ANNUAL DISTRICT REPORTS

FOREST INSECT AND DISEASE SURVEY

MANITOBA-SASKATCHEWAN REGION

1967

by

L.L. McDowall, K.L. Mortensen, G.N. Still
D.N. Shepherd, R.C. Tidsbury, W.B. Crawford
B.B. McLeod, W.J. Beveridge, C.L. Rentz
A.N. Simpson, M.J. Homann and P.W. Anderson

FOREST RESEARCH LABORATORY

WINNIPEG, MANITOBA

INFORMATION REPORT MS-X-7

FORESTRY BRANCH

January 1968

TABLE OF CONTENTS

INTRODUCTION

L. L. McDowall

Several important changes occurred in the distribution and status of some major insects in 1967. An overall reduction of spruce needle rusts in the northern sections of both provinces and a decline of leaf diseases were noted and no major tree disease infections were reported.

The season was characterized by prolonged periods of hot dry weather which extended from the latter part of June to September.

Field surveys were conducted from mid-May to early October. During this period, a total of 4631 insect and 3122 tree disease collections were submitted by the rangers. The number of collections from individual survey districts and host trees are shown in Table I. Approximately 112 hours of flying time was used for mapping insect and disease outbreaks; of this time 35 hours was supplied by the Forestry branches of both provinces. A summary of the aircraft travel is listed in Table II.

Survey district boundaries remained essentially the same in 1967 and the only change initiated was that of the sub-regional supervisors. On a trial basis they were not assigned a working district but were responsible for directing the work program within one of the three ecological sub-regions. Since only two sub-regional supervisor positions were appointed, each responsible for three ranger districts, the Prairie Sub-region was supervised by the Chief Ranger. Survey districts and aerial routes are shown in Figure 1.

Continuing high populations of the spruce budworm, Choristoneura fumiferana (Clem.), were again responsible for moderate to severe defoliation in the infestation areas of northern Manitoba and Saskatchewan.

The jack-pine budworm, Choristoneura pinus pinus Free., continued at infestation levels in southern and eastern Manitoba and several small new infestations were reported. In Saskatchewan, a considerable decrease in populations occurred and only a few scattered patches of light to moderate defoliation remain.

Populations of the larch sawfly, Pristiphora erichsonii (Htg.), remained relatively high in southern and eastern Manitoba, whereas in Saskatchewan infestations declined markedly in areas where severe defoliation had prevailed for a number of years.

The large aspen tortrix, Choristoneura conflictana (Wlk.), continued at infestation levels only in the Cypress Hills Provincial Park in southwestern Saskatchewan.

Infestations of the fall cankerworm, Alsophila pometaria (Harr.) persisted over most of southern Manitoba, but decreased slightly in the west central part of the province.

An increase in the distribution of the white-pine weevil, Pissodes strobi Peck., occurred in southern and eastern Manitoba. Symptoms were most conspicuous in the Sandilands and Agassiz Provincial forests.

The conditions briefly outlined above together with other important forest insect and tree disease problems are described in detail in the following individual reports. The survey wishes to express its sincere appreciation for the cooperation and assistance received from forestry officials and other government agencies of both provinces.

TABLE I

Insect and Disease Collections from the Principal Host Trees
Manitoba-Saskatchewan Region
1967

Ranger Districts	Tree species																							
	wS		bS		bF		jP		tL		tA		bPo		wB		mM		wE		Misc.		Totals	
	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D
Eastern Lowlands Man.	39	14	20	37	30	33	133	39	54	3	60	57	20	18	29	9	13	-	11	4	180	117	589	331
Central Lowlands Man.	93	14	36	21	-	5	38	19	37	1	103	95	41	16	8	3	33	7	5	1	132	117	526	299
Northern Lowlands and Northern Man.	59	26	50	40	24	20	43	22	50	-	62	53	35	38	46	28	6	2	5	1	118	133	498	363
Eastern Prairie Man.	40	9	-	-	-	-	11	4	3	-	80	114	24	12	3	4	55	5	22	-	275	72	513	220
Central Prairie Sask.	65	-	1	-	-	-	5	-	4	-	65	104	23	41	10	8	41	9	28	-	193	83	435	245
Western Prairie Sask.	22	2	-	-	-	-	2	-	-	-	48	60	17	2	3	-	70	12	14	-	283	37	459	113
Western Mixedwood Sask.	49	42	10	10	7	12	32	35	28	1	84	104	24	42	18	27	6	-	1	-	110	125	369	398
Central Mixedwood and Northern Sask.	30	36	34	60	9	16	68	85	65	1	130	132	57	66	41	59	-	1	-	-	260	244	694	700
Eastern Mixedwood Sask.	59	46	18	20	9	9	16	17	19	1	136	158	64	66	13	26	20	14	6	1	188	95	548	453
Totals	456	189	169	188	79	95	348	221	260	7	768	877	305	301	171	164	244	50	92	7	1739	1023	4631	3122

I = Insect Collections

D = Disease Collections

TABLE II

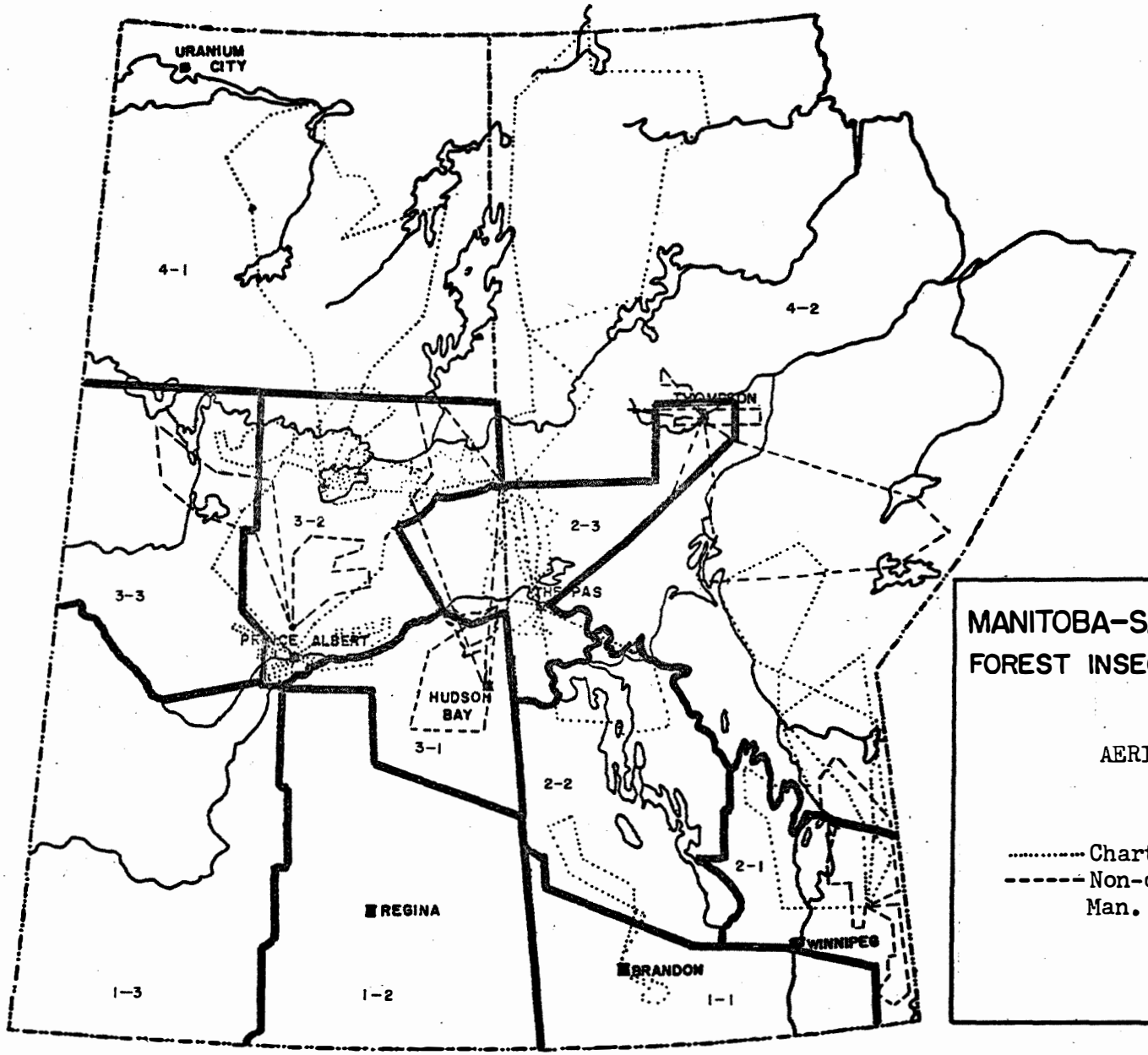
Summary of Aircraft Travel

Manitoba and Saskatchewan

1967

Province	Type of flying	Type of aircraft	No. of hours	Approx. mileage	Approx. area surveyed (sq. mi.)*
Manitoba	Chartered	Cessna 180	39:30	4,350	17,000
		Cessna 175	4:20	400	1,600
	Provincial Forestry Branch	Beaver	3:15	300	1,200
		Cessna 180	12:15	1,300	5,000
Saskatchewan	Chartered	Cessna 180	24:50	2,750	11,000
		Cessna 150	7:50	800	3,200
	Provincial Forestry Branch	Beaver	8:00	800	3,200
		Cessna 180	7:30	825	3,300
		Helicopter	4:00	340	1,360
	TOTALS		111:30	11,865	46,860

* Based on observations of approximately 2 miles on each side of flight lines.



SURVEY DISTRICTS

Prairie Sub-region
- 1.1 Eastern Prairie
- 1.2 Central Prairie
- 1.3 Western Prairie

Lowlands Sub-region
- 2.1 Eastern Lowlands
- 2.2 Central Lowlands
- 2.3 Northern Lowlands

Mixedwood Sub-region
- 3.1 Eastern Mixedwood
- 3.2 Central Mixedwood
- 3.3 Western Mixedwood

Northern Aerial
- 4.1 Saskatchewan
- 4.2 Manitoba

MANITOBA-SASKATCHEWAN REGION
FOREST INSECT AND DISEASE SURVEY

FIG. 1

AERIAL SURVEYS - 1967

..... Charter

------ Non-charter: Provided by Man. and Sask. Forest Service

Scale 120 mi. - 1 in.

EASTERN LOWLANDS DISTRICT

MANITOBA

1967

by

G. N. Still and K. L. Mortensen

INTRODUCTION

Forest insect and tree disease surveys were initiated in late May and continued until the latter part of September. A total of 580 insect and 331 disease samples was submitted to the Winnipeg laboratory. In addition to general sampling, the following sub-projects were carried out: (1) studies to determine the spread of the introduced larch sawfly parasite Olesicampe sp. nr. nematorum Tschek; (2) larch sawfly egg population studies at permanent plots; (3) establishment and tally of permanent plots to study effects of the diseases Pollaccia radiosa (Lib.) Bald. & Cif., Hypoxylon mammatum (Wahl) Miller, and Arceuthobium pusillum Peck.; (4) mass collections of jack-pine budworm, fall cankerworm, larch sawfly, and yellow-headed spruce sawfly for parasite studies; (5) special collections of gall insects, aphids and ants, insect eggs, tamarack cones, sawflies, jack-pine budworm, and insects infesting fungi; and (6) a small mammal population study near Hadashville.

Approximately 14 hours and 40 minutes of charter and 5½ hours of non-charter flying were used for aerial surveys in areas inaccessible by road for mapping insect and disease outbreaks.

Cool weather during May and June retarded foliage production and consequently, insect and disease development was somewhat later than usual. There were increases in the distribution of jack-pine budworm outbreaks in the Whiteshell Provincial Park and in the northern aerial survey region while the infestations in the Belair, Agassiz, and Sandilands Provincial forests remained much the same as last year. Moderate to severe defoliation by the larch sawfly again occurred at numerous scattered locations throughout the range of tamarack in the district. Populations of the fall cankerworm, gray willow-leaf beetle, aspen blotch miner, and the leaf roller Archips negundanus Dyar increased. The only significant change in the status of important tree diseases was the occurrence of winter browning in many areas.

INSECT CONDITIONS

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- Infestations in the Whiteshell Provincial Park and east of Lake Winnipeg expanded while those in the Sandilands, Agassiz, and Belair Provincial forests remained much the same as last year (Figure 1).

The boundaries of the Whiteshell Provincial Park infestation extended from southeast of Falcon Lake northwest through Telford and Rennie, north along the east side of the Rennie River, and north and west of the Winnipeg River to the Bird River and Davidson Lake on the Ontario border.

To the north, the most significant areas of moderate to severe defoliation were along the Cat Lake Road, east to Round Lake and north almost to Snowshoe Lake; between the Black and Manigotagan rivers from Turtle Lake through to Manigotagan Lake and along the east side of Lake Winnipeg from north of the Sandy River to the Rice and Bloodvein rivers. Similar patches of defoliation occurred along the Pigeon River in the Sturgeon Falls area; from Old Fort Falls on the Berens River to south of the Pigeon River and east to Family and Fishing lakes and along the Poplar River, in the Weaver Lake area. Larvae were also collected at Flintstone, Aikens, Red Willow, Gunisao, and Vickers Lakes.

Patches of light to moderate defoliation were observed throughout most of the southern half of the Sandilands Provincial Forest with patches of moderate to severe occurring between Woodridge and Badger and in the Menisino area. In the northern section, continuous moderate to severe defoliation was recorded west of the Whitemouth River from Marchand north to the Trans-Canada Highway.

Scattered patches of moderate to severe defoliation occurred throughout the Agassiz and Belair Provincial forests and in the vicinity of the Rosenburg and Red Rose fire towers in the Interlake section.

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- Populations remained high and moderate to severe defoliation was common in many tamarack stands throughout the district ranging as far north as the Bloodvein River and Sasaginnigak Lake (Figure 2). Moderate to severe defoliation was prevalent in the Sandilands, Northwest Angle, Whiteshell, Agassiz, and Belair Provincial forests and extended northward to include areas near Pine Falls, Cat Lake, Manigotagan, Bissett, Aikens and Sasaginnigak lakes and along the Bloodvein River. In the Interlake section moderate to severe defoliation was recorded in the Riverton, Washow Bay, and Mantagao Lake areas. A patch of light to moderate defoliation occurred in the Birds Hill Provincial Park. Light defoliation was commonly observed throughout the remainder of the district.

Sequential sampling of egg populations was again carried out in permanent study plots and the results are shown below.

Location and plot no.		No. of shoots examined	No. of shoots curled	Infestation rating-1967
Piney	01	180	32	Moderate
Telford	01	370	84	Moderate
Agassiz	01	90	51	Severe
Point du Bois	01	400	94	Moderate
Riverton	01	400	68	Moderate

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- An increase in populations and distribution was evident in the Interlake section of the district. Moderate to severe defoliation occurred in white spruce woodlots, ranging in size from five to ten acres, in the Arborg, Vidir, and Fisher Branch areas. In addition, larvae were collected from widely scattered locations throughout the remainder of the district, including Aikens, Molson, and Weaver lakes in the northern aerial survey region but defoliation was generally light.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):- There was a notable increase in populations of this sawfly, particularly in the eastern part of the district. Ornamental Colorado and white spruce in the towns of Whitemouth and Elma were moderately to severely defoliated. Moderate to severe defoliation occurred on black and white spruce at many scattered points along the main access roads throughout the Whiteshell Provincial Park and in the Point du Bois and Wadhope areas. Similar defoliation of planted spruces occurred at the Whitemouth River Picnic Site near Hadashville and at Vidir in the Interlake section. Light

defoliation was common at scattered locations throughout the remainder of the district, including northern aerial survey collection points at Sasaginnigak, Weaver, Molson, and Stevenson lakes.

WHITE-PINE WEEVIL, Pissodes strobi (Peck):- Light to moderate infestations on young, native jack pine and planted Scots and red pine were common throughout that portion of the district lying east of Lake Winnipeg, from Piney in the south to Wanipigow and Wallace lakes in the north. Conspicuous leader damage was also noted in the Interlake section near the Rosenburg fire tower.

Counts were made in young pine plantations in two areas to obtain damage appraisals and the results are shown below.

Locality	Tree species	No. of trees examined	No. of dead tops caused by P. strobi
Rosenburg fire tower	jack pine	175	22
Agassiz Provincial Forest (North of No. 4 Highway).	red pine	175	50

Infestations of similar intensity were observed at scattered locations in the Sandilands Provincial Forest.

PITCH NODULE MAKER, Petrova albicapitana (Busck):- Surveys indicated low populations were common throughout the range of jack pine in the district, including the northern aerial survey region. The most significant damage occurred in the southeastern portion of Manitoba in plantations and stands of regeneration jack pine. Localized light to moderate infestations with an occasional tree heavily damaged occurred in the Birch Point, Menisino, and Badger areas.

SPITTLE BUGS, Aphrophora spp.:- Spittle bugs were observed at numerous locations throughout the district. Although jack pine was the preferred host, collections were also made from Scots and white pine. Adults collected from jack pine near the Red Rose fire tower were identified as A. parallela Say.

Localized light to moderate infestations were detected in the Wampum, Vassar, Menisino, and Red Rose areas and in the Belair and Sandilands Provincial forests. Infestations were generally light elsewhere.

PINE ENGRAVER, Ips pini Say:- Several acres of recently dead and dying jack pine, approximately seven miles northeast of the Marchand Ranger Headquarters in the Sandilands Provincial Forest, were heavily infested. Associated with I. pini in the infested areas were Cerambycid sp., Clerid sp., and Buprestid sp. There were indications that the infested trees may have been weakened by previous flooding.

Several heavily infested trees were observed in the Agassiz Provincial Forest and in the vicinity of the Rosenburg and Red Rose fire towers.

FALL CANKERWORM, Alsophila pometaria (Harr.):- There was an increase in populations of the fall cankerworm throughout the Winnipeg - Selkirk - Beausejour area. Shelterbelts, woodlots, and shade trees suffered moderate to severe defoliation along the Red River, particularly in the St. Clements, Little Britain, and St. Andrews areas. A number of Manitoba maple shelterbelts were similarly defoliated along No. 4 Highway in the Highland Glen, Garson, and St. Ouens areas. In the town of Beausejour, localized moderate to severe defoliation occurred on ornamental and shade trees. Light to moderate defoliation of maple, elm, and ash was observed in the town of Stonewall and traces of feeding damage were noted in the Oak Point area on bur oak.

A LEAF ROLLER, Archips negundanus Dyar.:- Populations of this pest on Manitoba maple increased in southeastern Manitoba. Moderate to severe defoliation of shelterbelts and ornamentals was detected in the Birch Point, Vassar, and St. Labre areas. In the Interlake section, moderate to severe defoliation occurred at Vidir. Low populations were associated with heavy infestations of the fall cankerworm in the St. Ouens, Highland Glen and Whitemouth areas.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Chamb.:- This species was common throughout the forested areas of the district, including the northern aerial survey section and damage was most prevalent on regeneration and young aspen. Patches of moderate to severe leaf mining were observed in the Northwest Angle, Agassiz, and Sandilands Provincial forests and in the Whiteshell Provincial Park. Similar damage occurred in the Interlake section in the Lake St. George and Rosenburg areas and east of Lake Winnipeg near Wanipigow and Wallace lakes. Elsewhere, damage was generally light to moderate.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- An increase in populations of this skeletonizer occurred in 1967. Numerous, widely scattered patches of moderate to severe skeletonizing were recorded throughout that portion of the district lying east of Lake Winnipeg from Sprague north to Weaver Lake, including the Northwest Angle, Sandilands, Agassiz, Whiteshell, and Belair Provincial forests, along the Bissett Highway, and at Sasaginnigak Lake. Light skeletonizing occurred in the Bissett and Cat Lake areas, near Beaver Creek and Red Rose in the Interlake, and at Flintstone Lake.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- Localized patches of moderate to severe defoliation were noted on regeneration and young trembling aspen in the Agassiz Provincial Forest, east of Hodgson in the Lee Lake area, and in the Rosenburg, Mantagao Lake, and Red Rose area. Scattered light infestations were common throughout the remainder of the forested areas.

UGLY-NEST CATERPILLAR, Archips cerasivoranus (Fitch):- There was a general increase in the occurrence of this insect. Infestations were numerous and widespread throughout the district. Moderate to severe infestations of chokecherry were observed in the Sprague, East Braintree, Rembrandt, Hole River, and Wadhope areas. A severe infestation in a half mile hedgerow of aspen and choke cherry in the vicinity of Fisher Branch was noted. Elsewhere damage was generally light.

EUROPEAN ALDER LEAF MINER, Fenusa dohrnii (Tisch.):- Many scattered patches of moderate to severe blotch mining damage of alder occurred around Lake Winnipeg from the Washow Bay area north to Beaver Creek, including Hecla Island and in the Koostatak and Lake St. George areas. Similar infestations were found on the east side of the lake in the Manigotagan area and in the southeastern part of the province in the East Braintree and Marchand areas.

FALL WEBWORM, Hyphantria cunea (Drury):- Collections indicated that this species was widespread throughout the district. However, infestations were generally widely separated and only individual trees were attacked. Moderate to severe leaf skeletonizing was restricted to regeneration and small trees. A wide variety of deciduous trees were attacked and collections were taken from alder, white birch, swamp birch, willow, white elm, Manitoba maple, pincherry, chokecherry and balsam poplar. Populations were concentrated in areas surrounding Lake Winnipeg and along the East Braintree - Moose Lake Road in the southeast portion of the province.

TENT CATERPILLARS, Malacosoma spp.:- The incidence of tent caterpillars decreased in 1967. Occasional tents were detected only at widely separated points. The eastern tent caterpillar, M. americanum (F.) was found in the Northwest Angle and Sandilands Provincial forests. The prairie tent caterpillar, M. lutescens (N. & D.) was recorded in the Birds Hill Provincial Park and at Mantagao Lake. The western tent caterpillar, M. pluviale (Dyar) was detected at three locations in the Whiteshell Provincial Park, at Star Lake, and along the Bird Lake Road.

LARCH CASEBEARER, Coleophora laricella Hbn.:- In 1961, the larch casebearer was found in western Ontario, approximately 20 miles southeast of Lake of the Woods. It was first detected in southeastern Manitoba in 1965 and surveys in succeeding years indicated that populations remained low and spread was minimal. The results of these surveys are tabulated below.

Areas Sampled	No. of specimens collected		
	1965	1966	1967
Middlebro	3	16	1
Sprague	Nil	Nil	1
Birch Point	2	Nil	Nil
Piney	Nil	7	Nil
East Braintree	Nil	Nil	Not sampled
Caribou fire tower	Nil	Nil	" "
Falcon Lake	Nil	Nil	" "
West Hawk Lake	Nil	Nil	" "
Telford	Nil	Nil	" "
Rennie	Nil	Nil	" "
Elma	Nil	Nil	" "

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Acleris variana (Fern.)	Spruce, white	Whiteshell and Agassiz Provincial forests and at Mantagao Lake in the Interlake section.	Scattered traces of defoliation
Acraspis villosa Gill. (Hairy oak gall)	Oak, bur	Agassiz Provincial Forest, Seven Sisters, Teulon and Inwood.	Light gall infestations common.
Acrobasis sp. (A tubemaker)	Oak, bur	Birds Hill Provincial Park, Teulon, Inwood and Poplarfield.	Overall damage light.
Acrobasis rubrifasciella Pack. (Alder tubemaker)	Alder	Agassiz and Sandilands Provincial forests.	Occasional localized, light infestations.
Acronicta dactylina Grt. (Dagger moth)	Willow Aspen, trembling Poplar, balsam	Northwest Angle Provincial Forest, St. Labre, Rennie, Hodgson, Molson Lake.	Scattered low populations; no significant damage.
Anacamptodes vellivolata Hlst. (A looper)	Pine, jack Tamarack	Rennie, Darwin, Agassiz Provincial Forest, and Rosenburg.	Low populations; no significant damage.
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	Throughout the district.	Low populations; no notable damage.
Archips fervidanus (Clem.) (Oak webworm)	Oak, bur	Throughout the Aspen-Oak section of the district.	Low populations.
Arge clavicornis (Fab.) (A willow sawfly)	Willow Birch, white Alder	Throughout the district.	Patches of light defoliation. Commonly found during northern aerial surveys.
Arge pectoralis (Leach) (Birch sawfly)	Birch, white and swamp Alder.	Darwin, Hecla Island, Washow Bay, Beaver Creek, Hodgson, Sasaginnigak, Dogskin Lake.	Patches of light to severe defoliation of alder and swamp birch in the Washow Bay area and on Hecla Island; elsewhere defoliation generally light and localized.

Insect	Host(s)	Locality	Remarks
Bucculatrix canadensisella Cham. (Birch skeletonizer)	Birch, white Alder	Northwest Angle Provincial Forest, Lake St. George	Light leaf skeletonizing.
Calligrapha ignota Brown (Leaf beetle)	Birch, white	Sandilands and Belair Provincial forests	Traces of leaf skeletonizing at widely scattered localities.
Campaea perlata (Gn.) (Fringed looper)	Birch, white Aspen, trembling Poplar, balsam	Northwest Angle Provincial Forest, Otter Falls, and Rosenburg in the Interlake	Low populations; no significant damage.
Cecidomyia balsamicola Lintner (Balsam gall midge)	Fir, balsam	Northwest Angle and Agassiz Provincial forests, Hecla Island, Beaver Creek, Hodgson, and Berens River	Occasional moderate to severe damage on individual trees in the Beaver Creek, Contour, and Berens River areas.
Cecidomyia reeksi Vock. (Jack-pine resin midge)	Pine, jack	Hadashville and Whitemouth Lake	Localized light infestations.
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white	Falcon Lake and Red Rose	Moderate to severe infestations on occasional trees.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white	Hadashville and Red Rock Lake	Infestations generally light.
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Aspen, trembling Birch, white	Agassiz Provincial Forest, Hodgson, and Flintstone Lake	Traces of defoliation.
Choristoneura rosaceana Harr. (Leaf roller)	Willow Oak, bur Caragana Birch, white Fir, balsam	Northwest Angle Provincial Forest, Otter Falls, Lockport, St. Ambroise, Petersfield, Beaver Creek and Aikens Lake	Light leaf rolling.
Chrysomela crotchi Brown (Aspen leaf beetle)	Aspen, trembling	Throughout the district	A further decline in populations was evident; widely scattered traces of defoliation.

Insect	Host(s)	Locality	Remarks
Chrysomela knabi Brown (A leaf beetle)	Poplar, balsam Birch, white Alder	Agassiz Provincial Forest, Hecla Island, Aikens Lake, Molson and Stevenson lakes.	Localized light to moderate skeletonizing of regeneration at Molson and Stevenson lakes; light elsewhere.
Chrysomela scripta F. (Cottonwood leaf bettle)	Poplar, balsam Aspen, trembling Willow	Northwest Angle Provincial Forest, Marchand, Hadashville, and Rennie	Low populations; no significant damage.
Datana ministra (Drury) (Yellow-necked caterpillar)	Birch, white	Moose, Elliot, and Dogskin lakes.	Light to moderate defoliation to individual young trees.
Dendroctonus simplex Lec. (Eastern larch beetle)	Tamarack	Stony Creek and Whiteshell Lake.	Small patches of recently dead trees heavily infested.
Ectropis crepuscularia Schiff. (Saddle-backed looper)	Tamarack	Throughout the district	Low populations common.
Erannis tiliaria (Harr.) (Linden looper)	Elm, white	Selkirk	Associated with A. pometaria; damage negligible.
Eriosoma americanum (Riley) (Woolly elm aphid)	Elm, white	Seven Sisters, Whitemouth, and Hadashville	Occasional light to moderately infested trees.
Eucosma gloriola Heinr. (Eastern pine-shoot borer)	Pine, Scots and jack	Sandilands Provincial Forest	Low incidence of leader damage to plantations and regeneration.
Eupithecia luteata Pack. (A looper)	Tamarack Spruce, black and white Fir, balsam	Throughout the district	Low populations.
Feralia jocosa (Guen.) (Green-striped caterpillar)	Pine, jack Fir, balsam	White Lake, Otter Falls, Wanipigow and Molson lakes.	No significant damage.
Galerucella cavicollis (LeConte) (Cherry leaf beetle)	Cherry, pin Alder	Red Rock and Sasaginnigak lakes.	Localized light to moderate leaf skeletonizing.
Gracillarid sp. (Blotch miner)	Oak, bur	Birds Hill Provincial Park, Petersfield, Teulon, and Inwood	Scattered, localized patches of light to moderate leaf mining.

Insect	Host(s)	Locality	Remarks
Hemichroa crocea (Fourcroy) (Striped alder sawfly)	Alder	Washow Bay	Scattered small patches of moderate to severe defoliation.
Hylobius pinicola Couper (Root collar weevil)	Aspen, trembling Tamarack	Cat Lake and Washow Bay.	Adults collected in beating samples.
Hypagyrtis piniata Pack. (A looper)	Tamarack Pine, jack	Agassiz and Whiteshell Provincial forests, Pine Falls, Riverton, and Hodgson.	Low populations; no noticeable damage.
Itame loricaria Evers. (A looper)	Aspen, trembling Willow	Belair Provincial Forest, Washow Bay, Beaver Creek, Rosenburg, and St. Ambroise.	Low populations; no significant damage.
Lambdina fiscellaria fiscellaria (Gn.) (Hemlock looper)	Fir, balsam Tamarack	Rennie, Washow Bay, Beaver Creek; Flintstone, Sasaginnigak and Molson lakes.	Low populations; no significant damage.
Lecanium coryli L. (Lecanium scale)	Elm, white	Selkirk.	Localized light infestation.
Melanolophia canadaria Gn. (A looper)	Alder Willow Tamarack	Darwin, Rennie, Beaver Creek, and Red Willow Lake.	Populations low; no significant damage.
Mordwilkoja vagabunda (Walsh.) (Poplar vagabond gall aphid)	Aspen, trembling Cottonwood	Stead, Stonewall, and Hodgson.	Localized light Infestations.
Nematus limbatus Cress. (A willow sawfly)	Willow	Hadashville, Washow Bay, and Hodgson.	Scattered small patches of moderate to severe defoliation in the Washow Bay area; light elsewhere.
Nematus populi Marl. (A sawfly)	Willow Poplar, balsam Birch, white	Otter Falls, Hillside Beach, Lake St. George, and Molson Lake.	Scattered light defoliation.
Neodiprion abietis complex (Balsam-fir sawfly)	Spruce, black	Beaver Creek.	Localized light defoliation.

Insect	Host(s)	Locality	Remarks
Neodiprion nanulus nanulus Schedl. (Red-pine sawfly)	Pine, jack	Wampum, White Lake, and Otter Falls	Traces of defoliation.
Neodiprion virginianus complex (Red-headed jack-pine sawfly)	Pine, jack	Otter Falls, Rosenburg, Wallace and Sasaginnigak lakes.	Light defoliation of occasional trees.
Neurotoma inconspicua (Nort.) (A plum web-spinning sawfly)	Cherry, pin	Cat Lake	Occasional moderate to severe defoliation.
Nycteola frigidana Wlk. (A web-maker)	Willow	Telford, Cat Lake, Wallace Lake, Washow Bay, and Beaver Creek	Localized moderate defoliation at Cat Lake; light elsewhere.
Oligonychus ununguis (Jac.) (Spruce spider mite)	Spruce, white and black.	Birds Hill Provincial Park and Elliot Lake	Occasional tree lightly infested.
Operophtera bruceata (Hulst) (Bruce spanworm)	Willow	[illegible]	Trace of defoliation.
Orthosia hibisci (Guen.) (A fruit worm)	Willow Oak, bur Birch, white	[illegible] Whiteshell Provincial forests, Beaver Creek, Stonewall, and Rosenburg.	Low populations; no significant damage.
Paleacrita vernata (Peck) (Spring canker-worm)	Oak, bur	Stonewall	Larvae associated with A. pometaria.
Pandemis canadana Kft. (Leaf roller)	Willow Oak, bur Birch, white	Otter Falls, Cat Lake, Oak Point, Beaver Creek, and Red Rose.	Light infestations.
Phenacaspis pinifoliae (Fitch) (Pine needle scale)	Spruce, white and black Pine, red	Piney, Falcon Lake, Birds Hill, and Arborg.	Occasional tree lightly infested.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar, hybrid	Throughout the district.	Light infestations common.

Insect	Host(s)	Locality	Remarks
Phyllocolpa nr. agama (A sawfly)	Poplar, balsam and hybrid Oak, bur	Throughout the district.	Scattered light infestations.
Phyllophaga spp. (White grub)	Aspen, trembling Rose	Sandilands Provincial Forest.	Adults of P. anxia (Lec.) P. drakei Kby., and P. nitida (Lec.) collected.
Phytophaga rigidae (O. & S.) (Beaked willow ga fly)	Willow	Sandilands Provincial Forest, Birds Hill Provincial Park, and Vivian.	Individual clumps lightly infested.
Pikonema dimmockii (Cresson) (Greenheaded spruce sawfly)	Spruce, white and black	Throughout the district.	Low populations common; usually associated with P. alaskensis.
Proteoteras willingana (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the district.	Light damage common.
Protoboarmia porcelaria Gn. (Dotted-line looper)	Tamarack	Whiteshell and Agassiz Provincial forests and Washow Bay.	Low populations.
Rhabdophaga spp.	Willow	Sprague, Birds Hill Provincial Park, Otter Falls, Lake St. George, and Red Willow Lake.	R. batatas Walsh and R. strobiloides (Walsh) widely separated, localized, light infestations.
Rheumaptera hastata Linn. (A looper)	Birch, white	Hecla Island and Beaver Creek.	Occasional light to moderate skeletonizing of regeneration.
Saperda concolor Lec. (Poplar gall saperda)	Willow	Rennie.	Occasional localized light to moderate damage.
Schizura unicornis (J.E. Smith) (Unicorn caterpillar)	lder Willow Birch, white	Otter Falls, Wallace and Red Willow lakes.	Traces of defoliation.
Sciaphila duplex Wlshm. (A leaf roller)	Aspen, trembling	Marchand, Agassiz Provincial Forest, Whiteshell Provincial Park, Wallace Lake, Birds Hill, St. Ambroise, and Rosenburg.	Light infestations.

Insect	Host(s)	Locality	Remarks
Semiothisa spp. (Loopers)	Pine, jack Tamarack Fir, balsam	Throughout range of hosts in the district.	Generally low populations S. bicolorata Fabr. on jack pine; S. sexmaculata Pack., and S. signaria dispuncta Wlk. on tamarack.
Tetralopha aplastella Hlst. (Aspen webworm)	Aspen, trembling Poplar, balsam Willow Oak, bur	Throughout the district.	Localized patch of light to moderate defoliation near Malonton; light infestations common elsewhere.
Tetralopha robustella Zell. (Pine webworm)	Pine, jack and red	Piney, Whitemouth Lake, Hadashville, Belair Provincial Forest, and Red Rose.	Light infestations on scattered individual trees.
Tetranychidae sp. (A spider mite)	Poplar, balsam	Molson and Red Rock lakes.	Occasional young, open growing trees heavily infested.
Toumeyella numismaticum (Pt. & McD.) (Pine tortoise scale)	Pine, jack and Scots	Throughout range of jack pine in district.	Localized moderate to severe infestations in the Sandilands, Marchand, Stead, Red Rose, Mantagao Lake, and Whitemouth areas.
Trichiocampus irregularis (Dyar) (A sawfly)	Willow	Gull Harbor.	Localized light to moderate defoliation.
Trichiosoma triangulum Kby. (A sawfly)	Willow Alder	Wallace and Red Willow lakes, Telford.	Traces of defoliation.
Zeiraphera diniana Gn. (Spruce tip moth)	Tamarack	Throughout range of tamarack in district.	No noticeable damage.
Zeiraphera fortunana Kft. (Spruce bud moth)	Spruce, white	Birds Hill Provincial Park, Sandy Hook, and Rosenburg.	Traces of defoliation.

DISEASE CONDITIONS

SPRUCE MISTLETOE, Arceuthobium pusillum Peck.:- There are three major areas of infection in the district. One lies in that portion of the province lying generally south of the Trans-Canada Highway and east from the Sandilands Provincial Forest; another lies in the general area of the Belair Provincial Forest and includes Elk Island; the third area lies along the west side of Lake Winnipeg and extends from Riverton through to Whiteway Point and Lake St. George. Another relatively small area of infection exists in the Birds Hill Provincial Park.

Three 1/20 acre plots were established in infected black spruce stands to study the effects of this disease. Following is a summary of the initial tallies.

Plot locality	Average d.b.h. (inches)	Average height (ft.)(est.)	No. of trees tallied	No. of trees infected	Average % of crowns infected
Moose Lake	4.7	42	26	10	49.0
Belair Provincial Forest	2.5	19	34	28	71.1
Beaver Creek	3.7	28	33	20	47.3

WINTER DRYING OF PINES:- In the early part of the season browning of Scots and red pines was observed at many locations. In most cases this condition had affected all or most of the young trees at each locality where it was observed. However, after current needle growth appeared, it was evident that most of the affected trees would recover. This condition was observed in the Sandilands, Agassiz, and Belair Provincial forests and in the Pine Falls, Whitemouth, Selkirk, and Winnipeg areas.

SPRUCE NEEDLE RUSTS, Chrysomyxa spp.:- Infections of C. ledi (Alb. & Schw.) deBary on black and, occasionally, on white spruce occurred at scattered localities in the Whiteshell Provincial Park; in the Washow Bay area and at Berens River, Gunisao, Red Willow, Elliot, and Shallow lakes in the northern area. Patches of moderate to severe infection occurred in the West Hawk, Telford, Point du Bois, Washow Bay, and Red Willow Lake areas.

C. ledicola (Peck.) Lagerh. was recorded at scattered localities indicative of distribution throughout the forested areas of the district, including Sasaginnigak Lake in the northern region. Infections were found on both black and white spruce and on Labrador tea near Riverton. Patches of moderate to severe infection of roadside regeneration black spruce were recorded in the Contour, Beaver Point, Hecla, and Lac du Bois areas. Elsewhere infections were generally light with only occasional trees showing moderate to severe infection.

RUST GALL, Peridermium harknessii J.P.Moore:- Sporulating galls were found at scattered points throughout the range of jack pine in the district as far north as Aikens Lake. Localized patches of high incidence of infected trees were noted in the Moose Lake, Falcon Lake, Stead, Bissett, Long Lake, and Aikens Lake areas.

JACK-PINE MISTLETOE, Arceuthobium americanum Nutt. ex Engelm:- The major centre of infection in the district is located southeast of Lake Winnipeg in the general area of the Belair Provincial Forest. A high incidence of infected trees was observed on Elk Island and a collection was made on Black Island, where the incidence of brooms was low. It was confirmed that a light infection still exists in the Sandilands Provincial Forest, near Dawson Cabin, although only a few brooms were detected in the area.

YELLOW WITCHES' BROOM ON SPRUCE, Chrysomyxa arctostaphyli Diet:- Brooms were generally restricted to occasional, widely separated trees, with the exception of a small, half acre patch near the south end of Lake St. George. Approximately 10 percent of the trees were infected in this area and as many as five brooms were counted on a single tree. South of Jackfish Point, single brooms were recorded up to 11 miles south of the settlement. Widely scattered trees with from one to three brooms were observed at several locations in the Whiteshell Provincial Park and in the Davidson Lake, Bird Lake, Red Rose, and Koostatak areas. During northern aerial surveys, single brooms were observed at Norway House, Stevenson and Molson lakes.

YELLOW WITCHES' BROOM ON BALSAM FIR, Melampsorella caryophyllacearum Schroet.:- A special effort was made in 1967 to record infections to determine the distribution of this disease in the district. Incidence was low and only single brooms were observed on individual trees widely scattered throughout the range of the host as far north as Manigotagan and Long Lake. In the southeast portion of the district brooms were recorded in the Sprague and Moose Lake areas and in the Whiteshell Provincial Park at White, West Hawk and Whiteshell lakes and Lac du Bois. In the Interlake section brooms were recorded at Jackfish Point, Lake St. George and on Hecla Island.

HYPOXYLON CANKER OF ASPEN, Hypoxylon mammatum (Wahl) Miller:- A 1/20 acre plot was established in the Otter Falls area to study the effect of this disease on poplars in the region. All trembling aspen in the plot were tagged and tallied and the results are shown in the table below.

No. of trees tallied	Average d.b.h. (inches)	Average estimated height (ft.)	No. of trees infected
52	2.7	26.1	2

ASPEN SHOOT BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:- Although infections were well distributed throughout the district there was a general reduction in the intensity. All infections examined were generally light.

The study plot at Narcisse was re-examined for infected shoots but none were found on the tagged trees or on trees in the area immediately surrounding the plot. In 1966, 34.7 percent of the trees in the plot were infected.

LEAF DISEASES OF BALSAM POPLAR:- Septoria musiva Pk. and Linospora tetraspora Thompson were usually closely associated and were commonly found on regeneration and young balsam poplar throughout the district. Damage, in most instances, was light to moderate with patches of moderate to severe occurring in the Agassiz Provincial Forest, Pine Dock, Malonton, Balsam Bay, Middlebro, and Rennie areas.

INK SPOT, Ciborinia whetzelii Seaver:- Infections were widely scattered throughout that portion of the district lying east of Lake Winnipeg. The most southerly record was made at Moose Lake while the most northerly was made at Berens River during northern aerial surveys. Patches of light to moderate leaf infection, up to four acres in size, were observed in the Sandilands Provincial Forest and in the Sundown, Caribou Lake, and Wadhope areas. Elsewhere, only light infections were observed.

RUSTS, Gymnosporangium spp.:- Several species of this rust were recorded, the most significant being G. clavipes Cooke & Peck which infected Saskatoon at many points throughout the district, including Berens River, and Flintstone and Davidson lakes in the northern region. In June heavy infections on ground juniper occurred in the Brereton Lake, Otter Falls, Milner Ridge, Wadhope, Sandy Hook, and Rosenburg areas. In July and August, light infections of the alternate host, Saskatoon, were found at scattered locations throughout the district. Fruit, twigs, and foliage were moderately to severely damaged in localized patches in the Darwin, Birds Hill Provincial Park, Davidson Lake, Caribou Lake, Bird Lake, Flintstone Lake, Berens River, and Wadhope areas.

Light to moderate infections of branches and stems of juniper by G. clavariiforme (Jacq.) DC. occurred in the Lake St. George and Mantagao Lake areas.

G. connersii Parmelee caused moderate to severe leaf damage to patches of Saskatoon in the Inwood, Poplarfield, and Red Rose areas.

Moderate to severe, localized patches of leaf infection of mountain ash by G. cornutum Arth., and a Gymnosporangium sp. occurred in the Red Rock Lake, Wallace Lake, Berens River, and Sasaginnigak Lake areas.

TAR SPOT, Rhytisma salicinum (Pers.) Fr.:- Infections were again well distributed throughout the forested areas of the district, including Aikens, Gunisao, Stevenson, Elliot, and Dogskin lakes in the northern aerial survey region. Localized, moderate to severe infections occurred in the Middlebro, Hadashville, and Point du Bois areas but elsewhere only light damage was evident.

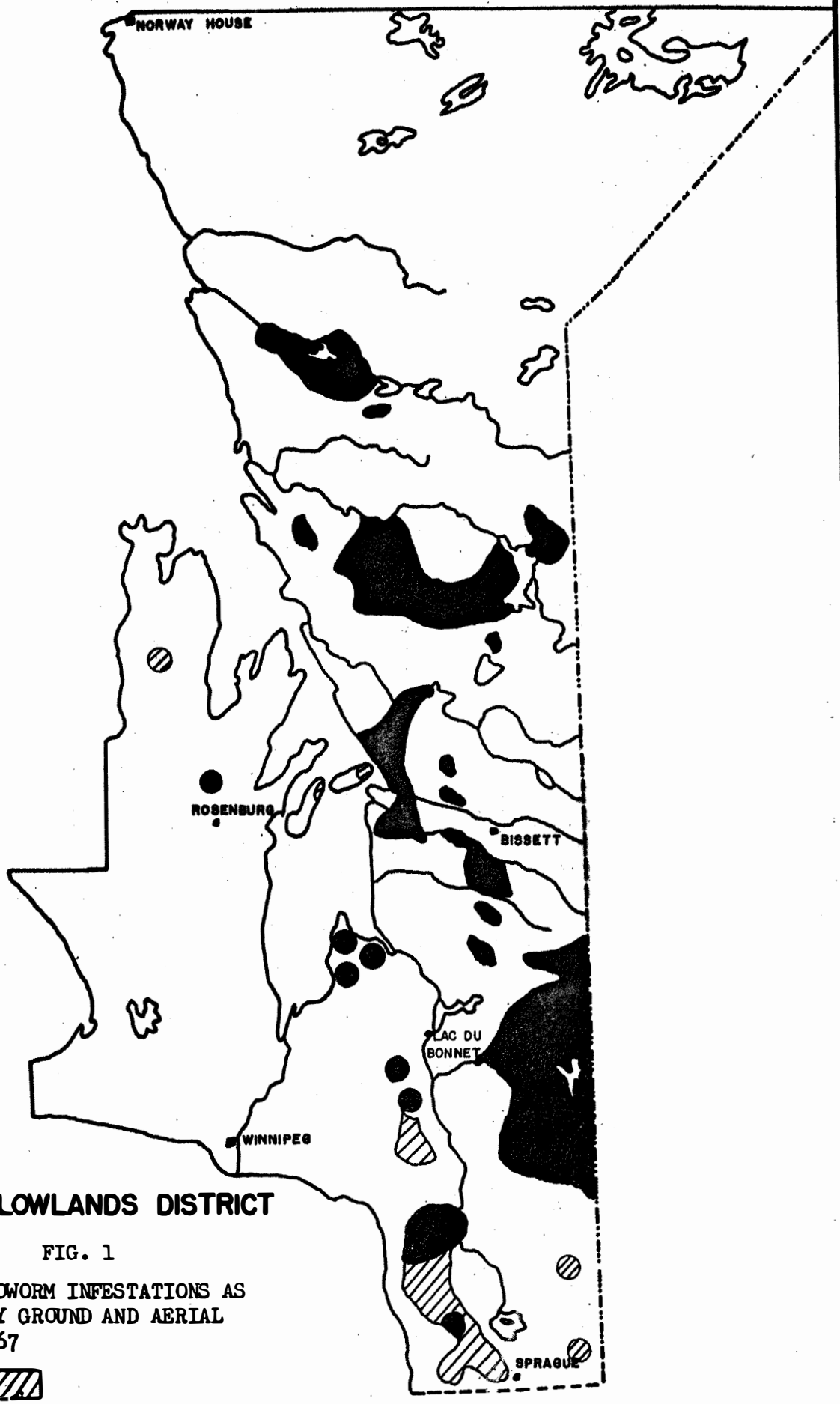
WILLOW LEAF RUST, Melampsora bigelowii Thum.:- Patches of moderate to severe damage were noted in the Birds Hill Provincial Park, Patricia Beach, Wadhope, and Birch Point areas. Scattered patches of light infection were common throughout the remainder of the district, as far north as Berens River.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina collinsii (Schw.) Von Hohnel (A witches broom)	Saskatoon	Throughout the district.	Widely separated, localized, light brooming.
Ciborinia foliicola (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Throughout district, including Aikens and Red Willow lakes in the northern aerial survey region.	Scattered light infections.
Coleosporium asterum Syd. (Needle rust)	Pine, jack	Manigotagan	Light infection of old needles.
Cronartium comandrae Peck (Comandra rust)	Pine, jack	Moose Lake, Marchand, Stead, Powerview, Lac du Bois, and Rosenburg.	Light infections often found associated with P. harknesii.
Diplodia tumefaciens (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling	Throughout district including Elliot Lake in the northern aerial survey region.	Localized, generally light gall infections.
Elsinoe ledi (Pk.) Zeller (Leaf spot)	Labrador tea	West Hawk Lake, Contour, Point du Bois, Beaver Point, Hecla Island.	Patches of moderate leaf infection.
Euryachora betulina (Fr.) Schroet. (Tar spot)	Birch, swamp and white	Middlebro, Birds Hill Provincial Park, Point du Bois, and Traverse Bay.	Localized patches of moderate leaf infection.
Exidia glandulosa (Bull.) Fr. (A saprophyte)	Aspen, trembling	Berens River.	Associated with Cytospora sp.
Fomes igniarius (L. ex Fr.) Gill (Heart rot of poplar)	Aspen, trembling	Throughout district.	Widely scattered, light infections common. Collected at Flintstone and Dogskin lakes during northern aerial surveys.

Organism and Disease	Host(s)	Locality	Remarks
Fomes pini (Thore) Lloyd (Red ring rot)	Tamarack	Telford	Single infected tree found.
Gnomonia ulmea (Schw.) (Leaf spot)	Elm, white	Elma, St. Ouens, Seven Sisters, and Silver Falls	Portions of shelterbelts moderately to severely infected.
Hypodermella ampla (Davis) Dearn. (Needle cast)	Pine, jack	Northwest Angle, Sandilands, and Whiteshell Provincial forests, Badger, and Pine Falls.	Widely scattered, light infections; occasional young trees moderately to severely infected.
Hypodermella nervata Darker (Needle cast)	Fir, balsam	Falcon Lake, Hodgson, Shallow Lake.	Occasional localized light to moderate infection of young trees. Several moderate to severely infected understory trees observed near Falcon Lake.
Lophodermium pinastri (Schrad. ex Fr.) Chev. (Needle cast)	Pine, jack	Rosenburg and Aikens Lake.	Scattered light needle infections.
Lophodermium juniperinum (Fr.) deNot. (Needle cast)	Juniper, ground	Agassiz Provincial Forest, Otter Falls, and Red Rock Lake.	Scattered patches of light to moderate needle infection.
Melampsora abieti - canadensis Ludw. ex Arth. (Leaf rust)	Aspen, trembling	Traverse Bay	New regional record. Light leaf infection on a few saplings.
Melampsora abieti-capraearum Tub. (A rust)	Fir, balsam Willow	Whiteshell and Birds Hill Provincial Park.	Traces of needle infection on fir noted at one locality in the Whiteshell Provincial Park; patches of severely infected willow in the Birds Hill Provincial Park.
Microsphaera alni (DC.) Wint.	Oak, bur	Agassiz Provincial Forest.	Severe infection of a few clumps.
Phyllosticta brunnea Dearn. & Barth. (Leaf spot)	Poplar, balsam	West Hawk Lake.	Light localized infection.

Organism and Disease	Host(s)	Locality	Remarks
Phyllosticta livida Ell. & Ev. (Leaf spot)	Oak, bur	Agassiz Provincial Forest.	Localized patch of light infection.
Phyllactinia corylea (Pers. ex Karst.) (Powdery mildew)	Alder Dogwood	Throughout the district.	Widely scattered patches of leaf infection varying from light to severe.
Pollaccia elegans Serv. (Leaf and twig blight of poplar)	Poplar, balsam	Birds Hill Provincial Park.	Scattered light damage to regeneration.
Pucciniastrum epilobii Otth. (Needle rust)	Fir, balsam	Northwest Angle, and Whiteshell Provincial forests, Beaver Creek, and Wallace Lake.	Traces of infection common.
Ramularia stolonifera Ell. & Ev. (Leaf spot)	Dogwood	Birds Hill Provincial Park.	Occasional severely infected clump.
Rhytisma punctatum Pers. ex Fr. (Speckled tar spot)	Maple, mountain	Pine Dock and West Hawk Lake.	Patches of severe leaf infection.
Sarcotrochila piniperda (Rhem.) Korf. (Needle fungus)	Spruce, white	Red Rose.	Localized light needle infection.
Sclerophoma pithyophila (Cda.) Hohn.	Juniper, ground	Otter Falls.	Light localized infection.
Septoria betulicola Pk. (Leaf spot)	Birch, white	Traverse Bay.	Localized light infection.
Septoria caraganae (Jac.) (Caragana leaf spot)	Caragana	Birds Hill, Teulon, Petersfield, Washow Bay.	Generally light infections of shelterbelts; occasional small portions moderately infected.
Tranzschelia pruni-spinosae (Pers.)Diet. (A rust)	Cherry, pin	Traverse Bay.	Small patch of moderate leaf infection.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Whiteshell Provincial Park and Malonton.	Occasional small patches of moderate to severe leaf infection.



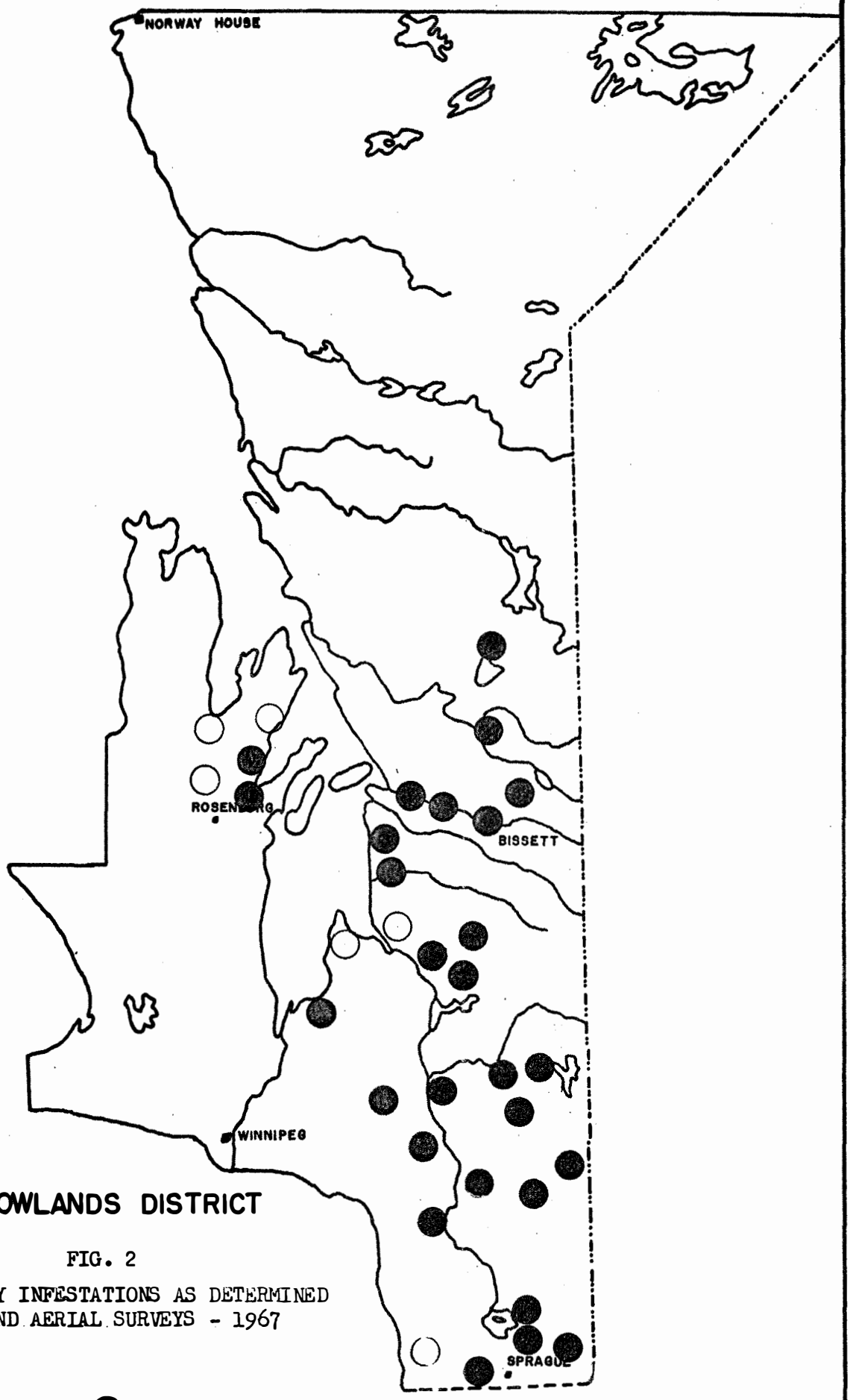
EASTERN LOWLANDS DISTRICT

FIG. 1

JACK PINE BUDWORM INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light

Moderate to Severe



EASTERN LOWLANDS DISTRICT

FIG. 2

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light ○

Moderate to Severe ●

CENTRAL LOWLANDS DISTRICT

MANITOBA

1967

by

D. N. Shepherd and K. L. Mortensen

INTRODUCTION

Totals of 526 insect and 299 disease collections were made from May 16 to September 29. Four and one-half hours of chartered flying time were used on aerial surveys. Major insect infestations were the spruce budworm and fall cankerworm. Larch sawfly, although present in tamarack stands, caused very little defoliation, and the yellow-headed spruce sawfly was widely distributed within the district.

Pollaccia radiosa (Lib.) Bald. & Cif. was the most prevalent disease, but showed a decrease from 1966. Considerable browning of spruce stands along the Norgate Road was noted, but no disease organisms were found. Fairly high mortality of jack pine occurred along the Grand Rapids Highway, where it appeared that road construction had impeded natural drainage.

In addition to detection and appraisal surveys, the following subprojects were carried out: (1) collections of tamarack cones for Dr. Heron; (2) mass collections of larch sawfly, yellow-headed spruce sawfly, fall cankerworm, and jack-pine budworm; (3) special collections of June beetles and of Fomes igniarius (L. ex Fr.) Gill; (4) small mammals were trapped for population studies; (5) a plot for the study of Arceuthobium pusillum Peck. on black spruce was established; (6) plot retallies were made in the Pollaccia plots.

Due to unseasonably cool weather in the early spring, insect and disease development was somewhat retarded. The incidence of rusts and leaf blights was low throughout the season due to the hot dry weather which prevailed from mid-June.

INSECT CONDITIONS

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- There was little change in the status of the larch sawfly throughout the Central Lowlands. Populations were generally low with the exception of occasional isolated stands near Waterhen P.O. and Grand Rapids where moderate to heavy defoliation occurred (Figure 1). In addition to mass collections for parasite rearing, sequential sampling of larch sawfly egg populations was conducted and the following results noted.

Location	Plot no.	No. of shoots examined	No. of shoots curled	Infestation rating 1967
Norgate Rd. (Mile 14)	01	50	0	light
Whitewater Lake	01	70	2	light
Cowan	01	60	1	light
Mafeking (Steeprock)	01	60	1	light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- The small pockets of heavy defoliation occurring in the northwestern part of the district continued in 1967. Scattered patches of moderate to heavy defoliation of white spruce were recorded along the shores of Lake Winnipegosis in the Dawson Bay area between the Overflowing and Red Deer rivers. The infestations remained much the same along

the northeast shore of Pelican Lake, where about three square miles of white spruce were heavily defoliated. The infestation increased on Birch Island and heavy defoliation now covers the northern and eastern sides of the island. Elsewhere, light defoliation of white spruce was recorded in the immediate vicinity of Baldy Mountain fire tower, where standard five tree beating samples revealed a combination of spruce budworm and spruce bud moth, Zeiraphera fortunana Kft. Occasional larvae were taken in spruce samples at Portage la Prairie, Steep Rock Lake, Volga, Woodside, Grand Rapids, Riding Mountain National Park, Devils Lake, and the Porcupine Provincial Forest.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):- The heaviest larval concentrations in the Central Lowlands District occurred along Highways 83 and 5, with moderate to heavy defoliation of shelterbelts in the San Clara-Benito areas and on native white and black spruce between Shortdale and Timberton. Light to moderate defoliation was noted at Baldy Mountain, Laurie Lake, and Blue Lakes, in the Duck Mountain Provincial Forest. Larvae were common throughout the Riding Mountain National Park with light to moderate defoliation generally confined to small, open growing trees. Defoliation throughout the remainder of the district was generally light.

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- A continued reduction in populations of this insect was noted along Number 6 Highway from Devils Lake north to Grand Rapids (Figure 2). Light defoliation of jack-pine stands occurred in this area, except for small pockets of moderate defoliation southeast of Chitek Lake and in the vicinity of Twin Creeks. Moderate defoliation was recorded at Grand Rapids and extended northward into the Northern Lowlands District. Collections were also made south of St. Martin along the north shore of Clear Lake in Riding Mountain National Park and in the Porcupine Provincial Forest. Mass collections of larvae and pupae for laboratory rearings were made at Grand Rapids, the results of which are tabled below.

Location	Type of collection	No. of specimens	No. of specimens parasitized by	
			Dipterous spp.	Hymenopterous spp.
Grand Rapids	Larval	75	0	2
Grand Rapids	Pupal	228	9	27

FALL CANKERWORM, Alsophila pometaria (Harr.):- Although still the most serious defoliator of deciduous trees in the Central Lowlands, there was a decline in population levels from 1966. The highest populations were found within the town limits of Dauphin and Gladstone, where pockets of heavy defoliation of Manitoba maple and white elm occurred. A number of heavily defoliated shelterbelts were recorded in the area from Portage la Prairie north to Oakland, and at Neepawa, Eden, Grandview and Woodside. In the Swan River Valley, populations were very low, and only a few larvae were collected from a shelterbelt near Swan River.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- There was an increase in populations of this insect. Scattered light to moderate defoliation of trembling aspen occurred at Wasagaming, Lake Katherine, and at the Clear Lake golf course. Light damage to balsam poplar and trembling aspen was recorded from Grandview north to Baldy Mountain and Blue Lakes.

UGLY-NEST CATERPILLAR, Archips cerasivoranus Fitch:- Populations were widely distributed throughout the district, and nests were found on a variety of hosts such as choke cherry, white spruce, white birch, and buffalo berry. A count of nests in a hedge row north of Grandview revealed 42 nests per 150 feet. Moderate to heavy damage of scattered, open growing clumps of choke cherry occurred throughout the Riding Mountain National Park. Localized damage to white birch was recorded at Grand Rapids. Collections were also made on buffalo berry at Bield, and on white spruce near Greyling Lake in Riding Mountain National Park.

FALL WEBWORM, Hyphantria cunea (Drury):- Light defoliation of Manitoba maple and dogwood occurred in the Dauphin and Mafeking areas. Heavy defoliation of an occasional alder and light damage to willow clumps was noted at Anama Bay on Lake Winnipeg.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- Moderate skeletonization of balsam poplar occurred along Highway 10 near Garland. Moderate to heavy damage of willow was noted in the Garland, Renwer, Bowsman, and Porcupine Mountain areas. Pockets of heavy damage occurred along the Whitewater Lake road in Riding Mountain National Park. Collections were also made at Grand Rapids, Westbourne, and Blue Lakes, but no appreciable damage was evident.

ALDER LEAF MINER, Fenusa dohrnii (Tisch.):- This insect caused light to moderate damage to alder throughout the Porcupine Provincial Forest, the Duck Mountains, in the Camperville area, and at Garland. Moderate leaf mining of individual clumps of alder was noted along the Norgate Road in Riding Mountain National Park.

LARGE ASPEN TORTRIX, Choristoneura conflictana (Wlk.):- This aspen leaf roller had a limited distribution in Riding Mountain National Park. Collections were made at Wasagaming, the Clear Lake golf course and along the Rolling River road but damage was generally light. Collections were also made at Grandview, and at Blue Lakes in the Duck Mountain Provincial Forest.

A LEAF ROLLER, Archips negundanus Dyar:- This insect was widely distributed in Manitoba maple shelterbelts along Highways 10 and 20. Damage was generally light, with the exception of a shelterbelt north of Swan River, in which 5 percent of the trees suffered approximately 50 percent defoliation. Collections were also made at Winnipegosis, Dauphin, Birch River, Valley River, and at the north gate in Riding Mountain National Park.

A LEAF ROLLER, Badebecia urticana Hbn.:- Although fairly widely distributed, populations of this insect remained low throughout the district, and damage to foliage was negligible. Larvae were found on a variety of hosts such as: trembling aspen, balsam poplar, Manitoba maple, and alder. Collections were made at Whitewater Lake in the Riding Mountain National Park, along Highways 5 and 20, at Oak Brae, and the Waterhen River.

A LEAF ROLLER, Sciaphila duplex Wlshm.:- Light to moderate damage to trembling aspen was caused by this insect at various points throughout the Riding Mountain National Park. This caused some concern to park officials and cottage owners within the Wasagaming townsite. Damage was generally caused by a combination of leaf rollers and leaf beetles. Elsewhere in the district, only low populations and light damage were recorded. Collections were also made at Westbourne, Makinak, Ashville, Grandview, Pine River, Meadow Portage, and in the Porcupine Provincial Forest.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Aceria parapopuli (Keifer) (Poplar bud-gall mite)	Aspen, trembling	Mafeking	One collection only.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white and black	Dauphin, Volga, Riding Mountain National Park, Blue Lakes, Swan River, Benito, Grand Rapids, and Baldy Mountain.	Very low populations.
Acraspis villosa Gill. (Hairy oak gall)	Oak	Dauphin.	Very low populations.
Acronicta leporina Linn. (A dagger moth)	Willow Aspen, trembling	Lake Audy and Blue Lakes.	Low populations.
Agrilus criddlei Frost (A wood-borer)	Willow	Clear Lake.	Low populations.
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	Riding Mountain National Park, Waterhen, Laurie and Whitefish lakes.	Low populations.
Archippus packardianus Fern. (A leaf roller)	Spruce, Colorado	Portage la Prairie	Larvae fairly abundant; damage light.
Arge clavicornis (Fab.) (A sawfly)	Alder Birch, white	Grand Rapids.	Low populations; no defoliation.
Campaea perlata (Gn.) (A fringed looper)	Aspen, trembling Hazel Poplar, balsam	Riding Mountain National Park, Westbourne, Porcupine Provincial Forest and Grand Rapids.	Low populations; very light damage.
Cecidomyia negundinis Gill (Boxelder gall midge)	Maple, Manitoba	Swan River and Riding Mountain National Park.	Low populations; light damage.
Cecidomyia reeksi Vock. (Jack-pine resin midge)	Pine, jack	Porcupine Provincial Forest.	Low populations.
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white and black	Birch River, Waterhen and Grand Rapids.	Light damage; low populations.

Insect	Host(s)	Locality	Remarks
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Spearhill, Swan River, Waterhen, Riding Mountain National Park, Camperville and Grandview	Generally low populations; light to moderate damage.
Chrysomela crotchi Brown. (Aspen leaf beetle)	Aspen, trembling	Porcupine Provincial Forest	Very low populations.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	Aspen, trembling Maple, Manitoba Willow Caragana	Riding Mountain National Park, Cowan, Favel River, Porcupine Provincial Forest and Grandview	Low populations; light damage.
Corythucha elegans Drake (A lace-bug)	Willow	Lake Audy	Occasional clump moderately damaged.
Dioryctria reniculella (Grt.) (Spruce coneworm)	Spruce, Colorado.	Portage la Prairie	Associated with Archippus packardianus Fern. and Choristoneura fumiferana (Clem.)
Enargia decolor Wlk. (A noctuid)	Poplar, balsam Aspen, trembling	Riding Mountain National Park	Low populations, widespread.
Erannis tiliaria (Harr.) (Linden looper)	Aspen, trembling	Baldy Mountain	Low populations.
Eupithecia filmata Pears. (A looper)	Spruce, white	Riding Mountain National Park, Durban and Baldy Mountain	Low populations; light to moderate damage at Baldy Mountain caused by a complex of defoliators.
Eupithecia luteata Pack. (A looper)	Tamarack	Riding Mountain National Park, Duck Mountain and Porcupine Provincial forests and Bield	Low populations; light damage.
Feralia jocosa (Guen.) (Green-striped caterpillar)	Pine, jack	Riding Mountain National Park, Grand Rapids, and Duck Mountain Provincial Forest	Low populations; no defoliation.

Insect	Host(s)	Locality	Remarks
Gracillaria negundella Chamb. (Boxelder leaf roller)	Maple, Manitoba Ash, green	Valley River and No. 20 Highway, Dauphin, Swan River, and Woodside.	Low populations; light damage.
Itame loricaria Evers. (A looper)	Aspen, trembling	Riding Mountain National Park, Duck Mountains and Grand Rapids.	Low populations; light damage.
Lecanium coryli L. (Lecanium scale)	Hazel	Grandview	Found on one isolated clump; light damage.
Limenitis arthemis Dru. (A nymphalid)	Aspen, trembling Cherry, choke	Grand Rapids and Gypsumville.	Very low populations.
Lithocolletis salicifoliella Cham. (Aspen blotch miner)	Aspen, trembling	Riding Mountain National Park, Porcupine Provincial Forest and Garland.	Low populations; light damage.
Malacosoma lutescens (N. & D.) (Prairie tent caterpillar)	Cherry, choke Alder	Riding Mountain National Park, Grandview, Cowan and Devils Lake.	Widespread in Riding Mountain National Park; light damage to choke cherry.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling	Riding Mountain National Park, Grandview, McCreary and Westbourne	Widespread populations; light damage.
Neodiprion abietis complex (Balsam-fir sawfly)	Spruce, white and black	Grand Rapids, Baldy Mountain and Riding Mountain National Park	Very low populations; light to moderate damage at Baldy Mountain.
Neodiprion nanulus nanulus Schedl (Red-pine sawfly)	Pine, jack	Grand Rapids	Two larval collections; light damage confined to a few branches.
Neodiprion prattibanksianae Roh. (Black-headed jackpine sawfly)	Pine, jack	Grand Rapids and Whitefish Lake	Low populations and light damage at Grand Rapids; moderate damage to one tree at Whitefish Lake.
Oberea schaumi Lec. (The poplar twig borer)	Aspen, trembling	Riding Mountain National Park, Makinak, Ashville, Grandview and Cowan.	Scattered collections.

Insect	Host(s)	Locality	Remarks
Oligonychus ununguis (Jac.) (Spruce spider mite)	Spruce, white	Wasagaming, Dauphin, Grandview, Swan River, and Riding Mountain (town)	General throughout Wasagaming townsite; light damage to occasional trees at Swan River.
Operophtera bruceata (Hulst) (Bruce spanworm)	Aspen, trembling	McCreary, Ashville and Oak Brae	Low populations; very light damage.
Orthosia hibisci (Guen.) (A fruit worm)	Aspen, trembling Poplar, balsam	Homebrook and Riding Mountain National Park	Common throughout Riding Mountain National Park; damage very light.
Pandemis canadana Kft. (A tortricid moth)	Maple, Manitoba Poplar, balsam Aspen, trembling Alder Willow	Riding Mountain National Park, Grandview, Duck Mountain Provincial Forest, Swan River, Birch River, Waterhen River and Homebrook	Light defoliation; low populations.
Paleacrita vernata (Peck) (Spring cankerworm)	Caragana Elm,white	Towns of Riding Mountain and Gladstone	Two larval collections.
Petrova albicapitana (Busck) (Pitch nodule maker)	Pine, jack	Pulp River, Porcupine and Duck Mountain Provincial forests	Low populations; light damage.
Phyllocnistis populiella Cham. (An aspen leaf miner)	Aspen, trembling	Waterhen River, Ochre River, Baldy Mountain, Riding Mountain National Park, Porcupine Provincial Forest, Garland, Camperville, and Winnipegosis	Low populations; light damage.
Phyllocolpa nr. robusta (A sawfly)	Aspen, trembling Poplar, balsam	Porcupine Provincial Forest, Riding Mountain National Park and Winnipegosis	Low populations; no visible defoliation.
Physokermes piceae (Schr.) (Spruce budscale)	Spruce, white	Gilbert Plains	Sparse populations; very light damage.

Insect	Host(s)	Locality	Remarks
Phytophaga rigidae (O. & S.) (Beaked willow gall fly)	Willow	Riding Mountain National Park, Grandview and Blue Lakes	Low populations; very light damage.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, black and white	Common throughout district	Low populations; usually found in conjunction with Pikonema alaskensis (Roh.).
Pontania sp. (A gall-making sawfly)	Willow	Riding Mountain National Park, Waterhen, Bowsman and Boggy Creek	Low populations; generally light to moderate damage at Bowsman.
Pristiphora lena Kincaid (A spruce sawfly)	Spruce, white	Gilbert Plains	Low populations.
Proteoteras willingana (Kft.) (Boxelder twig borer)	Maple, Manitoba	Howden, Swan River, Eden, Mafeking, Portage la Prairie and Valley River	Low populations and light damage.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Riding Mountain National Park, Cowan and Meadow Portage	Very low populations; no appreciable damage.
Saperda calcarata Say (Poplar borer)	Aspen, trembling	Riding Mountain National Park, Grandview, Cowan, Grand Rapids and Winnipegosis	Low populations; very light damage.
Semiothisa spp. (Loopers)	Spruce, white Tamarack Pine, jack	Duck Mountain and Porcupine Provincial forests	Low populations; no appreciable damage. Semiothisa signaria dispuncta Wlk. occasionally found on white spruce, Semiothisa sexmaculata Pack. common on tamarack, Semiothisa oweni Swett. one larval collection on tamarack, and Semiothisa bicolorata Fabr. on jack pine only.

Insect	Host(s)	Locality	Remarks
Tetralopha aplastella Hlst. (A webworm)	Poplar, balsam Aspen, trembling Oak	Throughout Riding Mountain National Park	Low populations; very light damage.
Toumeyella numismaticum (Pt. & McD) (Pine tortoise scale)	Pine, jack and lodgepole	Pine and Birch rivers	Very low populations; damage confined to occasional trees.
Zale duplicata largera Sm. (An owlet moth)	Pine, jack	Grand Rapids	One larva collected.
Zeiraphera fortunana Kft. (Spruce bud moth)	Spruce, white	Riding Mountain National Park and Baldy Mountain	Generally low populations and light damage except at Baldy Mountain, where moderate damage occurred in conjunction with other defoliators.

DISEASE CONDITIONS

ASPEN SHOOT BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:- This was the most prevalent annual disease in the Central Lowlands District. Generally, infections were light and appeared less severe than in 1966. Approximately 5 percent of the new shoots of small patches of aspen regeneration were infected at Grand Rapids, Gypsumville, Wellman Lake, and near Bell Lake in the Porcupine Provincial Forest. A decline of infections was noted in the plots at Clear Lake and Meadow Portage. The information obtained from tallies of these plots is tabled below.

Plot no. & location	No. of tA counted	% of trees infected		Av. % of shoots infected per tree	
		1966	1967	1966	1967
Clear Lake 01	20	100	100	22.7	12.3
Meadow Portage 01	20	22	0	2.5	0

Organism & Disease	Host(s)	Locality	Remarks
Arceuthobium americanum Nutt. ex Engelm. (Jack-pine mistletoe)	Pine, jack	Grand Rapids, Mafeking and Cowan	Jack-pine ridges in the Grand Rapids area were moderately to severely infected. Light infections at Mafeking and Cowan.
Arceuthobium pusillum Pk. (Eastern dwarf mistletoe)	Spruce, black and white	Mafeking, Devils Lake and Anama Bay	Moderate to heavy infections of both white and black spruce were noted near Anama Bay. A hyperparasite, Alternaria tenuis was found on mistletoe in this area. Moderate to severe infections were also recorded at Devils Lake and north of Mafeking.
Chrysomyxa arctostaphyli Diet. (Yellow witches'brooms of spruce)	Spruce, black and white Bearberry	Throughout the district	Infections light and widespread.
Chrysomyxa ledi (Alb. & Schw.) deBary (A needle rust)	Ledum Spruce, black	Morgate	Very light infections.
Chrysomyxa ledicola (Peck) Lagerh. (Spruce needle rust)	Spruce, black and white	Devils and Wellman Lakes and Cowan	25 percent of trees infected in a spruce stand near Cowan.
Chrysomyxa pirolata Wint. (A cone rust)	Spruce, white	Clear Lake	Single infection found in pole pruner sample.
Ciborinia foliicola (Cash & Davidson) Whet. (Black rib of willow)	Willow sp.	Riding Mountain National Park, and San Clara	Very light infections.
Ciborinia whetzelii Seaver (An ink spot)	Aspen, trembling	Meadow Portage and Riding Mountain National Park	Very light infections.
Cronartium comandrae Peck (Comandra blister rust)	Comandra, pale Pine, jack	Throughout the district	Two light infections of pine in Devils Lake-Grand Rapids areas.
Cucurbitaria caraganae Karst (A stem canker)	Caragana	Keyes	Single collection.

Organism & Disease	Host(s)	Locality	Remarks
Cytospora spp.	Maple, Manitoba Aspen, trembling Dogwood Fir, balsam Tamarack Willow Cedar Pine, jack	Throughout the district	Commonly associated with twig and branch dieback.
Diplodia tumefaciens (Shear) Zalasky (Macrophoma galls)	Aspen, trembling Poplar, balsam	McCreary, Grandview, Waterhen, and Meadow Portage	Light gall infection.
Eutypa acharii Tul. (Slash fungus)	Poplar, balsam	Riding Mountain National Park and Dauphin	Very light infections.
Fomes fomentarius (L. ex Fr.) Kickx (A tinder fungus)	Birch, white	Riding Mountain National Park, Waterhen, and Baldy Mountain	Light infections on dead host.
Fomes igniarius (L. ex Fr.) Gill (White trunk rot)	Aspen, trembling	Throughout the district	Mass collections made at Baldy Mountain. Infections generally light.
Fomes pini (Thore ex Pers.) Lloyd (Red heart rot)	Tamarack	Cowan	One collection.
Fomes pinicola (Swartz.) Cke. (Brown cubical rot)	Aspen, trembling	Glad Lake	One collection made; very light infection.
Hypoxylon fuscum (Pers. ex Fr.) Fr. (A canker)	Birch Hazel Alder	Riding Mountain National Park	Infections scattered and light.
Hypoxylon mammatum (Wahl) Miller (Canker)	Aspen, trembling Alder	Throughout the district	Generally light infections except at roadside park west of Grandview, where 20 percent of trees were infected.
Lophodermium pinastri (Schrad. ex Fr.) Chev. (A needle cast)	Pine, jack	Duck Mountain Provincial Forest	Single tree infected.

Organism & Disease	Host(s)	Locality	Remarks
Melampsora sp. (A leaf rust)	Willow	Riding Mountain National Park	Moderate damage to one clump.
Melampsora abieti-capraearum Tub. (A leaf rust)	Willow	Devils Lake	Heavy infection of single bush.
Peridermium harknessii J.P. Moore (Western gall rust)	Pine, jack and Scots	Devils Lake, Grand Rapids, Porcupine and Duck Mountain Provincial forests, and Birch River	Heavy infections in Grand Rapids area. Hyperparasite Phaeostoma sp. found on gall in Porcupine Provincial Forest. Hyperparasites Biatorella resinae (Fr.) Mudd. and Scoleconectria cucurbitula (Tode ex Fr.) Booth, found on galls at Devils Lake.
Phragmidium speciosium (Fries) Cooke (A rust)	Rose	Blue Lakes, Bell Lake	Severe infection in Porcupine Provincial Forest near Bell Lake.
Pollaccia elegans (Serv.) (Leaf and twig blight of poplar)	Poplar, balsam	Wellman Lake	One collection; very light infection.
Polyporus tulipiferus (Schw.) Overh.	Alder	Riding Mountain National Park	Very light infection of single tree.
Pseudomassaria corni (Sow.) von Arx.	Dogwood	Grand Rapids	Dieback of twigs and branches.
Puccinia caricis (Schum) Schroet. var. grossulariata Arth. (A leaf rust)	Gooseberry	Steep Rock Lake	Heavy infection of one bush.
Puccinia coronata Cda. (A leaf rust)	Alder	Baldy Mountain	Moderate infection in small area.
Septoria caraganae (Jacq.) Died. (A leaf spot)	Caragana	Swan River	Light infection of a shelterbelt.
Septoria musiva Pk. (A leaf spot)	Poplar, balsam	Lenswood and Birch River	Light infections.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam Aspen, trembling	Riding Mountain National Park, Lenswood, Birch River and San Clara	Scattered light infections.

Organism & Disease	Host(s)	Locality	Remarks
Wallrothiella arceuthobii (Pk.) Sacc. (A hyperparasite)	Arceuthobium americanum	Grand Rapids	A hyperparasite found on A. americanum.

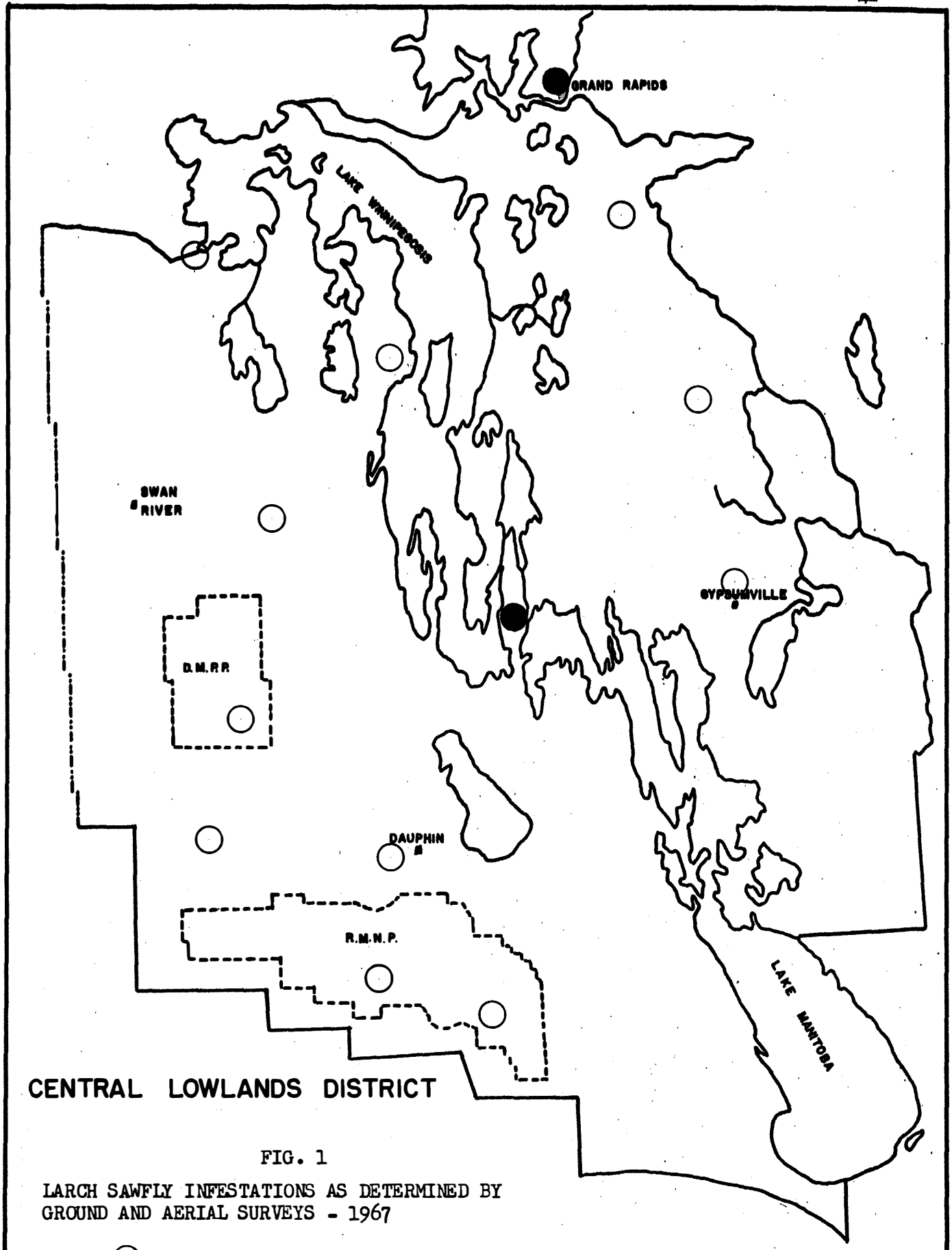


FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light ○

Moderate to severe ●

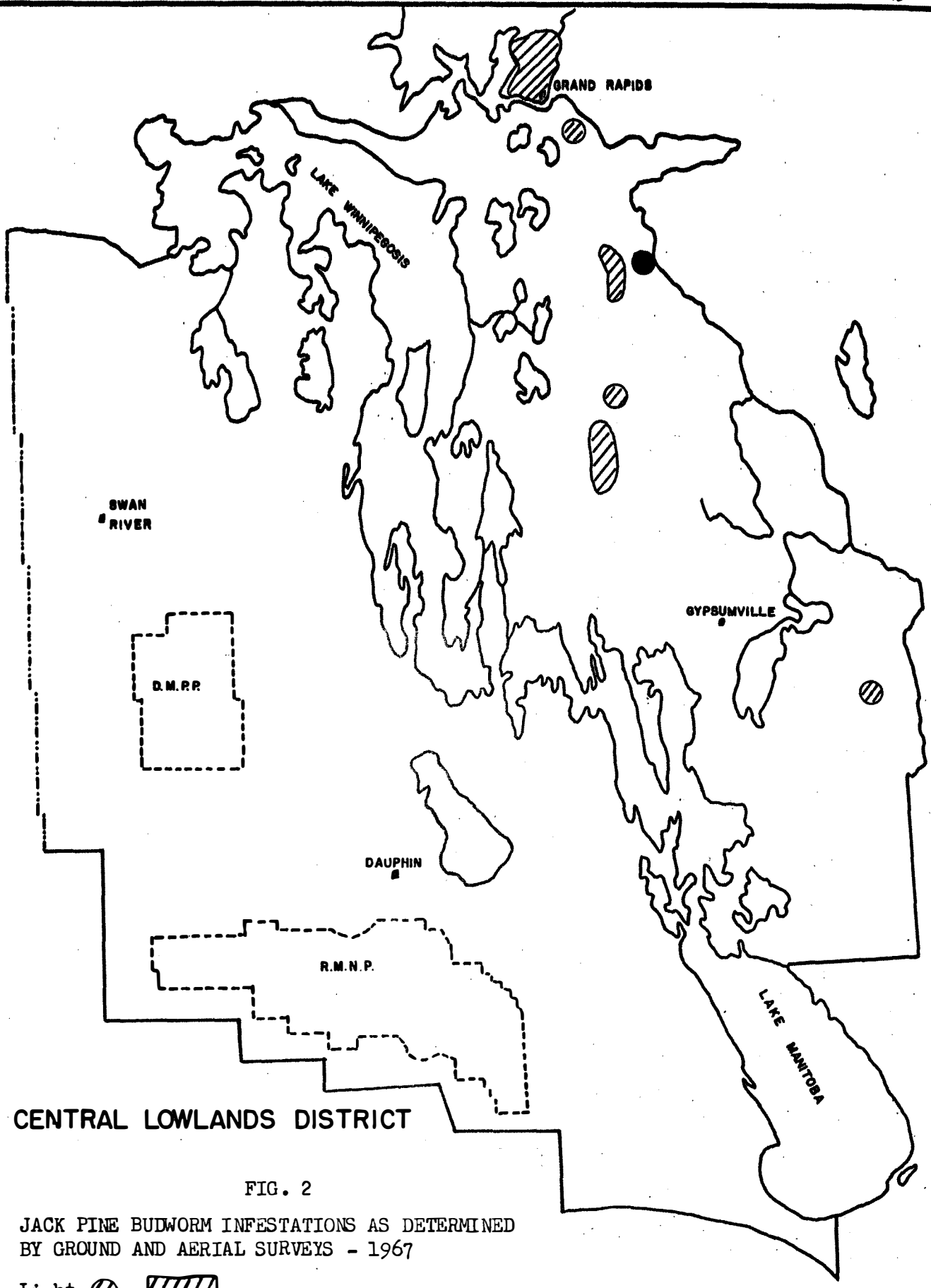


FIG. 2

JACK PINE BUDWORM INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light

Moderate to Severe

NORTHERN LOWLANDS DISTRICT

AND

NORTHERN MANITOBA

1967

by

R. C. Tidsbury and K. L. Mortensen

INTRODUCTION

Field surveys commenced on May 16 and terminated on September 30, during which time 498 insect and 363 disease collections were submitted to the Winnipeg laboratory. In addition to general sampling, survey sub-projects included: (a) egg population sampling of spruce budworm; (b) collecting larch sawfly cocoons for disease and parasite studies; (c) small mammal population survey; (d) sequential sampling of larch sawfly egg populations; (e) special collections of insect and disease material for personnel of the Winnipeg and other laboratories; and (f) the eighth annual survey of the Thompson Smoke Easement area. Approximately 24 hours of chartered flying time together with 12 hours supplied by the Manitoba Government Air Service was used for surveys and general mapping.

Changes were recorded in the distribution of three forest insects. Populations of the yellow-headed spruce sawfly increased south of The Pas. Jack-pine budworm populations increased north of Grand Rapids and in the Cedar-Moose lakes area. Aspen leaf beetle populations decreased throughout the district. The only notable change in the distribution of the spruce budworm infestation was a decrease in populations in the Kisseynew, Wabishkok, and Mikanagan lakes area. Larch sawfly populations decreased throughout The Bog south of Westray.

Changes in the status of diseases included a marked decrease in the leaf and twig blight, Pollaccia radiosa (Lib.) Bald. & Cif., and the spruce needle rusts Chrysomyxa spp. There was also a decrease of tar spot on willow.

INSECT CONDITIONS

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- High populations of this insect continued throughout the original Namew Lake infestation and the only notable decrease was observed in an area from Embury Lake and the north arm of Lake Athapapuskow to eight miles north of Kisseynew Lake (Figure 1). In this area, only scattered patches of light defoliation was observed.

Numerous pockets of varying degrees of defoliation occurred in the following areas surrounding the Namew Lake infestation. Light to moderate defoliation immediately south of Root Lake; moderate defoliation of white spruce and balsam fir at the south end of Iskwasum Lake; moderate defoliation of white spruce along the east side of Kipahigan Lake; the south side of Sisipuk Lake; and at Buds' Point and north to Denison Bay in the Cumberland Lake area. Moderate defoliation was noted along the west side of Cormorant Lake; between Mitchell and Cormorant lakes; and on an island off the north shore of Clearwater Lake.

Very light defoliation was recorded on white spruce at Wekusko, Granville, Clearwater, Jan, and Reed lakes and in the Ballantyne Bay area. A trace of defoliation was recorded on black spruce at Jan Lake and the Overflow Bay area of Lake Winnipegosis, while light defoliation was recorded on one reproduction black spruce at Granville Lake.

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- Ground checks during aerial surveys in late August indicated light populations at Gods, Highrock, Nueltin, Fort Hall, and Chipewyan lakes, and the Wolverine River south of MacLeod Lake and Lynn Lake. The majority of larvae collected north of Lynn Lake were in the early stages of development.

Defoliation decreased throughout The Bog and was generally light (Figure 2). Scattered patches of moderate to severe defoliation were recorded from The Pas north to Cranberry Portage; the heaviest defoliation occurred in the Root Lake area and small pockets of moderate defoliation were recorded at Thompson. Light defoliation was recorded at Amisk, Jan, Wekusko, Chisel and Clearwater lakes, Cranberry Portage, and the Dawson and Overflow Bay area of Lake Winnipegosis.

Aerial observations indicated light to moderate defoliation in the Kelsey Lake area and light defoliation in the Birchbark, Cook, Seager Wheeler and Renown lakes area of Saskatchewan.

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- Populations of this insect increased considerably northwest of Grand Rapids in the Cross, Cedar and Moose lakes area. Moderate to severe defoliation extended from Grand Rapids to the north side of Cross Lake northwesterly to Cedar, Traders, Driftwood and Moose lakes. Light defoliation was recorded in a stand east of Landry Lake. Elsewhere in the region, very light damage was recorded in the vicinity of Clearwater, Simonhouse, and Kiski lakes.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):- Populations of this sawfly increased considerably on black spruce reproduction from Clearwater Lake to Mafeking. Moderate to severe defoliation to the upper crowns was common along Highway 10 from Mafeking north to The Bog. Light to moderate defoliation was recorded on mature white spruce in the Dawson Bay area of Lake Winnipegosis and at First Cranberry Lake, as well as on ornamental white spruce in The Pas area. Very light defoliation was recorded on white and black spruce at the following locations in the northern areas: Harding, Moak, Witchai, Natawahunan, Norris, Nueltin, MacLeod, Setting, Wintering, Chisel and Island lakes.

BALSAM-FIR SAWFLY, Neodiprion abietis complex:- This sawfly caused light defoliation of ornamental white spruce in the Carrot River Valley and of occasional balsam fir at Island Lake. Light populations were recorded in conjunction with the yellow-headed spruce sawfly on black and white spruce at Westray.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- Populations of this skeletonizer increased from the previous year. Moderate to severe damage was recorded on willow at Westray and Mafeking and on trembling aspen reproduction at Goose Lake. Light defoliation of willow was recorded at Wabowden and Prospector and at Reed and Clearwater lakes. Very light damage was recorded on willow and trembling aspen in the Carrot River Valley, Simonhouse, Amisk, Jan, Chisel, Manisikwan, Fort Hall, Athapapuskow, Osborne, Herblet and Reader lakes and in the Dawson Bay area on Lake Winnipegosis.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:- Population levels were unchanged from 1966 and moderate damage on trembling aspen was recorded at Amisk, Norris, and Simonhouse lakes. Light damage was recorded on trembling aspen and occasionally balsam poplar at Chisel, Neso, Jan, Maligne, Granville, Goose, Wekusko, Herblet, Reed and Iskwasum lakes, the Overflow Bay on Lake Winnipegosis, Cranberry Portage and Wabowden areas.

A BLOTCH MINER, Gracillarid sp.:- This insect caused severe damage on large patches of willow in the Wabowden and Setting Lake area and moderate damage was recorded on scattered willow at Cross, Ospwagan and Chisel lakes. Light damage was noted at Overflow Bay on Lake Winnipegosis, Manisikwan, Annabel, Amisk, Clearwater, and Granville lakes and at Flin Flon and Cranberry Portage.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Acleris logiana (Linn.) (A leaf roller)	Birch, white	Athapapuskow Lake	Light damage on scattered reproduction.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, black and white Fir, balsam	Rocky, Paint, Moak, Harding, Norris and Simonhouse lakes; Dawson Bay on Lake Winnipegosis	Very low populations and no visible damage.
Acleris sp. (A leaf roller)	Willow Birch, white	Carrot River Valley, Cranberry Portage, Mafeking, Overflow Bay on Lake Winnipegosis, Simonhouse and Wintering lakes	Very low larval populations; no noticeable damage.
Acronicta grisea Wlk. (A dagger moth)	Willow Birch, white	Maligne, Sisipuk, and Kipahigan lakes	Very low larval populations; no noticeable damage.
Alsophila pometaria (Harr.) (Fall canker-worm)	Maple, Manitoba Alder	The Pas area (Carrot River Valley) and Neso Lake	Light to moderate infestation on maple in the Carrot River Valley; a trace of defoliation at Neso Lake.
Amauronematus spp. (Sawflies)	Willow Aspen, trembling Alder Birch, white Poplar, balsam	The Pas, Flin Flon, Cranberry Portage, Westray areas, Amisk, Clearwater, Simonhouse, Jan, Natawahunan, Witchai, Harding, Maligne, Granville, and Athapapuskow lakes	A trace of defoliation on willow in The Pas area and at Clearwater Lake.

Insect	Host(s)	Locality	Remarks
Anoplonyx canadensis Hgtn. (A sawfly)	Tamarack	Lynn Lake, Cranberry Portage, Wekusko, and Wabowden areas; Clearwater, Root, Nueltin, Highrock, Simonhouse, and Wekusko lakes	Common but no noticeable defoliation.
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	The Pas, Westray, Cranberry Portage, and Thompson areas, Wekusko, Jan and Amisk lakes and Overflow Bay on Lake Winnipegosis	Common but no noticeable defoliation.
Archips cerasivoranus (Fitch) (Ugly-nest caterpillar)	Cherry, choke	The Pas-Clearwater Lake area	Localized infestations; moderate to severe damage.
Arge clavicornis (Fab.) (Willow sawfly)	Birch, white Alder Willow Poplar, balsam	Clearwater, Jan, Harding, Red Sucker, Twin, Amisk, Maligne, Highrock, and Reindeer lakes; The Pas, Thompson and Overflow Bay on Lake Winnipegosis	Light defoliation on alder in the Thompson area; a trace of damage elsewhere.
Arge pectoralis (Leach.) (Birch sawfly)	Alder Birch, white	Footprint, Wintering, Chipewyan, and Clearwater lakes and Overflow Bay on Lake Winnipegosis	Very low larval populations; no appreciable damage.
Badebecia urticana Hbn. (A leaf roller)	Aspen, trembling Willow	Westray, The Pas, Overflow Bay on Lake Winnipegosis; Simonhouse, Jan, and Amisk lakes	Very light damage.
Calligrapha spp. (A leaf beetle)	Alder Willow	Westray and Sisipuk Lake	A trace of damage.
Campaea perlata (Gn.) (Fringed looper)	Aspen, trembling Poplar, balsam	Carrot River valley, The Pas, Flin Flon, Jan and Amisk lakes	Very light larval populations.

Insect	Host(s)	Locality	Remarks
Chalcoides spp. (Leaf beetles)	Aspen, trembling Maple, Manitoba	Carrot River valley, Tulabi Lake, and Flin Flon	Very light adult populations; no appreciable defoliation.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Athapapuskow and Clearwater lakes; Dawson Bay on Lake Winnipegosis and The Pas	Very light damage.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	Aspen, trembling Birch, white Willow	Jan, Simonhouse, Amisk, and Ospwagan lakes	Very light damage.
Chrysomela crotchi Brown (Aspen leaf beetle)	Aspen, trembling	Rocky, Goose, Simonhouse, Granville, and Wekusko lakes and The Pas area.	Light skeletonizing on reproduction at Goose Lake; a trace of damage elsewhere.
Chrysomela knabi Brown (A leaf beetle)	Poplar, balsam Alder	Norway House and Highrock Lake	Larvae caused moderate defoliation to an occasional poplar branch at Norway House; very light on alder at Highrock Lake.
Chrysomelid sp. (A leaf beetle)	Willow Alder Aspen, trembling Poplar, balsam	Natawahunan and Goose lakes; and Overflow Bay on Lake Winnipegosis	Light defoliation on alder at Natawahunan Lake; very light elsewhere.
Cimbex americana Leach (Elm sawfly)	Birch, white Willow	Clearwater and Simonhouse lakes	Very low larval populations; no noticeable defoliation.
Cyphon variabilis Thumb. (False flower beetle)	Willow Alder Aspen, trembling Poplar, balsam Spruce, white and black Pine, jack Tamarack	Throughout Northern Lowlands District	Very light adult populations; no damage.
Dichelonyx backi Kby. (Green rose chafer)	Willow Alder Birch, white	Neso and Johnson lakes	Light defoliation by adults on alder at Neso Lake; a trace of defoliation elsewhere.

Insect	Host(s)	Locality	Remarks
Dioryctria reniculella (Grt.) (Spruce coneworm)	Spruce, white and black	Amisk, Simonhouse, Kisseynew, Rocky, Johnson, and Jan lakes; and Cranberry Portage	Low populations.
Epinotia solandriana Linn. (A leaf roller)	Aspen, trembling Poplar, balsam	Clearwater and Amisk lakes; and the Carrot River valley	Very light damage.
Eupithecia filmata Pears. (A looper)	Spruce, white and black	Dawson Bay on Lake Winnipegosis; Amisk, Clearwater, Simonhouse, Rocky, Jan, Maligne, and Footprint lakes	Very low larval populations.
Eupithecia luteata Pack. (A looper)	Spruce, white and black Tamarack Fir, balsam Alder Willow	Common throughout Northern Lowlands District	Very low larval populations.
Fenusa dohrnii (Tisch.) (European alder leaf miner)	Alder	The Pas area, Overflow Bay on Lake Winnipegosis, Annabel, Jan, Maligne, Granite, Sisipuk, Highrock, Granville, Thompson and Simonhouse lakes	Heavy damage at Sisipuk Lake; moderate damage at Jan and Granville lakes; light damage elsewhere.
Feralia jocosa (Guen.) (Green-striped caterpillar)	Spruce, white and black	Dawson and Overflow bays on Lake Winnipegosis, Chisel, Clearwater, and Kisseynew lakes	Very low larval populations.
Galerucella cavicollis (Leconte) (Cherry leaf beetle)	Cherry, pin	Cross Lake	Moderate defoliation on one clump.
Gonioctena americana (Schaef.) (American aspen beetle)	Aspen, trembling	Clearwater and Amisk lakes	Very low adult populations; a trace of defoliation.
Gracillarid sp. (A blotch miner)	Willow Poplar, balsam	The Pas and Westray area; Red Sucker Lake	Very light damage.

Insect	Host(s)	Locality	Remarks
Halisidota maculata (Harr.) (Spotted tussock moth)	Willow Birch, white Aspen, trembling Poplar, balsam	Sisipuk, Goose, Iskwasum and Lynn lakes	Low larval populations on willow at Sisipuk Lake, very low populations elsewhere.
Hyphantria cunea (Drury) (Fall webworm)	Poplar, balsam Willow	The Bog, north of the Overflowing River	Occasional tents along roadside; light damage.
Ips pini Say (Engraver beetle)	Pine, jack Spruce, white	Atik Lake, Ballantyne Bay, and Wabowden	Low populations.
Lambdina fiscellaria fiscellaria (Gn.) (Hemlock looper)	Spruce, white Tamarack Alder	The Pas, Westray, Norris, and First Cranberry lakes	Very low larval populations.
Malacosoma lutescens (N. & D.) (Prairie tent caterpillar)	Willow	Cranberry Portage	Light defoliation on one clump.
Messa populifoliella (Townsend) (Leafmining sawfly)	Aspen, trembling	Wabowden and Reed Lake area	Light damage on one small tree at Wabowden and severe damage on one small tree at Reed Lake.
Nematus limbatus Cress. (A willow sawfly)	Willow	Prospector and Rocky Lake	Light to moderate defoliation on scattered reproduction.
Nematus populi Marl. (A sawfly)	Aspen, trembling	Clearwater and Amisk lakes	Severe defoliation confined to occasional branches.
Nematus unicolor (Marl.) (A sawfly)	Birch, white Alder	Prospector; Simonhouse, Hamel, Athapapuskow, Highrock, Nueltin, Granville and Thompson lakes	Low larval populations; no notable defoliation.
Nematus spp. (Sawflies)	Most deciduous trees	Throughout Northern Lowlands District	Severe defoliation on scattered small willow at Clearwater Lake.
Neodiprion virginianus complex (Redheaded jack-pine sawfly)	Pine, jack	Highrock Lake	Severe defoliation on one isolated tree.

Insect	Host(s)	Locality	Remarks
Neodiprion spp. (Sawflies)	Fir, balsam Pine, jack	Overflow Bay on Lake Winnipegosis and Chisel Lake	Very low adult populations on balsam fir at Overflow Bay; very light defoliation on jack pine at Chisel Lake.
Nycteola frigidana Wlk. (An owlet moth)	Willow	Overflow Bay on Lake Winnipegosis, Ospwagan, and Wintering lakes	Low larval populations; a trace of damage.
Nymphalis antiopa (L.) (Mourning-cloak butterfly)	Poplar, balsam	Norway House	Severe defoliation of two branches.
Pandemis canadana Kft. (A leaf roller)	Most deciduous trees	Carrot River valley, Overflow Bay on Lake Winnipegosis, Mafeking, Flin Flon; Goose, Clearwater and Jan lakes	Low larval populations; light damage.
Petrova albicapitana (Busck) (Pitch nodule maker)	Pine, jack	Clearwater, Reader, Simonhouse, Chisel, Annabel lakes, and at Westray	Very light damage.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Amisk, Goose, Clearwater, and Athapapuskow lakes	Light damage.
Phyllocolpa spp. (Leaf folding sawflies)	Poplar, balsam Aspen, trembling Will w	Throughout the district	P. nr. agama - widely distributed, light damage on small balsam poplar. P. nr. robusta - light damage on a few trembling aspen at Clearwater, Jan, and Iskwasum lakes. P. nr. nigrata-moderate damage on a few willow in the Norris Lake area.
Phytophaga rigidae (O. & S.) (Beaked willow gall fly)	Willow	Widely scattered throughout the Northern Lowlands District	Low populations.

Insect	Host(s)	Locality	Remarks
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white and black	Throughout the Northern Lowlands and southern portion of the Northern Aerial districts	Low populations; in conjunction with Pikonema alaskensis (Roh.).
Proteoteras willingana (Kft.) (Boxelder twig borer)	Maple, Manitoba	Carrot River valley	Very low populations.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Throughout the Northern Lowlands District	Generally very light infestations.
Semiothisa bicolorata Fabr. (A geometrid)	Pine, jack	Clearwater, Hook, and Tyrrell lakes, and Wabowden area	Very low populations; no damage.
Semiothisa oweni Swett (Owen's green looper)	Tamarack	Chisel and Root lakes; Thompson and Lynn Lake	Very low populations; no damage.
Semiothisa sexmaculata Pack (Green larch looper)	Tamarack	Throughout the district	Generally low populations; no damage.
Semiothisa signaria dispuncta Wlk. (A looper)	Tamarack Spruce, black	Chisel, Wekusko, and Jan lakes areas	Very low larval populations; no damage.
Syneta pilosa Brown (A leaf beetle)	Spruce, white and black Fir, balsam	Simonhouse, Paint, Clearwater, Witchai, and Ospwagan lakes, and Overflow Bay on Lake Winnipegosis	Very low adult populations;no conspicuous damage.
Tenthredinid spp. (Sawflies)	Willow Aspen, trembling Alder Saskatoon Birch, white Dogwood	Common in the Northern Lowlands and southern portion of the Northern Aerial district	Light defoliation on Saskatoon at Witchai Lake; no appreciable damage elsewhere.
Tortricid spp. (Leaf rollers)	Birch, white and swamp Poplar, balsam Alder Willow Aspen, trembling	The Pas, Flin Flon and Prospector areas; Simonhouse, Jan, Chisel,Rocky, Amisk, Wintering, Clearwater, Hamel, Reindeer, Highrock, Nueltin, and Maligne lakes; Carrot River valley, Overflow and Dawson bays on Lake Winnipegosis	Light damage on white birch at Wintering Lake; very light damage elsewhere.

Insect	Host(s)	Locality	Remarks
Toumeyella numismaticum (Pt. & McD.) (Pine tortoise scale)	Pine, jack	Clearwater Lake area	Severe infestation on one branch.
Trichiocampus irregularis (Dyar) (A sawfly)	Willow	Fort Hall Lake	Light defoliation.
Trichiosoma triangulum Kby. (A sawfly)	Alder Willow Birch, white	Prospector and Chisel, Twin, Annabel, and Jan lakes	Very low larval populations; no appreciable damage.
Zeiraphera fortunana Kft. (Spruce bud moth)	Spruce, white	Clearwater and Harding lakes	Very low larval populations.

DISEASE CONDITIONS

SPRUCE NEEDLE RUSTS, Chrysomyxa spp.:- A marked decrease in intensity of C. ledicola (Peck) Lagerh., and C. ledi (Alb. & Schw.) deBary, occurred throughout both districts. Heavy intensities of C. ledicola on small pockets of white spruce reproduction were recorded at Jan Lake. Similar incidences and intensities were recorded on small reproduction black spruce at Granite, Chisel, Jan, Amisk and Sisipuk lakes. Very light intensity and incidence was recorded on a few small black and white spruce reproduction at Reed, Ospwagan, Setting, Soab, Maligne, Granville and Shethanei lakes, the Overflow and Dawson Bay areas on Lake Winnipegosis, Wabowden and Thompson areas. Similar intensity and incidence was recorded on white spruce at Chisel, Granite, Amisk, and Sisipuk lakes, Norway House, and Wabowden. A trace of infection was recorded on ledum at Clearwater, Natawahunan, Harding, and Fort Hall lakes and the Overflow Bay on Lake Winnipegosis. Very light infections of C. ledi were recorded on several white spruce at Ospwagan Lake and in the Wabowden area. A trace of infection was recorded on ledum at Natawahunan, Sisipuk, Kipahigan, Jan, Amisk, Granite and Lynn lakes. Very light infections of C. ledi var. cassandrae were recorded on leather leaf at Jan and Fort Hall lakes. Heavy infections of C. empetri Schroet. were recorded on a few black spruce at at Fort Hall Lake and Lynn Lake. Cones of small black spruce were lightly infected by C. pirolata Wint. at Lynn Lake.

A LEAF AND TWIG BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:- The intensity of this blight decreased considerably in 1967. Moderate intensities on scattered trembling aspen reproduction were recorded at Highrock, Maligne, Granite, and Wekusko lakes. Areas of highest incidence, from 25 to 50 percent, were recorded at Maligne, Wintering, Reed, Wekusko, Setting, and Jan lakes. Light infections were recorded at Kisseynew, Cross, Gods, Athapapuskow, Norris, Chisel, Simonhouse, Amisk, Annabel, Neso, Ospwagan, Goose, Clearwater, Herblet and Iskwasum lakes and at Westray, Flin Flon, Thompson, and in the Overflow and Dawson Bay area on Lake Winnipegosis.

Three permanent plots established in 1966 were retallied and the results are shown in the following table :

Location	Percentage of tagged trees infected		Percentage of shoots infected	
	1966	1967	1966	1967
Westray	45	15	2.3	0.35
Reed Lake	100	70	10.0	4.60
Jan Lake	100	95	48.5	18.40

A LEAF AND TWIG BLIGHT, Pollaccia elegans Serv.:- Incidence of this blight remained very low. Light infections on a few scattered small balsam poplar were recorded at Thompson, Granite Lake and the Overflow Bay area on Lake Winnipegosis.

A RUST BROOM, Chrysomyxa arctostaphyli Diet.:- These rust brooms were common on black spruce. The highest incidence areas, involving very light infections of one or two brooms per tree, were recorded in the Nueltin and Chisel lakes area and the Overflow Bay area of Lake Winnipegosis. One broom was recorded on a white spruce tree at Clearwater Lake and an average of two brooms per tree was recorded on eight white spruce in the Reed Lake area. This pathogen was recorded on the alternate host, Arctostaphylos uva-ursi (L.) Spreng., at Kisseynew, Clearwater, and Reed Lakes, and the Overflow Bay on Lake Winnipegosis.

TAR SPOT OF WILLOW, Rhytisma salicinum (Pers.) Fr.:- Infections of this disease decreased considerably from 1966. Light infections of scattered clumps and small patches of willow were recorded at Sisipuk, Highrock, Chipewyan, Nueltin, Fort Hall, Granville, and Lynn lakes. Very light infections were recorded at Jan, Amisk, Herblet, Simonhouse, Thompson, and Athapapuskow lakes, Cranberry Portage, the Carrot River valley, The Bog and Wabowden areas.

LARCH-WILLOW RUST, Melampsora bigelowii Thum:- There was a marked decrease in infections of this rust. Intensities ranging from 5 to 20 percent on individual or small patches of willow clumps were recorded at Simonhouse, Gods, Chisel, Athapapuskow, Annabel, Ospwagan, Sisipuk, Granville, Maligne, and Jan lakes, and in the Westray - Cranberry Portage areas. Light infections were recorded at Amisk Lake, Wabowden, and Lynn Lake.

A LEAF SPOT, Septoria musiva Pk.:- Moderate to heavy infections of this leaf spot were recorded on patches of young balsam poplar at Gods, Athapapuskow, Egg, Chisel, Amisk, Maligne, Clearwater, and Simonhouse lakes and The Pas. Lighter infections were recorded at Neso, Herblet, Reader, and Goose lakes, Dawson Bay on Lake Winnipegosis, and in the Carrot River valley.

A GLOBOSE RUST GALL, Peridermium harknessii J.P. Moore:- Approximately 20 percent of the jack pine in a large stand about 10 miles south of Wabowden were lightly infected with rust galls. Light infections were also recorded on a few trees near Cranberry Portage, while very light infections were found at Chisel, Tramping, and Sisipuk lakes, and in the Ballantyne Bay area.

JACK-PINE MISTLETOE, Arceuthobium americanum Nutt. ex Engelm.:- Moderate to heavy infections in stands of approximately 4 to 5 acres were recorded near the junction of the Hanson Lake Road, and the Ballantyne River

and at Wanless and Iskwasum Lake. A heavy infection on approximately 30 trees was recorded in the Prospector area. A light infection, on two trees only, was recorded approximately 8 miles west of Creighton, and another similar infection 5 miles west of Iskwasum Lake.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Ciborinia whetzelii Seaver (An ink spot)	Aspen, trembling	Gods Lake	Light infection on scattered reproduction.
Cronartium comandrae Peck (Comandra rust of jack pine)	Comandra, pale	Rocky, Reed and Kipahigan lakes	Very light infections.
Dibotryon morbosum (Schw.) T. & S. (Black knot of cherry)	Cherry, pin	Wabowden area	Light infection on a small patch.
Diplodia tumefaciens (Shear.) Zalasky (Band galls)	Aspen, trembling	Thompson and Wekusko lakes	Very light infection on a few trees.
Euryachora betulina (Fr.) Schroet. (A tar spot)	Birch, white and scrub	Highrock, Fort Hall, Nueltin, Wekusko, Herblet, and Simonhouse lakes; Wabowden and Prospector	Moderate infection on a few scrub birch in the Wekusko Lake area, and on occasional white birch in the Wabowden area; light infections elsewhere.
Fomes fomentarius (L. ex Fr.) Kickx (A tinder fungus)	Birch, white	Simonhouse, Chisel, Wekusko, Paint, Reindeer, and Clearwater lakes; Overflow Bay on Lake Winnipegosis	Numerous conks on dead trees.
Fomes igniarius (L. ex Fr.) Gill (White trunk rot)	Aspen, trembling	Amisk, Wekusko and Kisseynew lakes	Light infections on a few trees.
Fomes pinicola (Swartz) Cke. (Brown cubical rot)	Spruce, white Pine, jack	Simonhouse, Thompson, Clearwater, and Red Sucker lakes; Ballantyne Bay	Light infections on a few dead trees and stumps.
Gymnosporangium corniculans Kern (A rust)	Saskatoon	Dawson Bay on Lake Winnipegosis	Heavy infection on several clumps.

Organism and Disease	Host(s)	Locality	Remarks
Hypodermella nervata Darker (Needle cast)	Fir, balsam	Simonhouse Lake and the Overflow and Dawson bay areas of Lake Winnipegosis	Very light infections on a few trees.
Linospora tetraspora Thompson (A leaf spot)	Poplar, balsam	Egg, Amisk, Clearwater, Simonhouse, Thompson, and Athapapuskow lakes; Carrot River valley, The Pas, and Overflow Bay on Lake Winnipegosis	Heavy infections on scattered reproduction in The Pas and Egg Lake areas; light infections elsewhere.
Melampsorella caryophyllacearum Schroet. (Witches'broom)	Fir, balsam	Paint and Wekusko lakes	One broom on each of three trees.
Phragmidium speciosum (Fries) Cooke (A rust on rosebush)	Rosebush	Throughout the district	Common on scattered patches.
Pucciniastrum epilobii Otth. (Needle rust)	Fir, balsam Fireweed	Cross and Clearwater lakes	Very light infections on balsam fir at Cross Lake and fireweed at Clearwater Lake.
Pucciniastrum spp. (A rust)	Spruce, white Fir, balsam	Cross and Island lakes	Light infections on several trees.
Rhizosphaera pini (Corda) Marbl. (Needle cast)	Fir, balsam Spruce, black	Clearwater, Chisel, Nueltin lakes; Overflow Bay on Lake Winnipegosis	Very light infections on black spruce at Nueltin Lake.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Common throughout the Northern Lowlands District and southern portion of Northern Aerial District	Moderate to heavy infections on small patches at widely scattered locations.

SUMMARY OF FOREST INSECT AND TREE DISEASE CONDITIONS

IN THE

THOMPSON SMOKE EASEMENT AREA

1967

The eighth annual survey of this smoke easement area was conducted from July 17 to 19 along six predetermined flight lines running east and west at approximately 12 mile intervals from between Harding and Assean lakes in the north, to Wintering and Cauchon lakes in the south. A total of eight hours flying time was provided by the Manitoba Government Air Service, and a total of 47 insect and 24 disease samples were collected in the vicinity of 9 sulphur dioxide stations.

Light to moderate sulphur dioxide fume damage was recorded on white birch foliage at Wintering Lake (SO_2 #19). Very light fume damage was recorded on Saskatoon foliage at Paint Lake (SO_2 #18) and Ospwagan Lake (SO_2 #17). Similar damage was also recorded on wild rose foliage at Ospwagan Lake (SO_2 #17) and on young white birch foliage at Harding Lake (SO_2 #15).

A rust broom, Chrysomyxa arctostaphylii Diet., was common on black spruce, with usually one or two brooms per tree. A notable decrease in infections of the spruce needle rusts, Chrysomyxa spp., was recorded throughout the area. Insect populations were generally very low. Forest insects and diseases collected during the survey are listed in Tables I and II.

TABLE I

FOREST INSECT CONDITIONS

SMOKE EASEMENT AREA, THOMPSON, MANITOBA

1967

Insect	Host(s)	Location and sampling station no.	Remarks
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white and black	SO_2#18 Paint Lake SO_2#15 Harding Lake SO_2#10 Burntwood River	Very low larval populations; no visible damage.
Arge clavicornis Fab. (A sawfly)	Alder Birch, white	SO_2#15 Harding Lake SO_2#10 Burntwood River	Light defoliation on alder at the Burntwood River, very light defoliation elsewhere.
Choristoneura fumiferana (Clem.) (Spruce budworm)	Spruce, white	SO_2#5 Wintering Lake (N)	One larva.

Insect	Host(s)	Location and sampling station no.	Remarks
Chrysomelid sp. (A leaf beetle)	Alder	SO_2#8 Natawahunan Lake	Light defoliation on one clump.
Nycteola frigidana Wlk. (An owlet moth)	Willow	SO_2#17 Ospwagan Lake SO_2#19 Wintering Lake (S)	Very light damage.
Phratora purpurea purpurea Brown (A leaf beetle)	Birch, white	SO_2#5 Wintering Lake (N)	Low adult populations; very light damage.
Pikonema alaskensis (Roh.) (Yellow-headed spruce sawfly)	Spruce, white and black	SO_2#15 Harding Lake SO_2#10 Burntwood River SO_2#8 Natawahunan Lake SO_2#12 Witchai Lake SO_2#5 Wintering Lake (N)	A trace of defoliation on occasional branches.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white and black	SO_2#17 Ospwagan Lake SO_2#8 Natawahunan Lake SO_2#15 Harding Lake SO_2#19 Wintering Lake (S)	Very low larval populations.
Tenthredinid sp. (A sawfly)	Saskatoon Willow Birch, white Alder	SO_2#12 Witchai Lake SO_2#8 Natawahunan Lake SO_2#15 Harding Lake SO_2#16 Nelson House	Light larval defoliation on saskatoon at Witchai Lake; very low larval populations elsewhere.
Tortricid spp. (Leaf rollers)	Aspen, trembling Birch, white	SO_2#19 Wintering Lake (S) SO_2#5 Wintering Lake (N)	Very light damage on scattered reproduction.

TABLE II

TREE DISEASE CONDITIONS

SMOKE EASEMENT AREA, THOMPSON, MANITOBA

1967

Organism and Disease	Host(s)	Location and sampling station no.	Remarks
Chrysomyxa arctostaphylii Diet. (A rust broom)	Spruce, black	Throughout the area	One or two brooms per tree; widely scattered infections.
Chrysomyxa ledi (Alb. & Schw.) deBary (Spruce needle rust)	Ledum Spruce, white	SO_2#8 Natawahunan Lake SO_2#17 Ospwagan Lake	Very light infections.
Chrysomyxa ledicola (Peck) Lagerh. (Spruce needle rust)	Ledum Spruce, white and black	SO_2#8 Natawahunan Lake SO_2#15 Harding Lake SO_2#17 Ospwagan Lake	Very light infections over small pockets.
Melampsorella caryophyllacearum Schroet. (Witches'broom)	Fir, balsam	SO_2#18 Paint Lake	One broom.
Phragmidium speciosum (Fries) Cooke (A rust on rosebush)	Rose, wild	SO_2#18 Paint Lake SO_2#16 Nelson House	Very light infections.
Pollaccia radiosa (Lib.) Bald. & Cif. (A leaf and twig blight)	Aspen, trembling	SO_2#19 Wintering Lake (S)	Light infection on reproduction.

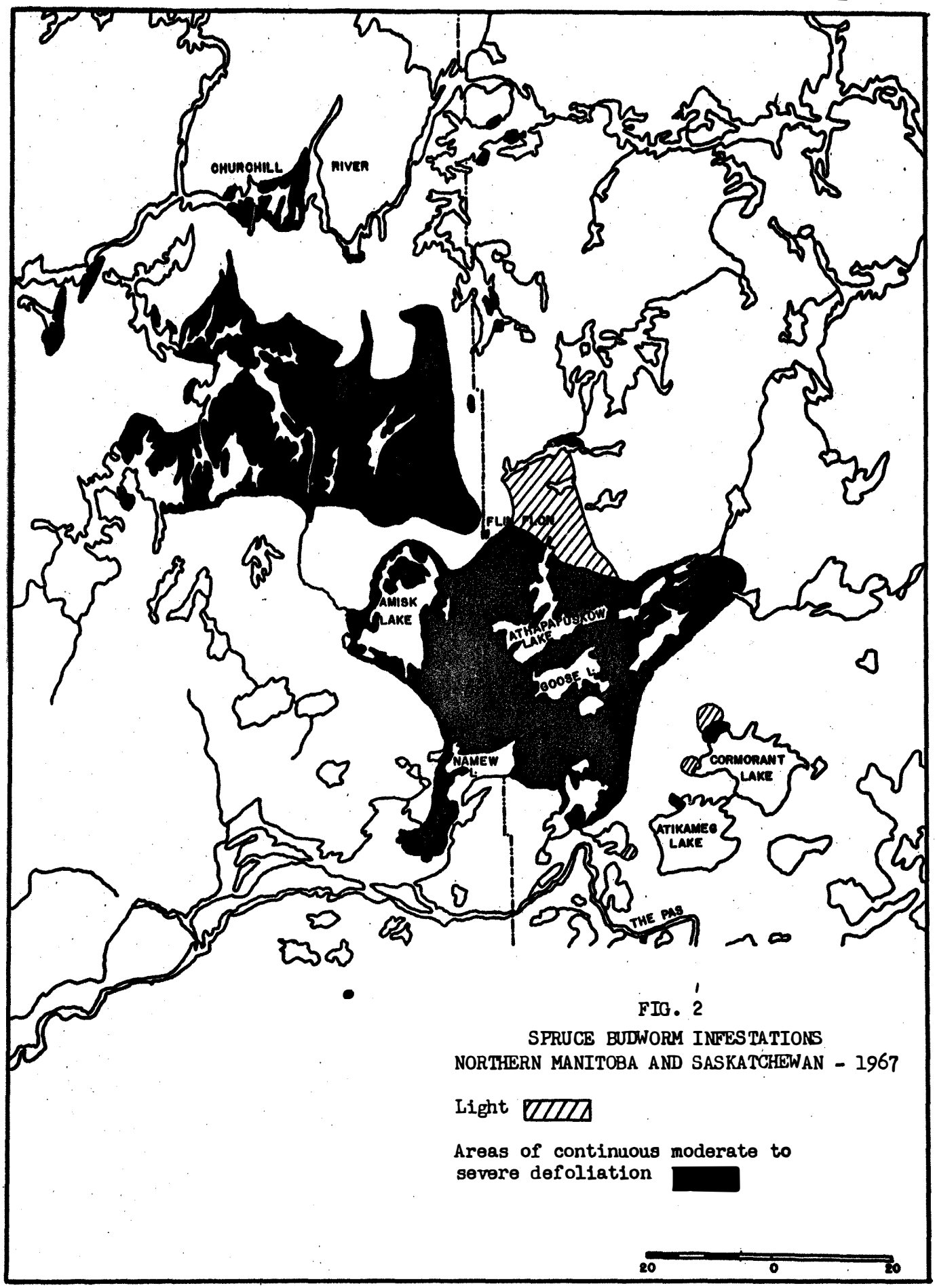


FIG. 2

SPRUCE BUDWORM INFESTATIONS
NORTHERN MANITOBA AND SASKATCHEWAN - 1967

Light

Areas of continuous moderate to severe defoliation

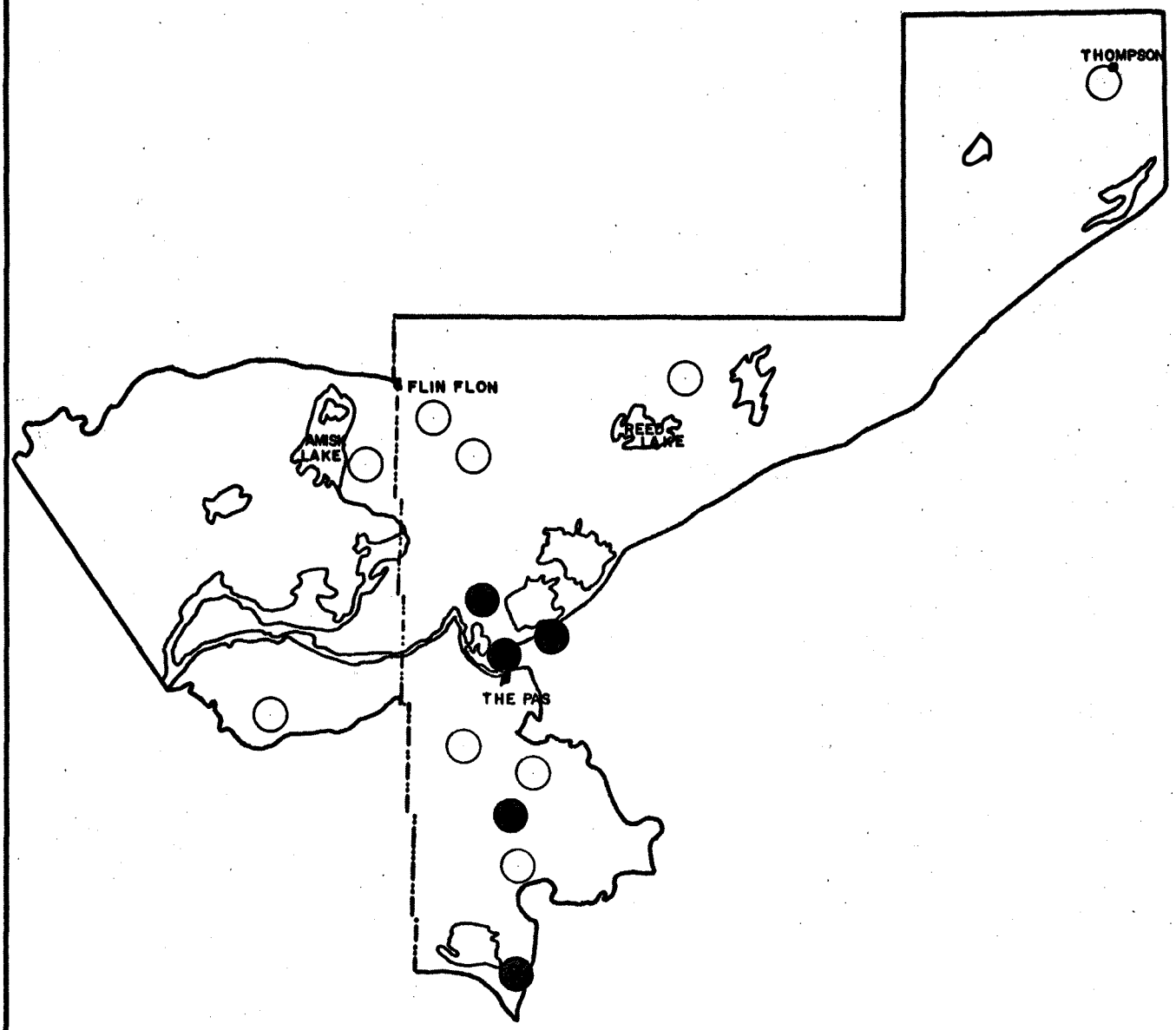


FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light ○

Moderate to Severe ●

EASTERN MIXEDWOOD DISTRICT

SASKATCHEWAN

by

W. B. Crawford and B. B. McLeod

INTRODUCTION

Prolonged warm, dry weather highlighted the 1967 field season (May 17 to September 30). Notable decreases in the incidence of some major insect and disease outbreaks were recorded from all portions of the district. Totals of 548 insect and 453 disease collections were submitted to the Winnipeg laboratory.

In addition to general collecting, survey sub-projects included: (a) collecting larch sawfly for disease and parasitic studies; (b) sequential sampling of larch sawfly egg populations; (c) small mammal population survey; and (d) shoot counts in the Pollaccia radiosa (Lib.) Bald. & Cif. plot. Special collections of insect and disease material were made for personnel of the Winnipeg and other laboratories.

Two hours flying time by fixed-wing aircraft and four hours by helicopter were provided by the Saskatchewan Department of Natural Resources for aerial surveys over inaccessible areas.

The spruce budworm infestation along the Birch River decreased in size but continued to cause moderate defoliation. Larch sawfly populations declined and yellow-headed spruce sawfly caused moderate defoliation to scattered farm shelterbelts and shade trees. The leaf beetles, Galerucella decora (Say), Chrysomela crotchi Brown, and Gonioctena americana (Schaeffer) caused patchy, moderate to severe defoliation throughout most of the district.

The warm, dry weather contributed to the decline of many of the annual diseases, such as leaf spots, foliage rusts, and shoot blights.

INSECT CONDITIONS

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- Populations of this defoliator declined throughout the district (Figure 1). Combined ground and aerial surveys revealed a trace to light defoliation in the Ridge Road, Peepaw Lake, Swan Lake Road, Norquay, Chelan and Greenwater Lake areas of the Porcupine Provincial Forest. This same condition was mapped throughout the Northern Provincial Forest in the Pasquia Hills, Carrot River and Squaw Rapids areas. Larch sawfly populations remained low in the Fort a la Corne Provincial Forest south of the Saskatchewan River and in the Gronlid area.

Sequential sampling of egg populations was continued in permanent tamarack plots and the results are summarized in Table I.

TABLE I

Location and plot no.	No. of shoots examined	No. of shoots curled	Infestation rating for 1967
Armit, Sask. 01	50	2	Light
Peepaw Lake, Sask. 01	50	1	Light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- The spruce budworm infestation along the Birch River continued to cause moderate defoliation but decreased in size from about 19 to 14 square miles in tp. 55, range 3, W 2nd mer. A portion of the area infested in 1966 (tp. 54, range 3, W 2nd mer.) was selectively cut during the winter and now supports relatively low populations. The infestation reported along the Sipanok Channel in 1966 declined to a level where it was no longer detectable from the air. Ground checks revealed low populations and a trace of defoliation.

Scattered individual white spruce in the Bainbridge Creek area on the north slopes of the Pasquia Hills supported populations sufficient to cause moderate defoliation. Elsewhere, populations were low and defoliation was negligible.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- A moderate infestation of a small patch of trembling aspen along the Fir River Road and a light to moderate infestation from mile 7 to mile 8 on the Otosquen Road were the only areas of notable defoliation.

Scattered, low populations were recorded in the remainder of the district.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- A severe infestation of this leaf beetle occurred throughout the northeast section of the district. Larvae and adults caused severe skeletonizing of willow and, to a lesser degree, trembling aspen and balsam poplar foliage, between miles 7 and 14 on the Ridge Road and along Highway No. 3 east of Hudson Bay. Severe skeletonizing was also recorded between miles 1 and 11 along the Swan Lake road in the Reserve area and between miles 7 and 8 along Highway No. 109.

Elsewhere, low populations and light feeding were noted.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Aceria parapopuli (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam	Nipawin and Carrot River	Low populations; light damage.
Acleris spp. (Leaf rollers)	Willow Aspen, trembling Poplar, balsam	Throughout the district	Infestations light and widely scattered.
Acleris logiana (Linn.) (A leaf roller)	Birch, white	Tobin Lake	Very light feeding damage.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white and black	Reserve, Usherville, Preeceville, Kuroki, Rama, Crystal Lake, Clear Lake Road (M.23), Fir River Road (M.11), and Otosquen Road (M.53)	Low populations; feeding in new buds.

Insect	Host(s)	Locality	Remarks
Altica populi Brown (Poplar flea beetle)	Poplar, balsam	Swan Lake Road	No visible damage; single collection.
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	Chelan, Ridge Road, and Peepaw Lake	Low populations; no visible defoliation.
Aphid spp.	Spruce, black and white All deciduous trees	Throughout the district	Moderate populations at Coxby, Greenbush River, and Preeceville on trembling aspen; scattered light populations throughout the remainder of the district.
Archips cerasivoranus (Fitch) (Ugly-next caterpillar)	Cherry, choke Buffalo berry	Parr Hill Lake, Bjorkdale, Ridge Road, Chemong, Hudson Bay, Murphy Creek, and Kelvington	Damage confined to roadside shrubs; intensity severe in some localities.
Archips negundanus Dyar (A leaf roller)	Maple, Manitoba	Canora and Hudson Bay	Low populations on shelterbelts.
Badebecia urticana Hbn. (A leaf roller)	Most deciduous trees and shrubs	Throughout the district	Scattered low populations.
Campaea perlata (Gn.) (Fringed looper)	Maple, Manitoba	Bainbridge Creek	Low populations causing light defoliation.
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white	Preeceville	Single collection with light damage.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, black and white	Roscoe, Bjorkdale, Runciman, Peesane, Greenbush River, Squaw Rapids, Clear Lake Road (M.23), and Fir River Road (M.12)	Low populations; light damage.
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Poplar, balsam	Greenwater Lake Provincial Park	Single pupal collection.

Insect	Host(s)	Locality	Remarks
Choristoneura pinus pinus Free. (Jack-pine budworm)	Pine, jack	Fir River Road (M.12) and Hudson Bay	Low populations causing light defoliation.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	Most deciduous trees and shrubs	Throughout the district	Low populations causing light damage.
Chrysomela crotchi Brown (Aspen leaf beetle)	Poplar, balsam Aspen, trembling	Preeceville, Ketchen, Squaw Rapids, Peesane, and Tobin Lake	Light skeletonization in all areas sampled.
Chrysomela scripta F. (Cottonwood leaf beetle)	Poplar, balsam	Stenen	Light defoliation.
Compsolechia niveopulvella Chamb. (A leaf roller)	Aspen, trembling	Duck Mountain Provincial Park	Light defoliation.
Cynipid sp. (A gall midge)	Aspen, trembling Willow	Throughout the district	Common on trembling aspen reproduction but damage light in all areas.
Dichelonyx backi Kby. (Green rose chafer)	Maple, Manitoba Aspen, trembling Saskatoon	Sturgis and Preeceville	Low populations with a trace of defoliation.
Dioryctria reniculella (Grote.) (Spruce coneworm)	Spruce, white and black	Rama, Birch River and Otosquen Road (M.53)	Low populations; light damage.
Epinotia solandriana Linn. (A leaf roller)	Aspen, trembling Poplar, balsam Willow	Kelvington, Usherville, Somme, and Silas	Low populations with a trace of defoliation.
Eupithecia luteata Pack. (A looper)	Spruce, white	Parr Hill Lake	Single collection; no visible damage.
Fenusa dohrnii (Tisch.) (European alder leaf miner)	Alder	Prairie River, Fir River Road (M.11), Swan Lake Road (M.8), and Otosquen Road (M.2)	Moderate infestation at Prairie River and Swan Lake Road, light elsewhere.

Insect	Host(s)	Locality	Remarks
Feralia jocosa (Guen.) (Green-striped caterpillar)	Spruce, white	Preeceville and Parr Hill Lake	Low populations; no visible damage.
Galerucella cavicollis (Le Conte) (Cherry leaf beetle)	Cherry, choke	Otosquen Road (M.53)	Low populations; light defoliation.
Gracillarid sp. (A blotch miner)	Willow	Norquay, Otosquen Road (M.54), Fir River Road (M.11), Etomami, Fairy Glen, and Squaw Rapids	Light damage in all areas.
Hylobius pinicola Couper (Pine root collar weevil)	Tamarack	Ridge Road	Three adult collections; no visible damage.
Hylurgopinus rufipes (Eichh.) (Native elm bark beetle)	Elm, white	Wadena, Preeceville, Duck Mountain Provincial Park, Eldersly, and Star City	Negative samples.
Hyphantria cunea (Drury) (Fall webworm)	Willow	Otosquen Road (M.53 and 54)	Low populations; light defoliation.
Laspeyresia youngana (Kearf.) (Spruce seed moth)	Pine, jack	Chemong, and Red Deer River Road (M.2)	Moderate populations; light damage.
Lithocolletis salicifoliella Chamb. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Throughout the district	Moderate infestation at Greenbush River on trembling aspen; light elsewhere.
Lyonitia sp. (A willow leaf miner)	Willow	Norquay, Otosquen Road (M.54), Fir River Road (M.11), Etomami, Fairy Glen, and Squaw Rapids	Light damage in all areas.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Throughout the district	Low, scattered populations; damage negligible.

Insect	Host(s)	Locality	Remarks
Neodiprion abietis Complex (Balsam-fir sawfly)	Spruce, white Tamarack	Ridge Road and Duck Mountain Provincial Park	Low populations caused a trace of damage.
Nycteola frigidana Wlk. (A webworm)	Willow	Ridge Road	Very low populations; a trace of damage.
Oberea schaumi Lec. (A poplar twig borer)	Aspen, trembling	Throughout the district	Low populations located mainly in the central and southeastern part of the district.
Operophtera bruceata (Hulst) (Bruce spanworm)	Aspen, trembling Willow Cherry, eastern choke	Echo Lake, Lintlaw, Kelvington, Sylvania, Canora, Endeavour, and Mistatim	Low populations; light feeding damage.
Orthosia hibisci (Guen.) (A fruit worm)	Poplar, balsam Birch, white Willow Saskatoon	Peesane, Ridge Road, Tisdale, Fir River Road, Leaf River, Murphy Creek, Reserve, Crystal Lake, Endeavour and Preeceville	Moderate infestation along Ridge Road; low populations elsewhere.
Pandemis canadana Kft. (A tortricid moth)	Most broad-leaved trees	Throughout the district	Low populations; damage light.
Pemphigus populi-transversus Riley (Poplar petiole gall aphid)	Poplar, balsam	Fir River Road, Prairie River, Kelvington and Squaw Rapids	Small, moderate infestations at Kelvington; elsewhere light.
Petrova albicapitana (Busck) (Pitch nodule maker)	Pine, jack	Fir River Road and Hudson Bay	Low populations; light damage.
Phenacaspis pinifoliae (Fitch) (Pine needle scale)	Spruce, black	Otosquen Road (M.41)	Fifty percent of the needles infested on a 3-foot tree.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Throughout the district	Low populations; light damage.
Phyllocolpa spp. (A sawfly)	Aspen, trembling Poplar, balsam	Throughout the district	Light damage to balsam poplar by P. nr. agama and to trembling aspen by P. nr. robusta.

Insect	Host(s)	Locality	Remarks
Phytophaga rigidae (O.S.) (Beaked willow gall fly)	Willow	Fir River Road (M.11), Carrot River, and Squaw Rapids	Populations low in all areas.
Pikonema alaskensis (Roh.) (Yellow-headed spruce sawfly)	Spruce, white and black	Arabella and Endeavour	Moderate defoliation to young white spruce shelterbelts; all other areas trace to light.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white Tamarack	Duck Mountain Provincial Park, Preeceville, Parr Hill Lake, Prairie River, Otosquen Road (M.29), Elm Lake and Sipanok Channel	Low populations; no defoliation.
Pissodes strobi (Peck) (White-pine weevil)	Spruce, white	Peepaw Lake	Single collection; leader dead.
Pontania sp. (A sawfly)	Willow	Throughout the district	Low populations recorded in all areas.
Proteoteras willingana (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the district	Moderate damage at Arabella and Mitchellview; all other areas recorded as light.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Duck Mountain Provincial Park, Fir River Road M.11), and Otosquen Road (M.54)	Light damage.
Saperda calcarata Say (The poplar borer)	Aspen, trembling Poplar, balsam Willow	Erwood, Hudson Bay, Otosquen Road (M.60), Kinistino, Hagen, Valparaiso, Archerwill, and Greenwater Lake Provincial Park	Moderate populations on trembling aspen at Erwood; all other areas very light.

Insect	Host(s)	Locality	Remarks
Saperda concolor Lec. (Poplar-gall saperda)	Willow	Pelly, Star City, Hagen, Kinistino, Valparaiso, and Swan Lake Road	Light to moderate damage at Star City, Kinistino, and Valparaiso.
Saperda populnea moesta Lec. (Poplar-twig borer)	Poplar, balsam	Throughout the district	Common in all areas; light damage.
Sciaphila duplex Wlshm. (A leaf roller)	Aspen, trembling	Ridge Road, Sylvania, Roscoe, Horsehide Creek, Kelvington, and Preeceville	Low populations; light defoliation.
Tetralopha aplastella Hlst. (A webworm)	Aspen, trembling Poplar, balsam	Kelvington and Mistatim	Low populations; light damage.
Toumeyella numismaticum (Pt. & McD.) (Pine tortoise scale)	Pine, jack	Red Deer River Road	Single collection; no damage.

DISEASE CONDITIONS

LEAF AND TWIG BLIGHT OF POPLAR, Pollaccia radiosa (Lib.) Bald. & Cif.:- This blight of trembling aspen declined in severity in all parts of the district. A small patch of moderate infection persists at Squaw Rapids and at Madge Lake in the Duck Mountain Provincial Park. All other areas were recorded as light.

A plot was established in 1966 and counts were continued in 1967 to study the recurrence and effect of this disease. Twenty trees were tagged and the new shoots counted and recorded as being healthy or infected. The results are summarized in Table II.

TABLE II

Location of plot	Year	Percent trees infected	Percent new shoots infected
Ridge Road, Sask.	1966	100.0	14.2
	1967	66.7	1.1

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl) Miller:- This canker was recorded in varying degrees of intensity throughout the district. Moderate infections of trembling aspen occurred in the Peesane area while most other areas were lightly infected.

Special surveys were conducted in the Duck Mountain Provincial Park to determine its occurrence and positive collections were made in the Pickeral Point area at Madge Lake.

H. mammatum was also collected from willow and maple.

LEAF BLIGHTS OF BALSAM POPLAR:- Two pathogens found associated with this leaf blight condition were Linospora tetraspora Thompson and Septoria musiva Pk. Incidence of both were much lower than the previous year and only light damage was recorded on scattered, individual trees throughout the district.

OTHER NOTEWORTHY DISEASES

Organism and disease	Host(s)	Locality	Remarks
Apiosporina collinsii (Schw.) von Hohnel (Witches'broom)	Saskatoon	Nipawin	Light infection.
Arceuthobium pusillum Peck. (Dwarf mistletoe)	Spruce, black	Otosquen Road (M.41)	Moderate from mile 40.5 to mile 41.5; about 60 percent of the stand infected.
Caliciopsis calicioides (Ellis & Ev.) Fitzp. (Bark fungus)	Poplar, balsam	Throughout the district	Common, light infections on mature balsam poplar.
Chrysomyxa arctostaphyli Diet. (Yellow witches' broom)	Spruce, white and black	Fir River Road (M.14), Usherville, Clear Lake Road (M.1), Endeavour, and Carrot River	Individual brooms scattered over the district.
Ciborinia foliicola (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Fir River Road (M.11) and Ruby Lake	Light infections restricted to individual trees.
Ciborinia whetzelii Seaver (Ink spot of aspen)	Aspen, trembling	Fir River Road (M.12) and Parr Hill Lake	Moderate damage on Fir River Road, light at Parr Hill Road.
Coccomyces hiemalis Higgens (Shot hole of cherry)	Cherry, choke	Ridge Road and Fort a la Corne Provincial Forest	Small area of severe damage at Fort House.
Cronartium comandrae Peck (Comandra blister rust)	Pine, jack	Chemong	Trace of damage on one tree only.

Organism and Disease	Host(s)	Locality	Remarks
Cytospora sp. (A canker)	Aspen, trembling	Throughout the district	Very common but light in most stands.
Diplodia tumefaciens (Shear) Zalasky (Macrophoma gall of poplar)	Aspen, trembling	Duck Mountain Provincial Park and Red Deer River	Trace of damage; light infections.
Euryachora betulina (Fr.) Schroet. (A leaf spot)	Birch, white	Fir River Road (M.20) and Red Deer River	Trace of damage.
Fomes fomentarius (L. ex Fr.) Kickx (White mottled rot)	Birch, white Aspen, trembling Poplar, balsam	Mountain Cabin, Chemong, Fir River Road (M.11), Etomami, and Bertwell	Light infections on scattered trees.
Fomes igniarius (L. ex Fr.) Gill. (White trunk rot)	Aspen, trembling	Throughout the district	Light infections on scattered trees.
Fomes pinicola (Swartz) Cke. (Brown cubical rot)	Spruce, white Aspen, trembling Birch, white	Fir River Road, Clear Lake Road (M.21), Swan Lake Road, Peepaw Lake, Duck Mountain Provincial Park and Mountain Cabin	Low incidence on scattered hosts.
Melampsora bigelowii Thum (Larch-willow rust)	Willow	Valparaiso	Single collection infecting less than 5 percent of the foliage.
Peridermium harknessii J.P. Moore (Western gall rust)	Pine, jack	Hudson Bay, Greenbush River, and Murphy Creek	Infections light.
Tryblidiopsis pinastri (Fr.) Karst. (Saprophyte)	Spruce, white and black	Throughout the district	Moderate infection to black spruce on Fir River Road; light elsewhere.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Poplar, balsam Aspen, trembling	Red Deer River, Swan Lake Road (M.8), Fairy Glen, and Squaw Rapids	Moderate infections at Squaw Rapids and along the Red Deer River; light elsewhere.

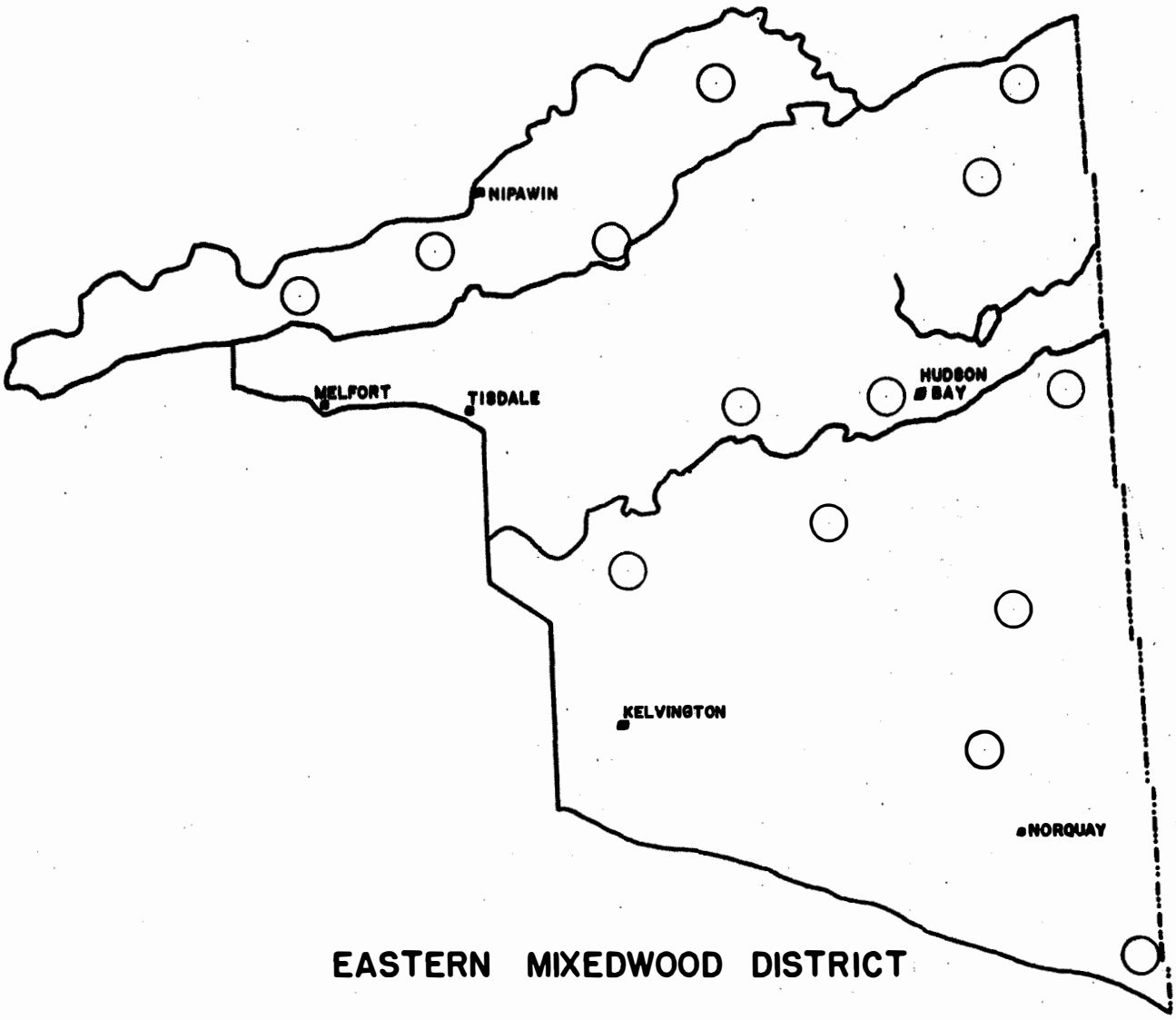


FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light ○

CENTRAL MIXEDWOOD DISTRICT

AND

NORTHERN SASKATCHEWAN

1967

by

W. J. Beveridge and B. B. McLeod

INTRODUCTION

Generally, warmy sunny weather with below normal precipitation persisted throughout the survey season. Field surveys were carried out between mid-May and early October and totals of 694 insect and 700 disease collections were submitted to the Winnipeg laboratory. Major outbreaks were mapped and a general reconnaissance of inaccessible areas was carried out using 32 hours charter flying and 19½ hours provided by the Saskatchewan Department of Natural Resources.

Survey sub-projects continued were: (a) sequential sampling of larch sawfly egg populations; (b) biological control of the larch sawfly at Crutwell; (c) population and defoliation studies of the larch sawfly at permanent plots; (d) small mammal population studies; and (e) infected shoot counts in permanent disease plots. A number of mass and special collections were made for personnel of the Winnipeg and other laboratories.

The jack-pine budworm and larch sawfly outbreaks continued to decline in 1967. The spruce budworm infestation continued severe with some minor extensions of the boundaries. The epidemic outbreaks of foliage rusts recorded in 1966 terminated and only light infections remained. Extensions in the range of several diseases were made this season despite the dry weather.

INSECT CONDITIONS

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- Populations of the larch sawfly declined significantly across the southern portion of the Central District and remained low in the northern area (Figure 1). Lower populations accompanied by light defoliation were mapped throughout the Pines, Nisbet, and Fort a la Corne Provincial forests. Moderate to severe defoliation occurred in the vicinity of White Gull Lake, but only light defoliation was recorded throughout the Candle, Big Sandy, East Trout, and Montreal lakes areas. This same condition was present in the Prince Albert National Park and northward to Lac la Ronge, Churchill River, and to the 56th parallel.

Low populations and light defoliation were recorded in northern Saskatchewan (aerial survey) as far north as Stoney Rapids.

Sequential sampling of egg populations was again carried out in permanent sample plots and the infestation ratings based on the utilization of current shoots for oviposition are summarized in Table I.

TABLE I

Location and plot no.		No. of shoots examined	No. of shoots curled	Infestation rating for 1967
Crutwell	01	80	3	Light
Red Rock Blk.	01	170	35	Light
Mayview, P.A.N.P.	01	50	0	Light
Lac la Ronge	01	50	0	Light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- Although a few minor extensions were noted, the main spruce budworm infestation along the Manitoba-Saskatchewan boundary remained essentially the same as in 1966. Moderate to severe defoliation of the new foliage of white spruce and balsam fir occurred throughout the main outbreak area and some back feeding on the old foliage was noted in the Wildnest Lake area, Belcher - Attitti lakes area, and in the Nemei - Phelan lakes area. Black spruce suffered heavy feeding damage to the top portion of the upper crown with light defoliation in the mid and lower crowns. Extensions of the main outbreak were mapped northward from Grassy Narrows to Ukoop Lake, northward from Attitti Lake to McArther and Belcher lakes, and in the Nemei - Phelan - Wuskwiatik lakes area. Tree mortality in the main outbreak area is confined to some reproduction balsam fir.

Light branch and top mortality was observed on the larger balsam fir in the Wildnest Lake area.

The Churchill River outbreak, centered in the Pita - Wintego lakes area, increased in size and intensity. Moderate to severe defoliation was recorded and now extends westward along the river to Iskwatam Lake. Several additional pockets of moderate to severe defoliation of spruce and fir were mapped southeast of the main infestation towards Island Falls.

The small infestations located on islands and along the southeast shore of Trade Lake increased in size and now moderate to severe defoliation extends southward into the Horst and Copeland lakes area.

The island infestations west of the main outbreak continued and moderate to severe defoliation to spruce and fir was recorded as far west as the previously reported infestations on Besnard Lake. Tree mortality is confined to understory reproduction balsam fir. Infestations were mapped on islands in the following lakes: Drinking, Nistowiak, Lac la Ronge, Nemeiben, Iskwatikan, Mountain and Besnard.

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- The severe infestations of north-central Saskatchewan continued to decline (Figure 2). Small pockets of light to moderate defoliation persisted in the Round Lake area of the Nisbet Provincial Forest, North Cabin Tower area of the Pines Provincial Forest, and in the Twin Lakes area of the Fort a la Corne Provincial Forest. Several small pockets of light to moderate defoliation were mapped along the Torch River between Candle Lake and the Hanson Lake road and a small patch of reproduction jack pine was moderately defoliated just north of Candle Lake. The small infestation along Highway 165 and the Meeyomoot River has completely subsided.

The Pinehouse Lake infestation which originally covered some 300 square miles declined to one small pocket of light to moderate defoliation and now covers approximately 10 acres.

Tree mortality has been very light, however, considerable top and branch tip mortality was observed in the Nisbet and Fort a la Corne Provincial forests and in the area between Candle Lake and the Hanson Lake road.

Mass collections of jack-pine budworm larvae and pupae from the Nisbet Provincial Forest were reared for parasites. The results are summarized as follows:

Location	Type of collection	No. of specimens	Percent parasitism by Diptera sp.	Hymenoptera sp.
5 miles west of Prince Albert	Pupae	175	14.2%	47.3
5 miles west of Prince Albert	Larvae	77	27.2%	1.3%

BALSAM-FIR SAWFLY, Neodiprion abietis complex:- Populations of this sawfly on islands in the Churchill River declined in 1967. The Sandfly Lake outbreak, which has persisted for a number of years, subsided. Mortality of black spruce on these islands is estimated in excess of 80 percent. The infestation at Dead Lake is confined to one small island where defoliation ranged from light to moderate on black spruce and severe on balsam fir. Tree mortality to date is light.

Collections were also taken at Emmeline, Iskwatikan, and Otter lakes and at Waskesiu in Prince Albert National Park but only a trace of defoliation was recorded.

PITCH NODULE MAKER, Petrova albicapitana (Busck.):- Populations increased throughout the Central District, especially in the areas where jack-pine budworm infestations had subsided. Light to moderate populations were recorded at Deception, Pasfield, Wapata and Black lakes in northern Saskatchewan.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- Larvae and adults of this leaf beetle caused severe skeletonizing of willow foliage around the south end of Lac la Ronge and along Highway No. 2 in the Potato Lake area. Moderate damage was also recorded at Little Sandy Lake just west of White Gull Lake. Generally low populations and light damage occurred throughout the Pines Provincial Forest, the Nipawin Provincial Park and in the Little Bear Lake and Ballantyne River areas along the Hanson Lake road. Elsewhere, only low populations were observed with little or no visible damage.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:- High populations severely defoliated scattered trembling aspen reproduction in the headquarters area at Prince Albert. Light to moderate populations infested balsam poplar in the townsite area of Waskesiu in Prince Albert National Park. Low populations and light damage also occurred throughout the Pines and Fort a la Corne Provincial forests, Lac la Ronge, and at Trade and Iskwatikan lakes.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- Populations of this leaf beetle declined throughout the Central District in 1967. Patches of moderate defoliation of trembling aspen reproduction occurred throughout the western portion of the Fort a la Corne Provincial Forest, but most trees partially refoliated by mid-summer. The severe infestations that occurred in Prince Albert National Park in 1966 subsided and low populations caused only a trace of damage. Low populations were also recorded at Little Bear Lake and at the Ballantyne River on the Hanson Lake road and in the Meeyomoot Bay area of Lac la Ronge.

A LEAF MINER OF WILLOW, Lyonetia sp.:- Severe infestations of this leaf miner occurred along the south shore of Lac la Ronge, along Highway No. 2 in the Potato Lake - McKenzie Creek areas, along the Montreal River north of Molanosa, in the White Swan Lake area, and throughout the Pines Provincial Forest. Light damage was recorded along Highway No. 165 and in the Otter and Iskwatikan lakes areas.

Collections were taken at many points in northern Saskatchewan and light damage was recorded at the following lakes: Rottenstone, Deception, Waterbury, Close, Unknown, Wapata, Black, Riou, Costigan, Middle Foster, and Jewitt.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Aceria parapopuli (Keifer) (Poplar bud-gall-mite)	Aspen, trembling Poplar, balsam	Sturgeon, Tobin, Little Sandy and Emmeline lakes; Ballantyne River, Waskesiu and Lone Spruce	Low populations with light damage.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white and black	White Gull Creek, Nipawin Provincial Park, Waskesiu and Otter Lake	Low populations; insignificant damage.
Acronicta dactylina Grt. (A dagger moth)	Poplar, balsam	Otter Lake	Single collection.
Acronicta grisea Wlk. (A dagger moth)	Birch, white Saskatoon	Nipawin Provincial Park and Otter Lake	Low populations; no visible damage.
Anoplonyx luteipes (Cress.) (Marlatts larch sawfly)	Tamarack	Fort a la Corne Provincial Forest and Prince Albert	Low populations with no noticeable damage.
Archips cerasivoranus (Fitch) (Ugly-nest caterpillar)	Cherry, choke	Tobin Lake, Crutwell, Fenton Ferry, and Fort a la Corne Provincial Forest	Patches of moderate to severe damage at Twin Lakes in Fort a la Corne Provincial Forest, at Tobin Lake, and throughout southern portion of Central Mixedwood District.

Insect	Host(s)	Locality	Remarks
Arge clavicornis (Fab.) (Willow sawfly)	Aspen, trembling Birch, white Willow Alder Birch, bog	Little Emmeline, East Trout, Little Bear, and Otter lakes, Waskesiu, Fort a la Corne Provincial Forest, La Ronge and at Waterbury Lake in Northern Saskatchewan	Low populations; light damage.
Badebecia urticana Hbn. (A leaf roller)	Birch, white Poplar, balsam Aspen, trembling Willow Alder	Crutwell, Prince Albert, Henribourg, Waskesiu, MacDowall, Cole Rapids, East Trout Lake, Nipawin and Fort a la Corne Provincial forests	Low populations; light damage.
Campaea perlata (Gn.) (Fringed looper)	Birch, white Poplar, balsam	MacDowall, Cole Rapids, Anglin Lake, Fort a la Corne Provincial Forest and at Turnor Lake in Northern Saskatchewan	Low population with no visible damage.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, black and white	Crutwell, Lac la Ronge, Fort a la Corne Provincial Forest, Waterbury, Pasfield and Close lakes, and Stoney Rapids in Northern Saskatchewan	Light infestations on individual trees.
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Aspen, trembling	MacDowall and Cole Rapids	Low populations; a trace of damage.
Chrysomela crotchi Brown (Aspen leaf beetle)	Aspen, trembling	Mayview, Crutwell, Little Bear Lake and Fort a la Corne Provincial Forest	Low populations; light damage.

Insect	Host(s)	Locality	Remarks
Chrysomela knabi Brown (A leaf beetle)	Poplar, balsam Alder	La Ronge, Molanosa, Red Rock Block; Iskwatikan, Wapata, and Cree lakes in Northern Saskatchewan	Low populations; trace of damage.
Corythucha elegans Drake (A lace bug)	Willow Alder	Nipawin Provincial Forest and Little Emmeline Lake	No noticeable defoliation.
Dicheylonyx backi Kby. (Green rose chafer)	Birch, white Spruce, black Willow	Forest Gate, Little Bear Lake, Nipawin and Fort a la Corne Provincial forests	Low populations; no visible damage.
Epinotia solandriana Linn. (A leaf roller)	Aspen, trembling Poplar, balsam Willow	Prince Albert, Waskesiu, Anglin Lake, Alingly, La Ronge, Otter Rapids and Fort a la Corne Provincial Forest	Low population; light damage.
Fenusa dohrnii (Tisch.) (European alder leaf miner)	Alder	La Ronge, Big Sandy Lake, MacDowall, Nipawin Provincial Forest and at Close and Cree lakes in Northern Saskatchewan	Light to moderate populations; moderate damage.
Itame loricaria Evers. (A looper)	Aspen, trembling Birch, white Willow	Henribourg, Waskesiu, Sturgeon Lake, Mayview, Tobin Lake and Ballantyne River	Low populations; no visible damage.
Malacosoma lutescens (N. & D.) (Prairie tent caterpillar)	Cherry, choke	Crutwell, Prince Albert, MacDowall, Tobin Lake and Alingly	Light infestations in southern areas.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Cole Rapids, Candle Lake, Alingly, MacDowall, Fenton Ferry and La Loche in Northern Saskatchewan	Very light scattered infestations; a trace of damage.
Oberea schaumi Lec. (Poplar twig borer)	Aspen, trembling	Crutwell, La Ronge, MacDowall, Alingly, Davis and Prince Albert National Park	Scattered collections; low populations.

Insect	Host(s)	Locality	Remarks
Operophtera bruceata (Hulst) (Bruce spanworm)	Aspen, trembling Willow	Sturgeon Lake, Fort a la Corne Provincial Forest and Otter Rapids	Scattered collections; low populations.
Orthosia hibisci (Guen.) (A fruit worm)	Aspen, trembling Birch, white Alder Willow	Henribourg, Sturgeon Lake, Nipawin and Fort a la Corne Provincial forests, and Ballantyne River	Low population; no visible damage.
Pandemis canadana Kft. (A tortricid)	Aspen, trembling Birch, white Willow	Waskesiu, MacDowall, Nipawin Provincial Park, and Cole Rapids	Low populations; light damage.
Pemphigus populi-transversus Riley (Poplar gall aphid)	Poplar, balsam	La Ronge, Lone Spruce, Torch River, Crutwell, Waskesiu, Timber Bay, Prince Albert and Deschambault Lake	Heavy infestation at Lone Spruce; elsewhere light.
Phyllocolpa spp. (Sawflies)	Aspen, trembling Poplar, balsam	Throughout the district	P. nr. agama - low population; trace of damage. P. nr. robusta - light leaf folding damage on fringe reproduction.
Phyllocnistis populiella Cham. (A leaf miner)	Aspen, trembling	Waskesiu	Two collections; no visible damage.
Phytophaga rigidae (O.S.) (Beaked willow gall fly)	Willow	Molanosa, Forest Gate, MacDowall; Iskwatikan, Big Sandy, Tobin, Eulas and Stinking lakes; Mayview and Fenton Ferry	Low populations.
Pikonema alaskensis (Roh.) (Yellow-headed spruce sawfly)	Spruce, black and white	Throughout the district	Scattered populations; light defoliation.

Insect	Host(s)	Locality	Remarks
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, black and white	Fort a la Corne Provincial Forest, Otter, Waterbury and Unknown lakes and Torch River	Light scattered infestations; light defoliation at the Torch River.
Pissodes strobi (Peck.) (White-pine weevil)	Spruce, black	Mile 23 on Highway #165, Forest Gate	Light damage on scattered trees.
Pissodes terminalis Hopping (Lodgepole terminal weevil)	Pine, jack	Candle Lake	Single collection; low populations and light damage.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Throughout Central District and at Waterbury Lake in Northern Saskatchewan	Low populations; no noticeable damage.
Saperda calcarata Say (Poplar borer)	Aspen, trembling	Prince Albert, Holbein and Fort a la Corne Provincial Forest	Low populations; light damage.
Saperda concolor Lec. (Poplar-gall saperda)	Willow	MacDowall	Low populations; light damage.
Saperda populnea moesta Lec. (Poplar-twig borer)	Poplar, balsam	Prince Albert, MacDowall, Nipawin Provincial Forest and White Swan Lake	Moderate to severe damage on regeneration at MacDowall.
Sciaphila duplex Wlshm. (A leaf roller)	Aspen, trembling	Cole Rapids, Torch River, Davis, MacDowall, and Fort a la Corne Provincial Forest	Low populations; trace of damage.
Syneta pilosa Brown (A leaf beetle)	Spruce, white and black Tamarack Alder	Nipawin Provincial Park ; White Swan, Otter and East Trout lakes, and Fort a la Corne Provincial Forest	Low populations; light defoliation.
Toumeyella numismaticum (Pt. & McD.) (Pine tortoise scale)	Pine, jack and lodgepole	Prince Albert, Crutwell, and Fort a la Corne Provincial Forest	Populations low but increasing in the Nisbet Provincial Forest; lodgepole pine plantation lightly infested in the Fort a la Corne Provincial Forest.

TREE DISEASE CONDITIONS

A MISTLETOE OF JACK PINE, Arceuthobium americanum Nutt. ex Engelm:- No extensions of this disease were recorded in the Central or Northern Districts. Surveys were continued within the known boundaries to record the many stands of infected jack pine. The infections scattered throughout the Fort a la Corne and Nisbet Provincial forests were mapped from the air. Scattered pockets of both mature and young growth pine growing along the Bow River and in the south shore area of Lac la Ronge were severely infected. A parasite of mistletoe, Wallrothiella arceuthobii (Pk.) Sacc. was observed throughout most of these areas.

In northern Saskatchewan, A. americanum was mapped along Highway No. 155 north from the 56th parallel to the settlement of La Loche and along the Turnor Lake road from the junction of Highway No. 155 northeast to Turnor Lake.

SPRUCE NEEDLE RUSTS, Chrysomyxa ledicola (Peck) Lagerh. and Chrysomyxa ledi (Alb. & Schw.) deBary:- Prolonged warm dry weather was a contributing factor in the decline of the severe rust infections of 1966. Areas where severe infections of white and black spruce had occurred were re-visited and the current year's infections noted. A trace to light infections were recorded at Waskesiu, Lac la Ronge, Montreal Lake and in the Fort a la Corne and Nisbet Provincial forests. In a number of areas, heavier infections occurred on the alternate host Labrador Tea.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl.) Miller (H. pruinatum (Klotzsch) Cke.):- This canker of trembling aspen was collected throughout the Central District. Severe infections were recorded in several aspen woodlots in the vicinity of the town of Davis. Light mortality to trees and tops was observed. Additional collections were made at Crutwell, MacDowall, Waskesiu and Emmeline, Nemeiben, Eulas and McLennan lakes. Damage in the above mentioned locations was light. H. mammatum was collected from dead branches and stems of willows and alder at numerous points in both the Central and Northern Districts.

A LEAF SPOT, Drepanopeziza populorum (Desm.) V. Hohn:- Infections declined throughout both the Central and Northern Districts. Aerial surveys of the central portion of the Prince Albert National Park revealed scattered infections to aspen clones in the Kingsmere - Bagwa lakes area. Additional infections were recorded in the Fort a la Corne Provincial Forest and in the Candle Lake area but damage was light in both areas.

LEAF AND TWIG BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:- A sharp decline in the incidence of P. radiosa was recorded throughout the Central District. Light infections occurred in the Fort a la Corne, Nisbet and Pines Provincial forests, Prince Albert National Park and Lac la Ronge areas.

Study plots for this disease, established in 1966, were retallied and a summary of the results is shown in the following table.

TABLE II

Location of plot	Year	Percent of trees infected	Percent current shoots infected
Crutwell	1966	90	4.20
	1967	50	.22
Mayview	1966	100	9.10
	1967	72.2	1.06

LEAF BLIGHTS OF BALSAM POPLAR, Linospora tetraspora Thompson and Septoria musiva Pk.:- Infections of these two leaf blights declined throughout the Central District. A severe infection of L. tetraspora occurred on balsam poplar reproduction along the south and west boundaries of Prince Albert National Park (Rabbit Creek - Nesslin Lake area). Additional samples were taken as far north as Black Bear Island Lake on the Churchill River but damage was light. S. musiva occurred throughout the district and damage ranged from trace to light.

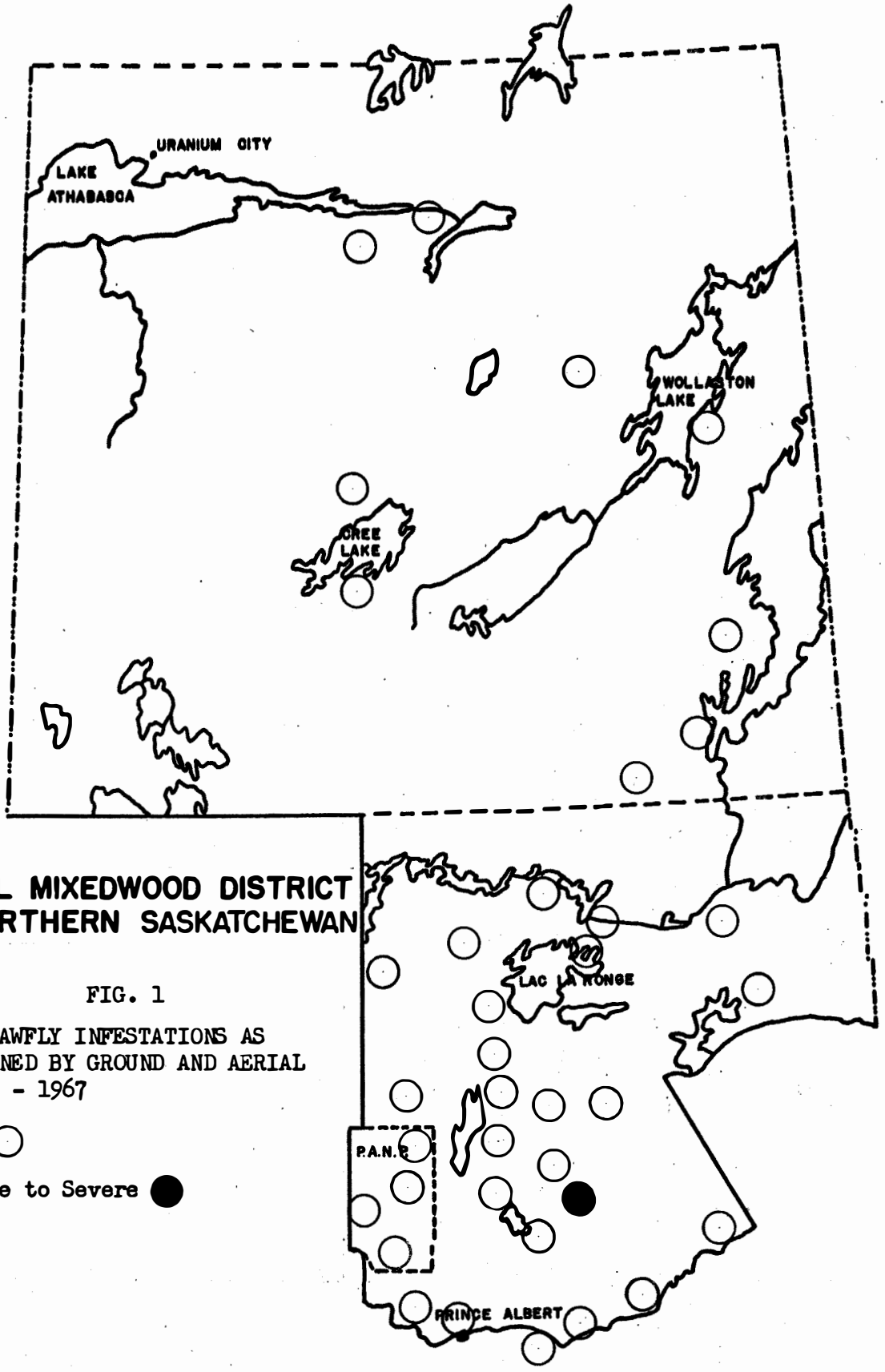
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Caliciopsis calicioides (Ellis & Ev.) Fitzp. (Bark fungus)	Poplar, balsam	Throughout Central District and north of Buffalo Narrows	Found on scattered mature trees.
Chrysomyxa arctostaphyli Diet. (Yellow witches'broom)	Spruce, black and white	Throughout Central District and at Wathaman, Costigan and Black lakes, and north of Buffalo Narrows	Single brooms found on scattered trees.
Ciborinia foliicola (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Red Rock Block and in the Nipawin Provincial Park	Only a trace on single bushes.
Cronartium comandrae Peck (Comandra blister rust)	Pine, jack	Mayview, Fort a la Corne Provincial Forest; Little Sandy, Tobin and Emmeline lakes and at La Loche	Very light infections.

Organism and Disease	Host(s)	Locality	Remarks
Cronartium comptoniae Arth. Spaulding and Hansbrough 1932 (Sweet fern blister rust of pine)	Myrica gale L.	Nemeiben, McLennan, Eulas, Nagle, and Jewett lakes in Northern Saskatchewan	Common on alternate host.
Didymosphaeria populina Vuill (Shoot blight)	Poplar, balsam	Montreal River Road	Single collection of the perfect state of Pollaccia elegans Serv.
Diplodia tumefaciens (Shear) Zalasky (Band galls)	Aspen, trembling	Fort a la Corne Provincial Forest, Nipawin Provincial Park, Lac la Ronge, and La Loche	Heavy on one small patch in Fort a la Corne Provincial Forest.
Fomes fomentarius (L. ex Fr.) Kickx (A slash fungus)	Birch, white Aspen, trembling Poplar, balsam	Throughout the Central District and at Riou Lake and Buffalo Narrows	Common on scattered individual trees throughout Central District.
Fomes igniarius (L. ex Fr.) Gill (White trunk rot)	Birch, white Aspen, trembling	Throughout the Central District and north of Buffalo Narrows	One moderate patch at Tobin Lake associated with considerable windfall damage.
Hypoxylon fuscum (Pers. ex Fr.) Fr. (A slash fungus)	Aspen, trembling Birch, white Alder Hazelnut	Waskesiu, Holbein, La Ronge, Montreal River Road; Tobin, McLennan, Black Bear Island, Nagle and Jewett lakes	Distribution extended to Nagle and Jewett lakes in northern Saskatchewan.
Libertella betulina Desm. (A die back)	Birch, white	Spruce River, Candle, McLennan, Black Bear Island, La Ronge and Jewett lakes	Distribution extensions.
Melampsora bigelowii Thum. (Larch-willow rust)	Willow	Throughout the Central District and at Jewett Lake and Stoney Rapids in Northern Saskatchewan	Heavy infection in Pines Provincial Forest; trace elsewhere.

Organism and Disease	Host(s)	Locality	Remarks
Peridermium harknessii J. P. Moore (Globose rust gall)	Pine, jack	Throughout the Central District and at Rottenstone, Deception, Close and Turnor lakes, Buffalo Narrows and La Loche in Northern Saskatchewan	Common throughout Central and Northern Districts, some branch tip mortality in the Nipawin Provincial Park.
Phragmidium speciosum (Fries) Cooke (Rust)	Rose	Crutwell, La Ronge, Iskwatikan, Otter, Eulas lakes, MacDowall, Forest Gate, Boundry Tower, White Gull Creek and Engemann Lake	Much lighter than 1966.
Pollaccia elegans Serv. (Leaf and shoot blight)	Poplar, balsam	La Ronge, MacDowall, Little Sandy Lake	Light in all areas.
Pucciniastrum epilobii Otth. (A rust)	Fir, balsam Fireweed	Waskesiu, Crutwell, Boundry Tower, Montreal River Road; Otter, Nemeiben, Iskwatikan, Eulas, and Tobin lakes	Severe infection on islands of Otter Lake; very light throughout the remainder of the Central District.
Rhytisma salicinum (Pers.) Fr. (A tar spot)	Willow	Throughout the Central District and at Wapata, Black, Unknown, Waterbury, Cree, Engemann, Jewett, and Nagle lakes, and Stoney Rapids in Northern Saskatchewan	Light to moderate infections at Otter and Big Sandy lakes.
Septoria betulicola Pk. (A leaf spot)	Birch, white	La Ronge	Single collection.
Storm damage	Aspen, trembling	Northwest of La Ronge	Moderate windthrow to mature aspen, along the northwest shore of Lac la Ronge.

Organism and Disease	Host(s)	Locality	Remarks
Tryblidiopsis pinastri (Fr.) Karst. (A saprophyte)	Spruce, white and black	Throughout Central District and at Brabant, Turnor, and Reindeer lakes and Buffalo Narrows in Northern Saskatchewan	Traces on dead branches of living trees in both districts.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Poplar, balsam Aspen, trembling Willow	Throughout Central District and at Nagle Lake in Northern Saskatchewan	Light to moderate in all areas.



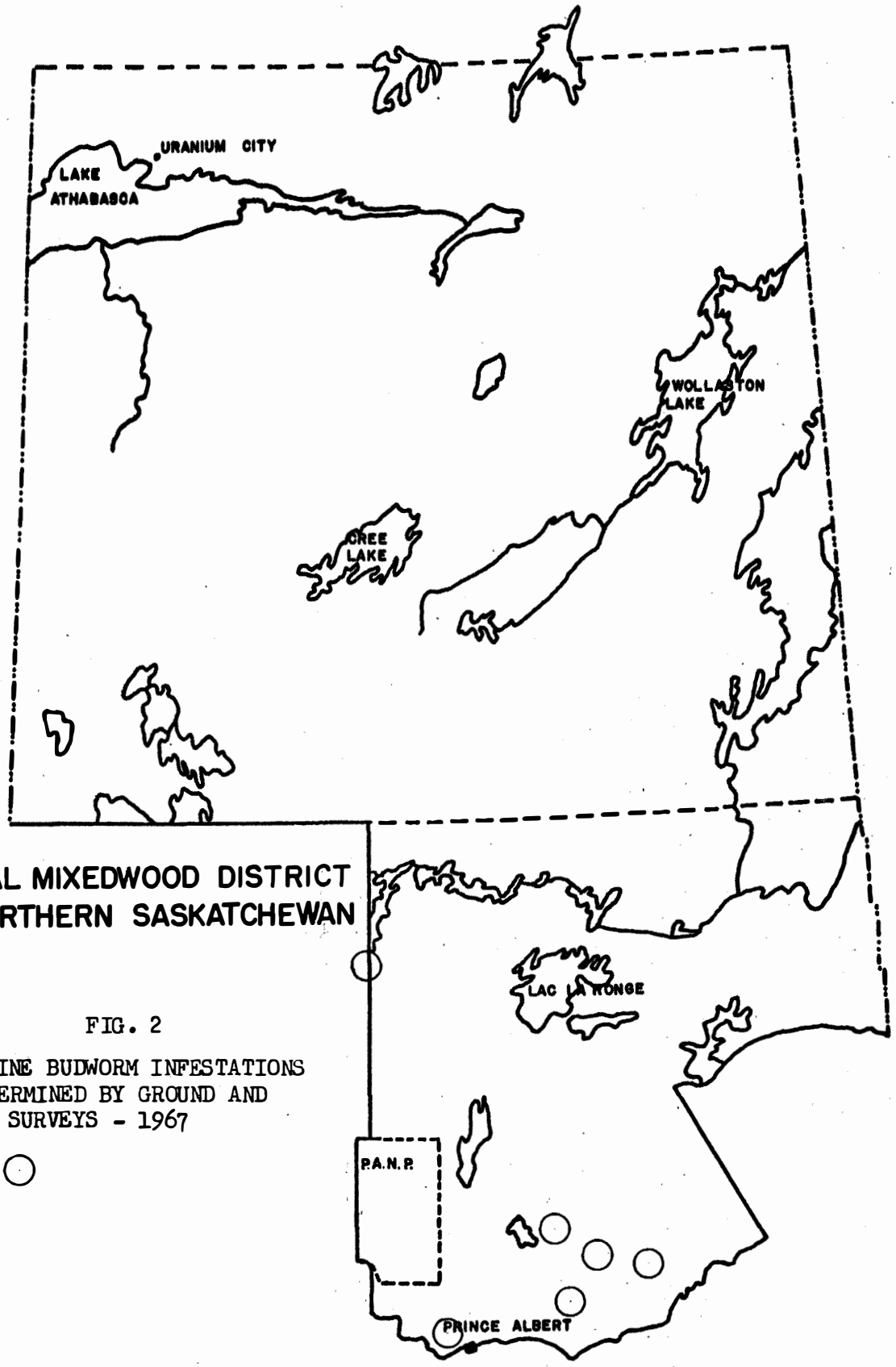
CENTRAL MIXEDWOOD DISTRICT AND NORTHERN SASKATCHEWAN

FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS - 1967

Light ○

Moderate to Severe ●



CENTRAL MIXEDWOOD DISTRICT
AND NORTHERN SASKATCHEWAN

FIG. 2

JACK PINE BUDWORM INFESTATIONS
AS DETERMINED BY GROUND AND
AERIAL SURVEYS - 1967

Light ○

WESTERN MIXEDWOOD DISTRICT

SASKATCHEWAN

1967

by

C. L. Rentz and B. B. McLeod

INTRODUCTION

Field surveys to determine the status of forest insects and tree diseases were carried out from May 23 to September 29. Totals of 369 insect and 398 disease collections were submitted to the Winnipeg laboratory.

Survey sub-projects carried out were: (1) sequential sampling of larch sawfly egg populations; (2) larch sawfly population studies at permanent plots; and (3) population studies of small mammals. Mass collections of prairie tent caterpillar and yellow-headed spruce sawfly were collected for parasite studies. A number of special collections were made for personnel of the Winnipeg and other laboratories.

The more notable changes in the status of forest insects and tree diseases were the increase in populations of the yellow-headed spruce sawfly and the decline of the jack-pine budworm. A relatively dry summer contributed to the decline of several annual diseases. The heavy infections of foliage rusts of conifers, deciduous trees, and shrubs subsided, and only scattered light infections were recorded. Globose gall and spindle rusts were widely scattered throughout most jack-pine stands.

INSECT CONDITIONS

LARCH SAWFLY, Pristiphora erichsonii (Htg.):- Light defoliation occurred on reproduction tamarack in the Dore, Beaupre, and Smoothstone lakes areas (Figure 1). Elsewhere, populations remained at very low levels and no defoliation was noted.

Sequential sampling of egg populations was again carried out in the four permanent plots and the infestation ratings, based on the utilization of current shoots for oviposition, are summarized in Table I.

TABLE I

Location and plot no.	No. of shoots examined	No. of shoots curled	Infestation rating 1967
Loon Lake 01	50	0	light
Pierceland 01	50	0	light
St. Cyr 01	50	0	light
Erinferry 01	50	0	light

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- Populations of this budworm decreased considerably over the past season. The severe infestation, previously reported in the Canwood Provincial Forest, has almost subsided and only the occasional tree showed light defoliation. Additional collections were taken at Erinferry and Mont Nebo but damage was negligible.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):- Populations of this sawfly increased considerably and were widely distributed throughout the district. Moderate to severe defoliation of white spruce shelterbelts and ornamental plantings occurred at Loon Lake, Peerless, Loon River, Meadow Lake, Barthel, Red Cross, Frenchman's Butte, and Marchant Grove. Light defoliation of scattered white and black spruce was recorded at a number of locations within the district. Mass collections of late instar larvae were made at Loon Lake, Loon River, and at Ministikwan Lake for parasite studies at the Winnipeg laboratory.

GRAY WILLOW-LEAF BEETLE, Galerucella decora (Say):- This leaf skeletonizer was widespread throughout the western and northern areas of the district, but in most instances populations were low.

Two areas of moderate to severe skeletonizing were recorded: one along the Dore Lake Road near the junctions of the Sled Lake and Smoothstone Lake trails, and another along Highway 4 between the town of Meadow Lake and Divide Radio.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- This leaf beetle caused severe defoliation to approximately 10 acres of trembling aspen regeneration near the Nelson Hill Tower south of Loon Lake, and patches of moderate to severe defoliation occurred southward to the town of St. Walburg. Elsewhere, defoliation was light and confined to scattered aspen reproduction.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:- Moderate to severe infestations of this blotch miner of trembling aspen regeneration were recorded at Smoothstone and Sharps lakes, and in the Canwood Provincial Forest. Light infestations were recorded at Big River, Mont Nebo, Loon, Bronson, Jeanette, Dore, Canoe, McCallum, and Green lakes. In the remainder of the district, leaf mining was confined to a few leaves on individual trees.

BLOTCH MINER ON WILLOW, Lyonetia sp.:- A severe infestation of this species occurred in the Smoothstone - Sled - Dore lakes area and extended north to Lac la Plonge, Kazan and Pinehouse lakes. Low populations, causing light damage, were recorded in the remainder of the district.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Aceria parapopuli (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam	Loon and Smoothstone lakes	Light populations on both species of trees.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white	Matheson and Jumbo lakes, Goodsoil and Mont Nebo	Single larva; no visible defoliation.
Anoplonyx canadensis (Htgn.) (A sawfly)	Tamarack	Lac des Jones and Jeanette Lake	Very light; found in association with larch sawfly.

Insect	Host(s)	Locality	Remarks
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	Entire district	Very low populations; no noticeable damage.
Archips cerasivoranus (Fitch) (Ugly-nest caterpillar)	Cherry, choke Rose	Southern portion of the district	Heavy along fence rows at Peerless and Bodmin, light in remainder of areas.
Arge clavicornis (Fab.) (A sawfly)	Willow Alder Fir, balsam	Throughout the district	Common, but populations low and damage negligible.
Badebecia urticana Hbn. (A leaf roller)	Birch, white Aspen, trembling Cherry, choke	Throughout the district	Low populations; leaf rolling light in all areas.
Campaea perlata (Gn.) (Fringed looper)	Aspen, trembling Willow	Buffalo Narrows and Delorande Lake	Low populations; no serious damage.
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white	Erinferry, Hawkeye and Loon Lake	Low populations; light damage.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Central portion of the district	Common; damage light.
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Aspen, trembling	Meota, Bolney, Vawn and Loon Lake	Low populations; no appreciable damage.
Chrysomela crotchi Brown (A leaf beetle)	Aspen, trembling	Throughout the district	A trace of damage in all areas.
Chrysomela knabi Brown (A leaf beetle)	Poplar, balsam	Keeley and Dore lakes	Trace; no conspicuous damage.
Epinotia solandriana Linn. (A leaf roller)	Aspen, trembling Birch, white	Mont Nebo; Peck and Jeanette lakes	Some light leaf rolling evident.
Fenusa dohrnii (Tisch.) (European alder leaf miner)	Alder	Throughout the district	Light damage in most areas, occasionally moderate.
Hemichroa crocea (Fourcroy) (Striped alder sawfly)	Alder	Loon Lake Beach, Mistohay Lake, Beaupre Creek and Smoothstone Lake	Light defoliation to individual thickets along lake shores and creek banks.

Insect	Host(s)	Locality	Remarks
Malacosoma lutescens (N. & D.) (Prairie tent caterpillar)	Cherry, choke Willow	Kilwinning, Mont Nebo, Ordale, Nelson Hill Tower, Smoothstone Lake and Frenchman's Butte	Low populations.
Messa populifoliella (Townsend) (A leaf mining sawfly)	Poplar, balsam Aspen, trembling	Pierceland, Keeley Lake, Rabbit Hill Tower and Dore Lake	Light blotching of leaves in all areas.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Throughout the district	Low populations.
Nematus limbatus Cress. (A willow sawfly)	Willow	Entire district	Populations low.
Nematus populi Marl. (A sawfly)	Willow Poplar, balsam	Round and Dore lakes	Light defoliation to isolated clumps and regeneration trees.
Nematus ventralis Say (A sawfly)	Aspen, trembling Willow	Loon Lake, Loon River and Smoothstone Lake	Low populations; light defoliation.
Neodiprion abietis complex (Balsam-fir sawfly)	Spruce, white Fir, balsam	Delorande, Pinehouse and Kazan lakes	Two islands on Kazan Lake severely defoliated; trace of defoliation at Delorande and Pinehouse lakes.
Nymphalis antiopa (L.) (Mourning cloak butterfly)	Aspen, trembling Willow	Loon and Dore lakes	Light defoliation of single trees.
Oberea schaumi Lec. (Poplar twig borer)	Aspen, trembling	Marchant Grove, Paradise Hill and Loon Lake	Small scattered collections on regeneration and young growth.
Pemphigus populi-transversus Riley (Poplar petiole gall aphid)	Poplar, balsam Aspen, trembling	Throughout the district	Galls common; a trace of damage.
Petrova albicapitana (Busck) (Pitch nodule maker)	Pine, jack	Throughout the district	Low populations; light damage, mainly regeneration.

Insect	Host(s)	Locality	Remarks
Phyllocolpa spp. (Leaf folding sawflies)	Poplar, balsam Willow Aspen, trembling	Throughout the district	P. nr. agama found more commonly than P. nr. nigrata and P. nr. robusta. Low populations causing only light damage to individual regeneration.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Throughout the district	A trace of damage in all areas.
Phytophaga rigidae (O.S.) (Beaked willow gall fly)	Willow	Throughout the district	Light damage.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white	Jumbo, Smooth-stone and Clark lakes	Found in conjunction with Pikonema alaskensis; very low populations.
Pissodes strobi (Peck) (White-pine weevil)	Pine, jack Spruce, white and black	Highway #155, Dore Lake Road, Otter Creek Trail, Horse-head Tower and Sharp Lake	Leader damage very light in all areas.
Pissodes terminalis Hopping (Lodgepole terminal weevil)	Pine, jack	Loon Lake, Lac la Plonge and Otter Creek Trail	Very light damage.
Pleroneura borealis Felt (Balsam shoot-boring sawfly)	Fir, balsam	Buffalo Narrows and 22 miles north of Big River	Light damage to new shoots in lower crowns.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Throughout the district	Low populations; very little damage.
Saperda calcarata Say (Poplar borer)	Aspen, trembling	Throughout the district	Highest populations in the southern areas.
Saperda concolor Lec. (Poplar-gall saperda)	Willow	Redfield, Kil-winning and Loon Lake	Moderate infestation at Redfield; light elsewhere.

Insect	Host(s)	Locality	Remarks
Semiothisa bicolorata Fabr. (A geometrid)	Pine, jack	Big River, Pierceland and Beauval	Low populations; light damage.
Trichiocampus irregularis (Dyar) (A sawfly)	Willow Poplar, balsam	Worthington, Peck, Loon, Jeanette lakes and at Iron Springs	Light defoliation on individual trees.
Trichiosoma triangulum Kby. (A sawfly)	Willow Alder Poplar, balsam	Cold, Clark and Smoothstone lakes and at Nelson Hill Tower	Very low populations; a trace of defoliation.

DISEASE CONDITIONS

MISTLETOE OF JACK PINE, Arceuthobium americanum Nutt. ex Engelm.:- Surveys for this disease were intensified in 1967 and a number of new locations were recorded. Infections were widely distributed along Highway 155 between Green Lake and Buffalo Narrows, with the most severe occurring between miles 42 and 80. A. americanum was recorded for the first time at Sharps and Bug lakes, Lac des Jones, Lac Huard and at the Martineau River Crossing north of Cold Lake.

SPRUCE NEEDLE RUSTS, Chrysomyxa spp.:- A considerable decline of needle rust infections occurred throughout the district. Chrysomyxa ledicola, (Peck) Lagerh. and Chrysomyxa ledi (Alb. & Schw.) deBary, were both collected but in all instances only single needles were infected. However, both species were prevalent on the alternate host, Labrador Tea.

YELLOW WITCHES' BROOM OF SPRUCE, Chrysomyxa arctostaphyli Diet.:- Brooms were common in most black spruce stands examined with the heaviest infections usually occurring in the northern areas. Brooming of white spruce was less evident and in all instances only single brooms were found.

LEAF AND SHOOT BLIGHT OF POPLARS, Pollaccia radiosa (Lib.) Bald. & Cif:- his pathogen was commonly found throughout the district, however, the number of infected shoots per tree were considerably lower than in 1966. wo special study plots were established in 1966 to study the recurrence and effect of this disease on trembling aspen reproduction. Twenty trees were tagged and the number of new shoots were recorded as healthy or infected. The plots were retallied this season and the results are summarized in Table II.

TABLE II

Location and size of plot	Year	Percent of trees infected	Percent current shoots infected
Goodsoil 46.5' x 46.5'	1966	100	5.67
	1967	100	2.98
Nelson Hill 46.5' x 46.5'	1966	90	1.83
	1967	53	0.76

A BARK FUNGUS, Caliciopsis calicioides (Ellis & Ev.) Fitzp:- This fungus was commonly found on bark of mature or semi-mature balsam poplar throughout the northern half of the district. In most instances, only several trees in an area were affected except in the Canoe and Jeanette lakes areas, where practically all trees examined were found to be affected.

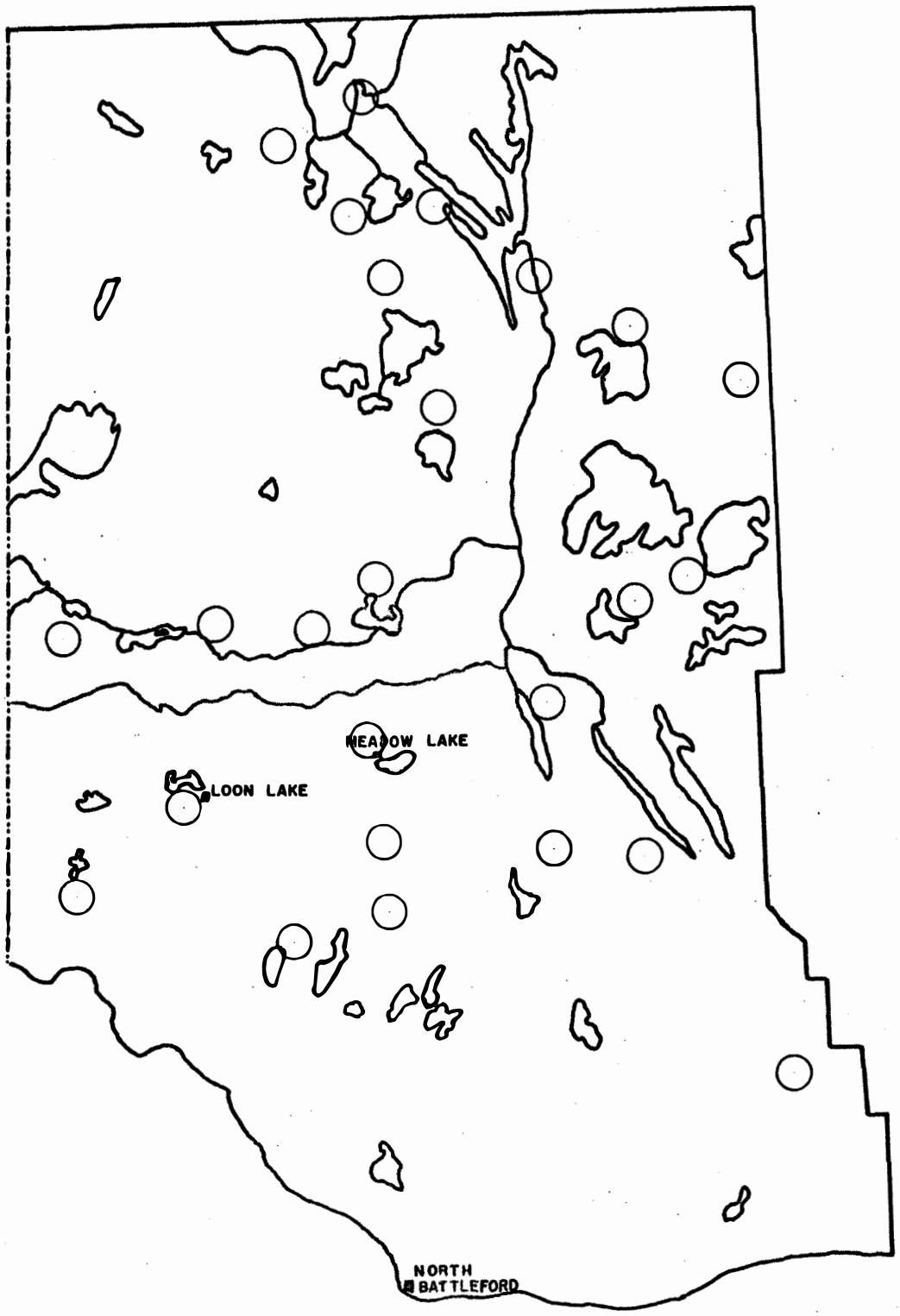
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina collinsii (Schw.) Hohn (A witches'broom)	Saskatoon	Canwood, Mont Nebo; Loon, Dore and Ministikwan lakes	Common in all areas but infections light.
Chrysomyxa pirolata Wint. (Spruce cone rust)	Spruce, black	Smoothstone Lake	Single collection.
Ciborinia foliicola (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Isle-a-la-Crosse, and Nelson Hill Tower	Trace on single clumps.
Ciborinia whetzelii Seaver (Ink spot of aspen)	Aspen, trembling	Mile 32 on Hwy. 155; 3 miles west of Big River and 12 miles west of Big River	Only individual leaves affected in all areas.
Cronartium comandrae Peck (Elongated rust galls)	Pine, jack Comandra, pale	Mile 40 on Hwy. 155, Golden Ridge, Beacon Hill, Steeles Narrows, Jct. Beaver River and Hwy. 55, Matheson Lake and Goodsoil	Light infections causing little damage; also found on alternate host, Pale comandra at Steeles Narrows.

Organism and Disease	Host(s)	Locality	Remarks
Dendryphiopsis atra (Cda.) Hughes (A bark fungus)	Poplar, balsam	Canoe, Brightsand and Delorande lakes	Found in conjunction with C. calicioides; trace in all areas.
Diplodia tumefaciens (Shear) Zalasky (Band galls)	Aspen, trembling	Smoothstone Lake, 4 miles southwest of Loon Lake, Loon Lake Beach, mile 32 on Hwy. 155, Martineau River	Bark severely infected on 41 out of 50 trees at Smoothstone Lake; light infections elsewhere.
Drepanopeziza populorum (Desm.) Hohn (Leaf spot)	Aspen, trembling	Throughout the district	Light infections in most areas; a pocket of severe infection between Erinferry and Big River.
Fomes fomentarius (L. ex Fr.) Kickx (White mottled rot)	Birch, white Aspen, trembling Poplar, balsam	Buffalo Narrows, 20 miles north of Big River, Smoothstone Lake, Sharps Lake and Martineau River	Common on older trees.
Fomes igniarius (L. ex Fr.) Gill (White trunk rot)	Aspen, trembling Birch, white	Meetoos, Buffalo Narrows; Smoothstone, Loon, Keeley, Clark, Dore, Jeanette and Cold lakes	Conks common on older trees in most stands.
Fomes pinicola (Swartz) Cke. (Brown cubical rot)	Spruce, white Birch, white	Meetoos, Bronson Lake, Michel Point, Smith Island-Dore Lake, Cold Lake-Primrose Lake area	Common, infections light.
Hemimyriangium betulae Reid & Pirozynski (A tar spot)	Birch, white and scrub	Buffalo Narrows; Smoothstone, Sled, Clark, and Loon lakes	Common but light in all areas;trace of damage.
Hypodermella nervata Darker (A needle cast)	Fir, balsam	Island Lake	Trace of damage on old foliage.
Hypoxylon fuscum (Pers. ex Fr.) Fr. (A canker)	Alder Willow	Delorande Lake, Cold River and Martineau River	Very light in all areas.

Organism and Disease	Host(s)	Locality	Remarks
Hypoxylon mammatum (Wahl) Miller (A canker)	Aspen, trembling Willow Alder	Throughout the district	Light with an occasional pocket of moderately infected aspen.
Libertella betulina Desm. (A dieback)	Birch, white	Cold and Loon lakes, Martineau River	Very light d eback in all areas.
Linospora tetraspora Thompson (Leaf blight)	Poplar, balsam Aspen, trembling	Throughout the d strict	Very light infections causing early leaf fall.
Lophodermium pinastri (Schrad. ex Fr.) Chev. (A needle cast)	Pine, jack	Mile 48 Hwy. 155, Jeanette Lake, 10 miles west of Big River	Collected mainly on standing trees.
Melampsora bigelowii Thum (Larch-willow rust)	Willow	Throughout the district	Very light, occasional clump moderately infected.
Melampsora medusae Thum (Larch-aspen rust)	Aspen, trembling	Pierceland area	A small pocket of light infection.
Melampsoridium betulinum (Pers.) Kleb. (A rust)	Birch, scrub	Loon Lake area	Trace causing some early leaf fall.
Melampsorella caryophyllacearum Schroet. (Witches' broom)	Fir, balsam	Canoe and Dore lakes	Single brooms in both areas.
Peridermium harknessii J. P. Moore (Globose rust gall)	Pine, jack	Jeanette, Jumbo, Kimball and Canoe, lakes; mile 18 on Hwy. 155, Divide Tower	Light in all areas except in the Divide Tower area where some trees were moderately infected.
Pollaccia elegans (Serv.) (Poplar shoot blight)	Poplar, balsam	25 miles northwest of Big River, 13 miles southwest of Loon Lake, and at Sharp and Dore lakes	Light infections to individual shoots on reproduction.
Rhytisma salicinum (Pers.) Fr. (Tar spot on willow)	Willow	Throughout the district	Light infections causing little damage.

Organism and Disease	Host(s)	Locality	Remarks
Septoria betulicola Pk. (Leaf spot)	Alder Birch, white	Mile 32 Hwy. 155 and Smoothstone Lake	Moderate to severe on birch at Smoothstone Lake. Trace on alder at mile 32.
Septoria musiva Pk. (A leaf blight)	Poplar, balsam	Throughout the district	Light in all areas.
Septoria shepherdiae (Sacc.) Desm. (Leaf spot)	Berry, buffalo	Steeles Narrows	Very light. A new host record.
Tryblidiopsis pinastri (Fr.) Karst. (A saprophyte)	Spruce, white and black	Throughout the district	More common on white spruce, otherwise light.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Throughout the district	Common but light in all areas.
Wallrothiella arceuthobii (Pk.) Sacc. (A hyperparasite)	Arceuthobium americanum	Mile 48 Hwy. 155 2 miles north of Cold River Bridge, 8 miles northeast of Chitik Lake, and at Dore, Jeanette, Bug and Sharp lakes	Light infections on mistletoe plants.



WESTERN MIXEDWOOD DISTRICT

FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS-

1967

Light ○

WESTERN PRAIRIE DISTRICT

SASKATCHEWAN

1957

by

A. N. Simpson

INTRODUCTION

Forest insect and disease surveys in the Western Prairie District commenced in mid-May and terminated in the latter part of September. During this time, 459 insect and 113 disease collections were submitted to the Winnipeg laboratory. Survey sub-projects continued were: (1) a white grub survey; (2) tree disease studies in permanent plots; and (3) a small mammal population survey in the Cypress Hills Provincial Park.

The large aspen tortrix was again responsible for moderate to severe defoliation of trembling aspen in the Cypress Hills Provincial Park. Farm shelterbelts were severely defoliated by the fall cankerworm. Infestations of a poplar leaf mining sawfly, Messa populifoliella (Townsend) increased, and populations of the poplar bud-gall mite remained high. Shoot blight of trembling aspen was widespread but decreased in intensity.

INSECT CONDITIONS

PINE NEEDLE SCALE, Phenacaspis pinifoliae (Fitch):- Moderate infestations occurred in white spruce shelterbelts in the Wymark area and at the Swift Current Experimental Farm. Light infestations were recorded on lodgepole pine as well as white spruce in the Cypress Hills Provincial Park.

FALL CANKERWORM, Alsophila pometaria (Harr.):- Severe defoliation of many Manitoba maple and elm farm shelterbelts occurred throughout the district (Figure 1). Moderate to severe defoliation was recorded at Asquith, Laura, Stewart Valley, Success and Swift Current and light to moderate in the Warman, Liberty and Cardell areas.

Frequently associated with the fall cankerworm was the linden looper, Erannis tiliaria (Harr.), and the spring cankerworm, Paleacrita vernata (Peck), but no significant defoliation was attributed to this species.

LARGE ASPEN TORTRIX, Choristoneura conflictana (Wlk.):- Populations of this insect continued at infestation levels throughout the Cypress Hills Provincial Park. The most severe defoliation was observed in the Park Block, the southwest portion of the East Block and, southwest of and including the Battle Creek area in the West Block. Elsewhere, scattered, isolated stands showed light to moderate defoliation.

Several samples were also taken in the Meacham and Rutland areas in the northern half of the district, but defoliation was very light.

POPLAR BUD-GALL MITE, Aceria parapopuli (Keifer):- Moderate to severe infestations of this gall mite were recorded on hybrid poplars in the Mortlach, Elrose, Laporte, Shackleton, Cabri, Swift Current, and Instow areas. In the Bresaylor, Maymont, and Borden areas, scattered trembling aspen stands were lightly attacked. In the East Block of the Cypress Hills Provincial Park, low populations were recorded in scattered stands of balsam poplar.

COTTONWOOD LEAF MINING BEETLE, Zeugophora scutellaris Suffr.:- Populations of this leaf miner were generally light over most of the district. However, moderate to severe damage was recorded on hybrid poplars at the Trans-Canada Camp Grounds near Maple Creek, and north in the vicinity of Lancer. Light populations were noted on scattered trembling aspen in the Maple Creek area.

A LEA MINING SAWFLY, Messa populifoliella (Townsend):- A considerable increase in populations of this sawfly was recorded in 1967. Light to moderate damage was noted on hybrid poplars, and in some instances, on balsam poplar.

PRAIRIE TENT CATERPILLAR, Malacosoma lutescens (N. & D.):- Moderate defoliation of scattered choke cherry and rose bushes occurred in the northern half of the district. Heavy concentrations of tents were recorded in the Outlook, Dundurn, and Borden areas and on rose bushes in the Cypress Hills Provincial Park, particularly in the West Block.

UGLY-NEST CATERPILLAR, Archips cerasivoranus (Fitch):- Moderate infestations on scattered clumps of choke cherry were recorded in the Birsay, Outlook, and Dundurn areas. An occasional collection was also made from rose bush but damage was very light.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Acronicta spp. (Dagger moths)	Caragana Maple, Manitoba	Instow and Val Marie	Very low populations; no damage. Species recorded were: A. americana Harr., and A. dactylina Grt.
Altica populi Brown (Poplar flea beetle)	Poplar, balsam	Baldwinton	Very light defoliation on reproduction.
Archips negundanus Dyar (A leaf roller)	Maple, Manitoba	Throughout the district	Light defoliation, frequently associated with fall cankerworm.
Arge clavicornis (Fab.) (A sawfly)	Willow	Cypress Hills Provincial Park	No noticeable defoliation.
Brachyrhinus ovatus (Linn.) (Strawberry root weevil)	Pine, lodgepole	Mortlach	No appreciable damage.

Insect	Host(s)	Locality	Remarks
Campaea perlata (Gn.) (Fringed looper)	Caragana Aspen, trembling	Borden and Wood Mountain	Low populations; no damage.
Cecidomyia negundinis Gill (Boxelder gall midge)	Maple, Manitoba	Throughout the district	Light infestations.
Choristoneura fumiferana (Clem.) (Spruce budworm)	Spruce, white	Cypress Hills Provincial Park	A trace of damage on current growth.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	Maple, Manitoba Poplar Caragana Cherry, choke Elm,	Cardell, Assiniboia, Zealandia, and Dundurn	No visible defoliation; frequently associated with fall cankerworm.
Chrysomela spp. (Leaf beetles)	Poplar, hybrid	Eastend and Thompson Lake Regional Park	A single collection made of: C. crotchi Brown and C. knabi Brown; no appreciable damage.
Chrysomela scripta F. (Cottonwood leaf beetle)	Caragana Maple, Manitoba	Lafleche and Mortlach	Light infestations.
Compsolechia niveopulvella Cham. (A leaf tier)	Poplar	Lafleche	Trace of damage.
Corythucha elegans (Drake) (A lace bug)	Willow	Cypress Hills Provincial Park	Discoloration of the leaves. Light to moderate damage.
Cyphon variabilis Thumb. (False flower beetle)	Caragana Aspen, trembling Maple, Manitoba	Northern half of the district	Small collections, light damage.
Dichelonyx backi Kby. (Green rose chafer)	Aspen, trembling	Cypress Hills Provincial Park	No apparent damage.
Epicnaptera americana (Harr.) (A lappet moth)	Aspen, trembling Willow	Birsay and Wood Mountain	Populations light.
Epinotia solandriana Linn. (A leaf roller)	Poplar, balsam Willow	Borden Bridge and Baldwinton	Light leaf curling.
Erannis tiliaria (Harr.) (Linden looper)	Poplar Cottonwood Ash, green Maple, Manitoba	Zealandia, Stewart Valley, Swift Current, Mortlach and Cardell	Populations light; found in association with fall cankerworm.

Insect	Host(s)	Locality	Remarks
Eriosoma americanum (Riley) (Woolly elm aphid)	Elm, American	Throughout the district	Common; damage ranged from light to moderate on individual trees.
Galerucella decora (Say) (Gray willow leaf beetle)	Aspen, trembling	Cypress Hills Provincial Park	Single collection; light skeletonizing.
Gonioctena americana (Schaef.) (American aspen beetle)	Aspen, trembling Poplar, balsam Willow	Waseca, Cardell, and Cypress Hills Provincial Park	Trace of damage in all areas.
Gracillaria negundella Cham. (Boxelder leaf roller)	Maple, Manitoba	Stalwart, Zealandia and Stewart Valley	Populations light to moderate.
Halisidota maculata (Harr.) (Spotted tussock moth)	Poplar, balsam Aspen, trembling Maple, Manitoba	Kenaston, Wymark and Cypress Hills Provincial Park	Scattered trees lightly defoliated.
Hypagyrtis nubecularia Gn. (A looper)	Maple, Manitoba Willow	Keller and Cardell	Low populations; no noticeable defoliation.
Itame loricaria Evers. (A looper)	Aspen, trembling Poplar. Willow	Bateman and the Cypress Hills Provincial Park	Trace of defoliation.
Leptocoris trivittatus (Say) (Boxelder bug)	Maple, Manitoba Caragana	Cardell	New collection point; populations light.
Lithocolletis salicifoliella Cham. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Holdfast, Outlook, Pike Lake and Cypress Hills Provincial Park	Leaf mining was light and scattered.
Lopidea dakota (Knight) (Caragana plant bug)	Ash, green Caragana Elm Maple, Manitoba Willow	Throughout the district	Common but usually found in small numbers.
Melanolophia canadaria Gn. (A looper)	Maple, Manitoba	Assiniboia	Light population; no damage.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond gall aphid)	Poplar, hybrid Aspen, trembling	Bresaylor, Kerrobert, Mortlach and Thompson Lake Regional Park	Light infestations on scattered trees; damage light.

Insect	Host(s)	Locality	Remarks
Nematus populi Marl. (A sawfly)	Willow	Cardell and Fiske	Patches of light to moderate defoliation.
Nymphalis antiopa (L.) (Mourning cloak butterfly)	Elm	Outlook	Light defoliation on the occasional tree.
Operophtera bruceata (Hulst) (Bruce spanworm)	Poplar, hybrid Willow Elm Aspen, trembling	Borden, Outlook, Birsay, Swift Current, Wood Mountain, Cardell, and Cypress Hills Provincial Park	Light to moderate damage.
Orsodacne atra (Ahr.) (A leaf beetle)	Poplar Caragana Aspen, trembling	Waseca, Saskatchewan Landing and Bateman	Light infestations; no defoliation.
Pandemis canadana Kft. (A tortricid)	Maple, Manitoba Caragana Poplar, balsam	Shamrock, Shaunavon and Cypress Hills Provincial Park	Light damage on shelterbelts.
Pareophora minuta (MacGillivary) (Ash sawfly)	Ash	Biggar and Waseca	Very light defoliation.
Pemphigus populicaulis Fitch (A gall aphid)	Poplar, balsam	Cypress Hills Provincial Park	Light gall infestations on the occasional tree.
Pemphigus populitransversus Riley (Transverse poplar petiole gall)	Poplar, balsam Cottonwood, plains	Waseca, Outlook, Birsay, Clearwater Lake Regional Park, Mortlach and Cypress Hills Provincial Park	Low populations; light damage.
Phyllocolpa spp. (Sawfly spp.)	Poplar, hybrid Aspen, trembling	Waseca, Wilbert, Elrose, Swift Current Experimental Farm, Kincaid, Thompson Lake Regional Park and Wood Mountain	Populations of P. nr. agama; P. nr. nigrata; and P. nr. robusta were light.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Elm	Throughout the district	Occasional tree heavily infested in the Cypress Hills Provincial Park; elsewhere, damage was light.

Insect	Host(s)	Locality	Remarks
Phytophaga rigidae (O. & S.) (Beaked willow gall fly)	Willow	Waseca and Biggar	Individual trees lightly infested.
Pikonema alaskensis (Roh.) (Yellow-headed spruce sawfly)	Spruce, white	Waseca and Cypress Hills Provincial Park	Low populations; light defoliation.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, Colorado	Waseca	Low populations; negligible damage.
Proteoteras willingana (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the district	Fairly low populations, damage light.
Saperda calcarata (Say) (Poplar borer)	Aspen, trembling	Bresaylor and Dundurn	Moderate to heavy populations in scattered woodlots.
Saperda concolor Lec. (Poplar-gall saperda)	Willow	Waseca, Bresaylor, Adanac, Tramping Lake, Fiske and Dundurn	Moderate to severe infestations in the Dundurn area; elsewhere, light to moderate.
Saperda populnea moesta Lec. (Poplar twig borer)	Poplar, balsam	Waseca and Baldwinton	Light damage to scattered woodlots.
Sciaphila duplex Wlshm. (Leaf roller)	Aspen, trembling	Cypress Hills Provincial Park	Damage light.
Tetralopha aplastella Hlst. (Aspen webworm)	Aspen, trembling	Kenaston and Cypress Hills Provincial Park	Infestations light; damage insignificant.
Zeiraphera fortuana Kft. (Spruce bud moth)	Spruce, white	Cypress Hills Provincial Park	Damage negligible.

DISEASE CONDITIONS

CYTOSPORA CANKER, Cytospora spp.:- This canker was collected from trembling aspen, hybrid poplar, ash, Manitoba maple, and willow. In the Biggar and Elrose areas hybrid poplar shelterbelts were moderately to severely infected; whereas Manitoba maple and ash were only moderately infected. Aspen stands in the Kenaston, Kerrobert, and Chaplin areas were lightly infected and the incidence per tree was low. A localized area of light infection on willow was recorded at Fiske.

WHITE TRUNK ROT, Fomes igniarius (L. ex Fr.) Gill:- Light infections of this disease were observed in the Bresaylor, Dundurn, Swanson, Pike Lake, and Laura areas in trembling aspen woodlots. In the Cypress Hills Provincial Park this disease infected the occasional mature tree.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl.) Miller :- Infections of this canker were fairly well distributed over the entire district. Infections ranged from light to moderate in trembling aspen stands and very light on isolated willow clumps in the Cypress Hills Provincial Park.

LEAF AND TWIG BLIGHT OF POPLARS, Pollaccia radiosa (Lib.) Bald. & Cif. and Pollaccia elegans Serv.:- The blight of trembling aspen, P. radiosa, was very common over the district with infections ranging between 10 and 60 percent. The heaviest infections were recorded in the Outlook and Kenaston areas but light infections were also recorded in the Neilburg, Biggar, Macklin Lake, Richard, Kerrobert, and Cypress Hills Provincial Park areas.

P. elegans was found on balsam poplar reproduction in the Baldwinton area and nearly all of the reproduction was infected.

A permanent study plot of P. radiosa has been established in the Cypress Hills Provincial Park. During the past season, considerable defoliation from large aspen tortrix was recorded in the plot which may have helped reduce the P. radiosa infection. Current shoot counts from the past two years are summarized and are presented in the following table:

Locality	Year	Percent of trees infected	Percent of current shoots infected
Cypress Hills	1966	100	64.1
Provincial Park	1967	85	1.4

DIEBACK, Stigmina negundinis (Bert. & Curt.) M. B. Ellis:- Shelterbelts and natural stands of Manitoba maple were frequently infected with this dieback. The infection was recorded as light to moderate in each case and was associated with some herbicide and drought damage. Areas infected were: Biggar, Dundurn, Fiske, Moose Jaw, Courval, Assiniboia, Instow, Gull Lake and Cardell.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina collinsii (Schw.) Hohn (Witches'broom)	Saskatoon	Bresaylor	Light infection on individual clump.
Atropellis piniphila (Weir) Lohman and Cash (Atropellis canker of pine)	Pine, lodgepole	Cypress Hills Provincial Park	Occasional tree infected with this canker.
Camarosporium caragana Karst. (Slash fungus)	Caragana	Luseland, Biggar, Hodgeville and Eastend	Scattered light infections.
Chrysomyxa arctostaphyli Diet. (Witches' broom)	Spruce, white	Cypress Hills Provincial Park	A few brooms on individual trees.
Ciborinia foliicola (Cash and Davidson) Whetzel (Black rib of willow)	Willow	Cypress Hills Provincial Park	Localized patches moderately infected.
Cronartium comandrae Peck (Comandra blister rust)	Pine, Scots	Waseca	One tree heavily infected.
Cryptochaete rufa (Fr.) Karst. (Slash fungus)	Aspen, trembling	Northern portion of the district and the Cypress Hills Provincial Park	This fungus was common in trembling aspen stands.
Cytospora sp.	Maple, Manitoba	Assiniboia	Associated with light twig and branch dieback.
Diplodia fraxini F. (Slash fungus)	Ash	Saskatchewan Landing	Damage of up to 50 percent at this location.
Fomes fomentarius (L. ex Fr.) Kickx (White mottled rot)	Birch	Swanson	A single collection.
Melampsora bigelowii Thum. (A larch-willow rust)	Willow	Cypress Hills Provincial Park	Occasional patch lightly infected.
Melampsora occidentalis Jacks. (A rust)	Poplar, hybrid	Elrose and Biggar	Light infection in one large shelterbelt at Elrose.

Organism and Disease	Host(s)	Locality	Remarks
Otthia hypoxylon (Ell. & Ev.) Shear (Slash fungus)	Maple, Manitoba	Dundurn	Light stem infection.
Peridermium harknessii J. P. Moore (Globose rust of pine)	Pine, lodgepole	Cypress Hills Provincial Park	Light infection on a few trees.
Septoria negundinis Ell. & Ev. (Slash fungus)	Maple, Manitoba	Cantuar	Light infection on one tree.
Sphaeropsis albescens Ell. & Ev. (Dieback)	Maple, Manitoba	Dundurn, Fiske, Leader, and Gull Lake	Heavy branch and twig mortality.
Tubercularia ulmea (Carter) (Dieback)	Caragana Maple, Manitoba	Waseca, Dundurn, Fiske, Cantuar, and Stewart Valley	Common in these areas, damage moderate.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Aspen, trembling	Cypress Hills Provincial Park	Moderate infection on approximately 50 percent of the trees.

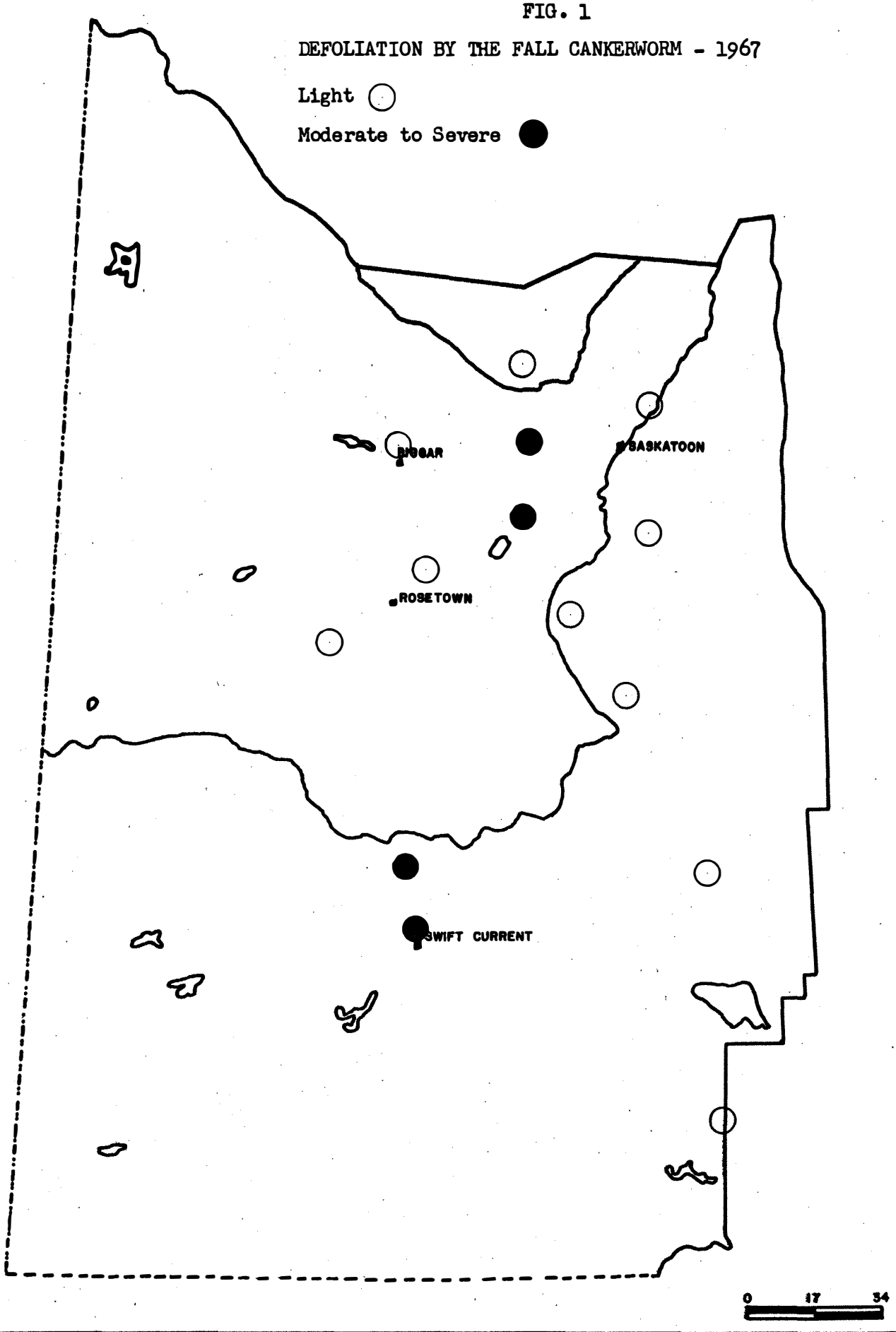
WESTERN PRAIRIE DISTRICT

FIG. 1

DEFOLIATION BY THE FALL CANKERWORM - 1967

Light ○

Moderate to Severe ●



CENTRAL PRAIRIE DISTRICT

SASKATCHEWAN

1967

by

M. J. Homann

INTRODUCTION

This report deals with insect and disease conditions on shade trees, farm shelterbelts and natural forest, in the Central Prairie District. Although temperatures were near normal, less than average rainfall hampered tree development and contributed to drought conditions throughout much of the district.

Surveys were carried out from mid-May to mid-September during which time 435 insect and 245 disease collections were submitted for identification. In addition to general sampling and collections, the following survey subprojects were carried out: (1) collections to determine the distribution of white grubs; (2) retally of Pollaccia radiosa (Lib.) Bald. and Cif. plots for incidence and distribution in forest stands; and (3) small mammal population surveys.

The spruce sawfly was widely distributed throughout the district and caused moderate damage to scattered white spruce shelterbelts. Leaf miners on trembling aspen and hybrid poplars were common, causing light to moderate damage and populations of the fall canker worm declined.

Poplar twig blight was prevalent throughout the district but infections were usually light.

INSECT CONDITIONS

POPLAR BUD-GALL MITE, Aceria parapopuli (Keifer):- Twigs of trembling aspen were lightly infested at Duval, Watson, Muenster, Melville, Churchbridge and in the Good Spirit and Moose Mountain Provincial parks. It was more prevalent on hybrid poplars than on aspen at Radville, Bengough and throughout Rowan's Ravine Provincial Park.

FALL CANKERWORM, Alsophila pometaria (Harr.):- Low populations and light defoliation were recorded on Manitoba maple and white elm at Muenster and Weyburn. High populations occurred in a Manitoba maple shelterbelt at Carlyle where chemical control operations were undertaken.

UGLY-NEST CATERPILLAR, Archips cerasivoranus (Fitch):- Low populations and light feeding damage to individual choke cherry bushes occurred throughout the district. Numerous pockets of localized defoliation were noted on choke cherry at Lampman, Kelliher, and between Round Lake and Marieval in the Qu'Appelle Valley. A parasite, Macrocentrus cerasivoranae Vier. was collected along with A. cerasivoranus at Willow Bunch.

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- Damage to current needle growth was light to moderate on white spruce at Melfort, while at Wadena, Muenster, Goodeve, Weyburn, and the Indian Head Tree Nursery populations were low and damage negligible.

PRAIRIE TENT CATERPILLAR, Malacosoma lutescens (N. & D.):- Scattered pockets of moderately defoliated choke cherry were recorded between Montmarte and Sintaluta and throughout the Qu'Appelle Valley; elsewhere defoliation was light. The principal host of this insect was choke cherry followed by Saskatoon, willow and rose.

LEAF MINING SAWFLY, Messa populifoliella (Townsend):- Hybrid poplars appeared to be more susceptible to attack by this insect; the occasional shelterbelt was moderately infested at Rowan's Ravine Provincial Park and the Indian Head Tree Nursery. Light leaf mining damage occurred at Weyburn, Bengough, Carievale, McLean, Leross, Wadena, and Moose Mountain Provincial Park on hybrid poplar and trembling aspen.

SPRUCE SPIDER-MITE, Oligonychus ununguis (Jac.):- Light to moderate infestations were noted on white spruce at Milestone and on black spruce at Rhein. Elsewhere, populations were low.

PINE NEEDLE SCALE, Phenacaspis pinifoliae (Fitch):- Light to moderate infestations occurred on white spruce at Creelman and Yorkton and on Scots pine and white spruce in the Indian Head Tree Nursery. Low populations were present elsewhere.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh):- Populations were high on white spruce shelterbelts at Davin, Lemberg, and Mikado. Chemical control measures using malathion were undertaken but not before moderate defoliation had occurred. Elsewhere, light damage to white spruce was recorded at Oxbow, Moose Mountain Provincial Park, Creelman, Indian Head Tree Nursery, Goodeve, Muenster, Archerwill, Churchbridge, and Good Spirit Provincial Park.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white	Muenster	A single larval collection.
Acraspis villosa Gill. (Hairy oak gall)	Oak, bur	Indian Head Tree Nursery, Oxbow, and Qu'Appelle Valley north of Whitewood	Occasional galls on a few trees.
Acronicta spp. (Dagger moths)	Aspen, trembling Poplar, balsam Maple, Manitoba Birch, white Ash, green Oak, bur	Oxbow, Moose Mountain Provincial Park, Whitewood, Creelman and Muenster	Low populations causing slight damage. Species listed in order of abundance: A. grisea Wlk., A. innotata Gn., and A. leporina Linn.
Altica populi (Brown) (A flea beetle)	Poplar, balsam	Waldron, Marieval, and Good Spirit Provincial Park	Light infestation on scattered individual trees.

Insect	Host(s)	Locality	Remarks
Aphid spp.	Aspen, trembling Maple, Manitoba Poplar, balsam Willow Spruce, white Caragana	Entire district	Populations high at Willow Bunch Regional Park where spraying operations were undertaken on Manitoba maple. Leaves lightly infested elsewhere.
Archips negundanus Dyar (A leaf roller)	Maple, Manitoba Ash, green	Muenster, Goodeve, Marieval, Wadena, Creelman and Weyburn	Low populations causing very light damage.
Archippus packardianus Fern. (A leaf roller)	Spruce, white	Wadena, Good Spirit Provincial Park and Indian Head Tree Nursery	Low populations; a trace of damage.
Arge clavicornis (Fab.) (A sawfly)	Birch, white Poplar, balsam Willow	Muenster and Moose Mountain Provincial Park	No appreciable damage.
Badebecia urticana Hbn. (A leaf roller)	Aspen, trembling Maple, Manitoba Willow Poplar, balsam Birch, white	Entire district	Generally low populations; light damage.
Biston cognataria (Gn.) (Pepper-and-salt moth)	Aspen, trembling Maple, Manitoba Caragana	Wadena, Goodeve, Marieval, and Indian Head Tree Nursery	No damage.
Calligrapha alni (Schffr.) (A leaf beetle)	Willow	Meacham	A single larval collection.
Campaea perlata (Gn.) (Fringed looper)	Poplar, balsam Aspen, trembling Maple, Manitoba Birch, white	Wadena, Leross, Goodeve, Indian Head Tree Nursery and Moose Mountain and Good Spirit Provincial parks	Generally low populations; light damage.
Cecidomyia negundinis Gill (Boxelder gall midge)	Maple, Manitoba	Bengough, Willow Bunch, Indian Head Tree Nursery and Marieval	Occasional galls on a few trees.

Insect	Host(s)	Locality	Remarks
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white	Watson and Archerwill	Single trees lightly infested.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white	Creelman, Regina, Indian Head Tree Nursery, Watson, Archerwill, Melville and Good Spirit and Moose Mountain Provincial parks	Majority of trees moderately infested in Good Spirit Provincial Park.
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Aspen, trembling	Good Spirit Provincial Park	Low populations causing light damage.
Choristoneura pinus pinus Free. (Jackpine budworm)	Pine, jack and Scots	Creelman, Indian Head Tree Nursery, Wolseley, and Muenster	Highest populations on jack pine at Creelman; light damage.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	Aspen, trembling Willow Maple, Manitoba Birch, white Ash, green Elm, white Poplar, balsam Caragana	Entire district	Generally low populations, light leaf rolling.
Chrysomela spp. (Leaf beetles)	Aspen, trembling Poplar, balsam	Broadview; Moose Mountain and Good Spirit Provincial parks	Low populations causing light damage; species listed in order of abundance: C. crotchi Brown, C. knabi Brown and C. scripta F.
Compsolechia niveopulvella Cham. (Leaf tier)	Maple, Manitoba Aspen, trembling	Carlyle and Broadview	No appreciable damage.
Corythucha spp. (Lace bugs)	Oak, bur Willow Elm, white	Estevan, Oxbow, Moose Mountain Provincial Park, Qu'Appelle Valley, and Regina	Generally low populations causing light damage; species listed in order of abundance: C. arcuata (Say), C. cydoniae (Fitch) C. elegans Drake, and C. ulmi (O.&D.)

Insect	Host(s)	Locality	Remarks
Dichelonyx backi Kby. (Green rose chafer)	Aspen, trembling Willow Birch, white Spruce, white	Muenster, Creelman, Moosomin, and Moose Mountain Provincial Park	Generally low populations; trace of damage.
Epicnaptera americana (Harr.) (A lappet moth)	Poplar, balsam	Good Spirit Provincial Park	A single larval collection.
Epinotia solandriana Linn. (A leaf roller)	Aspen, trembling Maple, Manitoba	Goodeve, Creelman and Moose Mountain Provincial Park	Low populations causing light damage.
Eriosoma americanum (Riley) (Woolly elm aphid)	Elm, white	Entire district	Highest populations at Rowan's Ravine Provincial Park and Indian Head Tree Nursery where occasional shelterbelts were moderately infested.
Eufodonia notataria (Wlk.) (A looper)	Tamarack	Wolseley	No appreciable damage.
Eupithecia spp. (Loopers)	Willow Spruce, white Aspen, trembling Caragana	Muenster, Wadena, and Fairlight	Generally low populations causing light damage; species listed in order of abundance: E. luteata Pack., E. ravocostaliata Pack. and E. filmata Pears.
Feralia jocosa (Guen.) (The green-striped spruce caterpillar)	Poplar, balsam	Marieval	Single larval collection.
Galerucella decora (Say) (The gray willow-leaf beetle)	Willow	Melville and Moose Mountain Provincial Park	Highest populations in Moose Mountain Provincial Park; light skeletonization.
Gracillaria negundella Cham. (The boxelder leaf roller)	Maple, Manitoba	Weyburn, Creelman, Goodeve, Wadena, and Muenster	Low populations causing light leaf rolling damage.

Insect	Host(s)	Locality	Remarks
Halisidota maculata (Harr.) (The spotted tussock moth)	Poplar, balsam Maple, Manitoba Caragana	Wadena, Penzance, Goodeve and Good Spirit Provincial Park	No appreciable damage.
Herculia thymetusalis Wlk. (The spruce needle worm)	Spruce, white	Regina	Light damage to an occasional tree.
Hylobius pinicola Couper (Pine root collar weevil)	Willow	Muenster	Single collection.
Hylurgopinus rufipes (Eichh.) (Native elm bark beetle)	Elm, white	Estevan	Low populations collected from recently dead trees.
Hyphantria cunea (Drury) (Fall webworm)	Maple, Manitoba Elm, white Ash, green	Marieval Regional Park	Populations moderate on Manitoba maple and white elm causing light feeding damage in the upper crowns.
Itame loricaria Evers. (A looper)	Poplar Willow Caragana	Weyburn, Creelman, Indian Head Tree Nursery, Goodeve, and Wadena	Light damage and low populations.
Lecanium coryli L. (Lecanium scale)	Ash, green Elm, white and Chinese Caragana	Lake Alma, Weyburn, Grenfell, Melville, and Rowan's Ravine Provincial Park	Twigs lightly infested on an occasional tree.
Leptocoris trivittatus (Say) (Boxelder bug)	Maple, Manitoba	Oxbow	Numerous beetles on slash trees.
Lithocolletis salicifoliella Chamb. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Wadena, Goodeve, Broadview; Good Spirit and Moose Mountain Provincial parks	Most prevalent in Moose Mountain Provincial Park. Leaves lightly infested elsewhere.
Melanolophia canadaria (Guen.) (A looper)	Maple, Manitoba Willow Ash, green	Weyburn, Creelman, Marieval, Churchbridge, and Meacham	Light feeding damage.
Mordwilkoja vagabunda (Walsh.) (Poplar vagabond aphid)	Aspen, trembling Cottonwood, plains	Entire district	Occasional trees lightly infested.

Insect	Host(s)	Locality	Remarks
Nematus unicolor (Marl.) (A sawfly)	Birch, white Cherry, choke	Willow Bunch and Marieval	Low populations.
Operopthera bruceata (Hulst) (Bruce spanworm)	Aspen, trembling Elm, white Birch, white Ash, green Willow	Wadena, Weyburn, Broadview, and Moose Mountain Provincial Park	Low populations causing a trace of feeding damage.
Pandemis canadana Kft. (A leaf roller)	Most deciduous hosts	Entire district	Populations generally low and widespread causing light leaf rolling damage.
Palthis angulalis (Hbn.) (Spruce harlequin)	Spruce, white Maple, Manitoba	Muenster and Ellisboro	Low populations; no damage.
Parorgyia vagans B. & McD. (A tussock moth)	Aspen, trembling Poplar, balsam Maple, Manitoba Willow	Broadview, Marieval Regional Park and Meacham	No noticeable damage.
Pemphigus populitransversus Riley (Poplar petiole gall aphid)	Poplar, balsam and hybrid	Entire district	Numerous galls at Bengough, Oxbow, Carievale, Watrous, and Buffalo Pound and Rowan's Ravine Provincial parks; light elsewhere.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam and hybrid	Moose Jaw, Goodeve, Touchwood, Leross, Muenster, Churchbridge, Marieval and Moosomin	Leaf mining light on an occasional tree.
Phyllocolpa spp. (Sawflies)	Aspen, trembling Poplar, balsam and hybrid	Goodeve, Penzance, Leross, Wadena, Indian Head Tree Nursery, Good Spirit and Moose Mountain Provincial parks	P. sp. nr. agama most common followed by P. sp. nr. robusta. Low populations; damage negligible.
Phytophaga rigidae (O.S.) (Beaked willow gall fly)	Willow	Entire district	Generally low populations throughout the district.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white	Muenster, Churchbridge, Good Spirit and Moose Mountain Provincial parks	Associated with P. alaskensis (Roh); slight damage.

Insect	Host(s)	Locality	Remarks
Pristiphora erichsonii (Htg.) (Larch sawfly)	Tamarack	Wolseley and Indian Head Tree Nursery	Very light defoliation in both areas.
Protitame virginalis Hlst. (A looper)	Aspen, trembling	Duval, Watrous, and Good Spirit Provincial Park	Low populations causing a trace of feeding damage.
Rhabdophaga batatas Walsh (Willow gall)	Willow	Meacham	Occasional clumps lightly infested.
Saperda calcarata Say (The poplar borer)	Aspen, trembling	Muenster, Marieval, and Good Spirit Provincial Park	Occasional stems lightly infested.
Schizura concinna (J. E. Smith) (Red-humped caterpillar)	Aspen, trembling	Moose Mountain Provincial Park	Low populations causing light damage.
Sciaphila duplex Wlshm. (A leaf roller)	Aspen, trembling	Leross, Invermay, and Good Spirit Provincial Park	Light leaf rolling damage.
Taniva albolineana (Kearfoot) (Spruce needle miner)	Spruce, white	Abernethy and Wadena	Light needle mining on occasional shelterbelts.
Tetralopha aplastella Hlst. (A webworm)	Aspen, trembling Poplar, balsam	Wadena, Marieval, Fairlight, and Moose Mountain Provincial Park	Highest populations at Moose Mountain Provincial Park causing light damage; elsewhere, populations were low.
Trichiosoma triangulum Kby. (A sawfly)	Poplar, balsam Aspen, trembling Ash, green	Muenster, Good Spirit and Moose Mountain Provincial parks	Low populations; no appreciable damage.
Zeugophora scutellaris Suffr. (Cottonwood leaf mining beetle)	Poplar, hybrid	Buffalo Pound Provincial Park	Light leaf mining damage on an occasional tree.

DISEASE CONDITIONS

CYTOSPORA CANKER OF ASPEN:- Due to the possible effect of drought conditions, canker damage appeared to be more prevalent. Moderate canker damage with numerous dead trees occurred in trembling aspen stands at Lake Alma, Weyburn, Duval and Watrous. Light damage to the upper crowns of hybrid poplars occurred in shelterbelts at Drinkwater, Bengough, Creelman, Amulet, Lake Alma and Weyburn Regional Park.

WHITE TRUNK ROT, Fomes igniarius (L. ex Fr.) Gill: - Light infections to trembling aspen were prevalent throughout the northern portion of the district. Collections were made in the grassland area from trembling aspen woodlots at Carievale, Creelman, Claybank and Willow Bunch.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl) Miller:- Although the incidence of this disease remained low, the intensity was higher, with occasional dead trees found in trembling aspen stands at Wadena and Ceylon. Elsewhere, light infections occurred at Willow Bunch and Weyburn.

SHOOT AND TWIG BLIGHTS OF POPLARS, Pollaccia radiosa (Lib.) Bald. & Cif. and Pollaccia elegans Serv.:- egeneration trembling aspen was lightly infected with P. radiosa throughout the district with highest infections in the Moose Mountain Provincial Park. A light infection was recorded on a hybrid poplar shelterbelt at the Moosomin campgrounds. A plot was established in 1966 and counts were continued in 1967 to study the recurrence and effect of this disease. The results are summarized in the following table.

	Percent trees infected		Percent new shoots infected	
Plot no. and location	1966	1967	1966	1967
Last Mountain 01	57	75	18	5
Moose Mountain Provincial Park 01	76	70	5	6

P. elegans Serv. was well distributed throughout the mixedwood region of the district with light infections confined to regeneration balsam poplar.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina collinsii (Schw.) Hohn (Witches'broom)	Saskatoon	Entire district	Numerous brooms at Moosomin campgrounds. Occasional brooms elsewhere.
Ciborinia whetzelli Seaver (Aspen ink spot)	Aspen, trembling	Moose Mountain Provincial Park	A few regeneration lightly infected.

Organism and Disease	Host(s)	Locality	Remarks
Cryptochaete rufa (Fr.) Karst. (Slash fungus)	Aspen, trembling	Entire district	Prevalent on slash causing light infections.
Daedalea unicolor (Bull.) Fr. (Sap and heart rot)	Aspen, trembling Birch, white	Willow Bunch	Occasional slash lightly infected.
Dibotryon morbosum (Schw.) T. & S. (Black knot of choke cherry)	Cherry, choke	Entire district	Infections generally light.
Discella carbonacea (Fr.) Berk. & Br.	Willow	Estevan	Light infection on an occasional clump. Associated with dieback.
Drepanopeziza populorum (Desm.) Hohn. (Leaf spot)	Aspen, trembling	Lake Alma, McLean and Rowan's Ravine Provincial Park	Generally light infections in localized areas.
Fomes fomentarius (L. ex Fr.) Kickx	Birch, white Poplar, balsam	Moose Mountain Provincial Park and along the Qu'Appelle Valley west to Ellisboro	Few conks on an occasional tree.
Fomes fraxinophilus (Peck) Sacc. (Heartwood rot)	Ash, green	Estevan and Echo Valley Provincial Park	Light infection on a few trees.
Fomes pinicola (Schwartz) Cke. (Red belt fungus)	Aspen, trembling	Moose Mountain Provincial Park	Light infection.
Ganoderma applanatum (Pers.) Pat. (Sap and heart rot)	Poplar, balsam Aspen, trembling	Archerwill, Wadena, and the Qu'Appelle Valley (north of Rocanville)	Light infection on slash.
Libertella betulina Desm. (A dieback)	Birch, white	Katepwa	Single collection.
Nectria cinnabarina (Tode ex Fr.) Fr. (Canker and dieback)	Cherry, choke	Marieval Regional Park and Echo Valley Provincial Park	Light infection on an occasional clump.

Organism and Disease	Host(s)	Locality	Remarks
Polyporus pargamenus Fries (Slash fungus)	Aspen, trembling Poplar, balsam	Watrous, Goodeve, Deep Lake, Oxbow, Moose Mountain and Good Spirit Provincial parks	Generally light infection on an occasional slash.
Polyporus tulipiferus (Schw.) Overh.	Birch, white Caragana	Goodeve and Marieval	Light infection.
Rhytisma salicinum (Pers.) Fr. (Tar spot on willow)	Willow	Muenster and Good Spirit Provincial Park	Leaves lightly infected on an occasional clump.
Septoria musiva Pk. (Leaf spot of poplar)	Poplar, balsam	Muenster, Archerwill and Good Spirit Provincial Park	Incidence and intensity low in localized areas.
Trametes hispida Bagl.	Poplar, balsam Aspen, trembling	Leross, Ellisboro and Good Spirit Provincial Park	Light infections.
Tuberculatia ulmea Carter (Dieback)	Elm, Chinese	Weyburn	Incidence low but intensity moderate with a few dead trees in a shelterbelt.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Poplar, balsam Aspen, trembling Willow	Entire district	Incidence moderate at Meacham, Watson, Penzance, Strawberry Lakes and Good Spirit Provincial Park. Light infections elsewhere.
Valsa sp. (Canker)	Aspen, trembling	Lake Alma, Creelman, Buffalo Pound Provincial Park, Watrous and Churchbridge	Light infections on the occasional dead trees.

EASTERN PRAIRIE DISTRICT

MANITOBA

1967

by

P. W. Anderson

INTRODUCTION

The 1967 field season was highlighted by below average rainfall and prolonged hot periods. Field surveys were conducted from early June until the first week of October. Totals of 513 insect and 220 disease collections were submitted to the Forest Research Laboratory in Winnipeg. Approximately 1½ hours of flying time were used to map jack-pine budworm and larch sawfly defoliation.

In addition to general and special collections (aphids for Dr. Bradley and Lithocolletis sp. for Dr. Freeman in Ottawa), a number of insect mass collections were made for parasite studies. These included: fall cankerworm, spruce budworm, jack-pine budworm, and red-humped oak worm.

Populations of the fall cankerworm increased notably over last year along the Red River between Winnipeg and Emerson and in farm shelterbelts in the vicinity of Brandon but declined in the extreme southwestern section of the district. High populations of lace bugs caused serious damage to bur oak and willow throughout Turtle Mountain Provincial Park and at La Riviere. A small but severe infestation of red-humped oak worm occurred at Oak Lake. A notable increase in spruce budworm populations was recorded in the Spruce Woods Provincial Forest and a heavy moth flight suggests a continued increase in populations in 1968. Populations of yellow-headed spruce sawfly, larch sawfly, and all species of leaf beetles declined.

Distribution of annual diseases such as spruce needle rusts and the leaf and shoot blights decreased. Except for a severe infection of Peridermium harknesii J. P. Moore in a plantation of Scots pine near Shilo, the perennial diseases remained unchanged from last year.

INSECT CONDITIONS

FALL CANKERWORM, Alsophila pometaria (Harr.):- Populations of this defoliator increased notably over last year along the Red River and in farm shelterbelts in the vicinity of Brandon but declined in the extreme southwestern section of the district. Manitoba maple and white elm were the preferred hosts but bur oak and green ash were also susceptible.

High populations along the Red River caused moderate to severe defoliation at Emerson, Morris, Ste. Agathe, and along the Roseau River to Dominion City. Severe defoliation occurred on farm shelterbelts at Crystal City, Medora, east of Brandon and throughout a 25-square-mile area around Chater. Severe damage was also recorded within the town limits of Holland and Treherne. Light to moderate infestations were observed at Nesbitt, Souris, Alexander, Brookdale, Hallboro, Oberon, Hallstat, and Letellier. Chemical control measures were observed within the towns of Morris, Emerson, and Brandon.

Mass collections of larvae were made in the vicinity of Emerson and Morris.

LACE BUGS, Corythucha spp.:- A number of species were collected from bur oak, willow, and miscellaneous shrubs. These included: C. elegans Drake, C. mollicula O. & D., C. ulmi O. & D., C. cydoniae (Fitch), and C. arcuata (Say); the latter being the most common. Severe infestations on

bur oak and willow were observed throughout Turtle Mountain Provincial Park and at La Riviere. Moderate discoloration of foliage was recorded at Reston, Souris, Ninette, Newdale, and Starbuck; and light at Minnedosa, Miniota, Oak Lake, Nesbitt, Wawanesa, Neelin, Windygates, Edrans, and along the Red River south of Winnipeg.

RED-HUMPED OAK WORM, Symmerista albicosta (Hbn.):- A small but severe infestation of this insect occurred 10 miles southwest of the town of Oak Lake. Populations were exceptionally high, completely defoliating one to two square miles of bur oak. High larval mortality was observed just prior to pupation but the cause was unknown. A mass collection of larvae was made in the vicinity of Oak Lake beach resort.

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- This species was found in jack and Scots-pine plantations in the Spruce Woods Provincial Forest and in a Scots-pine plantation in Turtle Mountain Provincial Park. Very low populations in Turtle Mountain Provincial Park caused a trace of feeding damage. Populations in the Spruce Woods Provincial Forest were high but a spray program conducted during the latter part of June appeared to reduce populations considerably.

Mass collections for parasite recovery were made in the vicinity of Shilo.

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):- A notable increase in larval populations was recorded in the northwest portion of the Spruce Woods Provincial Forest. Defoliation was generally light but one small area 3 miles northeast of Sewell Lake was of moderate intensity. A heavy moth flight was observed, suggesting a continued increase in population in 1968. Low populations in planted white spruce in Turtle Mountain Provincial Park caused only a trace of damage.

Mass collections for parasite recovery were made immediately north of Sewell Lake.

LEAF ROLLERS ON TREMBLING ASPEN, Tortricid spp.:- Several species of leaf rollers were recorded throughout the district. Light feeding damage occurred at Elm Creek, Lyleton, Elkhorn, Spruce Woods Provincial Forest, Glenboro, Hallboro, Emerson, Miniota, Justice, Ste. Agathe, Dominion City, Beulah, and Turtle Mountain Provincial Park. Species collected include: Archips negundanus Dyar, Archippus packardianus Fern., Sciaphila duplex Wlshm., Pandemis canadana Kft., and Badebecia urticana Hbn.

BOXELDER TWIG BORER, Proteoteras willingana (Kft.):- Damage was present in most Manitoba maple examined in farm shelterbelts, parks, and along riverbanks. Several shelterbelts near Alexander incurred moderate twig mortality. Elsewhere, damage was light.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
Aceria parapopuli (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam Cottonwood, eastern	Lyleton, Brandon Hills, and Spruce Woods Provincial Forest	Several trees heavily infested at Lyleton; only occasional galls elsewhere.
Acleris variana (Fern.) (Black-headed budworm)	Spruce, white	Spruce Woods Provincial Forest	Trace of feeding damage observed at Shilo.
Acraspis villosa Gill. (Hairy oak gall)	Oak, bur	Throughout the district	Galls common; average of 5 percent of foliage infested.
Acronicta spp. (Dagger moths)	Maple, Manitoba Willow Oak, bur Birch, white	Throughout the district	Species collected include: A. americana Harr., A. dactylina Grt., and A. impressa Wlk.; a trace of feeding damage observed at Oak Lake.
Actias luna (L.) (Luna moth)	Birch, white	Turtle Mountain Provincial Park	Low population; light feeding damage on scattered trees.
Agrilus criddlei Frost (A wood borer)	Willow	Emerson, Turtle Mountain Provincial Park, and St. Jean Baptiste	Low population; light damage observed at St. Jean Baptiste.
Altica populi Brown (A poplar flea beetle)	Poplar, balsam	Ingelow, Minnedosa, Spruce Woods Provincial Forest, and Turtle Mountain Provincial Park	Very low populations; a trace of feeding damage at Minnedosa.
Amauronematus sp. (A sawfly)	Poplar, balsam	Beulah, Souris, Minto, Spruce Woods Provincial Forest, and Turtle Mountain Provincial Park	Low population; trace of feeding damage at Beulah, Souris and in Spruce Woods Provincial Forest.

Insect	Host(s)	Locality	Remarks
Anisota virginiensis (Drury) (Pink-striped oak worm)	Oak, bur	Kaleida and Windygates	Light infestation on scattered trees.
Anoplonyx canadensis Hgtn. (A sawfly)	Tamarack	Spruce Woods Provincial Forest	Common but no defoliation.
Anoplonyx luteipes (Cress.) (A sawfly)	Tamarack	Spruce Woods Provincial Forest	Common but no defoliation.
Archips cerasivoranus (Fitch) (Ugly-nest caterpillar)	Cherry, choke	Spruce Woods Provincial Forest	High concentration of tents; light to moderate defoliation on scattered bushes.
Archips fervidanus (Clem.) (Oak webworm)	Oak, bur	Spruce Woods Provincial Forest	One tent collected.
Bucculatrix canadensisella Cham. (Birch skeletonizer)	Birch, white	Turtle Mountain Provincial Park and Beulah	Scattered light to moderate damage throughout Turtle Mountain Provincial Park; light at Beulah.
Cecidomyia negundinis Gill. (Boxelder gall midge)	Maple, Manitoba	Ste. Agathe, Ale ander, and Ingelow	Scattered pockets of light leaf infestations.
Cecidomyid spp. (Gall midges)	Willow Oak, bur Aspen, trembling Maple, Manitoba	Throughout the district	Numerous galls in scattered pockets.
Cerura occidentalis Lint. (A notodontid)	Poplar, balsam Aspen, trembling	Minneodsa and Max Lake	A trace of feeding damage at Max Lake.
Chermes cooleyi Gillette (Cooley spruce gall aphid)	Spruce, white	Spruce Woods Provincial Forest	Light gall infestation on occasional trees.
Chermes lariciatus (Patch) (Spruce pineapple gall aphid)	Spruce, white	Spruce Woods Provincial Forest	Light infestation on scattered trees.

Insect	Host(s)	Locality	Remarks
Choristoneura conflictana (Wlk.) (Large aspen tortrix)	Aspen, trembling	Souris and Spruce Woods Provincial Forest	Moderate damage confined to small patches of one or two acres west of Souris; trace of damage in Spruce Woods Provincial Forest.
Choristoneura rosaceana Harr. (Oblique-banded leaf roller)	On most deciduous tree species	Neepawa, Lyleton, Shoal Lake, Griswold, Crystal City, Alexander, Spruce Woods Provincial Forest, and Turtle Mountain Provincial Park	Light feeding damage on elm, caragana, and willow at Lyleton and Alexander.
Chrysomela crotchi Brown (Aspen leaf beetle)	Aspen, trembling Oak, bur	Beulah, Edrans, Brandon Hills, and Spruce Woods Provincial Forest	Low adult populations, one larval collection; no observable damage.
Cynipid spp. (Gall midges)	Aspen, trembling Maple, Manitoba Oak, bur Cherry, choke Willow	Throughout the district	Leaf and twig galls common at Proven Lake, Emerson, and in the Brandon Hills.
Datana ministra (Drury) (Yellow-necked caterpillar)	Oak, bur	Ninette	Low populations; light defoliation.
Dicerca sp. (Short-horned wood borer)	Aspen, trembling Spruce, white Poplar, balsam Willow	Spruce Woods Provincial Forest, Brandon, Edrans, Sandy Lake, Ninette and Newdale	Low populations of adults.
Dioryctria reniculella (Grt.) (Spruce coneworm)	Spruce, white	Spruce Woods Provincial Forest	One pupa collected.
Disholcaspis spp. (Stem galls)	Oak, bur	Alexander, Minto, St. Norbert, Ninette, Turtle Mountain Provincial Park, and Spruce Woods Provincial Forest	Species collected include: D. globulus Weld, D. spongiosa Karsch, and D. mamma Cress., the latter being very common at St. Norbert where galls infested all shoots on all regeneration.

Insect	Host(s)	Locality	Remarks
Epinotia solandriana Linn. (A leaf roller)	Oak, bur	Spruce Woods Provincial Forest	Low population; no observable damage.
Erannis tiliaria (Harr.) (Linden looper)	Maple, Manitoba Poplar, balsam	Brandon Hills, Moore Park, and Miniota	Low populations; no observable damage.
Eriophyes fraxiniflora (Felt) (Ash flower gall)	Ash, green	Alexander and Portage la Prairie	Moderate infestations at both locations.
Eriosoma americanum (Riley) (Woolly elm aphid)	Elm, white	Throughout the district	Galls common at Souris, elsewhere light.
Galerucella decora (Say) (Gray willow-leaf beetle)	Willow Aspen, trembling	Carberry and Max Lake	Very low populations; no observable damage.
Gonioctena americana (Schaef.) (American aspen beetle)	Aspen, trembling	Brandon Hills	Very low population; no observable damage.
Gracillaria negundella Chamb. (Box-elder leaf roller)	Maple, Manitoba	Emerson, Cartwright, Alexander, and Beulah	Light infestations at Cartwright and Alexander.
Gracillarid spp. (Blotch miners)	Elm Willow Oak, bur	Throughout the district	Light mining damage throughout district.
Halisidota maculata (Harris) (Spotted tussock moth)	Willow Poplar, balsam	Griswold, Ninette, Lyleton, and Spruce Woods Provincial Forest	Damage light at Ninette and Spruce Woods Provincial Forest, negligible elsewhere.
Lecanium corylli L. (Lecanium scale)	Maple, Manitoba Oak, bur Elm, white	Morris, Ste. Agathe, Starbuck, Emerson, St. Norbert, and Alexander	High populations on bur oak at Starbuck and along Red River, elsewhere low.
Lithocolletis salicifoliella Cham. (Aspen blotch miner)	Aspen, trembling Willow	Throughout the district	Low populations; very light damage.
Malacosoma lutescens (N. & D.) (Prairie tent caterpillar)	Cherry, choke	Spruce Woods Provincial Forest, Stockton, and Edrans	Most abundant 7 miles north of Glenboro; light to moderate feeding in localized areas.

Insect	Host(s)	Locality	Remarks
Messa populifoliella (Townsend) (A leaf mining sawfly)	Cottonwood, eastern	Bede and Winnipeg	Light infestation on several ornamental trees.
Mordwilkoja vagabunda (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling	Spruce Woods Provincial Forest, Newdale, Ninette, Killarney, Beulah and Minnedosa	Very light, scattered infestations.
Paleacrita vernata (Peck) (Spring cankerworm)	Oak, bur Maple, Manitoba Willow	Portage la Prairie	Moderate to severe defoliation in localized area 7 miles west of Portage la Prairie.
Parorgyia plagiata (Wlk.) (Grey spruce tussock moth)	Spruce, white	Spruce Woods Provincial Forest	Low populations; no noticeable defoliation.
Pemphigus populi-transversus Riley (Transverse poplar petiole gall)	Poplar, balsam Aspen, trembling Cottonwood, eastern	Widely scattered throughout district	Small pockets of high gall concentrations at Lyleton, Turtle Mountain Provincial Park, Basswood, Souris, and Dunrea; elsewhere light.
Periclista albicolis (Nort) (A sawfly)	Oak, bur	Spruce Woods Provincial Forest	Light damage observed on widely scattered trees.
Phenacaspis pinifoliae (Fitch) (Pine needle scale)	Spruce, white	Spruce Woods Provincial Forest, Turtle Mountain Provincial Park, Emerson, Morris, and Alexander	Very light infestations on individual trees.
Phyllocolpa nr. agama (A sawfly)	Poplar, balsam Cottonwood, eastern Willow	Moore Park, Bede, Lyleton, Souris, Griswold, and Spruce Woods Provincial Forest	Common on regeneration; up to 10 percent curling of shoots.
Phyllocolpa nr. nigrata (A sawfly)	Willow	Spruce Woods Provincial Forest and Ninette	Very low populations; no observable damage.

Insect	Host(s)	Locality	Remarks
Phyllocolpa nr. robusta (A sawfly)	Aspen, trembling Poplar, balsam	Spruce Woods Provincial Forest and Turtle Mountain Provincial Park	Low populations; light damage at both locations.
Phyllocnistis populiella Cham. (Aspen leaf miner)	Aspen, trembling Poplar Cottonwood, eastern	Throughout the district	Moderate infestations on trembling aspen reproduction at St. Norbert and light at Letellier, Proven Lake, and St. Jean Baptiste.
Physokermes piceae (Schr.) (Spruce bud scale)	Spruce, white	Spruce Woods Provincial Forest	Very low populations.
Phytophaga rigidae (O. & S.) (Beaked willow gall fly)	Willow	Throughout the district	Light gall infestations in isolated clumps.
Pikonema alaskensis (Roh.) (Yellow-headed spruce sawfly)	Spruce, white	Spruce Woods Provincial Forest and at Erickson	Very low population; no observable feeding damage.
Pikonema dimmockii (Cress.) (Green-headed spruce sawfly)	Spruce, white	Spruce Woods Provincial Forest and Erickson	Populations very low; trace of feeding damage on widely scattered individual trees.
Plagodis alcoolaria (Gn.) (A looper)	Elm, white Willow	Griswold and Emerson	Low populations; no visible damage.
Pontania sp. (A sawfly)	Willow	Throughout the district	Common on willow; high gall concentrations at Griswold, Souris, Shilo, Minto, Emerson, and in Spruce Woods Provincial Forest.
Protitame virginalis Hlst. (A looper)	Aspen, trembling	Roseau River and at Max Lake	Very low populations; no visible damage.
Rhabdophaga strobiloides (Walsh) (Willow cone gall midge)	Willow	Throughout the district	Generally very light infestations.

Insect	Host(s)	Locality	Remarks
Saperda concolor Lec. (Poplar-gall saperda)	Willow	St. Adolphe, Lyleton, and St. Jean Baptiste	Moderate local infestations at St. Adolphe and Lyleton; light elsewhere.
Schizura spp. (Notodontids)	Aspen, trembling Oak, bur Maple, Manitoba	Roseau River, Wawanesa, Elkhorn, and Erickson	Species collected include: S. concinna (J.E. Smith), S. ipomoeae Dbldy., and S. unicornis (J.E. Smith); populations very low and caused no appreciable damage.
Semiothisa oweni Swett. (Owen's green looper)	Tamarack	Spruce Woods Provincial Forest	Common but causing only a trace of damage.
Semiothisa sexmaculata Pack. (A geometrid)	Tamarack	Spruce Woods Provincial Forest	Common; a trace of feeding damage.
Tetralopha aplastella Hlst. (An aspen webworm)	Aspen, trembling Oak, bur	Turtle Mountain Provincial Park, Roblin, Alexander, Miniota, and Wawanesa	Light skeletonizing damage observed at all points.
Tortricid sp.	Aspen, trembling	Turtle Mountain Provincial Park	Light skeletonizing damage, occasional tree moderately damaged.

DISEASE CONDITIONS

EASTERN DWARF MISTLETOE, Arceuthobium pusillum Peck.:- In the Spruce Woods Provincial Forest, small pockets of light to moderate infection on white spruce were located north of Sewell Lake and between Glenboro and Carberry. Within these pockets, the occasional tree was severely infected.

WESTERN GALL RUST, Peridermium harknessii J. P. Moore:- One Scots-pine plantation was found to be severely infected with this rust gall. Fifty percent of the trees were infected with an average of 50 galls per tree. Several trees were dead, apparently from the disease.

LEAF RUST, Gymnosporangium corniculans Kern:- Rust spots were found to infect 100 percent of the foliage on all saskatoon throughout the Spruce Woods Provincial Forest. Light infections were located at Beulah, Ninette, and Treherne. Other shrubs, such as hawthorn, hazel, and choke cherry were lightly infected at Ninette and in Spruce Woods Provincial Forest.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl) Miller:- This disease was prevalent in most trembling aspen stands examined in the forested and agricultural areas. Infection was light to moderate in most stands but was found to be moderate to severe in localized areas. Light to moderate infection was general in the vicinity of Turtle Mountain Provincial Park, Spruce Woods Provincial Forest, Erickson, Sandy Lake, Souris, Elkhorn, Starbuck, and Emerson. Localized areas of moderate to severe intensity were observed at Kemnay, Brown, Manitou, and Cartwright.

LEAF AND SHOOT BLIGHT OF POPLAR, Pollaccia radiosa (Lib.) Bald. and Cif.:- Light infections were observed in scattered young trembling aspen stands in the vicinity of Killarney, Glenboro, Carberry, Moore Park, Deleau, Spruce Woods Provincial Forest, and Turtle Mountain Provincial Park.

WHITE TRUNK ROT, Fomes igniarius (L. ex Fr.) Gill:- Conks were very common in mature and overmature stands of trembling aspen in the Turtle Mountain Provincial Park, Spruce Woods Provincial Forest, and in the areas surrounding Minnedosa, Erickson and Sandy Lake. The most notable infection centre was observed in overmature aspen at Erickson where 50 percent of the trees were infected with an average of three conks per tree.

WHITE HEART ROT, Fomes fraxinophilus (Pk.) Sacc.:- A moderate infection of one to two acres of green ash was recorded two miles southwest of Wawanesa. Seventy-five percent of the trees were infected with an average of six conks per tree.

FROST DAMAGE:- Early spring frosts caused conspicuous damage to foliage of bur oak in the Spruce Woods Provincial Forest and along the Pembina Valley. No shoot mortality was noted and all trees had refoliated by late June.

BARK SCALING OF PINE:- This condition is characterized by a peeling-off of the outer bark. All trees in several plantations of Scots and jack pine in the Spruce Woods Provincial Forest were affected in this manner.

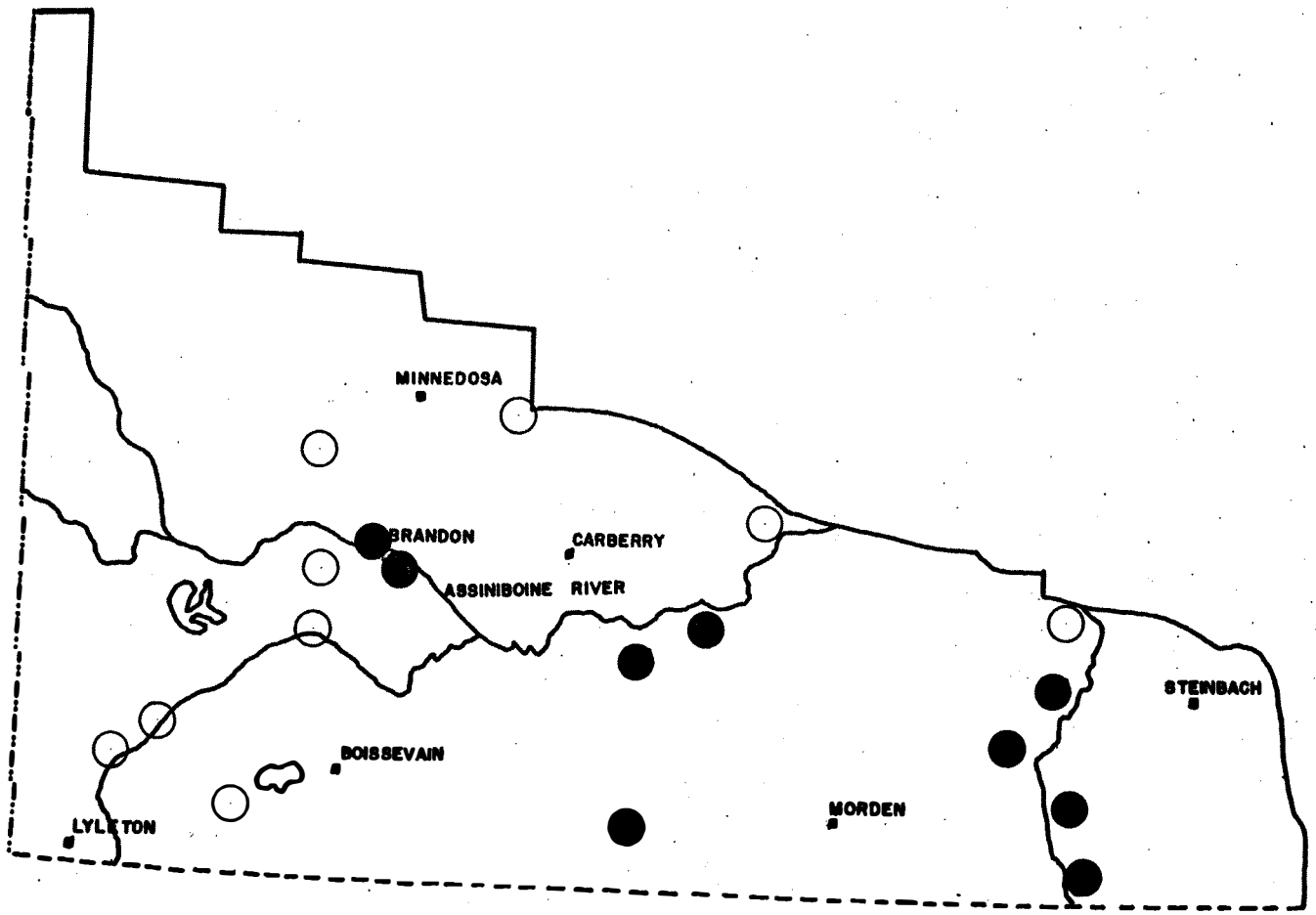
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Ciborinia foliicola (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Russell	One collection; light infection.
Cladosporium sp. (Saprophyte)	Cherry, choke Cottonwood, eastern	Emerson and Spruce Woods Provincial Park	Lightly scattered throughout both areas.
Cryptochaete rufa (Fr.) Karst (A slash fungus)	Aspen, trembling	Throughout the district	Very common; found on dead stems and branches.

Organism and Disease	Host(s)	Locality	Remarks
Cytospora sp. (A canker)	Aspen, trembling Willow	Throughout the district	Light to moderate infections common.
Dibotryon morbosum (Schw.) T. & S. (Black knot of cherry)	Cherry, choke	Oak Lake, Miniota, Deleau, Erickson, Turtle Mountain Provincial Park, and Spruce Woods Provincial Forest	Occasional clump severely infected at Spruce Woods Provincial Forest; light elsewhere.
Diplodia tumefaciens (Shear) Zalasky (Macrophoma galls)	Aspen, trembling	Oak Lake	Light twig infection.
Eudarluca australis Speg.	Willow	Ninette	Hyperparasite on Melampsora bigelowii.
Exidia glandulosa (Bull.) Fr. (Slash fungus)	Aspen, trembling Cherry, choke Hazel	Spruce Woods Provincial Forest, Miniota, Ingelow, and Turtle Mountain Provincial Park	Commonly found on dead branches and stems.
Fomes fomentarius (L. ex Fr.) Kickx (White mottled rot)	Birch, white	Spruce Woods Provincial Forest	Single collection - one infected tree.
Fomes pinicola (Swartz) Cke.	Pine, Scots	Spruce Woods Provincial Forest	Single collection.
Lenzites saepiaria (Wolf.) Fr. (Brown cubical pocket rot)	Aspen, trembling	Turtle Mountain Provincial Park	Common slash fungus on old dead fallen trees.
Melampsora bigelowii Thum. (A larch-willow rust)	Willow	Ninette, Souris, and Kemnay	Small patches of severe infection observed at Ninette and Souris; light infection at Kemnay.
Melampsora medusae Thum. (Larch-aspen rust)	Willow	Letellier	Severe infection on several willow bushes in town park.
Pleurotus sapidus Kalchbr. (Slash fungus)	Aspen, trembling Poplar, balsam	Spruce Woods Provincial Forest and Turtle Mountain Provincial Park	Slash fungus common on old dead fallen trees.

Organism and Disease	Host(s)	Locality	Remarks
Podosphaera oxyacanthae (DC.) deBary (Powdery mildew)	Cherry, choke	Spruce Woods Provincial Forest	Patches of light to moderate infection.
Pollaccia elegans Serv. (Poplar shoot blight and leaf spot)	Poplar, balsam	Killarney, Proven Lake and Spruce Woods Provincial Forest	Very light infection on the occasional tree.
Polyporus abietinus (Dicks.) ex Fr. (Pitted saprot)	Pine, jack and Scots	Spruce Woods Provincial Forest	Very light infection on several fallen trees.
Polyporus betulinus (Bull.) Fr. (Slash decay fungus)	Birch, white	Spruce Woods Provincial Forest	One infected tree.
Polyporus hirsutus (Wulf.) Fries. (The hairy conk)	Oak, bur	Spruce Woods Provincial Forest	Single collection from old dead fallen tree.
Polyporus paragamenus Fr. (Slash fungus)	Aspen, trembling	Erickson, Ninette, Nesbitt, Spruce Woods Provincial Forest, and Turtle Mountain Provincial Park	Very common slash fungus on old, dead, overmature trees.
Polyporus versicolor (L.) Fr. (Slash fungus)	Birch, white	Turtle Mountain Provincial Park and Edrans	Two conks collected.
Poria punctata (Fries) Karst. (A decay)	Willow	Edrans and Turtle Mountain Provincial Park	Very light infection on two trees at Turtle Mountain Provincial Park.
Radulum casearium (Morgan) oyd (Slash fungus)	Aspen, trembling	Turtle Mountain Provincial Park	Single collection.
Rhytisma salicinum (Pers.) Fr. (Tar-spot on willow)	Willow	Roseau River, Emerson, and Spruce Woods Provincial Forest	Light infection observed at Shilo, Emerson, and Roseau River.
Schizophyllum commune Fr. (Slash fungus)	Aspen, trembling Spruce, white	Miniota and Spruce Woods Provincial Forest	Very light infections at both points.
Septoria musiva Pk. (Leaf spot)	Poplar, balsam	Spruce Woods Provincial Forest and Turtle Mountain Provincial Park	Moderate infection on several trees near Carberry.

Organism and Disease	Host(s)	Locality	Remarks
Stigmina negundinis (Bert. & Curt.) M. B. Ellis	Maple, Manitoba	Morris	Single collection; very light infection on one tree.
Uncinula salicis (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Throughout the district	Pockets of severe infection on regeneration at St. Jean Baptiste, Beulah, Turtle Mountain Provincial Park, and Spruce Woods Provincial Forest; light infections on regeneration and undergrown trees common.



EASTERN PRAIRIE DISTRICT

FIG. 1

DEFOLIATION BY THE FALL CANKERWORM - 1967

Light ○

Moderate to Severe ●

INDEX TO INSECT SPECIES

INDEX TO TREE DISEASES