

Annual Reports of Forest Biology Rangers
Manitoba and Saskatchewan, 1954

by

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TABLE OF CONTENTS

Introduction	Page 1
1. Forest Biology Ranger Report for the Southern District of Manitoba	6
1.1 Introduction	7
1.2 Review of forest insects and tree diseases	7
1.3 Insect conditions	7
1.4 Tree disease conditions	23
1.5 Special collections	24
1.6 Summary of insect and tree disease collections . . .	25
1.7 Personnel contacted	27
2. Forest Biology Ranger Report for the Eastern District of Manitoba	28
2.1 Introduction	29
2.2 Review of forest insects and tree diseases	29
2.3 Insect conditions	30
2.4 Tree disease conditions	45
2.5 Special collections	48
2.6 Summary of insect and tree disease collections . . .	48
2.7 Personnel contacted	49
3. Forest Biology Ranger Report for the Western District of Manitoba	50
3.1 Introduction	51
3.2 Review of forest insects and tree diseases	51
3.3 Insect conditions	52
3.4 Tree disease conditions	62
3.5 Permanent sample stations	64
3.6 Special collections	67
3.7 Summary of insect and tree disease collections . . .	67
3.8 Personnel contacted	69
4. Forest Biology Ranger Report for the Northern District of Manitoba	70
4.1 Introduction	71
4.2 Review of forest insects and tree diseases	71
4.3 Insect conditions	72
4.4 Tree disease conditions	83
4.5 Permanent sample plots	85
4.6 Special collections	85
4.7 Summary of insect and tree disease collections . . .	86
4.8 Personnel contacted	87

	Page
5. Forest Biology Ranger Report for the Hudson Bay District of Saskatchewan	88
5.1 Intorduction	89
5.2 Review of forest insects and tree diseases	89
5.3 Insect conditions	89
5.4 Tree disease conditions	102
5.5 Permanent sample plots and stations	104
5.6 Special collections	105
5.7 Summary of insect and tree disease collections . .	106
5.8 Personnel contacted	107
6. Forest Biology Ranger Report for the Prince Albert District of Saskatchewan	108
6.1 Introduction	109
6.2 Review of forest insects and tree diseases	109
6.3 Insect conditions	110
6.4 Tree disease conditions	123
6.5 Special collections	128
6.6 Summary of insect and tree disease collections . .	129
6.7 Personnel contacted	129
7. Forest Biology Ranger Report for the Prince Albert National Park, Saskatchewan	131
7.1 Introduction	132
7.2 Review of forest insects and tree diseases	132
7.3 Insect conditions	132
7.4 Tree disease conditions	140
7.5 Permanent sample plots	143
7.6 Special collections	143
7.7 Summary of insect and tree disease collections . .	144
7.8 Personnel contacted	145
8. Forest Biology Ranger Report for the Northern District of Saskatchewan	146
8.1 Introduction	147
8.2 Review of forest insects and tree diseases	147
8.3 Insect conditions	148
8.4 Tree disease conditions	157
8.5 Permanent sample plots	161
8.6 Special collections	163
8.7 Summary of insect and tree disease collections . .	163
8.8 Personnel contacted	164
9. Forest Biology Ranger Report for the Meadow Lake District of Saskatchewan	166
9.1 Introduction	167
9.2 Review of forest insects and tree diseases	167
9.3 Insect conditions	168
9.4 Tree disease conditions	183
9.5 Special collections	186

	Page
9.6 Summary of insect and tree disease collections . .	186
9.7 Personnel contacted	187
10. Forest Biology Ranger Report for the Southwestern District of Saskatchewan	188
10.1 Introduction	189
10.2 Review of insect and tree disease conditions	189
10.3 Insect conditions	189
10.4 Tree disease conditions	195
10.5 Permanent sample stations	196
10.6 Personnel contacted	196
11. Forest Biology Ranger Report for the Southeastern District of Saskatchewan	197
11.1 Introduction	198
11.2 Review of insect and tree disease conditions	198
11.3 Insect conditions	199
11.4 Tree disease conditions	205

INTRODUCTION

In 1954, Forest Biology Rangers with headquarters at Winnipeg, were responsible for forest insect and tree disease surveys in both the forested and agricultural areas of Manitoba and Saskatchewan. Prior to 1954 a separate survey unit operated in the agricultural areas of the two provinces.

Field surveys in 1954 were organized on the basis of 10 survey districts as outlined in Figures 1 and 2. Districts in the forested areas in general paralleled the Forest Districts defined by the Manitoba Forest Service and the Department of Natural Resources in Saskatchewan. A Forest Biology Ranger was allocated to each of the 10 survey districts. Rangers were responsible for collecting insect and tree disease samples, mapping and recording infestations, and assessing populations and damage of the major insect and tree disease species. Individual reports outlining insect and tree disease conditions have been prepared by each ranger for his respective district.

Review of Major Insect Problems

Surveys conducted during recent years indicated that the major insect problems which occur periodically or continually in the forested areas of Manitoba and Saskatchewan are the larch sawfly, the forest tent caterpillar, the large aspen tortrix, the spruce budworm, and the jackpine budworm. The status of these species in the various districts is outlined in detail in individual district reports. Following is a general summary of their past and present status throughout the two provinces as a whole.

The present outbreak of the larch sawfly originated in the Western and Southern districts of Manitoba in the late 1930's. By 1945 the outbreak had spread north, east and west to include most tamarack stands in Manitoba and the Hudson Bay District of Saskatchewan. From 1945 to 1954, the northward and westward extension of the outbreak has continued until at the present practically all tamarack stands in the two provinces are infested. A general decline in populations of the insect is now evident in some of the older outbreak areas. The decline is most evident in the Western, Southern and Eastern districts of Manitoba and in the Hudson Bay and Prince Albert districts of Saskatchewan. The main body of the outbreak is now centred in the Meadow Lake and Northern districts of Saskatchewan. In these districts defoliation of tamarack was generally severe in 1954.

As the outbreak of larch sawfly developed, permanent survey sample plots were established throughout the two provinces. Annual defoliation records and more recently population changes have been recorded in the outbreak area. In some of the older infestations many tamarack stands have suffered heavy defoliation by the larch sawfly for from six to eight consecutive years. The principal effect on host trees has been a reduction in terminal shoot and foliage production and a subsequent reduction in

annual increment. Tallies in permanent sample plots have not revealed any extensive tree mortality definitely attributable to larch sawfly defoliation.

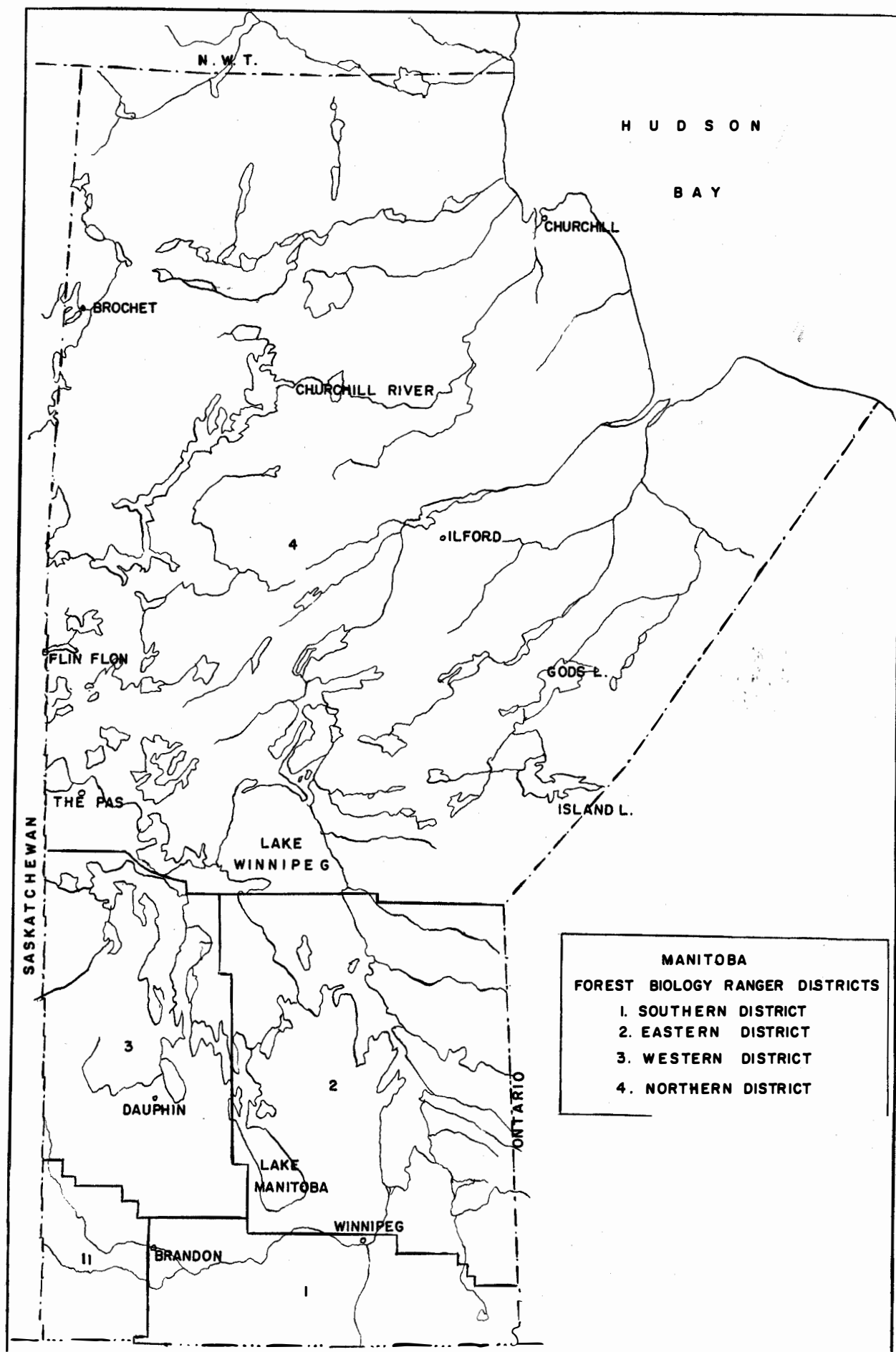
Periodic outbreaks of the forest tent caterpillar cause extensive defoliation of trembling aspen in Manitoba and Saskatchewan. Past records indicate that the outbreaks occur at approximately ten year intervals and normally high populations persist for periods of four to five years. The recent outbreaks originated in 1950 at widely separated points in the Meadow Lake District of Saskatchewan and the Southern District of Manitoba. In Manitoba the outbreak reached its peak in 1952, at that time covering approximately 1200 square miles. Populations in this area showed a marked decline in the spring of 1953. In Saskatchewan the outbreak reached a peak in 1953 covering approximately 3000 square miles through the Meadow Lake, Prince Albert and Northern districts. A marked decline in numbers was recorded in the Saskatchewan area in 1954. In both the Manitoba and Saskatchewan areas the outbreaks were terminated by unfavorable spring weather conditions, before reaching what would be considered maximum population limits. The period of severe defoliation did not exceed two years in any one outbreak area. Investigations elsewhere have shown that periods of four to six years of heavy defoliation of aspen by tent caterpillar will cause a reduction of annual increment. However, tree mortality is usually light and confined to mature and overmature stands.

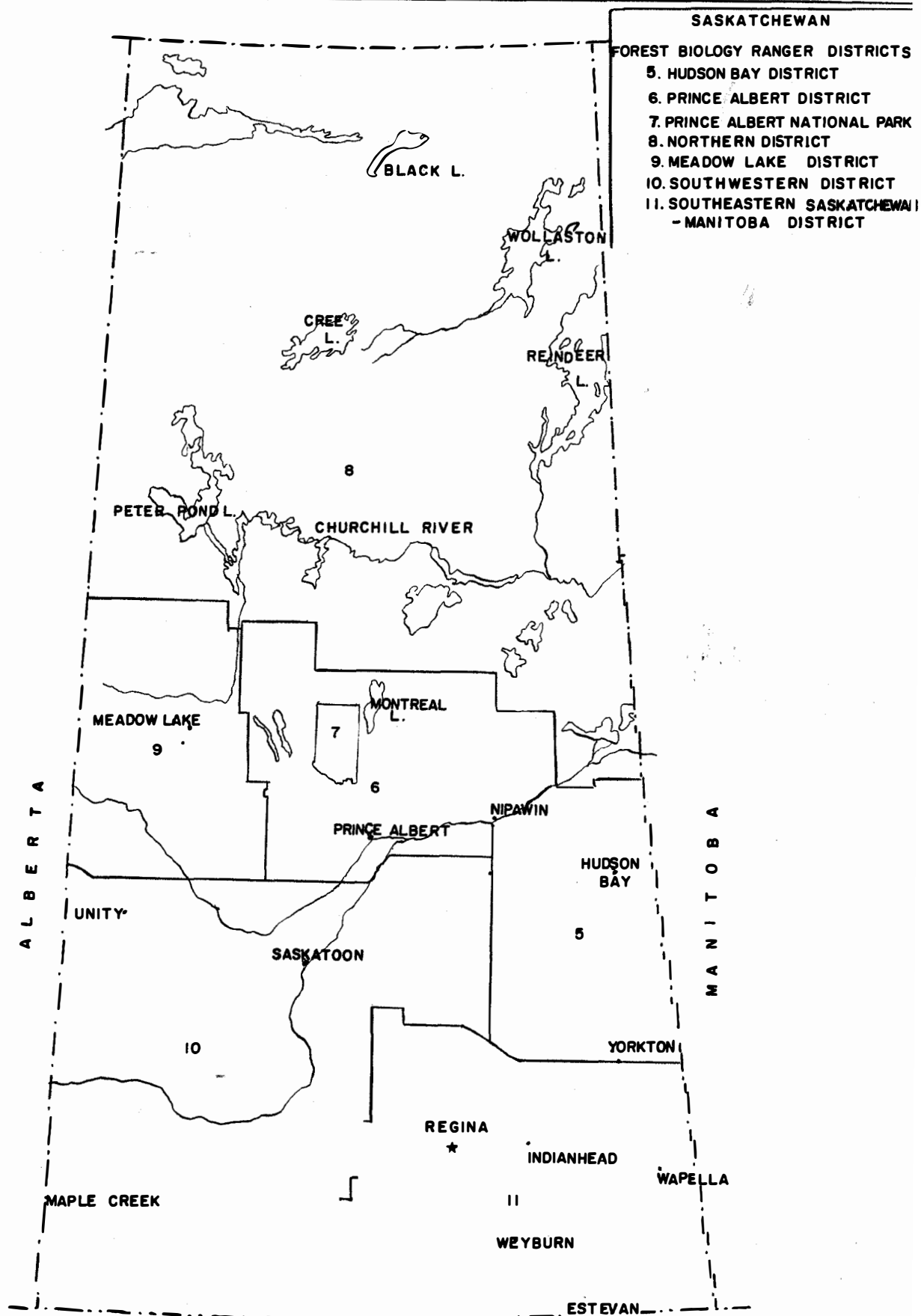
The large aspen tortrix is another insect species which commonly attacks trembling aspen. Periodic short-term outbreaks occur in the same stand types which support outbreaks of the forest tent caterpillar. In parts of the Meadow Lake District of Saskatchewan, aspen tortrix was found in outbreak numbers from 1948 to 1951. This was followed by an outbreak of the forest tent caterpillar (1952 - 1953). Aspen in parts of this area was heavily defoliated for five consecutive years. In 1954 the large aspen tortrix was at very low population levels throughout both provinces.

The spruce budworm is widely distributed through the forested areas of Manitoba and Saskatchewan, but outbreaks of this insect are usually of a local nature. A population of budworm has persisted in the Spruce Woods Forest Reserve, Manitoba, for many years, but has never reached severe proportions. More recently a similar condition has developed in the Namew Lake area on the Manitoba - Saskatchewan boundary. During the past three years the insect has been confined to a relatively small area with populations fairly static and defoliation damage confined to the new growth on spruce and regeneration balsam. During the early summer of 1954 there was a sudden increase in numbers of the spruce budworm in the extreme southeast corner of Manitoba. The appearance of the insect in this area was attributed to a "blow-in" during one of the migratory phases, from the Kenora - Sioux-Lookout area of Ontario. Egg surveys in the fall of 1954 indicated that the populations had not become established and relatively few budworm are expected in this area in 1955.

It is generally concluded that the stand-types in which budworm are present in Manitoba and Saskatchewan are not the type which support large scale outbreaks of this insect comparable to those that occur in the white spruce-balsam stands of Eastern Canada. However it is probable that the areas of Manitoba and Saskatchewan which now support white spruce and balsam regeneration will in the future, be more susceptible to this insect, since the quantity of balsam fir seems to be increasing.

The jackpine budworm is periodically present in outbreak numbers in the two provinces. In Saskatchewan an outbreak occurred in the Fort a la Corne Provincial Forest from 1939 to 1945. Although the insect is still present in this area, there has been no general increase in numbers during recent years. From 1939 to 1949 parts of the Sandilands Forest Reserve in Manitoba were heavily infested with this budworm. Some top-killing of jackpine was recorded in both the Saskatchewan and Manitoba outbreak areas. In 1953 and in 1954 a population increase of jackpine budworm was apparent in the Eastern and Southern districts of Manitoba. These increases may indicate the initial stages of another outbreak in the Manitoba area.





1. FOREST BIOLOGY RANGER REPORT

SOUTHERN DISTRICT

MANITOBA

1954

by

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CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

1.1. INTRODUCTION

Field surveys to determine the prevalence of forest insects and tree diseases were conducted in southern Manitoba from May until the latter part of October of 1954. Insect outbreaks were mapped and the abundance and distribution of lesser insects and tree diseases were recorded. Several mass collections of insect material were made for various personnel of the Winnipeg and other laboratories. Sampling of curled tips on tamarack was carried out to obtain estimate of larch sawfly populations. Spruce and jack-pine budworm egg surveys, forest tent caterpillar egg surveys and mass collections of larch sawfly cocoons were additional projects conducted in the Southern District in 1954.

A total of 460 insect collections and 33 tree disease collections were made in 1954. Approximately four hours flying time was provided by the Manitoba Forest Service which facilitated the mapping of insect outbreaks in areas otherwise inaccessible. The assistance and co-operation given by the Manitoba Forest Service and private co-operators is gratefully acknowledged.

1.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

Several changes in the status of some major insects were noted in southern Manitoba in 1954. Populations of the larch sawfly showed a general decline over most of the Southern District. Although high water levels were partially responsible for the lower populations, parasites and predators of the larch sawfly were again quite active and were considered an important control factor in some areas. A marked increase was noted in populations of spruce budworm and jack-pine budworm in 1954. However, a general outbreak of these species is not anticipated for 1955.

Populations of the American poplar leaf beetle, grey willow-leaf beetle, pitch nodule maker, yellow-headed spruce sawfly, black-headed budworm, and large aspen tortrix remained about the same as in 1953. An increase in populations of the white-pine weevil, a webworm on jack pine, and the spotted willow leaf beetle on alder, was recorded in the southern part of Manitoba.

A survey of forest tree diseases, conducted in the Southern District, revealed that Arceuthobium pusillum Peck., a mistletoe on black spruce was the most prominent disease. Several small collections of Arceuthobium americanum Nutt., a mistletoe on jack pine, were made but no increase was noted over 1953.

1.3. INSECT CONDITIONS

1.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

Tamarack stands throughout the Southern District of Manitoba were

again subjected to attack by the larch sawfly. However, a sharp decline in populations occurred in some areas. Reduced populations could be partially attributed to the high water levels which persisted in swamps for the most of the season. The accompanying map (Fig. 1) indicates the distribution and abundance of this species in 1954.

The first larch sawfly larvae were collected from a dry site, one mile east of Marchand, on June 22nd. Larvae development was rapid from this date on, and a small number of third and fourth instar larvae were recovered on June 30th. Adult sawflies were still active at this time and foliage production of tamarack was well advanced. Larch sawfly feeding was general throughout most of the district in the latter part of July and larvae of all instars could be found.

Light to moderate defoliation was recorded from Middlebro west to Sprague. East of Middlebro to the United States boundary defoliation was light and surface water was present in all tamarack stands throughout the summer. Tamarack stands from Sprague north to Moose Lake were lightly defoliated. Light defoliation was recorded west of Sprague to Piney with the exception of one swamp located in sec. 15, tp. 1, rge. 13, E.P. mer. in the vicinity of South Junction. Here defoliation was moderate. Light defoliation occurred in swamps north of Vassar to Whitemouth Lake. Moderate to heavy defoliation was recorded in sec. 3, tp. 2, rge. 11, E.P. mer. west of Piney. in sec. 3, tp. 2, rge. 10, E.P. mer. two miles west of Menisino.

Patches of light defoliation were recorded in scattered tamarack stands between Badger and Woodridge in the Sandilands Forest Reserve. Defoliation ranged from light to moderate on scattered tamarack from Woodridge west to the town of Sandilands. Light defoliation with occasional patches of moderate defoliation occurred from Woodridge south to Menisino. Moderate to heavy defoliation was recorded between the Sandilands Forest Reserve Headquarters and the town of Marchand. Approximately ten per cent of the tamarack in this area was completely stripped.

In the northern part of the Sandilands Forest Reserve two areas of moderate defoliation were recorded: in Plot No. 101 (sec. 31, tp. 7, rge. 10, E.P. mer.) and Plot No. 103 (sec. 32, tp. 7, rge. 11, E.P. mer.). Elsewhere only light defoliation occurred. Surface water was present in the above mentioned area throughout the summer. Light defoliation prevailed in all tamarack and black spruce swamps examined between Dawson Cabin and the town of Richer. Light to moderate defoliation occurred in scattered tamarack from Hadashville east to Prawda, McMunn, and East Braintree. Northeast of East Braintree along the Falcon Lake Road to No. 1 Highway, defoliation was light. Surface water was also present in most swamps in this area during the season.

Large stands of tamarack along the Greater Winnipeg Water District Railroad between East Braintree and Waugh were heavily defoliated.

An aerial survey of the inaccessible areas in southeastern

Manitoba was conducted, and defoliation estimates of this areas were as follows:

The flight originated at Lac du Bonnet and covered the area south of No. 1 Highway along the Manitoba-Ontario boundary to the United States boundary, west of Moose Lake to Whitemouth Lake and north along the Whitemouth River to Hadashville. Light feeding damage was observed along the south shore of Falcon Lake to Waugh. Moderate to heavy defoliation prevailed in large swamps in tps. 6 and 7 south of Waugh, then gradually becoming lighter farther south in the Harrison Creek area. The heaviest defoliation was recorded in the large tamarack and black spruce swamps along Stony Creek, northeast of Moose Lake. In this area, defoliation was severe. Light to moderate feeding damage occurred around Twin Lakes, Whitemouth Lake, and along the Whitemouth River to Hadashville. Moderate to heavy defoliation occurred in swamps five miles west of Hadashville. North and east of the Whitemouth River from Hadashville to Whitemouth, tamarack is very scattered and little or no defoliation was observed.

In the Spruce Woods Forest Reserve populations appeared low, and very little feeding damage was noted. Collections of larch sawfly larvae received from the agricultural area at the following places, Carman, Pilot Mound, and St. Elizabeth revealed that populations were low and no defoliation was reported.

The last larch sawfly larvae were collected on August 26 in the Sandilands Forest Reserve, and by the first week of September, cocooning was completed. Refoliation of defoliated trees was generally good throughout most of southern Manitoba.

During the season a number of mass collections of larch sawfly cocoons were made in the Southern District of Manitoba. The cocoons were collected for the purpose of determining by dissection the distribution and incidence of parasites. The location and number of cocoons contained in each collection are shown in Table 1.

TABLE 1

Larch Sawfly Cocoon Collections

Plot No.	Place	Sec.	Tp.	Rge.	Mer.	No. of cocoons collected
101	Sandilands Forest Reserve	36	7	10	E.P.	350
102	" " "	5	8	11	E.P.	350
103	" " "	32	7	11	E.P.	400
104	" " "	2	8	11	E.P.	400
106	Falcon Lake	8	9	17	E.P.	350
	East Braintree	33	7	14	E.P.	200
	Sprague	16	1	14	E.P.	200

Results of dissections of the larch sawfly are shown in Table 2. Bessa harveyi (T.T.) and Mesoleius tenthredinis Morley are still the two main larval parasites of the larch sawfly. B. harveyi still continues to be the most prominent parasite in the Southern District and showed a rise of approximately 17 per cent over the previous year. There was also a slight increase in the abundance of the parasite, M. tenthredinis and effective parasitism by this species in 1954 was 4 per cent. The chalcid parasite, Tritneptis klugii (Ratz.), was not recovered in 1954.

TABLE 2

Summary of Larch Sawfly Parasitism Determined by Dissections

Place	No. of cocoons examined	No. of larch sawfly larvae containing Mesoleius		Per cent effective parasitism based on living larvae			% cocoons diseased	% dead from other causes
				Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
		Eggs	Larvae					
Sandilands For. Res.	350	0	2	31.4	.7	0	38.2	0
" " "	300	0	2	30.2	.9	0	30	1.6
" " "	400	0	3	39.5	.9	0	17	1.2
" " "	400	2	0	27.4	.0	0	16.2	.2
Falcon Lake	350	1	0	25.2	.0	0	16.3	1.7
East Braintree	200	8	1	21.8	.6	0	10.5	1.5
Sprague	200	0	6	26.7	3.8	0	20.5	1.

**SOUTHERN DISTRICT
MANITOBA**

FOREST INSECT AND DISEASE SURVEY WINNIPEG

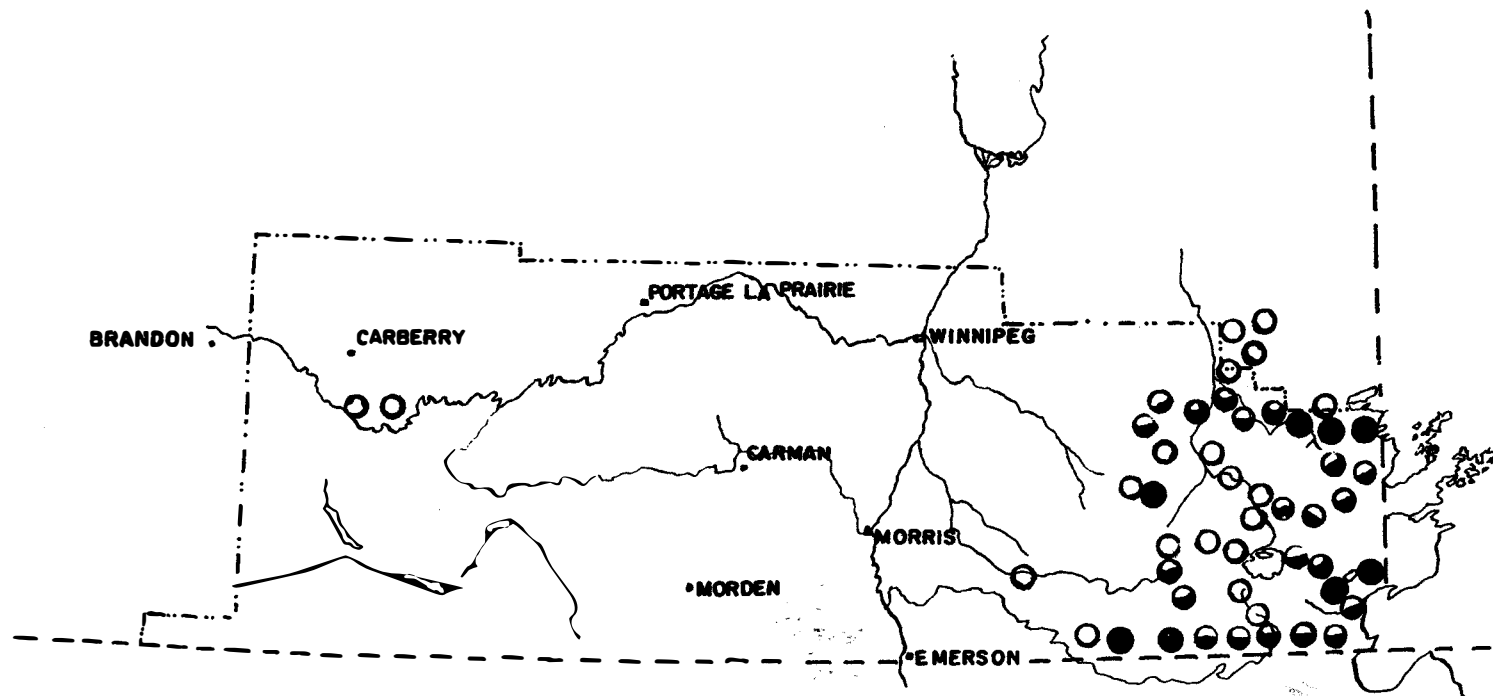
LARCH SAWFLY DISTRIBUTION

1954

**AS DETERMINED BY GROUND
AND AERIAL SURVEYS**

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



1.3.2. Spruce Budworm, Choristoneura fumiferana (Clem.)

A sudden increase in the distribution and abundance of the spruce budworm was recorded in the extreme southeastern part of Manitoba in 1954. The sudden appearance of larvae in this area is thought to be due to dispersal (during one of the migratory phases) out of the Kenora-Souix-Lookout outbreak area. The distribution and relative abundance of this insect as determined by ground surveys in the Southern District of Manitoba is shown in Fig. 2.

From Moose Lake south to Sprague, and west through South Junction, Vassar, Piney and thence north through Sandilands Forest Reserve, ground surveys revealed larvae of the spruce budworm feeding on the new growth of white and black spruce and even isolated tamarack. Although larvae were common on these hosts, defoliation was relatively light. Egg surveys conducted through this area during the fall revealed very few egg clusters, indicating that budworm populations did not become established. No increase in the abundance of this insect is expected in 1955.

Elsewhere in the district light populations were recorded from Falcon Lake south through East Braintree and west to McMunn and Hadashville. Fairly heavy concentrations of larvae were found in two small spruce stands (sec. 19, tp. 7, rge. 11, E.P. mer. and sec. 35, tp. 5, rge. 9, E.P. mer.) in the Sandilands Forest Reserve.

In the Spruce Woods Forest Reserve, where a resident population of budworm has been recorded for many years, the distribution and abundance was about the same as in 1953. A slight increase in numbers was recorded in the old campsite area on the road to Camp Hughes. Light feeding damage to white spruce was observed east and west of Carberry along No. 1 Highway.

A number of larval and pupal population counts were carried out in the southeastern part of Manitoba. Two methods of sampling were employed, the first consisted of four 18" branches taken from each of five trees (Table 3), and the second based on the examination of a number of terminals taken from four 18" branches from each tree (Table 4).

**SOUTHERN DISTRICT
MANITOBA**

FOREST INSECT AND DISEASE SURVEY WINNIPEG

DISTRIBUTION OF
SPRUCE BUDWORM

1954

○ LIGHT

Fig. 2

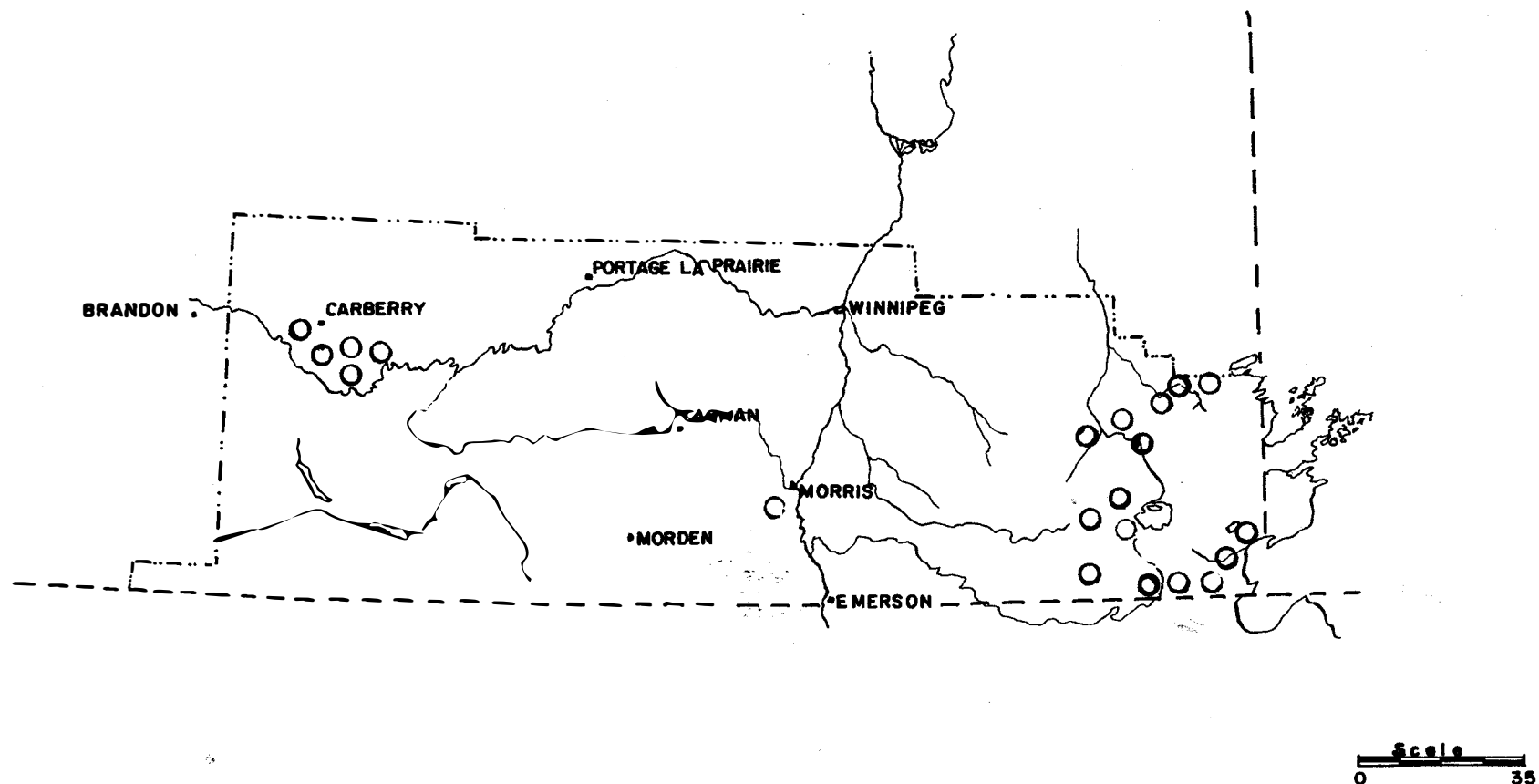


TABLE 3

Summary of Spruce Budworm Counts Based on Examination of Four 18"
Branches from Each Tree

Place	Location	Population counts		
		Tree no.	Larvae	Pupae
Sandilands For. Res.	Sec. 19, tp. 7, rge. 11, E.P. mer.	1	4	-
		2	2	-
		3	3	-
		4	2	-
		5	3	-
Sandilands For. Res.	Sec. 35, tp. 5, rge. 9, E.P. mer.	1	1	1
		2	3	-
		3	4	-
		4	23	9
		5	4	-
Falcon Lake Road	Sec. 18, tp. 8, rge. 11, E.P. mer.	1	4	3
		2	6	-
		3	3	1
		4	4	-
		5	7	-
McMunn	Sec. 31, tp. 7, rge. 14, E.P. mer.	1	2	-
		2	3	1
		3	2	5
		4	1	3
		5	-	3
Moose Lake	Sec. 5, tp. 3, rge. 15, E.P. mer.	1	2	1
		2	-	2
		3	-	5
		4	-	3
		5	-	1

TABLE 4

Summary of Spruce Budworm Counts Based on Examination of Spruce and Balsam Terminals

Place	Location	Host tree	No. of buds examined	No. of buds infested	% buds infested
Sandilands F.R.	Sec. 21, tp. 7, rge. 11, E.P. mer.	Spruce	200	4	2
Sandilands F.R.	Sec. 20, tp. 7, rge. 11, E.P. mer.	Spruce	269	28	10.4
Sandilands F.R.	Sec. 30, tp. 7, rge. 11, E.P. mer.	Balsam	240	4	1.6
Sandilands F.R.	Sec. 14, tp. 7, rge. 11, E.P. mer.	Spruce	453	12	2.6
Sandilands F.R.	Sec. 35, tp. 5, rge. 9, E.P. mer.	Spruce	397	47	11.8

1.3.3. Jack-pine Budworm, Choristoneura pinus Free.

After an apparent absence of several years, jack-pine budworm populations increased markedly in 1954 and caused light to moderate defoliation in two separate areas in the Sandilands Forest Reserve.

The two infested areas were widely separated; the first was located in the extreme south and the second in the northern part of the Sandilands Forest Reserve. Although an extensive survey was carried out in the area between, only two small collections were recovered. Both collections were made along the road from St. Labre to Whitemouth Lake. The first jack-pine budworm larvae were collected on July 7; the last pupal collection was made on July 25.

In the south end of the Sandilands Forest Reserve populations were low and only light feeding damage was recorded. Collections were made by standard five-tree beating method. Trees in this area are open-growing orchard type. This area is located in sec. 33, 32, 31, tp. 1, rge. 11, E.P. mer. and sec. 4, 5, and 9, tp. 2, rge. 11, E.P. mer. between Piney and Menisino. The second area is located in the northwest corner of the Sandilands Forest Reserve in sec. 7, 6, and 5, tp. 8, rge. 10, E.P. mer. A ground and aerial survey was carried out in this locale and it was estimated that the infested area covered approximately 10 acres. Populations were relatively high and feeding damage ranged from moderate to heavy. The heaviest defoliation was recorded in the southwest corner of sec. 7, and reddening of the foliage was quite noticeable on a number of trees (Fig. 3). This is an open-growing stand of orchard type trees with branches growing to within two feet of the ground. Moderate defoliation occurred in the northeast corner of sec. 6. Trees here are much taller and feeding was mainly confined to the upper crown of the foliage. Elsewhere defoliation was light.

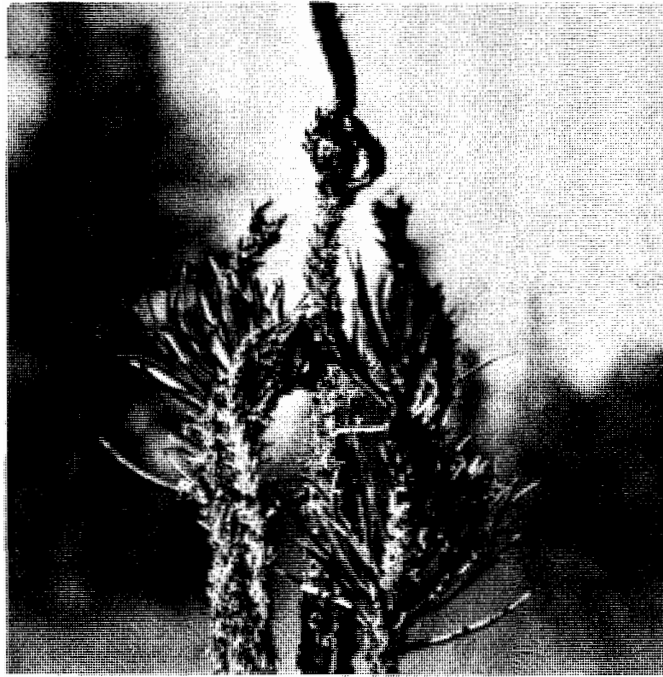


Figure 3. Leaders defoliated by the jack-pine budworm, Sandilands Forest Reserve, Manitoba.

Population counts were conducted in this area. Four 18-inch branch tips were taken from each of five trees and all larvae and pupae counted. The results obtained are shown in Table 5.

TABLE 5

Summary of Jack-pine Budworm Counts Based on Examination of Four 18" Branches from Each Tree

Place	Location	Tree No.	Larvae	Pupae	Emerged pupae
Sandilands F.R.	Sec. 7, tp. 8, rge. 10, E.P. mer.	1	1	21	3
		2	0	10	7
		3	4	36	16
		4	3	28	15
		5	2	49	20
Sandilands F.R.	Sec. 5, tp. 8, rge. 10, E.P. mer.	1	-	6	3
		2	2	5	1
		3	-	7	2
		4	1	2	4
		5	-	4	-

1.3.4. Black-headed Budworm, Accleris variana (Fern.)

No serious defoliation by this species was recorded from any part of southern Manitoba in 1954. One mass collection of larvae was made in the Spruce Woods Forest Reserve but defoliation was light. Collections were also made from the Sandilands Forest Reserve, West Hawk Lake, Turtle Mountain Forest Reserve, and from a farm shelter belt near the town of Myrtle. In all instances, very few larvae were collected and no visible damage was noted.

1.3.5. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly was commonly found on white spruce throughout most of southern Manitoba. The majority of collections were made from ornamental or open-growing spruce ranging in height from four to fifteen feet.

The heaviest populations occurred in the Spruce Woods Forest Reserve on mature trees. Defoliation was recorded as light at all sample points. Larvae were also collected from the following points: Falcon Lake, East Braintree, Waugh, Hadashville, Sandilands Forest Reserve, Marchand, Sprague, Moose Lake, Middlebro, Steinbach, Austin, Sidney, and Carberry.

1.3.6. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

This insect was generally found in association with the yellow-headed

spruce sawfly. However, populations were considerably lighter and the combined feeding damage of both species was recorded as light.

1.3.7. Forest Tent Caterpillar, Malacosoma disstria Hbn.

Two collections of this insect; one containing sixteen larvae, and another containing one larva, were taken from white poplar. The first was made two miles west of Menisino in sec. 3, tp. 2, rge. 10, E.P. mer. and the second in sec. 10, tp. 1, rge. 10, E.P. mer. near South Junction. Since populations were light, very little defoliation was evident.

A survey for the prevalence of egg bands was conducted in the late fall, but negative results were obtained at all points examined. The locations of the examination points are shown in Table 6.

TABLE 6

Summary of Forest ^{Tent} Caterpillar Egg Band Counts Based on Examination of Three White Poplar Trees at Six Points in the Southern District in 1954

Place	Location				Average D.B.H.	Average height	Average no. of egg bands
	Sec.	Tp.	Rge.	Mer.			
Middlebro	7	1	16	E.P.	3.3	21'	0
Moose Lake	28	2	15	E.P.	4.0	29'	0
Whitemouth L.	20	3	13	E.P.	3.5	28'	0
Piney	6	2	12	E.P.	3.9	24'	0
Sandilands F.R.	11	8	11	E.P.	3.8	29'	0
East Braintree	34	7	14	E.P.	4.1	23'	0

1.3.8. Spruce Needle Worm, Dioryctria reniculella Grt.

Populations of this insect were widely scattered in the Southern District and caused no defoliation. Collections were taken from the following points: Sandilands Forest Reserve, Spruce Woods Forest Reserve, and Assiniboine Park in Winnipeg.

1.3.9. Large Aspen Tortrix, Archips conflictana (Wlk.)

No heavy concentrations of this insect were encountered in white poplar stands in southern Manitoba. Collections were made in the Turtle Mountain Forest Reserve, Sandilands Forest Reserve, and at Falcon Lake.

1.3.10. American Poplar Beetle, Gonioctena americana (Schaeff.)

Several collections of this species were made in the West Hawk, Star, and Falcon Lakes areas. Defoliation was light and confined to second growth poplar. Collections were also taken at Sprague and in the Sandilands Forest Reserve, but no visible damage was recorded.

1.3.11. Grey Willow-Leaf Beetle, Galerucella decora (Say)

This insect was causing moderate to severe damage throughout most of southern Manitoba in 1954. The most severe damage was recorded in willow stands between Douglas and Carberry. Large areas of willow in this area were skeletonized to a burnt-over appearance. In the Turtle Mountain Forest Reserve and north through the agricultural areas to Boissevain, moderate feeding damage occurred. Moderate to heavy skeletonizing was recorded between Dawson Cabin and Hadashville in the northern part of the Sandilands Forest Reserve. Light to moderate damage was evidenced from East Braintree northeast to Falcon Lake. Damage to willow stands between Piney and Vassar and north of Sprague to Moose Lake was light to moderate. Light defoliation was also recorded at La Broquerie, Sarto, and Ninette.

1.3.12. Birch Leaf Skeletonizer, Bucculatrix canadensisella Chamb.

Skeletonizing of white birch by this insect was light in all areas where collected in 1954. The highest populations were recorded on scattered birch in sec. 35, tp. '5, rge. 9, E.P. mer. in the Sandilands Forest Reserve. Collections containing only a few larvae were also made at Marchand, Moose Lake, and Sprague.

1.3.13. Ugly-nest Caterpillar, Archips cerasivorana (Fitch)

Populations of this insect were relatively high throughout most of southern Manitoba. An especially high concentration of nests were observed west of Carberry along the trail leading into the Spruce Woods Forest Reserve. Oak as well as chokecherry was subjected to attack. Other areas of moderate to heavy damage was seen along the Dawson trail north of the Sandilands Forest Reserve Headquarters, and in the region between Woodridge and Garrick. Nests of this insect were also common along No. 12 Highway between Piney and Steinbach.

1.3.14. A Tent Caterpillar, Malacosoma lutescens (N. & D.)

This insect was widely distributed on chokecherry bushes in the Southern District. The heaviest populations were recorded in the west block of the Spruce Woods Forest Reserve and south of Carberry along the road leading into the east block. In the Sandilands Forest Reserve between Woodridge and Garrick, high populations also existed and moderate to heavy damage to chokecherry was recorded.

1.3.15. Spiny Elm Caterpillar, Nymphalis antiopa L.

Two collections of this insect were made from white poplar in the vicinity of Vassar in southeastern Manitoba. Populations were relatively high and defoliation, which was moderate to heavy, was confined to one or two trees in both instances. Light populations of this insect were reported from Portage la Prairie and Carman.

1.3.16. Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

This insect caused only light damage in all areas where collected in southern Manitoba in 1954. Collections were made in Sandilands Forest Reserve, Sundown, Whitemouth Lake, East Braintree, Falcon Lake, Middlebro, Spruce Woods Forest Reserve, and Turtle Mountain Forest Reserve.

1.3.17. Webworm on Poplar, Tetralopha asperatella Clem.

Collections of this insect were made at widely scattered points throughout the Southern District, but in all instances, very little damage occurred.

1.3.18. Spotless Fall Webworm, Hyphantria textor Harr.

One collection of the spotless fall webworm containing eighteen larvae, was made from birch in sec. 35, tp. 5, rge. 9, E.P. mer. of the Sandilands Forest Reserve. All the larvae were collected from one tree, which showed slight feeding damage on the lower foliage.

1.3.19. Yellow-Necked Caterpillar, Datana ministra (Drury)

Populations of this insect were found to be relatively high in some areas and were causing moderate to heavy defoliation to roadside willow between Middlebro, Sprague, and South Junction in southeastern Manitoba.

1.3.20. Pine Tortoise Scale, Toumeyella numismaticum (Pettit & McD.)

A decline in the overall population of this insect was evident in 1954. A small local outbreak east of Piney still existed but did not appear to be spreading to any extent. Elsewhere throughout the Sandilands Forest Reserve, populations had either receded or remained at about the same level as in 1953.

1.3.21. White-pine Weevil, Pissodes strobi (Peck)

An increase in populations of this insect was recorded in 1954. Dead and dying leaders of young jack pine were quite common in the Sandilands Forest Reserve, South Junction, Whitemouth Lake, and East Braintree areas. As in 1953, the heaviest damage was observed between Garrick and Woodridge in the Sandilands Forest Reserve. Another area of increased damage was recorded one mile west of South Junction on regeneration jack pine.

1.3.22. Pine Nodule Maker, Petrova albicapitana (Busck.)

No serious damage was caused by this insect in 1954. Several small collections were made from jack-pine regeneration at Middlebro, South Junction, Badger, Piney, and throughout the Sandilands Forest Reserve.

1.3.23. A Tube Maker, Acrobasis rubrifasciella Pack.

This tube maker was widely distributed and commonly found on alder throughout the Southern District. However, very little damage was recorded in any one area.

1.3.24. Bark Beetles, Ips pini Say

Areas of windblown timber examined at Falcon Lake, East Braintree, and in the Sandilands Forest Reserve revealed that bark beetle populations were relatively high. In the Sandilands Forest Reserve, approximately fifty per cent of the logs examined were infected.

1.3.25. Fall Cankerworm, Alsophila pometaria Harr.

A special survey for the prevalence of fall cankerworm on elm and maple was conducted throughout parks, boulevards and private lands in the greater Winnipeg area. Results of the survey indicated that this insect was widespread through the area but was causing only light defoliation. West of Winnipeg in the Brandon area, moderate defoliation occurred.

1.3.26. Birch Tube Maker, Acrobasis betulella Hlst.

No serious outbreak of this insect was encountered in birch stands in the Southern District. Several small collections were made from the following points: Piney, Moose Lake, and the Sandilands Forest Reserve.

1.3.27. Spotted Willow-Leaf Beetle, Chrysomela interrupta (Alver)

Populations of this insect were relatively high in the Sandilands Forest Reserve and surrounding areas. Clusters of this beetle, which appears to be gregarious, were found on alder. Another area of light to moderate defoliation occurred between the town of Marchand and Forest Reserve Headquarters. Several collections were also made from Piney, South Junction, and Sprague.

1.3.28. Jack-pine Webworm, Tetralopha robustella Zell.

An extensive survey for the prevalence of this jack-pine webworm conducted in southeastern Manitoba in 1954, indicated that it was more widely distributed through the district than in previous years. The main outbreak appeared to be centered in a stand of jack-pine regeneration one mile west of South Junction. Populations in this area, although relatively high, caused only moderate damage. Collections were also

made at Vassar, Whitemouth Lake Road, Piney, Badger, and other scattered points in the south portion of the Sandilands Forest Reserve. In all instances, populations were light and very little damage was noted.

1.3.29. Alder Sawfly, Hemichroa crocea (Fourc.)

Two collections of this insect were made in 1954. Both were taken from birch in the vicinity of Waugh in southeastern Manitoba, but little or no defoliation was recorded.

1.3.30. Black-headed Jack-pine Sawfly, Neodiprion banksianae Roh.

One collection of this sawfly was made from jack pine in the northern part of the Sandilands Forest Reserve, but no defoliation occurred.

1.3.31. Red-Pine Sawfly, Neodiprion nanulus Schedl.

Collections of this insect were confined to the southeastern corner of Manitoba; namely, the Moose Lake, Sandilands Forest Reserve, and Waugh areas. The heaviest populations were recorded from the Moose Lake area. Three special collections of Neodiprion colonies were made in this area. Red-pine sawfly was found feeding on both mature and regeneration red pine. On the smaller trees defoliation was recorded from light to moderate where as on the mature trees, where foliage was much heavier, defoliation was light. Other collections were made from jack pine, but only three or four larvae were collected and no defoliation was apparent.

1.4. TREE DISEASE CONDITIONS

1.4.1. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

The reported distribution and abundance of this disease remained about the same as in 1953. Widely scattered collections were made, but the only area of conspicuous damage was in sec. 30, tp. 7, rge. 11, E.P. mer. in the north end of the Sandilands Forest Reserve. A survey for the prevalence of the fungus, Wallothiella arceuthobii (Pk.) Sacc., which attacks the female flowers preventing seed maturation, was made, but no evidence of this fungus was found.

1.4.2. Mistletoe on Black Spruce, Arceuthobium pusillum Peck.

This mistletoe on black spruce was commonly found throughout most of southeastern Manitoba. It caused light to moderate damage to black spruce stands at Moose Lake, Sprague, South Junction, Piney, Sandilands Forest Reserve, McMunn, and Falcon Lake. No tree mortality has been noted in any of these areas to date.

1.4.3. White Trunk Rot, Fomes igniarius (L.) Gill

Several collections of this fungus were made from white poplar at widely scattered points throughout southern Manitoba.

1.4.5. Hypoxylon Canker of Poplar, Hypoxylon pruinatum (Klotsche.) Cke.

The known distribution of H. pruinatum remained much the same as in 1953. A heavy concentration of the disease was noted in the large poplar stands in the vicinity of Moose Lake in southeastern Manitoba.

1.4.6. Black Knot of Cherry, Dibotryon morbosum (Schw.) T. & S.

This disease, found on chekecherry, was observed to be widely distributed throughout southern Manitoba. Small local concentrations were recorded at Moose Lake, Piney, Sandilands Forest Reserve, Spruce Woods Forest Reserve, and in the East Braintree-Falcon Lake areas.

1.4.7. Slash Fungus on Poplar, Polyporus pargamensis (Fr.) Sacc.

Several collections of this disease were taken from white poplar in southeastern Manitoba. The purple-coloured fungus was collected from poplar slash only, and was recovered mainly in the Sandilands Forest Reserve.

1.4.8. Other Noteworthy Diseases

Host	Locality	Causal organism	Remarks
Balsam	Moose Lake	<u>Melampsorella cerastii</u> (Pers.) Schroet.	Yellow witches'-broom of balsam
Jack pine	Sandilands F.R.	<u>Cronartium comandrae</u> Peck	Spindle gall rust on stem and branches
White spruce	Sandilands F.R.	<u>Chrysomyxa pyrolae</u> (DC.) Arth.	Cone rust on white spruce
White poplar	Sandilands F.R.	<u>Trametes hispida</u>	Conks on white poplar
Willow	Sandilands F.R.	<u>Rhytisma salicinum</u> (Pers.) Fr.	Tar spot on willow

1.5. SPECIAL COLLECTIONS

A number of special collections were made during the season for various project workers at the Winnipeg and other laboratories. The type of collection and for whom collected is shown in the following table.

TABLE 8

Summary of Special Collections

Type and purpose of collection and for whom collected	No. of collections	Time spent collecting (including travel)
Spruce budworm larval collection for Dr. G. Stehr, Sault Ste. Marie (225)	1	1 day
Black-headed budworm larval collection for Dr. G. Stehr, Sault Ste. Marie (125).	1	5 hrs.
Larch sawfly larval collection for A. M. Heimpel, Sault Ste. Marie (500).	2	5 hrs.
Red-pine sawfly larval collection for Dr. Lambert, Ottawa (150).	2	2 hrs. 1 hr.
Larch sawfly cocoon collection for Winnipeg Lab, mouse predation study (1800).	10	6 days
Larch sawfly cocoon collection for Winnipeg Lab., parasite study (500).	2	2 days
Curled tips of tamarack for Winnipeg Lab., Insect population studies.	5	2 days
Tree rings from tamarack for Winnipeg Lab. for Tree response studies to L.S. attack.	5	1 day
Pine scale collections for R. R. Lejeune, Winnipeg Lab.	6	1½ days
Larch sawfly cocoon collections for J. Muldrew, Winnipeg Lab.	1	1 day

1.6. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The following table contains a summary of insect and tree disease collections obtained from the different tree species in the Southern District in 1954.

TABLE 7

Summary of Collections

Host tree	No. insect collections		No. disease collections	
	Ranger	Co-operator	Ranger	Co-operator
Tamarack	52	4	1	-
W. spruce	51	4	1	-
B. spruce	14	-	12	1
Jack pine	142	7	7	-
Balsam fir	10	-	3	-
Red pine	7	-	-	-
Cedar	1	-	-	-
Lodgepole pine	1	1	-	-
W. birch	41	2	1	-
S. birch	2	-	-	-
W. poplar	44	2	4	-
Balsam poplar	13	-	-	-
Bur oak	6	-	-	-
Alder	18	-	-	-
Willow	24	3	1	-
W. eml	9	-	-	-
M. maple	3	2	-	-
Chokecherry	18	1	3	-
Saskatoon	1	-	-	-
Hazel	1	-	-	-
Miscellaneous	-	11	-	-
Dogwood	-	1	-	-
Mountain maple	1	-	-	-

1.7. PERSONNEL CONTACTED

Name	Address	Title	No. of contacts
J. G. Somers	Winnipeg	Provincial Forester	1
W. Webster	"	District Forester	8
C. Smith	"	Forester	10
R. Hill	Marohand	Forest Ranger	15
E. Harrison	Sprague	Sr. Forest Ranger	6
W. Trowsdale	"	Forest Ranger	8
W. Meseman	Piney	" "	2
G. Palmer	Woodridge	" "	5
R. Kemp	Richer	" "	5
H. Terschman	Hadashville	" "	2
W. Ruth	Stead	" "	3
E. Pokowski	West Hawk Lake	" "	4
C. Beiber	East Braintree	Fire Ranger	3
R. McIntosh	Steinbach	Game Guardian	5
B. Gilmore	East Braintree	Forest Ranger	2
M. Kastrukoff	Winnipeg	Forester	1
A. Kotowicz	"	"	3
R. Filteau	Steinbach	Agricultural Rep.	1
D. Wardrop	Lac du Bonnet	Forest Ranger	2
F. Honton	" " "	Pilot	1
E. Sinclair	Winnipeg	Prov. Land Inspector	2
J. J. Wright	Carberry	Forest Ranger	2
D. S. Stevenson	Morris	Agricultural Rep.	1
A. Tinline	Boissevain	Peace Garden Supt.	1

2. FOREST BIOLOGY RANGER REPORT

EASTERN DISTRICT

MANITOBA

1954

by

J. J. Lawrence

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

2.1. INTRODUCTION

Forest insect and tree disease surveys were conducted in the Eastern District of Manitoba from May 17th to October 28th in 1954. Insect outbreaks were mapped and the distribution and abundance of lesser insects and tree diseases recorded.

Approximately 24 hours of aerial surveys, with periodic ground checks, were conducted in the area north of Lac du Bonnet and east of Lake Winnipeg. Both chartered and Manitoba Government Air Service aircraft were used in these surveys.

During the season special surveys were conducted for larch sawfly, spruce budworm, jack-pine budworm, and forest tent caterpillar. Special collections of insect and tree material were made for project personnel at the Winnipeg and outside laboratories.

A total of 440 insect collections and 37 tree disease collections were made in the Eastern District of Manitoba. The assistance and co-operation of Manitoba Forest Service personnel and private co-operators throughout the field season is gratefully acknowledged.

2.2. REVIEW OF FOREST INSECT AND TREE DISEASES

The larch sawfly was again present in all tamarack stands examined in the Eastern District. South of the Winnipeg River populations appeared to be somewhat higher than in 1953; defoliation ranged from light to moderate. North of the river larval feeding damage was very light, as in 1953.

A sudden increase in the distribution and abundance of jack-pine budworm was recorded in 1954. In the Stead and Belair areas, defoliation of the new growth on jack pine was moderate to severe. Local populations of this insect again appeared at Aikens Lake and Seddons Corner; however, defoliation at these points was generally light.

An increase in populations of the spruce budworm, black-headed budworm, and the grey willow-leaf beetle were also noted in 1954. The status of the American poplar leaf beetle, yellow-headed spruce sawfly, pine tortoise scale, and pitch nodule maker, remained approximately the same as 1953. A further decline in numbers of the forest tent caterpillar was apparent in 1954.

Mistletoe on jack pine, Arceuthobium americanum Nutt., was most common in the Stead, Belair, and Victoria Beach areas. The dwarf mistletoe on black spruce, Arceuthobium pusillum Peck., was widely distributed through the southern portion of the Eastern District, and appeared to be causing some tree mortality in the Gypsumville and Riverton areas.

Other common tree diseases in the Eastern District were a canker of poplar, Hypoxylon pruinatum (Klotche.) Cke.; the white trunk rot of

poplar, Fomes igniarius (L.) Gill.; and the spruce needle rust, Chrysomyxa sp.

2.3. INSECT CONDITIONS

2.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly was again the major insect species in the Eastern District of Manitoba. The distribution of this insect and defoliation estimates as determined by ground and aerial surveys are shown in Fig. 1.

In the Whiteshell Forest Reserve and west to Whitemouth, Seddon's Corner and Lac du Bonnet, defoliation was generally light. Pockets of moderate damage were recorded eight miles west of Whitemouth, six miles east of Rennie, and in the vicinity of Red Rock, Jessica, Dorothy, Betula and War Eagle lakes. Through the Brokenhead, Stead, Belair, and Scanterbury areas, defoliation was light.

In the region east of Lake Winnipeg, between Lac du Bonnet and Island Lake, defoliation was generally very light. Needle growth and shoot production on tamarack was sparse through the whole of this area.

West of Lake Winnipeg in the interlake area, defoliation ranged from very light to moderate. Light defoliation prevailed through the Riverton, Arborg, Rosenburg, Poplarfield, Ashern, and Gypsumville areas. Moderate defoliation was recorded in sec. 13, tp. 25, rge. 2, W.P. mer., six miles north of Fisherbranch. North of Gypsumville only a trace of defoliation was observed.

Mass collections of larch sawfly cocoons were taken from nine permanent sample plots in the Eastern District in 1954. The cocoons were subsequently dissected to determine the incidence of parasites attacking cocooned larvae of the larch sawfly. Table 1 gives the locations of the collecting points and the number of cocoons collected.

TABLE 1

Larch Sawfly Cocoon Collections - 1954

Area no.	Location	Sec.	Tp.	Rge.	Mer.	Grid	No. of cocoons
1	10.2 mi. W. of Rennie	10	11	13	E.P.	6-012-254	400
2	6 mi. E. of Rennie	22	10	15	E.P.	6-016-253	400
3	9 mi. E. of Rennie	17	10	16	E.P.	6-016-253	400
4	West of Hawk Lake	29	9	17	E.P.	6-018-251	400
5	Red Rock Lake	17	12	15	E.P.	6-015-256	400
6	Seddon's Corner	1	13	9	E.P.	7-096-257	200
7	8 mi. N.E. of Lac du Bonnet	30	15	12	E.P.	6-010-261	200
8	Riverton	32	23	4	E.P.	7-086-273	200

Results of the cocoon dissections are shown in Table 2. Bessa harveyi (T.T.) and Mesoleius tenthredinis Morley were the only parasites recovered. A chalcid parasite, Tritneptis klugii (Ratz.), which has occurred sporadically in other parts of Manitoba was again absent in collections from the Eastern District. B. harveyi was the most important parasite of the larch sawfly in this area. Parasitism by this species ranged from 12.8 per cent at Seddon's Corner to 41.6 per cent at Riverton. Parasitism by M. tenthredinis was less abundant and reached a high of only 7.1 per cent. It was absent in two areas sampled in 1954.

Disease organisms of the larch sawfly appeared active in some areas and caused an estimated 35.5 per cent mortality of the host larvae.

TABLE 2

Summary of Larch Sawfly Parasitism and Disease Determined by Dissections

Place	No. of cocoons dissected	No. larch sawfly larvae containing <u>Mesoleius tenthredinis</u>		Per cent effective parasitism of living larvae		% larvae destroyed by disease	% larvae dead from other causes
		Eggs	Larvae	Bessa harveyi	Mesoleius tenthredinis		
10.2 mi. W. of Rennie	400	37	20	28.4	7.1	18	13.7
6 mi. E. of Rennie	400	9	7	28.4	2	4	8.5
9 mi. E. of Rennie	400	22	15	39.4	5.8	10.7	24.7
Nest Hawk Lake	400	13	18	41.1	7.1	3.2	33.5
Red Rock Lake	400	4	3	33.4	.9	4.7	19.7
Seddon's Corner	200	1	0	12.8	0	7.5	35.6
Lac du Bonnet	200	2	0	36.9	0	11.5	2
Riverton	200	2	1	41.6	.8	35.5	2

EASTERN DISTRICT MANITOBA

FOREST INSECT AND DISEASE SURVEY - WINNIPEG

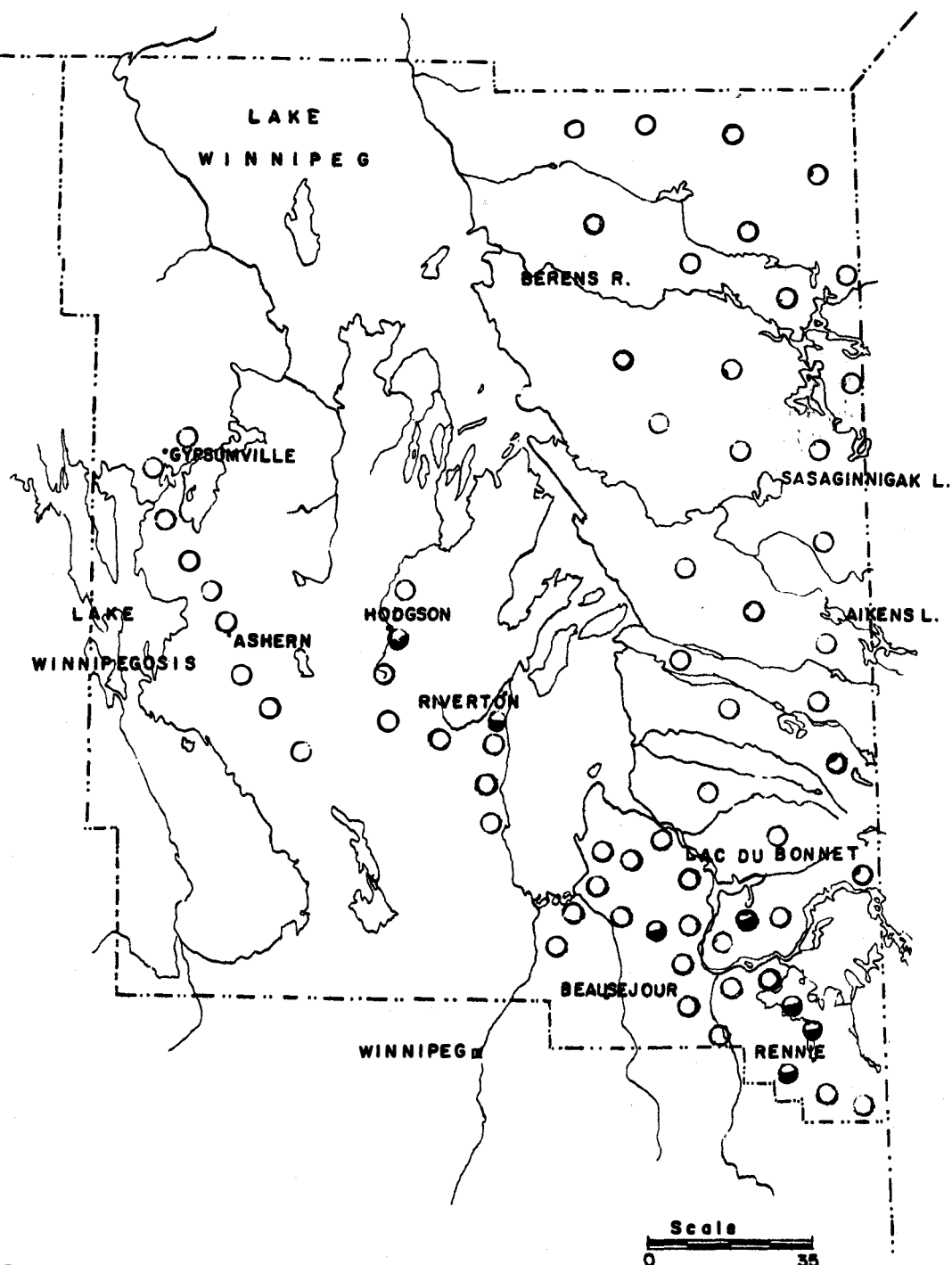
LARCH SAWFLY DISTRIBUTION

1954

AS DETERMINED BY GROUND
AND AERIAL SURVEYS

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



2.3.2. Spruce Budworm, Choristoneura fumiferana (Clem.)

The spruce budworm was widespread throughout the district in 1954. It occurred on white spruce, black spruce, and balsam fir throughout the area encompassed by the Manitoba-Ontario border on the east, Lakeland on the west, and Island Lake on the north. Although common at several points throughout this area, populations were generally low and caused no appreciable damage.

Light to moderate defoliation was recorded to the new growth of regeneration white spruce near Beausejour. Several collections of the spruce budworm were also taken in the Whiteshell Forest Reserve but defoliation was light. Moderately high populations were noted at Caddy Lake. Additional collections were taken between Seddon's Corner and Lac du Bonnet, east to Pointe du Bois, and along the Bird River Road, but in all instances defoliation was very light.

Aerial surveys supplemented by period ground checks carried out in the region east of Lake Winnipeg revealed the presence of spruce budworm in small numbers at the following points: Manigotagan, Sasaginnigak, Family, Island, Wallace, and Flintstone lakes and at Beren's River.

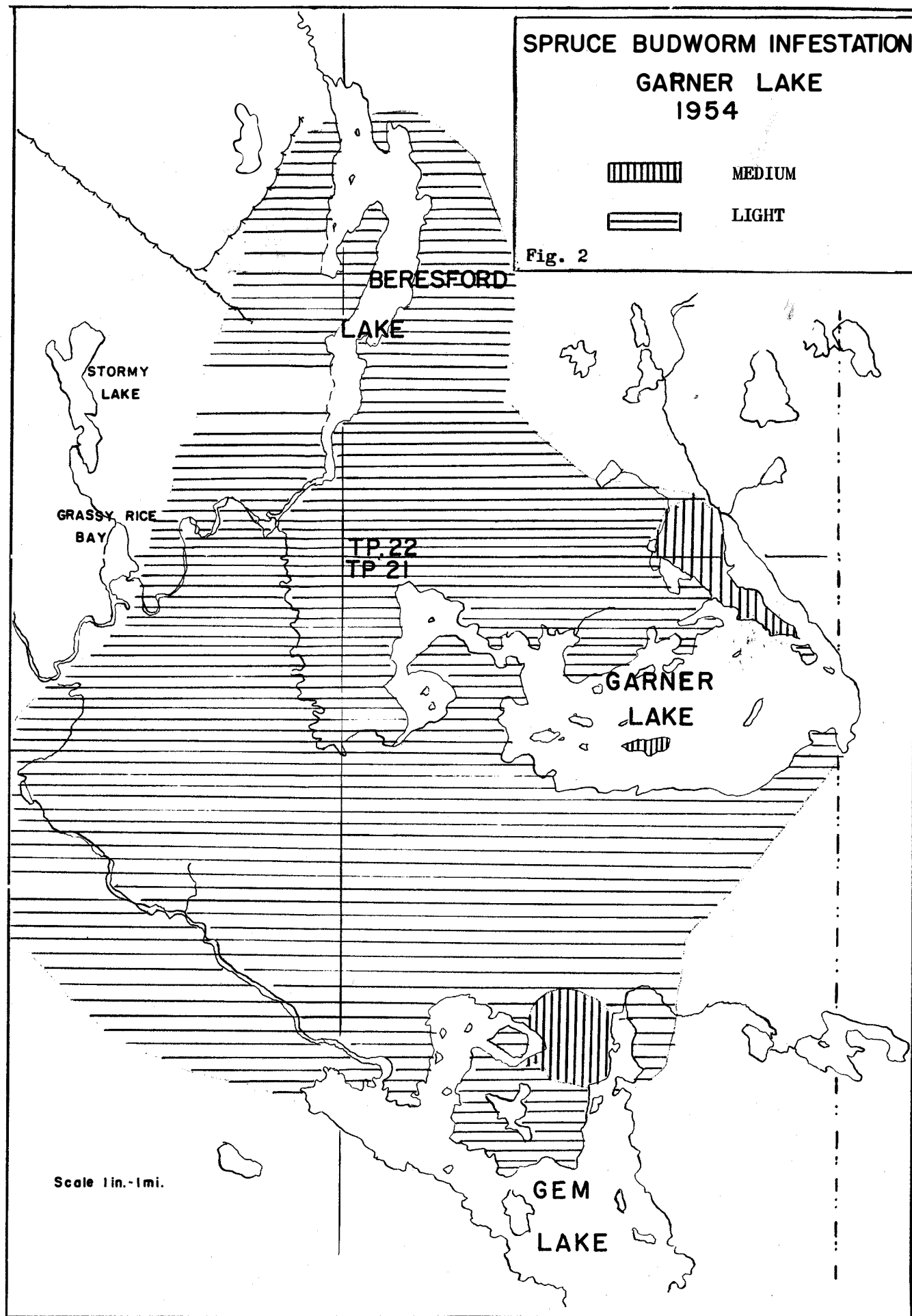
The localized infestation previously reported at Garner Lake, still persisted and increased in size in 1954. The infestation, which has caused moderate defoliation to the new growth of white spruce and balsam fir for the past several years, now covers an area of several square miles. The boundaries and defoliation estimates of this infestation are shown in Figure 2.

The following table (Table 3) shows the relative abundance of spruce budworm larvae in host tree collections in the Eastern District (based on standard 5-tree samples).

TABLE 3

Summary of Spruce Budworm Collections - 1954

Host	No. of collections	% collections containing larvae	Ave. no. of larvae per collection
W. spruce	63	27	1.04
B. spruce	35	14.2	.2
Balsam fir	17	53	1.3



2.3.3. Jack-pine Budworm, Choristoneura pinus Free.

Increased populations of the jack-pine budworm were noted in some areas of the Eastern District in 1954. Although the boundaries remained much the same as in 1953, intensified activity was particularly noticeable in the infestations at Stead, Belair, and Aikens Lake; Fig. 3, 4, and 5 illustrate respectively the boundaries and severity of the infestations in these areas.

Light occurrence of the jack-pine budworm was noted at Milner Ridge, in the Pointe du Bois area, and through the Whiteshell Forest Reserve. Infestation at Seddon's Corner remained light and only the occasional tree showed noticeable feeding damage.

In the region east of Lake Winnipeg and north of the Winnipeg River, the budworm was widely distributed, but except for the infestation at Aikens Lake, caused only very little defoliation. Collections were taken at Weaver, Sasaginnigak, Moor, Garner, Aikens, and Flintstone lakes.

Table 4 indicates the relative abundance of jack-pine budworm larvae in collections taken from jack pine (**5-tree beating sample**) in the Eastern District.

TABLE 4

Summary of Jack-pine Budworm Collections - 1954

Host	No. of host tree collections	% host tree collections containing larvae	Ave. no. of larvae per collection
Jack pine	110	49.5	.5

2.3.4. Black-headed Budworm, Acleris variana (Fern.)

The black-headed budworm occurred in practically all white spruce, black spruce, and balsam-fir stands in the Eastern District. While populations appeared somewhat higher than in 1953, defoliation again ranged from only very light to light.

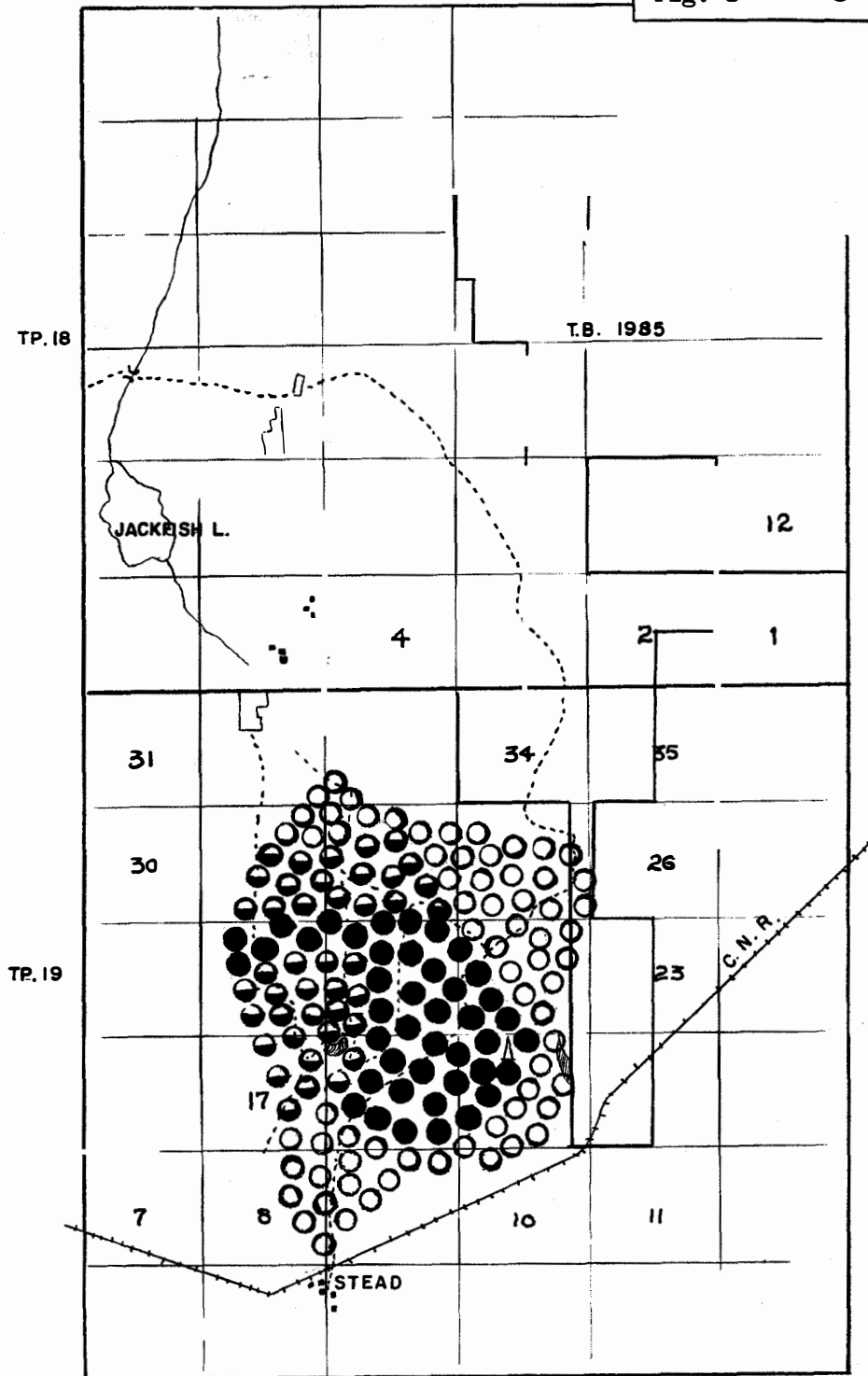
Light infestations of this species prevailed through the entire interlake area as well as in the Whiteshell Forest Reserve. Some nineteen locations in the region east of Lake Winnipeg and north of the Winnipeg River were sampled during July. Of these, sixteen revealed the presence of black-headed budworm. Collections were taken at the following lakes: Weaver, Sasaginnigak, Viking, Molson, Island, Elliot, Charron, Moor, Aikens, Garner, Stevenson, Family, Wallace, and

JACK PINE BUDWORM INFESTATION STEAD MANITOBA

1954

- HEAVY
- MEDIUM
- LIGHT

Fig. 3



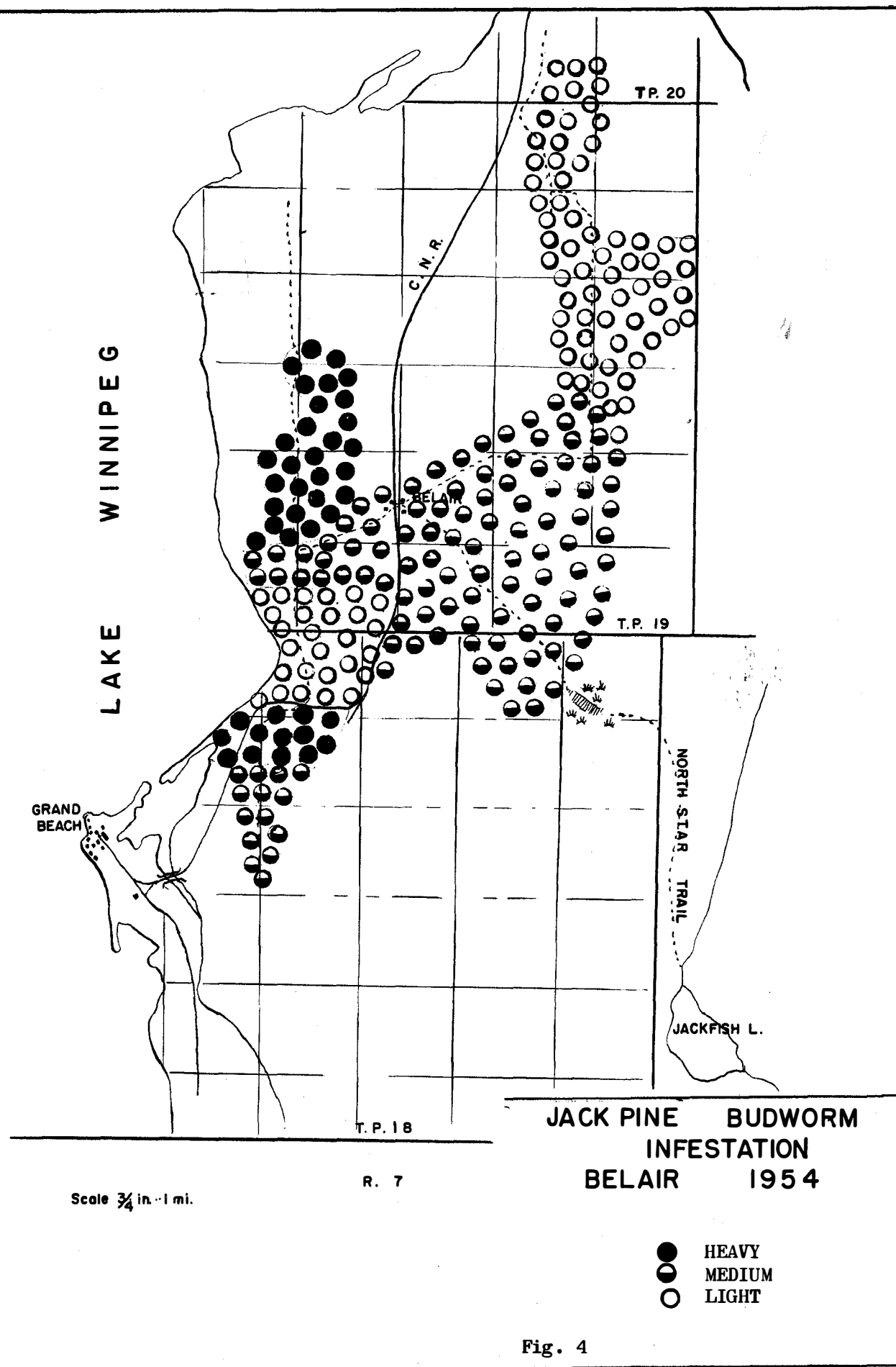
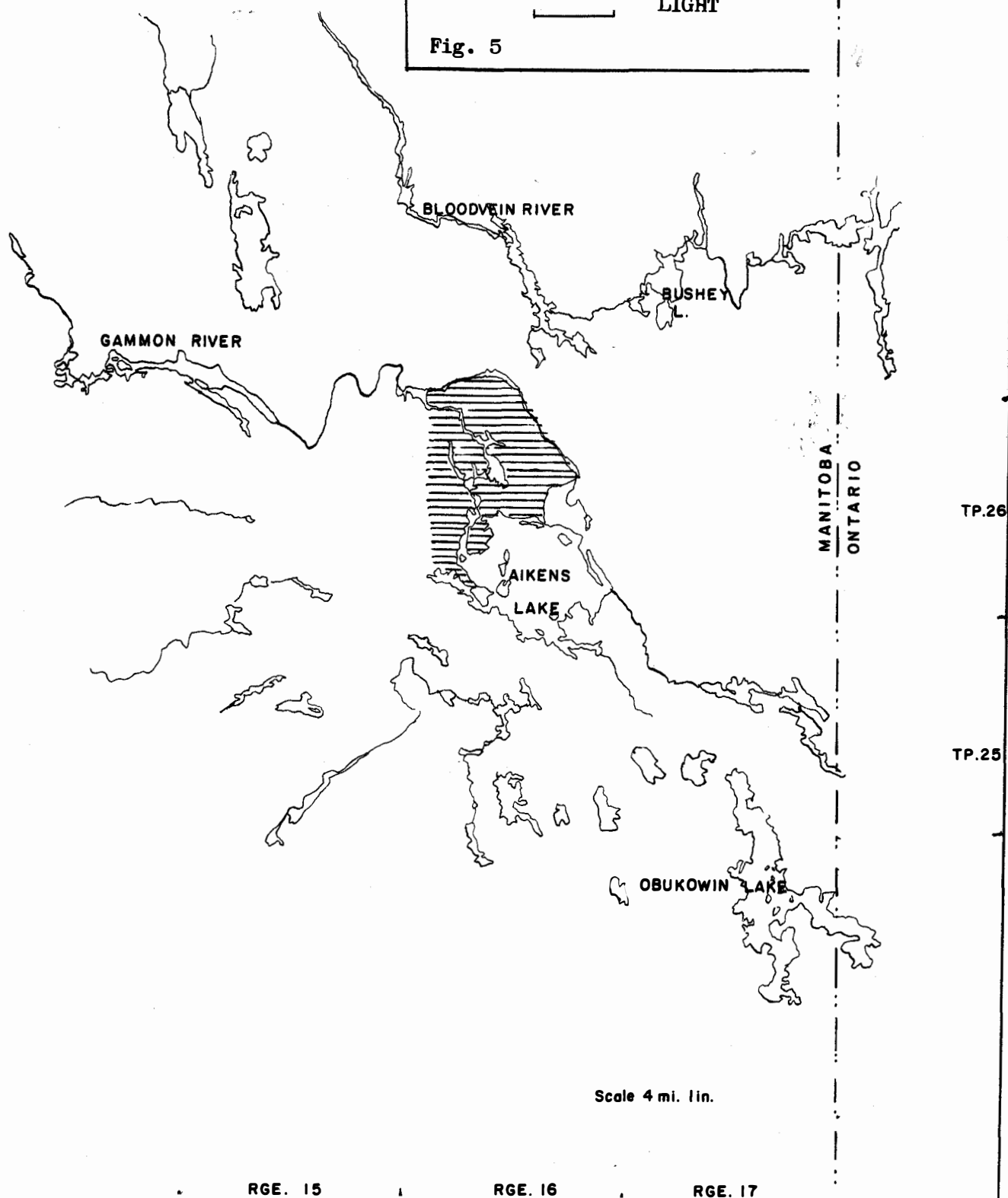


Fig. 4

JACK PINE BUDWORM
INFESTATION
AIKENS LAKE
1954

— LIGHT

Fig. 5



Flintstone, and at Norway House and Beren's River.

The following table (Table 5) indicates the relative abundance of the black-headed budworm in standard 5-tree host samples taken in the district in 1954.

TABLE 5

Summary of Black-headed Budworm Collections

Host	No. of host tree collections	% host tree collections containing larvae	Ave. no. of larvae per collection
White spruce	63	30.8	1.3
Black spruce	35	42.8	1
Balsam fir	17	46	1

2.3.5. Forest Tent Caterpillar, Malacosoma disstria Hbn.

A further decline in the populations of the forest tent caterpillar was evident in the Eastern District in 1954. In the areas where serious defoliation was recorded for the past three years, infestations had almost completely subsided. Elsewhere through the district defoliation was negligible.

Collections of the forest tent caterpillar were taken at Brereton Lake, Rennie, Pointe du Bois, and Weaver Lake. The latter was the only collection taken north of the Winnipeg River.

Forest tent caterpillar egg surveys carried out during the latter part of the season failed to reveal the presence of any egg bands indicating that little or no infestation is likely to occur in the district in 1955. The points at which 3-tree samples were taken are shown in Table 6.

TABLE 6

Forest Tent Caterpillar Egg Sampling Points

Place	Location				Ave. d.h.h.	Ave. ht. (ft.)	No. of egg bands
	Sec.	Tp.	Rge.	Mer.			
Crowduck Ptge.	12	13	16	E.P.	4 $\frac{1}{2}$	36	0
Whiteshell Lake Rd.	33	12	15	E.P.	43/8	34	0
Falcon Lake Rd.	8	9	17	E.P.	33 $\frac{3}{4}$	38	0
Gull Lake	36	16	7	E.P.	23 $\frac{1}{2}$	19	0
Stead	34	18	8	E.P.	31 $\frac{1}{4}$	24	0
Stead	20	17	8	E.P.	21 $\frac{1}{4}$	19	0
Milner Ridge	7	14	10	E.P.	53 $\frac{1}{4}$	38	0
Rennie	1	11	13	E.P.	31/8	24	0
Brereton Lake	20	10	15	E.P.	3	24	0

2.3.6. Spruce Needle Worm, Dioryctria reniculella (Grt.)

This species was widely distributed through the Eastern District in 1954, but caused no noticeable defoliation. Collections were taken at the following locations: Seddon's Corner, along the Bird River Road, three miles from Rennie, at Caddy Lake and Garner Lake.

2.3.7. Grey Willow-leaf Beetle, Galerucella decora (Say)

The grey willow-leaf beetle was present in the entire area bounded by No. 1 Highway in the south, Moar Lake in the north, and Lake Manitoba in the west. Skeletonizing of willow foliage ranged from light in some areas to severe in others.

Through the Whiteshell Forest Reserve, in the Lac du Bonnet area, and in the region east of Lake Winnipeg damage was light. Moderate to severe damage to willow was noted along No. 1 Highway west of Whitemouth and north through the Belair area.

In the interlake area of the Eastern District, conspicuous skeletonizing of willow foliage was apparent in the vicinity of Woodlands, St. Laurent, Clarkleigh, Lundar, Deerhorn, Ericksdale, Poplarfield and Flat Valley. Throughout the remainder of the region, skeletonizing was very light.

2.3.8. American Poplar Leaf Beetle, Gonioctena americana (Schaeffer.)

Only four collections of this insect were made during the 1954 season. These were made at the following locations: 4 miles north of Seddon's Corner (sec. 27, tp. 13, rge. 9, E.P. mer.); 9 miles north of Seddon's Corner (sec. 13, tp. 14, rge. 10, E.P. mer.); 15 miles east of Lac du Bonnet (sec. 12, tp. 16, rge. 13, E.P. mer.); and 2 miles north of Bluff Creek (sec. 23, tp. 21, rge. 11, E.P. mer.). At all points, populations were light and no defoliation was apparent.

2.3.9. Ugly Nest Caterpillar, Archips cerasivorana (Fitch.)

This insect caused little or no damage throughout the Eastern District of Manitoba during 1954. Three collections were made in the Grand Beach, Victoria Beach, and Stead areas, and a fourth collection was made west of Whitemouth.

2.3.10. Pine Tortoise Scale, Toumeyella numismaticum (Pettit & McD.)

The infestation of pine tortoise scale continued to flourish in the Grand Beach-Belair area. However, some recession in populations was evident through the area in 1954.

Another infestation previously reported at Milner Ridge (sec. 16, tp. 14, rge. 10, E.P. mer.) was still very light. No collections of Toumeyella were made at Gull Lake or at Whitemouth where it was detected in 1953.

2.3.11. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

These two species were widely scattered throughout the Eastern District during the 1954 season. Green-headed spruce sawfly populations were generally low and never occurred in sufficient numbers to cause defoliation.

Defoliation of one tree out of five examined four miles east of West Hawk Lake (sec. 13, tp. 9, rge. 17, E.P. mer.) was light to moderate. Moderate damage was recorded on two of five trees examined in sec. 33, tp. 12, rge. 15, E.P. mer., one mile north of White Lake.

Larvae of both species were recovered from black and white spruce examined in the remaining part of the District. This included the area west as far as Lake Manitoba and north to Gypsumville, and north of Lac du Bonnet to Little Grand Rapids. Defoliation was generally very light.

2.3.12. Pitch Nodule Maker, Petrova albicapitana (Busck.)

Five collections of the pitch nodule maker were taken in the Eastern District in 1955. These collections were taken from regeneration jack pine in the Whiteshell Forest Reserve, and between Rennie and Whitemouth. In all instances, damage was light.

2.3.13. Western Tent Caterpillar, Malacosoma pluviale Dyar

North of the Winnipeg River collections of this insect were made at Weaver, Viking, Moar, Aikens, Wallace, and Flintstone lakes. At all the above mentioned points damage was very light.

2.3.14. Large Aspen Tortrix, Archips conflictana (Wlk.)

The large aspen tortrix was widely scattered but caused only very light defoliation in the Eastern District of Manitoba in 1954. Collections were made at Rennie, Seddon's Corner, Ericksdale, and Ashern.

2.3.15. A Webworm, Tetralopha robustella Zell.

This insect was found mainly in the Whiteshell Forest Reserve of the Eastern District during 1954. Although populations were higher than the previous year, little or no damage was recorded.

The heaviest concentration of T. robustella was found on the portage between Brereton and Mud Turtle lakes (sec. 11, tp. 11, rge. 5, E.P. mer.). This stand consisted of mature open growing jack pine. Numerous colonies of the insect were noted but damage was very light.

Other areas where it was detected but caused only very light damage were: Telford, West Hawk Lake, White Lake, Betula Lake, Nutimik Lake,

and west of Rennie.

2.3.16. Spotless Fall Webworm, Hyphantria textor Harr.

Only four collections of this insect were made in the Eastern District of Manitoba in 1954. Collections were made at the following locations: Brereton Lake, West Hawk Lake, and two collections at Hoar Lake. At each of the above points, damage was light. Typical damage caused by this species is shown in Fig. 6.

2.3.17. Other Noteworthy Insects

Other insect species, which occurred commonly through the district but caused no appreciable damage are listed below;

Insect species	No. of collections	Remarks and host
<i>Malacosoma lutescens</i> N. & D.	2	Slight damage to chokecherry
<i>Neodiprion nanulus</i> Schedl.	1	" " " jack pine
<i>Neodiprion abietis</i> (Harr.)	2	Slight damage to white and black spruce
<i>Neodiprion americanum</i>		
<i>banksiana</i> Roh.	8	Very light on jack pine
<i>Tetralopha asperatella</i> Clem.	10	Very light on white poplar
<i>Neodiprion swainei</i> Midd.	2	Slight damage on jack pine
<i>Lambdina fiscellaria</i> Hlst.	2	Slight damage on white spruce and balsam fir
<i>Archips rosaceana</i> Harr.	3	Slight damage on chokecherry
<i>Acrobasis betulella</i> Hlst.	3	Slight damage on birch
<i>Pissodes strobi</i> (Peck.)	2	Slight damage on white spruce
<i>Lithocolletis tremuloidiella</i> Braun.	1	Slight damage on white poplar



Figure 6. Spotless fall webworm tent
on alder, Brereton Lake,
Manitoba.

2.4. TREE DISEASE CONDITIONS

2.4.1. Dwarf Mistletoe on Black Spruce, Arceuthobium pusillum Peck.

A light to moderate amount of brooming caused by A. pusillum occurred along the west shore of Brereton Lake in the Whiteshell Forest Reserve (sec. 24, tp. 11, rge. 14, E.P. mer.). Due to high water levels, the area covered by this stand was not determined.

No change was noted during 1954 in the status of mistletoe on black spruce north of Stead and at Grand Beach.

In the Interlake area, two areas of infection were noted. A small pocket of infected black spruce occurred three miles north of Riverton, sec. 3, tp. 24, rge. 4, E.P. mer. (See Fig. 7). A few dead tops, probably caused by this disease, were noted in this stand. Another area of mistletoe-infected black spruce was observed north of Gypsumville (sec. 23, tp. 32, rge. 9, W.P. mer.). Of the two areas in the Interlake District, the latter was the more severely attacked. All trees examined had one or more brooms and some mortality was noted.

During November of 1954, a survey was made from Pine Falls north towards the O'Hanly River. Throughout this area several large brooms were noted on black spruce. Observations made with binoculars indicated they were caused by the dwarf mistletoe, A. pusillum.

2.4.2. Ink Spot on Poplar, Sclerotinia bifrons Seaver & Shope

A small area of white poplar, west of Rennie along No. 1 Highway in sec. 26, tp. 10, rge. 14, E.P. mer., was moderately infected by this disease. About 50 per cent of the leaves had one or more spots per leaf. The moderate infection covered an area approximately 100 yards square.

Another small area of infection was recorded west of Rennie, sec. 11, tp. 11, rge. 13, E.P. mer. At the point of examination damage was light.

2.4.3. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

Boundaries and intensity of A. americanum infections at Belair and Victoria Beach remained static in 1954. Several trees in the areas were examined for the fungus parasite, Wallothiella arceuthobii (Pk.) Sacc., but none was found.

2.4.4. Spruce Needle Rust, Chrysomyxa sp.

This needle rust was again widespread throughout the Eastern District in 1954. It was commonly found on white and black spruce, but caused only very light damage.



Figure 7. Dwarf mistletoe on black spruce,
Riverton, Manitoba.

2.4.5. Larch Canker

Three collections of this disease were taken from tamarack in 1954; one at West Hawk Lake, another at Telford, and the third at Red Rock Lake. Damage in each case was very light.

2.4.6. Other Noteworthy Diseases

Host	Locality	Causal organism	Remarks
Aspen	Stead, Man.	<i>Stereum rufum</i>	Fungus
Aspen	Bluff Creek, Man.	<i>Fomes igniarius</i>	Heart rot
Aspen	Rennie, Man.	<i>Polyporus pargamensis</i>	Slash fungus
White spruce	Bird River Rd., Man.	<i>Fomes pinicola</i>	Heart rot

2.5. SPECIAL COLLECTIONS

Table 7 contains a summary of all special collections made in the Eastern District. The material contained in the collections will be used by personnel at the Winnipeg and other laboratories throughout the country.

TABLE 7

Summary of Special Collections

Type of collection and for whom	No. of collections	Time spent (including travel)
Larch sawfly cocoon collection for J. Muldrew, Winnipeg	1 (1200 cocoons)	6 days
Larch sawfly cocoon collection for parasite and mouse predation studies	13 (200 cocoons ea.)	9 "
Spruce budworm larvae for Dr. G. Stehr, Sault Ste. Marie	2 (200 larvae ea)	1 "
Black-headed budworm larvae for Dr. G. Stehr, Sault Ste. Marie	1 (200 larvae)	$\frac{1}{2}$ "
Jack-pine budworm larvae for Dr. G. Stehr, Sault Ste. Marie	200 larvae	$\frac{1}{2}$ "
Pine tortoise scale for R. Lejeune, Winnipeg	1	1 "
Curled tips on tamarack for larch sawfly population studies	6	4 "
Tree ring collections - 3 on tamarack, 5 on black spruce	3	$2\frac{1}{2}$ "

2.6. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The following table (Table 8) is a summary of all insect and tree disease collections taken in the Eastern District of Manitoba in 1954.

TABLE 8

Summary of Insect and Tree Disease Collections - 1954

Host	No. of insect collections	No. of disease collections
Jack pine	112	4
White spruce	66	3
Black spruce	39	2
Balsam fir	17	
Tamarack	49	11
W. poplar	98	
B. poplar	4	
W. birch	44	19
Alder	7	
Elm	2	
Oak	4	
Chokecherry	6	
Willow	11	
Miscellaneous	17	

2.7. PERSONNEL CONTACTED

Name	Position	Address	No. of contacts
C. Ritche	Forest Ranger	Rennie	5
A. D. Maltman	" "	Rennie	3
W. Danyluk	" "	Rennie	3
E. Pokowski	" "	West Hawk Lake	1
J. Nespor	" "	Lac du Bonnet	3
D. Wardrop	" "	" " "	6
J. McCarrol	" "	" " "	3
S. Sveinson	" "	" " "	1
A. Hood	" "	Whitemouth	1
J. Inkster	" "	Pine Falls	1
D. Naysmith	Logging Superintendent	" "	1
H. Schmit	Scaler	" "	1
G. Bailey	Cruiser	" "	1
B. Gilmore	Forest Ranger	Stead	2
Wm. Ruth	" "	Stead	2
J. Russel	Fire Ranger	Bisset	2
R. Davies	" "	Sasaginnigak	3
C. Hanson	Pine Falls Paper Co.	Pine Falls	2

3. FOREST BIOLOGY RANGER REPORT

WESTERN DISTRICT

MANITOBA

1954

by

A. E. Campbell

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

3.1. INTRODUCTION

Field surveys to determine the prevalence of forest insects and tree diseases in the Western District of Manitoba were conducted from May 26th to October 2nd in 1954. No major insect outbreaks were recorded during the survey. A slight increase was noted in the numbers of black-headed budworm, Accleris varians (Fern.) and the yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

Special survey projects on the larch sawfly included, curled tip sampling for population estimates, and foliage production and defoliation estimates in permanent tamarack sample plots. Larch sawfly cocoons for parasite and disease studies were also collected from a number of points in the Western District.

Special tree disease surveys were conducted in 1954 to determine the distribution and prevalence of Radulum casearium (Morgan) Lloyd, Hypoxylon pruinosum (Klotche.) Cke. and Fomes pini (Thore.) Lloyd.

A total of 541 insect samples and 65 disease samples were collected from the Western District of Manitoba in 1954. The cooperation and assistance given by personnel of the Manitoba Forest Service, and National Parks, and by private co-operators is gratefully acknowledged.

3.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

There was little change in the status of forest insects in the Western District in 1954. A small increase in numbers and distribution of the black-headed budworm and the yellow-headed spruce sawfly occurred in Riding Mountain National Park.

The steady decline of the larch sawfly populations in the district continued in 1954. Spotty defoliation was evident along the south slopes of the Duck Mountain Forest Reserve and from Mafeking north to the Overflowing River.

High water levels persisted in most tamarack swamps examined. Parasites and predators of the larch sawfly were again active and were undoubtedly important control factors.

A small increase in numbers and distribution of the spruce budworm occurred throughout the district in 1954. The grey willow-leaf beetle increased in abundance and distribution and caused extensive damage to some willow stands. Populations of the striped alder sawfly were at a low level in 1954 as compared to 1953, when this insect caused light defoliation to alder. Little change was noted in the status of the balsam fir sawfly in 1954. Only a small number of larvae were collected during the season.

Populations of the green-headed spruce sawfly, the white-pine weevil, and the large aspen tortrix remained at about the same levels

as in 1953.

During the 1954 survey special attention was given to the occurrence of a canker on poplar caused by the fungus, Hypoxyton pruinaum. Dead tops resulting from complete girdling of trees were common in the central section of the district. A mistletoe on jack pine, Arceuthobium americanum Nutt., was causing some tree mortality in the Cowan area. Other tree diseases causing light to moderate damage were, a spruce needle rust, Chrysomyxa sp.; leaf spot of poplars, Septoria musiva; and a needle cast on tamarack. The latter fungus attacks the needles eventually killing them.

3.3. INSECT CONDITIONS

3.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly caused only very light defoliation in most parts of the Western District of Manitoba in 1954. A map outlining defoliation of tamarack in the district is shown in Fig. 1. The steady decline of populations of P. erichsonii was evident in all areas except along the south border of the Duck Mountain Forest Reserve and from Mafeking north to the Overflowing River. In these areas defoliation varied from light to moderate. The first larch sawfly larvae were collected July 3rd from tamarack in Riding Mountain National Park.

In the eastern section of the Park, traces of defoliation were noted on tamarack in the Rolling River, Whirlpool and Katherine Lakes areas. In the central section which includes the areas along No. 10 Highway, Lake Amy and P.O.W. roads, and north along the old Dauphin Trail, defoliation varied from light to a trace. Very light sawfly damage was also noted in the Deep Lake and Tilson Lake areas. The larch sawfly caused light to moderate defoliation of tamarack along the southern part of the Duck Mountain Forest Reserve, and north along the Baldy Mountain Road. Light defoliation occurred in a small stand in sec. 12, tp. 28, rge. 24, W.P. mer. In the areas surrounding Grandview, Gilbert Plains, and north to Mink Creek and Venlaw, no appreciable defoliation of tamarack was observed. In the Bield area and north through San Clara, Shell River, and Boggy Creek, defoliation of tamarack varied from very light to light.

Tamarack stands from Dauphin north through Garland, Pine River, Selater, Cowan, and in the western part of the Duck Mountain Forest Reserve were lightly defoliated.

Through the Renwer, Minitonas and Swan River areas, defoliation was very light in most tamarack stands examined.

Very light sawfly damage was noted in the Birch River area and along the east slopes of the Porcupine Forest Reserve and north to the Overflowing River.

During late September and early October, a number of mass collections of larch sawfly cocoons were taken from permanent sampling plots distributed throughout the Western District of Manitoba. The cocoons were collected for the purpose of determining by dissection the distribution and incidence of parasites. The locations of the collecting points and the number of sawfly cocoons contained in each collection are shown in Table 1.

TABLE 1
Larch Sawfly Cocoon Collections

Plot	Place	Sec.	Tp.	Rge.	Mer.	Grid	No. of cocoons
104	RMNP - Lake Audy Rd.	16	20	19	W.P.	7-053-267	250
106	RMNP - No. 10 Hwy.	23	21	19	W.P.	7-054-269	250
107	RMNP - P.O.W. Road	14	21	21	W.P.	7-051-269	250
108	RMNP - Norgate Road	36	19	17	W.P.	7-058-266	250
111	Renwer	15	36	23	W.P.	7-047-291	250
113	Mafoeking	19	44	25	W.P.	7-043-303	250

Results of the dissections are shown in Table 2. As in 1953, the two main parasites were Bessa harveyi T.T. and Mesoleius tenthredinis Morley. B. harveyi was the most effective parasite, accounting for as much as 53.4 per cent parasitism of cocooned larvae in some areas. M. tenthredinis was less important due to the large number of parasite eggs which failed to hatch. The maximum effective parasitism by this species was 7.9 per cent.

A chalcid parasite, Tritneptis klugii Ratz., was absent from mass collections of larch sawfly cocoons both in 1953 and 1954.

TABLE 2

Summary of Larch Sawfly Parasitism Determined by Dissections

Plot no.	Place	No. of cocoons dissected	No. of larch sawfly larvae containing <i>Mesoleius</i>		Per cent effective parasitism based on living sawfly larvae			% larvae destroyed by disease	% larvae dead from other causes
			Eggs	Larvae	<i>Besha harveyi</i>	<i>Mesoleius tenthredinis</i>	<i>Tritneptis klutii</i>		
104	RMNP - Lake Audy Rd.	200	43	13	28.9	6.8	0	3	2
106	RMNP - No. 10 Hwy.	200	27	11	45.0	7.7	0	18	1
107	RMNP - P.O.W. Road	200	19	8	39.7	5.8	0	11.5	20.5
108	RMNP - Norgate Rd.	200	20	9	32.8	4.6	0	3.5	1
111	Renwer	200	13	11	36.2	7.9	0	28	3
113	Mafeking	200	12	7	53.4	6.0	0	42.5	0

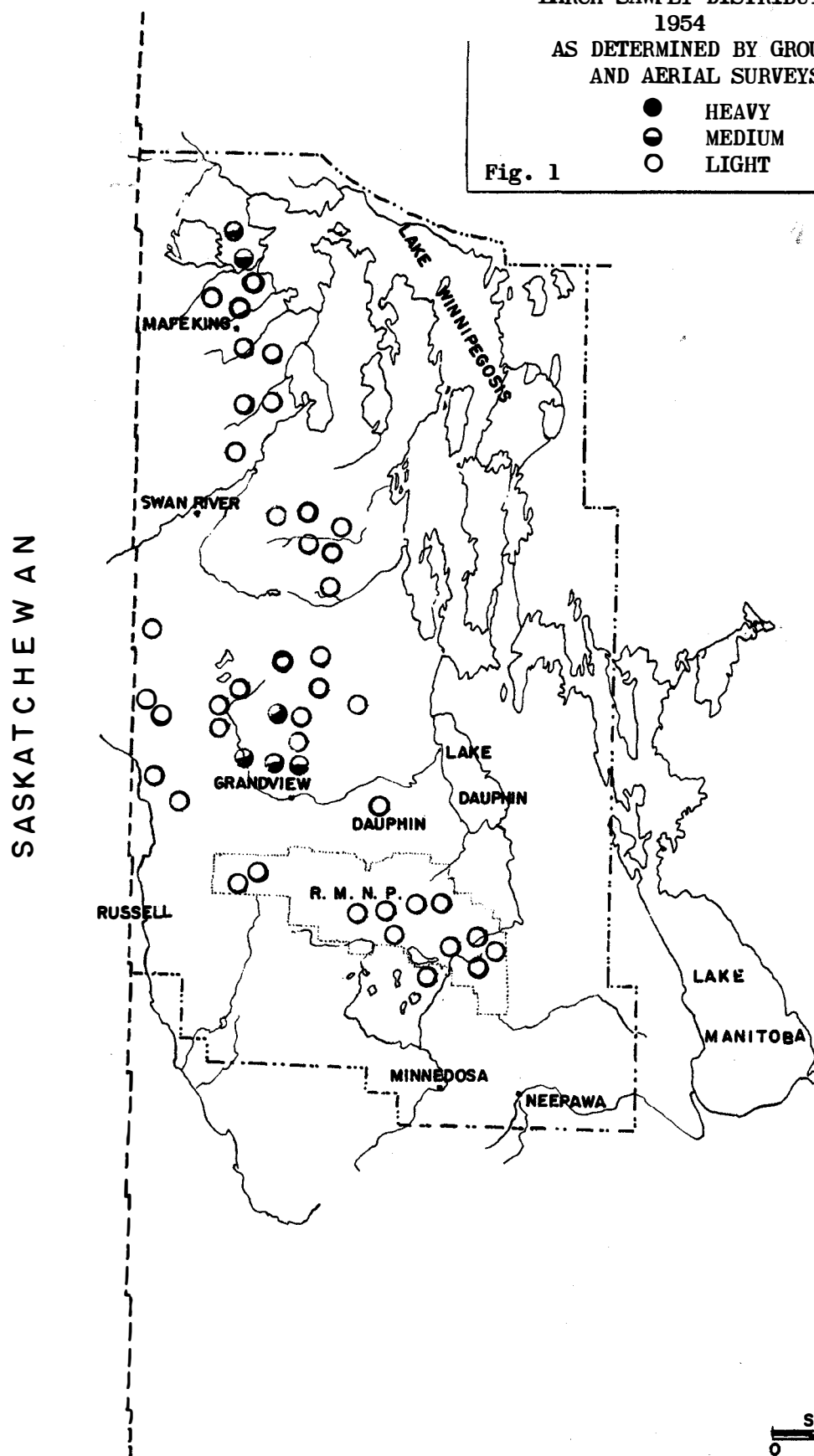
WESTERN DISTRICT MANITOBA

FOREST INSECT AND DISEASE SURVEY-WINNIPEG-
LARCH SAWFLY DISTRIBUTION
1954

AS DETERMINED BY GROUND
AND AERIAL SURVEYS

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



Scale
0 35

3.3.2. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly was common on most white and black spruce examined in 1954. Slight population increases were noted in some areas of the district. The heaviest concentration of larvae occurred in Riding Mountain National Park and along the south border of the Duck Mountain Forest Reserve. However, in all instances, it was causing only light defoliation. Light to moderate defoliation was noted on open-growing and ornamental spruce south of the Park. A total of 73 collections were made during the survey.

Table 3 gives the relative abundance of the yellow-headed spruce sawfly larvae in collections taken from white and black spruce (based on standard five-tree beating samples).

TABLE 3

Summary of Yellow-headed Spruce Sawfly Collections

Host	Total no. of host tree samples	Per cent host tree samples containing larvae	Average no. of larvae per 5-tree sample
W. spruce	33	100	1.8
B. spruce	8	100	1.3

3.3.3. Balsam-Fir Sawfly, Neodiprion abietis (Harr.)

The status of this species in the Western District remained unchanged in 1954. A total of 7 collections containing 34 larvae were taken from white and black spruce in the Riding Mountain National Park during the survey. The majority of the collections were taken in sec. 19, tp. 20, rge. 20, W.P. mer. and sec. 7, tp. 21, rge. 20, W.P. mer. south of Lake Audy and in sec. 12, tp. 20, rge. 19, W.P. mer. along No. 10 Highway.

Shown in the following table (Table 4) is the relative abundance of the balsam-fir sawfly taken from white and black spruce based on the standard five-tree beating sample.

TABLE 4

Summary of Balsam-fir Sawfly Collections

Host	Total no. of host tree samples	Per cent host tree samples containing larvae	Average no. of larvae per 5-tree sample
W. spruce	33	.01	.09
B. spruce	8	Nil	Nil

3.3.4. Black-headed Budworm, Acleris variana (Fern.)

Increased populations of the black-headed budworm were evident in some areas in 1954, but the insect caused no conspicuous defoliation. The highest concentrations of larvae were noted in Riding Mountain National Park where 62 collections containing 286 larvae and 35 pupae were taken from white and black spruce. The relative abundance of the black-headed budworm in collections taken from white and black spruce in the Western District, based on the standard five-tree beating sample is shown in Table 5.

TABLE 5

Summary of Black-headed Budworm Collections

Host	Total no. of host tree samples	Per cent host tree samples containing larvae	Average no. of larvae per 5-tree sample
W. spruce	33	79	3.5
B. spruce	8	.22	1.1

3.3.5. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

Populations of this sawfly remained about the same as in 1953. It was found generally associated with the yellow-headed spruce sawfly throughout the district. Defoliation by this species was negligible. A total of 41 collections containing 105 larvae were collected in 1954. A summary of collections showing the relative abundance of the green-headed spruce sawfly in collections taken from white and black spruce is shown in Table 6.

TABLE 6

Summary of Green-headed Spruce Sawfly Collections

Host	Total no. of host tree samples	Per cent host tree samples containing larvae	Average no. of larvae per 5-tree sample
W. spruce	33	100	1.3
B. spruce	8	100	2.2

3.3.6. Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

The distribution and occurrence of this leaf miner remained about the same throughout the district as in 1953. It was common on regeneration poplar along the Norgate Road in Riding Mountain National Park. Elsewhere in the district only a trace of this insect was observed and it was causing no appreciable damage.

3.3.7. Spruce Budworm, Choristoneura fumiferana (Clem.)

A slight increase in numbers of spruce budworm was evident in Riding Mountain National Park. However, defoliation was negligible. Elsewhere in the district budworm remained at very low population levels.

3.3.8. Ugly Nest Tortrix, Archips cerasivorana (Fitch)

Nests of this insect were common on chokecherry bushes growing along most roadsides in the district. Areas where these nests were particularly noticeable were around Cowan, Mink Creek, and Venlaw. No serious damage was recorded in any area.

3.3.9. Forest Tent Caterpillar, Malacosoma disstria Hbn.

This caterpillar was not recovered from the Western District in 1954.

3.3.10. Fall Cankerworm, Alsophila pometaria (Harr.)

This insect was found in fairly large numbers on maple, ash, and elm in the Dauphin, Valley River, and Wilson River areas, but it was causing only light injury to most trees examined.

3.3.11. Spotless Fall Webworm, Hyphantria textor Harr.

Two samples of the spotless fall webworm were collected from the St. Rose area. The host tree in both instances was willow and defoliation was negligible.

3.3.12. Jack-Pine Budworm, Choristoneura pinus Free.

One collection containing three larvae of this species was found on jack pine in the Western District. This collection was taken along the Norgate Road in Riding Mountain National Park.

3.3.13. Large Aspen Tortrix, Archips conflictana (Wlk.)

Larvae of this species were found on white poplar stands throughout the Western District in 1954. In all instances, defoliation was very light.

3.3.14. American Poplar Leaf Beetle, Gonioctena americana (Schaeff.)

The American poplar leaf beetle was generally distributed throughout the district but caused no extensive defoliation of poplar.

3.3.15. Striped Alder Sawfly, Hemichroa vryoes (Fourc.)

A marked decline in populations of this insect occurred throughout the Western District. In areas where the alder sawfly caused light to moderate defoliation in 1953, damage was inconspicuous in 1954. High water levels in most alder stands examined may have prevented the sawfly adults from emerging.

3.3.16. Birch Leaf Skeletonizer, Bucculatrix canadensisella Cham.

The birch leaf skeletonizer was recovered in small numbers from white birch throughout Riding Mountain National Park. In other sections of the district no trace of this insect was noted on the birches examined.

3.3.17. White-Pine Weevil, Pissodes strobi, (Peck)

The white-pine weevil was generally distributed throughout the Western District in 1954. The heaviest concentrations of this insect occurred in the central and western sections of Riding Mountain National Park. Dead leaders were common on young spruce along the Old Dauphin Trail and along the Whitewater Lake Road. Some damage to white spruce terminals was also noted along the Norgate Road in the eastern section of the Park.

3.3.18. Pine Tortoise Scale, Toumeyella numismaticum (Pettit & McD.)

The pine tortoise scale, which commonly occurs on young jack pine, was detected in two areas in the district. In each case only one tree was affected. The collections were taken from sec. 2, tp. 36, rge. 23, and sec. 21, tp. 46, rge. 25, W.P. mer.

3.3.19. The Leaf Beetle, Chrysomela tremulae (F.)

This leaf beetle was present on most regeneration poplar examined east from Dauphin through St. Rose, McCreary, Shergrove to Reykjavik. Light defoliation occurred in a small stand of young poplar between the Narrows and Reykjavik. Elsewhere in the district only a trace of this insect was observed.

3.3.20. Pitch Nodule Maker, Petrova albicapitana (Busck.)

This insect, which causes nodules on the laterals and main stems of young jack pine, was found in small numbers in most stands examined in the district.

3.3.21. Grey Willow-Leaf Beetle, Galerucella decora (Say)

This insect caused extensive damage to willow stands throughout the Western District in 1954. The distribution of collections and damage estimates are shown in Fig. 2.

Complete skeletonizing of willow foliage was common along the Lake Audy Road in Riding Mountain National Park and in the Grandview, Gilbert Plains and Biell areas. Light to moderate damage occurred north from Dauphin through Ethelbert, Pine River, and Renwer. East of Lake Dauphin light to moderate skeletonizing was recorded. A small area of moderate damage was recorded along the Camperville-Winnipegosis Road.

3.3.22. Other Noteworthy Insects

The following insects were generally distributed throughout the Western District but they were causing no appreciable defoliation.

Insect species	No. Collections	Remarks
<u>Acronicta fragilis</u> Gn.	5	Found on spruce, caused no damage
<u>Anacamptodes vellivolata</u>	11	Found on white spruce and jack pine, causing no defoliation
<u>Archips rosaceana</u> Harr.	8	Found on w. poplar, causing no damage
<u>Badebecia urticana</u> Hbn.	14	Common on white poplar, causing no defoliation
<u>Dysmigia lorecaria</u> Evers	7	Found on white poplar, causing no defoliation
<u>Eupithecia luteata</u> Pears	6	Found on white spruce, causing no damage
<u>Orthosia hibisci</u> Gn.	21	Common on white poplar, but caused no damage
<u>Protoboarmia porcelaria</u>	15	Common on white spruce, but caused no damage
<u>Rhagothrips californica</u>	7	Found on white poplar, causing no defoliation
<u>Semiothisa bicolorata</u> Fabr.	7	Found on jack pine, causing no defoliation
<u>Semiothisa sexmaculata</u> Pack	11	Common on tamarack but caused no damage
<u>Semiothisa granitata</u> Gn.	28	Common on white spruce, causing no defoliation
<u>Zeiraphera fortunana</u> Kft.	10	Common on white spruce, causing no defoliation

WESTERN DISTRICT MANITOBA

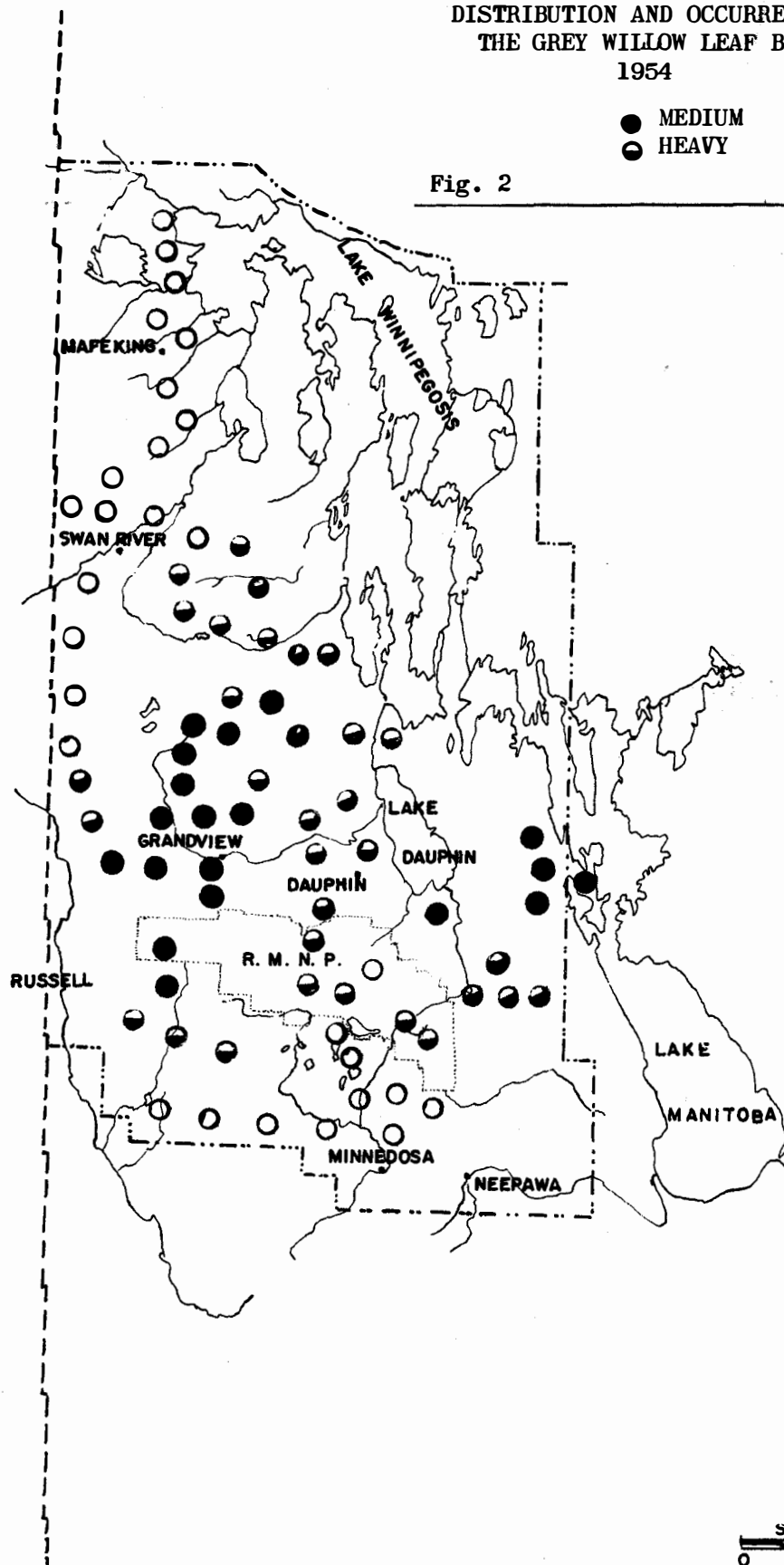
FOREST INSECT AND DISEASE SURVEY WINNIPEG

DISTRIBUTION AND OCCURRENCE OF
THE GREY WILLOW LEAF BEETLE
1954

● MEDIUM
○ HEAVY

Fig. 2

SASKATCHEWAN



Scale
0 35

3.4. TREE DISEASE CONDITIONS

3.4.1. Canker on Poplar, Hypoxylon pruinaum (Klotche.) Cke.

Dead tops on poplar resulting from complete girdling of the trees by H. pruinaum was common in the Ethelbert and Pine River areas. Cankers were also commonly found on open-growing poplar from Camperville south through Winnipegosis and Fork River to Dauphin. Light to moderate infections were noted east of St. Rose through Shelgrove to the Narrows on Lake Winnipeg. In the agricultural areas through the district, localized infections were causing moderate to heavy tree mortality to white poplar. Collections of this disease were obtained at the following locations: Birdtail Valley (sec. 26, tp. 28, rge. 21, W.P. mer.), Mink Creek (sec. 15, tp. 28, rge. 21, W.P. mer.), and Birtle (sec. 6, tp. 17, rge. 26, W.P. mer.).

3.4.2. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

Jack pine appeared to be relatively free from mistletoe attack in the district except at Cowan where infection was heavy.

3.4.3. Spruce Needle Rust, Chrysomyxa sp.

Moderate to heavy infections of the spruce needle rust occurred on white and black spruce in the Singoosh and Blue lakes areas, and in the central and western portion of the Duck Mountain Forest Reserve. In Riding Mountain National Park, infection was light to moderate and generally confined to small areas of open-growing white spruce. Spruce stands elsewhere in the district remained relatively free from needle rust attack (Fig. 3).

3.4.4. Leaf Spot of Balsam Poplar, Septoria musiva (Pk.)

This fungus, which attacks the foliage of young and mature stands of balsam poplar causing the foliage to turn a reddish brown, occurred at varying degrees of intensity throughout the district. Moderate to heavy infections were observed in the Shell River Valley and from Ethelbert north to Mafeking.

3.4.5. White Trunk Rot, Fomes igniarius (L.) Call

White trunk rot, caused by the false tinder fungus, F. igniarius, was common throughout the district. It occurs mainly in mature white poplar stands. Conks on white poplar are particularly noticeable along No. 10 Highway in Riding Mountain National Park and along the west border of the Duck Mountain Forest Reserve.

3.4.6. Needle Cast of Tamarack

An unidentified fungus that attacks the needles of tamarack, caused light to moderate damage in the Riding Mountain National Park. The most severe infection occurred along the Norgate Road in the eastern section of the park. The infected trees had a brown scorched appearance and

WESTERN DISTRICT MANITOBA

FOREST INSECT AND DISEASE SURVEY-WINNIPEG

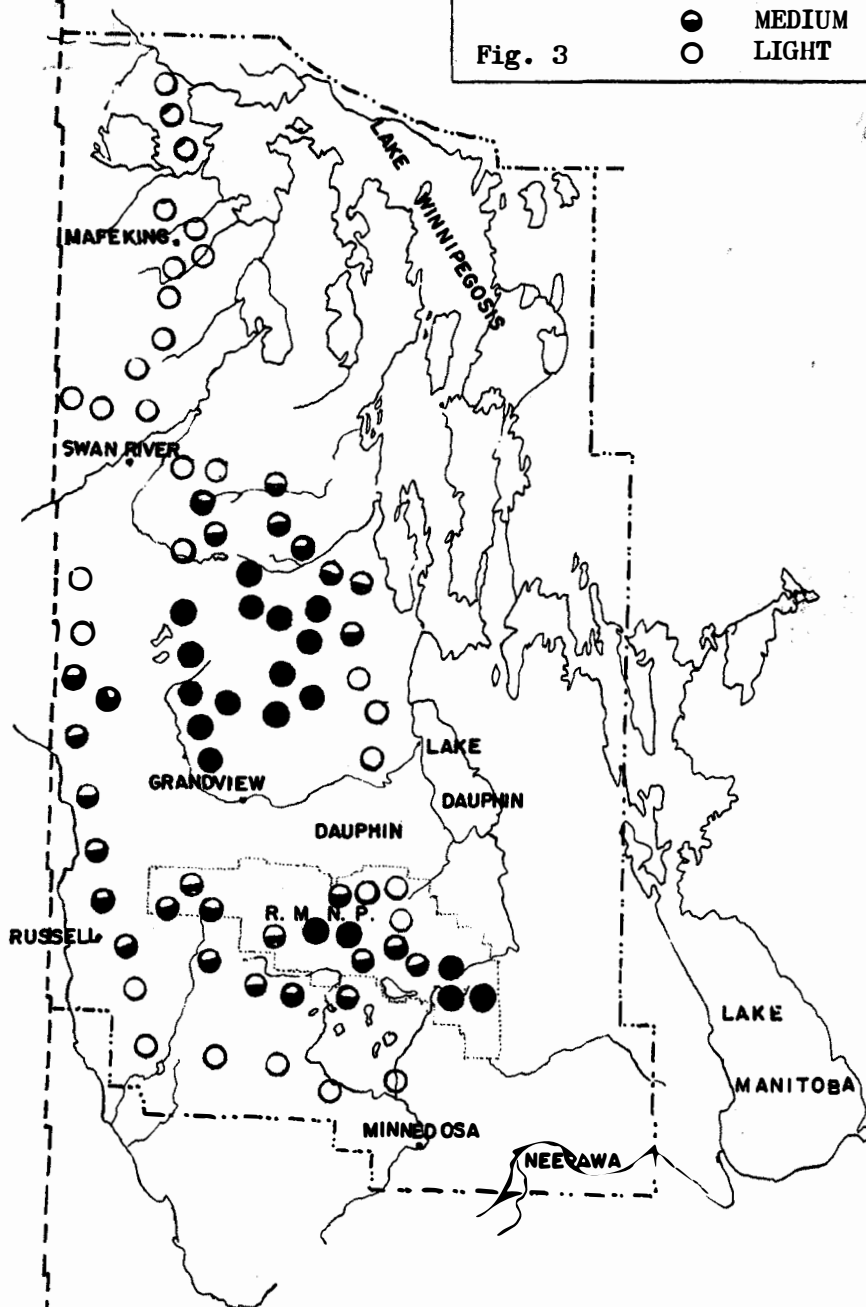
RUST DAMAGE ON WHITE AND
BLACK SPRUCE 1954

AS DETERMINED BY GROUND
AND AERIAL SURVEYS

Fig. 3

- HEAVY
- ◐ MEDIUM
- LIGHT

SASKATCHEWAN



Scale
0 35

affected needles remained on the tree until after the normal period of needle drop. Light infection also occurred in scattered tamarack stands in the Cowan, Renwer, and Mafeking areas. Elsewhere in the district, no trace of the fungus was recovered. Damage to tamarack needles by this fungus is shown in Fig. 4.

3.4.7. Yellow Witches'-Broom, Peridermium coloradense (Diet.) A. & K.

The heaviest concentration of yellow witches'-broom caused by P. coloradense, occurred on white and black spruce in the central portion of Riding Mountain National Park. Several specimens were taken from sec. 35, tp. 19, rge. 17, W.P. mer.; sec. 6, tp. 20, rge. 19, W.P. mer.; and sec. 4, tp. 22, rge. 19, W.P. mer. Light infections occurred along the Singoosh Lake Road in the Duck Mountain Forest Reserve. An occasional broom was also observed on black and white spruce from Mafeking north to the Overflowing River.

3.4.8. Dying of Spruce Needles

Two collections containing dying white spruce needles were submitted for diagnosis. To date the causal agent has not been determined. This condition of white spruce needles, which caused the needles to turn a reddish brown, was detected along the North Shore Road in Riding Mountain National Park. However, infection was confined to a small area and caused no appreciable damage. It was also detected in sec. 19, tp. 30, rge. 24, W.P. mer. and sec. 24, tp. 27, rge. 26, W.P. mer. in the Duck Mountain Forest Reserve. In each case, damage was confined to one or two trees.

3.4.9. Black Knot of Cherry, Dibotryon morbosum (Schw.) T. & S.

There was little or no change in the distribution and occurrence of this disease on cherry in 1954. Infections were moderate to heavy along the Norgate Road in Riding Mountain National Park. Elsewhere in the district, occurrence was generally light.

3.4.10. White Trunk Rot, Radulum casearium (Morgan) Lloyd

Despite the special sampling for the detection of this trunk rot during the survey, no specimens were found in 1954.

3.5. PERMANENT SAMPLE STATIONS

The following table gives the locations of permanent sample stations that were established in the Western District in 1954.



Figure 4. Needle cast on tamarack in
Riding Mountain National
Park, Manitoba.

TABLE 7

Permanent Sample Stations - 1954

Station no.	Place	Sec.	Tp.	Rge.	Mer.	Grid	Tree Species
01	Minitonas	2	36	23	W.P.	7-046-291	B. spruce
02	Riding Mountain Nat. Park - No. 10 Hwy.	14	30	19	W.P.	7-054-267	" "
03	Duck Mountain For. Res. - Singoosh Rd.	3	31	24	W.P.	7-046-283	" "
04	Baden	35	43	26	W.P.	7-043-302	" "
05	Red Deer River - No. 10 Hwy.	21	46	25	W.P.	7-043-306	" "
06	Riding Mountain Nat. Park - Norgate Rd.	32	19	17	W.P.	7-056-267	" "
07	Duck Mountain For. Res. - Baldy Mt. Rd.	25	28	24	W.P.	7-046-279	" "
16	Duck Mountain For. Res. - Baldy Mt. Rd.	11	29	24	W.P.	7-046-280	W. spruce
17	" " " " - Wellman L. Rd.	16	34	25	W.P.	7-044-288	" "
18	Shell River Valley	25	30	28	W.P.	7-040-283	" "
22	" " "	25	30	28	W.P.	7-040-283	W. poplar

3.6. SPECIAL COLLECTIONS

Several special collections consisting of insect and tree material were made in the Western District of Manitoba during the summer of 1954. The purpose and type of the collections are shown in Table 8.

TABLE 8

Summary of Special Collections

Type and purpose of collection	No. of collections	Days spent making collections (including travel)
Larch sawfly cocoon collections for Winnipeg Lab. - Survey parasite studies	6	4½
Larch sawfly cocoon collections for J. Muldrew project - parasite studies	2	4½
Curled tips from tamarack for J. Heron, Larch sawfly fecundity studies	1	1
Curled tips from tamarack for Winnipeg Lab. Survey - Larch sawfly population studies	9	5
Tamarack and black spruce tree discs for Winnipeg Lab. Survey - Tree growth studies	6	4

3.7. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The following table (Table 9) presents a summary of all insect and tree disease collections taken from host trees in the Western District of Manitoba in 1954.

TABLE 9

Summary of Collections - 1954

No. Insect samples			No. Tree disease samples		
Host	Biology Rangers	Co-operators	Host	Biology Rangers	Co-operators
W. spruce	120	8	W. poplar	34	3
B. spruce	18	3	B. poplar	4	
Balsam	5	-	Tamarack	2	1
Jack pine	31	-	Willow	1	
Tamarack	53	8	W. spruce	12	2
S. larch	1	-	B. spruce	2	
W. poplar	117	1	W. birch	1	
B. poplar	24	1	Balsam	1	
Willow	60	1	Jack pine	7	
W. birch	40	2	Chokecherry	1	
Elm	7	-			
Chokecherry	18	-			
Hazel	3	-			
Alder	13	-			
Dogwood	6	-			
Man. maple	2	1			
Oak	1	-			
S. birch	1	1			
Misc.	15	4			

3.8. PERSONNEL CONTACTED

Name	Title	Address	No. of contacts
E. A. Koons	District Forester	Dauphin	6
J. Koke	Chief Ranger	"	8
B. Balchen	Forest Engineer	"	4
J. Allen	Chief Warden	Wasagamung	3
R. T. Pike	Forest Engineer	"	2
J. Hyska	Park Warden	Rossburn	2
M. Doan	" "	Wasagamung	2
B. Armstrong	" "	Holling River Stn.	3
R. C. McKenzie	Forester	Dauphin	5
A. Briggs	Forest Ranger	"	5
Wm. Presloski	" "	Mafeking	3
J. Adams	Fire Ranger	Barrows	1
J. B. Norman	Forest Ranger	Birch River	2
B. Bates	Sr. Forest Ranger	Swan River	4
C. Dawson	Forest Ranger	Minitonas	3
D. Sinclair	" "	Bield	3
Wm. Mawdsley	" "	Grandview	2
B. Hewett	Fire Ranger	Baldy Mountain	4
S. Williamsen	Forest Ranger	Mafeking	4
H. Karantz	Game & Fish. Off.	Swan River	2
V. B. Patterson	For. Biol. Ranger	Indian Head, Sask.	2
J. Heron	Field Officer	Madge Lake, Sask.	2

4. FOREST BIOLOGY RANGER REPORT

NORTHERN DISTRICT

MANITOBA

1954

by

J. B. Martin

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

4.1. INTRODUCTION

Field surveys to determine the distribution and status of forest insects and tree diseases in the Northern District of Manitoba were carried out from May 26th to September 26th, in 1954.

During this period major insect outbreaks were mapped, the distribution of minor species recorded, and the occurrence and distribution of forest tree diseases noted. Aerial surveys in a chartered aircraft were conducted in late July and late August covering areas inaccessible by road.

Special projects in the 1954 season included mass collections of larch sawfly cocoons for parasite and disease studies, collection of curled tips from tamarack for sawfly population studies, and defoliation tallies in permanent tamarack sample plots. Forest tent caterpillar egg band surveys were carried out in September. Special attention was given to a search for a white trunk rot of white poplar, Radulum casearium (Morgan) Lloyd.

A total of 365 insect, and 31 tree disease collections were made in the district in 1954. Collections submitted by Forest Service personnel totalled 28. Approximately five hours flying time were provided by the Manitoba Forest Service which greatly facilitated coverage of the district. The assistance and co-operation given by personnel of the Manitoba Forest Service are gratefully acknowledged.

4.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

Three major insect species; the larch sawfly, Pristiphora erichsonii (Htg.), the spruce budworm, Choristoneura fumiferana (Clem.), and the black-headed budworm, Acleris variana (Fern), occurred in outbreak proportions in the Northern District in 1954.

The larch sawfly continued to defoliate tamarack over an extensive area, and while it was generally less severe in the southern part of the district, the area of severe defoliation in the north increased considerably.

The spruce budworm infestation at the northeast tip of Namew Lake remained unchanged in size and severity.

The black-headed budworm was found at low infestation levels in all parts of the district, and caused only very light defoliation.

The populations of the grey willow-leaf beetle, Galerucella decora (Say), and the pitch nodule maker, Petrova albicapitana (Busck.), remained at about the same level as last year. Populations of the forest tent caterpillar, Malacosoma disstria Hbn., the balsam-fir sawfly, Neodiprion abietis (Harr.), and the American poplar leaf beetle, Gonioctena americana (Schaeff.), were lower than last year, while the populations of the yellow-headed spruce sawfly, Pikonema alaskensis (Roh.), the green-headed spruce sawfly, Pikonema dimmockii (Cress.), and of the large aspen tortrix,

Archips conflictana (Wlk.), increased slightly.

The most conspicuous disease in the Northern District was a needle rust of spruce, Chrysomyxa sp. Spore clouds of this rust were seen and reported over the entire district. Another outstanding disease was a dwarf mistletoe on jack pine, Arceuthobium americanum Nutt., which was again common in an area of some 3,000 square miles. Yellow witches'-broom, Peridermium coloradense (Diet.) A & K., was common on stagnate black spruce throughout the district.

Other noteworthy diseases were hypoxylon canker of poplar, Hypoxylon pruinae (Klotsche) Cke., and black knot of cherry, Dibotryon morbosum (Schw.) T. & S.

4.3. INSECT CONDITIONS

4.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly continued to cause widespread damage to tamarack in the Northern District of Manitoba in 1954. A general increase in the size and severity of the infestation was noted. In general, the infestation was of moderate severity in the area bounded by the Overflowing River, Namew Lake, Flin Flon, Pukatawagan, and Atikameg Lake. Severe defoliation was observed from this area north as far as Gillam on the Hudson Bay Railway and was also reported to continue northeast as far as York Factory on the shore of Hudson Bay. The first larval collection of this species was made on June 30 and the last on August 27. The first occurrence of cocoons was recorded on August 4.

Light to moderate defoliation occurred at: The Bog, The Pas, east of The Pas, Cranberry Portage, Flin Flon and in the area east of the Hudson Bay Railway from Ilford south. Severe defoliation was found along the Hudson Bay Railway from Cormorant to Gillam and west to Florence Lake, Limestone-point Lake, and Winapedi Lake. Reports indicate that in the triangular area encompassed by Ilford, York Factory, and God's Lake, tamarack was 90 per cent defoliated.

The area severely defoliated in 1954 is considerably north of the severely defoliated area of 1953, indicating that the general northward extension of the outbreak of larch sawfly continues. Figure 1 shows defoliation of tamarack by the larch sawfly in the Northern District as determined by ground and aerial surveys.

The following table indicates the relative abundance of the larch sawfly in collections obtained from tamarack in the Northern District of Manitoba in 1954.

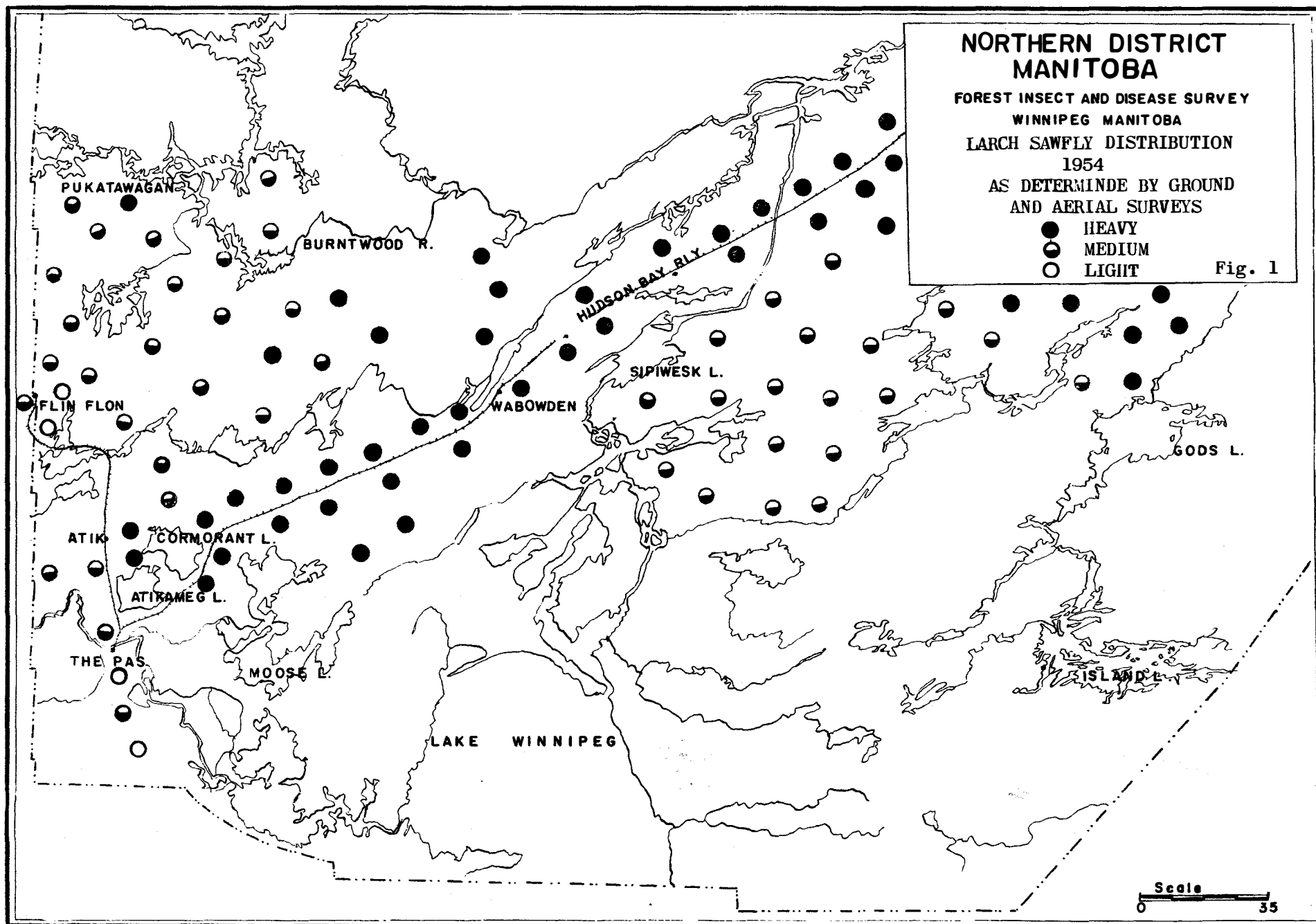


TABLE 1

No. of collections from tamarack	No. of collections containing larch sawfly larvae	Average no. of trees sampled per collection	Average no. of larvae per sample	Average no. of larvae per tree sampled
72	45	5.6	41.2	7.2

During August and September, 18 inch branch samples of tamarack foliage and mass collections of larch sawfly cocoons were taken from five permanent sample plots. The data obtained from the branch samples will be used as an index for forecasting larch sawfly populations. These data are now in the process of being summarized and results will not be available until next season. The cocoons were used for the purpose of determining by dissection the distribution and abundance of parasites. The locations of the collecting points are shown in Table 2.

TABLE 2

Larch Sawfly Cocoon Collections and 18 Inch Branch Samples of Tamarack Foliage

Larch plot no.	Location	Sec.	Tp.	Rge.	Mer.	Cocoons collected	18" Branches collected
101	The Pas	24	57	26	W.P.	200	20
102	Cranberry Ptge.	18	65	26	W.P.	200	20
103	Beaver Lake	17	63	1	W2nd	200	20
104	Cormorant	9	61	21	W.P.	200	20
105	The Bog	22	50	25	W.P.	200	20

Table 3 shows the results of dissections of cocoons of the larch sawfly.

TABLE 3

Summary of Larch Sawfly Parasitism Determined by Dissections:

Plot no.	Place	No.	No. of larch sawfly larvae containing		Per cent effective parasitism			% larvae destroyed by disease	% larvae dead from other causes
			Mesoleius		Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
			Eggs	Larvae					
101	The Pas	200	6	4	38.5	2.0	0	6.0	0.0
102	Cranberry Portage	200	1	0	34.5	0.0	0	5.5	0.0
103	Beaver Lake	200	26	18	42.5	9.0	0	17.0	0.0
104	Cormorant	200	29	11	25.0	5.5	0	19.0	0.0
105	The Bog	200	2	3	25.0	1.5	0	12.5	1.5

Bessa harveyi (T.T.) and Mesoleius tenthredinis Morley were the only parasites recovered. B. harveyi was the most important parasite. Parasitism by this species ranged from 25 to 42.5 per cent. Effective parasitism by M. tenthredinis was again generally low; the highest recorded was nine per cent at Beaver Lake in Saskatchewan. The chalcid parasite, Tritneptis klugii (Ratz.), was not recovered in the district in 1954.

4.3.2. Forest Tent Caterpillar, Malacosoma disstria Hbn.

No defoliation of poplar by the forest tent caterpillar was found in the Northern District in 1954. The moderate infestations that persisted in 1953 at Cranberry Portage (sec. 14, tp. 61, rge. 30, W.P. mer.), at Sturgeon Landing (sec. 21, tp. 61, rge. 29, W.P. mer), and at Meridian Tower (sec. 8, tp. 64, rge. 1, W2nd mer.) completely subsided in 1954. Only two larvae of the forest tent caterpillar were found in the Northern District. These larvae were collected on June 28th and July 7th at Prospector, Manitoba.

Table 4 following shows the relative abundance of the forest tent caterpillar in collections taken from white poplar in the Northern District in 1954.

TABLE 4

No. of collections from white poplar	No. of collections containing forest tent caterpillar larvae	Average no. of trees sampled per collection	Average no. of larvae per sample	Average no. of larvae per tree sampled
64	2	5	1	0.2

An egg band survey conducted during the latter part of the season yielded no egg bands. The following table (Table 5) shows the areas in the Northern District where egg sampling was carried out in 1954.

TABLE 5

Summary of Forest Tent Caterpillar Egg Band Counts Based on Examination of Three White Poplar Trees at Five Points in the Northern District in 1954.

Place	Location			Ave. D.B.H.	Ave. ht.	Ave. No. of egg bands
	Tp.	Rge.	Mer.			
Sturgeon Weir	63	1	W2nd	2.9	23	0
Denare Beach	66	1	W2nd	2.1	26	0
Cranberry Portage	64	26	W.P.	4.5	27	0
Wanless	60	16	W.P.	4.6	37	0
Westray	54	15	W.P.	5.7	32	0

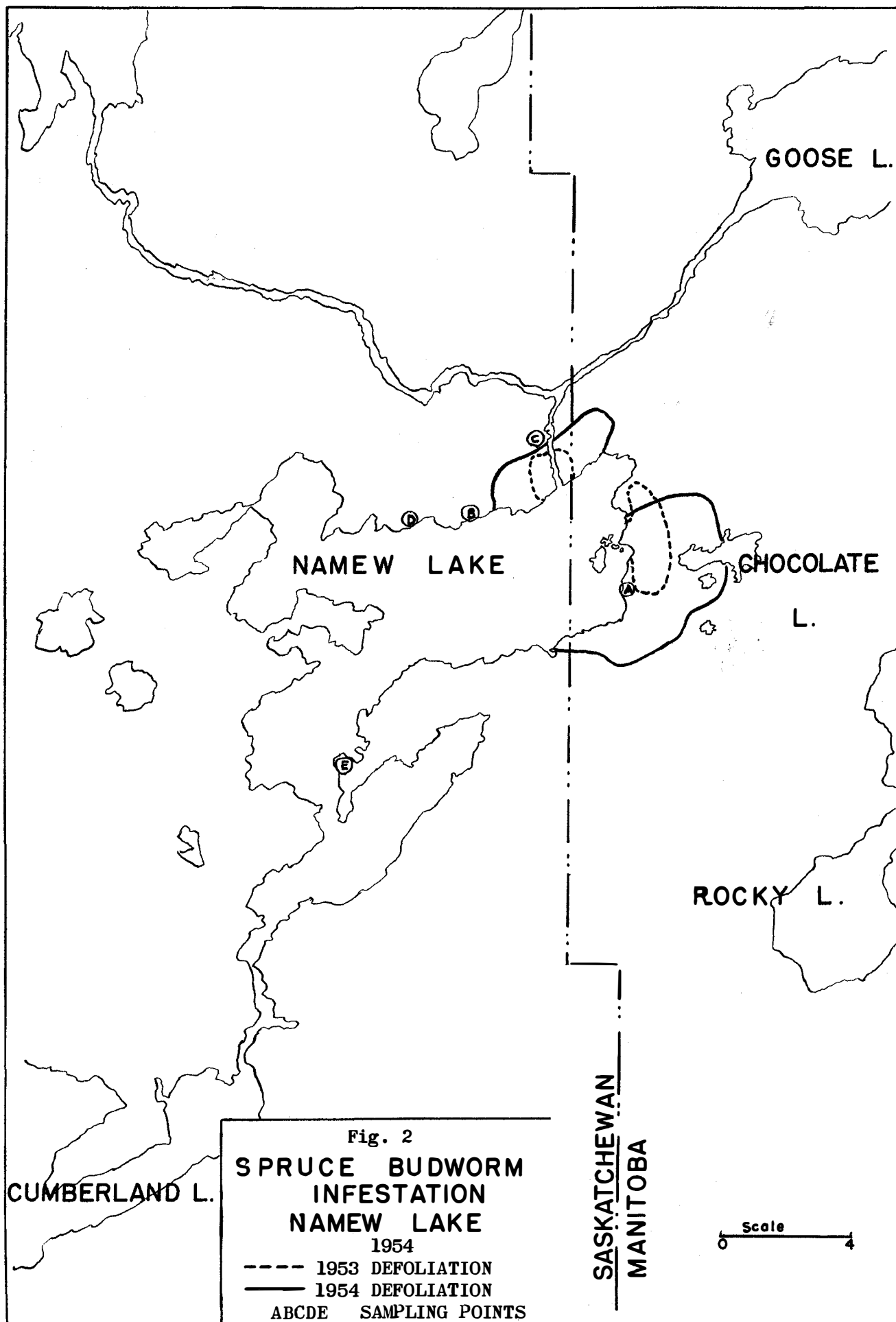
4.3.3. Spruce Budworm, Choristoneura fumiferana (Clem.)

The spruce budworm infestation at the northeast tip of Namew Lake on the Manitoba-Saskatchewan boundary, which was first reported in 1951, continued in 1954. This year approximately 5,000 acres of spruce and regeneration balsam were lightly to moderately defoliated. Severe defoliation was confined to a relatively small area close to the townsite at Sturgeon Landing, Saskatchewan (Fig. 2).

Larval surveys were carried out from mid-June through July in stands adjacent to Namew Lake that were considered susceptible to budworm attack. Outside the infestation area, spruce budworm was found at Cumberland House, Saskatchewan, and The Pas, Manitoba, but populations were very low and defoliation was negligible (Fig. 3). Spruce budworm was also reported to have caused slight defoliation of balsam fir at Island Lake in northeastern Manitoba.

The first larval collection of this species from the Northern District consisted of a 4th instar larva and was collected on June 30. The last larval collection was made on July 9. The first pupa was observed on July 8 and the last on July 15.

Spruce budworm egg counts were again made in and around the infestation at Namew Lake. Table 6 gives the egg counts for 1954 as compared to the counts made in 1953 at the same points.



NORTHERN DISTRICT MANITOBA

FOREST INSECT AND DISEASE SURVEY · WINNIPEG ·

SPRUCE BUDWORM DISTRIBUTION

1954

AS DETERMINED BY GROUND
AND AERIAL SURVEYS

Fig. 3



INFESTATION



SAMPLE



NEGATIVE SAMPLES

SCALE
0 35

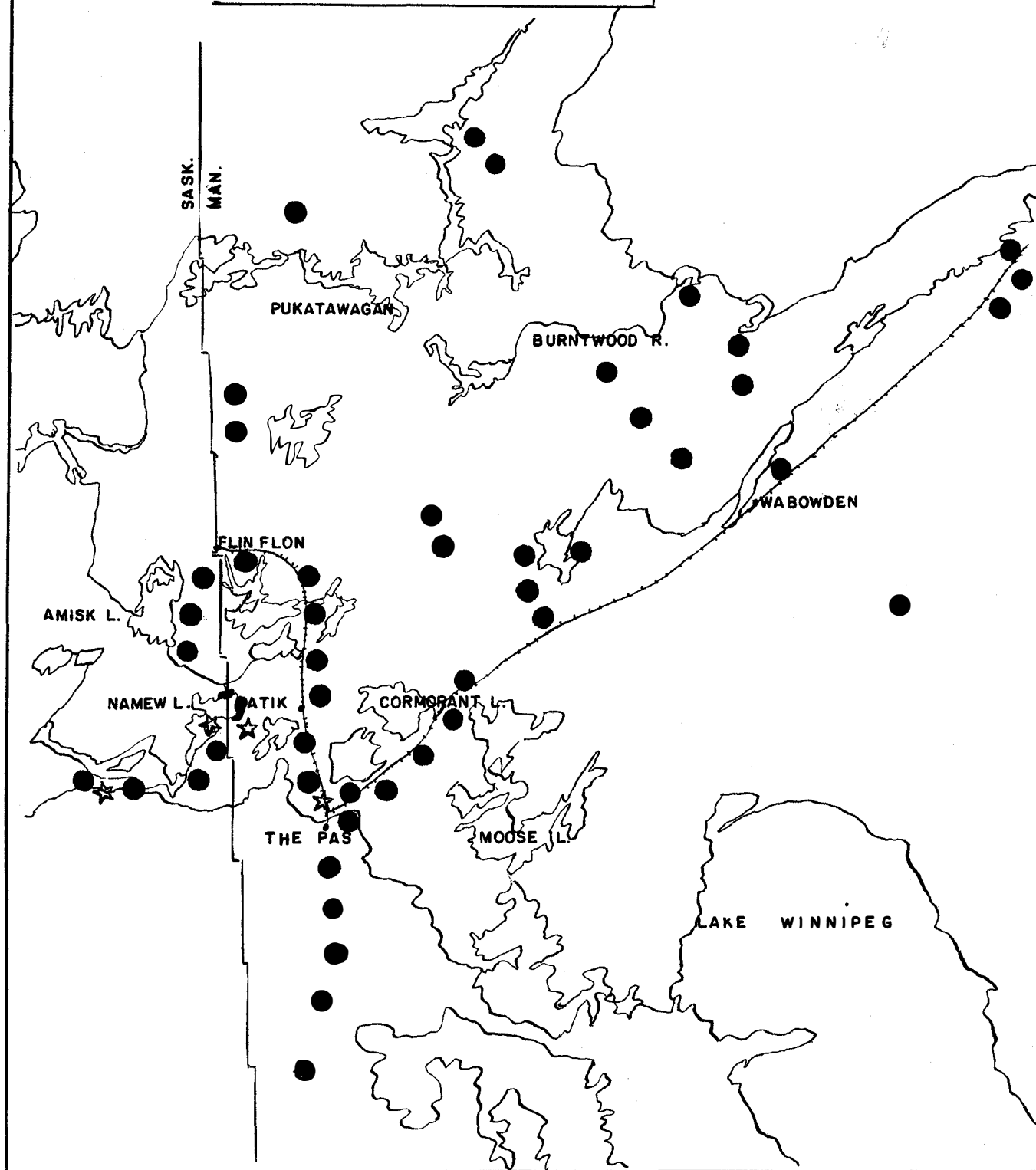


TABLE 6

Average No. of Egg Clusters per 18" Branch Sample (2 branches from each tree).

Area A			Area B			Area C			Area D			Area E		
Mid-crown			Mid-crown			Mid-crown			Mid-crown			Mid-crown		
Tree	'53	'54	Tree	'53	'54	Tree	'53	'54	Tree	'53	'54	Tree	'53	'54
1	1.5	2.0	1	1.0	0.0	1	1.5	5.0	1	0.0	0.0	1	0.5	0.0
2	0.0	1.5	2	1.0	0.0	2	0.5	10.5	2	0.0	0.0	2	0.0	0.0
3	4.0	2.5	3	1.5	0.0	3	0.0	14.0	3	0.0	0.0	3	0.0	0.0
4	2.0	3.0	4	1.0	0.0	4	1.0	6.5	4	0.0	0.0	4	0.0	0.0
5	5.5	2.5	5	1.0	0.0	5	0.0	5.5	5	0.0	0.0	5	0.0	0.0
6	2.5		6	0.5		6	1.0					6	0.0	
7	3.0		7	0.0		7	0.5					7	0.0	
8	1.5		8	0.0		8	0.0					8	0.0	
9	5.0		9	1.5		9	1.0					9	0.0	
10	2.5		10	0.5		10	1.5					10	0.0	
Av. no. of egg clusters														
	2.8	2.3		0.8	0.0		0.7	8.3		0.0	0.0		.05	0.0

4.3.4. Jack-pine Budworm, Choristoneura pinus Free.

Defoliation by the jack-pine budworm was negligible in the Northern District in 1954. Two samples of this species were taken; one at Nelson Lake consisting of five pupae and one adult, and the other at Weaver Lake consisting of one larva.

4.3.5. Large Aspen Tortrix, Archips conflictana (Wlk.)

This species, which was actively defoliating white poplar over some 12,000 square miles of the Northern District in 1950, showed a steady decline in numbers through 1951, 1952, and 1953. In 1953, populations were at such low levels that no collections were made despite intensive sampling of white poplar. In 1954, slight population increases were again evident and several collections from widely scattered points were obtained. It was detected in five samples taken at Prospector, Nelson House, Atik, Sipiwesk Lake, and Grace Lake. Of these samples, four contained one larva each and the fifth, one pupa. The larval collections were made between June 14 and 25, and the pupal collection on June 25.

4.3.6. American Poplar Beetle, Gonioctena americana (Schaeff.)

A light infestation of this insect reported near The Pas in 1953, completely subsided in 1954. This year only three adults and two larvae of this species were collected in the Northern District. The adults were obtained between June 18 and 21, and the larvae on the 22nd and 23rd of

June. The locations, where this beetle was detected in 1954, were: The Pas Airport, Atik, Cranberry Portage, and Amisk Lake.

4.3.7. Grey Willow-leaf Beetle, Galerucella decora (Say)

During the past four years, populations of the grey willow-leaf beetle have shown a steady decline in the Northern District. In 1954, it occurred only in the triangular area encompassed by The Pas, Cormorant, and Baker's Narrows. Although skeletonizing of willow foliage varied from nil to very light, the majority of willow within this area had discernible Galerucella damage.

4.3.8. Balsam-fir Sawfly, Neodiprion abietis (Harr.)

The balsam-fir sawfly, which was found at widely scattered points in the Northern District in 1950 and 1951, has shown a steady decline during the last three years. Only two samples were obtained in 1952 and none in 1953 or 1954.

4.3.9. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly was found in all parts of the Northern District north of The Pas and west of the Hudson Bay Railway as far north as Gillam. Populations were small and defoliation varied from nil to very slight. Larval collections of this species were made between June 30 and August 25, and pupal collections between July 25 and August 25.

Because of the mixed populations of the black-headed budworm and the spruce budworm on the same hosts in some areas, it was found difficult to obtain relative estimates of damage caused by the yellow-headed spruce sawfly.

At Sturgeon Landing, Saskatchewan, light defoliation was seen on white spruce on the fringe of a stand. This was a very small area and was the only location where the insect was found in large numbers. Twenty larvae were collected in a 5-tree sample.

4.3.10. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

The green-headed spruce sawfly population increased slightly in 1954. Twenty-four samples containing this insect were taken in 1954, while none were found in 1953. The samples contained few larvae and defoliation by this insect was not perceptible.

The area from which the samples were taken was roughly that between The Pas, Gillam, Cormorant Lake, and Namew Lake. Samples were taken at each of these locations.

Larvae were found from June 30th to August 18th, and cocoons from July 7 to August 18.

4.3.11. Pitch Pine Nodule Maker, Petrova albicapitana (Busck.)

The pitch pine nodule maker population continued to decline in Northern Manitoba as it has for the last five years. At Radio Range (sec. 14, tp. 57, rge. 26, W.P.), where nodules were numerous in 1950 and 1951, no new nodules were found in 1954.

Nodules were found only at Atik, Manitoba, and at Creighton, Saskatchewan. In both these places, nodules were difficult to find, indicating low population levels.

4.3.12. Black-headed Budworm, Acleris variana (Fern.)

The black-headed budworm was generally distributed through the Northern District in 1954. Although this insect was common on spruce and balsam fir, defoliation was for the most part very light. Defoliation was most conspicuous in the Prospector and Stevenson Lake areas.

In all, 61 samples of black-headed budworm were collected in the Northern District. Larvae were found from June 29th to August 26th; pupae from July 7th to August 28th; and adults from August 4th to August 28th.

4.3.13. Other Noteworthy Insects.

Insect species	No. of collections	Remarks
Army Worm, <u>Cirphus unipuncta</u>	5	Occurred frequently on grass, weeds, and in gardens at The Pas, Cormorant, and Gillam. One found on spruce at Wabowden.
White-pine Weevil, <u>Pissodes strobi</u>	3	Recovered in collections at Cranberry Portage and Cormorant. Only one tree infested in each case.
Ugly Nest Tortrix, <u>Archips cerasivorana</u>	4	Very few tents observed. Generally occurred in the vicinity of The Pas and Cormorant.
Olethreutid sp.	1	This species caused moderate rolling of leaves to $\frac{1}{4}$ acre of poplar near Grace Lake.

4.4. TREE DISEASE CONDITIONS

4.4.1. Dwarf Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

Arceuthobium americanum, a mistletoe of jack pine, first recorded in the Northern District about 1930, is now known to occur in an area of approximately 3,000 square miles. The disease appears to be generally confined to mature jack-pine stands in the Turnerberry, The Pas, Atikameg Lake, Cormorant Lake, and Wekusko districts.

South of The Pas, in the Turnerberry area, 75 to 90 per cent of the jack pine are affected in an area of approximately 1,225 square miles. From Atikameg Lake, the infestation extends northeast along the Hudson Bay Railway, through the Cormorant Lake area to Wekusko. This area, in which approximately 50 per cent of the jack pine are affected, covers about 2,000 square miles.

Samples of this mistletoe were taken in 1954 at: The Pas, Prospector, and Atikameg Lake.

4.4.2. Black Knot of Chokecherry, Dibotryon morbosum (Schw.) T. & S.

In 1954, scattered chokecherry southwest of Flin Flon had black knot on about five per cent of the stems in a quarter acre plot.

4.4.3. Gall Rust, Cronartium sp.

During the past five years this disease has occurred at almost every point in the Northern District where jack pine is found. For the most part, only occasional trees have been affected.

4.4.4. Witches'-broom on Black Spruce, Peridermium coloradense (Diet) A. & K.

Witches'-brooms are very common on black spruce in the Northern District. Brooms were seen in almost every stand of black spruce. Aerial surveys conducted from 1950 through to 1954 indicate that witches'-brooms may be found on occasional trees as far north as Lynn Lake, Nelson House, and Gillam.

Samples of brooms were taken in 1954 at Freshford, The Pas, Atik, Overflowing River, Pukatawagan, Prospector, and Gillam.

4.4.5. Canker of Poplar, Hypoxylon pruinaum (Klotche.) Cke.

This canker of poplar was found to be generally distributed in the Northern District, but the incidence was low and the damage light. Samples were taken at Wanless and at Amisk Lake.

4.4.6. White Trunk Rot, Fomes igniarius (L.) Gill

Conks of the false tinder fungus were found only at Amisk Lake, Saskatchewan, in 1954.

4.4.7. Trunk Rot, Radulum casearium (Morgan) Lloyd.

This fungus, which causes a white trunk rot of poplar, was not detected in the Northern District of Manitoba in 1954.

4.4.8. Spruce Needle Rust, Chrysomyxa sp.

This spruce needle rust was widely distributed throughout white spruce stands in the Northern District in 1954. Large spore clouds, caused by this rust, were seen from the ground and on aerial surveys during June and July. Yellow-orange spore clouds, and lakes with a scum of yellow-orange spores were seen scattered throughout the entire district. No severe killing of foliage by this disease was detected.

One sample of needle rust was taken at Reeder's Lake, Manitoba; sec. 19, tp. 57, rge. 26, W.P. mer.

Spore clouds and spore-covered water were particularly noticeable in the following areas:

Location	Sec.	Tp.	Rge.	Mer.
Sturgeon Landing, Sask.	21	61	29	W.P.
Goose Lake, Man.	22	63	28	W.P.
Nelson House, Man.	36	73	10	W.P.
Snow Lake, Man.	12	68	18	W.P.
Gillam, Man.	2	85	18	E.P.

4.5. PERMANENT SAMPLE PLOTS

Five plots were established in tamarack stands in the Northern District in 1954. No additional permanent sample stations were established. The locations and numbers of the permanent plots are shown in Table 7.

TABLE 7

Permanent Sample Plots

Host tree	Size of plot	Location	Grid	Sec.	Tp.	Rge.	Mer.
Tamarack	1 x 2 ch.	The Pas	7-042-323	24	57	26	W.P.
Tamarack	1 x 2 ch.	Cranberry Ptge.	7-040-325	18	65	26	W.P.
Tamarack	1 x 2 ch.	Beaver Lake	7-033-333	17	63	1	W2nd
Tamarack	1 x 2 ch.	Cormorant	7-049-329	9	61	21	W.P.
Tamarack	1 x 2 ch.	The Bog	7-043-312	22	50	25	W.P.

4.6. SPECIAL COLLECTIONS

Several special collections, consisting of insect and tree material, were made in the Northern District of Manitoba during the summer of 1954. The material was required for continuation of special studies being conducted by the Winnipeg Survey, and project workers at the Winnipeg and other laboratories. The type and purpose of the collections are shown in Table 8.

TABLE 8

Summary of Special Collections

Type and purpose of collection	No. of collections	Time spent making collections (including travel)
Larch sawfly cocoon collection for Dr. Coppel. Dom. Parasite Lab., Belleville, Ontario	1	1 day
Larch sawfly cocoon collections for Winnipeg Lab. Parasite studies.	5	8 days
Spruce budworm larval collections for Dr. Stehr. Sault Ste. Marie, Ont.	2	1 day
Spruce budworm larval collections for Mr. R. J. Heron. Winnipeg, Manitoba	2	1 day
Spruce budworm larval collections for Mr. A. M. Heimpel. Sault Ste. Marie, Ontario	2	1 day

TABLE 8 (cont'd)

Type and purpose of collection	No. of collections	Time spent making collections (including travel)
Curled tips from tamarack for larch sawfly population studies. Winnipeg Survey	5	2.5 days
Tamarack tree discs for tree response studies. Winnipeg Survey	4	1 day

4.7. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The number of insect and tree disease collections made in 1954 in the Northern District of Manitoba from the principal species are shown in the following table (Table 9).

TABLE 9

Host tree	No. of insect samples	No. of disease samples
White poplar	64	15
Black poplar	10	1
Tamarack	72	
Willow	32	
White spruce	28	1
Black spruce	61	8
White birch	33	1
Balsam fir	10	
Jack pine	24	5
Elm	1	
Maple	1	
Chokecherry	5	
Dogwood	1	
Alder	4	
Miscellaneous	12	
Unknown	7	
Totals	365	31

4.8. PERSONNEL CONTACTED

Name	Address	Title	Service	No. of contacts
C. Patterson	The Pas	Dist. Forester	MFS	12
R. Ross	"	Chief Ranger	MFS	8
C. McLean	"	Dist. Engineer	MFS	5
W. Shipley	"	Forest Ranger	MFS	14
R. Cooper	"	" "	MFS	11
E. Clarkson	"	Fire Ranger	MFS	30
J. Richenholler	Cranberry Ptge.	Forest Ranger	MFS	8
A. Moens	" "	Fire Ranger	MFS	8
A. Towell	Flin Flon	Field Officer	DNR	3
W. Reese	" "	" "	DNR	1
D. McKinnon	Channing	Forest Ranger	MFS	5
O. Shaw	Cumberland House	Field Officer	DNR	2
B. Crate	" "	Employee	DNR	2
W. Erlendson	Sherridon	Forest Ranger	MFS	1
F. Fenner	Cormorant	Fire Ranger	MFS	5
A. Davidson	Prince Albert	Asst. Dep. Min.	DNR	1
C. Brown	" "	Northern Administrator	DNR	1
C. Smith	Snow Lake	Fire Ranger	MFS	1
D. Wood	Nelson House	" "	MFS	1
W. Hislop	Wabowden	Forest Ranger	MFS	3

5. FOREST BIOLOGY RANGER REPORT

HUDSON BAY DISTRICT

SASKATCHEWAN

1954

by

M. R. Pratt

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

5.1. INTRODUCTION

Field surveys to determine the prevalence of forest insects and tree diseases were conducted in the Hudson Bay District of Saskatchewan from the third week of May to mid-October, in 1954. Major insects and tree disease outbreaks were mapped and the distribution and abundance of minor insect pests and diseases recorded.

A total of 493 insect samples, and 148 tree disease samples were collected throughout the Hudson Bay District during the 1954 season.

Approximately 3½ hours of aircraft travel were supplied by the Department of Natural Resources, which made it possible to survey areas otherwise inaccessible. The assistance and co-operation received from personnel of the Saskatchewan Department of Natural Resources and private co-operators is gratefully acknowledged.

5.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

There were a few minor changes in the status of some forest insect pests in the Hudson Bay District during 1954. Populations of the larch sawfly continued to decline and defoliation to tamarack stands was lighter than in the four preceding years. High water levels, parasites, and predators were considered the major control factors in most areas.

Populations of the yellow-headed spruce sawfly, black-headed budworm, and a leaf roller Olethreutid sp. increased slightly. The pyralids, Tetralopha asperatella Clem. and Meroptera pravelle Grt. were present in most white poplar stands.

The survey for forest tree diseases was continued in 1954. Arceuthobium americanum Nutt., a mistletoe on jack pine, was again prevalent in the Hudson Bay area.

A parasitic fungus, Wallrothiella arceuthobii (Pk.) Sacc., which attacks the female flowers of A. americanum, and prevents the maturation of seed, was present in jack-pine mistletoe infections. Arceuthobium pusillum Peck., a dwarf mistletoe on black spruce, was also noticed. The needle rust, Chrysomyxa ledicola (Peck.) Lagerh., was quite common on white spruce stands in the Porcupine Provincial Forest. Three other diseases, Hypoxyylon pruinatum (Klotsche.) Cke., a slash fungus, Radulum casearium (Morgan) Lloyd, and Polyporus pargamensis (Fr.) Sacc. were commonly found on aspen throughout the Hudson Bay District.

5.3. INSECT CONDITIONS

5.3.1. Larch Sawfly, Pristiphora erichsonii (Mtg.)

All accessible tamarack stands in the Hudson Bay District were examined and sampled in 1954 to determine the extent and severity of

larch sawfly defoliation. While present in all tamarack stands, a further decline in populations of this insect was evident. Defoliation of tamarack in the district as determined by ground and aerial surveys is shown in Fig. 1.

In the Madge Lake area of the Duck Mountain Forest Reserve and on the south slopes of the Porcupine Provincial Forest, defoliation of tamarack was light.

Larch sawfly defoliation to tamarack was light between Usherville and Hudson Bay. Larch sawfly populations on scattered tamarack along the trail from Reserve to Eldridge Lake were low and caused no noticeable damage. All swamps east of Hudson Bay along the Armit Road as far as the Manitoba border were examined. Light defoliation was noted in sec. 12, tp. 44, rge. 32, W2nd mer., 21 miles east of Hudson Bay, and at sample plot 103 in tp. 44, rge. 31, W.P. mer., 28 miles east of Hudson Bay.

Slightly heavier defoliation to tamarack foliage was seen along the C.N.R. right-of-way from Chemong to Cantyre on the Manitoba border. In this area moderate defoliation ranging up to 40 per cent was observed.

Tamarack swamps west of Hudson Bay to Prairie River and Crooked River were surveyed and light defoliation was recorded. Surface water to a depth of 14 inches was present in most swamps and good foliage production noted in this area.

Nil to slight defoliation was recorded in a larch stand in sec. 19, tp. 43, rge. 12, W2nd mer. northwest of Bjorkdale. The same conditions existed in a tamarack stand west of Chelan in tp. 42, rge. 11, W2nd mer.

In the Carrot River and Nipawin areas, light defoliation was observed on tamarack. Northeast of White Fox, tamarack stands were sampled as far as tp. 54, rge. 10, W2nd mer., a distance of approximately 35 miles along the Flin Flon Highway. In this region all tamarack growth was observed to be lightly attacked by the larch sawfly.

Scattered tamarack south of Tisdale along Highway No. 35 was checked for larch sawfly activity; small populations were found, resulting in light defoliation.

Mass collections of larch sawfly cocoons were taken from five widely separated points in the district (Table 1). The cocoons were dissected to determine the species and abundance of larch sawfly parasites.

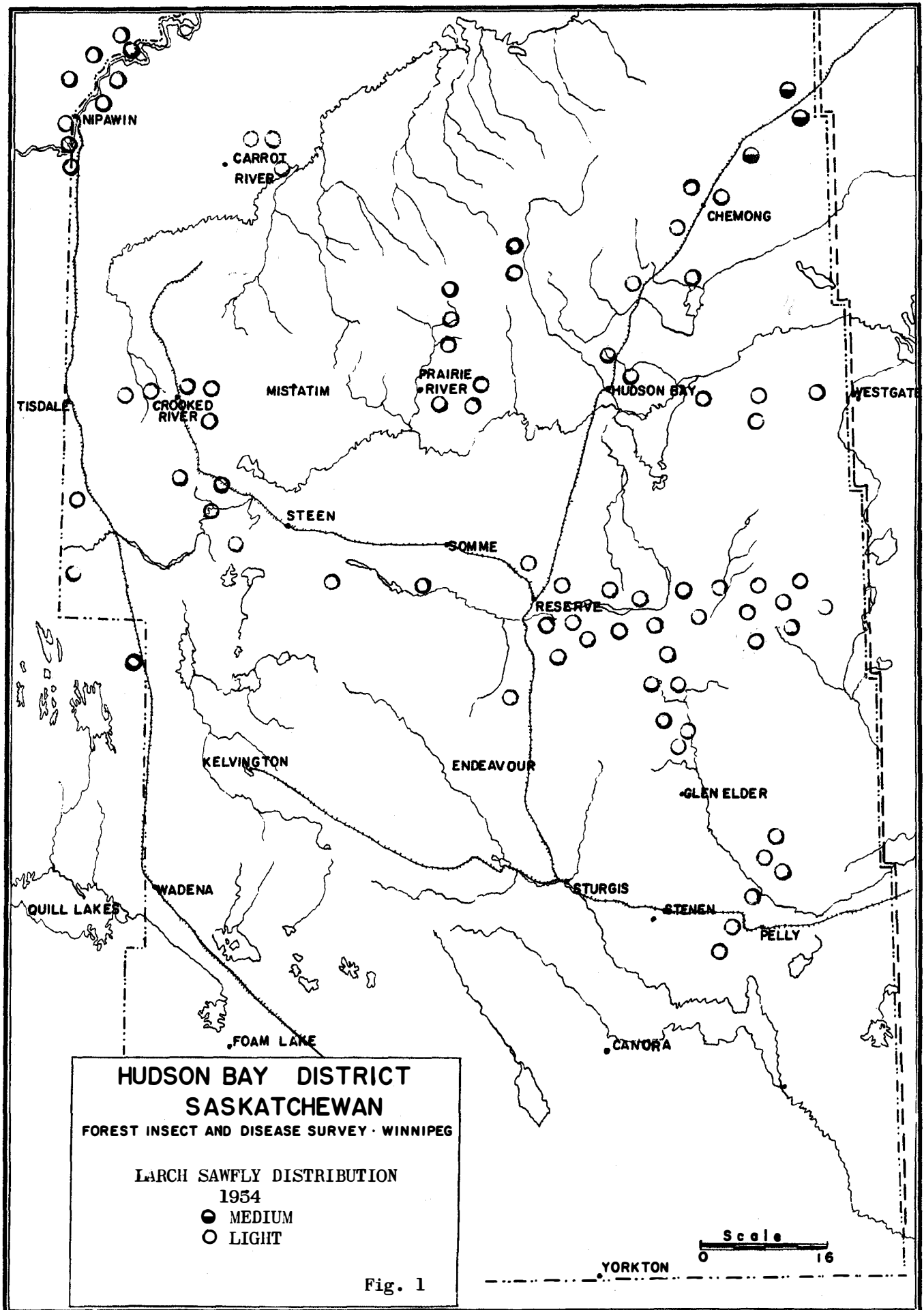


TABLE 1

Areas from which Mass Collections of Larch Sawfly Cocoons Were Taken for
Parasite Studies

Plot or area no.	Place	Sec.	Tp.	Rge.	Mer.	Grid	No. of cocoons
108	Bjorkdale	19	43	12	W-2	7-015-303	140
103	Armit		44	31	W.P.	7-034-303	178
105	Greenbush	21	41	5	W-2	7-026-305	170
104	Armit	6	44	32	W.P.	7-032-303	150
101	Armit	12	44	2	W.P.	7-033-303	150

Results of the dissections are shown in Table 2. As in the former years, the most effective parasite was B. harveyi, which accounted for as much as 33 per cent parasitism of cocooned larvae in some areas. M. tenthredinis was of lesser importance; the effective parasitism amounting to only one per cent. The chalcid parasite, Tritneptis klugii Ratz., was absent from mass collections of larch sawfly cocoons in 1954.

TABLE 2

Summary of Larch Sawfly Parasitism Determined by Dissections

Plot or area no.	Place	Number of cocoons dissected	No. of larch sawfly larvae containing <i>Mesoleius</i>		Per cent effective parasitism based on sound larvae			% larvae destroyed by disease	% larvae dead from other causes
			Eggs	Larvae	<i>Bessa</i> <i>harveyi</i>	<i>Mesoleius</i> <i>tenthredinis</i>	<i>Tritneptis</i> <i>klugii</i>		
108	Bjorkdale	140	0	0	33	-	0	31	Nil
103	Armit Trail	178	0	0	32	-	0	23	3
104	Armit Trail	150	1	1	25	1	0	33	2
101	Armit Trail	150	1	1	36	1	0	22.6	1
105	Greenbush	171	0	1	26	.75	0	19	2

5.3.2. Large Aspen Tortrix, Archips conflictana (Wlk.)

This leaf roller, which is periodically found at outbreak levels in the Hudson Bay District, caused only light defoliation of aspen in 1954. White poplar between Tallpines and Bertwell along No. 9 Highway, which was heavily attacked in 1952 and 1953, showed no appreciable defoliation in 1954. Larvae of A. conflictana were collected throughout the Duck Mountain, Porcupine and Northern Provincial forests but populations were at very low levels. Scattered samples were also taken in the Nipawin and Carrot River areas.

5.3.3. Jack-pine Budworm, Choristoneura pinus Free.

Larvae of the jack-pine budworm were collected from regeneration jack pine northeast of White Fox in tp. 53, rge. 13. Only very light defoliation was recorded.

5.3.4. Spruce Budworm, Choristoneura fumiferana (Clem).

All accessible white spruce stands in the Hudson Bay District were sampled, but only two samples of this insect were recovered in 1954. Both samples were collected in sec. 2, tp. 47, rge. 3, W2nd mer. north of Washee. Defoliation in this area was very light.

5.3.5. Forest Tent Caterpillar, Malacosoma disstria Hbn.

This insect was not found in the Hudson Bay District in 1954.

5.3.6. Pine Tortoise Scale, Toumeyella pumismaticum (Pettit & McD.)

Two collections of this insect were taken in a young jack-pine stand south of Hudson Bay in tp. 44, rge. 3, W2nd mer.

5.3.7. Pitch Nodule Maker, Petrova albicapitana (Busck.)

Small populations of this insect occurred throughout most jack-pine stands in the Hudson Bay District. This insect, which caused only light damage, was most abundant on regeneration jack pine.

5.3.8. American Poplar Leaf Beetle, Gonioctena americana (Schaeffer.)

The American poplar leaf beetle was widely distributed throughout the Hudson Bay District. Light populations of this insect occurred on regeneration and second growth white poplar stands in the Madge Lake area of the Duck Mountain Provincial Forest. In the Porcupine Provincial Forest, defoliation to scattered white poplar stands ranged from 10 to 15 per cent. Samples of this insect were found in the Northern Provincial Forest along the road to Armit and north of Hudson Bay on immature white poplar along the Otosquen Trail. Light populations of the poplar beetle also occurred on scattered immature poplar trees throughout the areas from Prairie River to Crooked River, and from Clemenceau west to Greenwater Provincial Park.

In the Nipawin, Carrot River areas, defoliation to white poplar by the American poplar leaf beetle was generally light.

5.3.9. Grey Willow-Leaf Beetle, Galerucella decora (Say)

Forty-nine collections of the grey willow-leaf beetle were made throughout the Hudson Bay District in 1954. Skeletonizing of willow foliage was considerably heavier than in 1953. Larvae were found mainly on small soft-leaved willow bushes; the glossy sharp-leaved willow was relatively free from attack.

Severe damage to roadside willow was noted from Arran to Sturgis, and from Hinchliffe to Usherville. Willow bushes west of Yorkton to Leross were moderate to severely skeletonized. Moderate to severe damage was observed on some soft-leaf willow between Wadena and Tisdale.

5.3.10. Balsam-fir Sawfly, Neodiprion abietis (Harr.)

Eight widely scattered collections of the balsam-fir sawfly were obtained in the Hudson Bay District in 1954. In all cases damage to the host, White spruce, was negligible. The relative abundance of the balsam-fir sawfly, based on 5-tree beating samples, from white and black spruce, is shown in Table 3.

TABLE 3

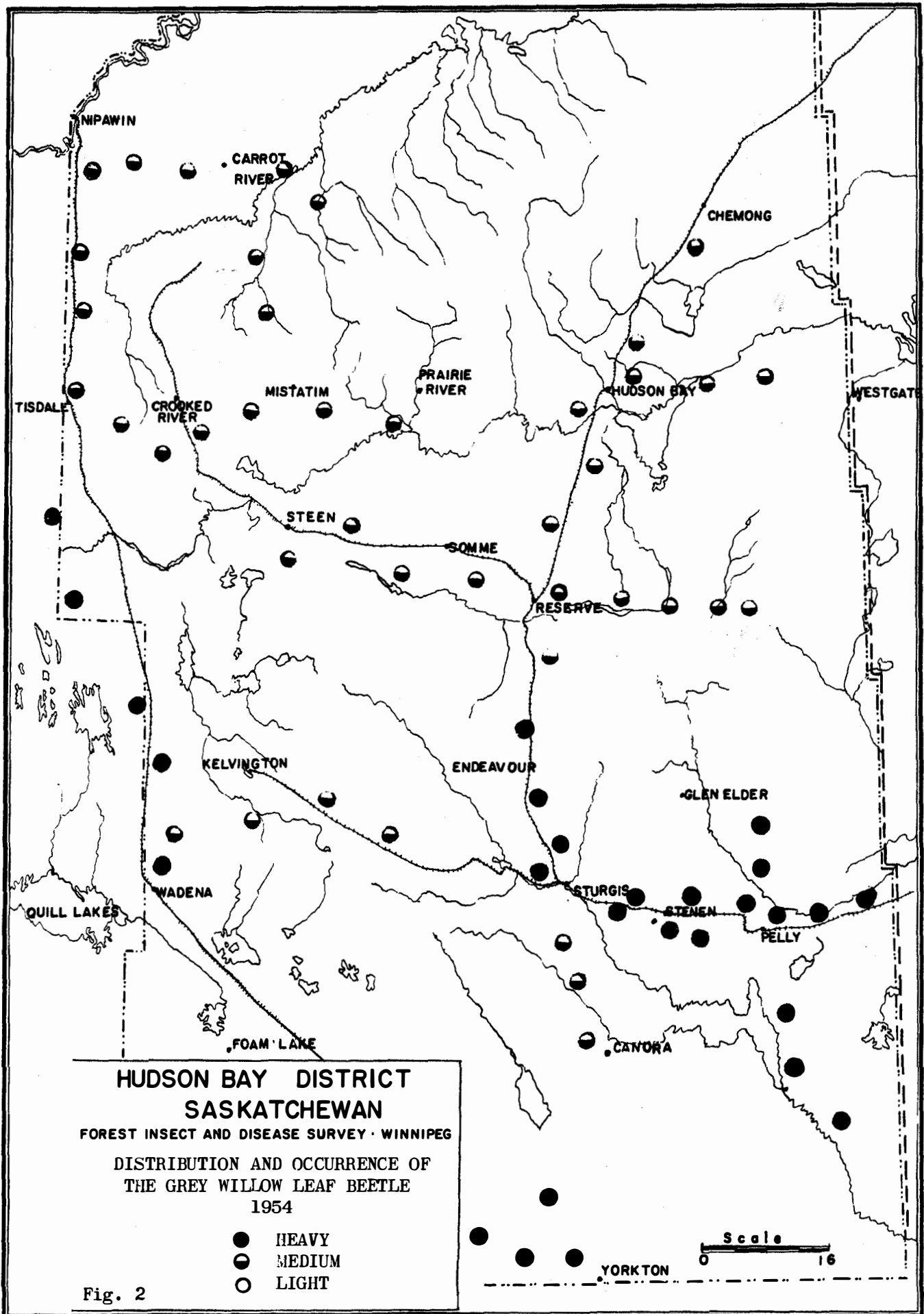
Balsam-fir Sawfly Collections - 1954

Host	Total no. of host tree samples	Per cent collections con- taining sawfly	Ave. no. sawflies per collection	Ave. no. sawflies per tree
W. spruce	76	8	3.3	.7
B. spruce	11	0	0	0

5.3.11. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly continued to be the major insect pest of shelterbelt spruce through the Hudson Bay District. Eighty per cent of the spruce samples taken during the yellow-headed spruce sawfly larval feeding period contained at least four or more larvae.

Samples of this insect were found in the Madge Lake area of the Duck Mountain Provincial Forest. Populations of yellow-headed spruce sawfly were slightly higher than in 1952 and 1953 on white spruce in the Porcupine Provincial Forest. High populations of this sawfly were again



present on most shelterbelts in the Etomami Settlement in tp. 43, rge. 2, and 3, W2nd mer. Damage to spruce foliage in this area is shown in Fig. 3.

The relative abundance of the yellow-headed spruce sawfly, based on standard 5-tree beating samples, from white and black spruce, is shown in Table 4.

TABLE 4

Yellow-headed Spruce Sawfly Collections - 1954

Host	Total no. of host tree samples	Per cent col- lections con- taining sawfly	Ave. no. sawflies per collections	Ave. no. sawflies per tree
W. spruce	76	80	6	1.1
B. spruce	11	0	0	0

5.3.12. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

Thirty-eight samples of this insect were collected on white spruce stands throughout the Hudson Bay District in 1954. Populations were low and defoliation to white spruce negligible. During the peak of the green-headed spruce sawfly feeding period, only two or three larvae were obtained per standard 5-tree sample. The relative abundance of green-headed spruce sawfly in beating samples from white and black spruce is shown in Table 5.

TABLE 5

Green-headed Spruce Sawfly Collections - 1954

Host	Total no. of host tree samples	Per cent col- lections con- taining sawfly	Ave. no. sawflies per collection	Ave. no. sawflies per tree
W. spruce	76	48	2.6	.5
B. spruce	11	0	0	0



Figure 3. Yellow-headed spruce sawfly defoliation on shelterbelt, Etomami, Saskatchewan.

5.3.13. Black-headed Budworm, Accleris variana (Fern).

Thirty-nine samples of this insect were collected in the Hudson Bay District in 1954. The black-headed budworm was present on white spruce, black spruce, and balsam fir throughout the entire district. Despite an apparent increase in populations, defoliation to white spruce was still very light. Table 6 shows the relative abundance of black-headed budworm collected in standard beating samples from white and black spruce during the 1954 season.

TABLE 6

Black-headed Budworm Collections - 1954

Host	Total no. of host tree samples	Per cent collections containing sawfly	Ave. no. sawflies per collection	Ave. no. sawflies per tree
W. spruce	76	44	3	.6
B. spruce	11	9	1	.2

5.3.14. Spruce Gall Aphid, Chermes abietis (L.)

Galls of this insect were commonly found on white spruce throughout the Hudson Bay District, but damage was negligible.

5.3.15. Ugly Nest Tortrix, Archips cerasivorana (Fitch)

The ugly nest tortrix was found feeding on chokecherry throughout the entire Hudson Bay District. Defoliation was most severe on scattered chokecherry bushes growing along roadsides and cultivated fields. Typical damage caused by this insect is shown in Fig. 4.

5.3.16. White-pine Weevil, Pissodes strobi (Peck)

Scattered samples of this insect, causing very little damage were found in the Hudson Bay District. Activity was mainly confined to second growth jack pine and white spruce.

5.3.17. Aspen Blotch Miner, Lithocolletis salicifoliella (Chamb.)

This insect was active on most regeneration white poplar. Conspicuous discoloration of white poplar foliage, caused by the aspen blotch miner, was observed at Madge Lake in the Duck Mountain Provincial Forest, Porcupine and Northern Provincial forests.

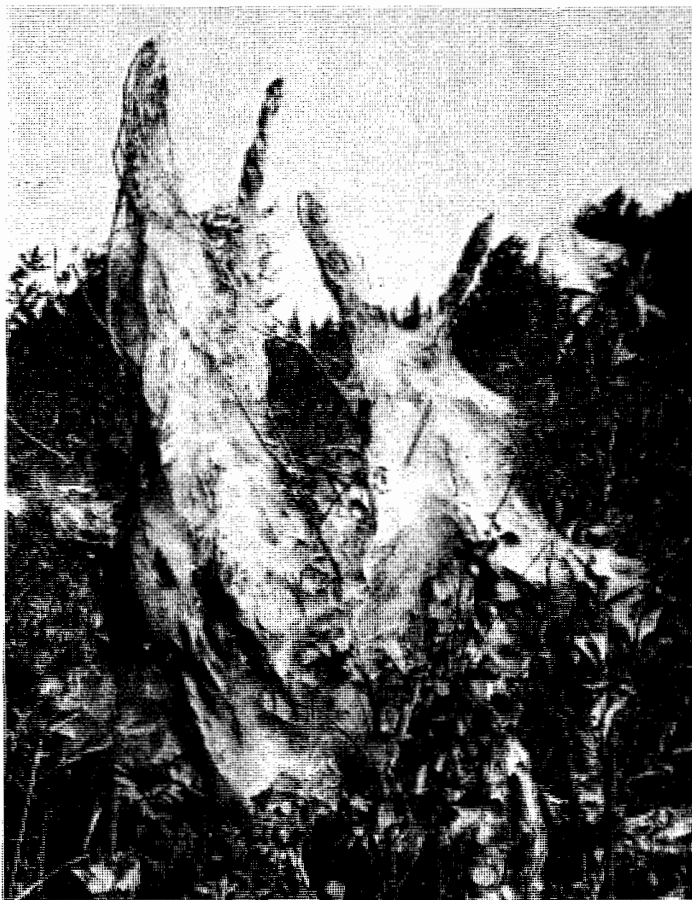


Figure 4. Ugly nest tortrix tents south
of Chelan, Saskatchewan.

5.3.18. Poplar Vagabond Gall Aphid, Mordwilkoja vagabunda (Walsh.)

Deformed leaf clusters on regeneration and second growth white poplar caused by the poplar vagabond gall aphid, were found throughout the Hudson Bay District. Although widely distributed, damage by this insect was generally light.

5.3.19. Other Noteworthy Insects

The following insects were generally distributed throughout the Hudson Bay District in 1954, but caused no appreciable defoliation.

Insect species	No. of collections	Remarks
<u>Tetralopha asperatella</u> Clem.	32	Found on trembling aspen, caused very light defoliation
<u>Microptera praveilla</u> Grt.	16	Found on trembling aspen, caused no defoliation
<u>Orthosia hibisci</u> (Gn.)	73	Common on white poplar, also found on black poplar, alder, and willow
A leaf roller, <u>Olethreutid</u> sp.	33	Common on trembling aspen, increase in population along No. 9 Highway between Endeavour and Hudson Bay
<u>Malacosoma lutescens</u> (N. & D.)	9	Found on chokecherry, mainly in the southern section of the Hudson Bay District
<u>Nymphalis antiopa</u> L.	7	Found on white and black poplar, caused very little defoliation
<u>Dysmigia loricaria</u> Evers	26	Found on white poplar and willow, caused no defoliation

5.4. TREE DISEASE CONDITIONS

5.4.1. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

A heavy infestation of this mistletoe was observed on mature jack pine northeast of White Fox along the Flin Flon Highway. Another small area of jack pine infested with mistletoe was observed in tp. 44, rge. 3, W2nd mer. southeast of Hudson Bay. This infestation was confined to about four acres of mature jack pine.

5.4.2. Parasite on Jack Pine Mistletoe, Wallrothiella arceuthobii (Pk.) Sacc.

This fungus parasite, which prevents the maturation of jack-pine mistletoe seed, was common on mistletoe northeast of White Fox along the Flin Flon Highway and in tp. 44, rge. 3, W2nd mer. southeast of Hudson Bay.

5.4.3. Canker of Poplar, Hypoxylon pruinaum (Klotsche.) Cke.

Cankers caused by H. pruinaum were most abundant in the aspen grove region of the Hudson Bay District (See Fig. 5). A moderate concentration of this disease was noted at Madge Lake in the Duck Mountain Provincial Forest. Several samples were also taken along the southern slopes of the Porcupine Mountains. Some evidence of this disease was found in the Northern Provincial Forest. However, there appeared to be a progressive tapering off of occurrence toward the northern fringe of the district, and in the extreme northern end of the district, the disease was absent in a number of stands.

5.4.4. Trunk Rot of White Poplar, Radulum casearium (Morgan) Lloyd

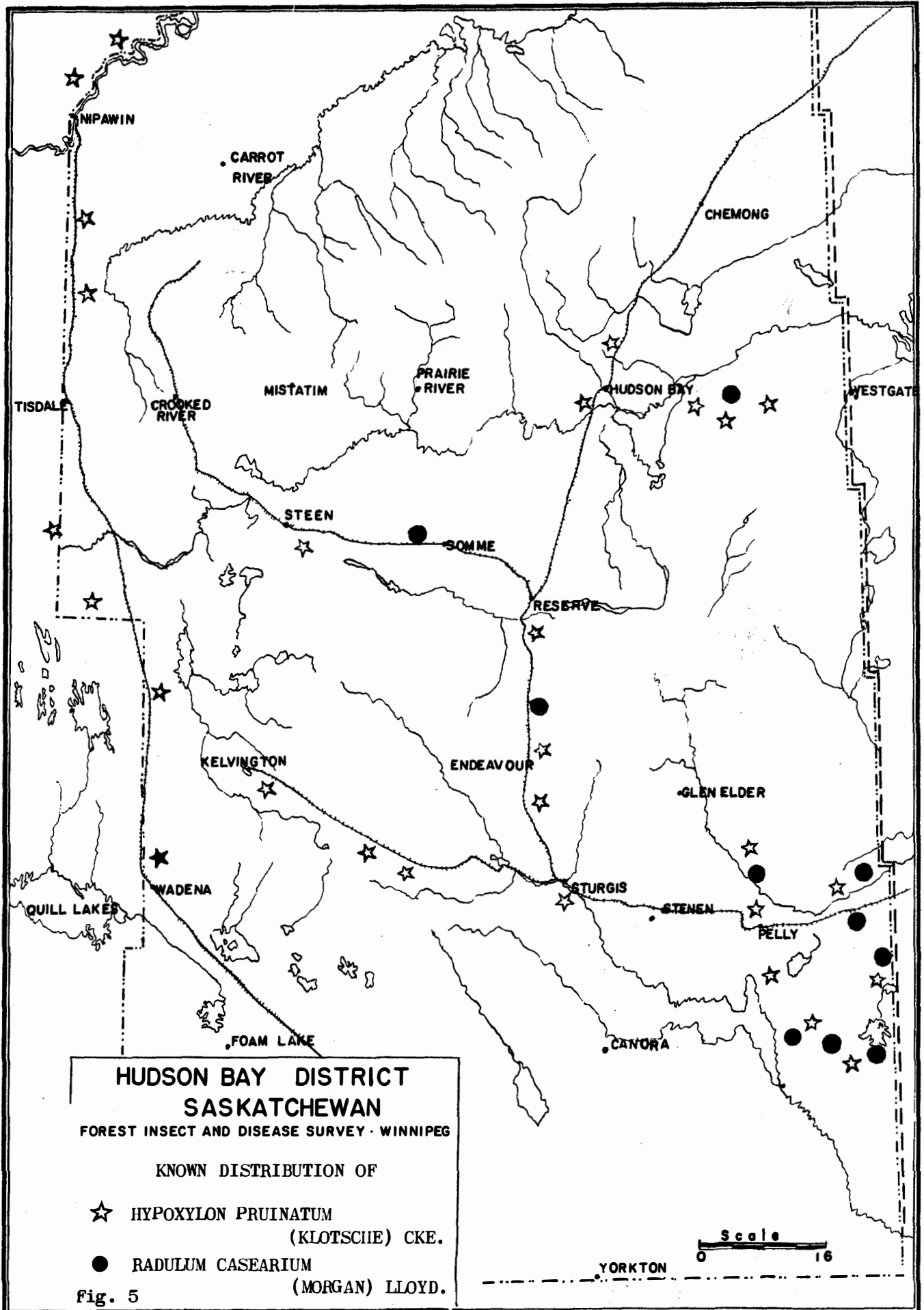
Scattered samples of this decay fungus of white poplar were found throughout the Madge Lake area in the Duck Mountain Provincial Forest (See Fig. 5). Some evidence of its occurrence was also found on the under surface of wind-blown white poplar along the southern and western slopes of the Porcupine Hills. Despite extensive sampling this fungus was not found in other parts of the Hudson Bay District in 1954.

5.4.5. White Trunk Rot, Fomes igniarius (L.) Gill

Field observations in the Hudson Bay District indicated that F. igniarius, the false tinder fungus, occurred commonly on mature living and dead white poplar throughout the Duck Mountain, Porcupine, and Northern Provincial forests.

5.4.6. White Mottled Rot of White Poplar and Birch, Fomes fomentarius (Fr.) Kichx.

The tinder fungus, F. fomentarius, was commonly found on mature, overmature, and dead white birch. It also occurred occasionally on white poplar. F. fomentarius was generally distributed throughout the entire forested area of the Hudson Bay District.



5.4.7. Black Knot of Cherry, Dibotryon morbosum (Schw.) T. & S.

Black knot of cherry caused by D. morbosum was common on Prunus spp. in the Hudson Bay District of Saskatchewan in 1954.

5.4.8. Spruce Needle Rust, Chrysomyxa ledicola (Peck) Lagerh.

An epidemic of needle rust on black and white spruce occurred between Endeavour and Bertwell in the Porcupine Provincial Forest. It also lightly infected most spruce stands in agricultural and forested areas throughout the remainder of the district.

5.4.9. Dwarf Mistletoe on Black Spruce Arceuthobium pusillum Peck

A moderate but localized infection of the dwarf mistletoe on black spruce in the vicinity of Hudson Bay was examined again this year. This infection occurs in a large swamp in tp. 44, rge. 1, W2nd mer. southeast of Hudson Bay, and in tp. 44, rge. 31 & 32, W.P. mer. Thus far this is the only recorded infection of dwarf mistletoe on black spruce in the Hudson Bay District or in Saskatchewan.

5.4.10. Other Noteworthy Diseases

Host	Locality	Causal organism	Remarks
Aspen	Madge Lake, D.M.P.F.	Sterium sp.	Slash fungus
Aspen	Madge Lake, D.M.P.F.	Trametes hispida	Ring scale rot
Aspen	Armit Road	Pleurotus ostryatus	Slash fungus
White spruce	Armit Road	Fomes roseus	A brown cubical rot
White birch	Madge Lake, D.M.P.F.	Schizophyllum commune	A slash fungus
White spruce	Armit Road	Fomes pini (Thore) Lloyd	Red ring rot of conifers

5.5. PERMANENT SAMPLE PLOTS AND STATIONS

One permanent sample plot and sixteen permanent sample stations were established this year in various forest stands in the Hudson Bay District. The locations of permanent plots and stations established in 1954 are shown in Tables 7 and 8.

TABLE 7

Permanent Sample Plots

No.	Tree species	Place	Location				Grid
			Sec.	Tp.	Rge.	Mer.	
108	Tamarack	Bjorkdale	19	43	12	W-2	7-015-303

TABLE 8

Permanent Sample Stations

No.	Tree species	Place	Location				Grid
			Sec.	Tp.	Rge.	Mer.	
05	W. spruce	Benito Beach	24	31	30	W.P.	7-037-283
06	W. spruce	Madge Lake	36	30	30	W.P.	7-036-283
07	" "	Bertwell	14	42	4	W-2	7-028-301
08	" "	Bertwell	10	42	4	W-2	7-027-300
09	" "	Washee	2	47	3	W-2	7-030-307
10	" "	Bertwell		42	4	W-2	7-028-301
11	" "	Armit Rd.		44	30	W.P.	7-034-303
12	" "	Chelan		41	10	W-2	7-018-300
13	" "	Armit Rd.		44	31	W.P.	7-033-303
14	" "	Clemenceau	34	42	3	W-2	7-029-301
15	" "	Bertwell	19	42	3	W-2	7-038-301
16	W. spruce	Bertwell	9	42	4	W-2	7-027-300
17	" "	Ushta	25	38	5	W-2	7-036-295
21	" "	Etomami Setlmt.	34	43	3	W-2	7-030-303
01	B. spruce	Pelly	30	33	32	W.P.	7-033-287
02	" "	Clemenceau	14	42	4	W-2	7-028-301

5.6. SPECIAL COLLECTIONS

Several special collections consisting of insect and tree material were made in the Hudson Bay District of Saskatchewan during the summer of 1954. The purpose and collection type are shown in Table 9.

TABLE 9

Summary of Special Collections

Type and purpose of collection	No. of collections	Days spent making collections (including travel)
Larch sawfly cocoon collection for Winnipeg Lab., Survey parasite studies	6	8
Curled tamarack tip survey for Winnipeg Lab., Larch sawfly population studies	7	6
Tree discs for Winnipeg Lab., Tree growth studies	5	3
Mass larch sawfly collection for A. M. Heimpel, Sault Ste. Marie	3	2

5.7. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

Table 10 contains a summary of insect and tree disease collections taken from host trees in the Hudson Bay District in 1954.

TABLE 10

Summary of Collections

Host tree	Insect samples	Tree disease samples
W. spruce	76	17
Tamarack	75	
Poplar	133	90
Willow	71	1
W. birch	18	15
Alder	24	
Jack pine	20	11
Chokecherry	38	6
B. spruce	11	4
Balsam	4	4
Miscellaneous	23	

5.8. PERSONNEL CONTACTED

Name	Position	Address	No. of contacts
C. Schell	District Superintendent	Hudson Bay	10
R. Whitlock	Field Supervisor	Southern Sask.	4
A. Towall	" "	Hudson Bay	6
H. Barton	Radio Operator	" "	10
K. Smith	Forester	Carrot River	4
F. Price	Construction Engineer	Hudson Bay	5
H. R. Peacock	Chief Forester	" "	6
J. C. Cockwell	Field Officer	" "	10
H. Randall	" "	Carrot River	2
C. Furgusson	" "	Hudson Bay	8
J. Heron	Park Superintendent	Madge Lake	10
F. Bryson	Field Officer	Usherville	5
F. J. Hawkins	" "	Chelan	2
J. M. Bacon	" "	Pelly	5
W. Boshman	Sask. Timber Board	Hudson Bay	4
W. Stubbington	Field Officer	White Fox	1
A. Kirkpatrick	Office Manager, DNR	Hudson Bay	7
R. Wilson	Field Officer Pilot	" "	5
W. Earl	Forester	" "	4
D. Smith	Field Officer	" "	8
R. Lockhart	" "	" "	2
D. Phelan	Sask. Timber Board	" "	7

6. FOREST BIOLOGY RANGER REPORT

PRINCE ALBERT DISTRICT

SASKATCHEWAN

1954

by

J. A. Drouin

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

6.1. INTRODUCTION

Field surveys to determine the status of forest insects and tree diseases in the Prince Albert District were carried out from May 5th to October 1st in 1954. In the latter part of May and early June, a special survey of the district was conducted to determine the effects of adverse weather on the hatch and survival of forest tent caterpillar eggs and larvae. Standard sampling was conducted from early June to mid-September. Larch sawfly population studies, based on curled tip counts in permanent sample plots, were continued in 1954. Additional studies in tamarack plots included foliage production estimates and defoliation estimates. A number of special collections of insect material were obtained for parasite and disease studies.

Random samples of tree diseases were collected throughout the Prince Albert District in 1954. Special surveys were made of larch canker and a spruce needle rust.

A total of 517 insect and 118 tree disease collections were made in 1954. Collections submitted by private co-operators and Department of Natural Resources personnel totalled 61. Approximately four hours flying were provided by the Department of Natural Resources. This greatly facilitated the mapping of larch sawfly outbreaks and spruce needle rust infections. The writer gratefully acknowledges the assistance given by provincial personnel and private co-operators during the 1954 season.

6.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

The status of some major insects and tree diseases changed somewhat in the Prince Albert District during 1954. The larch sawfly continued to defoliate tamarack over a wide area and the picture remained much the same as in 1953. Forest tent caterpillar populations showed a marked decline and the outbreak which persisted for the last three years, completely subsided. The large aspen tortrix was widespread in 1954, but populations remained light. The leaf hopper, Idiocerus sp., was again abundant in black and white poplar and willow stands; however, there was a decrease in the number of oviposition slits in late fall. Populations of the jack-pine budworm and American poplar leaf beetle were slightly higher in 1954, while on the other hand, the white-pine weevil, the owlet moths, Orthosia hibisci Gn., and Homoglaea hircina Morris., and leaf rollers remained at the same levels. An increase in the prevalence of pine scale, Toumeyella sp., was noted but a corresponding increase of the predator, Hyperaspis binotata Say., appeared to offset damage to the infested trees. Populations of the black-headed budworm, yellow and green-headed spruce sawflies, grey willow-leaf beetle, blotch miner and ugly nest caterpillar remained at low levels.

Tree disease surveys showed an increase in mortality of jack pine infected with the mistletoe, Arceuthobium americanum. Increased mortality was also evident in tamarack stands infected by the larch canker.

A spruce needle rust, Chrysomyxa ~~poss.~~ ledicola, was abundant and widespread and caused severe discoloration of white and black spruce foliage over extensive areas. A canker of white poplar, Hypoxylon pruinae, was prevalent in the district, causing some mortality to white poplar in forest stands, shelterbelts and woodlots. Other noteworthy tree diseases were a shoestring root rot, Armillaria mellea of jack pine; yellow witches'-broom, Peridermium coloradense on spruce; leaf spot, Septoria musiva of black and white poplar; and the white trunk rot, Fomes igniarius commonly found on poplar.

6.3. INSECT CONDITIONS

6.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

Defoliation of tamarack stands by the larch sawfly in the Prince Albert District of Saskatchewan remained much the same as in 1953. Infestations were generally lighter in the southern sections with medium to severe damage occurring over most of the northerly areas. The accompanying map (Fig. 1) shows the distribution and abundance of the larch sawfly over the district in 1954 as determined by ground and aerial surveys. High water levels, caused by abnormal precipitation in July, August and September, were recorded in all tamarack stands examined. In many cases, the abnormally high water varying in depth, from 6 to 24 inches, was present in early spring. These areas (Candle Lake, Fort a la Corne P.F. and Red Rock Block) showed a marked decrease in defoliation in 1953. Foliage production was scanty, with poor leader growth. The first larch sawfly larvae were collected on July 7 and the first cocoons observed July 27. The majority of the larvae were mature in early August; however, a noticeable overlap of instars occurred throughout the season. The last larch sawfly larvae were recorded on August 30.

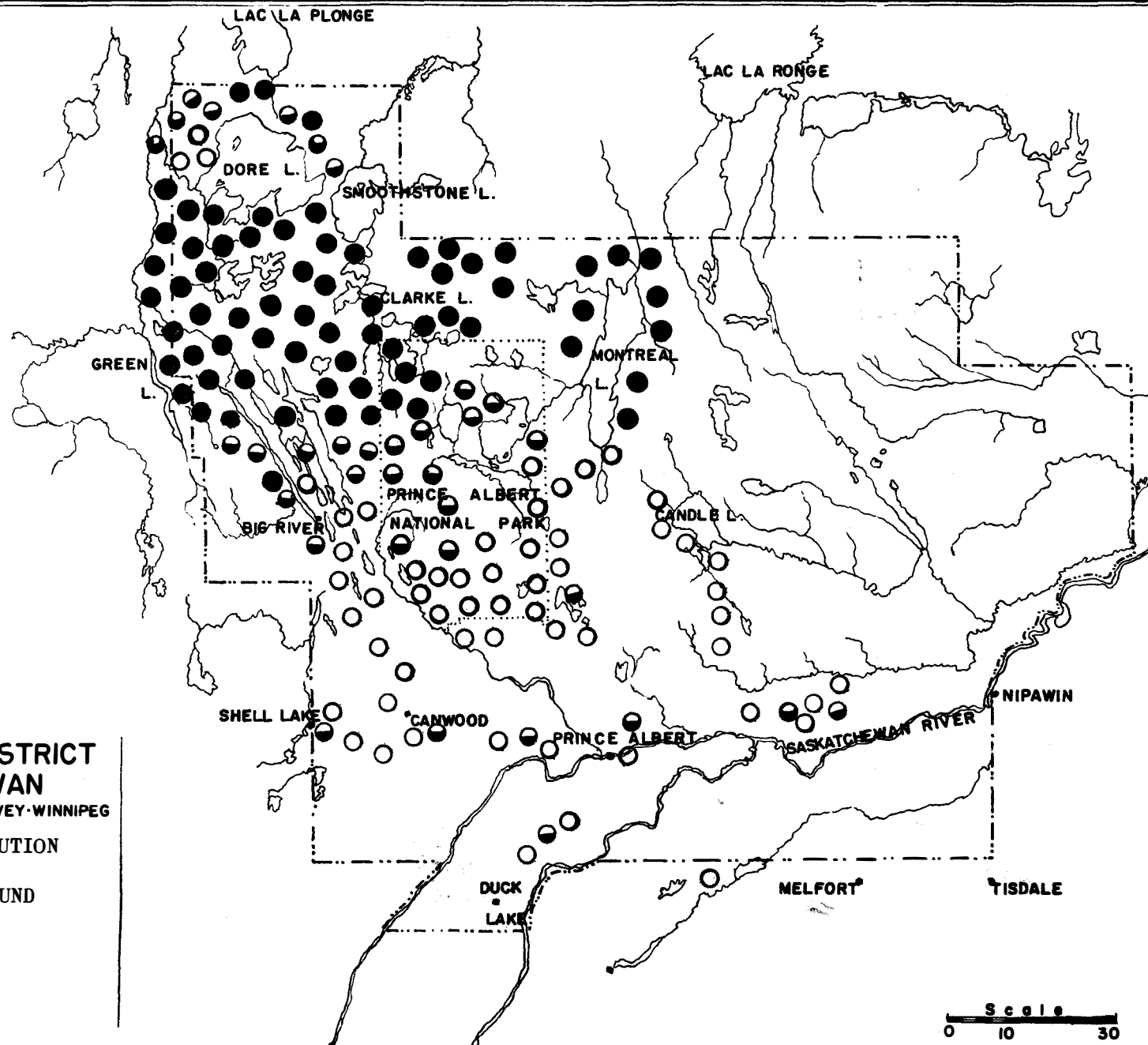
Host tree development varied in different swamps and appeared to be dependent on water levels. Only very light refoleation took place. The new growth was barely visible, protruding up to only 1/16 inch above the bud sheath. In tamarack stands through the southern portion of the district; namely in the Home, Holbein, Red Rock, Steep Creek and McDowall blocks of the Nisbet Provincial Forest, damage ranged from nil to moderate. West of Prince Albert along Highway 55 to Shell Lake, defoliation was light with scattered trees suffering moderate damage.

In the eastern portion of the Prince Albert District through Candle Lake and Fort a la Corne Provincial Forests, damage was negligible. Occasionally moderate damage occurred on single or groups of trees growing on the drier sites west of English Cabin. Larch sawfly defoliation in the Emma Lake Provincial Forest was light with a few "pockets" of moderate to heavy defoliation at the north end of Emma Lake. Some light to medium defoliation occurred west of Prince Albert National Park, decreasing from light to nil toward the south end of Lake Four and west to Ladder and Delaronde lakes to Big River. Light defoliation was observed north of Big River along the east shore of Cowan

**PRINCE ALBERT DISTRICT
SASKATCHEWAN**
FOREST INSECT AND DISEASE SURVEY-WINNIPEG
LARCH SAWFLY DISTRIBUTION
1954
AS DETERMINED BY GROUND
AND AERIAL SURVEY

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



Lake, while along the west shoreline, it was moderate.

Heavy defoliation occurred in most tamarack stands from Cowan Lake to Green Lake in the Big River Provincial Forest. The same conditions existed north of Green Lake in the areas lying east and west of the Beaver River to the Waterhen River. Lighter damage was observed west of Bazill Bay on Dore Lake, decreasing to light in tp. 67, between the Beaver River and Dore Lake. In this area, surface water was prevalent in the tamarack stands. North of Dore Lake to Lac La Plonge defoliation varied from medium to heavy, while stands in the vicinity of the Dore, Sled, Beaupre and Smoothstone lakes suffered severe defoliation. South of Smoothstone Lake through Lesten and Clarke lakes, to Paquin Lake in the northwest end of the Prince Albert National Park, defoliation was moderate to severe.

Mass collections of larch sawfly cocoons were taken from five points in the Prince Albert District. The cocoons were dissected to determine the incidence of larch sawfly parasites and disease. The areas from which larch sawfly cocoons were collected are shown in Table 1.

TABLE 1

Larch Sawfly Cocoon Collections

Plot no.	Place	Sec.	Tp.	Rge.	Mer.	Grid	No. of cocoons
104	Railway Bog, P.A.	8	49	26	W-2	8-077-311	250
114	Red Rock Blk.	19	49	25	W-2	8-078-311	250
102	Crutwell	27	49	1	W-3	8-074-311	250
107	Fort a la Corne P.F.	4	50	20	W-2	8-087-312	250
106	Big River	32	55	7	W-3	8-064-321	250

Results of the dissections are shown in Table 2. Bessa harveyi T.T. and Mesoleius tenthredinis Morley were the two main parasites recovered. M. tenthredinis was the most abundant of the two species, but owing to an immunity factor in the host sawfly larvae, a large number of eggs failed to hatch, thereby greatly reducing its value as an important parasite.

TABLE 2

Summary of Larch Sawfly Parasitism Determined by Dissections

Plot no.	Place	No. cocoons examined	No. larch sawfly larvae larvae containing Mesoleius		Per cent effective parasitism based on sound larvae			% larvae diseased	% larvae dead from other causes
			Egg	Larvae	Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
104	Railway Bog, P.A.	200	68	19	21.3	11.2	0	13.0	2.5
114	Red Rock Block	200	71	18	13.6	10.6	0	10.5	5.0
102	Crutwell	200	45	14	23.5	9.8	0	19.0	4.5
107	Fort a la Corne P.F.	200	22	16	20.9	10.4	0	18.0	5.5
106	Big River	200	13	3	11.7	2.5	0	35.5	5.0

Heavy mortality of larch sawfly larvae caused by disease was recorded in plot 104, Railway Bog, Prince Albert and at plot 114 in the Red Rock Block of the Nisbet Provincial Forest. Diseased larvae were also located in the Fort a la Corne, Big River and Cookson areas. In most cases causal fungus was identified as Empusa sp. High water levels were also responsible for high mortality in larval populations. Drowned larvae were numerous in most swamps examined during the period of larval diapause.

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

A marked decline of populations of the forest tent caterpillar occurred through the Prince Albert District in 1954. Relatively few larvae were found in areas, which as shown by the 1953 fall egg survey, harbored high potential populations.

The first emergence of larvae was recorded on May 24th. Surveys during this period indicated a very low per cent hatch of egg bands. Dissections of egg bands revealed many dead embryos and only approximately 15 per cent of the larvae successfully emerged. The larval emergence was followed by two weeks of adverse weather which appeared to further reduce the numbers of tent caterpillar.

Another factor considered important in the reduction of populations of tent caterpillar was the delay in foliage development in some areas (Fig. 2). In some areas foliage was not available for the larvae until a week to ten days after the recorded emergence data.

Egg band surveys were again conducted in the fall of 1954. No egg bands were recovered in the Prince Albert District and no defoliation by this species is expected in 1955. Table 3 shows the location of egg sampling stations in 1955.

TABLE 3

Forest Tent Caterpillar Egg Survey

Place	Sec.	Tp.	Rge.	Mer.	Ave. D.B.H. in "	Ave. ht. in '	No. of egg bands
Big River 18 mi. N.	14	58	9	W-3	3.6	25.3	0
Mildred 3 mi. W.	27	50	10	W-3	3.0	30.0	0
Shell Lake 3 mi. E.	1	50	8	W-3	3.0	14.0	0
Big River 31 mi. S.W.	12	56	11	W-3	2.6	21.0	0
Shellbrooke	26	49	3	W-3	3.0	17.6	0



Figure 2. Retarded aspen foliage at Duck Lake,
Saskatchewan

6.3.3. The Large Aspen Tortrix, Archips conflictana (Wlk.)

The large aspen tortrix was more widely distributed through the Prince Albert District in 1954 but defoliation by this species still remained light. It was recorded at most points where white poplar was examined between May 21 and June 30.

The heaviest populations occurred in agricultural areas, in the McDowall Block of the Nisbet Provincial Forest, through the Birch Hills area and north to the Saskatchewan River. The same conditions existed west of Prince Albert in the Sturgeon Lake area and in the Holbein Block of the Nisbet Forest.

Second and third instar larvae of the large aspen tortrix were first recorded in the field on May 21. At that time foliage of white poplar was patchy and the buds were only partly opened. By June 22 pupation was general.

An egg survey of this species was attempted to determine the potential population in 1955. However, owing to the very low populations of this insect in 1954, relatively few egg clusters were recorded.

6.3.4. Spruce Budworm, Choristoneura fumiferana (Clem.)

Four collections of this insect were obtained in the Prince Albert District. Two of these were taken from white spruce at Crutwell and two from jack pine in the Red Rock Block of the Nisbet Provincial Forest. In both areas defoliation was negligible.

6.3.5. Jack-pine Budworm, Choristoneura pinus Free.

The jack-pine budworm varied in intensity and distribution in the Prince Albert District in 1954. Increased populations were evident in the Home, Holbein, McDowall, and Red blocks of the Nisbet Provincial Forest while somewhat lower but more widely distributed populations occurred in the Fort a la Corne Provincial Forest. The first jack-pine budworm collection, containing 2nd and 3rd instar larvae, was taken in the Red Rock Block on July 7. By July 15 pupation was general and the first adults in the field were recorded on July 25,

A special survey, consisting of the examination of 5 jack pine trees at 5-mile intervals, was conducted to determine the occurrence of jack-pine budworm in the jack-pine stands of the Prince Albert District. The survey revealed that light populations were present in the Home, Holbein, McDowall, Steep Creek and Canwood blocks of the Nisbet Provincial Forest and throughout the Fort a la Corne Provincial Forest. Larvae were most commonly found on staminate flowering trees with only very scattered populations occurring on non-flowering and regeneration jack pine.

The following table shows the relative abundance of jack-pine budworm larvae and pupae in collections taken from jack pine throughout the district in 1954.

TABLE 4

Summary of Jack-pine Budworm Collections

Host	Total no. of collections	% collections containing budworm	Ave. no. of budworm per collection	Ave. no. of budworm per tree
Jack pine	22	30	5.8	1.1

6.3.6. American Poplar Leaf Beetle, Gonioctena americana (Schffr.)

Distribution and abundance of this species remained much the same as in 1953. While generally distributed throughout the Prince Albert District, defoliation was confined to immature or stagnate open-growing white and black poplar stands. The first poplar leaf beetle larvae were collected May 16.

Medium damage was recorded at Alingly and Wheatley northwest of Prince Albert (sec. 21, tp. 51, rge. 27, W2nd and sec. 18, tp. 51, rge. 26, W2nd respectively). Other areas of medium to heavy damage were observed at Round Lake in the Home Block and in the agricultural area west of Duck Lake. Light to medium damage was recorded at sample plot 101 in the Steep Creek Block and 6 miles west of McDowall. A small but heavy infestation was recorded on regeneration white and black poplar and willow at the Dore and Smoothstone lakes road junction. This area suffered heavy defoliation by forest tent caterpillar in 1953. At the examination points foliage production on white poplar was poor and defoliation ranged from 50 to 75 per cent. Light populations of this species were also observed on immature white poplar along the Dore Lake Road and in the Big River area, but defoliation was light.

6.3.7. Grey Willow-Leaf Beetle, Galerucella decora (Say)

Populations of this species remained light in the Prince Albert District in 1954. During aerial surveys in late August two "pockets" of medium to heavy skeletonizing were observed; one at Ross Lake (tp. 64, rge. 11, W3rd mer.), and the other at the southwest tip of Bazill Bay on Dore Lake.

6.3.8. Balsam-Fir Sawfly, Neodiprion abietis Harr.

Populations of the balsam-fir sawfly were at very low levels. Larval collections were made at Red Rock and Home blocks, Candle Lake, and Fort a la Corne P.F.

6.3.9. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

This species was common in the Prince Albert District but generally caused only light damage to black and white spruce. Moderate defoliation to regeneration white spruce was recorded seven miles south of Candle Lake. Light populations were observed on shelterbelts and woodlots in the Choiceland and Duck Lake areas. Heavy dipterous parasitism of yellow-headed spruce sawfly larvae occurred at Emma Lake (sec. 11, tp. 53, rge. 27, W2nd mer.).

TABLE 5

Summary of Yellow-headed Spruce Sawfly Based on Five-Tree Beating Samples

Host	No. of collections	% collections containing sawfly	Ave. no. of sawfly per collection	Ave. no. of sawfly per tree
W. spruce	11	55	4.6	.92
B. spruce	4	35	0.5	0.1

6.3.10. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

The green-headed spruce sawfly was generally associated with the yellow-headed spruce sawfly. However, populations were very low and caused little defoliation.

6.3.11. Black-headed Budworm, Acleris variana (Fern.)

Distribution and abundance of this species increased in the Prince Albert District in 1954. The highest populations were observed on black spruce but it also occurred commonly on white spruce. The first larva was noted in the field July 7 in the Holbein Block. Light populations were noted in the agricultural areas south of Prince Albert, in the Nisbet and Fort a la Corne Provincial forests, at Candle Lake, and north to the Big River Provincial Forest. A mass collection of 86 larvae was made on July 13 in sec. 22, tp. 49, rge. 25, W2nd mer. Parasitism was common in most areas.

TABLE 6

Summary of Black-headed Budworm Based on Five-Tree Samples

Host	No. of collections	% collections containing budworm	Ave. no. of budworm per collection	Ave. no. of budworm per tree
B. spruce	6	54	4.2	9.9

6.3.12. Pitch Nodule Maker, Petrova albicapitana (Busck.)

This species was again prevalent throughout the jack-pine stands of the Prince Albert District. Distribution remained about the same as 1953. Damage was most conspicuous in the jack-pine regeneration in the Nisbet Provincial Forest.

6.3.13. A Pine Scale, Toumeyella sp.

Damage to jack-pine stands by this insect was more conspicuous during 1954 than in previous years. The increase in scale populations was accompanied, however, by a corresponding increase in populations of the scale predator, Hyperaspis binotata Say.

The most severe attacks of scale were apparent in the Home, Holbein, Round Lake, Steep Creek, Red Rock and McDowall blocks of the Nisbet Provincial Forest. By the latter part of July, scale populations were sharply reduced under the heavy attack by Hyperaspis binotata Say. Noticeable predation was recorded at the heavy infestations in the Home and Holbein blocks, Nisbet Provincial Forest.

6.3.14. White-Pine Weevil, Pissodes strobi (Peck.)

Damage by this weevil occurred mainly in the southern sections of the Prince Albert District. In general, damage was found at scattered points. However, pockets of severe leader damage were recorded on white and black spruce and jack pine in the vicinity of Twin Lakes in the Fort a la Corne Provincial Forest. Damage was first observed on July 27 on white spruce near Twin Lakes and 5 miles north of English Cabin in the Fort a la Corne Provincial Forest. Damage to white, black spruce, and jack pine was recorded at scattered points throughout the Nisbet Provincial Forest, and in the Angling Lake area of Emma Lake Provincial Forest. Typical white-pine weevil damage is shown in Fig. 3.

6.3.15. Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

Discolouration of aspen foliage caused by the feeding of aspen blotch miner was again conspicuous in all areas of the Prince Albert District. Heaviest discolouration was recorded in regeneration and stagnant white poplar stands growing on sandy sites in the Nisbet and Fort a la Corne Provincial forests.

6.3.16. A Leaf Miner, Gracillariid sp.

Pockets of heavy leaf miner damage on willow were observed in the Railway Bog at Prince Albert. Light leaf mining of alder by the same species was also general in the district.

6.3.17. Ugly Nest Tortrix, Archips cerasivorana (Fitch)

Nests of this insect were common in the Prince Albert District in 1954. The heaviest concentrations were recorded in the agricultural



Figure 3. White-pine weevil damage on white spruce at Crutwell, Saskatchewan.

areas north of Melfort, in the McDowall Block, and in the Fort a la Corne Provincial Forest. Damage was confined to roadside shrubs; namely chokecherry.

6.3.18. A Tent Caterpillar, Malacosoma lutescens (N. & D.)

Small populations of this species were scattered throughout most sections of the Prince Albert District. Defoliation was slight and limited to chokecherry, pincherry, and rose bushes.

6.3.19. The Leaf Beetle, Chrysomela interrupta Auct.

Low populations of this leaf beetle caused light defoliation of white poplar, black poplar, and alder in Steep Creek and McDowall blocks and in the Canwood area. Pockets of heavy damage to alder were observed at Miles 5 and 6 in the Fort a la Corne Provincial Forest.

6.3.20. A Webworm, Tetralopha asperatella Clem.

A Pyralid Moth, Meroptera pravella Grt.

These species were generally distributed throughout the white poplar stands of the Prince Albert District. The insects were found associated with large aspen tortrix and other leaf rollers in most areas. Damage in all cases was negligible.

6.3.21. Leaf Roller Moth, Olethreutid sp.

This leaf roller was found causing light to medium damage to new jack-pine terminals, particularly on staminate flowering trees. Heaviest populations were recorded in the McDowall Block and Fort a la Corne Provincial Forest.

The larvae bore down from the top of the new terminals to the end of new growth and pupate. In the earlier stages of attack, terminals turn yellow and are covered with a light coating of frass and webbing on the outer surface. Following the initial attack, the terminals turn brown and eventually break off.

6.3.22. Leaf Hoppers, Idiocerus sp.

Light to moderate populations of leaf hoppers occurred in all white and black poplar and willow stands in the Prince Albert District in 1954. First emergences of this species were recorded on June 1 along the Narrows Road in the Prince Albert National Park. Oviposition slits and several species of leaf hoppers were recovered from all sample points during the season. The most common species obtained were the following:

Idiocerus lachrymalis
Idiocerus suturalis

Oviposition slits on white poplar and willow showed a decrease as compared with 1953. Abnormal weather conditions in the latter part of

August and September may have ~~been~~ affected Oviposition.

6.3.23. Poplar Borer, Saperda calcarata Say

This poplar borer was general in open-growing and stagnated white poplar stands. Light to medium damage was observed in areas south of McDowall, in the vicinity of Duck Lake, in the Holbein, Red Rock and Home blocks of the Nisbet Provincial Forest, and north of Prince Albert at Sturgeon Lake.

6.3.24. Woolly Elm Aphid, (Eriosoma americanum)

Light to medium damage to shade and shelterbelt trees by the woolly elm aphid was reported in the Prince Albert townsite and in a large shelterbelt in the Domremy area.

6.4. TREE DISEASE CONDITIONS

6.4.1. Larch Canker

Tree tallies in permanent tamarack plots in the Prince Albert District indicated the incidence of larch canker increased considerably in 1954. In the areas of heavy larch canker infection in the MacDowall Block, mortality of tamarack increased. Dead tops and dying branches were prevalent on most trees. Tree mortality was also noticeable in the tamarack stands at Crutwell, the railway bog at Prince Albert, the airport bog in the Red Rock Block, the Holbein and Steep Creek blocks, and west of English Cabin in the Fort a la Corne Provincial Forest. In permanent sample plot No. 110 (sec. 13, tp. 56, rge. 24, W2nd mer.), ten miles northwest of Candle Lake, many dying branches and dead tops of tamarack were recorded. The visible signs of infection are: the presence of some swelling, pitch exudations, yellowing of foliage on branches or affected parts, and pitch rings in the branches.

6.4.2. Armillaria Root Rot, Armillaria mellea (Vahl.) Quel.

This fungus, which causes rotting of the bark and wood of the roots and root collar, occurred mainly on regeneration jack pine in widely scattered areas of the Prince Albert District. The disease was generally observed in stands of reduced vigor and those growing on apparently unfavorable soil conditions. Occurrence was most prevalent in the Home, Holbein, and Red Rock blocks of the Nisbet Provincial Forest. Damage to regeneration jack pine caused by A. mellea was also noted at Adamson Lake (sec. 26, tp. 46, rge. 1, W3rd mer.) south of MacDowall, along the Wingard Road (sec. 30, tp. 46, rge. 2, W3rd mer.), at Round Lake, Candle Lake, and in the Steep Creek Block. Larvae of the weevil, Hypomolyx piceus DeG., which are thought to be closely associated with this root rot, were again observed 17 miles northwest of the Candle Lake townsite.

6.4.3. Spruce Needle Rust, Chrysomyxa poss. ledicola (Pk.) Lagerh.

This spruce needle rust was observed on most white and black spruce stands throughout the Prince Albert District. A map outlining the distribution of this rust in the Prince Albert District is shown in Figure 4. In the southern sections of the district damage generally remained light; however, "pockets" or groups of trees suffered medium to heavy damage. In the Candle Lake area damage on black spruce was light and spotty, while in white spruce stands, it was medium to heavy.

Aerial surveys carried out during the season also indicated widespread distribution of this rust fungus in spruce stands over the Big River Provincial Forest, along the Waterhen River, and in the Sled, Dore, Lac La Plonge, and Smoothstone lakes areas.

6.4.5. Yellow Witches'-Broom, Peridermium coloradense (Diet.) A. & K.

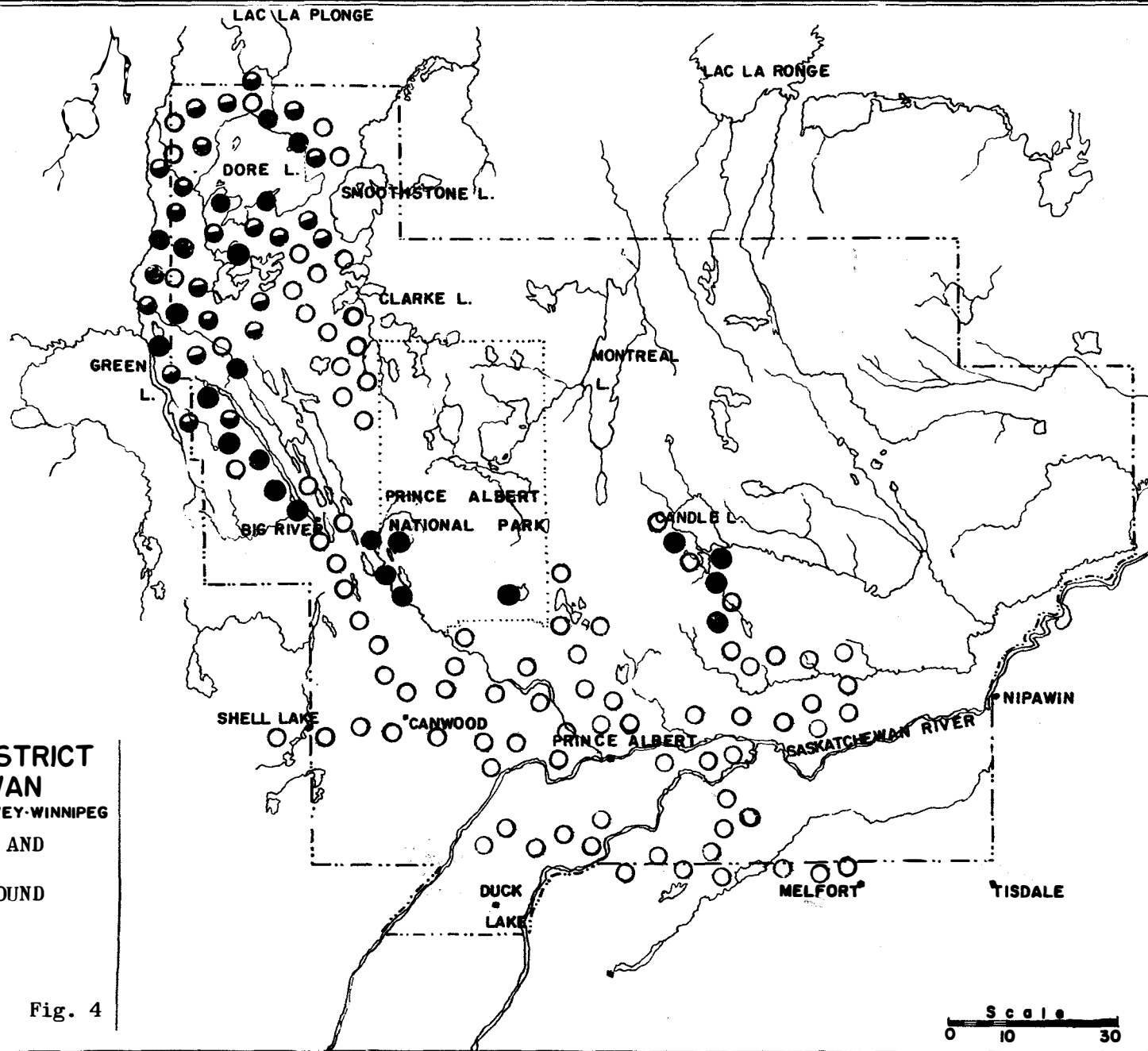
Disease surveys in 1954 indicated that this rust fungus still persisted at widely scattered points in the Prince Albert District. However, in all cases damage was negligible.

**PRINCE ALBERT DISTRICT
SASKATCHEWAN**
FOREST INSECT AND DISEASE SURVEY-WINNIPEG

RUST DAMAGE ON WHITE AND
BLACK SPRUCE 1954
AS DETERMINED BY GROUND
AND AERIAL SURVEY

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 4



6.4.6. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

Mistletoe on jack pine was prevalent to some degree throughout most of the jack-pine stands in the Prince Albert District. Increased mortality of jack pine, caused directly by mistletoe, occurred in the heavy infections in the Home, Holbein, MacDowall, and Steep Creek blocks of the Nisbet Provincial Forest. Typical mistletoe damage is shown in Figures 5 and 6. Mortality of mistletoe-infected jack pine was also heavy in the Fort a la Corne Provincial Forest, in the Canwood Block, and in a small jack-pine stand east of Mont Nabo on Highway 55. Scattered mistletoe attack and light mortality of jack pine was also observed south of Big River, along the Dore Lake Road, and at Candle Lake.

6.4.7. Parasite on Jack-pine Mistletoe, Walrothiella arceuthobii (Pk.) Sacc.

This parasite of jack-pine mistletoe was abundant in all of the heavy mistletoe infections in the Nisbet and Fort a la Corne Provincial forests. The fungus attacks the female flowers of the jack-pine mistletoe and prevents seed maturation.

6.4.8. Canker of Poplar, Hypoxylon pruinaum (Klotsche.) Cke.

Additional reports of the occurrence of H. pruinaum were obtained from white poplar stands in the agricultural areas southwest of Prince Albert. Canker damage to shelterbelts and woodlots was recorded at St. Louis, Kinistino, Melfort and Gronlid. Damage varied from dead leaders to complete killing of occasional trees. Throughout the remainder of the district canker was prevalent in most white poplar stands.

6.4.9. Leaf Spot, Septoria musiva (Pk.)

Leaf Blight, Linospora tetraspora

Balsam poplar foliage in the Prince Albert District suffered heavy attacks by the leaf spot, S. musiva, and the leaf blight, L. tetraspora. Although these fungi cause serious discolouration to balsam poplar foliage, the actual damage to the tree appears to be of little consequence.

6.4.10. Other Noteworthy Diseases

Host	Locality	Causal organism	Remarks
Aspen	Duck Lake	<u>Polyporus pargamensis</u>	Slash fungus - common
Balsam fir	Waskesiu Lake	<u>Fomes pinicola</u>	" " "
Aspen	" "	<u>Polyporus betulinus</u>	" " "
Jack pine	Home Block	<u>Cronartium comandrae</u>	Spindle blister rust - light
Balsam fir	Big River	<u>Hypodermella nerva</u>	Needle cast - light
Black spruce	" "	<u>Fomes pini</u>	Red heart rot - light
Willow	Sturgeon Lake	<u>Melampsora bigelowii</u>	Leaf rust - light
Black spruce	Fort a la Corne P.F.	<u>Chrysomyxa pyrolae</u>	Cone rust - light



Figure 5. Heavy mortality of mistletoe infected jack pine, Steep Creek Block, Nisbet Provincial Forest, Saskatchewan.



Figure 6. Heavy mortality of mistletoe infected jack pine in the Home Block, Nisbet Provincial Forest, Saskatchewan.

6.5. SPECIAL COLLECTIONS

Several special collections, consisting of insect and tree material, were made during the summer of 1954. The material was required for continuation of special studies being conducted by the Winnipeg Survey, and project workers at the Winnipeg and other laboratories. The type and purpose of the collections are shown in Table 7.

TABLE 7

Special Collections

Type and purpose of collection	No. of collections	Time spent on collections
Larch sawfly cocoon collection for J. Muldrew, Winnipeg	1 (3500 cocoons)	3½ days
Cold weather check on forest tent caterpillar egg bands for Winnipeg Laboratory	4 (3 tree checks)	3 days
Large aspen tortrix larvae for Winnipeg Laboratory	(75 larvae)	2 hrs.
Jack-pine budworm larval collection for Dr. Stehr, Sault Ste. Marie	1 (75 larvae)	1 day
Black-headed budworm larval collection for Dr. Stehr, Sault Ste. Marie	1 (86 larvae)	1 day
Larch sawfly cocoon collection for J. Muldrew, Winnipeg	1 (5000 cocoons)	10 days
Larch sawfly cocoon collections for Winnipeg Laboratory	5 (each 250 cocoons)	3 days
Curled tips of tamarack for Winnipeg Laboratory	5	5 days
Tamarack and black spruce tree discs for Winnipeg Laboratory	5	5 days

6.6. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The following table presents a summary of insect and tree disease collections from host trees in the Prince Albert District in 1954.

Host	Insect samples		Tree disease samples	
	Biology Ranger	Co-operators	Biology Ranger	Co-operators
W. spruce	20	7	9	1
B. spruce	9	5	10	0
W. poplar	104	2	21	0
B. poplar	18	0	5	0
Jack pine	82	10	26	0
Balsam fir	2	1	2	0
Larch	56	8	11	0
Willow	43	1	1	0
Alder	7	2	0	0
Chokecherry	50	2	2	0
Saskatoon	0	0	1	0
W. birch	11	0	1	0
Elm	3	3	0	0
Maple	2	3	0	0
Miscellaneous	10	1	1	0

6.7. PERSONNEL CONTACTED

Name	Position	Address	No. of contacts
J. Churchman	Deputy Minister	Regina	1
E. J. Marshall	Director of Forests	Prince Albert	2
B. A. Matheson	District Superintendent	Prince Albert	2
A. Hansen	" "	Meadow Lake	1
J. Johnson	District Supervisor	Prince Albert	2
H. Stav	" "	Meadow Lake	1
A. Kabzem	Forester	Prince Albert	1
M. Palley	"	" "	1
G. Hornecastle	"	" "	2
W. MacNeil	"	Meadow Lake	1
M. Laird	"	Prince Albert	1
M. Noss	"	" "	1
F. J. Arnold	Field Officer	" "	2
C. Schell	" "	Strong Pine	5
E. Over	" "	Big River	5
T. Arsenault	" "	Pierceland	1
R. Mazurak	" "	Candle Lake	1
L. Horne	" "	Holbein	3
J. Woods	" "	Lac la Ronge	3
W. Reise	" "	" " "	3
L. Clements	" "	" " "	2

TABLE (cont'd)

Name	Position	Address	No. of contacts
E. C. Nicholson	Field Officer	Prince Albert	2
A. Fremont	" "	Emma Lake	2
T. Leae	" "	Prince Albert	2
J. Cowie	" "	Big River	2
C. Ferguson	" "	Meadow Lake	1
C. Colby	Patrolman	Big River	2
J. Langford	"	Prince Albert	2
N. MacInnes	"	Big River	3
J. D. McFarlane	Park Superintendent	P.A.N.P.	2
C. Davies	Chief Warden	P.A.N.P.	3
Harrison	Warden	P.A.N.P.	3
Gregson	Warden	P.A.N.P.	1
R. D. Whitney	Forest Pathology	Saskatoon	3
H. S. Whitney	" "	"	2
H. van Groenewoud	" "	"	2
J. Jameson	Dom. Forest Service	Winnipeg	2

²More than 10 contacts

7. FOREST BIOLOGY RANGER REPORT
PRINCE ALBERT NATIONAL PARK
SASKATCHEWAN
1954

by
B. B. McLeod
Forest Biology Laboratory
Winnipeg

CANADA DEPARTMENT OF AGRICULTURE
SCIENCE SERVICE
FOREST BIOLOGY DIVISION
MARCH, 1955

7.1. INTRODUCTION

Forest insect and tree disease surveys were carried out in the Prince Albert National Park from May 24 to Oct. 13, 1954. During the latter part of May and early June a forest tent caterpillar egg survey was conducted to determine the time and the per cent emergence of young larvae in the field. Ground and aerial surveys to determine the distribution and intensity of attack of the larch sawfly were carried out during August and September. Mass collections of larch sawfly cocoons, curled tips of tamarack, and tree ring discs were taken in permanent tamarack sample plots for special survey studies. A survey to determine the area affected and intensity of attack of larch canker, was conducted in September. A total of 147 insect samples and 59 tree disease samples were taken in Prince Albert National Park in 1954.

The co-operation and assistance given by personnel of the Parks Board and other private co-operators are gratefully acknowledged.

7.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

The most important change in insect conditions in 1954 was the complete collapse of the forest tent caterpillar infestation. Intensive sampling in areas heavily defoliated in previous years, failed to reveal a single forest tent caterpillar larva.

The larch sawfly continued to defoliate tamarack in the park. ¹⁹⁵³ Defoliation in the southern portion was generally lighter than in ~~1953~~; however, severe defoliation still persisted in the northwest portion.

Larch canker, a disease that has caused heavy mortality of tamarack in some areas of the Prince Albert District, increased in range and severity in the Park. A spruce needle rust, *Chrysomyxa* sp., was again abundant in the new growth of both white and black spruce.

7.3. INSECT CONDITIONS

7.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

Defoliation of tamarack by the larch sawfly in Prince Albert National Park ranged from light in the southern portions to severe in the northwest. Surveys carried out in the south section of the park showed light feeding damage in permanent sample plot No. 111 on the south boundary (sec. 24, tp. 53, rge. 2, W3rd mer.). Light defoliation was also recorded at the following locations: Kitigan Creek area (tp. 53, rge. 2, W3rd mer.); Rabbit Cabin area (tp. 53, rge. 4, W3rd mer.); Aymot Lake area (tp. 53, rge. 5, W3rd mer.); and along the Sturgeon River on the southwest boundary. Light feeding damage was apparent along the east boundary of the Park in the Sandy, Kenowa, Trappers and Namokus Lakes areas.

Larch sawfly moderately defoliated stands of tamarack along the

south shore of Waskesiu Lake. Aerial surveys indicated moderate defoliation through the Kingsmere and Crean lakes section. Stands of tamarack in the vicinity of Bladebane Lake were also moderately attacked. Severely defoliated stands of tamarack were observed in the Lavalle and Paquin lakes areas.

The distribution of collections of the larch sawfly and defoliation estimates based on ground and aerial surveys are shown in Fig. 1.

Throughout the summer high water levels persisted in all tamarack swamps. At the time of cocooning many larvae dropped into open water and drowned. The effects of high water levels on overall populations of larch sawfly within the Park is not as yet known.

Mass collections of cocoons of the larch sawfly were taken from permanent sample plot No. 111 on the south boundary road and sample plot 116 on the Hearts Road for the purpose of continuing special studies on larch sawfly parasites and disease. The results of cocoon dissections are shown in Table 1.

As shown in Table 1, parasitism and disease of larch sawfly are at relatively low levels. The most important parasites are M. tenthredinis and B. harveyi. The most important disease of larch sawfly is the fungus, Beauveria sp.

**PRINCE ALBERT DISTRICT
SASKATCHEWAN**
FOREST INSECT AND DISEASE SURVEY-WINNIPEG
LARCH SAWFLY DISTRIBUTION
1954
AS DETERMINED BY GROUND
AND AERIAL SURVEYS

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1

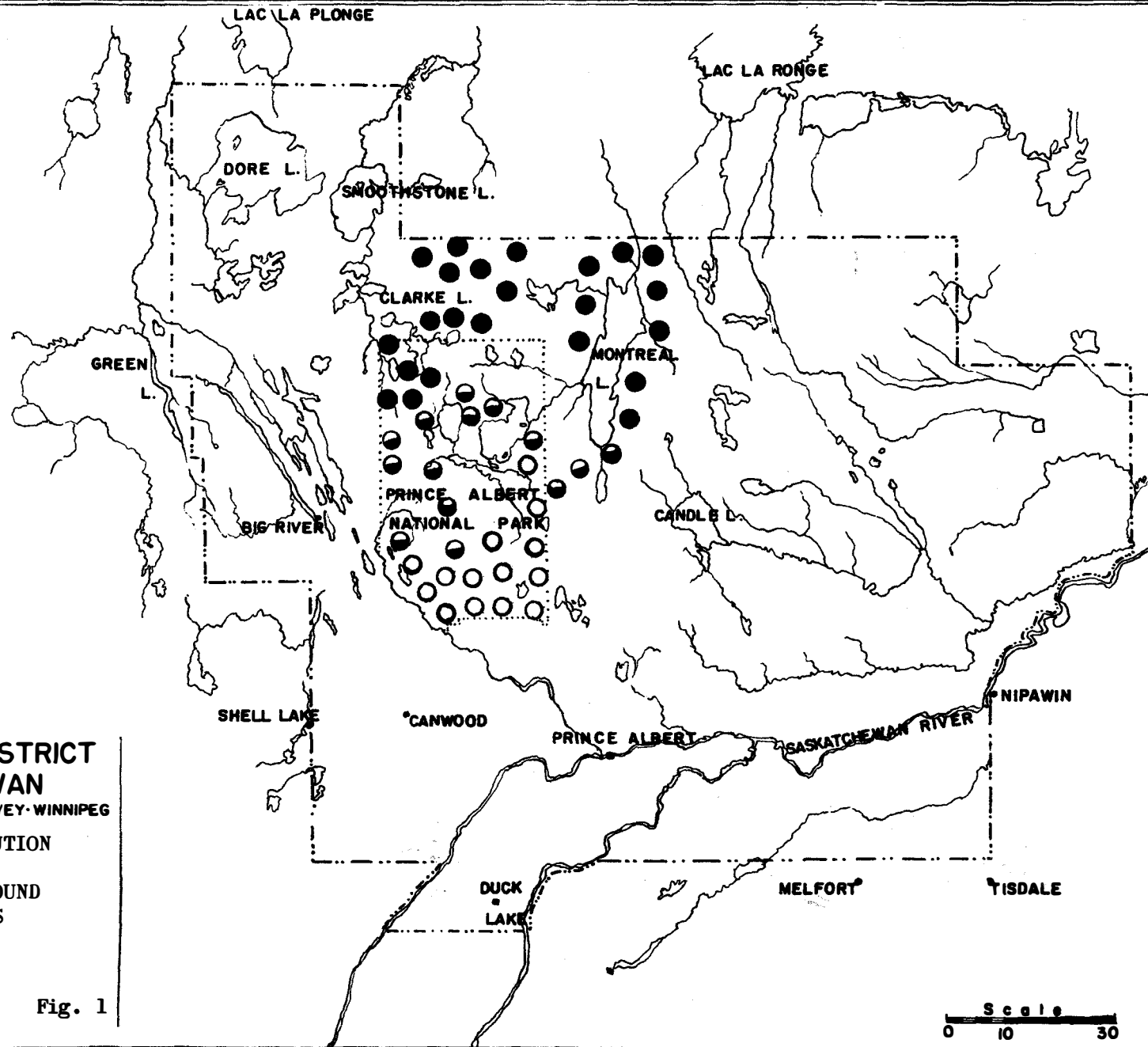


TABLE 1

Summary of Larch Sawfly Parasitism by Dissections

Place	No. of cocoons dissected	No. of larch sawfly larvae containing Mesoleius		Per cent effective parasitism based on living larvae			% larvae destroyed by fungi	% larvae dead from other causes
				Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
		Eggs	Larvae					
Mayview	200	49	18	6.1	11	0	8	12.5
Waskesiu River	200	29	23	1.1	13	0	4	11

7.3.2. Forest Tent Caterpillar, Malacosoma disstria Hbn.

On the basis of egg surveys of the forest tent caterpillar, in the Prince Albert National Park during late summer of 1953, heavy to moderate defoliation of aspen by this insect was predicted for 1954. However, during the spring of 1954 a marked decline in numbers of tent caterpillar was apparent and defoliation in the park was negligible.

The period of hatch of egg bands was greatly delayed due to a late spring. The first emergence of larvae was recorded on May 24th. Examination of egg bands following the period of hatch revealed that relatively few larvae emerged from the bands, and dissections of bands revealed a higher percentage of dead embryos. Table 2 shows the per cent emergence and embryo mortality at three representative points in the park.

TABLE 2.

Emergence of Forest Tent Caterpillar Egg Bands

Sample area	% dead embryos	% undeveloped eggs	% hatch
First Narrows Camp	76	11	13
Narrows Road	75	12	13
Waskesiu	62	13	25

The larval populations which did emerge successfully and commence feeding were further reduced by adverse weather during late May and early June. By the end of the larval feeding period extensive surveys of the park indicated that populations were at very low levels.

Egg surveys during the late summer of 1954 failed to reveal a single egg band of the forest tent caterpillar. The areas in which egg surveys were conducted are shown in Table 3.

TABLE 3

Forest Tent Caterpillar Egg Survey

Place	Location				Ave. D.B.H. of trees (in.)	Ave. hit. of trees (ft.)	No. of egg bands
	Sec.	Tp.	Rge.	Mer.			
South Boundary	14	53	1	W3rd	4	28	0
Kitigan Creek	29	53	2	W3rd	3.3	35.3	0
Waskesiu River	28	57	1	W3rd	3.3	32.6	0
Narrows Road	14	57	2	W3rd	6.3	48.3	0

7.3.3. Poplar Leaf Beetle, Gonioctena americana (Schffr.)

American poplar leaf beetle larvae were first recovered on June 4th and first adult on June 24th. Heavy populations were recorded during the period of early development but heavy rains appeared to reduce the populations somewhat. Light defoliation to regeneration white poplar was recorded in the southeast portion of the park. This same condition existed along the north and south shores of Lake Waskesiu and around Waskesiu townsite. Regeneration white poplar in sec. 10, tp. 57, rge. 1, W3rd mer. suffered moderate damage. A small area of severe defoliation was recorded in tp. 56, rge. 1, W3rd mer. along the west shore of Shady Lake. Light to moderate defoliation of white poplar, ranging up to 3" d.b.h., was recorded in the Rabbit Cabin area (tp. 53, rge. 4, W3rd mer.). Typical damage to white poplar foliage by this leaf beetle is shown in Fig. 2 and 3.

7.3.4. Jack-pine Budworm, Choristoneura pinus Free.

Jack-pine budworm larvae were recovered from several areas in Prince Albert National Park in 1954. Populations of this budworm throughout the park were still very low and only a trace of feeding damage was observed. The following table lists the locations where samples of the jack-pine budworm were taken.

TABLE 4

Jack-pine Budworm Collection Points - 1954

Location	Sec.	Tp.	Rge.	Mer.
South Boundary Gate	14	53	1	W3rd
Spruce Valley Gate	26	54	1	W3rd
Kingsmere Lake H.Q.		59	4	W3rd
Big Island - Crean Lake		59	1	W3rd



Figure 2.

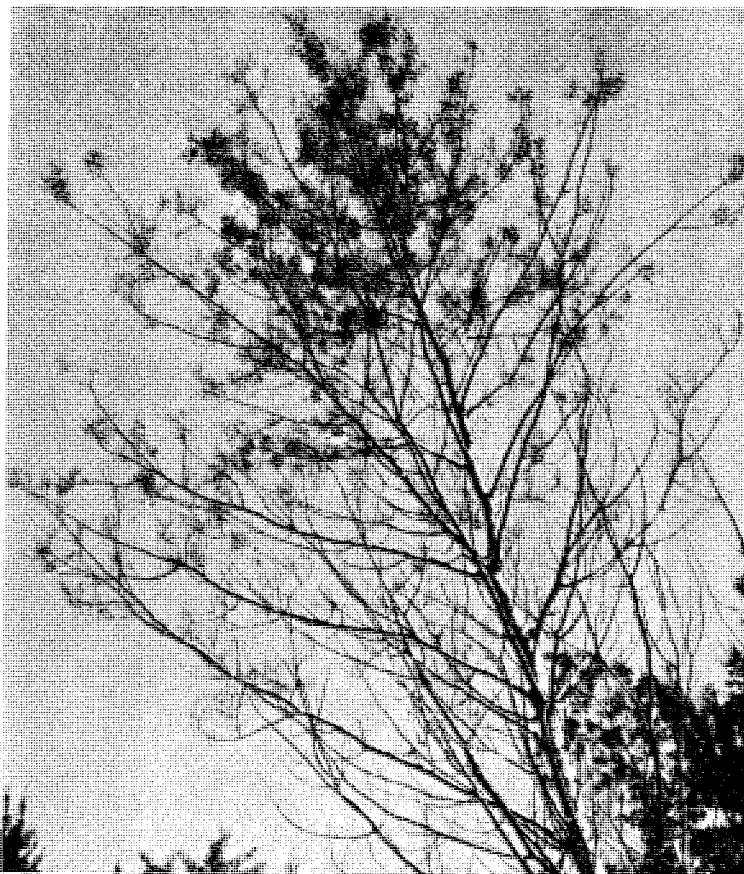


Figure 3.

Figure 2 and 3. Poplar leaf beetle damage in Prince Albert National Park.

7.3.5. The Tent Caterpillar, Malacosoma lutescens (N. & D.)

A very light infestation of M. lutescens was recorded along the south boundary of Prince Albert National Park. The infestation was confined to roadside chokecherry. In most cases the infested shrubs were stripped of foliage.

7.3.6. Ugly Nest Tortrix, Archips cerasivorana (Fitch)

A very light infestation of ugly nest tortrix was recorded along the south boundary of Prince Albert National Park in 1954. The infestation was confined to chokecherry in open areas and to roadside shrubs.

7.3.7. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Populations of the yellow-headed spruce sawfly increased noticeably in Prince Albert National Park in 1954. The first larvae of this species were collected on June 28 in sec. 34, tp. 53, rge. 1, W3rd mer.

Heavy populations of the yellow-headed spruce sawfly, causing approximately 25 per cent defoliation, were observed at both ends of the Chipewyan Portage between Crean and Kingsmere lakes. Light defoliation (about 15%) of white spruce was also recorded around the Crean Lake H.Q. In addition, light defoliation was observed at the mouth of the Crean River, on Pig Island in Crean Lake, and in tp. 58, rge. 1, W3rd mer. along the north shore of Lake Waskesiu. Very light feeding damage was recorded along the west and south boundaries of the park and in the Ajawaan Lake area (tp. 59, rge. 4, W3rd mer.).

Table 5 shows the relative abundance of yellow-headed spruce sawfly in samples from white spruce, principal host tree (based on 5-tree beating samples).

TABLE 5

Summary of Yellow-headed Spruce Sawfly Collections

Host	No. of collections	Ave. No. of trees per collection	% collections containing sawfly	Ave. no. of sawfly per collection
W. spruce	19	5	57.8	3.1

7.4. TREE DISEASE CONDITIONS

7.4.1. Larch Canker

Tree tallies in permanent tamarack plots in two areas of the Prince Albert National Park indicated the incidence of larch canker increased noticeably in 1954 and caused some mortality of tamarack. Branch and tree mortality was very noticeable on the south boundary of the park in permanent sample plot No. 111, in sec. 24, tp. 53, rge. 2, W3rd mer. In another tamarack stand on the east boundary (sec. 14, tp. 55, rge. 1, W 3rd mer.), larch canker had killed many trees and branches (Fig. 4). Additional samples of this disease were taken along the Hearts Road in tp. 57, rge. 1, W 3rd mer. and on the south boundary in tp. 53, rge. 3, W 3rd mer. Damage in these areas was light.

7.4.2. Spruce Needle Rust, Chrysomyxa sp.

The spruce needle rust was found on the new growth of all white and black spruce stands examined. Severe rusting on white spruce needles occurred around Crean, Kingsmere, and the Hearts lakes. Moderate to severe infections of white and black spruce was recorded from the Waskesiu townsite along #2 Hwy. to the 3rd meridian boundary. Light to moderate rusting occurred in all stands of spruce examined south of Waskesiu and along the southern and western boundaries of the park. Moderate infection of spruce was observed in the Lavallee Lake area in the northwestern portion of the park.

7.4.3. Yellow Witches'-Broom, Peridermium coloradense (Diet.) A.& K.

Yellow witches'-brooms, caused by the rust fungus, P. coloradense, were collected in all black spruce stands examined in the Prince Albert National Park in 1954. Although widespread, it caused only very light damage. The heaviest concentration of brooms was recorded in tp. 55, rge. 1, W 3rd mer. Scattered white spruce in the vicinity of Namekus Lake was lightly infected but damage was negligible.

7.4.4. Linospora Leaf Blight, Linospora tetraspora Thompson

Balsam poplar foliage in the Prince Albert National Park was severely attacked by this fungus in 1954. Regeneration poplar up to 2" d.b.h. suffered the heaviest attack, while trees in the larger diameter classes were only moderately affected. The fungus forms black fruiting bodies imbedded in the infected leaf tissue and causes a leaf spot. (Fig. 5 & 6).

7.4.5. Dwarf Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

Specimens of this parasitic plant were collected from one area in Prince Albert National Park. Mature jack pine in tp. 53, rge. 1, W 3rd mer., which has been attacked for several years, was showing some evidence of mortality. The host trees in this area are scattered through a mixed stand of trembling aspen. The female mistletoe flowers were lightly infected with Wallrothiella arceuthobii, a parasitic fungus which



Figure 4. Tamarack killed by the larch canker
in the Prince Albert National Park,
Saskatchewan.

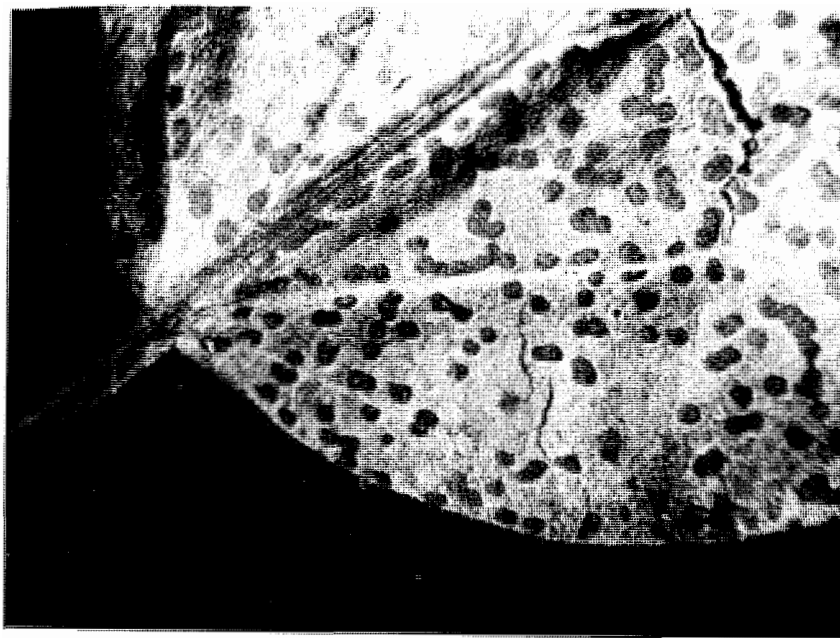


Figure 5.

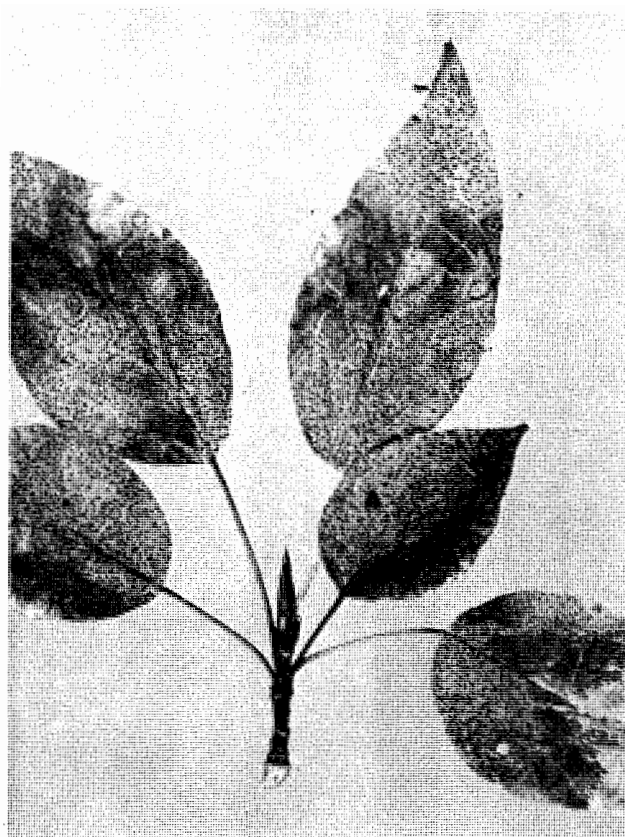


Figure 6.

Figures 5 and 6. Linospora tetraspora on balsam poplar
Prince Albert National Park,
Saskatchewan

prevents seed maturation.

7.4.6. Needle Cast on Balsam Fir

Samples of needle cast on balsam fir were taken along the north and south shores of Waskesiu Lake, and in the Crean and Kingsmere lakes areas. The infections were confined to regeneration trees and lower branches of larger trees. In all cases, damage was relatively light.

7.4.7. Canker of White Poplar, Hypoxylon pruinaum (Klotsche.) Cke.

A light infection of H. pruinaum was recorded along the south boundary of Prince Albert National Park. Dead tops of white poplar, killed by this canker, were quite noticeable in the Kitigan Creek and Rabbit Cabin areas. Cankers on white poplar also occurred along both the Narrows and Hearts roads but the infections were recorded as light.

7.4.8. Other Noteworthy Diseases

Host	Location	Causal organism	Remarks
Saskatoon	Kingsmere	<u>Apiosporina collinsii</u>	Severe
Aspen	Narrows Road	<u>Polyporus pargamensis</u>	Light
White birch	Waskesiu	<u>Tremella sp.</u>	Very light
Jack pine	Angling Lake Rd. Jct.	<u>Armillaria root rot</u>	" "
Jack pine	Angling Lake Rd. Jct.	<u>Cronartium comandrae</u>	" "

7.5. PERMANENT SAMPLE PLOTS

Only one new permanent sample plot (No. 116) was established in the Prince Albert National Park in 1954. It was established in a tamarack stand along the Hanging Hearts Road one mile west of the Waskesiu River.

7.6. SPECIAL COLLECTIONS

Several special collections, consisting of insect and tree material, were made in the Prince Albert National Park during the field season of 1954. The material will be used for continuation of special studies being conducted by the Winnipeg Survey. The type and purpose of the collections are shown in Table 6.

TABLE 6
Summary of Special Collections

Type and purpose of collection	No. of collections	Time spent making collections (including travel)
Forest tent caterpillar egg bands for Winnipeg Survey	1	4 days
Larch sawfly cocoons for parasite study, Winnipeg Survey	2	1 day
Curled tips from tamarack for larch sawfly population studies, Winnipeg Survey	2	$\frac{3}{4}$ day
Tree disc sections from tamarack for tree response studies, Winnipeg Survey	1	$\frac{1}{4}$ day

7.7. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

Table 7 contains a summary of insect and tree disease collections taken, by host species, from Prince Albert National Park in 1954.

TABLE 7
Summary of Collections

Host	Insect samples	Tree disease samples
W. spruce	22	16
B. spruce	7	16
W. poplar	44	12
B. poplar	14	3
W. birch	4	2
Alder	8	-
Willow	20	-
Jack pine	5	4
Balsam	6	2
Larch	17	5
Chokecherry	5	-
Saskatoon	-	1

7.8. PERSONNEL CONTACTED

Name	Position	No. of contacts
J. D. McFarlane	Park Superintendent	2
C. Davies	Chief Warden	3
Warden Harrison	District 1 Warden	2
" Holden	" 8 Warden	1
" Gregson	" 3 Warden	1
" Leader	" 2 Warden	2

*More than 10 contacts

8. FOREST BIOLOGY RANGER REPORT

NORTHERN DISTRICT

SASKECHWAN

1954

by

B. B. McLeod

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

8.1. INTRODUCTION

Forest insect and tree disease surveys were carried out in the Northern District of Saskatchewan from May 1 to October 13, 1954. For survey purposes in 1954, that portion of the Prince Albert District lying north of Prince Albert National Park was included in the Northern District. This area includes Bittern Creek, Montreal Lake, East Trout Lake, and Clark Lake.

During the month of May special studies were conducted to determine the migration period of young aspen tortrix larvae. A forest tent caterpillar egg band survey was also carried out to determine the percentage of larvae that emerged successfully from the eggs. Examinations of forest tent larvae were carried out in May to determine the ability of the insect to withstand adverse spring weather. Through June, July, August, and September, general insect and disease surveys were carried on in the district. During the latter part of the survey season, mass collections of larch sawfly cocoons, tamarack tips, and tree ring discs were taken from permanent sample plots in the district for special studies at the Winnipeg laboratory. A total of 327 insect and 138 disease collections were taken from the district in 1954.

Three aerial surveys were carried out in the fall of 1954 for the purpose of mapping larch sawfly defoliation. The first survey, carried out in the central area, covered the area from Lac La Ronge north to the Churchill River, west along the river to Snake Lake, south to the Smoothstone river, and thence east to La Ronge. The second survey covered the area from Lac La Ronge northeast to Deschambault Lake and Cumberland House, north to the Reindeer River, west along the Churchill River to Lac La Ronge, and then south along the Montreal River and Prince Albert National Park to Prince Albert. The third survey originated from Meadow Lake and covered the area from Peter Pond and Churchill lakes, north to Turnar and Frobisher lakes, southeast to Isle-a-la-Crosse, and south along the Beaver River.

The Department of Natural Resources of Saskatchewan contributed 14 hours flying time for survey work in the Northern District. The Department also made available their patrol and game branch boats for survey work on Lac La Ronge.

Mr. Boardman, an outfitter at Lac La Ronge, placed his camps and equipment along the Churchill River at the disposal of this ranger as well as air transportation from La Ronge.

The co-operation of the above agencies is gratefully acknowledged.

8.2. REVIEW OF FOREST INSECT AND TREE DISEASES

There were some major changes in 1954 in insect populations in the Northern District and in the part of the Prince Albert District covered by this report. Probably the most important change was the almost

complete termination of the forest tent caterpillar infestation. Another important change was the increase in range and intensity of attack of tamarack by the larch sawfly. This insect completely stripped tamarack in the north-central and north-western portions of the province as far north as the survey could be carried out. An increase in the range and mortality to tamarack by larch canker was also observed.

8.3. INSECT CONDITIONS

8.3.1. Larch Sawfly, Pristiphora erichsonii (Ftg.)

Ground and aerial surveys in 1954 indicated an increase in the range and intensity of the larch sawfly infestation in the Northern District. Moderate defoliation was recorded at Bittern Creek (tp. 58, rge. 26, W2nd mer.) and in the region around the south end of Montreal Lake (tp. 58 and 59, rge. 25, W2nd mer.). Light defoliation occurred in tamarack stands around Deschambault Lake and east to Cumberland House, Nemew and Amisk lakes. Light to moderate defoliation was recorded in the Wildnest Lake-Pelican Narrows areas and north to the Reindeer River.

In the western portion of the district severe defoliation was observed around Kazan Lake, Buffalo Narrows, and the Lac Isle-a-la-Crosse areas. Stands of tamarack between Peter Pond Lake, Churchill Lake, and north to the Frobisher and Turnar lakes, were completely stripped. This same condition existed along the Churchill River system through the Dipper, Knee, Sandy, and Sandfly Lake regions. Large open-growing stands of tamarack along the east side of Snake Lake and along the Smoothstone River were 100 per cent defoliated. Small pockets growing in the bays and low lying areas of Black Bear Island Lake and Trout Lake were also completely stripped. Severe defoliation was recorded in the Besnard, Morning, Egg, and Nemeiben lakes areas. There are some fairly large tamarack stands in these areas. In the vicinity of Lac La Ronge, Wapawekka lakes, and south along the Montreal River system, tamarack suffered complete defoliation. Surveys over the region north and east of Lac La Ronge indicated similar conditions in the Iskwatikan, Nistowiak, Keg, and Tradelakes areas of the Churchill River. Severe defoliation was also recorded in the Campbell and McIntosh lakes areas and along the Foster River north of the Churchill River.

Defoliation of tamarack in the Northern District of Saskatchewan as determined by ground and aerial surveys is shown in Fig. 1.

Two permanent sample plots in tamarack stands were set up in the district; one in the Lac La Ronge area in sec. 6, tp. 70, rge. 22, W2nd mer., and in sec. 13, tp. 62, rge. 24, W2nd mer. in the Montreal Lake area. Mass collections of larch sawfly cocoons were taken in these parts as well as curled tamarack tips and larch and black spruce tree discs. The curled tips will be used as an index for determining larch sawfly populations and the tree discs for special studies on tree growth response to larch sawfly attacks. The results of these studies will be reported at a later date. The larch sawfly cocoons were subsequently dissected to determine species and abundance of parasites. Results of the dissections are shown in Table 1.

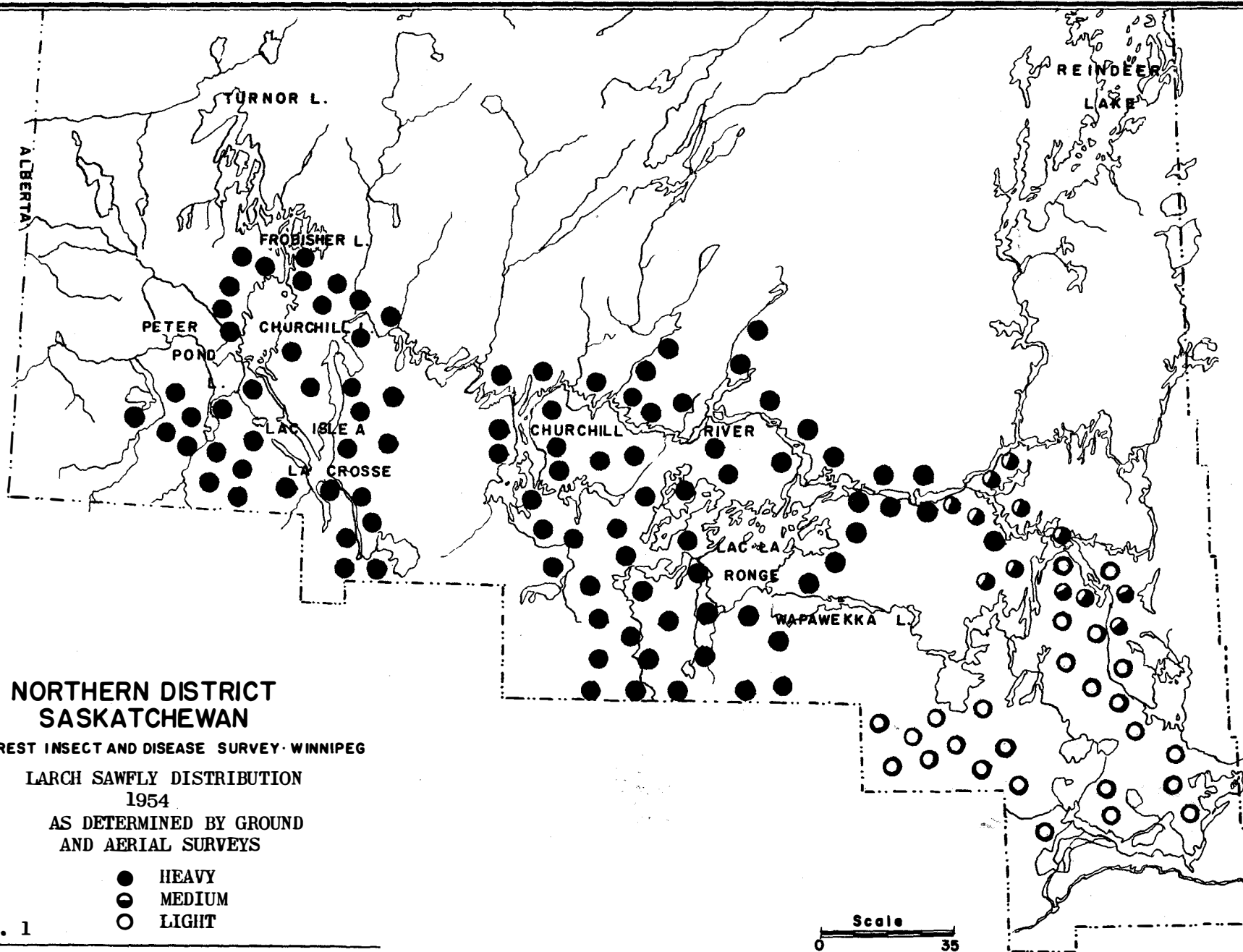


Fig. 1

TABLE 1

Summary of Larch Sawfly Parasitism by Dissections

Place	No. of cocoons dissected	No. of larch sawfly larvae containing Mesoleius		Per cent effective parasitism based on living larvae			% larvae destroyed by disease	% larvae dead from other causes
				Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
		Eggs	Larvae					
Montreal Lake	200	69	23	4.4	15	1.8	18	2.5
Lac La Ronge	150	18	9	9.1	6.3	0.0	3.3	2.0

The data shown in Table 1 indicate that parasitism was relatively low in the Northern District in 1954. Three species of parasites were present. Mesoleius tenthredinis (Morley) was most abundant in the Montreal Lake area, while on the other hand, parasitism by Bessa harveyi (T.T.) was highest in the Lac La Ronge area. A chalcid parasite, Tritneptis klugii (Ratz.), was recovered only in the Montreal Lake area.

8.3.2. Forest Tent Caterpillar, Malacosoma disstria Hbn.

The first emergence of forest tent caterpillar larvae in the Northern District was recorded on May 25th. An egg band survey carried out in the spring of 1954 showed a very low larval emergence in areas which, as revealed by the 1953 fall egg survey, harboured potentially heavy populations. Cold wet weather immediately following larval hatch, appeared to further reduce the forest tent caterpillar populations. Intensive sampling of white poplar through the old outbreak area from Bittern Creek in the south to the Churchill River in the north, failed to recover more than two or three forest tent caterpillar samples. Fall egg band surveys were again carried out but no new forest tent caterpillar egg bands were recovered. These results indicated that the forest tent caterpillar outbreak has subsided and no defoliation by this insect is expected in 1955. The locations of the egg band sampling points in the fall of 1954 are shown in the following table (Table 2).

TABLE 2

Results of the Forest Tent Caterpillar Egg Survey Based on Examination of 3 White Poplar Trees at 4 Sample Points in the Northern District.

Place	Location				Ave. d.b.h. of trees (in.)	Ave. ht. of trees (ft.)	No. of egg bands
	Sec.	Tp.	Rge.	Mer.			
La Ronge	5	70	22	W2nd	4.7	56.3	0
Potatoe Lake	30	69	22	W2nd	5.0	49.3	0
Bittern Creek	25	57	27	W2nd	4.0	28.3	0
Montreal Lake	10	60	25	W2nd	5.0	34.3	0

8.3.3. Large Aspen Tortrix, Archips conflictana (Wlk.)

Second instar larvae of the large aspen tortrix were collected on May 18 in sample plot, 102 (sec. 5, tp. 70, rge. 22, W2nd mer.). The spring migration of larvae up the trees lasted four days but the populations were very light. Samples taken in the 1952-53 outbreak area south of Lac La Ronge show that this infestation has subsided. A small outbreak was recorded between the 3rd meridian National Park boundary and Bittern Creek (tp. 57, rge. 27, W2nd mer.). Aspen tortrix pupae were

first collected here on June 24th and showed a high parasitism by Hymenopterous and Dipterous parasites. Diseased larvae and pupae were also common in this area. Defoliation in the boundary area was approximately 60 per cent.

8.3.4. American Poplar Leaf Beetle, Gonioctena americana (Schffr.)

Prolonged cold weather and heavy rains during the early part of the season appeared to have reduced populations of the American poplar leaf beetle throughout the Northern District of Saskatchewan in 1954. The only significant infestation of this species occurred near Lac La Ronge, where it caused light defoliation of regeneration white poplar over a small area.

8.3.5. Jack-pine Budworm, Choristoneura pinus Free.

The populations of this insect in the Northern District of Saskatchewan were very low in 1954 and no damage was recorded. The first larvae and pupae were collected at Pine Creek on July 12 and the first adult on August 4th. Scattered samples of this insect were taken from Bittern Creek to Pine Creek along #2 Hwy. Collections were also recovered in permanent sample station #01 (sec. 9, tp. 58, rge. 26, W2nd mer.), in permanent sample plot #101 (sec. 24, tp. 67, rge. 23, W2nd mer.), and at Birch Creek south of Malanosa.

8.3.6. Black-headed Budworm, Accleris variana (Fern)

An increase in the distribution and abundance of the black-headed budworm was observed in the Northern District in 1954; however, damage to the host trees was generally light. Low populations and very light feeding damage were recorded on Black Bear Island Lake on the Churchill River where larvae were first recovered on June 22.

Black-headed budworm pupae were recovered at Montreal Lake on July 19. Black spruce in this area was lightly defoliated. Noticeable feeding damage to black spruce and balsam fir occurred at Stoney Narrows on Lac La Ronge. Populations in this area appeared high but defoliation was still considered light. Collections of black-headed budworm were also taken at Iskwtikan and Nistowial lakes on the Churchill River but damage was negligible. Light infestations were also observed on black spruce around Nikik Lake and along the east shore of Montreal Lake.

The following table (Table 3) indicates the abundance of the black-headed budworm larvae in collections taken from black spruce, white spruce, and balsam fir during the period of larval activity in the field. All collections used in the summary were standard 5-tree beating samples.

TABLE 3

Host	No. of collections	Ave. No. of trees per collection	Per cent collections containing black-headed budworm	Ave. No. of budworm per collection	Ave. No. of budworm per tree
White spruce	18	5	55.5	3.1	.58
Black spruce	6	5	85.3	18.0	3.60
Balsam fir	5	5	60.0	3.6	.90

8.3.7. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly was generally distributed throughout the white spruce stands along the Churchill River and in the Lac La Ronge and Montreal lakes areas. Damage was recorded as light in all stands with the exception of a small area in tp. 59, rge. 25, W2nd mer. on the east shore of Montreal Lake where defoliation was moderate. Defoliation of white spruce in this area is shown in Fig. 2. Samples taken of later-instar larvae indicated a high degree of parasitism by an unidentified Diptera parasite. The following table shows the abundance of yellow-headed spruce sawfly in collections taken from white spruce in the Northern District. Results are based on the standard 5-tree beating samples.

TABLE 4

Host	No. of collections	Ave. No. of trees per collection	Per cent collections containing sawfly	Ave. No. of sawfly per collection	Ave. No. of sawfly per tree
White spruce	17	5	29.4	16.2	3.6

8.3.8. Spiny Elm Caterpillar, Nymphalis antiopia (L.)

Several collections of the spiny elm caterpillar were made in the Lac La Ronge area of the Northern District. Willow bushes on several small rocky islands on Lac La Ronge were completely stripped. A single collection was taken along #2 Hwy. south of the Montreal River in tp. 70, rge. 22, W2nd mer. Larvae of the spiny elm caterpillar were also common



Figure 2. Yellow-headed spruce sawfly defoliation, Montreal Lake, Saskatchewan.



Figure 3. Willow defoliated by Nymphalis antiopa along the Churchill River in Saskatchewan.

along the south shore of Black Bear Island Lake on the Churchill River where light to moderate defoliation of regeneration white and black poplar and willow was recorded (see Fig. 3).

8.3.9. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

This sawfly was generally recovered from black spruce in all areas sampled. However, populations remained at a low level and no visible damage was observed.

8.3.10. Pitch Nodule Maker, Petrova albicapitana (Busck.)

Populations of the pitch nodule maker remained at a low level in 1954. Scattered collections were recovered at Pine Creek (tp. 67, rge. 24, W2nd mer.), Montreal Lake (tp. 59, rge. 25, W2nd mer.), and in the Many Rapids region of the Churchill River. Damage in all cases was confined to a relatively few trees.

8.3.11. Woodborers

Examination of 1953 burns in the Lac La Ronge and Churchill River areas revealed light to moderate attacks of white spruce by woodborers; namely Monochamus sp.

8.3.12. Willow-leaf Beetle, Galerucella decora (Say)

A small infestation of the willow-leaf beetle caused light to moderate skeletonizing of willow foliage at Moose Point on Lac La Ronge (tp. 72, rge. 21, W2nd mer.). Several collections of this leaf beetle were taken along #2 Hwy. south of Lac La Ronge. Damage to willow foliage in this area was generally light.

8.3.13. Leaf Hoppers, Idiocerus sp.

Leaf hopper oviposition damage to white poplar and black poplar and willow was again conspicuous in the Northern District in 1954. However, damage to white poplar appeared to be somewhat lighter than in 1953. The first emergence of nymphs from slits in the bark of host trees was observed on June 1st and adults were still active in the field at the close of the season on October 15th.

8.3.14. A Webworm, Tetralopha asperatella (Clem.)

This species of webworm was common in the old forest tent caterpillar and aspen tortrix outbreak areas north of Prince Albert National Park to Lac La Ronge. Numerous tents were collected through the area but in all cases, damage to white poplar foliage was light.

8.3.15. A Leaf Beetle, Chrysomela interrupta (Auct.)

Several collections of this leaf beetle were taken from alder and black poplar throughout the Northern District. Light damage to alder was

recorded at Skunk Creek (sec. 13, tp. 62, rge. 24, W2nd mer.) and at Nistowial Lake on the Churchill River. Light to moderate damage to black poplar foliage was recorded along the south shore of Black Bear Island Lake.

8.4. TREE DISEASE CONDITIONS

8.4.1. Dwarf Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

A severe infection of the dwarf mistletoe of jack pine occurs in the Pine Creek area 20 miles south of Lac La Ronge on #2 Hwy. Severe brooming of both mature and regeneration pine was recorded in 1954. Light infections of this parasite also occurred at Nutt Point, Waden Bay and English Bay on the shores of Lac La Ronge. Some tree mortality, apparently due to this mistletoe, was noted at Iskwatikan Lake on the Montreal River. The most northerly collection of mistletoe, positively identified as A. americanum, was made at Black Bear Island Lake on the Churchill River. Jack pine in this area was lightly attacked.

During the course of larch sawfly aerial surveys, several areas of jack pine were observed to have been heavily attacked by a witches'-broom. It was not possible to obtain samples during this survey for positive identification; however, the brooming appeared to have been caused by A. americanum.

Heavy brooming of jack pine was observed all around Churchill Lake and Peter Pond Lake and north around Frobisher Lake. Heavy mistletoe damage was also present along the east shore of Lac Isle-a-la-Crosse. In 1953, samples of A. americanum were taken along the south end and west shore of Lac Isle-a-la-Crosse. A small pocket of heavily infected jack pine was recorded in tp. 72, rge. 3 & 4, W3rd mer. east and south of Snake Lake (See Fig. 4).

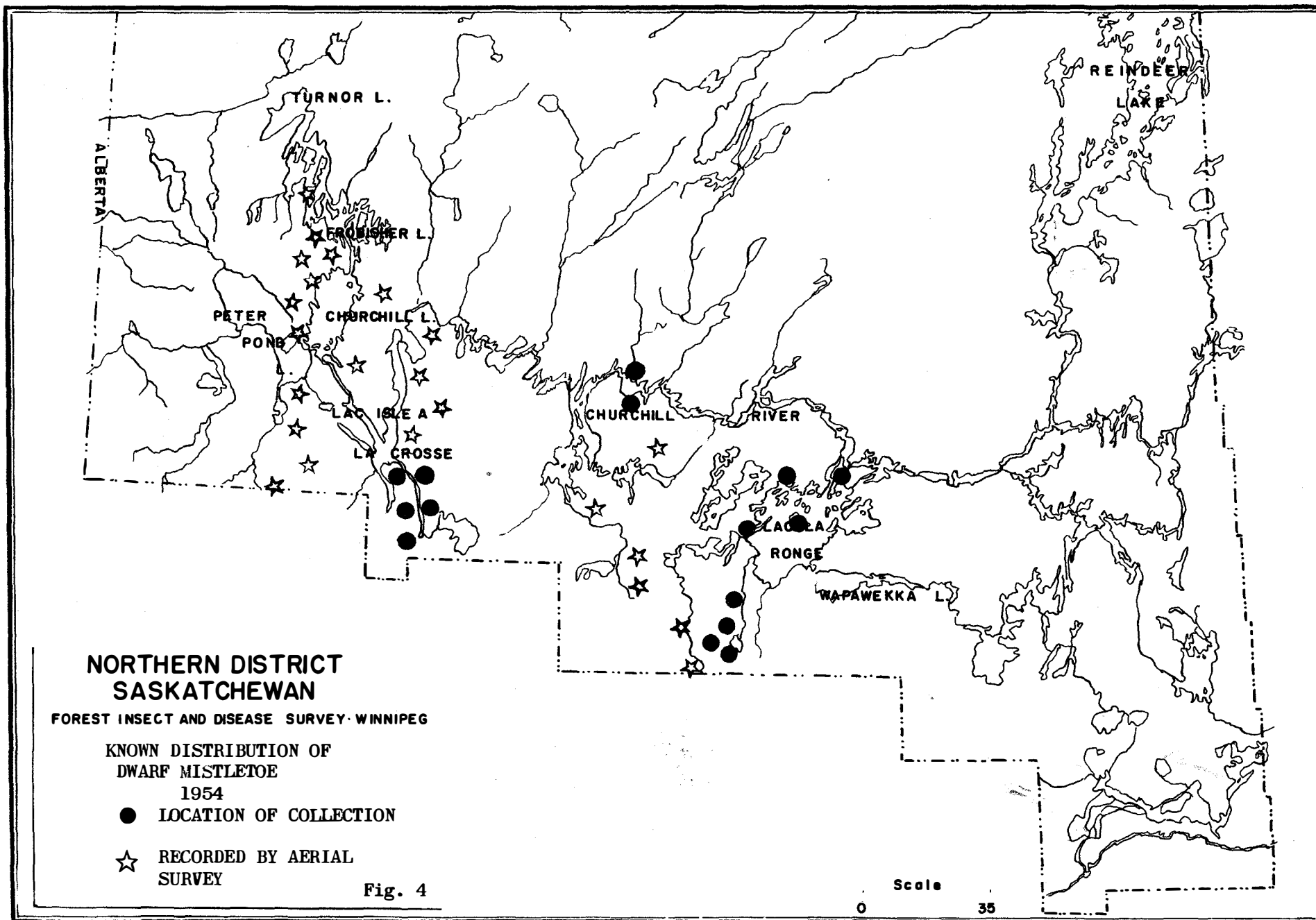
8.4.2. Parasite on Jack-Pine Mistletoe, Wallrothiella arceuthobii (Pk.) Sacc.

This fungus was found in all areas where mistletoe-infected jack pine was examined. Female mistletoe plants in the Pine Creek area were light to moderately parasitized and the seed production appeared somewhat reduced.

8.4.3. Needle Rust on Conifers, Chrysomyxa sp.

An epidemic of this needle rust was again present in white and black spruce stands in Northern Saskatchewan. Spruce in the Montreal Lake-East Trout Lake region was heavily infected. The new foliage in this area had a distinct reddish color through the latter part of the season. In the Lac La Ronge and Churchill areas white and black spruce were lightly infected.

Samples of Chrysomyxa rust were taken from black spruce as far north as Campbell Lake (Grid 8-078-356). Moderate infections of the new foliage



were also recorded from Bittern Creek to the south end of Montreal Lake along #2 Hwy.

8.4.4. Yellow Witches'-Broom on Black Spruce, Peridermium coloradense (Diet.) A. & K.

The yellow witches'-broom was collected in all black spruce stands examined in 1954. Samples were taken from Bittern Creek in the south to the Churchill River in the north. In all cases, the infection appeared light and damage confined to scattered host trees.

During the aerial surveys over the district many yellow and orange colored brooms, possibly P. coloradense, were observed on black spruce. They were particularly noticeable in the Kazan Lake area and around Churchill and Peter Pond lakes. Scattered brooms were also noticed along the east shore of Isle-a-la-Crosse and in the Snake Lake region. Black spruce between Big Sandy and Ballantyne Bay on Deschambault Lake and along the Churchill River in the Trade and Keg lakes areas east of Lac La Ronge, was also lightly infected (See Fig. 5).

8.4.5. Black Knot of Cherry, Dibotryon morbosum (Schw.) T. & S.

This fungus, which attacks the stem and branches of chokecherry shrubs, caused moderate mortality to chokecherry bushes in sec. 5, tp. 70, rge. 22, W3rd mer. south of Lac La Ronge.

8.4.6. Needle Cast on Balsam Fir

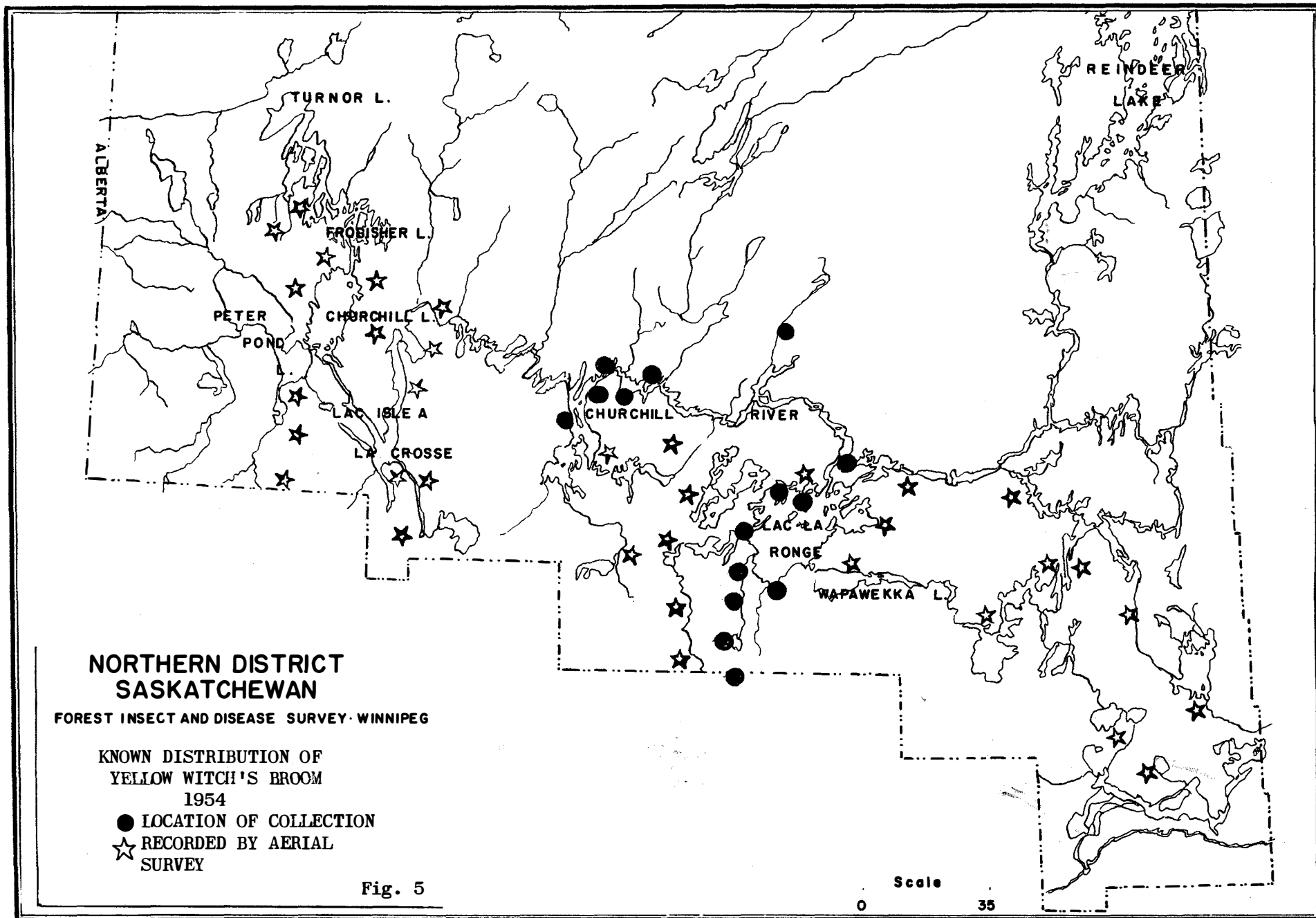
Needle cast on balsam fir was recorded in the Bigstone Lake area, on islands in Lac La Ronge, and along the Churchill River. At all collection points the infection was light.

8.4.7. Leaf Spot of Poplar, Septoria misiva Pk.

The foliage of balsam poplar in the vicinity of Montreal Lake and Potatoe Lake was discolored by this fungus. Generally regeneration suffered the heaviest infection and in some cases, all foliage on the tree was completely discolored.

8.4.8. Larch Canker

This disease, which appears to be causing some mortality in Prince Albert National Park, was found as far north as Lac La Ronge in 1954. Dead and dying branches were observed on recently infected trees in this area.



8.4.9. Other Noteworthy Diseases

Host	Locality	Causal organism	Remarks
Saskatoon	La Ronge	<i>Apiosporina collinsii</i>	Witches'-broom on saskatoon, damage light
White spruce	Churchill River	<i>Chrysomyxa pyrolae</i>	A cone rust of white spruce, <u>light</u> infection
Aspen	La Ronge	<i>Fomes igniarius</i>	White trunk rot of poplar, very common
Jack pine	La Ronge	<i>Armillaria mellea</i>	Shoestring root rot, <u>light</u> infection
Jack pine	Pine Creek	<i>Cronartium</i> sp.	Gall rust on jack pine, very light <u>infections</u>
Aspen	La Ronge	<i>Polyporus pargamenus</i>	Heart rot of poplar, light damage

8.5. PERMANENT SAMPLE PLOTS

Five permanent sample plots were established in the Northern District in 1954. The following table shows the location and tree species of the plots.

TABLE 5

Plot no.	Tree species	Location	Sec.	Tp.	Rge.	Mer.	Grid	Size of plot
101	Tamarack	3.4 mi. S. of Montreal R.	6	70	22	W2nd	8-080-342	1 x 5 ch.
115	Tamarack	10 mi. S. of Molanosa	13	62	24	W2nd	8-079-331	1 x 5 ch.
101	Jack pine	Pine Creek	24	67	23	W2nd	8-081-339	1 x 5 ch.
102	W. Poplar	4.5 mi. S. of La Ronge	5	70	22	W2nd	8-080-342	1 x 5 ch.
103	W. Poplar	7 mi. S. of La Ronge	30	69	22	W2nd	8-080-342	1 x 5 ch.

8.6. SPECIAL COLLECTIONS

The following table (Table 6) lists the special collections taken from the Northern District in 1954.

TABLE 6

Summary of Special Collections

Type and purpose of collection	No. of collections	Time spent making collections (including travel)
Aspen buds, mined by large aspen tortrix for R. M. Prentice	1 collection of 100 mined buds	3 days
Larch sawfly cocoons for W. Turnock of Winnipeg and Dr. Coppel of Sault Ste. Marie	1 collection of 600 cocoons	3 days
Larch sawfly cocoons for J. Muldrew of Winnipeg	1 collection of 3000 cocoons	3 days
Larch sawfly cocoons for dissection at the Winnipeg Laboratory Parasite studies.	2 collections of 250 cocoons	3 days
Curled tips of tamarack for larch sawfly population study at Winnipeg	2 collections of 5 trees	3 days
Tree disc collection from tamarack and black spruce	2 collections from 3 trees	2 days
Yellow-headed spruce sawfly larval collection for parasite recovery.	1 collection of 300 larvae	1 day
Jack-pine scale collection for R. R. Lejeune of the Winnipeg Laboratory	1 collection	1 day

8.7. SUMMARY OF INSECT AND TREE DISEASE COLLECTIONS

The number of insect and tree disease collections taken from principal tree species in 1954 in the Northern District of Saskatchewan are shown in Table 7.

TABLE 7

Host tree	Insect Samples	Tree disease samples
White spruce	22	12
Black spruce	11	25
White poplar	34	10
White birch	7	3
Alder	11	-
Willow	18	1
Jack pine	11	15
Larch	34	4
Pincherry	1	-
Balsam fir	6	10
Unknown	1	1
Black poplar	4	1
Saskatoon	-	2
Chokecherry	-	2

8.8. PERSONNEL CONTACTED

Name	Position	Address	No. of contacts
J. Churchman	Deputy Minister	Regina	1
C. Hogg	" "	"	1
A. Davidson	Asst. to Dep. Minister	Prince Albert	5
E. J. Marshall	Director of Forests	" "	5
C. S. Brown	Northern Administrator	" "	3
B. Matheson	Dist. Superintendent	" "	7
A. Hansen	" "	Meadow Lake	3
A. Kabzen	Forester	Prince Albert	5
M. Palley	" "	" "	3
D. Wiley	" "	" "	1
M. Noss	" "	" "	1
E. Dodds	Dist. Supervisor	La Ronge	8
J. Johnson	" "	Prince Albert	8
H. Stav	" "	Meadow Lake	2
J. Cloutier	Field Officer	La Ronge	2
T. Woods	" "	" "	2
W. Reese	" "	" "	2
L. Clements	" "	" "	2
F. Arnold	" "	Prince Albert	2
E. C. Nicholson	" "	" "	3
L. Horne	" "	Holbein	1
P. Mazurak	" "	Candle Lake	1
E. Over	" "	Big River	2

Name	Position	Address	No of contacts
T. Arsenault	Field Officer	Pierceland	1
W. Crothers	" "	Glaslyn	1
E. Lozo	Pilot	La Ronge	2
T. Leia	"	Prince Albert	4
C. Furgeson	"	Meadow Lake	1
G. McKay	Game Branch	La Ronge	2
F. Dick	Fisheries	La Ronge	2
F. Bard	DNR Museum	Regina	1
F. Larkman	" "	"	1
J. Dawn	Fire Control Branch	La Ronge	2
B. Clements	" " "	" "	2
D. Williams	Fire Hazard Research	Ottawa	6
W. Wheaton	" " "	Winnipeg	6
J. Jameson	Dom. For. Service	Winnipeg	2
D. Neilson	Agric. Rep.	Prince Albert	1
J. Langford	Patrolman	" "	2
C. Colby	"	Big River	2

2 More than 10 contacts.

9. FOREST BIOLOGY RANGER REPORT

MEADOW LAKE DISTRICT

SASKATCHEWAN

1954

by

G. T. Lalor

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

9.1. INTRODUCTION

Field surveys to determine the status of forest insects and tree diseases in the Meadow Lake District were conducted from May 3rd to October 4th in 1954. From early May to early July, joint surveys were conducted with rangers in the Prince Albert and Northern districts of Saskatchewan.

A total of 441 insect samples and 70 tree disease samples were collected in the Meadow Lake District. Approximately 70 insects were submitted by personnel of the Department of Natural Resources and private co-operators. Their assistance and co-operation throughout the 1954 field season are gratefully acknowledged.

9.2. REVIEW OF FOREST INSECTS AND TREE DISEASES

There were some important changes in the status of forest insects in the Meadow Lake District in 1954. The larch sawfly continued its spread west and north through the district, and now covers an area of approximately 10,000 square miles. Severe infestations were recorded as far north as Canoe Lake and Beauval and as far south as St. Walburg and #55 Highway.

The forest tent caterpillar, which caused severe defoliation of white poplar in the Meadow Lake District in 1953, was confined to a very small area in 1954. The infestation this year covered an area of about 25 square miles in tp. 52 and 53, rge. 17, W3rd mer., directly between Turtle and Helene lakes. Within the infestation area, populations were high and defoliation severe. Populations of a dipterous parasite, Sarcophaga sp., were high through the infested area and were considered an important control factor.

The large aspen tortrix, American poplar leaf beetle, a leaf roller, Olethreutid sp., and Orthosia hibisci caused defoliation to trembling aspen in an area covering approximately 1200 square miles. The areas of severe defoliation were centred around Spiritwood and Belbutte.

The boxelder leaf roller caused severe defoliation to Manitoba maple shelterbelts at most points of inspection in the district. At several points defoliation ranged from 90 to 100 per cent. Populations of black-headed budworm and yellow-headed spruce sawfly remained at very low levels.

A needle rust of conifers, Chrysomyxa sp., which severely infected white spruce in the Isle a-la-Crosse area in 1953, spread south to encompass an area of approximately 7500 square miles in 1954. Severe infection was recorded in the eastern half of the district. In the western half of the district including St. Walburg, Goodsoil and Pierceland, damage was light to moderate.

Yellow witches'-broom of spruce, Peridermium coloradense, was common in most black spruce stands in the district. Heavy infections of

this disease were recorded in the southern portion of the Meadow Lake Provincial Forest Reserve and in the Turtle Lake area.

A mistletoe on jack pine, Arceuthobium americanum, was prevalent on jack pine in the vicinity of Pierceland. A parasite fungus, Wallrothiella arceuthobii, which attacks the female flowers of the jack-pine mistletoe, was also present in this area. A blister rust on jack pine, Cronartium comandrae, was recovered from several widely scattered points in the district. The most severe infection was recorded in a stand of mature jack pine, seventeen miles south of Meadow Lake. The shoestring root rot, Armillaria mellea, was common on jack pine throughout the Meadow Lake Provincial Forest.

9.3. INSECT CONDITIONS

9.3.1. Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly continued to spread west and northward through the Meadow Lake District in 1954 and now covers an area of some 10,000 square miles. Severe infestations were recorded as far north as Beauval and Canoe Lake and south to St. Walburg. The accompanying map (Fig. 1) shows the distribution and defoliation estimates throughout the district as determined by ground and aerial surveys.

Larch sawfly adults were active by June 16 at most points throughout the district and curled tips were present on tamarack examined. At the end of July, defoliation was severe and by August 25, feeding was complete.

Moderate defoliation of tamarack occurred within an area of approximately 250 square miles encompassed by Waterhen Lake, the Waterhen River, Minnow Lake, and the Beaver River. Elsewhere throughout the district, defoliation was severe.

Special studies carried out at permanent sample plots located through the district indicated that new terminal growth of tamarack was generally short and sparse. High water levels were present in the plots and many of the larch sawfly larvae had drowned when they dropped to the ground to spin their cocoons. Along the dry fringe of some swamps, predation of cocoons by mice was common.

During September, mass collections of larch sawfly cocoons were taken from the five permanent sample plots in the district. The cocoons were subsequently dissected to determine the incidence of parasitism of cocooned larvae. The locations of the collecting points and the number of cocoons in each collection are shown in Table 1.

TABLE 1

Larch Sawfly Cocoon Collections

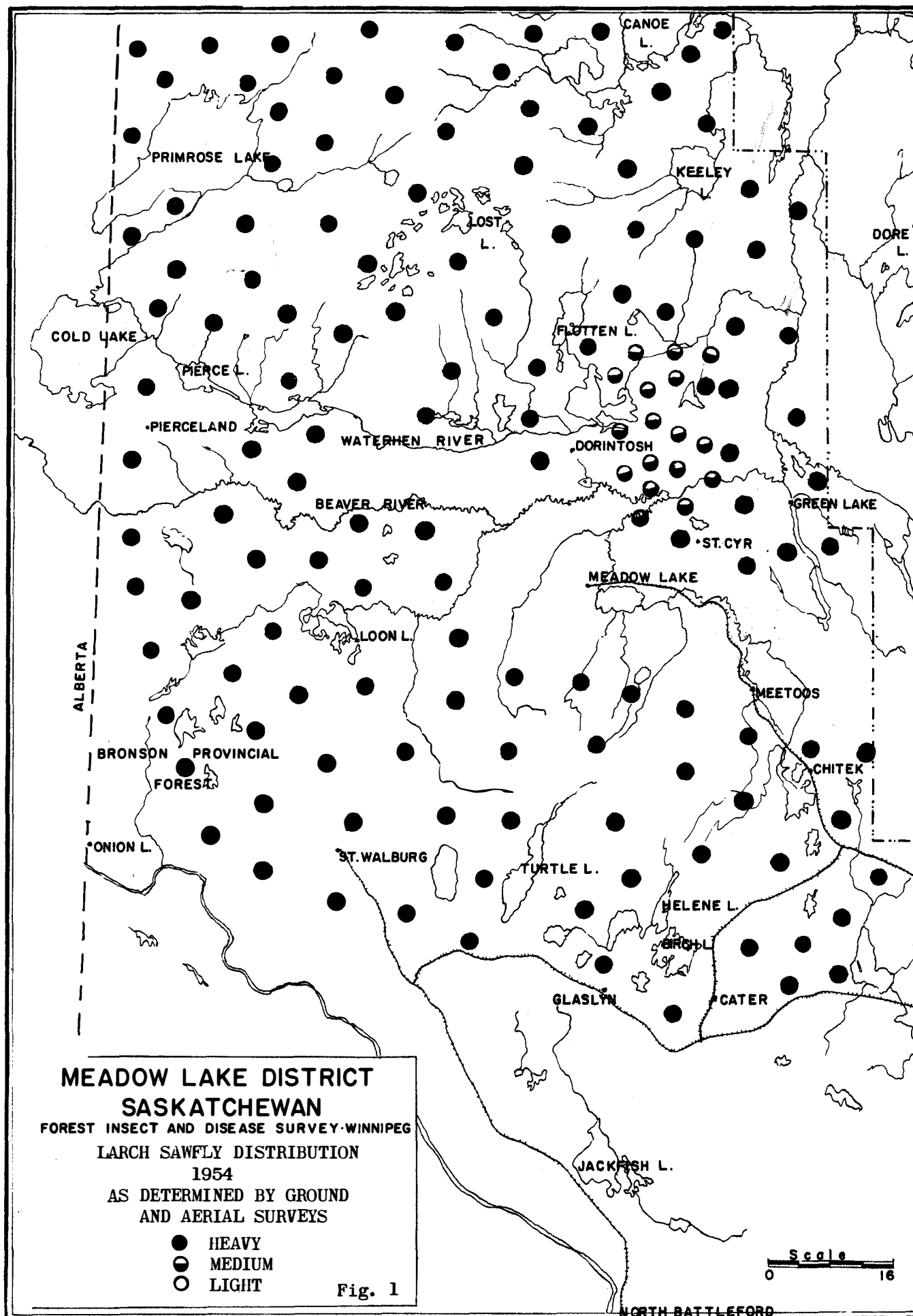
Plot no.	Place	Sec.	Tp.	Rge.	Mer.	Grid	No. of cocoons
101	Meadow Lake P.F.	15	55	17	W3rd	8-050-319	250
102	Turtle Lake	34	58	18	W3rd	8-048-317	100
103	Loon Lake	16	59	22	W3rd	8-041-326	250
104	Pierceland	14	62	26	W3rd	8-036-330	250
105	Green Lake	5	61	12	W3rd	8-056-328	250

Results of the dissections are shown in Table 2. The parasite, Mesoleius tenthredinis Morely, was somewhat more abundant than in 1953 and was present at all locations except one. Bessa harveyi (T.T.), which tends to build up slowly in new infestations, was reported for the first time in all areas. Last year this species occurred in very low numbers only at Turtle Lake (sample plot No. 102). Tritneptis klugii (Ratz.), a chalcid parasite, was again absent from the district.

TABLE 2

Summary of Larch Sawfly Parasitism as Determined by Dissections

Plot no.	Place	No. larch sawfly containing Mesoleius		Per cent effective parasitism based on living larvae			% larvae destroyed by disease	% larvae dead from other causes
		Eggs	Larvae	Bessa harveyi	Mesoleius tenthredinis	Tritneptis klugii		
102	Turtle Lake	1	0	9	0	0	21	7
103	Loon Lake	6	6	3	3	0	5	2
104	Pierceland	2	2	4	1	0	26	10
105	Green Lake	1	1	11	1	0	16	12
101	Meadow Lake	2	4	3	2	0	17	6



9.3.2. Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Forest tent caterpillar, which caused severe defoliation to white poplar in the Meadow Lake District in 1953, was confined to a small area in 1954. The infestation covered an area of approximately 25 square miles situated in tp. 52 and 53, rge. 17, W3rd mer., directly between Turtle Lake and Helene Lake. Populations were high and defoliation severe.

An early survey of the district indicated a sharp decline in forest tent caterpillar populations. Commencing June 15th, egg bands at many points where defoliation had occurred in 1953, were examined and it was observed that the forest tent caterpillar egg hatch was very low. in the area between Mildred and Cater, where populations had been heavy in 1953, egg band examinations showed a fair hatch but no larvae could be recovered. By June 30th, there was still no evidence of feeding. At Flotten Lake (sec. 13, tp. 65, rge. 17, W3rd mer.), where an infestation had occurred in 1953, no forest tent caterpillar were found present. This same condition occurred at a point three miles south of the Beaver River (sec. 18, tp. 61, rge. 20, W3rd mer.) and Jeanette Lake (sec. 25, tp. 64, rge. 18, W3rd mer.). During this survey representative egg bands from Meadow Lake and adjacent areas were collected and forwarded to the Winnipeg Laboratory for study, the results of which are shown in the following table.

No. bands counted	% dead embryos	% dead larvae	% hatch
34	12	75	13

At Midnight Tower (sec. 12, tp. 53, rge. 17, W3rd mer.), forest tent caterpillar was found in conjunction with the large aspen tortrix, the American poplar leaf beetle, and several species of leaf rollers and caused severe defoliation to white poplar. Forest tent caterpillar populations were very high and most of the damage was caused by that insect. On June 15th the forest tent caterpillar larvae were in the first to third instars and defoliation ranged from 30 to 40 per cent. By June 30th defoliation had reached 90 to 100 per cent. Larvae had reached the fourth and fifth instars and migration was in progress. Migrating larvae are shown in Figure 2. Clusters of forest tent caterpillar larvae were observed clinging to various shrub species and grass, and moving singly in search of food. The competition for food offered by the leaf roller, Oletreutid sp., large aspen tortrix, and American poplar leaf beetle, were believed responsible to a great extent for the migration of forest tent caterpillar larvae. At the beginning of the pupation period heavy parasitism by the dipterous fly, *Sarcophaga aldrichi*, was observed. On June 29th a collection of 200 fourth and fifth instar larvae was made at Midnight Tower. On July 17th mixed larval and pupal collections were made at the same point.



Figure 2. Migrating forest tent caterpillar
at Midnight Tower, Saskatchewan.

On July 27th a collection containing both occupied and empty pupal cases, was made at Midnight Tower. During this period relatively few adult moths were observed in the area. On August 11th another collection of 200 pupal cases was made. These collections were all shipped to the Winnipeg Laboratory for parasite and disease studies.

The locations and types of collections within the infestation area are shown in Table 3.

TABLE 3

Mass Collections of Forest Tent Caterpillar

Date collected	Location			Place	Stage and no. collected		
	Sec.	Tp.	Rge.		Larvae	Pupae	Adults
June 29	24	53	17	Midnight L.	265	--	--
July 17	24	53	17	" "	10	180	--
July 27	24	53	17	" "	1	166	--
Aug. 11	24	53	17	" "	--	200	--

Insectary rearings of larvae and pupae from the outbreak area indicated approximately 75 per cent parasitism of late stage larvae and 90 per cent parasitism of pupae. The parasite, Sarcophaga aldrichi, was the common pupal parasite. The high degree of parasitism of pupae probably accounts for the low moth populations observed in the outbreak area.

Tent caterpillar egg surveys were carried out at 16 points within the outbreak area of 1953 and 1954. Three tree samples at these points failed to reveal any tent caterpillar egg bands and it is concluded that the outbreak has completely subsided. No defoliation by this insect is expected in 1955. The points where egg sampling was conducted are shown in Table 4.

TABLE 4

Forest Tent Caterpillar Egg Survey

Place	Location				Ave.	Ave.	No. egg bands per 3-tree sample
	Sec.	Tp.	Rge.	Mer.	D.B.H.	ht.	
Meadow Lake	24	58	17	W3rd	3	12	Nil
Meadow Lake	25	57	17	W3rd	$3\frac{1}{2}$	26	Nil
M.L.P.F.	26	56	17	W3rd	$3\frac{1}{2}$	25	Nil
M.L.P.F.	16	55	17	W3rd	3	18	Nil
Midnight Tower	13	53	17	W3rd	4	22	Nil
Midnight Tower	25	53	17	W3rd	$2\frac{1}{2}$	23	Nil
Turtle Lake	27	53	17	W3rd	$2\frac{1}{2}$	22	Nil
Midnight Tower	24	52	17	W3rd	3	22	Nil
Green Lake	29	61	12	W3rd	4	36	Nil
Green Lake	31	61	12	W3rd	$4\frac{1}{2}$	37	Nil
Plot #101	19	54	16	W3rd	3	27	Nil
Plot #103	29	53	17	W3rd	$3\frac{1}{2}$	25	Nil
Turtle Lake	29	53	17	W3rd	3	18	Nil
Turtle Lake	35	53	17	W3rd	3	18	Nil
Glaslyn	32	50	16	W3rd	3	18	Nil
Belbutte	3	50	13	W3rd	3	20	Nil

9.3.3. Defoliation of Trembling Aspen

During ground and aerial surveys conducted in the Meadow Lake District, it was noted that trembling aspen stands over an extensive area suffered light to severe defoliation in 1954. The defoliated area covered approximately 1200 square miles and was centred around Chitek Lake, Junor, and Belbutte in the east and Turtle Lake in the west. Within this area, two areas of severe defoliation occurred; one between Turtle and Helene lakes and the other centred around Spiritwood, Belbutte and Junor. The accompanying map (Fig. 3) outlines the infested area and the defoliation estimates therein.

Examinations of white poplar within the area indicated that several insect species; namely a leaf roller, *Olethreutid* sp.; the large aspen tortrix, *Archips conflictana* (Wlk.); American poplar leaf beetle, *Gonioctena americana* (Schaeffer.); and the owlet moth, *Orthosia hibisci* were responsible for the defoliation. These species are discussed below in order of their relative abundance.

The leaf roller, *Olethreutid* sp., was the most abundant throughout the infestation area. The large aspen tortrix occurred at somewhat lower population levels than in 1953. Small populations of the American poplar leaf beetle were present throughout the infested area but caused only light damage. The owlet moth was present only in very

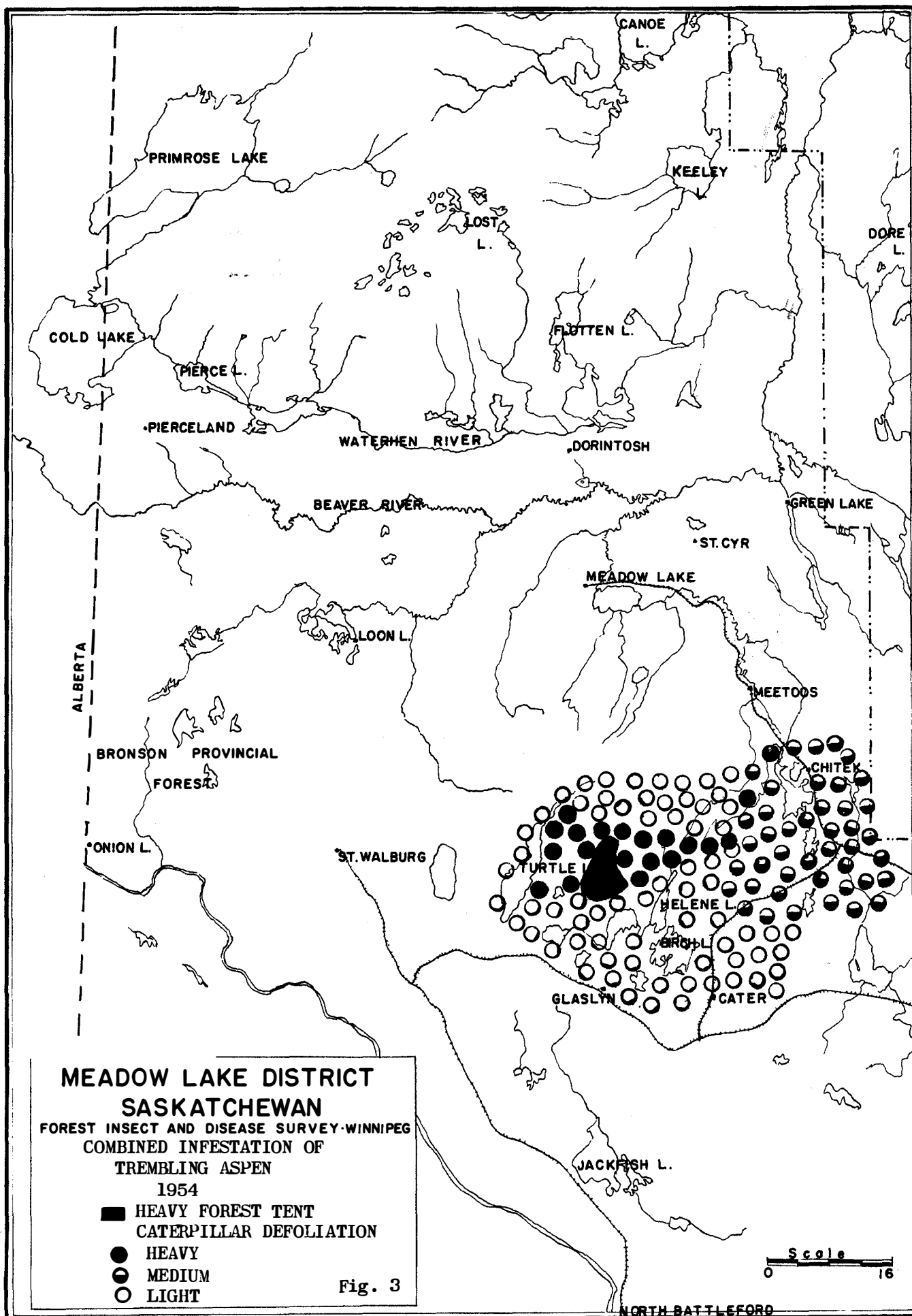




Figure 4. Forest tent caterpillar, large aspen tortrix and leaf roller damage, Turtle Lake, Saskatchewan.



Figure 5. Defoliation of trembling aspen caused by forest tent caterpillar at Midnight Tower, Saskatchewan.

small numbers.

Other insect species commonly found on white poplar within the infested area were: a sawfly, Tenthredinid sp.; a leaf roller, Tortricid sp.; the owl moth, Homoglea hircina; the leaf chafer, Dichelonyx backii; the leaf roller, Pandemis canadana; the fringed looper, Campaea perlata; and the looper, Dysmigia loricaria, and Badebecia urticana.

9.3.4. Boxelder Leaf Roller, Gracillaria negundella Chamb.

The boxelder leaf roller caused damage to Manitoba maple growing in shelterbelts at most points of inspection in the Meadow Lake District. The accompanying map (Fig. 6) shows the distribution and defoliation estimates of this insect in the district in 1954.

Through the North Battleford area, damage to Manitoba maple shelterbelts and shade trees was extensive and severe. Between Belbutte and Glaslyn damage was also severe. At Fairholm defoliation ranged from 75 to 90 per cent. At Turtleford shelterbelts were 100 per cent defoliated. Moderate to severe defoliation of Manitoba maple shelterbelts and shade trees occurred in the St. Walburg, Goodsoil, Pierceland, Meadow Lake, St. Cyr and Makwa River areas. At Meadow Lake (sec. 22, tp. 59, rge. 17, W3rd mer.), a Manitoba maple shelterbelt owned by Mr. Danelcavich was inspected and defoliation ranged from 75 to 100 per cent. A control was recommended by the Winnipeg Laboratory.

9.3.5. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

The yellow-headed spruce sawfly occurred commonly on native and ornamental white spruce in the Meadow Lake District in 1954. Infestations, generally more common on ornamental spruce, ranged from light to moderate.

At Pierceland, two open-growing white spruce, about 2 inches D.B.H. and 10 feet in height, were moderately defoliated. At Turtleford (sec. 17, tp. 51, rge. 22, W3rd mer.), an ornamental white spruce hedge was moderately defoliated. Trees in the hedge averaged 2 inches D.B.H. and were 10 feet in height. Light to moderate defoliation of ornamental white and blue spruce was also reported in the town of Glaslyn.

Collections of the yellow-headed spruce sawfly were taken from native white spruce at several points in the district; damage was generally light.

Thirteen miles south of Meadow Lake on #4 Highway (sec. 31, tp. 57, rge. 16, W3rd mer.), larvae were present on mature white spruce but damage was negligible. Table 5 shows the relative abundance of the insect in standard 5-tree beating samples from host trees.

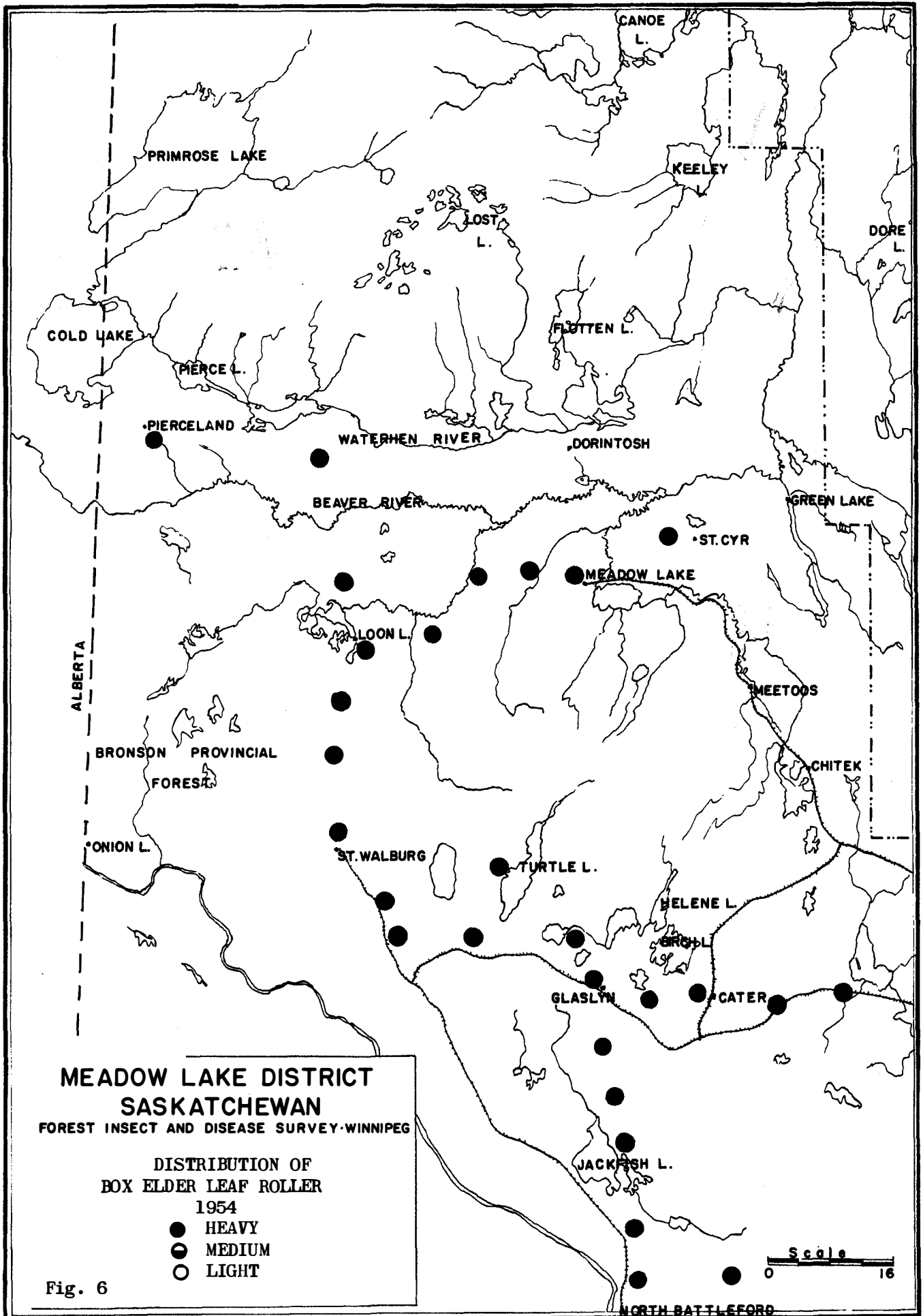


TABLE 5

Yellow-headed Spruce Sawfly Collections - 1954

Host tree	No. host tree samples	% host tree samples containing		Ave. no. of larvae per sample
		Larvae	Pupae	
W. spruce	38	64	15	.3
Blue spruce	1	100	--	.001

9.3.6. A Tent Caterpillar, Malacosoma lutescens (N. & D.)

Collections of this tent caterpillar were taken in the Spiritwood and Glaslyn areas. Damage to roadside shrubs such as rose and chokecherry ranged from light to moderate.

9.3.7. Ugly Nest Tortrix, Archips cerasivorana (Fitch)

The abundance of ugly nest tortrix increased noticeably in 1954. Last year it was confined mainly to the area immediately south of Loon Lake (sec. 19, tp. 58, rge. 16, W3rd mer.). In 1954, however, tents were numerous on roadside shrubs such as chokecherry, rose, and honeysuckle from the town of Loon Lake north as far as the Makwa River (sec. 21, tp. 58, rge. 20, W3rd mer.) and west to within seven miles of Meadow Lake (sec. 13, tp. 58, rge. 16, W3rd mer.).

9.3.8. Black-headed Budworm, Acleris variana (Fern.)

This insect was present on white spruce at several points of inspection in the Meadow Lake Provincial Forest. Populations were at very low levels and damage was negligible.

Table 6 indicates the relative abundance of the black-headed budworm in standard 5-tree beating samples taken from white spruce.

TABLE 6

Black-headed Budworm Collections - 1954

Host tree	No. host tree samples	% host tree samples containing		Ave. no. of larvae per sample
		Larvae	Pupae	
W. spruce	38	18	5	1

9.3.9. A Leaf Hopper, Idiocerus sp.

This insect was found present on white poplar at most points of inspection in 1954. At several points dead twigs resulting from egg scars were observed.

9.3.10. Grey Willow-Leaf Beetle, Galerucella decora (Say)

Although present at widely scattered points in the Meadow Lake District in 1954, the grey willow-leaf beetle caused no noticeable skeletonizing of willow foliage.

9.3.11. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

The green-headed spruce sawfly remained at very low population levels in the Meadow Lake District in 1954. One sample only of this insect was recovered and it was taken in sec. 36, tp. 57, rge. 17, W3rd mer., thirteen miles south of Meadow Lake.

9.4. TREE DISEASE CONDITIONS

9.4.1. Spruce Needle Rust, Chrysomyxa sp.

The spruce needle rust, which severely infected white spruce in the Isle-a-la-Crosse and Green lakes areas, in 1953, spread over an extensive area of the Meadow Lake District in 1954. The rust on spruce was first observed in mid-July. An aerial survey of the district was conducted in early August. A map outlining the extent and severity of attack in the Meadow Lake District is shown in Figure 7.

White spruce in an area of approximately 7,500 miles was affected by this rust. Severe infection was recorded from the eastern boundary of the district west to the eastern half of Bronson Provincial Forest, and from the Brightsand-Turtle Lakes area in the south to Waterhen River in the north. Within this area pockets of light to moderate infection were recorded in the vicinity of Waterhen and St. Cyr Lakes.

South into the agricultural area, white spruce was generally lightly infected. A severe infection of a white spruce shelterbelt occurred in the Meadow Lake area and caused extensive needle cast on some trees.

9.4.2. Yellow Witches'-Broom of Spruce, Peridermium coloradense (Diet.) A. & K.

P. coloradense was common in most black spruce stands in the Meadow Lake District. Severe infections occurred through tps. 54 & 55, rge. 17, W3rd mer. in the Meadow Lake Provincial Forest, and in the Turtle Lake area. Aerial surveys revealed numerous brooms on black spruce in the areas surrounding Green Lake and on the west shores of Sled and Dore lakes.

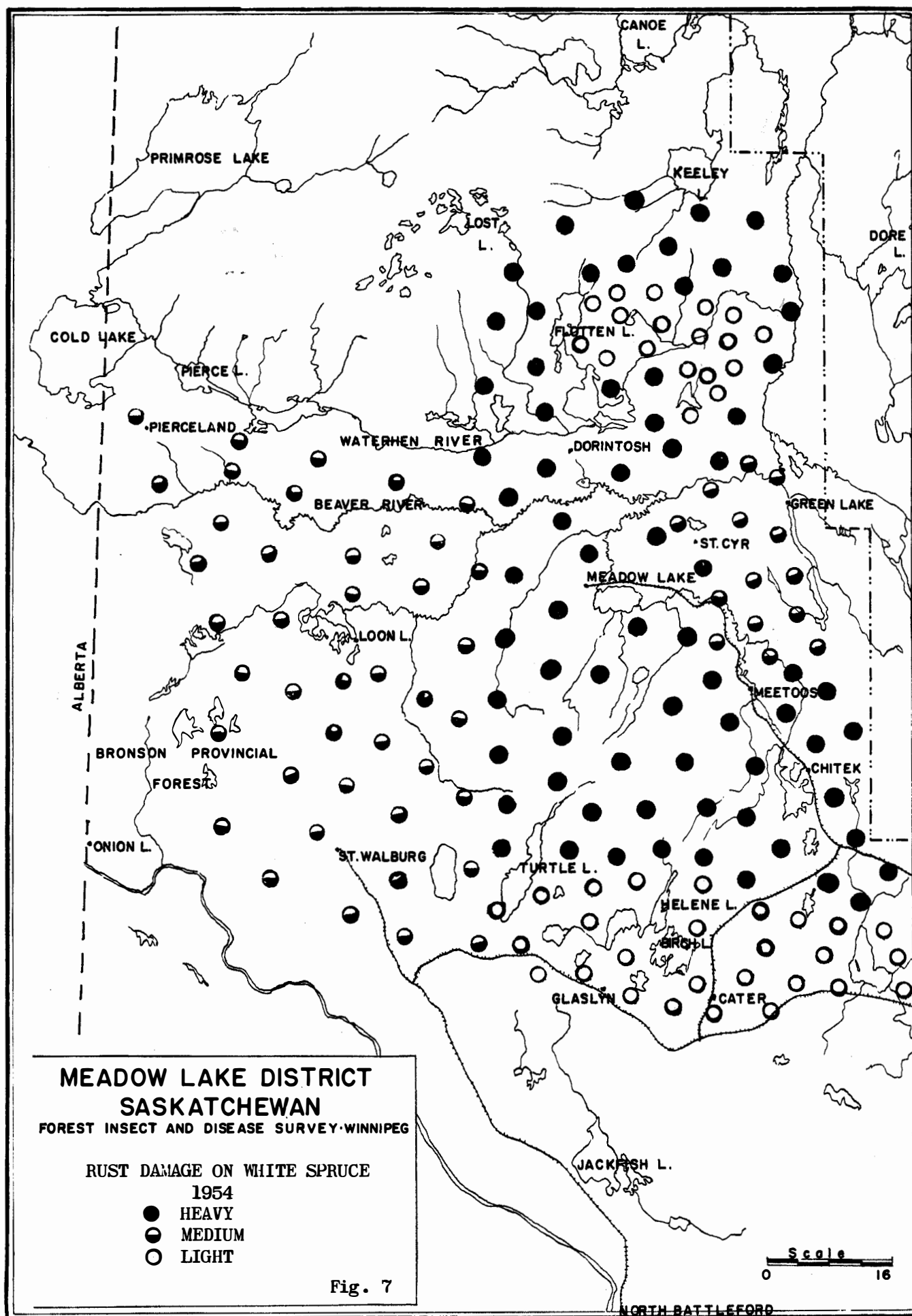
9.4.3. Mistletoe on Jack Pine, Arceuthobium americanum Nutt.

There was little change in the status of mistletoe infections on jack pine in the Meadow Lake District in 1954. It was present in the Pierceland and Flotten Lake areas. At Golden Ridge, severe infection was also observed.

The parasite, Wallrothiella arceuthobii (Pk.) Sacc., which attacks the female flowers of the mistletoe plant preventing the maturation of seed, was present in all mistletoe infections examined.

9.4.4. Blister Rust on Jack Pine, Cronartium comandrae Peck

This blister rust, which forms a gall or spindle-like growth on the stem and branches of jack pine, was found at several widely scattered points in the district. Seventeen miles south of Meadow Lake a stand of mature jack pine was severely infected. At that point nearly every branch and twig was girdled by rust spindles. Dead branches were numerous and several trees were dead.



9.4.5. Canker of White Poplar, Hypoxylon pruinaum (Klotsche.) Cke.

This canker of white poplar was present at most points where white poplar was examined in the Meadow Lake District of Saskatchewan.

9.4.6. Armillaria Root Rot, Armillaria mellea (Vahl.) Quel.

This fungus, which causes rotting of the bark and root collar, occurred on jack pine growing in the Meadow Lake Provincial Forest. Samples were collected twenty-five miles south of Meadow Lake in sec. 25, tp. 56, rge. 17, W3rd mer.

9.4.7. Witches'-Broom on Tamarack

A single sample of this disease was taken from mature tamarack in permanent sample plot No. 104 (sec. 14, tp. 62, rge. 26, W3rd mer.). Damage in this instance was light.

9.4.3. Brooms on Saskatoon

Brooms on Saskatoon were common in the areas surrounding St. Walburg and Meadow Lake but caused very little damage.

9.4.9. Other Noteworthy Diseases

Name	Sec.	Tp.	Rge.	Mer.	Degree of damage
Diseased needles of jack pine	8	54	16	W3rd	Very light damage in this area
Needle cast on balsam fir	13	65	17	W3rd	Severe infection over small area

9.5. SUMMARY OF SPECIAL COLLECTIONS

The following table (Table 7) contains a summary of special collections made in the Meadow Lake District in 1954. The collections contained insect and tree material for continuation of special studies being conducted at Winnipeg and outside laboratories.

TABLE 7

Summary of Special Collections - 1954

Type and purpose of collection	No. of collections	Time spent making collection
Larch sawfly cocoons for J. Muldrew, Winnipeg Lab.	4 (1500 cocoons each)	10 days
Large aspen tortrix larvae for R. Prentice, Winnipeg Laboratory	3 (500 larvae)	1½ "
Forest tent caterpillar larvae and pupae for Winnipeg Laboratory	(4 - 200 specimens each)	6 "
Jack-pine budworm larvae for Dr. Stehr	1 (75 larvae)	1 day
Larch sawfly larvae for Mr. H. Heimpel, Belleville, Ontario	(3 - 200 larvae each)	3½ days
Larch sawfly cocoons for the Winnipeg Laboratory	(5 - 200 cocoons each)	4 days
Larch sawfly cocoons for W. Turnock, Winnipeg Laboratory	(1 - 2000 cocoons)	2 "
Larch sawfly cocoons for J. Heron, Winnipeg Laboratory	(1 - 200 cocoons)	½ day
Larch sawfly curled tip collection for the Winnipeg Lab.	5	3½ days
Large aspen tortrix mined buds, R. Prentice, Winnipeg Lab.	(1 - 100 mined buds)	3 "
Tamarack and black spruce tree rings, Winnipeg Laboratory	5	2½ "

9.6. SUMMARY OF INSECT AND DISEASE COLLECTIONS

Table 8 presents a summary of all insect and tree disease collections taken from various host trees in the Meadow Lake District in 1954.

TABLE 8

Summary of Insect and Disease Collections - 1954

Host tree	Total collections		Disease collections submitted by Forest Biology Rangers
	Submitted by Forest Biology Personnel	Submitted by Co-operators	
W. spruce	26	12	20
B. spruce	15	1	19
J. pine	32	--	13
Tamarack	27	31	7
W. poplar	124	16	10
B. poplar	20	--	6
W. birch	10	--	--
M. maple	15	2	--
Chokecherry	31	1	4
Willow	32	--	5
Alder	11	--	6
Miscellaneous	18	--	--

9.7. PERSONNEL CONTACTED

Name	Address	Service Title	No. of contacts
E. J. Marshall	Prince Albert	Director of Forests	1
B. A. Matheson	" "	District Superintendent	1
W. Reiss	Lac la Ronge	Field Officer	2
A. Davidson	Regina	Deputy Minister DNR	1
A. Hanson	Meadow Lake	District Superintendent	15
H. Stav	" "	Field Supervisor	10
C. Ferguson	" "	Pilot (DNR)	3
W. Crothers	Glaslyn	Field Officer	2
B. Shannon	Green Lake	" "	2
D. Burant	Goodsoil	" "	4
D. Pegg	Loon Lake	" "	3
F. Arsenault	Pierceland	" "	2
N. Mazaruk	Meadow Lake	Radio Operator	5
V. Honig	St. Walburg	Field Officer	2
W. MacNeil	Meadow Lake	District Forester	2

10. FOREST BIOLOGY RANGER REPORT

SOUTH WESTERN DISTRICT

SASKATOON

1954

by

K. Mortensen

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

10.1. INTRODUCTION

Field surveys to determine the status of insects and tree diseases attacking shelterbelts and native stands in the Southwest District of Saskatchewan were carried out from mid-May to mid-September.

The period from May 15 to July 15 was spent on a fall cankerworm detection survey. The period from July 15 to September 15 was spent on a special survey for the yellow-headed spruce sawfly. Four permanent sample stations were established in spruce shelterbelts as future collection points for the latter insect. In addition to the above survey, the distribution and abundance of minor insects and tree diseases were recorded.

A total of 249 insect and 33 tree disease collections were taken in the Southwest Saskatchewan District in 1954.

10.2. REVIEW OF INSECT AND TREE DISEASE CONDITIONS

Insect conditions in Southwest Saskatchewan remained much the same as they were in 1953. The fall cankerworm, Alsophila pometaria (Harr.), was the major insect pest throughout the southern half of the district. Maple, elm, and ash were the principal host trees attacked in this area. In the northern portion of the district, the yellow-headed spruce sawfly, Pikonema alaskensis (Roh.), was the most serious defoliator of white and Colorado spruce shelterbelts. Usually the most serious damage by these species occurred in abandoned farmsteads where no control measures had been applied.

The boxelder leaf roller, Gracillaria prob. negundella Chamb., increased in abundance and caused considerable damage to maple trees. The pine needle scale, Phenacaspis pinifoliae (Fitch), and spruce spider mite, Paratetranychus ununguis (Jac.), occasionally caused considerable damage to ornamental and shelterbelt spruce. The false webworm, Cephalcia sp., caused moderate damage to a few Colorado spruce at a farm near Baldwinton.

A canker of white poplar, Hypoxyylon pruinaum (Klotsche.), was the most important tree disease. It occurred throughout the entire district. A spruce needle rust, Chrysomyxa sp., and a leaf spot of balsam poplar, Septoria musiva Pk., were common through the northern portion of the district.

10.3. INSECT CONDITIONS

10.3.1. Fall Cankerworm, Alsophila pometaria (Harr.)

The fall cankerworm was again the most destructive insect in deciduous shelterbelts on the prairies. The principal host trees attacked were maple, elm, and ash. Although a more complete survey of the area was made this year than last year, it appeared that distribution

and intensity remained about the same as in 1953. The distribution pattern was roughly a triangle; the base being the Canada-United States border. Within this area, many shelterbelts were 100 per cent defoliated. The highest concentrations of larvae occurred in the Tugaske-Eyebrow area. The accompanying map (Fig. 1) shows the distribution together with defoliation estimates of the fall cankerworm in 1954 throughout the Southwest District of Saskatchewan.

The first larval collections of the fall cankerworm were taken on May 29 at Scout Lake, near the United States border. Hatching had just commenced at that time. The last larval collections were made on July 14 at Climax.

Some natural control factors appeared to be influencing the infestations at a few shelterbelts that were heavily infested in 1953. A shelterbelt at Aneriod, 100 per cent defoliated last year, suffered only moderate defoliation this year. Egg clusters examined showed approximately 80 to 100 per cent hatch.

A well planned spray program in the Delisle municipality did a great deal toward keeping the fall cankerworm in check in that area this year.

10.3.2. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Defoliation by the yellow-headed spruce sawfly was somewhat lighter this year through the Southwest District of Saskatchewan, than it was in 1953. However, distribution remained much the same. It occurred commonly throughout the entire northern part of the district; the southern fringe being roughly a line northwest to southeast through Macklin, Rosetown, Elbow and Craik. Figure 2 shows the distribution and defoliation estimates in the Southwest District as determined by ground surveys.

Isolated shelterbelts in the vicinity of Elbow, Rosetown, Luseland, Colonsay, Helfort, Tisdale, and Wynyard were heavily defoliated. Frequently these were abandoned farmsteads where artificial control measures were not employed. Probably the most severe defoliation in these shelterbelts occurred at Salvador, Zealandia and Colonsay. At Salvador, on an abandoned farmstead, where small spruce trees were suffering competition from grass, heavy tree mortality had taken place. At Zealandia, defoliation was heavy in a field shelterbelt, and unless control measures are effected shortly, tree mortality will occur. In a shelterbelt, consisting of white and Colorado spruce at Colonsay, only the Colorado spruce escaped with moderate defoliation.

Two heavy infestations on farmsteads at Anerely last year, were reduced almost to nil in 1954 through artificial control measures.

The first larval collection of the yellow-headed spruce sawfly was taken on July 9 at Elbow and the last collection on September 8 at

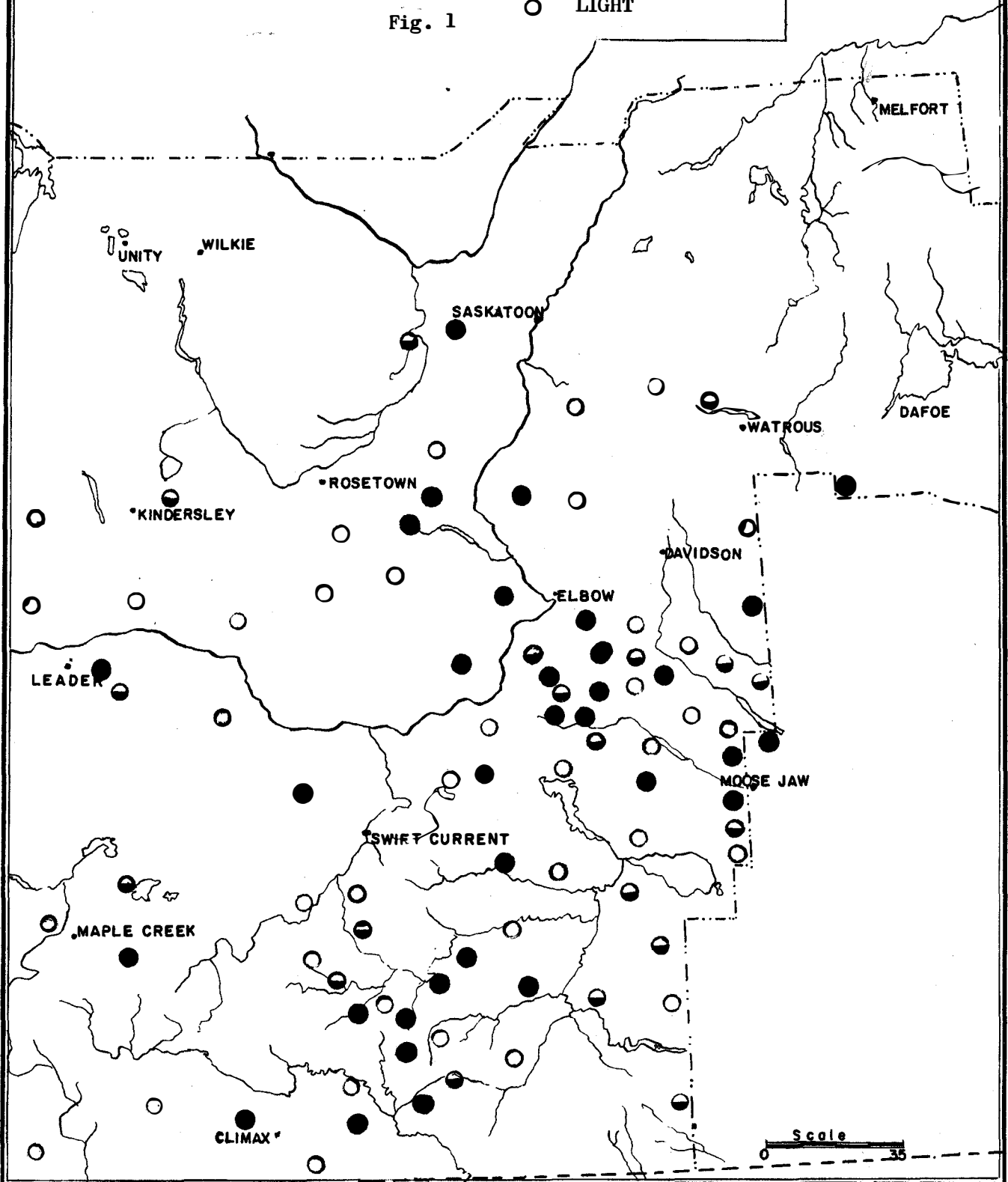
SOUTHWESTERN DISTRICT SASKATCHEWAN

FOREST INSECT AND DISEASE SURVEY - WINNIPEG

KNOWN DISTRIBUTION OF
FALL CANKERWORM
1954

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



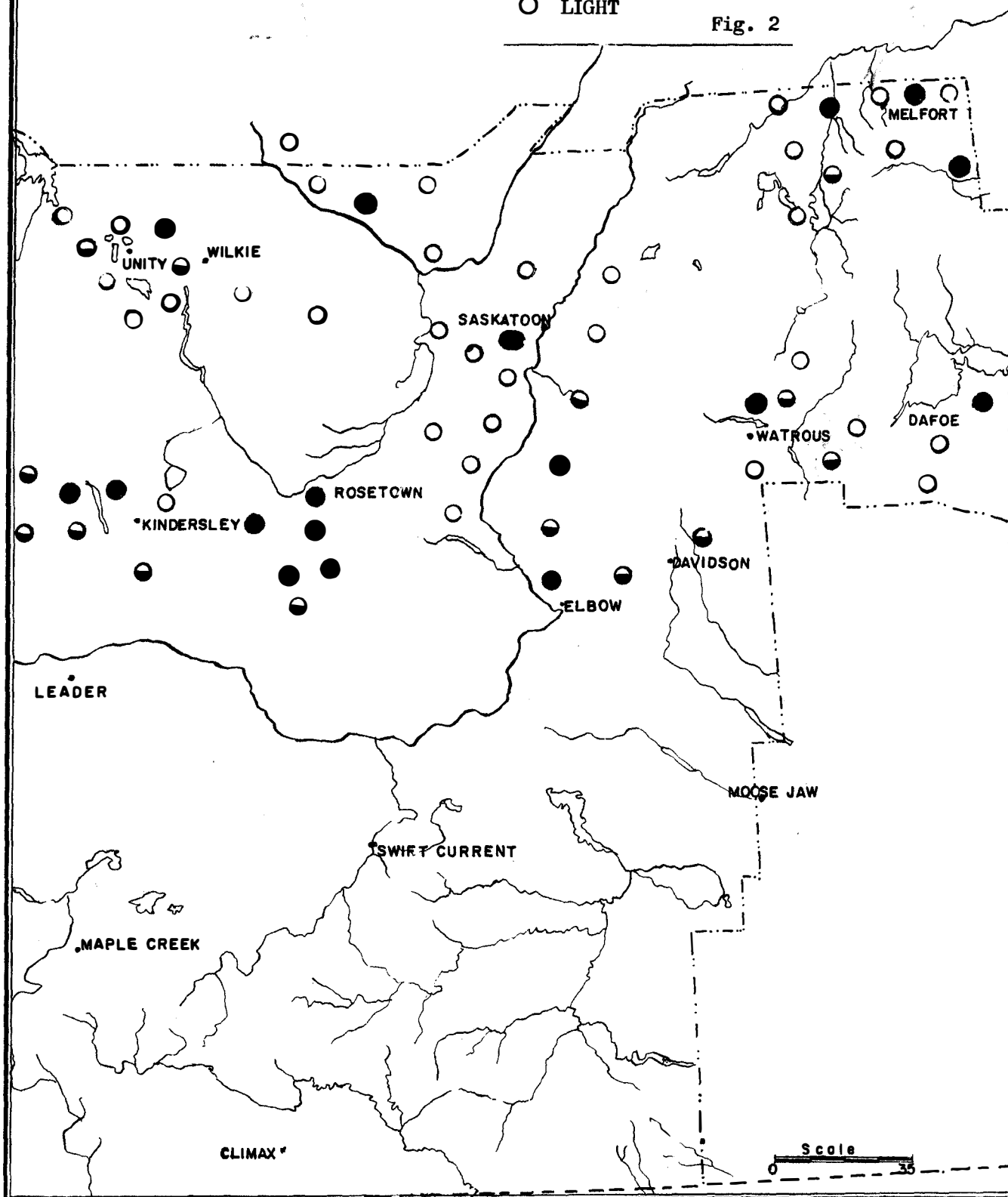
SOUTHWESTERN DISTRICT SASKATCHEWAN

FOREST INSECT AND DISEASE SURVEY - WINNIPEG

KNOWN DISTRIBUTION OF
YELLOW-HEADED SPRUCE SAWFLY
1954

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 2



Barford. Larval feeding was general at the time of the first collection (July 9) and pupation common by August 3.

10.3.3. Large Aspen Tortrix, Archips conflictana (Wlk.)

The large aspen tortrix caused some light defoliation in the Cypress Hills. Larvae were common and were found as late as July 13th. Elsewhere throughout native white poplar stands, they occurred only occasionally and caused no apparent damage.

10.3.4. Boxelder Leaf Roller, Gracillaria prob. negundella Cham.

The boxelder leaf roller increased in abundance in 1954. In some cases considerable damage was caused and much interest was aroused among shelterbelt owners. In many instances, the leaves of the lower third of the trees were severely mined and skeletonized, causing them to be easily blown off by the wind. Occurrence was widespread throughout the district; heavy infestations were reported from Davidson, Conquest, Ligdden, Richard, and Rosthern.

10.3.5. Spruce Spider Mite, Paratetranychus ununguis (Jac.)

Spruce spider mite occurred frequently throughout the spruce shelterbelts, causing varying degrees of damage. No severe infestations were reported this year, although considerable damage had been done on a farm at Plenty before the insects were sprayed.

10.3.6. Pine Needle Scale, Phenacaspis pinifoliae (Fitch)

The pine needle scale was less abundant this year than in 1953. Work done on this insect at Indian Head indicated fairly high mortality by predators. Heavy infestations on white spruce occurred at Swift Current and Rosthern.

10.3.7. Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly was not common through the district. It occurred in the tamarack swamps southeast of Melfort and Tisdale. Heavy damage occurred in an isolated plantation of larch south of Battleford, and light to moderate damage to a few trees on a private nursery at Saskatoon.

10.3.8. Spruce Budworms

Acleris variana Fern. occurred frequently in spruce shelterbelts throughout the district, but no damage was apparent. Diorystria reniculella Grt. was less abundant than A. variana. Choristoneura fumiferana Clem. was occasionally encountered and in one shelterbelt at Rosetown, appeared to be causing some damage.

10.3.9. A Tent Caterpillar, Malacosoma lutescens (N. & D.)

Tent caterpillar infestations were not numerous this year although

distribution was widespread throughout the district. Wild rose was the preferred host.

10.3.10. Aphids

The caragana aphid, Macrosiphum caraganae Cholod., and boxelder aphid, Periphyllus neguninis (Thor.), were both more abundant than in 1953. In many shelterbelts they were very heavy and caused considerable annoyance. Coccinellid predators were present but not in large enough numbers for effective control. The aphid, Eriosoma americanum Riley, was common on all elm trees during the early part of the summer. Occasionally local infestations became heavy. Again Coccinellid predators exercised some control.

10.3.11. The Owlet Moth, Orthosia hibisci Gn.

This insect was almost always present in deciduous shelterbelts but caused no serious damage.

10.3.12. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

The green-headed spruce sawfly was occasionally associated with yellow-headed spruce sawfly. Only a few larvae were found in the Tisdale-Wadena area and at Evesham near the Alberta-Saskatchewan border.

10.3.13. Ugly Nest Caterpillar, Archips cerasivorana Fitch

The nests of this insect were not numerous in 1954 and defoliation to chokecherry was less than in 1953. However, the insect did occur commonly in the Melfort-Tisdale area. One collection was made at a nursery in Saskatoon.

10.3.14. A Webworm, Tetralopha asperatella Clem.

This insect occurred commonly throughout the native white poplar stands across the park belt, but it caused very little damage.

10.3.15. Balsam-fir Sawfly, Neodiprion abietis (Harr.)

The balsam-fir sawfly, N. abietis, was not recovered from shelter-belt spruce in the Southwest District of Saskatchewan in 1954.

10.4. TREE DISEASE CONDITIONS

10.4.1. Canker of Poplar, Hypoxyylon pruinatum (Klotsche.) Cke.

Cankers caused by the fungus, H. pruinatum, occurred commonly in the native white poplar stands throughout southwestern Saskatchewan. Infections were light and generally only a small percentage of the trees in a stand were affected. The disease caused conspicuous cankers on the bark of the trees. Heavily infected trees are girdled and killed. Aspen is most commonly attacked; balsam poplar less frequently.

10.4.2. Spruce Needle Rust, Chrysomyxa sp.

The spruce needle rust was commonly found on spruce throughout the Wilkie, Rosthern, and Tisdale areas. Infections were generally light and no damage was apparent. This rust fungus, which attacks the needles of native and ornamental spruces turning them a reddish brown, occasionally becomes epidemic.

10.4.3. Leaf Spot of Balsam Poplar, Septoria musiva Pk.

Leaf spot of balsam poplar was heavy across the northern part of the district. The disease, caused by the fungus, Septoria musiva, occurs abundantly on native poplars causing a leaf spot.

10.5. PERMANENT SAMPLE STATIONS

The following table gives the locations of permanent sample stations that were established in the Southwest District of Saskatchewan in 1954. These locations will be sampled regularly each year.

TABLE 1

Permanent Sample Stations

Sample station no.	Host tree	Place	Location			
			Sec.	Tp.	Rge.	Mer.
01	W. spruce	Meachem	10	37	27	W2nd
02	" "	Annaheim	34	38	21	W2nd
03	" "	Simpson	6	29	25	W2nd
04	" "	Runciman	36	46	15	W2nd
05	Aspen	Runciman	36	46	15	W2nd

10.6. PERSONNEL CONTACTED

Name	Position	Address
Mr. Zapt	Field Officer, DNR	Maple Creek
Mr. Danielson	Field Officer, DNR	Maple Creek

11. FOREST BIOLOGY RANGER REPORT

SOUTHEASTERN DISTRICT

SASKATCHEWAN

1954

by

V. B. Patterson

Forest Biology Laboratory

Winnipeg

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1955

11.1. INTRODUCTION

This report deals with insect and tree disease conditions in the agricultural areas of southwest Saskatchewan and southwest Manitoba.

Field work was conducted in Saskatchewan during the last week of May and during all of June. The work consisted of a general survey for the occurrence of all insects in conjunction with the Cankerworm plot work and detection surveys.

A general survey of the Manitoba section of the district was conducted in July in conjunction with the detection survey of the yellow-headed spruce sawfly. Two days were spent in the Riding Mountain National Park assisting the Western District Ranger with plot work.

A survey of the Saskatchewan section of the district east of #35 Highway was conducted during August and the first two weeks in September. This was a general survey with emphasis on the yellow-headed spruce sawfly and sampling of aspen poplar.

The last two weeks in September were spent in the Western District assisting in retallying permanent sample plots. Three days in October were spent assisting with work in the Hudson Bay District.

11.2. REVIEW OF INSECT AND TREE DISEASE CONDITIONS

The fall cankerworm, Alsophila pomataria Harr., and the yellow-headed spruce sawfly, Pikonema alaskensis (Roh.), were still the major defoliating insects of farm shelters and town plantings. The latter was recorded this year at several locations in the southern half of the district. This insect may have been present in this area in previous years but had not been detected. However, the absence of any appreciable injury to old growth might indicate that the infestation has very recently spread to the south.

The blotch miner, Gracillaria prob. negundella Chamb., was found at almost every location where Manitoba maple occurred. Injury at many locations was very heavy and complete trees had a creamy-white appearance.

The large aspen tortrix, Archips conflictana (Wlk.), and a leaf beetle, Chrysomela tremulae Auct., were the most common defoliators of aspen in native stands. The former was general west of #35 Highway and the latter found at most sampling points throughout the remainder of the area. Neither were responsible for any serious defoliation.

11.3. INSECT CONDITIONS

11.3.1. Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Infestations of farm shelterbelts by the yellow-headed spruce sawfly remained unchanged from last year in the area north of the Assiniboine River. Larval feeding was general through the area by the second week of July. Populations were generally low and at only three locations was defoliation severe enough to cause serious injury to trees. South of the Assiniboine River, larvae were collected at three locations: Pipestone, Napinka, and Deloraine.

In the Saskatchewan section of the district covered by this report, six collections of larvae and pupae were taken and injury to spruce reported from nine other locations. Prior to 1954, no collections had been made in the area south of No. 1 Highway in Saskatchewan. However, at the locations where it was detected in 1954, injury to previous years growth was negligible, which may indicate that the infestation is relatively new.

The accompanying map (Fig. 1) shows the distribution and reports of injury to spruce by the yellow-headed spruce sawfly in southeast Saskatchewan and southwest Manitoba in 1954.

11.3.2. Fall Cankerworm, Alsophila pometaria (Harr.)

Larvae of the fall cankerworm were widely distributed in the area west of No. 35 Highway from the International Boundary to Weyburn and southwest of a line through Yellowgrass to Moose Jaw. The population level was generally low and injury, for the most part, was light. Moderate to heavy injury occurred at Khedive, Neptune, Lake Alma, Hardy, Yellowgrass, and south of Moose Jaw. In the Last Mountain area, larvae were taken from three locations outside of the two permanent sampling stations located at Findlater and Nokomis.

Collections of 200 larvae and 30 hatched egg bands were collected at each sample station during the second week of June. Another collection containing 200 third instar larvae from each sample station, was made during the third week of June. At that time defoliation on one of the two rows of trees on the Nokomis plot was estimated at 50 to 70 per cent and at Findlater plot from 90 to 100 per cent.

Figure 2 shows the distribution of collections and defoliation estimates of the fall cankerworm in southeast Saskatchewan and southwest Manitoba in 1954.

11.3.3. Spruce Budworm, Choristoneura fumiferana (Clem.)

Only three light infestations of the spruce budworm were recorded. Two of these were collected from Colorado spruce in the Brandon and Harding areas of Manitoba and the other from Norway spruce at Heward, Saskatchewan.

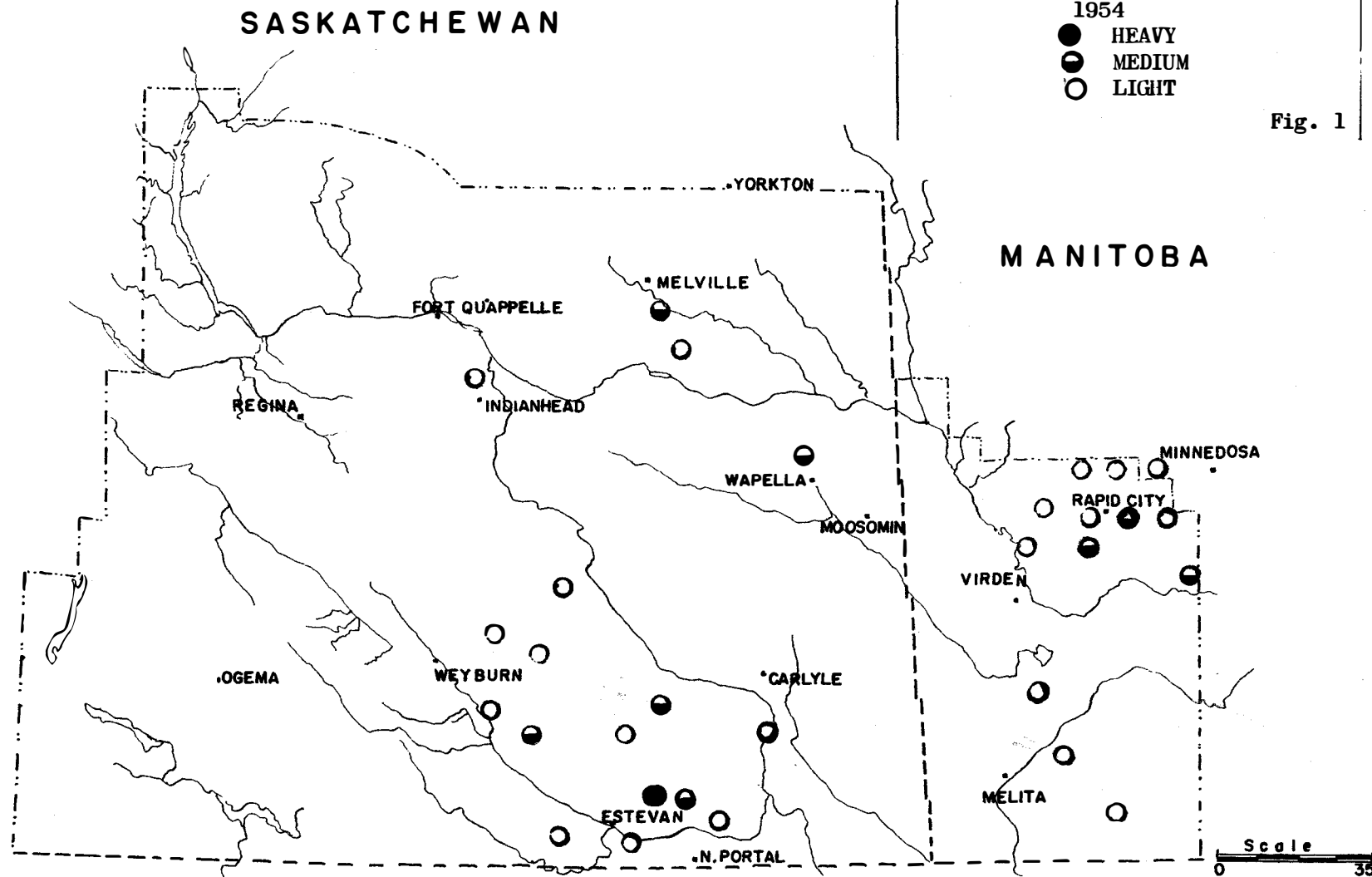
**SOUTHEASTERN DISTRICT
SASKATCHEWAN**
FOREST INSECT AND DISEASE SURVEY - WINNIPEG

KNOWN DISTRIBUTION OF
YELLOW-HEADED SPRUCE SAWFLY

1954

- HEAVY
- ◐ MEDIUM
- LIGHT

Fig. 1



FOREST INSECT AND DISEASE SURVEY · WINNIPEG ·

● HEAVY
 ◐ MEDIUM
 ○ LIGHT
 ☆ REPORTS

SASKATCHEWAN



11.3.4. Black-headed Budworm, Acleris variana (Fern.)

Pupae and larvae of the black-headed budworm were collected at Brandon, Minnedosa, and Harding in Manitoba and at Dalishoro and Windthorst in Saskatchewan. Injury was light at all locations.

11.3.5. Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

Larvae of the green-headed spruce sawfly were recorded at four locations in Manitoba. The highest population occurred at a farm shelterbelt north of Brandon. Collections were also taken at Hamiota and Napinka in Manitoba. Damage was very light in these areas.

11.3.6. Balsam-fir Sawfly, Neodiprion abietis (Harr.)

One collection of the balsam-fir sawfly was taken in the Hamiota townsite. A light infestation has persisted in this area for the last six years.

11.3.7. Pine Needle Scale, Phenacaspis pinifoliae (Fitch)

Three collections of the pine needle scale were submitted from the district; one from lightly infested shade trees at Brandon and two from moderately infested plantations at Hamiota.

11.3.8. Larch Sawfly, Pristiphora erichsonii (Htg.)

The population level of the larch sawfly in Manitoba was lower than in 1953. Larvae were found at only two locations and injury very light (Waskada and Isabella).

Cocoon collections were made in September at the Forest Nursery Station at Indian Head and at the C.P.R. plot at Wolseley. The infestation at Indian Head has persisted for a number of years despite some control work. Aerial control was attempted this year for the first time with apparently good results. The cocoon collection was made under fringe trees that were not sprayed.

11.3.9. Boxelder Leaf Roller, Gracillaria prob. negundella Chamb.

The boxelder leaf roller was generally found wherever Manitoba maple occurred throughout the district. At some locations populations were large enough to mine 90 - 100 per cent of the leaves and cause the trees to take on a white appearance. Pupae were present when the first collections were made on July 13 and larvae were present as late as August 10. First adult emergence was recorded August 13.

The following table (Table 1) contains a summary of collections of the boxelder leaf roller taken from Manitoba maple throughout the district in 1954.

TABLE 1

Summary of Boxelder Leaf Roller Collections

Date	Location	Host	Stage	Degree of infestation
July 13	Hamiota, Man.	Manitoba maple	L & P	L-M
" 13	Miniota	" "	L & P	L
" 14	Hamiota	" "	L & P	M
" 15	"	" "	L & P	L
" 16	Lenore	" "	L & P	L
" 17	Alexander	" "	L & P	L
" 19	Souris	" "	L & P	M-H
" 21	Strathallan School	" "	L & P	L
" 21	Goodlands	" "	L & P	M
" 22	Napinka	" "	L & P	M-H
" 23	Pipestone	" "	L & P	L
" 30	Bellview	" "	P	L-M
" 21	Waskada	" "	L & P	L
Aug. 9	Kisbey, Sask.	Manitoba maple	L	L
" 10	Heward	" "	P	M-H
" 11	Halbrite	" "	L & P	M
" 11	Tisdale	" "	P	L-M
" 12	Tonguay	" "	P	L
" 13	Frobisher	" "	P & A	M
" 16	Windthorst	" "	P & A	M

11.3.10. A Tent Caterpillar, Malacosoma lutescens (N. & D.)

This tent caterpillar occurred throughout the area west of #35 Highway during June. Infestations were usually light, consisting of one or two tents on rose or chokecherry along roadways. Moderate infestations were reported at Lake Alma, Bengough, Moose Jaw, and Qu'Appelle.

11.3.11. Large Aspen Tortrix, Archips conflictana (Wlk.)

Collections and reports of the large aspen tortrix were made in June throughout the aspen belt west of No. 35 Highway and north of Highway No. 33. Surveys were conducted along Highway No. 22 and 35 from Bulveya to Fort Qu'Appelle and along No. 35, No. 1, No. 6, and No. 15 from Francis to Nokomis. Checks were made approximately ten miles apart and larvae were found at almost every location. At that time, injury was light, although there appeared to be moderately high populations. Collections were made at Parry, Stoughton, and Whitewood outside of this general area. In Manitoba, one pupa was collected in mid-July near Hargreave.

11.3.12. Poplar Leaf Beetle, Chrysomela tremulae Auct.

Larvae and adults of this poplar leaf beetle were found during July and August throughout southwestern Manitoba and the area east of No. 35 Highway in Saskatchewan. Populations were generally low but at one location in Saskatchewan, 159 adults and numerous larvae were collected by beating five trees. Injury was moderate at a few widely separated locations, but otherwise light.

11.3.13. Grey willow-Leaf Beetle, Galerucella decora (Say)

The grey willow-leaf beetle was found at only seven locations in the district. In Manitoba there were four infestations south of the Assiniboine River. Populations were low and injury at that time was light (July 7-23). In Saskatchewan, a small area near Odessa was about 90 per cent skeletonized by mid-August. A few adults were found feeding on aspen near Dubac. At Calder, large populations of adults were feeding on willow during the second week in September but at that time had caused only light injury.

11.3.14. Other Noteworthy Insects

Insect species	No. of collections	Host and remarks
<u>Archips rosaceana</u>	8	Found on aspen, maple, and rose
<u>Archips cerasivorana</u>	1	Found on chokecherry
<u>Archips negundana</u>	10	Found on Manitoba maple
<u>Rhogogaster californica</u>	14	Common on white poplar
<u>Platycampus</u> sp.	14	Common on white poplar
<u>Epicnaptera americana</u>	11	Common on White poplar
<u>Nematus</u> sp.	22	Common on white poplar
<u>Lobophtera nivigerata</u>	18	Common on white poplar
<u>Prochoerodis transversata</u>	15	Common on white poplar
<u>Campea perlata</u>	11	Common on white poplar
<u>Deuteronomus magnarius</u>	7	Common on white poplar
<u>Amphidasis cognataria</u>	14	Common on white poplar
<u>Prolitame</u> sp.	30	Common on white poplar
<u>Gluphisia septentrionalis</u>	12	Common on white poplar
<u>Meroptera pravella</u>	7	Occurred occasionally on white poplar

TABLE (cont'd)

Insect species	No. of collections	Host and remarks
<i>Lepyrus palustris</i>	7	Occurred occasionally on white poplar
<i>Raphia frater</i>	5	Occurred occasionally on white poplar
<i>Tetralopha asperatella</i>	5	Occurred occasionally on white poplar
<i>Podisus modestus</i>	4	Occurred occasionally on white poplar

11.4. TREE DISEASE CONDITIONS

11.4.1. Canker of Poplar, Hypoxylon pruinaum (Klotsche.) Cke.

The canker of poplar, H. pruinaum, was the most common tree disease throughout southeast Saskatchewan and southwest Manitoba. From 10 to 20 per cent of the trees examined in most areas were affected. At one location, samples were taken from trees that bore symptoms similar to those of H. pruinaum. Approximately 90 per cent of the trees in the area were affected. The fungus responsible for this condition has not as yet been definitely determined.

11.4.2. Poplar Leaf Blight, marssonia castagnii

The poplar leaf blight, M. castagnii, was general in the area west of Virden, Manitoba.

11.4.3. Septoria Leaf Spot, Septoria musiva Fk.

The leaf spot, S. musiva, was recorded on balsam poplar in the Qu'Appelle Valley north of Whitewood, Saskatchewan.

11.4.4. White Heart Rot of Willow, Poria punctata

This disease, common to willows was recorded at one location near Hartney, Manitoba.

11.4.5. Cluster Cup Rust

One collection of the cluster cup rust was found on currant in the district. This disease is uncommon in Western Canada.