

SUMMARY OF FOREST INSECT AND DISEASE

CONDITIONS IN MANITOBA, 1976

BY

A.E. CAMPBELL AND V. HILDAHL

INFORMATION REPORT NOR-X-183
MARCH 1977

NORTHERN FOREST RESEARCH CENTRE
CANADIAN FORESTRY SERVICE
ENVIRONMENT CANADA
5320 - 122 STREET
EDMONTON, ALBERTA, CANADA
T6H 3S5

Campbell, A.E. and V. Hildahl. 1977. Summary of forest insect and disease conditions in Manitoba, 1976. Environ. Can., Can. For. Serv., North. For. Res. Cent. Inf. Rep. NOR-X-183.

ABSTRACT

This report presents the results of the 1976 annual survey of forest insects and diseases in Manitoba. Estimates of defoliation by the forest tent caterpillar (*Malacosoma disstria* Hbn.), jack pine budworm (*Choristoneura pinus pinus* Free), and spruce budworm (*Choristoneura fumiferana* Clem.) for 1977 are included.

RESUME

Ce rapport présente les résultats du lever du plan des insectes et maladies forestières en 1976 dans le Manitoba. A ceci s'ajoutent la prédiction du defeuillage en 1977 par la livrée des forêts (*Malacosoma disstria* Hbn.), la tordeuse du pin gris (*Choristoneura pinus pinus* Free) et la tordeuse des bourgeons de l'épinette (*Choristoneura fumiferana* Clem.).

CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
INSECT CONDITIONS.....	1
Forest Tent Caterpillar.....	1
Jack Pine Budworm.....	9
Spruce Budworm.....	17
Fall Cankerworm.....	21
Yellow-Headed Spruce Sawfly.....	23
Balsam Fir Sawfly.....	23
Larch Sawfly.....	23
Plant Lice.....	24
DISEASE CONDITIONS.....	24
OTHER NOTEWORTHY INSECTS AND DISEASES.....	25

INTRODUCTION

Weather conditions during the early spring were characterized by above-normal temperatures and much-below-normal precipitation. By early June, conditions returned to near normal, and very dry weather prevailed for the remainder of the season. The warmer temperatures initiated early hatching and feeding of the major forest insects, resulting in insect development earlier than normal by as much as 2 weeks.

The reports received and observations made suggest that drought conditions are occurring in several forest stands throughout the southern section of the province.

INSECT CONDITIONS

Forest Tent Caterpillar, *Malacosoma disstria* (Hbn.)

This species continues to be the most abundant forest insect pest occurring in the province. In the past 3 years it has caused severe defoliation to trembling aspen stands and other broad-leaved trees and shrubs throughout the southern section of the province. The outbreak now involves approximately 103 600 km² compared to 33 670 in 1975 and 11 700 in 1974. However, the intensity of the infestation appears to be lessening in several areas; this was particularly evident in the vicinity of The Narrows, where there was a marked reduction in the average number of egg bands per sample tree from 86 in 1975 to 1 in 1976. Similar counts were recorded at other sampling points during the process of fall egg band surveys but, in general, results of the surveys suggest that larval populations will remain sufficiently high to cause severe feeding damage again

in 1977. There is no evidence of a widespread buildup of natural control factors such as parasites, predators or disease, nor was there any indication that climatic conditions had any adverse effects on the populations. The flesh fly, *Sarcophaga aldrichi* Park, occurred throughout the infestation area and was observed in fairly high numbers at widely distributed points. Based on a mass collection of cocoons taken from several points within the infestation in early July, *S. aldrichi* represented 90% of a parasite complex emergence in addition to *Agria housei* Shewell, *Patelloa pachypyga* A. & W., and *Leschenaultia exul* Tns. Egg parasites, *Telenomus clisiocampae* Riley, *Ooencyrtus clisiocampae* Ash, and *Tetrastychus silvatus* Gah. were reared from egg bands collected at most of the sampling points within the infestation.

The effectiveness of aerial application of Malathion 50 EC for the control of forest tent caterpillar in agricultural and forested areas was generally fair to good. The Manitoba Departments of Agriculture, Entomology Section, and Tourism, Recreation and Cultural Affairs, Parks Branch, were involved in the treatment of 40 500 and 1820 ha respectively.

Egg band surveys to predict the severity of the infestation for 1977 were conducted in cooperation with the provincial departments of Agriculture, Entomology Section, and Tourism, Recreation and Cultural Affairs, Parks Branch (see Table 1). The predictions are based on the average number of egg bands from three trees by diameter class. Included is a map indicating the extent of the outbreak in 1976 (Fig. 1).

TABLE 1. Results of Egg Band Surveys for Predicting Forest Tent Caterpillar Defoliation at Preselected Sampling Points

Location	Defoliation			Predicted Defoliation
	1974	1975	1976	1977
<u>Provincial Parks</u>				
Spruce Woods	-	-	Light	Light
Birds Hill	Trace	Light	Light	Severe
Grand Beach	Severe	Severe	Severe	Severe
Hecla Island	Severe	Severe	Severe	Severe
Grindstone	-	-	-	Moderate-Severe
Turtle Mountain	Nil	Nil	Nil	Light
Manipogo	Severe	Severe	Severe	Severe
Grand Valley	Trace	Light	Severe	Severe
Asessippi	Light	Light	Moderate	Moderate
Moose Lake	-	-	Light	Light
Duck Mountain	-	-	-	Nil
St. Malo	-	-	Light	Light
Camp Morton	-	-	Severe	Severe
<u>Whiteshell</u>				
-Falcon Lake (E)	Trace	Nil	Severe	Severe
-Falcon Lake (W)	Trace	Nil	Severe	Severe
-West Hawk Lake	-	-	-	Severe
-Star Lake	-	-	-	Moderate
-Telford	Trace	Light	Light	Light
-Rennie	-	-	-	Severe
-Brereton Lake	Light	Nil	Light	Severe
-White Lake	-	-	-	Severe
-Jessica Lake	-	-	-	Severe
-Betula Lake	-	-	-	Severe
-Big Whiteshell Lake	Light	Moderate	Light	Severe
-Rennie River	Light	Light	Severe	Severe
-Nutimik Lake & Barrier Bay	Severe	Severe	Severe	Severe
-Dorothy Lake & Otter Falls	Severe	Severe	Severe	Severe
-Eleanor Lake	-	-	-	Severe
-North Park Entrance (307)	Light	Light	Severe	Moderate
-Point du Bois	-	-	-	Severe
<u>Provincial Picnic & Camping Sites</u>				
-Lee River	Severe	Severe	Severe	Moderate
-Poplar Bay	Light	Light	Moderate	Moderate
-Bird River & Lake	-	-	-	Severe

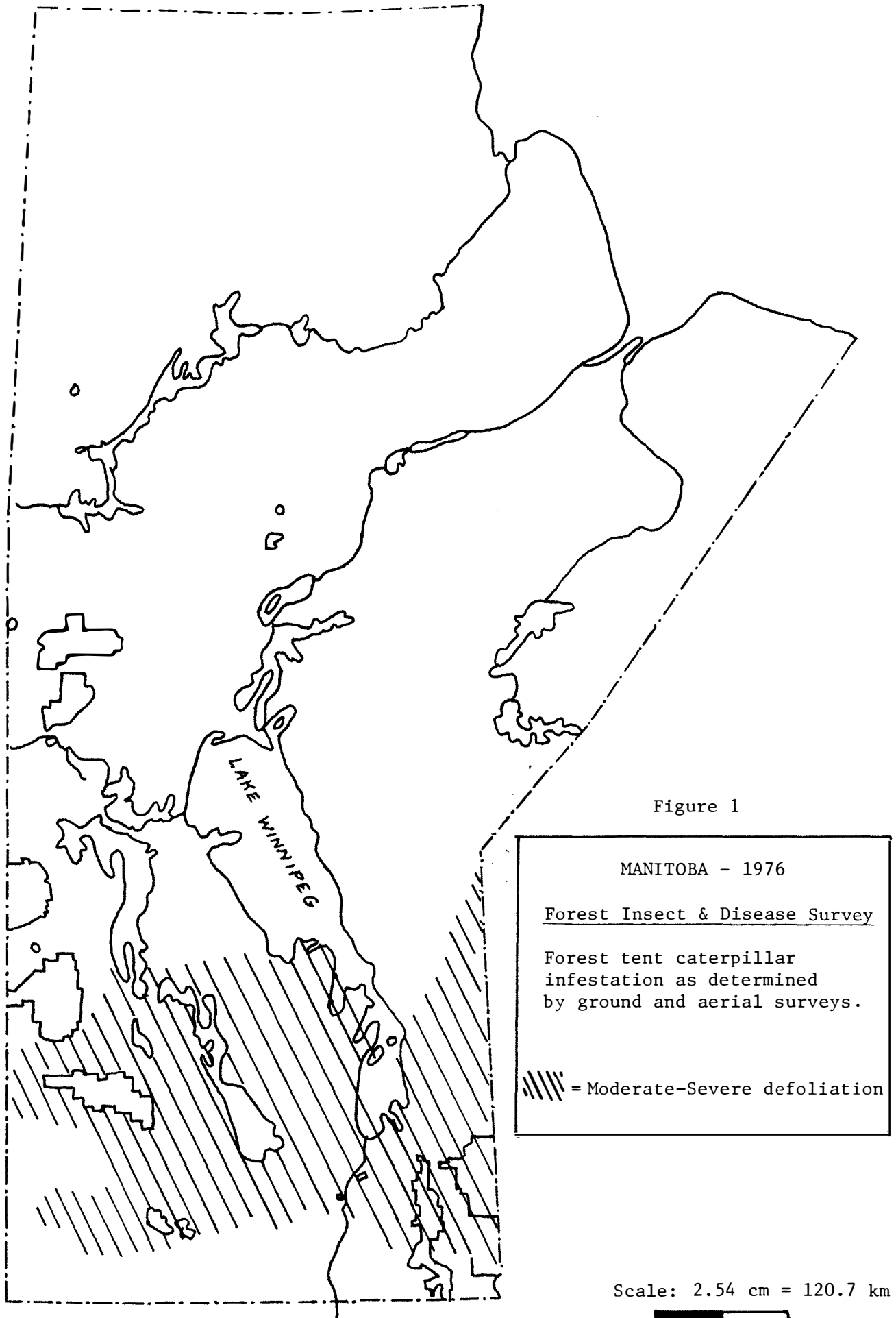
Location	Defoliation			Predicted
	1974	1975	1976	Defoliation 1977
-Seven Sisters	Moderate	Severe	Severe	Severe
-Lac du Bonnet	Nil	Light	Severe	Severe
-McArthur & Great Falls	Severe	Severe	Severe	Moderate-Severe
-Pine Falls	-	Severe	Severe	Severe
-Pinawa (Townsite & Channel)	Severe	Severe	Severe	Severe
-Whitemouth River	Light	Light	Severe	Severe
-Whitemouth Lake	-	-	-	Light
-Wampum & Sprague	Nil	Nil	Nil	Light
-Provincial Road #308	-	-	-	Moderate
-Black River	Light	Light	Moderate	Moderate
-Manigotagan	Light	Light	Moderate	Moderate
-Wanipigow River & Lake	-	Moderate	Light	Moderate
-Bissett	-	-	-	Moderate
-Quesnell Lake	-	-	-	Moderate
-Wallace Lake	-	Light	Light	Severe
-Hnausa	Severe	Severe	Severe	Moderate
-Beaver Creek	-	-	-	Light
-Pine Dock	-	-	Severe	Moderate
-Ste. Lakes	-	-	-	Severe
-Mantagac Lake	-	-	-	Severe
-Moosehorn (Watchorn Bay)	Severe	Severe	Severe	Severe
-Devils Lake	-	-	-	Light
-Waterhen River	-	-	-	Moderate
-Patricia Beach	-	-	-	Light
-Winnipeg Beach	Severe	Severe	Severe	Severe
-The Narrows	Severe	Severe	Severe	Light
-Alonsa	Severe	Severe	Severe	Severe
-Amaranth	Severe	Severe	Severe	Severe
-Turtle River #5 Highway	Severe	Severe	Severe	Severe
-Rainbow Beach	-	Severe	Severe	Severe
-Methley Beach	Severe	Severe	Severe	Severe
-Broken Pipe Lake #10 Highway	-	-	-	Severe
-Minnedosa River #10 Highway	-	-	Light	Severe
-Pine River	-	-	-	Light
-Lundar	Severe	Severe	Severe	Severe
-Binscarth	-	-	-	Light
-Rivers	-	Light	Light	Severe
-Hargrave (Virden-Kirkella)	Light	Light	Light	Light
-Killarney	-	-	-	Nil
-Wawanesa	-	-	-	Light
-Darlingford	-	-	-	Nil
-Keyes	Light	Severe	Severe	Severe

Location	Defoliation			Predicted
	1974	1975	1976	Defoliation 1977
<u>Agricultural Areas</u>				
-Anola	Severe	Severe	Severe	Moderate
-Lac du Bonnet	Nil	Light	Severe	Severe
-Eriksdale	Severe	Severe	Severe	Severe
-Inwood	-	Severe	Moderate	Severe
--Shorncliff	-	Severe	Severe	Severe
-Washow Bay	Severe	Severe	Severe	Moderate
-Langruth	Trace	Severe	Severe	Severe
-Amaranth	Severe	Severe	Severe	Severe
-Alonsa	Severe	Severe	Severe	Severe
-McCreary	Severe	Severe	Severe	Severe
-Ste. Rose du Lac	Severe	Severe	Severe	Moderate
-Laurier	-	-	-	Severe
-Eddystone-Shergrove	Severe	Severe	Severe	Light
-Chatfield	Severe	Severe	Severe	Severe
-Teulon	-	-	Light	Severe
-Lake Francis	-	-	Light	Severe
-Ashern	-	-	Severe	Severe
-Hodgson	-	-	Severe	Moderate
--Arborg	-	-	Severe	Moderate
-Lundar	-	Severe	Severe	Severe
-Broad Valley	-	-	-	Light
--Fraserwood	Severe	Severe	Severe	Moderate
--Stonewall	-	-	-	Moderate
--Woodlands	-	-	-	Severe
--Warren	-	-	-	Light
-Sylvan	-	-	-	Light
-Grahamdale	-	-	-	Severe
--Gypsumville	-	-	-	Light
-Oakbank	-	-	-	Light
--Dugald	-	-	-	Light
-Blumnort	-	-	-	Light
-Zhoda	-	-	-	Light
-Vita	-	-	Light	Light
-Tolstoi	-	-	-	Light
-Dominion City	-	-	-	Light
-St. Pierre	-	-	-	Light
-Aubigny	-	-	-	Light
-Springstein	-	-	-	Light
--Starbuck	-	-	-	Light
-Brunkild	-	-	-	Moderate
-Homewood	-	-	-	Light
-Elm Creek	-	-	-	Moderate
-St. Claude	-	-	-	Light

Location	Defoliation			Predicted
	1974	1975	1976	Defoliation 1977
-Morris	-	-	-	Severe
-Winkler	-	-	-	Moderate
-Darlingford	-	-	-	Nil
-Pilot Mound	-	-	-	Nil
-Cartwright	-	-	-	Light
-Killarney	-	-	-	Nil
-Belmont	-	-	-	Severe
-Stockton	-	-	-	Severe
-Holland	-	-	-	Severe
-Roseisle	-	-	-	Light
-Carman	-	-	Severe	Severe
-Portage la Prairie	-	-	-	Severe
-Austin	-	-	-	Severe
-Carberry	-	-	-	Severe
-Wawanesa	-	-	-	Light
-Nesbitt	-	-	-	Moderate
-Medora	-	-	-	Nil
-Melita	-	-	-	Nil
-Pierson	-	-	-	Nil
-Lyleton	-	-	-	Nil
-Pipestone	-	-	-	Light
-Sinclair	-	-	-	Nil
-Souris	-	-	-	Light
-Alexander	-	-	-	Light
-Hargrave	Light	Light	Light	Nil
-Kirkella	Light	Light	Light	Nil
-Birtle	-	-	-	Light
-Miniota	-	-	-	Light
-Clanwilliam	-	-	-	Severe
-Onanole	-	-	-	Light
-Westbourne	-	-	-	Severe
-Gladstone	-	-	-	Severe
-Keyes	-	-	-	Severe
-Neepawa	-	-	-	Severe
-Plumas	-	-	-	Severe
-Glenella	-	-	-	Severe
-Riding Mountain	-	-	-	Severe
-Kelwood	-	-	-	Severe
-Binscarth	-	-	-	Light
-Roblin	Light	Light	Light	Light
-Shortdale	-	-	-	Moderate
-Winnipegosis	-	-	Severe	Severe
-Rorketon	-	-	-	Light
-Garland	-	-	-	Light

Location	Defoliation			Predicted
	1974	1975	1976	Defoliation 1977
-Dauphin (5)	---	--	--	Severe
-Elma	--	---	---	Severe
-Red Rose	--	--	--	Moderate
-Sprague	--	--	Light	Light
<u>Forested Areas</u>				
-Cat Lake	--	---	--	Severe
-East Braintree	---	--	---	Severe
-Pine Dock	--	---	---	Moderate
-Anama Bay	--	---	---	Moderate
-Big Bend (513)	---	--	---	Moderate
-St. Martin	---	--	---	Severe
-Basket Lake (328)	---	--	---	Moderate
-Proulx Lake (328)	--	--	--	Severe
-Waterhen River	--	--	--	Moderate
-Meadow Portage	--	---	--	Moderate
-Pulp River (E. 271 & 20)	--	--	---	Severe
-Camperville	--	--	--	Light
<u>Provincial Forests</u>				
-Northwest Angle	--	--	--	Light
-Sandilands	--	--	--	Light
-Belair	--	--	--	Light
-Agassiz	--	--	--	Light-Moderate
-Spruce Woods	--	--	--	Light
-Duck Mountain	--	--	--	Light

Surveys were conducted in cooperation with field personnel of the Manitoba Parks Branch and Entomology Section of the Department of Agriculture, Winnipeg, Man.



Jack Pine Budworm, *Choristoneura pinus pinus* Free

Ground and aerial surveys confirmed the presence of high budworm populations attacking pine stands throughout the southern section of the province.

Light to severe defoliation occurred on current growth in Scots and jack pine plantations in the Spruce Woods Provincial Forest and in naturally growing jack pine stands in the Belair and Sandilands provincial forests, involving an estimated 21 412 ha on provincial and 1818 ha on private lands.

The Provincial Parks Branch conducted aerial spray operations in the Spruce Woods plantations for the control of this forest pest. Sumithion was applied at the rate of 114 ml/.4047 ha to approximately 484 ha which suffered moderate to severe defoliation in 1975. Based on pre- and postspray larval counts, the effectiveness of the spray was generally fair to good.

There was no serious top or branch mortality observed on host trees presently harboring high budworm populations in any of the outbreak areas.

Egg mass surveys were conducted in cooperation with the Manitoba Department of Tourism, Recreation and Cultural Affairs, Parks Branch, with assistance from the Forest Insect and Disease Survey section, Edmonton. Fourteen hundred and fifty branch samples were taken from 145 sampling points within the infestation. The results of these surveys are listed in Tables 2, 3, and 4.

Based on these egg counts, field surveys, observations, and past experience, it is expected that in 1977 jack pine budworm populations

will be sufficiently high to cause continued moderate to severe defoliation of jack pine stands within the present outbreak areas shown on Figs. 2 and 3.

TABLE 2. Jack Pine Budworm Egg Mass Surveys

Sampling Area: Sandilands Provincial Forest		Tree Species: Jack Pine	
Plot No.	Foliage area examined (m ²)	No. egg masses per 9.29 m ² foliage	Defoliation Prediction - 1977
1	1.486	44	Moderate
2	1.394	19	Light
3	1.207	130	Moderate
4	1.301	36	Light
5	0.929	0	Nil
6	1.022	9	Light
7	1.301	57	Light
8	1.022	9	Light
9	1.207	0	Nil
10	1.115	0	Nil
11	1.115	8	Light
12	1.394	41	Light
13	1.394	13	Light
14	1.301	0	Nil
15	1.301	0	Nil
16	1.301	70	Moderate
17	1.394	33	Light
18	1.207	198	Moderate
19	1.115	32	Light
20	1.115	74	Moderate
21	1.394	13	Light
22	1.301	0	Nil
23	1.301	7	Light
24	1.115	59	Moderate
25	1.115	9	Light
26	1.115	49	Light
27	1.486	18	Light
28	1.115	0	Nil
29	1.207	8	Light
30	1.115	17	Light

Plot No.	Foliage area examined (m ²)	No. egg masses per 9.29 m ² foliage	Defoliation Prediction - 1977
<hr/>			
31	0.846	21	Light
32	1.115	8	Light
33	1.486	19	Light
34	1.207	0	Nil
35	0.743	0	Nil
36	1.115	0	Nil
37	1.115	8	Light
38	1.207	8	Light
39	1.115	8	Light
40	1.022	9	Light
41	1.022	0	Nil
42	1.022	0	Nil
43	1.022	0	Nil
44	1.207	0	Nil
45	1.022	0	Nil
46	1.115	0	Nil
47	1.022	0	Nil
48	1.022	0	Nil
49	1.207	8	Light
50	1.207	16	Light
51	1.207	8	Light
52	1.115	16	Light
53	1.022	0	Nil
54	1.207	0	Nil
55	1.022	26	Light
56	1.022	0	Nil
57	1.301	15	Light
58	1.207	23	Light
59	1.207	7	Light
60	1.022	0	Nil
61	1.301	15	Light
62	1.207	0	Nil
63	1.301	0	Nil
64	1.207	8	Light
65	1.301	7	Light
66	1.022	17	Light
67	1.207	0	Nil
68	0.846	11	Light
69	1.115	0	Nil
70	1.486	0	Nil

Plot No.	Foliage area examined (m ²)	No. egg masses per 9.29 m ² foliage	Defoliation Prediction - 1977
<hr/>			
71	1.394	7	Light
72	0.929	10	Light
73	1.301	0	Nil
74	1.486	19	Light
75	1.394	0	Nil
76	1.301	0	Nil
77	1.858	0	Nil
78	1.394	0	Nil
79	1.394	0	Nil
80	1.301	0	Nil
81	1.115	0	Nil
82	1.115	0	Nil
83	1.301	7	Light
84	1.301	0	Nil
85	1.301	0	Nil
86	1.394	13	Light
87	1.022	0	Nil
88	1.301	0	Nil
89	1.115	25	Light
90	1.207	8	Light
91	1.115	8	Nil
92	1.207	7	Nil
93	1.672	6	Light
94	1.115	0	Nil
95	1.301	0	Nil
96	1.022	87	Moderate
97	1.207	8	Light
98	1.207	0	Nil
99	1.115	0	Nil
100	1.022	0	Nil

TABLE 3. Jack Pine Budworm Egg Mass Surveys

Sampling Area: Spruce Woods Provincial Forest Tree Species: Jack and Scots Pine			
Plot No.	Foliage area examined (m ²)	No. egg masses per 9.29 m ² foliage	Defoliation Prediction - 1977
1	1.394	6	Light
2	1.022	35	Light
3	1.301	0	Nil
4	1.115	33	Light
5	1.301	36	Light
6	1.207	8	Light
7	1.579	0	Nil
8	1.301	22	Light
9	1.394	0	Nil
10	1.394	0	Nil
11	1.301	7	Light
12	1.579	0	Nil
13	1.115	17	Light
14	1.672	0	Nil
15	1.207	8	Light
16	1.486	6	Light
17	1.579	23	Light
18	1.672	0	Nil
19	1.115	8	Light
20	1.394	7	Light
21	1.115	0	Nil
22	1.207	15	Light
23	1.207	31	Light
24	1.394	58	Moderate
25	1.022	111	Moderate
26	1.022	90	Moderate
27	1.022	80	Moderate
28	1.115	8	Light
29	0.929	99	Moderate
30	1.394	7	Light
31	1.115	0	Nil
32	1.301	7	Light
33	1.207	15	Light

TABLE 4. Jack Pine Budworm Egg Mass Surveys

Sampling Area: Belair Provincial Forest		Tree Species: Jack Pine	
Plot No.	Foliage area examined (m ²)	No. egg masses per 9.29 m ² foliage	Defoliation Prediction - 1977
1	1.301	117	Moderate
2	1.207	8	Light
3	1.301	7	Light
4	1.672	23	Light
5	1.394	74	Moderate
6	1.115	104	Moderate
7	1.207	61	Moderate
8	1.207	62	Moderate
9	1.022	28	Light
10	1.207	0	Nil
11	1.115	0	Nil
12	1.115	25	Light

T.7

Figure 2

MANITOBA - 1976

Forest Insect & Disease Survey

Jack pine budworm, *Choristoneura pinus* infestations as determined by aerial and ground surveys.

////// = Moderate-Severe defoliation

XXXXXX = Light defoliation

Scale: 0.63 cm = 1.16 km

T.6

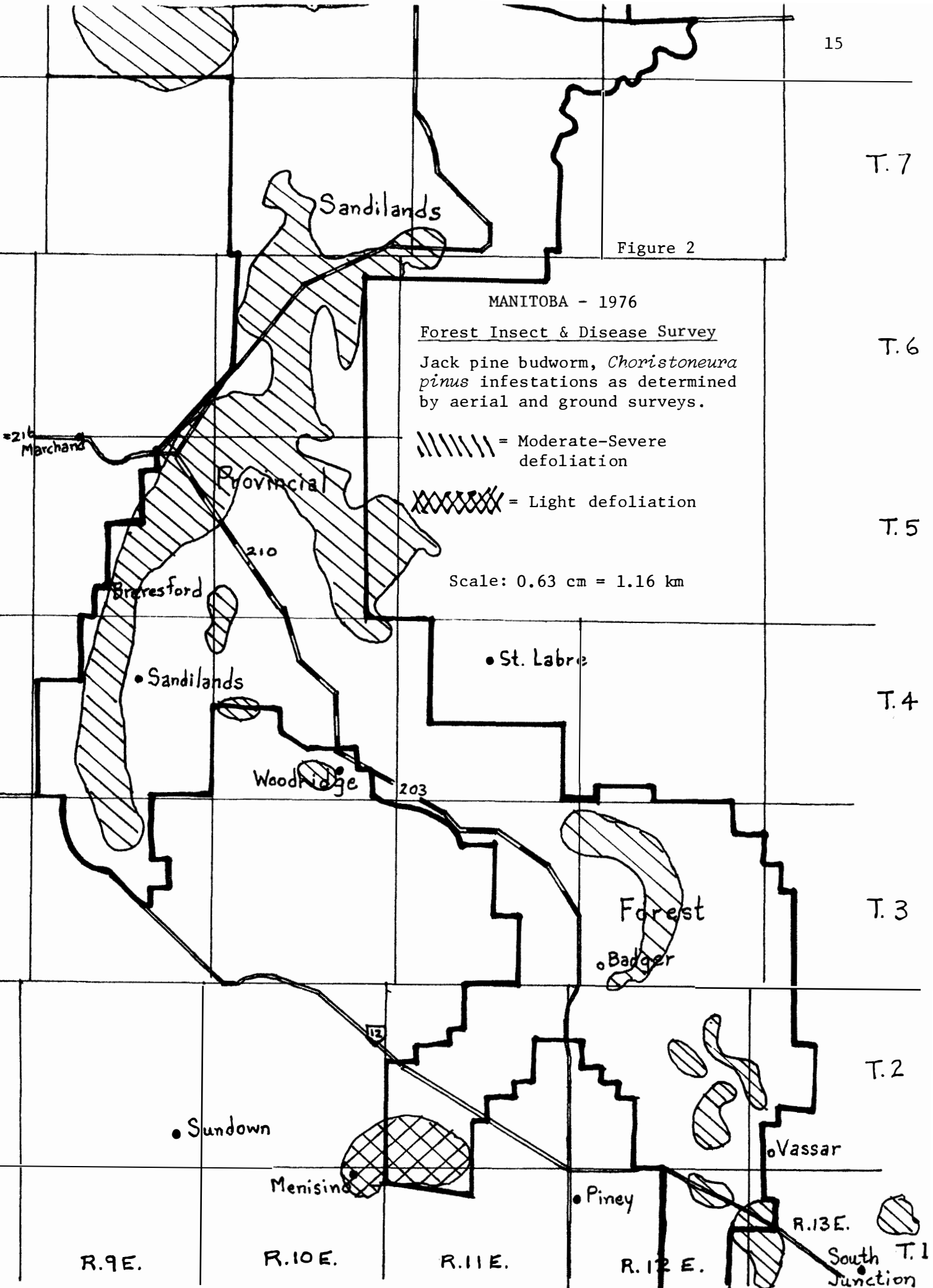
T.5

T.4

T.3

T.2

T.1





BELAIR PROVINCIAL FOREST

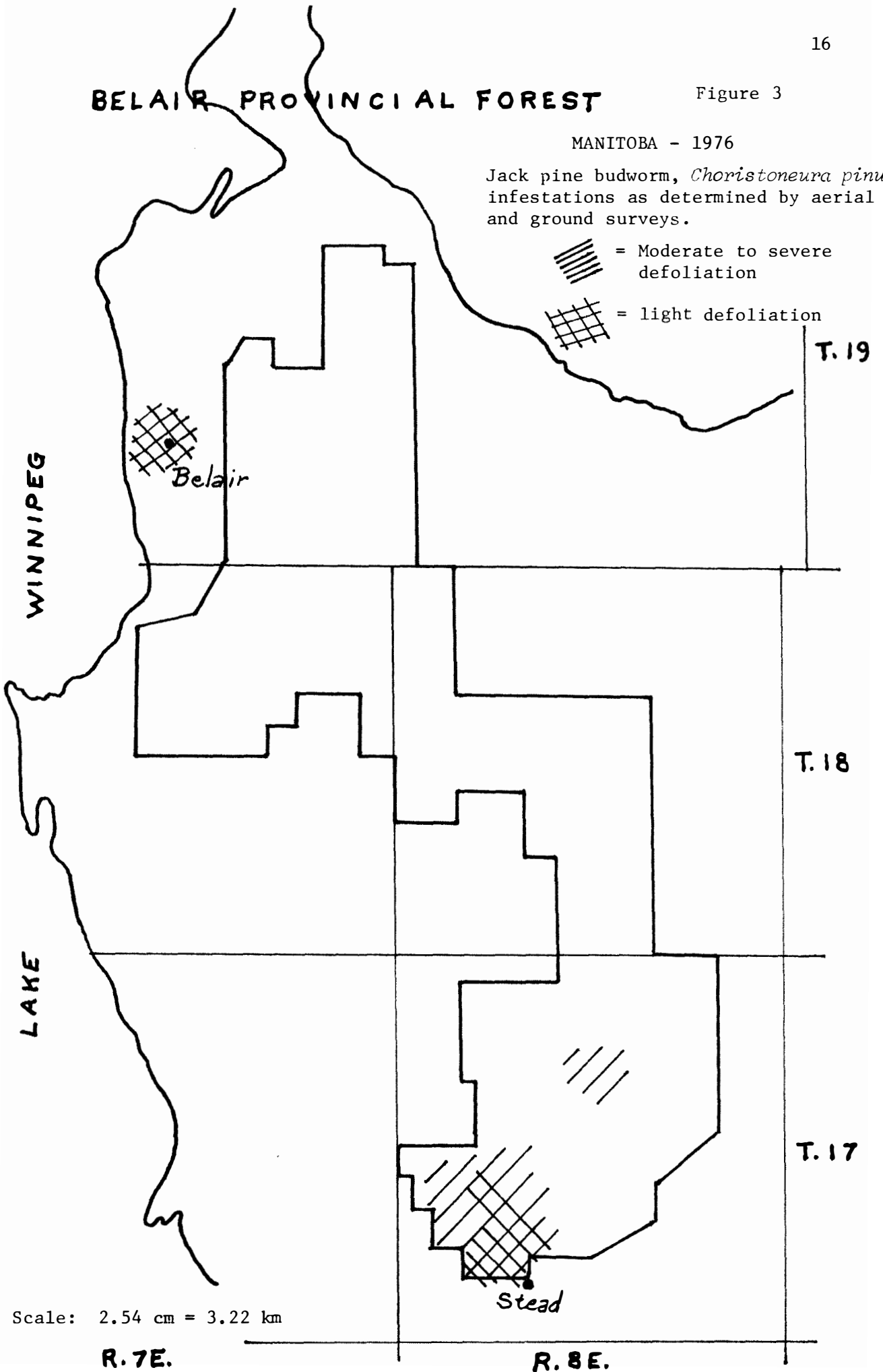
Figure 3

MANITOBA - 1976

Jack pine budworm, *Choristoneura pinus*
infestations as determined by aerial
and ground surveys.

 = Moderate to severe
defoliation

 = light defoliation



Scale: 2.54 cm = 3.22 km

R. 7E.

R. 8E.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

A significant increase in population of this important forest pest occurred in widely distributed host stands throughout the southern section of the province (Fig. 4).

Defoliation of current needle growth was generally moderate to severe within 1110 km² of agricultural and forested lands in the Interlake area. Feeding damage was particularly noticeable in the vicinities of Mulvihill, Camper, Arborg, Fisher Branch, and Riverton.

Light to moderate defoliation of white spruce also occurred in Grand Valley and Birds Hill provincial parks. The spruce needle miner, *Pulicavaria piceella* Kft. was also commonly associated with *C. fumiferana* in the latter area.

Spruce budworm populations in the Spruce Woods Provincial Park and Forest remain relatively high but feeding damage was not as conspicuous as in 1975. This could be attributed to the vigorous shoot growth on host trees for the past two years.


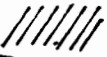
In the Whiteshell Provincial Park, moderate to severe defoliation was recorded on white spruce and balsam fir along Provincial Road 307 between Nutimik and Eleanor lakes, affecting an estimated 20 km².

Two small white spruce plantations (involving less than 60 ha) in Turtle Mountain Provincial Park suffered moderate to severe feeding damage to current growth.

Light feeding damage to current needle growth was observed on several planted white spruce near Lake Audy in the Riding Mountain National Park.

Forest Insect & Disease Survey

Spruce budworm infestations as determined by ground and aerial surveys.

-  = Moderate-Severe defoliation
-  = Light-Moderate defoliation

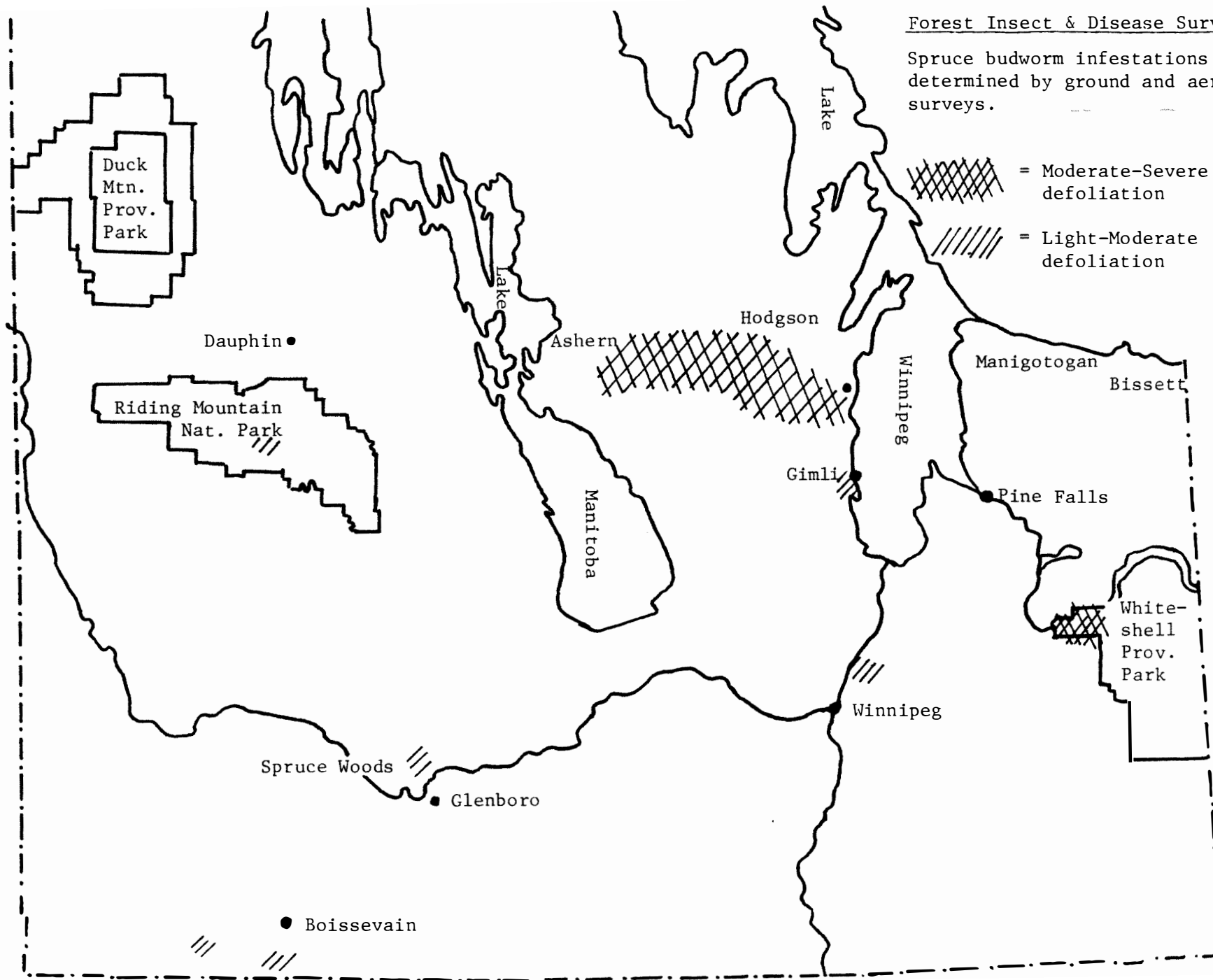


Figure 4

Except for occasional dead tops on host trees in the Spruce Woods and thinning of foliage in isolated stands in the Interlake resulting from feeding by this budworm, no other adverse effects that could be attributed to this insect were observed on host trees.

Egg mass surveys were conducted in cooperation with the Department of Tourism, Recreation and Cultural Affairs, Parks Branch, to determine 1977 infestation trends in the Whiteshell and Turtle Mountain provincial parks and in the Spruce Woods Provincial Park and Forest.

Results of the surveys, listed in Table 5, are based on Morris' sequential sampling technique for spruce budworm on balsam fir but slightly modified to apply to spruce in Manitoba. Generally speaking, the sampling procedure involves the removal of two 46-cm branch tips from the midcrown of host trees. The number of egg masses per 9.29 m² of foliage area examined is then calculated to determine the number of current egg masses that will cause light, moderate, and severe defoliation of current growth. Five trees were sampled in each plot.

TABLE 5. Spruce Budworm Egg Mass Surveys - 1976

Location	Plot Number	Tree Species	Foliage area examined m ²	Number of egg masses per 9.29 m ²	Defoliation Prediction for 1977
Whiteshell Provincial Park	1	White spruce	1.858	30	Light
	2	" "	1.951	29	Light
	3	" "	1.951	5	Light
	4	" "	1.765	26	Light
	5	" "	1.858	54	Moderate
	6	" "	1.951	10	Light
	7	" "	1.858	10	Light
	8	" "	1.858	15	Light
Turtle Mountain Provincial Park	35-37	White spruce	1.207	37	Moderate
	3-33	" "	1.394	97	Moderate
	2-40	" "	1.301	58	Moderate
	1-40	" "	1.207	150	Severe
	2-35	" "	1.765	47	Moderate
	1-N. Boundary	" "	1.579	629	Severe
	1-42	" "	1.579	12	Light
	2-42	" "	1.672	17	Light
	2-N. Boundary	" "	1.301	274	Severe
	1-35	" "	1.579	0	Nil
	1-32	" "	1.765	16	Light
	1-W. Cabin	" "	1.486	12	Light

Location	Plot Number	Tree Species	Foliage area examined m ²	Number of egg masses per 9.29 m ²	Defoliation Prediction for 1977
Spruce Woods Provincial Park & Forest	1	White spruce	1.115		Moderate
	2	" "	1.579		Severe
	3	" "	1.579		Moderate
	4	" "	1.486		Light
	5	" "	1.486		Light
	6	" "	1.394		Nil
	7	" "	1.486		Light

Fall Cankerworm, *Alsophila pomataria* (Harr.)

This insect, which had been abundant on deciduous trees throughout the agricultural area for the past several years, has almost disappeared from the Metropolitan area of Winnipeg, as well as from shelterbelts and windbreaks throughout the southern section of the province. Moderate defoliation was noted in several isolated shelterbelts in the vicinities of Winkler, Carman, Jordan, Morden, and at the junction of Provincial roads 32 and 201.

Although noticeable feeding damage was apparent in other areas, close examination of the injury established the forest tent caterpillar as the defoliator.

Egg mass surveys were conducted in cooperation with the provincial Department of Agriculture, Entomology Section, to predict 1977 infestation trends in the southern agricultural areas. Results are listed in Table 6.

TABLE 6. Fall Cankerworm Egg Mass Surveys to Predict 1977 Infestation
(Based on Examination of 0.6 to 0.9-m Branch Taken
from Two Trees at Midcrown)

Location	Tree species	Average dbh (cm)	Average ht. (m)	No. of egg masses		Infestation rating based on no. of egg masses per sample
				New	Old	
La Salle River at #2 Highway	American elm	12.7	7.92	0	0	Nil
La Salle River at #2 Highway	Manitoba maple	5.08	3.66	0	0	Nil
6 km S. Starbuck #332	American elm	20.32	9.14	0	13	Nil
8 km W., 5 km N. Brunkild	Manitoba maple	5.08	4.57	0	0	Nil
8 km W., 6 km N. Brunkild	Willow	5.08	5.49	0	0	Nil
8 km W., 8 km N., 1 m. W. Brunkild	Trembling aspen	5.08	3.66	0	0	Nil
1.6 km S., 8 km E. Elm Creek	American elm	12.7	7.32	0	0	Nil
"	Bur oak	5.08	4.88	0	0	Nil
"	Green ash	15.24	11.58	0	0	Nil
"	Trembling aspen	5.08	5.49	0	0	Nil
6 km E. Carman	Green ash	10.16	7.62	0	1	Nil
5 km S. Carman	American elm	10.16	7.62	1	5	Light
6 km S. Jordan	American elm	15.24	7.62	7	36	Light
6 km E. Morden	American elm	20.32	15.24	2	12	Light

Location	Tree species	Average dbh (cm)	Average ht. (m)	No. of egg masses		Infestation rating based on no. of egg masses per sample
				New	Old	
Chortitz	American elm	15.24	10.67	0	0	Nil
Osterwick	American elm	15.24	12.19	0	0	Nil
8 km E. Jct. #32 & 201	Green ash	10.16	7.62	0	0	Nil
1.6 km E., .4 km N. Jct. #32 & 201	Ash	20.32	15.24	3	9	Light

Yellow-headed Spruce Sawfly, *Pikonema alaskensis*

Moderate to severe defoliation occurred on young white spruce at Caddy Lake and at the junction of Highway 44 and Provincial Road 312 in the Whiteshell Provincial Park. Individual, open-growing white spruce in agricultural areas were also moderately defoliated.

Balsam Fir Sawfly, *Neodiprion abietis*

Low larval populations occurred on occasional balsam fir along Provincial Road 312 and near Dorothy Lake, causing light to moderate defoliation to old foliage on individual branches.

Larch Sawfly, *Pristiphora erichsonii*

This sawfly caused generally light defoliation to host trees near McMunn and along Highway 44, between Caddy Lake and Fish Hatchery Road.

Plant Lice, *Aphid* sp.

The most common species were the Cooley spruce gall and woolly elm aphids.

DISEASE CONDITIONS

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

Dutch elm disease became more widespread and severe in American elm stands throughout southern Manitoba in 1976. Increased incidence of diseased trees was particularly notable in the previously recorded outbreaks at Brandon and Selkirk. In addition, new localized outbreaks were recorded along the Brokenhead River from Scanterbury and Thalberg south to Sherwood Park and Beausejour, and in the Beaconia--Balsam Bay--Grand Beach areas on the southeast shore of Lake Winnipeg. Elsewhere, single infected trees were noted at Pine Falls, Albert Beach, Clandeboye, Matlock, Winnipeg Beach, and Gimli.

In the City of Winnipeg, the original outbreak in the Fort Garry area was held in check by sanitation measures implemented by the City Parks and Protection Division. Nevertheless, new infections involving approximately 80 trees were recorded in the Charleswood, Crescentwood, Bruce Park, St. Vital, and Transcona areas.

OTHER NOTEWORTHY INSECTS AND DISEASES

INSECTS

Causal Agent	Host	Remarks
<i>Aceria parapopuli</i> (Keifer), Poplar bud-gall mite	Hybrid poplars	Observed commonly in Winnipeg area and in parks.
<i>Bucculatrix canadensella</i> Cham., Birch skeletonizer	White birch	Low populations observed north of Riverton and in Winnipeg.
<i>Choristoneura conflictana</i> (Wlk.), Large aspen tortrix	Trembling aspen	Larvae commonly associated with forest tent caterpillar.
Eriophidae gall mites	American elm Green ash Manitoba maple	Common throughout host range in the province.
<i>Phenacaspis pinifoliae</i> (Fitch), Pine needle scale	White spruce Several species of pine	Light infestations in Metro Winnipeg and in plantations.

DISEASES

<i>Chrysomyxa ledicola</i> Lagh., Spruce needle rust	White spruce	Light infestations in the Whiteshell and Spruce Woods provincial parks.
<i>Hypoxyylon mammatum</i> (Wahl.) Miller, Hypoxyylon canker	Trembling aspen	Common in most host tree stands in the province.
<i>Venturia macularis</i> (Fr.), E. Muell & V. Arx., Aspen shoot blight	Trembling aspen	Light infestations in the Dauphin and Sifton areas and in the Duck Mountain Provincial Park and Forest.

