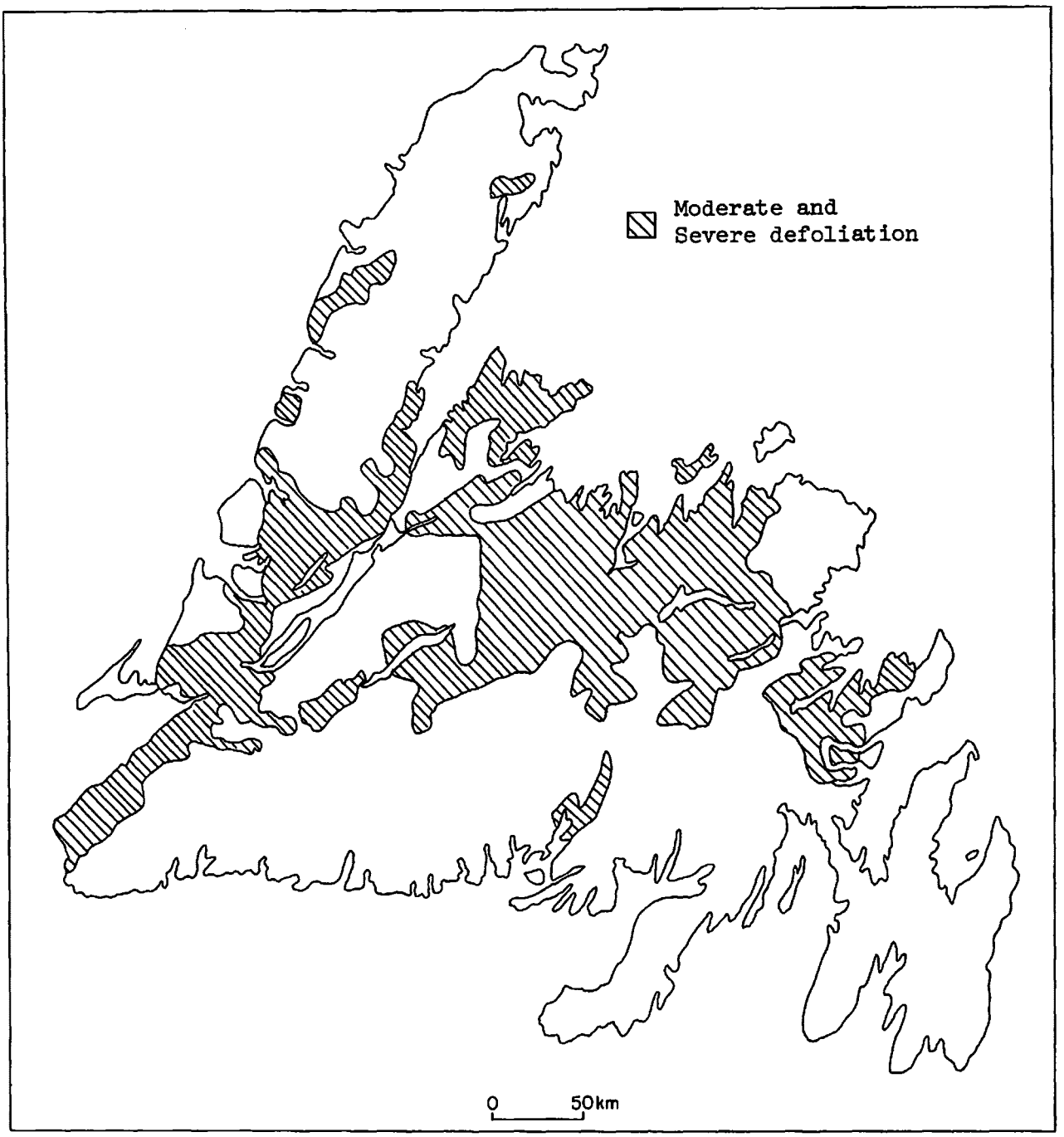

Fig. 8 - Areas of predicted moderate and severe spruce budworm defoliation in Newfoundland for 1977.

Blackheaded Budworm, Acleris variana (Fern.) — Population levels of this budworm continued to increase on the Avalon and Northern peninsulas and in the Lake Melville and White Bear River areas of Labrador. The Avalon infestations occurred near Sunnyside, Bellevue, Markland, Salmonier Valley and between Cochrane Pond and Pouch Cove. A total of 56 426 ha of defoliation occurred in these areas of which 16 453 ha were in the moderate to severe category (Table 5)(Fig. 9).

The Northern Peninsula infestation extended from Roddickton to Round Pond with a separate infestation at Leg Pond. The total area was 106 086 ha of which 18 163 ha were in the moderate to severe category (Table 5). High population levels of spruce budworm occurred in areas infested by the blackheaded budworm and have caused part of the defoliation (Fig. 10).

Past history of this budworm shows that parasitism plays an important role in terminating these outbreaks without serious tree mortality.

Year	No. of collections	No. of larvae per tree sample		
		Min.	Avg.	Max.
1976	41	0.2	10.3	53.3

Eastern Hemlock Looper Lambdina fiscellaria fiscellaria (Guen.) — Population levels were slightly lower in 1976 throughout the Island. In eastern Newfoundland the infestations on the Bellevue Peninsula and at Whelans Pond averaged 15.3 larvae per tree sample. The Bellevue infestation increased to 6 030 ha and includes the area from the junction of the Fairhaven Road along the Trans Canada Highway and up the eastern side of the Bellevue Peninsula. Severe damage to balsam fir occurred on an estimated 5 140 ha. There was little change in the Whelans Pond infestation from 1975. In central Newfoundland a collection in the Northwest Gander River Road contained 9 larvae. In western Newfoundland larvae were collected in the North Branch, Robinsons River and Crabbes River areas with about 3 larvae per tree sample. Similar collections were made in the Gros Morne National Park and along the Daniels Harbour Mine Road.

Year	No. of collections	No. of larvae per tree sample		
		Min.	Avg.	Max.
1976	75	0.3	15.7	210.4

Table 5.- 1976 blackheaded budworm infestations in productive forests in Newfoundland.

1:250,000 map sheet	Light	Moderate	Severe	Total
St. Anthony	6 952*	-	-	6 952
Blanc Sablon	50 497	-	-	50 497
Port Saunders	30 474	12 877	5 286	48 637
St. John's	39 973	4 371	12 082	56 426
Total	127 896	17 248	17 368	162 512

* = Hectares

Balsam Fir Sawfly, Neodiprion abietis complex — The infestations of this sawfly at Marystown virtually collapsed in 1976 and only light defoliation occurred in the area around Marystown proper.

In Labrador, however, infestations near White Bear River continued for the fourth consecutive year and covered an area of 2 569 ha with 1 386 ha in the moderate to severe category. Tree mortality in this area was estimated at 30% and was caused by the combined feeding of the sawfly and the blackheaded budworm. An area of 465 ha was observed at Dove Brook and collections from this area averaged 1 000 larvae per tree sample and caused 80% defoliation throughout the area.

Year	No. of collections	No. of larvae per tree sample Min	Avg.	Max.
1976 - Island	8	0.1	0.6	3.3
" - Labrador	12	0.3	40.0	1000.0

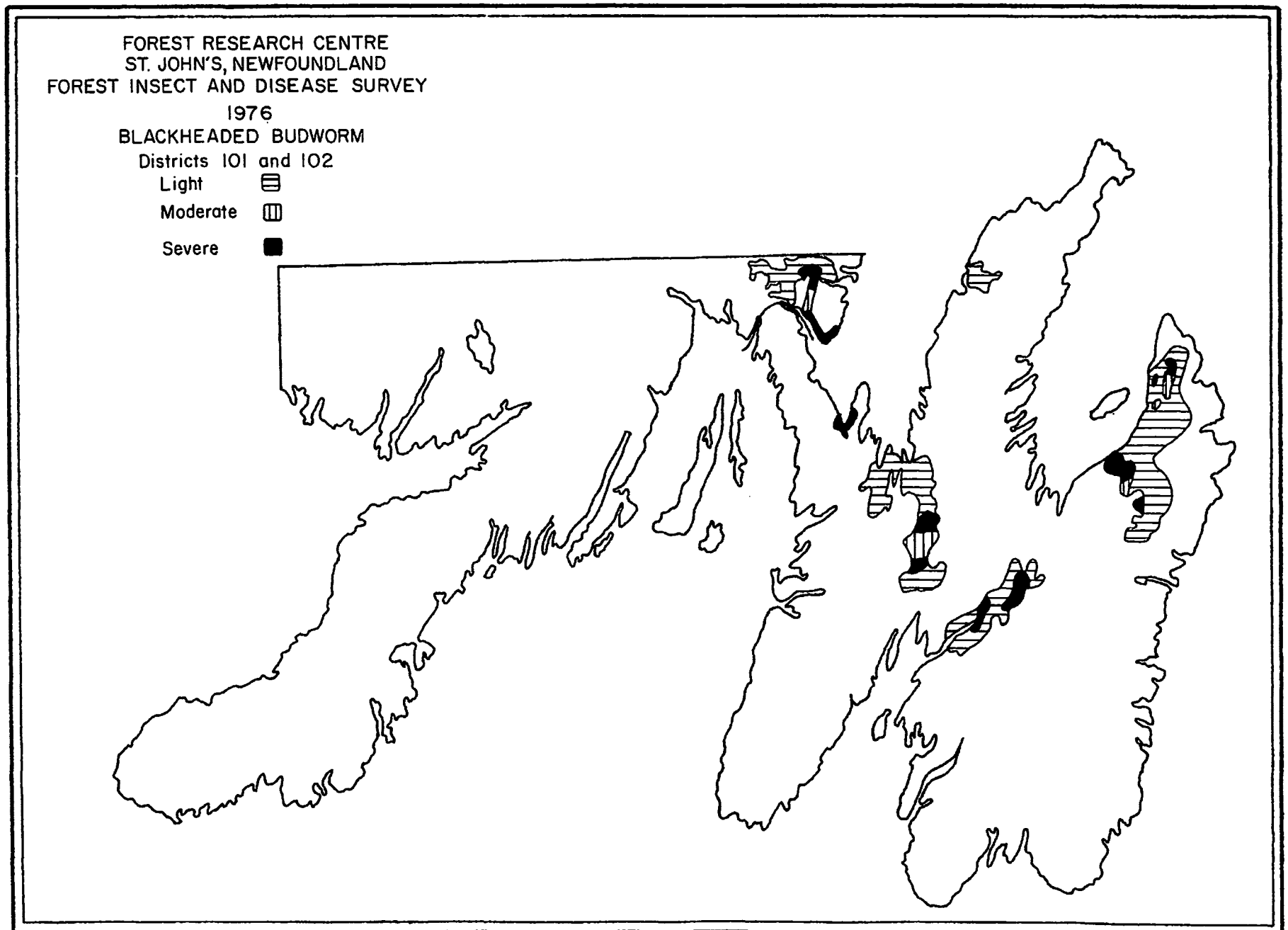
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
BLACKHEADED BUDWORM
Districts 101 and 102
Light
Moderate
Severe

Fig. 9

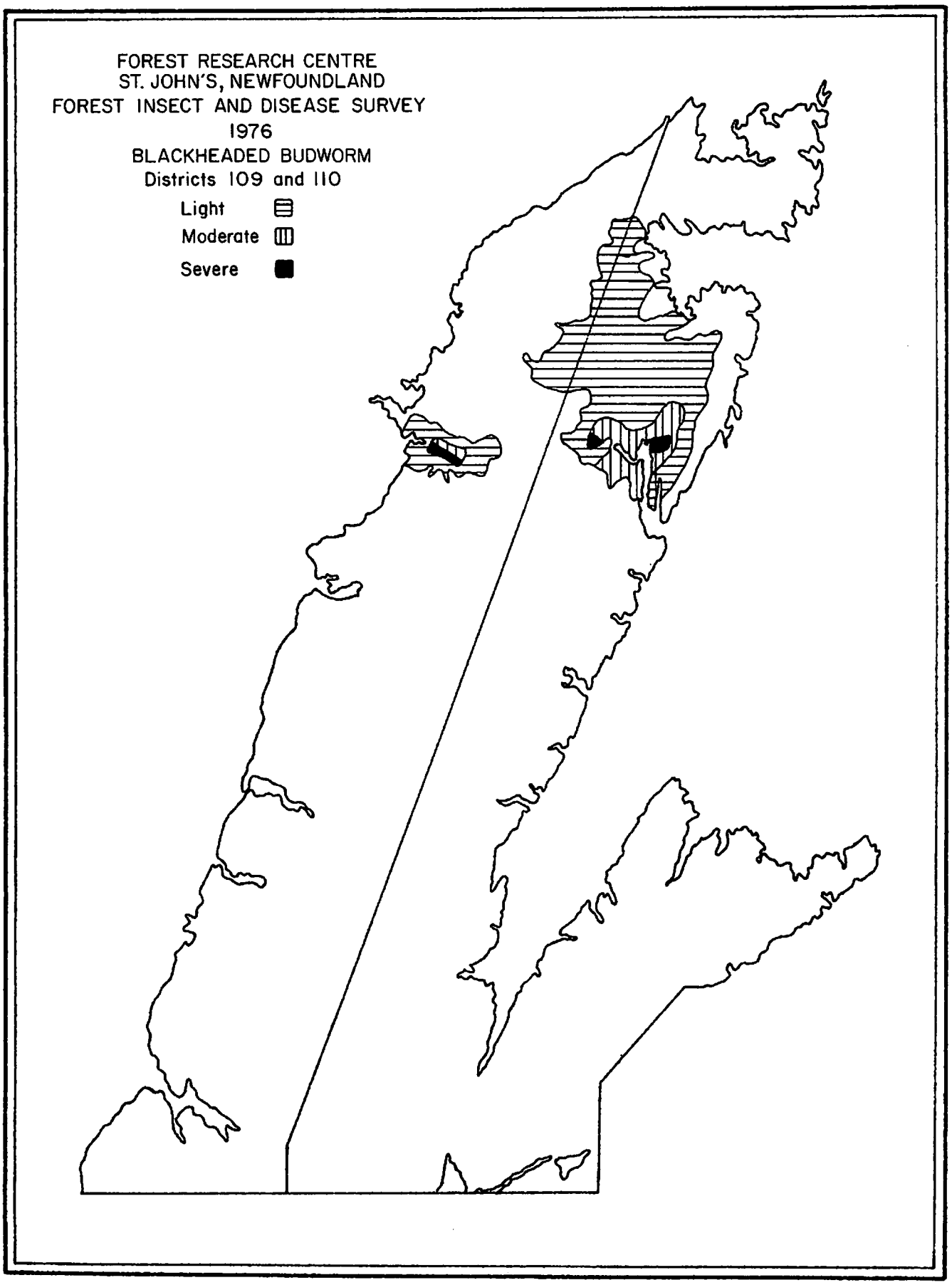
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1976
BLACKHEADED BUDWORM
Districts 109 and 110
Light
Moderate
Severe

Fig. 10

Balsam Woolly Aphid, Adelges piceae (Ratz.) — There was no regular or special sampling for aphid populations in 1976 but new damage of balsam fir by the aphid was observed along the Elliotts Cove-Snooks Harbour Road on Random Island. Recently new damage also occurred between Port Blandford and Bunyans Cove and for the second year in the St. Fintans-River Brook area.

Larch Casebearer, Coleophora laricella (Hbn.) — Population levels of the casebearer have been low throughout central and western Newfoundland for the past year. The infestation near Lake Ambrose in 1974 and 1975 has apparently collapsed. In eastern Newfoundland high larval populations caused 90% defoliation at Sandy Pond Road and Saltons Brook and 50% defoliation at Park Headquarters in the Terra Nova National Park. Larch stands in the Goulds and Newtown had 50% foliage loss and 25% defoliation was recorded in stands in the Bay Bulls and St. Phillips areas. Larvae from the Terra Nova National Park and Newtown areas had 16% parasitism. Table 6 contains a summary of larch casebearer counts taken in 1976.

Larch Sawfly, Pristiphora erichsonii (Htg.) — There were no sawfly infestations in eastern and central Newfoundland in 1976. Practically all larch stands in central Newfoundland were defoliated by the spruce budworm early in the season. However, in western Newfoundland light defoliation occurred in an area between St. Georges and South Branch except for a small stand of severe damage near Fischell's River. In Labrador an outbreak occurred between Sandwich Bay and Winokapu Lake. Severe defoliation was observed throughout this area and numerous sawfly adults were found along the shore of Northwest River and Indian Cove.

Two census plots of the masked shrew, Sorex cinereus cinereus Kerr., were checked for a 5 day trapping period in the Terra Nova National Park and Paddy's Pond. Results showed an average shrew population of 9.9 per ha in both areas. This was considerably higher than the previous year and was probably due to the exceptionally favourable weather during the summer season and throughout the trapping period (Table 7).

Year	No. of collections	No. of larvae per tree sample		
		Min.	Avg.	Max.
1976 - Island	1	1.7	1.7	5.0
" - Labrador	2	666.7	714.0	1000.0

Birch Casebearer, Coleophora fuscedinella (Zell.) — There was little change recorded in the overall boundary of casebearer this year although population levels were higher throughout the Island. The main area of infestation extends from Port aux Basques to Clarenville and north to Bellburns. In central and eastern Newfoundland severe damage extended from Gander to Thorburn Lake and in coastal areas from Halls Bay to Gander

Table 6.- Larch casebearer counts 1976

Location	Stand vigour	Stand defoliation	Avg. no. of cases per branch sample
Bay Bulls	M	L	0.9
Newtown	U	M	5.4
St. Phillips	U	L	3.4
Goulds	M	M	10.4
Cobblers Brook	V	T	0.5
1.6 km W. of Terra Nova National Park Headquarters	M	M	5.0
0.5 km E. of Sandy Pond Road	M	S	20.8
Sandy Pond	M	M	6.1
Saltons Brook	U	S	11.7
Mouth of Junction Brook	V	T	0.2
1.6 km E. of Junction Brook	V	T	0.4
Logging School Road	U	T	0.1
Pinchgut Lake	U	T	0.4

Defoliation:

S = Severe
M = Moderate
L = Light
T = Trace

Vigour:

V = Vigorous
M = Moderately vigorous
U = Untrifty

Table 7.- Estimated number of shrews per hectare (per acre)

Location	Sept. 1966	Sept. 1967	Sept. 1968	Oct. 1969	Sept. 1970	Sept. 1971	Sept.* 1972	Sept.* 1973	Oct.* 1974	Oct. 1975	Oct. 1976
Hall's Bay	21.52 (8.71)	28.00 (11.33)	8.28 (3.35)	7.09 (2.87)	7.04 (2.85)	6.08 (2.46)	5.39 (2.18)	8.60 (3.48)	9.69 (3.92)	Discontinued	
Wiley Brook	-	-	-	-	12.26 (4.96)	8.82 (3.57)	6.45 (2.61)	9.69 (3.92)	6.45 (2.61)	Discontinued	
Glovertown	0.00 (0.00)	0.00 (0.00)	1.08 (0.44)	3.43 (1.39)	Discontinued						
Terra Nova	0.00 (0.00)	0.00 (0.00)	1.66 (0.67)	7.09 (2.87)	8.40 (3.40)	7.07 (2.86)	7.54 (3.05)	9.69 (3.92)	10.77 (4.36)	3.24 (1.31)	1.63
Paddy's Pond	-	-	-	-	0.00 (0.00)	1.51 (0.61)	3.24 (1.31)	9.69 (3.92)	4.30 (1.74)	2.15 (0.87)	1.63

*Ten day trapping period

Bay. Light defoliation was recorded from Clarenville to Random Island and north to Bonavista. Immature and regeneration birch in open and exposed areas were the most severely damaged. In western Newfoundland light defoliation extended from Bonne Bay to Bellburns and from Deer Lake to Little Bonne Bay Pond, Hampden Junction to Sops Arm along Birchy Lake and the Baie Verte Peninsula. Moderate to severe damage occurred along the Trans Canada Highway between Deer Lake and Hampden, Cormack, Adies Lake and Sheffield Lake.

Year	No. of collections	No. of larvae per tree sample		
		Min.	Avg.	Max.
1976	92	0.3	14.6	55.0

Large Aspen Tortrix, Choristoneura conflictana (Wlk.) — This pest of aspen was common in widespread areas of central and western Newfoundland.

In central Newfoundland population levels were high for the fourth consecutive year throughout the Exploits watershed. Damage was most severe in the Pamehac Brook to Noel Paul's Brook area.

In western Newfoundland light damage occurred along the Trans Canada Highway near McIsaacs Brook, Sops Arm Road and Sheffield Lake. Moderate damage was recorded along the Seal Cove and Westport roads on the Baie Verte Peninsula.

Year	No. of collections	No. of larvae per tree sample Min.	Avg.	Max.
1976	26	0.3	7.8	50.0

Rusty Tussock Moth, Orgyia antigua (L.) — This insect was common throughout eastern and central Newfoundland on both softwood and hardwood tree species. Light defoliation was recorded at Cochrane Pond, St. Phillips, Bauline and the Bellevue Peninsula on the Avalon Peninsula and near Bread Cove Brook in the Terra Nova National Park.

Year	No. of collections	No. of larvae per tree sample Min.	Avg.	Max.
1976	16	0.3	3.4	18.3

In central Newfoundland population levels increased over 1975. The highest numbers were collected on New World Island where 25 larvae were collected from one tree. Larvae were also collected along the Aspen Pond Road.

Year	No. of collections	No. of larvae per tree sample Min.	Avg.	Max.
1976	11	0.3	2.2	25.0

In western Newfoundland low population levels were found in White Bay District. In Labrador an average of 2 larvae per tree were collected at Northwest River and Churchill Road.

Uglynest Caterpillar, Archips cerasivoranus Fitch — This insect was collected for the first time in Newfoundland this year. Numerous larvae were observed in a 25.9 km^2 area along Flat Bay Brook near the Trans Canada Highway. Population levels averaged 70 larvae per tree sample and caused 80% defoliation of choke cherry and other shrubs.

Fall Webworm, Hyphantria cunea (Dru.) — Population levels of the webworm caused severe damage to various shrubs along Whites Road in the same general area as 1975.

OTHER NOTEWORTHY INSECTS

Species	Host(s)	Locality	Average per tree	No. of collections
Adoxus obscurus (Linn.) Western grape rootworm	Dogwood, fireweed	Baie Verte Pen., Gros Morne Nat. Park Serpentine Lake	5.6	4
Altica sp. A flea beetle	Dogwood	Birchy Lake	7.0	1
Anacampsis innocuella Zell. Poplar leafroller	tA	Hughes Bk., Square Pond, Clarenville, central Nfld.	8.1	9
Anatis sp. A lady beetle	bS	Baie Verte Prov. Park	0.3	1
Androloma mac-cullochi Kby. MacCulloch's forester	Fireweed	Churchill Road	12.0	1
Anoplodera tibialis Lec. Longhorned beetle	bF	Piccadilly Head, 27.0 km S.W. Lake Ambrose Jct.	0.3	2
Anoplonyx luteipes (Cress.) Marlatt's larch sawfly	tL	Howley Road, Carmanville, Newtown, Gushues Pond, Long Harbour Road, Boot Brook	0.7	6
Anoplodera sexmaculata Linn. Longhorned beetle	bF	Northwest River Road	0.3	1
Archippus packardianus (Fern.) Spring spruce needle moth	bF	Bonne Bay Road, Barters Brook	0.5	2
Archips rosanus (Linn.) European leafroller	Sal	Crabbes River, Robinsons Road, Serpentine Lake Road	2.0	3
Bibio sp. March fly	W	Bottom Brook Road	127.0	1

OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Average per tree	No. of collections
Biston cognataria (Gn.) Pepper-and-salt moth	W	3.2 km N. Aspen Pond Road	0.3	1
Brachyrhinus singularis (Linn.) Clay coloured root weevil	bF	Father Duffy's Well, Windsor Lake	0.3	2
Caripeta divisata Wlk. Gray spruce looper	bF, bS, wS	District 12, Brown's Arm, Georges Brook, St. Fintan's, Serpentine Lake Road, McKenzies Brook	0.5	12
Chrysomela falsa Brown Willow leaf beetle	bPo	Otter Creek	70.0	1
Chrysomela mainensis mainensis Bech. Alder leaf beetle	Sal	T.N.N. Park, Jonathan's Pond, Baie Verte Pen., Gales Brook, McIsaacs Brook, Gull Lake (Labrador)	9.6	12
Compsolechia niveopulvella Chamb. Poplar leafroller	tA	6.9 km E. of Glenwood, 13.8 km N. of Northern Arm	8.2	2
Cryptorhynchus lapathi (Linn.) Poplar and willow borer	bPo	Pasadena nursery	1.7	1
Ctenicera sp. A click beetle	bF, tL, bS	Lady Slipper Road, Star Lake Road, Sandy Lake Road	0.3	3
Ctenicera triundulata (Rand.) Three-spotted click beetle	bF, tL	Star Lake Road, Sandy Lake Road		

OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Average per tree	No. of collections
Depressaria pastinacella (Dup.) Parsnip webworm	Wild parsnip	Tuckers Brook	3.7	1
Dioryctria reniculelloides M. & M. Spruce coneworm	bF, bS, wS, tL	Traverspine River, Districts 104, 106, 107, 108, 109 and 110	3.7	64
Diprion hercyniae (Htg.) European spruce sawfly	wS, bS	Goose Arm Road, Howley Road, Gros Morne National Park, District 109, T.N.N. Park, Bauline Line, Grand Lake Road (Labrador)	1.8	18
Ectropis crepuscularia Schiff. Saddleback looper	bF, bS	Cochrane Pond Prov. Park, T.N.N. Park	0.3	2
Epinotia solandriana Linn. A leafroller	Sal	1.6 km N. Harbour Breton, Terra Nova Road	6.3	2
Eupithecia sp. Brown spruce looper	bF, wS	Star Lake Road, Goose Arm Road, Baie Verte Pen., Fairhaven Road, Cochrane Pond Prov. Park, Districts 103, 107 and 110	0.3	20
Eupithecia transcanadata Mack. Conifer looper	bF	Norris Point Road	0.3	1
Evodinus monticola (Rand.) Longhorned beetle	wS	Western Brook	0.3	1
Fenusa dohrnii (Tischb.) European alder leafminer	Sal	Jefferys Road, Wing's Point, Little Falls, Tuckers Brook	1.9	4
Fenusa pusilla (Lep.) Birch leafminer	wB	Codroy Pond, Stockless Pond Road, Belldowns Point, Newtown, Districts 103, 104, 106 and 108	14.0	32

OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Average per tree	No. of collections
Feralia jocosa (Guen.) Red-marked caterpillar	bF, bS, wS tL	Throughout Province	0.5	33
Griselda radicana Wlshm. Red-striped spruce shoot moth	bF, bS	District 101, Southwest Arm, Georges Brook, Terra Nova Road	0.4	8
Halisodota maculata (Harr.) Spotted tussock moth	Sal	Tuckers Brook	18.0	1
Heterarthrus nemoratus (Fall.) Birch leafmining sawfly	wB	Quinn Lake, Crooked Lake, Twin Lakes Road, Taylors Brook, 9.0 km E. of Lethbridge Jct.	12.3	5
Hylobius sp. Root collar weevil	bF	Wild Cove Road, South Brook Valley	4.0	2
Hypagyrtis piniata (Pack.) Pine looper	bF	Lady Slipper Road, Grand Lake Road, 22.5 km S. of Conne River Pond	0.3	3
Ipimorpha pleonectusa Grt. Blackcheeked aspen caterpillar	tA	Terra Nova Road	2.0	1
Itame anataria Swett. A looper	wB	Waterville	0.3	1
Melanophila fulvoguttata (Harr.) Hemlock borer	bF	Grand Lake Road	1.0	1
Mindarus abietinus Koch Balsam twig aphid	bF	Northwest River Road, McKenzie's Brook, Hickman's Harbour Road, 9.6 km S. of Flat Bay Road, Robinsons River Road, Sheaves Cove, Quinn Lake	19.3	7

OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Average per tree	No. of collections
Monochamus scutellatus (Say) Whitespotted sawyer	bF	Grand Lake Road (Labrador)	0.3	1
Nadata gibbosa (J.E. Smith) Green oak caterpillar	W, wB, Sal	Serpentine Lake Road, Northwest Gander River Road, Aspen Pond Road, Woodstock Road	0.4	6
Nematus limbatus (Cress.) Willow sawfly	W	Serpentine Lake Road	15.0	1
Nepytia canosaria (Wlk.) False hemlock looper	bF, bS	Northwest Gander River Road, Aspen Pond Road, Goose Bay, Baie Verte Pen., Districts 101, 107 and 108	0.4	21
Nycteola cinereana N. & D. Poplar leaf tier	W, wB, Pch	Bay Bulls, Districts 104, 106 and 109	2.7	9
Nyctobia limitaria (Wlk.) Green balsam looper	bF, bS	Burnt Berry Brook, Buchans Road, Eastport, Deep Bight, Northwest River, Kenamu River, Districts 101, 107, 108, 109 and 110	0.6	52
Papilio glaucus canadensis R. & J. Tiger swallowtail	Sal	Pasadena nursery, Tuckers Brook	0.7	2
Parorgyia plagiata (Wlk.) Pine tussock moth		22.6 km S. of Conne River Pond, Deer Lake, Holyrood, Bellevue, Grand Lake Road, Northwest River Road	0.5	7
Phyllocnistis populiella Chamb. Aspen leafminer	tA, bPo	1.6 km W. of Jct. Seal Cove and Wild Cove roads, Lomond, Crabbes River Prov. Park	5.7	3
Phyllophaga sp. A June beetle	wS	Deer Lake	1.0	1

OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Average per tree	No. of collections
Pikonema alaskensis (Roh.) Yellowheaded spruce sawfly	bS	T.N.N. Park, McKenzies Brook	0.3	3
Pikonema dimmockii (Cress.) Greenheaded spruce sawfly	wS, bS	Campbells Creek, Wild Cove Pond Road, Grand Lake Road (Labrador)	0.5	4
Pissodes sp. A weevil	bS	Churchill Road, 9.0 km E. of Badger	0.3	2
Podabrus sp. A soldier beetle	tA, bF	Buchans Road, Star Lake Road, Salmonier, Jct. Argentia Road	0.5	4
Pontania sp. A sawfly	W	3.2 km S. of Robinsons River Road	100.0	1
Pristiphora geniculata (Htg.) Mountain ash sawfly	Ash	Throughout Island	58.6	24
Protoboarmia porcelaria indicataria (Wlk.) Dotted line looper	bF, bPo	Crabbes River Prov. Park, 3.5 km S. of Gander Bay South	3.5	2
Sciaphila duplex Wlshm. Poplar leafroller	tA	Millertown Jct., 4.8 km S. of Crabbes Road (T.C.H.)	1.8	2
Scoliopteryx libatrix (Linn.) Willow scalloped owlet	W	Aspen Pond Road, Come By Chance	0.3	2
Semiothisa sp. A looper	bF, bS	St. Andrews, Journois Brook, Kenamu River, Districts 101, 103 and 109	0.4	11
Stilpnotia salicis (Linn.) Satin moth	W, bPo, tA	Lewisporte, Indian Arm Pond, Stephenville, Corner Brook, Crabbes River Prov. Park, Lomond River, Gales Brook	11.4	7

OTHER NOTEWORTHY INSECTS - Concluded

Species	Host(s)	Locality	Average per tree	No. of collections
Syneta sp. A leaf beetle	W, bS, bF	Bottom Brook Road, Camp 33 Road, District 106, Conne River Pond	0.3	6
Syngrapha alias (Ottol.) Spruce climbing cutworm	bF	7.0 km W. of Springdale Jct. 7.5 km S.W. of Badger, St. Joseph's Cove, Pynn's Brook, South Brook Valley, Petley	0.3	6
Vasates quadripes (Shimer) Maple bladdergall mite	rM	Campbellton Road	50.0	1
Zeiraphera canadensis M. & F. Spruce bud moth	wS	St. Phillips	1.2	1

IMPORTANT FOREST DISEASES

Stem and Branch Cankers of Lombardy Poplar, Dothichiza populea Sacc. & Briard. — These cankers continued to be the most serious disease throughout the Island. Moderate to high incidence of the disease was observed in several urban areas on mature and immature trees. Detailed surveys in Corner Brook show that the disease affected 85% to 100% of the trees along streets and caused tree mortality from 3% to 69% and crown mortality from 13% to 90%. Trees in St. John's and Grand Falls were also affected.

Leaf and Twig Blight of Trembling Aspen, Pollacia radiosa (Lib.) Bald. & Cif. — This disease caused moderate to severe infection on the Sandy Lake and Rattling Brook roads near Grand Falls, near Badger and the junction of the Trans Canada Highway and Springdale Road and on the Gander Bay Road near Carmanville. Approximately 75% of the new shoots were killed in stands in these areas. Light damage occurred in the Loon Bay area, Lewisporte, Mill Brook and near Sheffield Lake.

Broom Rusts of Conifers — The incidence of rust of balsam fir, Melampsorella caryophyllacearum Schroet., and black spruce, Chrysomyxa arctostaphyli Diet., were widespread throughout central and eastern Newfoundland. The infection was estimated to range from 12% to 60% on balsam fir and 8% to 30% on black spruce. In most cases damage was more severe on mature trees than on regeneration.

Witches' Broom of Black Spruce, Arceuthobium pusillum Peck — This disease caused moderate to severe damage in patches to poor, wet and low lying areas along the Trans Canada Highway between Trout Brook and Crabbes River and along the Southwest Brook woods road. The incidence of damage varied from 60% to 95%.

Needle Rust of Balsam Fir, Pucciniastrum epilobi Otth — The incidence of this disease was severe along the Goose Arm Road in western Newfoundland, affecting up to 100% of the needles on 50 to 90% of the new shoots of regeneration.

Ink Spot of Aspen, Cibornia whetzelii (Seav.) Seav. — A high incidence of ink spot was recorded on immature aspen in a 2 hectare stand near McIsaacs Brook affecting 100% of the stand and 50% of the foliage. Moderate damage occurred on the Baie Verte Peninsula at Wild Cove Brook and along the Baie Verte Road. Severe damage occurred in an immature stand of aspen in an area 4.8 km along the Churchill Road in Labrador. This same area was infected in 1974.

Winter Drying — This damage was observed on several species of hardwoods and softwoods throughout the Island and was more severe and widespread than the previous year. In eastern Newfoundland severe damage of tamarack occurred on the Avalon Peninsula and up to 80% of the new shoots were killed.

Moderate damage was observed on balsam fir in the Long Harbour area. In central Newfoundland severe damage occurred near Badger where 70 to 80% damage of tamarack was recorded along the Bay D'Espoir Road. In western Newfoundland light damage was observed at Three Mile Rock and in a 2 hectare area in the Gros Morne National Park. A light infection occurred on trembling aspen in the Squires Memorial Park along the Upper Humber River.

Frost Damage — Varying degrees of frost damage occurred on the Island and in Labrador. In eastern Newfoundland roadside larch stands between St. John's and Whitbourne and from Terra Nova National Park to Gander were moderately damaged. An estimated 80 to 90% of the current foliage was damaged on young balsam fir and black spruce near Grand Falls and in two locations along the Sandy Lake woods road. Two areas along the Northwest Gander River Road were also affected. One area was approximately 4 hectares and contained 90% black spruce regeneration with 40 to 60% damage. The second area was about 10 hectares of balsam fir regeneration with 5 to 10% damage. Many individual tamarack trees were also affected throughout central Newfoundland and damage ranged from 10 to 90%. In Labrador, severe shoot mortality to seedling balsam fir occurred in the Northwest River and Goose River areas.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina morbosa (Schw.) Arx Black knot	Cherry, pin	9.6 km S. Flat Bay Rd. (T.C.H.), York Harbour, Jct. Reidsville & Bonne Bay roads	Moderate infection
Cercospora salicina Ell. & Ev. Leaf spot	Willow	6.4 km W. of McIsaacs Brook (T.C.H.)	Light infection
Coccomyces hiemalis Higgins Shot hole	Cherry, pin	Goose Arm Rd.	Light infection
Cronartium ribicola J.C. Fischer White pine blister rust	Pine, white	4.8 km W. of Lake St. John	Moderate infection
Cytospora salicis (Cda.) Rabh. Stem canker	Willow	Piccadilly Head Prov. Park	Light infection
Cytospora sp. A canker	Willow	Robinson's River Road, Lady Slipper Road, Blue Pond Prov. Park	Moderate to high infection
Gloeosporium apocryptum Ell. & Ev. Large leaf spot	Maple, mountain	1.6 km S. of Georges Point	Moderate infection
Gymnosporangium cornutum Arth. ex Kern Rust gall (on leaves)	Ash, mountain	0.5 km N. of Newtown	High infection
Gymnosporangium claviceps (Cke. & Pk.) Cke. & Pk. Quince rust	Serviceberry	Nippers Harbour Road	Low incidence
Heat injury	Aspen, trembling	Sheffield Lake Road	Low incidence
Isthmiella faullii (Darker) Darker Needle cast	Fir, balsam	1.6 km S. of Lark Harbour	Trace of infection

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OTHER NOTEWORTHY DISEASES - Concluded

Organism and Disease	Host(s)	Locality	Remarks
Melampsora abietis-capraearum Tub. Leaf rust of willow	Willow	Main Dam Rd. (Deer Lake)	Trace of infection
Melampsorella caryophyllacearum Schroet. Yellow witches' broom	Fir, balsam	Jct. Old Man's Pond & Goose Arm roads, Jct. Cormack & Adies Lake roads, 1.6 km N. of Alexanders, Windsor Lake	Light infection
Mycosphaerella sp. Leaf spot	Aspen, trembling	Hughes Brook	Light infection
Phyllosticta minima (Berk. & Curt.) Underw. and Earle Purple eye spot	Maple, red	Bonne Bay Road, Norris Point Road, North Lake Road	Light infection
Pollacia radiosa (Lib.) Bald. & Cif. Shoot and leaf blight of aspen	Aspen, trembling	Churchill Road, Hughes Brook, Holyrood	Light infection
Pucciniastrum epilobii Otth Needle rust of balsam fir	Fir, balsam	Belldowns Point, North Lake Road, Goose Arm Road, Goose River Road, Northwest River Road	Light to moderate infection
Rehmiellopsis balsameae Waterman Tip blight	Fir, balsam	3.2 km E. of Hillview, St. Joseph's, Windsor Lake	Light to moderate infection
Septoria betulae (Lib.) West. Leaf spot	Birch, white	Jct. Argentia Road and T.C.H.	Light infection
Winter drying	Aspen, trembling maple, mountain fir, balsam	Grand Lake Brook, Pasadena nursery, Sheaves Cove, Abrahams Cove, Squires Mem. Prov. Park	Low to high incidence

Tree Pest Extension Service Report 1976

An Urban Forestry Advisory program was established by the Newfoundland Forest Research Centre in 1975. One of the functions of this program was to provide a tree pest extension service as associated with the control of insects and diseases found on ornamental trees and shrubs. A continuing record of these insect and disease conditions in the urban centres of the province will appear in the Annual District Report, Forest Insect and Disease Survey. A spruce budworm egg mass survey was conducted in the municipal and private parks across the Island and the owners advised of the budworm damage expected in 1977. Requests for assistance during 1976 came from the following towns and cities: St. Georges, Stephenville, Corner Brook, Pasadena, Deer Lake, Grand Falls, Gander, Clarenville, Marystown, Mount Pearl and St. John's. Principal insects and diseases detected as a result of sampling in the major urban centres were as follows:

Corner Brook:	Spruce budworm, birch casebearer, satin moth, twig and stem canker of poplar.
Grand Falls:	Spruce budworm, birch casebearer, twig and stem canker of poplar.
Gander:	Spruce budworm, birch casebearer.
Clarenville:	Spruce budworm, birch casebearer.
Mount Pearl:	Spruce budworm, blackheaded budworm, larch needleworm.
St. John's:	Birch casebearer, mountain ash sawfly, twig and stem canker of poplar.

Other noteworthy insects and diseases:

OTHER NOTEWORTHY INSECTS

Species	Host(s)	Locality	Remarks
Acleris variana (Fern.) Blackheaded budworm	Black spruce White spruce Balsam fir	St. Phillips Mt. Pearl	Defoliation moderate.
Agrochola lota (Clerck 1759) A cutworm	Weeping willow	St. John's	First Canadian record of occurrence. St. John's 1976. Defoliation light.
Caliroa cerasi (L.) Pearslug	Cherry	St. John's	Defoliation light.
Choristoneura fumiferana (Clem.) Spruce budworm	Balsam fir Black spruce White spruce Colorado blue spruce	St. John's Clarenville Gander Grand Falls Corner Brook	The spruce budworm is now found in all major urban centres throughout Newfoundland.
Chrysomela falsa Brown Willow leaf beetle	Poplar	Gander	Defoliation moderate
Cinara spp. Twig aphid	Balsam fir	Bay Roberts Goulds	Damage light.
Coleophora fuscedinella (Zeller) Birch casebearer	White birch	St. John's Clarenville Gander Grand Falls Corner Brook Marystown	The birch casebearer is a common insect of ornamentals found throughout Newfoundland.
Compsolechia niveopulvella Chamb. Poplar leafroller		Corner Brook	

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OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Remarks
Cryptorhynchus lapathi (L.) Poplar and willow borer	Willow	St. Georges	Damage moderate.
Desmocerus palliatus (Forst.) Elder borer	Golden elder	St. John's	Damage light.
Dioryctria reniculelliodes Mut. & Mun. Spruce coneworm.	White spruce	Mt. Pearl	Damage light.
Fenusa pusilla (Lep.) Birch leafminer	White birch	Corner Brook Grand Falls St. John's	Defoliation light.
Fenusa ulmi Sund. Elm leafminer	American elm	St. John's	Defoliation light.
Monochamus scutellatus (Say) Whitespotted sawyer beetle	Balsam fir, black and white spruce logs	Pasadena Clarenville	Damage light.
Neodiprion sertifer (Geoff.) European pine sawfly	Scotch pine Jack pine Mugo pine	St. John's	Light defoliation recorded in St. John's area only.
Neurotoma inconspicua (Nort.) Plum webspinning sawfly	Cherry	St. John's	Defoliation light.
Nymphalis antiopa (L.) Spiny elm caterpillar	Willow spp.	Corner Brook	Defoliation light.
Ocnerostoma strobivora Free. White pine needleminer	Jack pine	St. John's	Defoliation moderate.
Periphyllus lyropictus (Kess.) Norway maple aphid	Maple spp.	St. John's	Damage light.

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OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Remarks
Pristiphora geniculata (Htg.) Mountain ash sawfly	Showy mountain ash	Corner Brook Gander St. John's	Found throughout Newfoundland but most noticeable in St. John's where light defoliation was recorded.
Scythridae spp. A scythrid moth	White ash	St. John's	Damage moderate.
Stilpnotia salicis (L.) Satin moth	All poplar species including trembling aspen	Corner Brook Stephenville and Stephenville Crossing Deer Lake Pasadena	Severe outbreaks in Corner Brook-Stephenville area during July and early August.
Swammerdamia pyrella Dev. Cherry micromoth	Hawthorn	St. John's	Defoliation light.
Vasates quadripedes (Shimer) Maple bladdergall mite	Maple spp.	St. John's	Damage light.
Zeiraphera improbana (Wlk.) Larch needleworm	Larch	Mt. Pearl	Defoliation moderate.
Household Insect Pests			
Camponotus herculeanus (L.) Red and black carpenter ant		St. John's	In mid-July flying carpenter ants quite numerous in St. John's area.
Forficula auricularia L. European earwig		St. John's	Detected in various locations throughout St. John's.

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OTHER NOTEWORTHY INSECTS - Continued

Species	Host(s)	Locality	Remarks
Tipula paludosa Meigen European crane fly		St. John's	Adult populations high on lawns throughout St. John's during September, October.
Infectious diseases			
Apiosporina morbosa (Schw.) Arx. Black knot	Cherry	St. John's Corner Brook	Moderate incidence on prunis spp. in St. John's and Corner Brook.
Cytospora chrysosperma (Pers.) Fr. Dothichiza populea Sacc. & Briard Stem and branch canker	Lombardy poplar	Corner Brook Deer Lake Grand Falls Bishops Falls Glovertown Topsail St. John's	The incidence of stem and branch canker caused by these diseases is now high with up to 40% mortality being recorded in the Corner Brook area. These diseases have spread throughout the urban centres in the Province.
Nectria galligena (Bres.) Stem and branch canker	Sycamore maple	St. John's Topsail	Damage moderate in Topsail area. Light in St. John's.
Taphrina aurea (Pers.) Fr. Leaf blister on poplar	Lombardy poplar	St. John's	Most noticeable on imported lombardy poplar saplings in the St. John's area.
Environmental factors			
Winter drying	Jack pine Scots pine Balsam fir Hicks yew (shrub)	Avalon Peninsula	Moderate damage to evergreens in exposed areas throughout the Avalon.

Cont'd ...

OTHER NOTEWORTHY INSECTS - Concluded

Species	Host(s)	Locality	Remarks
Wind	All species	Avalon Peninsula	Unusually high winds (100 km+) throughout the fall months lead to more than normal amount of tree mortality through uprooting and trunk breakage.
Climatic damage	Maple spp.	St. John's	Unseasonably warm temperatures in May led to early flushing of foliage. A sudden drop in temperature followed by high winds and snow caused new foliage to flush with an unusual ragged characteristic.