

ANNUAL DISTRICT REPORTS
FOREST INSECT AND DISEASE SURVEY
MANITOBA-SASKATCHEWAN REGION

1968

by

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INTRODUCTION

L.L. McDowall

Forest insect and disease surveys for 1968 commenced during late May and terminated in the first week of October. Unseasonably cool, wet weather in many parts of the Region especially in mid- and late-summer retarded the development of a number of late season defoliators, but it favored some disease organisms such as rusts and leaf spots.

A total of 5,494 insect and 3,305 disease samples were submitted by field survey technicians. Table I shows the number of samples and host trees sampled in each district. Approximately 92 hours of flying time were used for mapping forest insect and disease outbreaks; 30 hours of this were supplied by the Forestry Branches of both provinces. A summary of the aircraft travel is listed in Table II and aerial routes, survey districts and district field headquarters are shown in Figure 1.

An overall revision of sampling procedures in the agriculture areas of both provinces was initiated in 1968. Agriculture representatives were contacted by mail for a list of prospective farm shelterbelts in their respective districts which would be suitable for permanent sample points. The response was most gratifying and one hundred and forty shelterbelts were selected and sampled at least once during the summer. Further study of this plan is required to evaluate its merits; however, additional shelterbelts will be selected in districts where only a limited distribution was obtained. Further to this, greater emphasis will be placed on sampling in provincial and regional parks. Notable changes in forest insect conditions occurred within the major insect species and these are summarized below.

Populations of the larch sawfly continued to decline in Saskatchewan and are the lowest recorded in the past several years; although populations were somewhat lower in Manitoba, moderate to severe defoliation was noted in several areas.

The jack-pine budworm has virtually collapsed in Saskatchewan; populations were generally much lower in Manitoba than in previous years, but widely scattered pockets of moderate to severe defoliation occurred between Lake Winnipeg and the Manitoba-Ontario boundary.

Moderate to severe defoliation by the spruce budworm was again recorded throughout the infested areas of northern Manitoba and Saskatchewan. In the west-central portion of Manitoba populations were relatively high in the Dawson Bay-Pelican Lake-Birch Island areas, and in white spruce woodlots in the Interlake section.

Despite the cool, wet weather, outbreaks of two important insects were recorded. New infestations of the large aspen tortrix were reported in the Interlake, west-central and southwestern section of Manitoba. The infestations in the Cypress Hills Provincial Park continued but overall populations were generally lower.

A leaf roller of Manitoba maple Archips negundanus Dyar. caused moderate to severe defoliation throughout the metropolitan area of Winnipeg and as far north as Selkirk.

Although no major outbreaks of disease organisms were reported, rusts and leaf spots of coniferous and deciduous species were common in some districts during the latter part of the season. Several new pathogens for this region were recorded and new distribution records of known infections were established. Leaf and twig blight of poplars was widely distributed with the only increase reported in eastern Manitoba. Frost and hail damage were reported from the southern and northwestern areas of Saskatchewan; and conspicuous browning of jack pine was noted north of Bissett to Fishing Lake in eastern Manitoba.

The survey wishes to express its 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
1968

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.	37	6	41	28	22	14	77	34	48	1	77	53	29	31	33	19	26	4	16	18	162	124	568	332
Central Lowlands Man.	56	15	17	15	2	1	30	11	31	-	82	34	31	14	9	-	36	7	14	6	142	60	450	163
Northern Lowlands and Northern Man. Eastern Prairie Man.	68	39	50	39	23	29	42	28	54	14	79	64	54	38	43	25	4	-	6	9	131	79	554	364
Central Prairie Sask.	87	11	-	-	1	-	12	13	8	3	111	115	19	11	7	30	94	32	62	-	344	189	745	404
Western Prairie Sask.	62	8	1	-	-	-	5	1	4	1	56	43	17	15	6	3	71	27	64	20	324	144	610	262
Western Mixedwood Sask.	94	26	-	-	-	-	8	1	3	-	70	67	25	9	2	-	156	64	94	18	655	200	1107	386
Central Mixedwood and Northern Sask. Eastern Mixedwood Sask.	28	23	22	14	12	5	25	7	36	5	43	34	23	12	21	19	22	8	13	4	57	73	302	204
	43	51	36	59	16	14	37	33	65	15	64	85	41	44	25	58	10	8	-	-	251	286	588	653
	53	44	17	27	4	6	14	15	39	4	97	107	67	67	21	42	24	17	8	8	226	200	570	537
Totals	528	223	184	182	80	69	250	143	288	43	679	602	306	241	167	197	443	167	277	83	2292	1355	5494	3305

I = Insect collections

D = Disease collections

TABLE II
 Summary of Aircraft Travel
 Manitoba and Saskatchewan
 1968

Province	Type of flying	Type of aircraft	No. of hours	Approx. mileage	Approx. area surveyed (sq. mi.)*	
Manitoba	Chartered	Cessna 180	38:25	3,900	15,600	
		Cessna 175	3:00	300	1,200	
	Provincial Forestry Branch	Cessna 180	17:50	1,800	7,200	
Saskatchewan	Chartered	Cessna 180	21:30	2,200	8,800	
		Provincial Forestry Branch	Beaver	4:00	400	1,600
		Cessna 180	5:00	550	2,200	
		Helicopter	3:00	225	900	
TOTALS			92:05	9,375	37,500	

*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

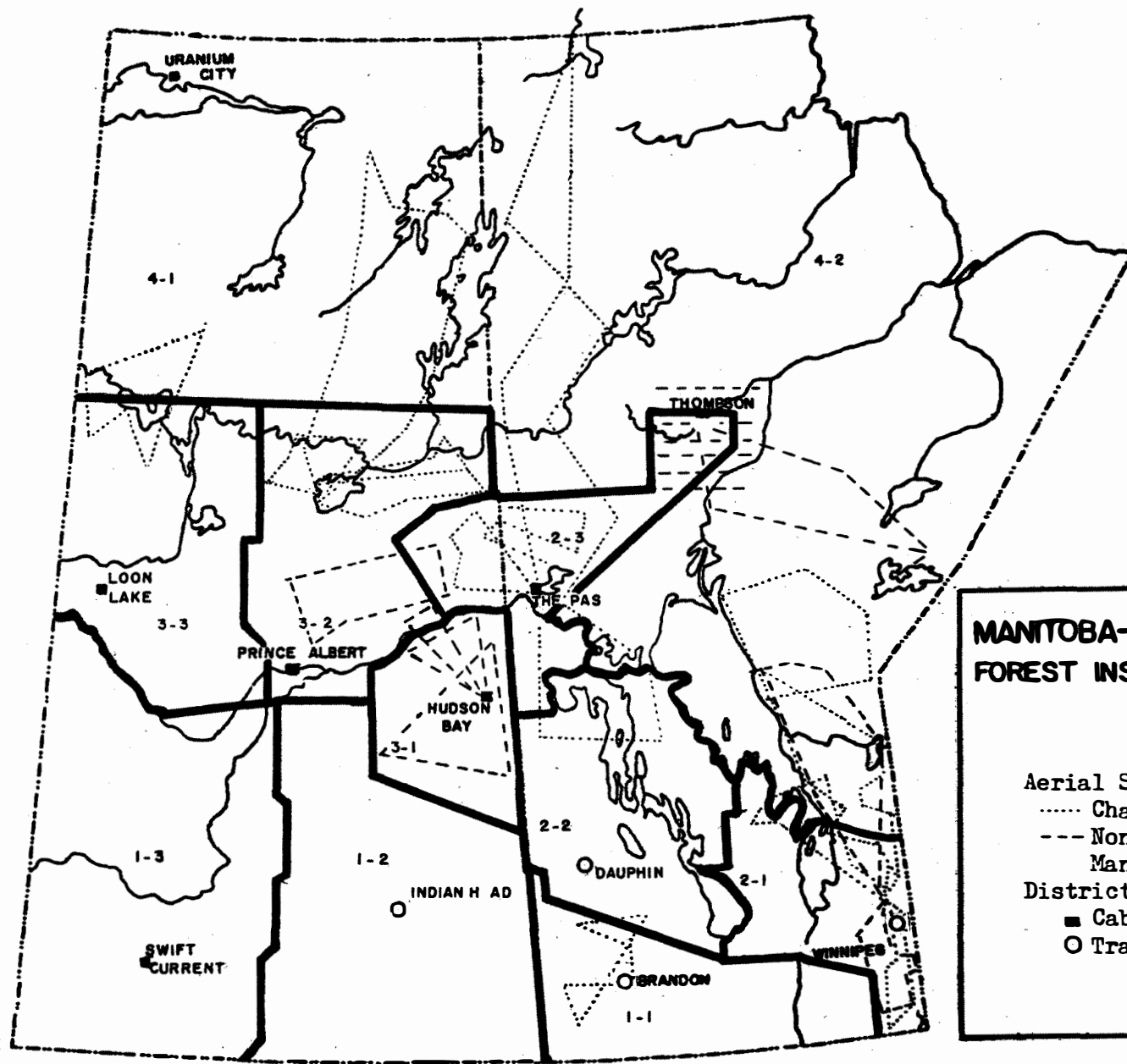
- 2.1 Eastern Lowlands
- 2.2 Central Lowlands
- 2.3 Northern Lowlands

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
 Charter
 --- Non Charter: Provided by
 Man. and Sask. Forest Services
District Field Headquarters
 ■ Cabins
 ○ Trailers

Scale 120mi-1 in.

EASTERN LOWLANDS DISTRICT
MANITOBA

1968

by
G.N. Still

INTRODUCTION

Field surveys to determine the distribution and abundance of forest insects and tree diseases were conducted from late May to early October during which time 568 insect and 332 disease samples were 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) a retally of trees at a permanent plot to study the effects of Pollaccia radiosa (Lib.) Bald. & Cif. on trembling aspen; (4) mass collections of jack-pine budworm, spruce budworm, large aspen tortrix, fall cankerworm, and larch sawfly for parasite studies; (5) special collections of gall insects, aphids and ants, insects infesting fungi, poplar bud-gall mite, and tent caterpillar egg bands; and, (6) small mammal population studies.

Approximately 14 hours and 25 minutes of charter and 5 hours and 50 minutes of non-charter flying were used for surveys of areas inaccessible by road.

Abnormally cool, wet weather retarded foliage production and insect development. There was a sharp decline in the intensity and distribution of the jack-pine budworm in the southern areas; infestations in the northern aerial survey section were not as severe as last year. Larch sawfly, fall cankerworm and willow leaf beetle populations were also lower. Infestations of the spruce budworm and aspen blotch miner remained much the same as last year.

A considerable increase in populations of the large aspen tortrix and a leaf roller of Manitoba Maple, Archips negundanus Dyar was recorded in a number of areas. There were no significant changes in the status of important tree diseases.

INSECT CONDITIONS

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:- A sharp decline in the infestation status of the jack-pine budworm occurred throughout the district, particularly in the southern portion (Figure 1).

Populations in the Sandilands, Agassiz, and Belair Provincial forests decreased considerably; light defoliation was detected in these areas with the exception of a few localized pockets of light to moderate feeding damage in the Richer area.

In the Whiteshell Provincial Park, a similar decrease was evident. Localized patches of light to moderate defoliation were observed in the vicinity of Brereton, Jessica, Red Rock and Meditation lakes and moderate to severe from Pointe du Bois to approximately 10 miles west of the town.

Throughout the northern aerial survey section of the district, infestations were not as severe as last year. Light to moderate defoliation was fairly widespread and scattered patches of moderate to severe were common. The largest area of light to moderate defoliation occurred north of Bird River and Bird Lake, and was bounded on the west by the Cat Lake Road, Black Lake, and Moose Lake, and extended north to the west side of Gem Lake. The eastern

boundary of this infestation was noted to be west of Flintstone, Octopus, and McGregor lakes. Patches of moderate to severe defoliation within this area were observed in the vicinities of Springer, Bird, Black, Flintstone and Gem lakes.

A similar infestation northwest of the latter extended west to the source of the O'Hanley River and north to Quesnel Lake. Centres of moderate to severe defoliation occurred in the Manigotagan-Quesnel Lake area and along the Black and O'Hanley rivers.

Generally light to moderate defoliation, with occasional, localized patches of moderate to severe occurred in the Sassaginigak Lake area from the Bloodvein River in the south to Family Lake in the north; along the Poplar River in the Weaver, Harrop and Eardley lakes areas and southeast of the Poplar River settlement; along the Pigeon River in the Round Lake area; in the Bloodvein area from Longbody Creek south to Loon Bay; and in the vicinity of Shallow and English lakes.

Light defoliation was also recorded at Rosenburg in the Interlake section and at Bull and Aikens lakes.

LARCH SAWFLY, Fristiphora erichsonii (Htg.): - Infestation levels were generally much lower than last year (Figure 2). In the southeast portion of the district, moderate to severe defoliation was observed in the Sprague, Piney, Whitemouth Lake and Waugh areas and light to moderate infestations in the remainder of the district lying south of the Trans-Canada Highway.

Defoliation was mainly light in the Agassiz Provincial Forest except near Seddons Corner where light to moderate was observed, and a few miles west of Lac du Bonnet where some stands were moderately to severely defoliated.

In the Whiteshell Provincial Park, defoliation ranged from light to moderate occasionally moderate to severe in the Telford area and northeast of Brereton Lake.

With the exception of moderate to severe defoliation in a stand northeast of Stead, infestations in the Belair Provincial Forest were light.

Moderate to severe defoliation occurred in scattered stands north of Lac du Bonnet and Pine Falls to the Maskwa Lake area and in numerous stands lying east of Highway No. 304 as far north as the Black River. The most northerly light to moderate defoliation was observed in the vicinity of Obukowin and Shallow lakes on the east side of Lake Winnipeg.

A few patches of light to moderate defoliation occurred at the south end of Hecla Island but was generally light over the remainder of this area.

In the Interlake area, light to moderate defoliation was observed in stands lying east of Hodgson and Koostatak to Lake Winnipeg. Occasionally severe defoliation was noted north of Highway No. 325 and light in the Lake St. George area.

The results of sequential sampling of egg populations in permanent study plots are shown below.

Location and plot number		No. of shoots examined	No. of shoots curled	Infestation rating - 1968
Piney 14-71-544	01	170	11	Light
Telford 15-32-552	01	170	24	Moderate
Agassiz 14-69-554	01	190	13	Light
Point du Bois 15-31-557	01	170	11	Light
Riverton 14-63-567	01	190	25	Moderate

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.): - For the second consecutive year, moderate to severe defoliation of white spruce woodlots occurred in the Arborg-Geyser-Vidir area and south of Fisher Branch.

Very light defoliation was noted at numerous other points throughout the remainder of the district including Shallow, Flintstone, and Molson lakes in the northern aerial survey section.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.): - Moderate to severe defoliation of individual, usually well-scattered regeneration spruce was again observed along highways throughout the Whiteshell Provincial Park, particularly in the vicinity of Nutimik, Betula and White lakes, and in the Point du Bois area; and along the Long Lake Road near Moore Lake. Similar defoliation of planted spruce occurred in the Caribou Tower, Hadashville, Elma, Whitemouth and Vidir areas. Light defoliation was mapped at scattered points throughout the remainder of the district, including northern sampling points at Shallow, Bull, Cantin, Stevenson, Eardley, and Molson lakes.

WHITE-PINE WEEVIL, Pissodes strobi (Peck): - Light infestations of jack pine saplings were again recorded at scattered points throughout the range of the host tree in the district as far north as O'Hanley Creek. Planted Scots pine and spruce were also infested in the southern portion of the district. Counts were made at a number of locations to assess infestation levels and the results are shown in the following table.

Locality and stand type	Tree species	No. of trees examined	No. of tops infested
Rosenburg Fire Tower (Natural regeneration)	Jack pine	100	8
3 mi. N. of Hwy. #44 on Central Agassiz Rd. (Plantation)	Scots pine	100	8
Whitemouth Lake (Plantation)	Jack pine	100	3
5 mi. N.W. of St. Labre (Plantation)	Jack pine	100	2
Toniata Beach (Plantation)	Jack pine	100	1
Badger (Plantation)	Jack pine	100	3
Madashville Fire Tower (Plantation)	Spruce	100	3

LARCH CASEBEARER, Coleophora laricella Hbn.:— The larch casebearer was first detected in southeastern Manitoba in 1965. Surveys carried out since then have indicated that populations remained low and that spread has been minimal. The results of the 1968 survey are shown below.

Areas sampled	No. of specimens collected
Birch Point (Buffalo Bay)	Nil
4 mi. east of Sprague	27
2 mi. east of Middlebro	Nil
2 mi. east of Piney	12
2 mi. west of Piney	Nil
Birch Lake (East Braintree)	Nil

A LEAF ROLLER, Archips negundanus Dyar:— New outbreaks occurred at numerous points throughout the district in 1968.

The most significant outbreaks were along the Red River in the Selkirk and Metro Winnipeg areas. At Selkirk moderate to severe defoliation of Manitoba maple occurred in the north end of Selkirk Park and on Sugar Island, while in Winnipeg similar defoliation was observed in sizeable patches along the river in the Middlechurch and St. Paul areas and in the campus area of the University of Manitoba in Fort Garry.

Moderate to severe defoliation was also recorded in woodlots in the Dugald, St. Ouens, Molson, Seven Sisters and Arborg areas and moderate defoliation was observed at Ostenfeld and River Hills. Light defoliation was noted in the Whitemouth, Garson, St. Andrews, Birds Hill, Lockport, Parkview, Poplar Point and Vidor areas.

Moderate to severe defoliation was again noted at Birch Point in southeastern Manitoba; and infestations at Vassar and St. Labre declined considerably.

LARGE ASPEN TORTRIX, Choristoneura conflictana (Wlk.):— Populations increased significantly in the Interlake section of the district (Figure 3). Outbreaks in the Malonton, Fraserwood, Narcisse, and Rembrandt areas caused moderate to severe defoliation of trembling aspen in scattered woodlots. Light to moderate defoliation occurred in the Komarno, Meleb, Silver and Chatfield areas and light in the Teulon, Poplarfield, Sylvan and Eriksdale areas.

FALL CANKERWORM, Alsophila pometaria (Harr.):— Moderate to severe defoliation of Manitoba maple shelterbelts and shade trees was again noted in the Selkirk, Beausejour and St. Ouens areas while population decreases were evident in other areas of the district. Light to moderate defoliation of town shade trees occurred at Stonewall, and light defoliation was observed along the Red River between Lockport and Winnipeg.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:— This leaf miner of trembling aspen was again detected at scattered points throughout the forested sections of the district. Patches of moderate to severe mining of understory and fringe saplings and young trees was observed in the Marchand, Hadashville, Betula Lake, Otter Falls, Davidson Lake, Manigotagan, Long Lake, Bissett and Wallace Lake areas; and light to moderate in the vicinity of Aikens and Shallow lakes. Infestations were generally light elsewhere.

UGLY-NEST CATERPILLAR, Archips cerasivoranus (Fitch):— Widely scattered nests were found on choke cherry in most areas of the district. Up to 15 nests were observed in a number of locations in the Interlake and southeastern portion of the district.

TENT CATERPILLARS, Malacosoma spp.:— The incidence of tent caterpillars remained low in 1968. M. pluviale (Dyar) was found in isolated patches of from one to four tents on pin cherry and willow in the vicinities of Davidson, Springer, Wallace and Eardley lakes; M. americanum (F.) on choke cherry in the Gull Lake, Selkirk and Sandridge areas with scattered patches of up to 10 tents; and M. lutescens (N. & D.) on choke cherry in the Carrick area where tents were numerous though well scattered.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam	Moose Lake, Beaver Creek, Erdley and Shallow lakes	Small localized pockets of light to moderate infestations.
<u>Acraspis villosa</u> Gill. (Hairy oak gall)	Oak, bur	Seven Sisters, Gull Lake and Teulon	Scattered, light infestations.
<u>Acrobasis betulella</u> Hlst. (Birch tube-maker)	Birch, white	Otter Falls and Bullhead Point	Scattered, light infestations.
<u>Acronicta dactylina</u> Grt. (Dagger moth)	Alder Willow	Moose and Davidson lakes, Red Rose and Lake St. George	Traces of defoliation.
<u>Actias luna</u> Linn. (Luna moth)	Birch, white	Davidson Lake	Isolated light to moderate defoliation of a few saplings.
<u>Adelges cooleyi</u> Gill. (Cooley spruce gall aphid)	Spruce, white	Stonewall	Light infestations of ornamentals.
<u>Adelges lariciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, black	Throughout the district	Light to moderate infestations of young white spruce at Hadashville and at Marchand and of black spruce at Davidson and Molson lakes.
<u>Anoplonyx canadensis</u> Hgtn. (A sawfly)	Tamarack Spruce, white	Throughout the range of tamarack in the district	Low populations on tamarack; no noticeable damage.
<u>Anoplonyx luteipes</u> (Cress.) (A sawfly)	Tamarack	Throughout the range of tamarack in the district	Low populations; no significant damage.

Insect	Host(s)	Locality	Remarks
<u>Aphrophora</u> spp. (Spittle bugs)	Pine, Jack, white and red Spruce, white	Moose Lake, Marchand, Stead, Rosenburg and Red Rose; Davidson and Weaver lakes	Populations lower than last year; <u>A. permutata</u> Uhl. found in the Interlake section and at Stead.
<u>Archippus</u> <u>packardianus</u> (Fern.) (A leaf roller)	Spruce, white and black Fir, balsam	Birds Hill, Selkirk, Malonton, Vidor and Beaver Creek	Low populations; no significant damage.
<u>Archips</u> <u>fervidanus</u> (Clem.) (Oak webworm)	Oak, bur	Vivian, Birds Hill and Fisherton	Nests few and widely scattered.
<u>Argyresthia</u> <u>laricella</u> Kft. (Larch shoot moth)	Tamarack	Northwest Angle Provincial Forest and Piney	Populations very light.
<u>Arge</u> <u>clavicornis</u> (Fab.) (Willow sawfly)	Willow	Hodgson and Seddons Corner	Very low larval populations.
<u>Arge</u> <u>pectoralis</u> Leach. (Birch sawfly)	Alder	Stead and Riverton	Not as common as last year; trace of defoliation.
<u>Badebecia</u> <u>urticana</u> Hbn. (Leaf roller)	Aspen, trembling Poplar, balsam Birch, white Willow	Cat Lake, Red Rose and Wallace Lake	A trace of leaf- rolling damage.
<u>Biston</u> <u>cognataria</u> Gn. (Pepper and salt moth)	Willow Tamarack	Agassiz and Belair Provincial forests Pine Falls and Riverton	Low larval populations; no noticeable damage.
<u>Bucculatrix</u> <u>canadensisella</u> Cham. (Birch skeletonizer)	Birch, white	Beaver Creek, Red Rose, O'Hanley Creek and Wallace Lake	Light leaf skeletonizing.
<u>Calligrapha</u> <u>alni</u> (Schffr.) (Leaf beetle)	Alder	Sassaginigak and Eardley lakes	Occasional, light to moderate defoliation of fringe trees.
<u>Campaea</u> <u>perlata</u> (Gn.) (Fringed looper)	Aspen, trembling Birch, white Willow Alder	Northern portion of Interlake and at Wallace Lake	Scattered, light infestations.

Insect	Host(s)	Locality	Remarks
<u>Cecidomyia balsamicola</u> Lintn. (Balsam gall midge)	Fir, balsam	Caribou Tower, Otter Falls and Wallace Lake	Light infestation of occasional trees.
<u>Cecidomyia reeksi</u> Vock. (Jack-pine resin midge)	Pine, jack	Menisino	Light shoot damage to planted saplings.
<u>Chrysomela crotchii</u> Brown (Aspen leaf beetle)	Aspen, trembling Poplar, balsam	Throughout the district including Aikens and Stevenson lakes in the northern section	Populations remained low; scattered light defoliation.
<u>Chrysomela knabi</u> Brown (Leaf beetle)	Alder Willow	Contour, Marchand and East Braintree	Localized, light skeletonizing.
<u>Cimbex americana</u> Leach (Elm sawfly)	Alder Willow Birch, white	Stead and Hecla Island	Localized, light defoliation.
<u>Cyphon variabilis</u> Thunb. (False flower beetle)	Spruce, black Pine, jack and red Poplar, balsam Aspen, trembling Tamarack Willow	Throughout forested sections of the district	Adults common; no noticeable damage.
<u>Dasineura balsamicola</u> (Lintn.) (Balsam gall midge)	Fir, balsam	Moose Lake, O'Hanley Creek and Bissett	Localized small pockets of light needle damage.
<u>Diorycytria reniculella</u> Grt. (Spruce coneworm)	Spruce, white	Hadashville, Birds Hill, Arborg and Vidir	Very low populations.
<u>Datana ministra</u> (Drury) (Yellow-necked caterpillar)	Elm, white Willow	Richer and Koostatak	Light to moderate defoliation near Richer and Koostatak.
<u>Empria multicolor</u> Nort. (A sawfly)	Birch, white Alder	Throughout the forested sections of the district including Little Grand Rapids in the northern section	Trace of defoliation.

Insect	Host(s)	Locality	Remarks
<u>Energia decolor</u> Wlk. (A noctuid)	Aspen, trembling Poplar, balsam Alder Willow Maple, Manitoba	Throughout the forested sections of the district	Trace of defoliation.
<u>Epinotia solandriana</u> Linn. (Leaf roller)	Birch, white Aspen, trembling	Throughout district	Scattered, light leaf rolling.
<u>Eriosoma americanum</u> (Riley) (Woolly elm aphid)	Elm, white	Throughout range of elm in the district	Common but light.
<u>Eupithecia filmata</u> Pears. (Early brown looper)	Fir, balsam	Telford, Stead and Riverton	Low populations; no noticeable damage.
<u>Eupithecia luteata</u> Pack. (A looper)	Spruce, black Tamarack	Throughout range of hosts in the district	Low populations; no noticeable damage.
<u>Fenusa dohrnii</u> (Tischb.) (European alder leaf miner)	Alder	Throughout the district	General decrease in populations; scattered patches of moderate to severe leaf mining in the Koostatak area, light elsewhere.
* <u>Galerucella decora</u> (Say) (Gray willow- leaf beetle)	Willow	Northern portion of Interlake section; in the Belair Provincial Forest and at Black River, Aikens, Family and Molson lakes	Populations greatly reduced from last year; only light skeletonizing detected.
<u>Gonioctena americana</u> (Schaef.) (American aspen beetle)	Aspen, trembling	Throughout district	Populations decreased; widely scattered light defoliation.

*Name revised to Pyrrhalta decora (Say)

Insect	Host(s)	Locality	Remarks
* <u>Gracillariid</u> sp. (Leaf miner)	Willow	Norway House, Weaver and Molson lakes	Patches of moderate to severe leaf mining in the Norway House and Weaver Lake areas; light at Molson Lake.
<u>Gracillariid</u> sp. (Leaf miner)	Oak, bur	Throughout range of bur oak in district	Localized light to moderate leaf mining of regeneration trees.
<u>Halisidota maculata</u> (Harr.) (Spotted tussock moth)	Alder Willow Birch, white	Moose Lake, Stead, Davidson Lake and O'Hanley Creek	Scattered light defoliation.
<u>Hemichroa crocea</u> (Fourcroy) (Striped alder sawfly)	Birch, white	Hecla Island	Localized, light defoliation.
<u>Hylurgopinus rufipes</u> (Eichh.) (Native elm bark beetle)	Elm, white	McMunn, Nutimik Lake and Selkirk	Isolated trees heavily infested.
<u>Hypagyrtis piniata</u> Pack. (A looper)	Tamarack	Throughout the range of tamarack in the district	Low populations; no noticeable damage.
<u>Hyphantria cunea</u> (Drury) (Spotless fall webworm)	Birch, white and swamp Willow Aspen, trembling Maple, Manitoba Alder	Throughout forested sections of the district	Widely scattered; heaviest populations in the Northwest Angle Provincial Forest.
<u>Ips pini</u> Say (Pine engraver)	Pine, jack	Marchand	Occasional tree infested.

*Name revised to Parornix sp.

Insect	Host(s)	Locality	Remarks
<u>Itame loricaria</u> Evers. (A looper)	Elm, white Aspen, trembling Willow	Darwin, Birds Hill, Selkirk and Rosenberg	Low populations; no significant damage.
<u>Lepyryus palustris</u> Scop. (A weevil)	Willow Aspen, trembling	Throughout district	Scattered low adult populations; no noticeable damage.
<u>Malacosoma disstria</u> Hbn. (Forest tent caterpillar)	Aspen, trembling	Stead	Localized light defoliation.
<u>Mavetiola rigidae</u> (O.&S.) (Beaked willow-gall fly)	Willow	Eriksdale, Davidson Lake and Bissett	Occasional clumps light to moderately infested.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond aphid)	Aspen, trembling Cottonwood	Interlake section	Occasional localized light to moderate infestations of saplings.
<u>Nematopus unicolor</u> (Marl.) (A sawfly)	Birch, white Alder	Throughout forested sections of the district	Scattered low populations; no significant damage.
<u>Nematopus limbatus</u> Cress. (A willow sawfly)	Willow	Throughout forested sections of the district	A few clumps moderately defoliated in the Whiteshell Lake area.
<u>Neodiprion abietis</u> complex (Balsam-fir sawfly)	Spruce, black	Bull Lake	Localized, light defoliation.
<u>Neodiprion nanulus</u> <u>nanulus</u> Schedl. (Red-pine sawfly)	Pine, jack	Marchand	Localized, light defoliation.
<u>Neodiprion pratti</u> <u>banksianae</u> Roh. (Black-headed jack-pine sawfly)	Pine, jack	Stevenson Lake	Light defoliation of occasional trees.

Insect	Host(s)	Locality	Remarks
<u>Nycteola cinereana</u> N. & D. (Owlet moth)	Poplar, balsam	Forested section of Interlake; Belair and Agassiz Provincial forests, Lac du Bonnet and Otter Falls	Light skeletonizing of regeneration and saplings, mainly to upper crown.
<u>Nycteola frigidana</u> Wlk. (A web-maker)	Willow	Marchand, Telford, Stead, Riverton, Hodgson, Red Rose, and at Round and Weaver lakes	Scattered light defoliation.
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Aspen, trembling Willow	Betula Lake, Lac du Bonnet, and Point du Bois	Isolated moderate to severe defoliation of occasional trees and clumps.
<u>Oligonychus ununguis</u> (Jac.) (Spruce spider mite)	Spruce, white	Stone all	Light infestations of ornamentals.
<u>Orevia antiqua</u> (Linn.) (Rusty tussock moth)	Maple, Manitoba Birch, white Willow	Whitemouth and Molson and Stevenson lakes	Trace of defoliation.
<u>Orthosia hibisci</u> Gn. (A fruit worm)	Aspen, trembling	Darwin, Seddons Corner and Winnipeg	Low populations; no noticeable damage.
<u>Paleacrita vernata</u> (Peck) (Spring cankerworm)	Elm, white	Selkirk	Low populations, associated with fall cankerworm infestation.
<u>Pandemis canadana</u> Kft. (Leaf roller)	Aspen, trembling Willow, Poplar, balsam Alder	Throughout the district	Scattered, light leaf rolling.
<u>Parorgyia plagiata</u> (Wlk.) (Grey spruce tussock moth)	Spruce, black	Telford, Darwin, Seddons Corner, Pine Falls and Dogskin Lake	Low populations; no noticeable damage.

Insect	Host(s)	Locality	Remarks
<u>Pemphigus populi-transversus</u> Riley (Poplar petiole gall aphid)	Poplar, balsam Cottonwood	High Bluff, Hillside Beach and at Cantin and Davidson lakes	Occasional moderately to severely infested saplings at Hillside Beach, light elsewhere.
<u>Petrova albicapitana</u> (Busck.) (Pitch nodule maker)	Pine, jack	Throughout the range of jack pine in the district	Scattered light infestations common.
<u>Phenacaspis pinifoliae</u> (Fitch) (Pine needle scale)	Pine, red	Marchand and Otter Falls	Occasional light infestation of planted trees.
<u>Phyllocnistis populiella</u> Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Throughout the district	Widely scattered leaf mining.
<u>Phyllocolpa</u> nr. <u>agama</u> (A sawfly)	Poplar, balsam and hybrid Aspen, trembling	Moose Lake, Birds Hill, Eriksdale and Sassaginigak Lake	Localized light leaf infestations.
<u>Physokermes piceae</u> (Schr.) (Spruce bud scale)	Spruce, white	Arborg and Vidir	Light infestations, associated with spruce budworm damage.
<u>Pikonema dimmockii</u> (Cresson) (Green- headed spruce sawfly)	Spruce, black and white	Throughout the district	Scattered low populations common; no significant damage.
<u>Proteoteras willingana</u> (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the range of Manitoba maple in the district	Light infestations; common
<u>Protoboarmia porcelaria indicataria</u> Wlk. (Dotted line loopers)	Pine, jack, white and red Fir, balsam	Moose Lake, Marchand, Darwin, Pine Falls, Hodgson and Wallace Lake	Low larval populations; no noticeable damage.

Insect	Host(s)	Locality	Remarks
<u>Rhabdophaga</u> <u>batates</u> O.S. (Willow gall)	Willow	Moose Lake Marchand, Hecla Island, Chatfield and Beaver Creek	Widely scattered, localized light infestations.
<u>Rhabdophaga</u> <u>strobiloides</u> O.S. (Willow cone-gall midge)	Willow	Throughout the district	Widely scattered, localized light to moderate infestations common.
<u>Rhogogaster</u> <u>californica</u> Nort. (A sawfly)	Alder	Telford, Darwin, Rennie, Seddons Corner and Hodgson	Low populations; no significant damage.
<u>Saperda concolor</u> Lec. (Poplar-gall saperda)	Aspen, trembling Willow	Otter Falls and Wallace Lake	Localized light infestations.
<u>Schizura concinna</u> (J. E. Smith) (Red-humped caterpillar)	Aspen, trembling Willow	Whiteshell Lake, Otter Falls, Powerview, Manigotagan, Red Rose and Wallace Lake	Light to moderate defoliation of occasional saplings.
<u>Sciaphila duplex</u> Wlsh. (A leaf roller)	Aspen, trembling	Throughout the district	Scattered light leaf rolling common.
<u>Semiothisa</u> spp. (Loopers)	Pine, jack and white Tamarack Spruce, black and white Fir, balsam	Throughout the district	Populations generally low; no significant damage. <u>S. bicolorata</u> Fabr. on white pine in the Northwest Angle Provincial Forest and throughout the range of jack pine in the district; <u>S. oweni</u> Swett on tamarack at Otter Falls; <u>S. sexmaculata</u> Pack. throughout the range of tamarack in the district; <u>S. signaria disjuncta</u> Wlk. on balsam fir and on black and white spruce throughout the district.

Insect	Host(s)	Locality	Remarks
<u>Tetralopha</u> <u>aplastella</u> Hlst. (Aspen webworm)	Aspen, trembling	Throughout the district	Scattered light infestations.
<u>Thecabius affinis</u> (Kalt.) (Leaf-gall aphid)	Poplar, balsam	Throughout the district	Occasional, localized light to moderately infested young trees at widely scattered points.
<u>Toumeyella</u> <u>numismaticum</u> P. & M. (Pine tortoise scale)	Pine, jack and Scots	Agassiz, Sandilands and Whiteshell Provincial forests	Not as common as last year; infested trees widely scattered.
<u>Trichiosoma</u> <u>triangulum</u> Kby. (A sawfly)	Willow	Marchand, Stead, and Hodgson	Localized, light infestations.
<u>Zeiraphera</u> <u>diniiana</u> Gn. (Spruce tip moth)	Tamarack	Whiteshell and Agassiz Provincial forests, Pine Falls, Riverton and Hodgson	Low populations; no significant damage.
<u>Zelleria</u> <u>haimbachi</u> Busck. (A pine needle miner)	Pine, jack	Menisino, Badger, Woodridge, Hadashville and Richer	Notable light needle mining damage, particularly in plantations.

DISEASE CONDITIONS

WINTER DRYING OF PINES:- Scattered pine stands on poor sites were severely affected by this condition throughout the Sandilands Provincial Forest last year. During ground and aerial surveys carried out in 1968, additional areas of browning have been detected in the Whiteshell Provincial Park, particularly in regeneration and sapling stands of jack pine in the Crowduck-Eaglenest lakes area. Similar browning of jack pine on ridge tops and fringe trees were observed in the Aikens, Sassaginigak, Family and Fishing lakes areas.

Cutting operations have been initiated in the Sandilands Provincial Forest to utilize trees affected by this condition.

SPRUCE NEEDLE RUSTS, Chrysomyxa spp.:— Patches of moderate to severe infection of black spruce by C. ledicola (Pk) Lagerh., particularly to seedlings and saplings, were observed to the north of Beaver Creek on Hecla Island, in the Lac du Bonnet area. Light infections occurred in the West Hawk, Springer, Eardley, and Molson lakes areas.

Scattered light infections of C. ledi (Alb. & Schw.) deBary were found throughout the Whiteshell Provincial Park, in the Rosenburg area, and at Aikens Lake.

JACK-PINE MISTLETOE, Arceuthobium americanum Nutt. ex Engelm.:— A half-acre pocket of moderate incidence was detected near the Hole River Indian Reserve north of Clements Point. This is believed to be the first record in this area east of Lake Winnipeg. There were indications that the infections had been present for a number of years.

In the Belair Provincial Forest, mistletoe was observed in the Stead Fire Tower area and at scattered points along the Star Trail.

SPRUCE MISTLETOE, Arceuthobium pusillum Peck.:— During aerial surveys of the southeast portion of the district, scattered pockets of broomed black spruce were observed to the south of the Greater Winnipeg Water District Railway between Shoal Lake and East Braintree; between Birch and Whitemouth lakes; and in the vicinity of Hugo, Windy and Oak lakes.

Pockets of light to moderate brooming were detected five miles east of Libau and three miles northwest of Dencross.

East of Lake Winnipeg, collections were made in the Virrs Point area northwest of the Manigotagan settlement where a pocket of moderate incidence of brooming was observed and from a single tree along Highway No. 304, three miles south of O'Hanley Creek.

LEAF AND TWIG BLIGHT OF POPLARS, Pollaccia spp.:— There were increases in the intensities of both P. radiosa (Lib.) Bald. & Cif. and P. elegans Serv. at a number of localities in the district.

Patches of P. radiosa infections of trembling aspen ranged from moderate to severe in the West Hawk area and along the Bird River Road in the Poplar Bay and Starr Lake areas. Localized patches of light to moderate infections were observed at scattered points throughout the Whiteshell Provincial Park and east of Lake Winnipeg as far north as Eardley and Shallow lakes. In the Interlake section, small, localized light to moderate infections were observed in the Red Rose and Hecla Island areas and light in the Lundar, Eriksdale and Rosenburg areas. The study plot at Narcisse was reexamined for infected shoots but, for the second consecutive year none were found.

Infections of P. elegans on balsam poplar ranged from light to severe in scattered patches along Highway No. 308 from the Caribou Fire Tower south to Moose Lake. Localized light to moderate infections were observed in the Pointe du Bois area and along the Bird River, on Hecla Island, in the Moore Lake area, and in the Interlake section from Red Rose north to Lake St. George. The perfect state, Venturia populina (Vuill.) Fabr. was collected near the Caribou Fire Tower.

LEAF RUSTS, Melampsora spp.:— The willow leaf rust, M. bigelowii Thüm. occurred in localized patches of moderate to severe intensity in the Birds Hill Provincial Park, Lac du Bois, Davidson Lake, Stead, Hecla, Powerview, Chatfield and Red Rose areas; and light to moderate at numerous widely scattered points throughout the remainder of the district as far north as Round Lake. The hyperparasite, Eudarluca australis Speg. was found on this rust at Moose Lake and Point du Bois.

A localized moderate to severe infection of M. abieti-capraearum Tub. on willow was found southwest of Arborg in the Skylake area.

A leaf rust of trembling aspen, M. medusae Thüm. was common at scattered locations throughout the Interlake section of the district where occasional patches of moderate to severe infection were recorded, and in the St. Ouens, Prawda and Richer areas where infections were generally light.

LEAF SPOTS OF BALSAM POPLAR:— Septoria musiva Pk. and Linospora tetraspora Thompson, usually closely associated, were again well distributed throughout the district. Widely scattered patches of moderate to severe leaf infections were particularly common throughout the Northwest Angle, Sandilands and Whiteshell Provincial forests. In the Interlake, similar infections were observed in the Chatfield, Red Rose and Rosenburg areas.

INK SPOT, Ciborinia whetzellii Seaver:— Traces of this leaf spot on trembling aspen were found at widely scattered points throughout the Whiteshell Provincial Park and east of Lake Winnipeg as far north as Stevenson Lake. Similar conditions existed in the Interlake section of the district in the Hecla, Eriksdale, Beaver Creek and Red Rose areas. A few scattered pockets of light to moderate infections were observed in the Wanipigow and Moore lakes areas.

RUSTS, Gymnosporangium spp.:— G. clavipes Cooke & Peck was again the most significant rust of this genus found in the district. It was located at widely scattered points and caused numerous localized patches of moderate to severe damage to the fruit and light damage to the shoots of saskatoon.

Localized patches of G. clavariiforme (Jacq.) DC. caused moderate to severe damage to shoots, foliage and fruit of saskatoon in the Birds Hill Park and at Shallow Lake.

A patch of moderate to severe leaf infection by G. connersii Parmelee was found in the Birds Hill Provincial Park on hawthorn.

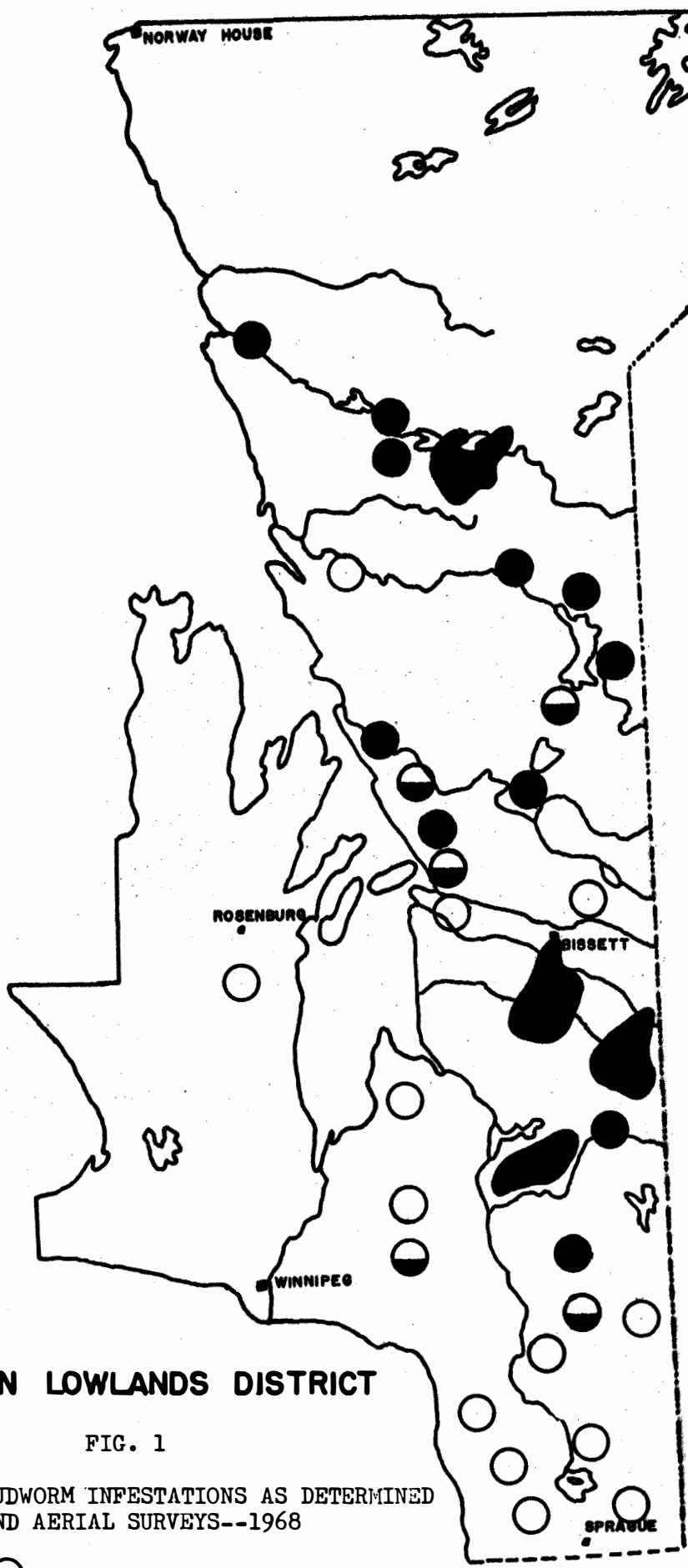
OTH R NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina collinsii</u> (Schw.) Hohnel (A witches' broom)	Saskatoon	Whitemouth Lake, Otter Falls, Stead, Hillside Beach and Red Rose	Localized small patches of moderate to severe brooming.
<u>Caliciopsis calicioides</u> (Ell. & Ev.) Fitzp. (Bark fungus)	Poplar, balsam	Hadashville, Hodgson and Bissett	Scattered mature trees infected.
<u>Chrysomyxa arctostaphyli</u> Diet. (Yellow witches' broom on spruce)	Spruce, black and white	Telford, Otter Falls, Pointe du Bois, Star Lake, Stead, Victoria Beach, Hecla, Red Rose and Stevenson Lake	Widely scattered individual trees with one to two brooms.
<u>Ciborinia foliicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Throughout the district including Stevenson, Round and Shallow lakes in the northern section	Localized patch with up to 30% of foliage infected at Shallow Lake. Infections light and scattered elsewhere.
<u>Coccomyces hiemalis</u> Higgins (Shot-hole of cherry)	Choke cherry, eastern Pin cherry	Throughout the district	Patches of up to 90% of foliage infected but spots small and generally few per leaf.
<u>Coleosporium asterum</u> (Diet.) Syd. (Needle rust)	Pine, jack Aster sp.	Northwest Angle, Sandilands and Whiteshell Provincial forests	A few scattered trees moderately to severely infected near Sandilands and Otter Falls. Generally very light elsewhere.
<u>Coleosporium viburni</u> Arth. (Leaf rust)	Nannyberry	Marchand	New record.
<u>Cronartium comandrae</u> Peck (Comandra rust)	Pine, jack	Falcon Beach and Rosenberg	Localized light infections.
<u>Cronartium ribicola</u> Fisch. (White-pine blister rust)	Pine, white	Moose Lake	Scattered light infections.

Organism and Disease	Host(s)	Locality	Remarks
<u>Cylindrosporella</u> sp. (Leaf spot)	Birch, white	Powerview, Red Rose and Maskwa Lake	Patches of moderate to severe leaf infection.
<u>Dendryphiopsis</u> <u>atra</u> (Cda) Hughes	Poplar, balsam	Hodgson and Bissett	Associated with infections of <u>Caliciopsis</u> <u>calicioides</u> (Ell. & Ev.) Fitzp. on mature trees.
<u>Diplodia</u> <u>tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling Poplar, balsam	Whitemouth Lake, Medika, Marchand, Hodgson and Bissett	Localized pockets with a few trees moderately infected.
<u>Drepanopeziza</u> <u>populorum</u> (Desm.) Hohn. (Leaf spot)	Aspen, trembling	Koostatak	Scattered light leaf infection.
<u>Elsinoe ledi</u> (Pk) Zeller (Leaf spot)	Labrador tea	West Hawk and Springer lakes	Patches of light to moderate leaf infection at West Hawk. Light at Springer Lake.
<u>Euryachora</u> <u>betulina</u> (Fr.) Schroet. (Tar spot)	Birch, white	Throughout forested sections of the district	Small localized pockets of moderate to severe leaf infection.
<u>Fomes fomentarius</u> (L. ex Fr.) Kickx (A tinder fungus)	Birch, white	Family and Bull lakes	Conks found on a few scattered trees at sampling points.
<u>Gnomonia ulmea</u> (Schw.) Thum. (Leaf spot)	Elm, white	Throughout the range of white elm in the district	Scattered moderate to severe leaf infections.
<u>Gnomoniella corvli</u> (Batsch ex Fr.) Sacc. (Leaf spot)	Hazel	Marchand	Small patch of light leaf infection.
<u>Hypodermella ampla</u> (Davis) Dearn. (Needle cast)	Pine, jack	Throughout the range of jack pine in the district	Occasional trees with moderate to severe infection of old needles.

Organism and Disease	Host(s)	Locality	Remarks
<u>Hypodermella</u> <u>laricis</u> Tubeuf (Needle cast)	Tamarack	Pointe du Bois	Scattered trees lightly infected.
<u>Hypodermella</u> <u>nervata</u> Darker (Needle cast)	Fir, balsam	Stead	Occasional regeneration lightly infected.
<u>Lophodermium</u> <u>pinastri</u> (Schrad. ex Fr.) Chev. (Needle cast)	Pine, red	Moose Lake	Occasional trees lightly infected.
<u>Melampsorella</u> <u>carvophyllacearum</u> Schroet. (Yellow witches' broom on balsam fir)	Fir, balsam	Moose Lake, Sprague and Otter Falls	Widely scattered, low incidence of brooming.
<u>Melampsoridium</u> <u>betulinum</u> (Pers.) Kleb. (Leaf rust)	Birch, swamp	Telford, Riverton and Hodgson	Isolated moderate to severe infections of occasional clumps.
<u>Peridermium</u> <u>harknessii</u> J.P. Moore (Western gall rust)	Pine, jack	Throughout the range of the host in the district	Current galls not as common as last year. Infections generally light and well scattered.
<u>Phaeoramularia</u> <u>maculicola</u> (Rom. & Sacc.) Sutton	Aspen, trembling	Pointe du Bois, Weaver Lake and Little Grand Rapids	Found associated with <u>C. whetzellii</u> infections.
<u>Phyllosticta</u> <u>viridis</u> Ell. & Kell.	Ash, green	Whiteshell Provincial Park	Patches of moderate to severe leaf infection.
<u>Pucciniastrum</u> <u>epilobii</u> Otth (Needle rust)	Fir, balsam	Throughout the district except Interlake section	Common but light.
<u>Pucciniastrum</u> <u>geoppertianum</u> (Kuhn.) Kleb. (Needle rust)	Fir, balsam	Otter Falls and Stead	Localized light infections.

Organism and Disease	Host(s)	Locality	Remarks
<u>Rhytisma punctatum</u> Pers. ex Fr. (Speckled tar spot)	Maple, mountain	Throughout the range of the host in the district	Localized patches of light to moderate leaf infection.
<u>Rhytisma salicinum</u> Pers. ex Fr. (Tar spot)	Willow	Throughout the district	Not as common as last year. Widely scattered light to moderate infections of individual clumps.
<u>Septoria caraganae</u> (Jacz.) Died. (Caragana leaf spot)	Caragana	Throughout the Interlake section; Whitemouth and Dawson Cabin	Moderate to severe leaf drop observed in the Stonewall, Poplar Point, Zbaras and Whitemouth areas.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam Aspen, trembling	Throughout the district	Widely scattered, occasional moderate to severe infected regeneration.

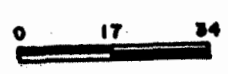


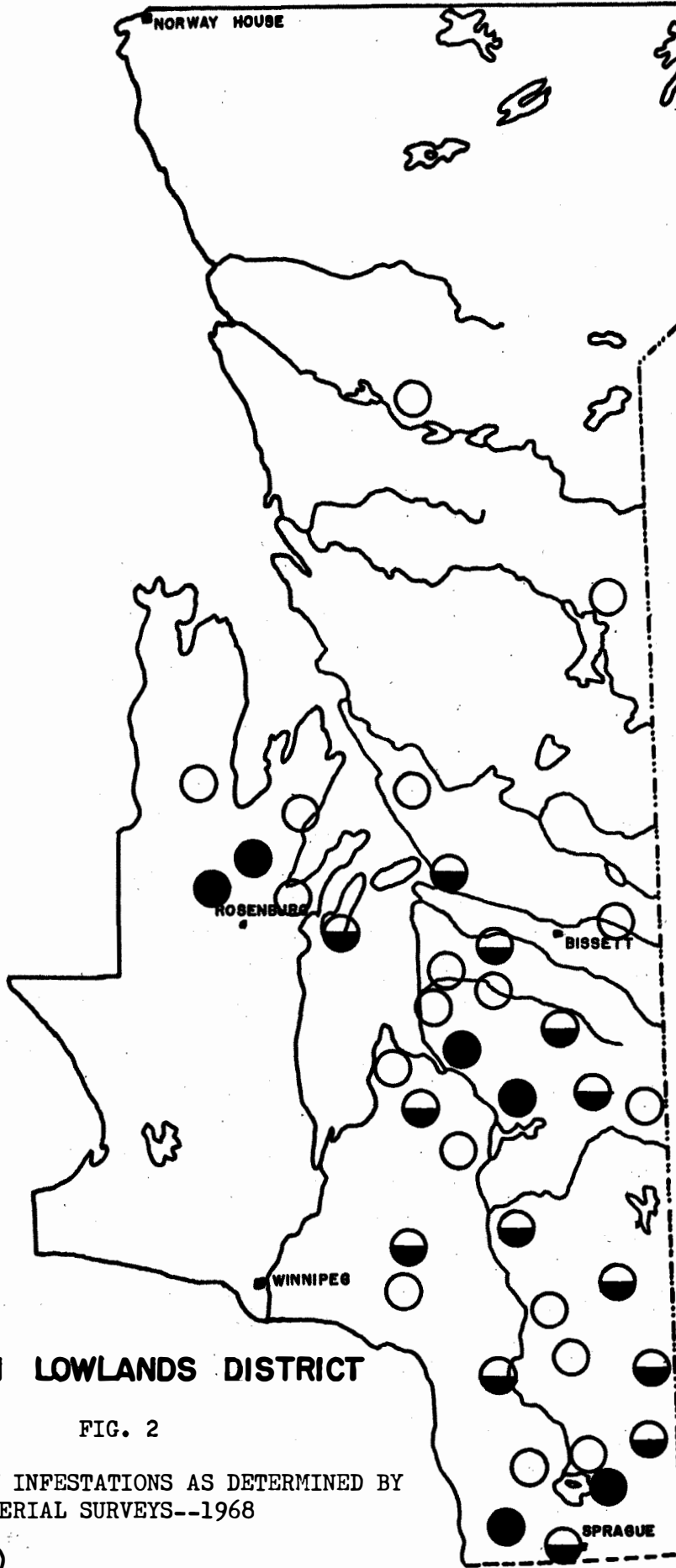
EASTERN LOWLANDS DISTRICT

FIG. 1

JACK-PINE BUDWORM INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS--1968

- Light ○
- Moderate ◐
- Severe ●





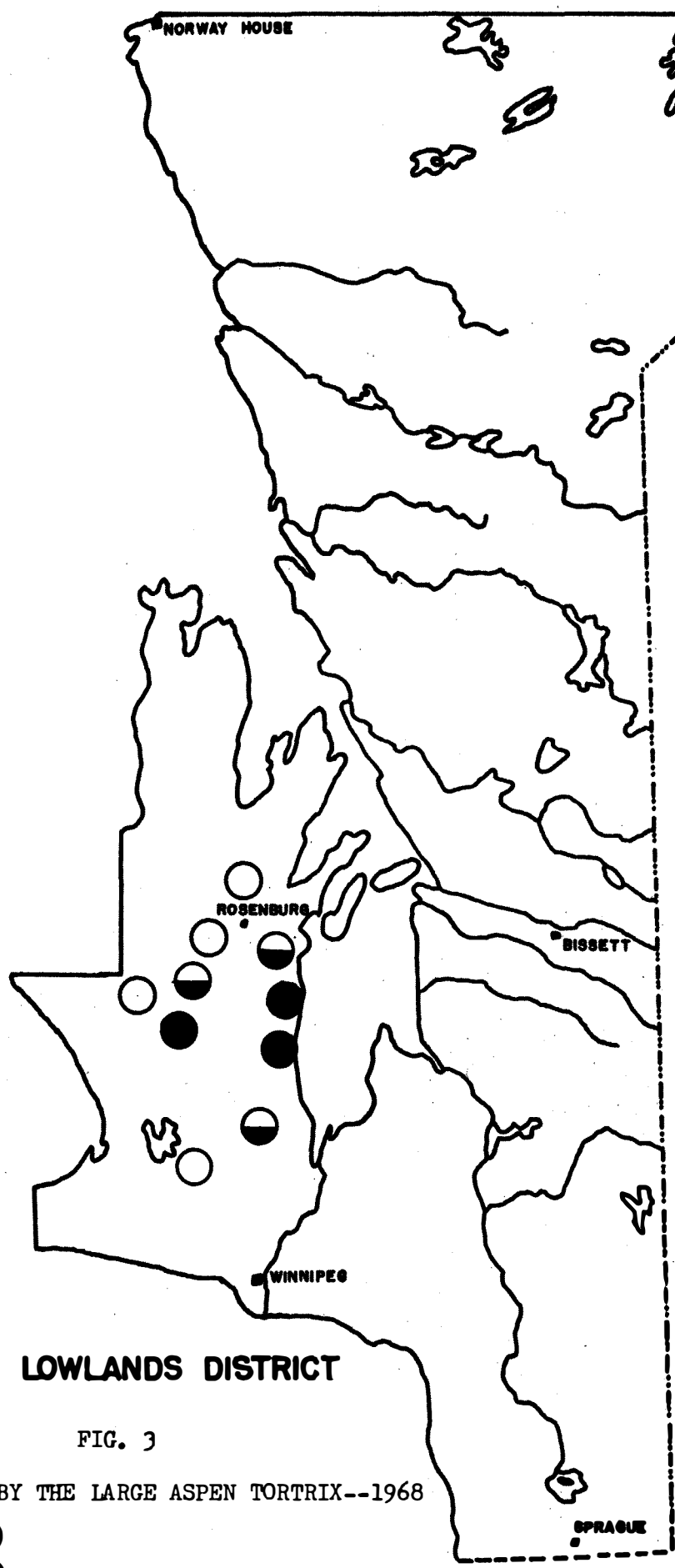
EASTERN LOWLANDS DISTRICT

FIG. 2

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS--1968

Light ○
 Moderate ◐
 Severe ●

0 17 34



EASTERN LOWLANDS DISTRICT

FIG. 3

DEFOLIATION BY THE LARGE ASPEN TORTRIX--1968

- Light ○
- Moderate ◐
- Severe ●

CENTRAL LOWLANDS DISTRICT
MANITOBA

1968

by
D. N. Shepherd

INTRODUCTION

Cool, wet weather prevailed during much of the 1968 field season. Insect development in July and August was considerably retarded, due in part to the unseasonable cool, wet weather. Totals of 450 insect and 163 disease samples were submitted for identification.

A major infestation of the large aspen tortrix occurred but significant declines in populations of the fall cankerworm, larch sawfly, and jack-pine budworm were noted. Populations of the spruce budworm remained relatively static.

Pollaccia radiosa (Lib.) Bald. & Cif.— This was the most prevalent disease for the second consecutive year; however, infections remained generally light. Aspen stands in the Camperville-Winnipegosis area showed poor foliage production but this was not attributed to either insects or disease organisms. Considerable reddening of jack-pine occurred in the Grand Rapids area.

In addition to general sampling, the following sub-projects were carried out: (1) mass collections of fall cankerworm, aspen tortrix and larch sawfly; (2) collection of tamarack cones for Dr. R.J. Heron; (3) special collections of June beetles; (4) plot retallies in the Pollaccia plots; (5) small mammals were trapped for population studies; and; (6) collection of M. lutescens for parasite studies.

INSECT CONDITIONS

LARGE ASPEN TORTRIX, Choristoneura conflictana (Wlk.):- This major defoliator of aspen caused severe defoliation in the south-east portion of the Riding Mountain National Park (Figure 1). Aspen stands in the McFadden Valley area were completely defoliated. Severe defoliation was noted along the southern boundary of the park between Highways 10 and 5, and patches of light to moderate defoliation occurred in and around the Wasagaming townsite. Pockets of light to moderate defoliation were recorded along Highway 19 from the east gate of the park, west to Lake Audy and at the Sugar Loaf Warden Station in the north. Scattered light to moderate defoliation was noted in the Dauphin Lake area, and at Bell Lake in the Porcupine Provincial Forest.

A LEAF ROLLER, Sciaphila duplex Wlshm.:— This leaf roller of aspen, often associated with C. conflictana, caused light to moderate damage in the Riding Mountain National Park for the second consecutive year. Moderate damage of regeneration aspen was noted along the Vermillion River, at Sifton, Meadowland and at Bell Lake in the Porcupine Provincial Forest. Elsewhere, populations were light and widely scattered.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaeff.):- Populations of this early season defoliator declined in most areas of the district. Moderate to severe defoliation occurred in Riding Mountain National Park along the Birdtail River in the northwest portion and lighter damage at Wasagaming in the southern portion. Moderate to severe damage of isolated aspen was noted at East Blue Lake in the Duck Mountain Provincial Park.

UGLY NEST CATERPILLAR, Archips cerasivoranus Fitch:- Populations of this insect, although widely distributed, showed a definite decline. Severe damage of a hedgerow was noted at Grandview and moderate damage of open growing choke cherry occurred in the Kinosota area. In Riding Mountain National Park, moderate to severe damage occurred in the Whitewater Lake area. Elsewhere, damage was light.

LARCH SAWFLY, Pristiphora erichsonii (Htg.): - There was a significant decline in larch sawfly populations throughout the Central Lowlands (Figure 2). Defoliation was generally light except at Grand Rapids where moderate to severe defoliation of isolated stands occurred. Light to moderate defoliation was noted in the Long Point area on Lake Winnipeg and in a stand at East Blue Lake in the Duck Mountain Provincial Park. Sequential sampling of larch sawfly egg populations was conducted; the results of which are tabled below.

Location	Plot No.	No. of shoots examined	No. of shoots curled	Infestation Rating 1968
Norgate Rd. (Mile 14) 14-45-561	01	50	0	light
Whitewater Lake 14-40-562	01	50	0	light
Cowan 14-38-577	01	50	0	light
Mafeking (Steep Rock) 14-36-585	01	50	0	light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.): - The status of the spruce budworm in the Central Lowlands remained much the same as in 1967. Pockets of moderate to severe defoliation of white spruce continued in the Dawson Bay area on Lake Winnipegosis between the Overflowing and Red Deer rivers.

Severe defoliation was observed on the northern and eastern sides of Birch Island in Lake Winnipegosis and along the north east shore of Pelican Lake.

Moderate damage to several ornamental white spruce at the north end of Clear Lake was noted, while damage in and around Wasagaming was light. Populations were low and damage light in all other areas.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.): - Although larval collections were made throughout the west-central area of the district, populations showed a definite decline from 1967. Black spruce plantings at Childs Lake in the Duck Mountain Provincial Park suffered severe damage. White spruce regeneration were moderately defoliated at Waterhen River and Edwards Lake in Riding Mountain National Park. Damage was generally light in most other areas.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam Poplar sp.	Moosehorn, Dauphin Lake area, Birch River, Makaroff, Waterhen River and McCreary	Moderate infestations in the Dauphin Lake area, light elsewhere.
<u>Acleris</u> spp. (Leaf rollers)	Willow Alder	Grandview and Grayling Lake	Low populations; very light damage.
<u>Acleris variana</u> (Fern.) (Black-headed budworm)	Spruce, white	Homebrook and Clear Lake	Low populations; light damage.
<u>Acronicta</u> spp. (Dagger moths)	Aspen, trembling Choke cherry, eastern	McCreary and Moosehorn	Very low populations.
<u>Adelges cooleyi</u> Gillette (Cooley spruce gall aphid)	Spruce, white	Childs Lake	A trace of damage.
<u>Adelges lariciatus</u> (Patch) (Spruce pineapple gall-aphid)	Spruce, white and black	Birch River, Duck Mountain Provincial Park, Wasagaming, Makaroff, Waterhen River and Homebrook	Very light damage except at Homebrook and Blue Lakes where white spruce were moderately defoliated.
<u>Alsophila pometaria</u> (Harr.) (Fall cankerworm)	Maple, Manitoba Caragana	Dauphin, Cowan, Portage la Prairie and Durban	Populations significantly lower; moderate defoliation in Dauphin.
<u>Altica populi</u> (Brown) (A flea beetle)	Poplar, balsam	Riding Mountain National Park	A single adult collection
<u>Amauronematus</u> spp. (Sawflies)	Aspen, trembling Willow	Birch River, Cowan, Porcupine Provincial Forest, and Riding Mountain National Park	Low populations; light feeding damage.
<u>Anoplonyx canadensis</u> Hgtn. (A sawfly)	Tamarack	Blue Lakes, Waterhen River and Camperville	No noticeable defoliation.

Insect	Host(s)	Locality	Remarks
<u>Anoplonyx luteipes</u> (Cress.) (A sawfly)	Tamarack	Throughout the district	Common but no significant defoliation.
<u>Aphid</u> spp.	Poplar, balsam Maple, Manitoba Aspen, trembling Elm, white	Throughout the district	Moderate infestations of balsam poplar and Manitoba maple at Moosehorn, light elsewhere.
<u>Archips negundanus</u> Dyar (A leaf roller)	Maple, Manitoba	Woodside, Delta, Oakland, Portage, Swan River, Bowsman, Dauphin and Grandview	Severe defoliation of a shelterbelt at Swan River, associated with <u>Gracillaria negundella</u> and <u>Choristoneura rosaceana</u> .
<u>Archippus packardianus</u> Fern. (A leaf roller)	Spruce, white	Riding Mountain National Park	Single larval collection.
<u>Arge clavicornis</u> (F.) (A sawfly)	Ash, green Alder Birch, white	Dauphin, Grand Rapids and Porcupine Provincial Forest	Low populations; light damage.
<u>Badebecia urticana</u> Hbn. (A leaf roller)	Poplar, balsam Birch, white Aspen, trembling Oak, bur Ash, green Willow Maple, Manitoba Saskatoon Choke cherry, eastern	Throughout the district	Widespread populations; light damage.
<u>Cecidomyia balsamicola</u> Lintner (Balsam gall midge)	Fir, balsam	Porcupine Provincial Forest	Light infestation of scattered regeneration at Bell Lake.
<u>Cecidomyia negundinis</u> Gill. (Boxelder gall midge)	Maple, Manitoba	Bowsman, Dauphin, Moosehorn, Makaroff, Fork River and the town of Riding Mountain	Light infestation of scattered trees.
<u>Cecidomyid</u> spp. (Gall midges)	Aspen, trembling Maple, Manitoba	Dauphin, McCreary, Waterhen River and Grand Rapids	Moderate infestation of Manitoba maple in a shelterbelt at Dauphin; light elsewhere.

Insect	Host(s)	Locality	Remarks
<u>Cephalcia</u> sp. (A false sawfly)	Spruce, white	Duck Mountain Provincial Forest	Single larval collection at Old Baldy Tower.
<u>Choristoneura</u> <u>pinus pinus</u> Free. (Jack-pine budworm)	Pine, jack	McCreary, Grand Rapids, Long Point on Lake Winnipeg and Riding Mountain National Park	A collapse of the Grand Rapids infestation; no noticeable damage.
<u>Choristoneura</u> <u>rosaceana</u> Harr. (Oblique-banded leaf roller)	Choke cherry, eastern Oak, bur Maple, Manitoba Spruce, white Poplar, balsam Willow Aspen, trembling Alder	Riding Mountain National Park, Birch River, Baden, Wasagaming, Dauphin and Swan River	Found in association with <u>C. conflictana</u> in Riding Mountain National Park; wide- spread leaf roller damage.
<u>Chrysomela</u> <u>crotchi</u> Brown (Aspen leaf beetle)	Aspen, trembling	Birch River and Riding Mountain National Park	Low populations; no noticeable damage.
<u>Compsolechia</u> <u>niveopulvella</u> Cham (A leaf roller)	Aspen, trembling	Cowan	Low populations; very light damage.
<u>Contarinia</u> <u>virginianiae</u> (Felt) (The choke cherry midge)	Choke cherry, eastern	Steep Rock and Devils Lake	Severe infestation of fruit in these areas.
<u>Diorycytria</u> <u>reniculella</u> (Grt.) (Spruce coneworm)	Spruce, white and Colorado	Portage la Prairie, Timberton, Riding Mountain National Park and Duck Mountain Provincial Forest	Low populations; light damage.
<u>Enargia</u> <u>decolor</u> Wlk. (A noctuid)	Aspen, trembling Poplar, balsam	Riding Mountain National Park, Duck Mountain Provincial Forest, McCreary and at Ebb and Flow Lake	Low populations; found in association with <u>C. conflictana</u> in Riding Mountain National Park.

Insect	Host(s)	Locality	Remarks
<u>Epicnaptera americana</u> (Harr.) (A lappet moth)	Willow	Dauphin	Single larval collection.
<u>Epinotia solandriana</u> Linn. (A leaf roller)	Aspen, trembling Poplar, balsam	Throughout the district	Found in association with <u>C. conflictana</u> in Riding Mountain National Park; leaf-roller damage common.
<u>Eramnis tiliaria</u> (Harr.) (Linden looper)	Maple, Manitoba	Fork River	Low populations; no defoliation.
<u>Eriosoma americanum</u> (Riley) (Woolly elm aphid)	Elm, white	Found in most shelterbelts	Moderate infestations at Makaroff and in Vermillion Park in Dauphin.
<u>Eupithecia</u> spp. (Loopers)	Caragana Spruce, black Willow	Kenville, Grand Rapids and Bell Lake	Low populations; very light damage. Species collected: <u>E. filmata</u> Pears., <u>E. ravocostaliata</u> Pack.
<u>Fenusa dohrnii</u> (Tischb.) (European alder leaf miner)	Alder	Duck Mountain Provincial Forest and Grand Rapids	Light leaf mining at Blue Lakes; moderate at Grand Rapids.
<u>Feralia jocosa</u> (Guen.) (Green-striped caterpillar)	Fir, balsam	Singoosh Lake	Single larval collection.
* <u>Galerucella decora</u> (Say) (Grey willow-leaf beetle)	Willow Poplar, balsam Aspen, trembling	Duck Mountain Provincial Park, and Porcupine Provincial Forest	Very low populations; generally light damage.
<u>Gracillaria negundella</u> Cham. (Box elder leaf roller)	Maple, Manitoba	Common in shelterbelts throughout the district	Low populations; light damage.
<u>Gracillariid</u> spp. (Blotch miners)	Elm, white Ash, green Hawthorn Oak, bur Dogwood	Throughout the district	Severe on Hawthorn at Homebrook, moderate on elm at Dauphin and Makaroff; light elsewhere.

*Name revised to Pyrralta decora (Say)

Insect	Host(s)	Locality	Remarks
<u>Itame loricaria</u> Evers. (A looper)	Aspen, trembling	Ste. Rose, Cowan, Camperville, Whitefish Lake and Riding Mountain National Park	Low populations; found in association with <u>C. conflictana</u> in Riding Mountain National Park.
<u>Lecanium coryli</u> L. (Lecanium scale)	Aspen, trembling	Sifton	Single collection on regeneration.
<u>Lithocolletis</u> <u>salicifoliella</u> Cham. (Aspen blotch miner)	Poplar, balsam Poplar, hybrid	Grand Rapids and Makaroff	Low populations; very light damage.
<u>Malacosoma</u> <u>disstria</u> Hbn. (Forest tent caterpillar)	Aspen, trembling Dogwood	Duck Mountain Provincial Forest and Ebb and Flow Lake	Two larval collections; no noticeable damage.
<u>Malacosoma</u> <u>lutescens</u> (N.&D.) (Prairie tent caterpillar)	Rose Willow Gooseberry Aspen, trembling Choke cherry, eastern	Dauphin Lake area, Alonsa, McCreary, Arden, Bluewing, Cayer, Birch River, Grand Rapids, Birnie and Riding Mountain National Park	Moderate damage of shrubs at Lake Audy and Arden; severe at Birnie, Cayer and Birch River.
<u>Mayetiola</u> <u>rigidae</u> (O.S.) (Beaked willow gall fly)	Willow	Dauphin, White- water and Blue lakes	Populations low in all areas.
<u>Melanagromyza</u> sp. (A twig gall maker)	Aspen, trembling	Throughout the district	Generally light damage.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling	Cayer, Crane River, Shergrove, McCreary, Grand Rapids, Meadow Portage and Baldy Mountain	Widespread populations; light damage.
<u>Neodiprion</u> <u>nanulus nanulus</u> Schedl (Red- pine sawfly)	Pine, jack	Cowan	A single colony; defoliation confined to one branch.

Insect	Host(s)	Locality	Remarks
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Aspen, trembling	McFadden Valley in Riding Mountain National Park	Single larval collection; found in association with <u>C. conflictana</u> .
<u>Oberea schaumii</u> Lec. (The poplar twig borer)	Aspen, trembling	Grand Rapids	Light damage to scattered regeneration.
<u>Oligonychus ununguis</u> (Jac) (Spruce spider mite)	Spruce, white	Dauphin	Severe damage of ornamental and shelterbelt spruce.
<u>Operophtera bruceata</u> (Hulst) (Bruce spanworm)	Aspen, trembling	Dauphin Beach and Grandview	Low populations; light damage.
<u>Orsodacne atra</u> (Ahr.) (A leaf beetle)	Poplar, balsam Willow Aspen, trembling	Riding Mountain National Park, Duck Mountain Provincial Park and Porcupine Provincial Forest	Low populations; very light damage.
<u>Orthosia hibisci</u> (Guen.) (A fruit worm)	Maple, Manitoba Aspen, trembling	Cowan, Camperville and Woodside	Low populations; no defoliation.
<u>Pemphigus populi-transversus</u> Riley (Poplar petiole gall aphid)	Poplar, balsam	Duck Mountain Provincial Park	Moderate infestation of 10 trees at Laurie Lake.
<u>Petrova albicapitana</u> (Busck.) (Pitch nodule maker)	Pine, jack and lodgepole	Grand Rapids, Duck Mountain and Porcupine Provincial forests, Fork River and Birch River	Light damage.
<u>Phenacaspis pinifoliae</u> Fitch (Pine needle scale)	Spruce, white	Dauphin and Waterhen River	Severe damage of white spruce in shelterbelts at Dauphin; light at the Waterhen River.

Insect	Host(s)	Locality	Remarks
<u>Phyllocnistis populiella</u> Cham. (Aspen leaf miner)	Aspen, trembling Cottonwood, plains	Bell Lake, Dauphin and Makinak	Low populations; a trace of damage.
<u>Phyllocolpa</u> spp. (Sawflies)	Aspen, trembling Poplar, balsam Willow	Meadowlands, Grand Rapids and Ketchum Lake	Light damage; <u>P. nr. agama</u> collected from balsam poplar, <u>P. nr. robusta</u> from trembling aspen and <u>P. nr. nigrata</u> from willow.
<u>Pikonema dimmockii</u> (Gress.) (Green-headed spruce sawfly)	Spruce, white and black	Throughout the district	Very low populations; often found in association with <u>P. alaskensis</u> .
<u>Pissodes strobi</u> (Peck) (White-pine weevil)	Spruce, white and black	Wasagaming and Blue Lakes	Severe damage of regeneration black and white spruce at Blue Lakes.
<u>Fontania</u> sp. (A gall making sawfly)	Willow	Throughout the district	Severe infestation of shelterbelts in Dauphin area; light damage elsewhere.
<u>Proteoteras willingana</u> (Kft.) (Box elder twig borer)	Maple, Manitoba	Throughout the district	Common in shelterbelts; light damage.
<u>Rhabdophaga strobiloides</u> (O.S.) (Willow cone gall midge)	Willow	Grand Rapids, along the Vermillion River, Blue and Whitefish lakes	Severe infestation along the Vermillion River; light elsewhere.
<u>Semiothisa sexmaculata</u> Pack. (A geometrid)	Tamarack	Porcupine Provincial Forest, Homebrook, Camperville and Waterhen River	Low populations; no noticeable damage.
<u>Zeiraphera fortunana</u> Kft. (Spruce bud moth)	Spruce, white	Riding Mountain National Park, Duck Mountain Provincial Park, Timberton and Whitefish Lake	Very low populations; a trace of feeding damage.

Insect	Host(s)	Locality	Remarks
<u>Zugophora scutellaris</u> Suffr. (Cottonwood leaf mining beetle)	Poplar, hybrid Cottonwood, plains	Makaroff and Makinak	Light infestation of hybrid poplar in a shelterbelt at Makaroff.

DISEASE CONDITIONS

ASPEN SHOOT BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:— Both the incidence and intensity of this annual disease declined from 1967. Generally one per cent or less of new aspen shoots were infected. However, at Blue Lakes in the Duck Mountain Provincial Park, approximately 10 per cent of aspen regeneration were infected. An average of about 10 per cent of the new shoots were affected. Infections declined in the plot at Clear Lake for the second consecutive year, while no infected trees were found in the Meadow Portage plot.

The figures obtained from the above-mentioned tallies are summarized as follows:

Plot no. and location	No. of ta counted	% of trees infected			Av. % of shoots infected per tree		
		1966	1967	1968	1966	1967	1968
Clear Lake 01	20	100	100	66	22.7	12.3	3.5
Meadow Portage 01	20	22	0	0	2.5	0	0

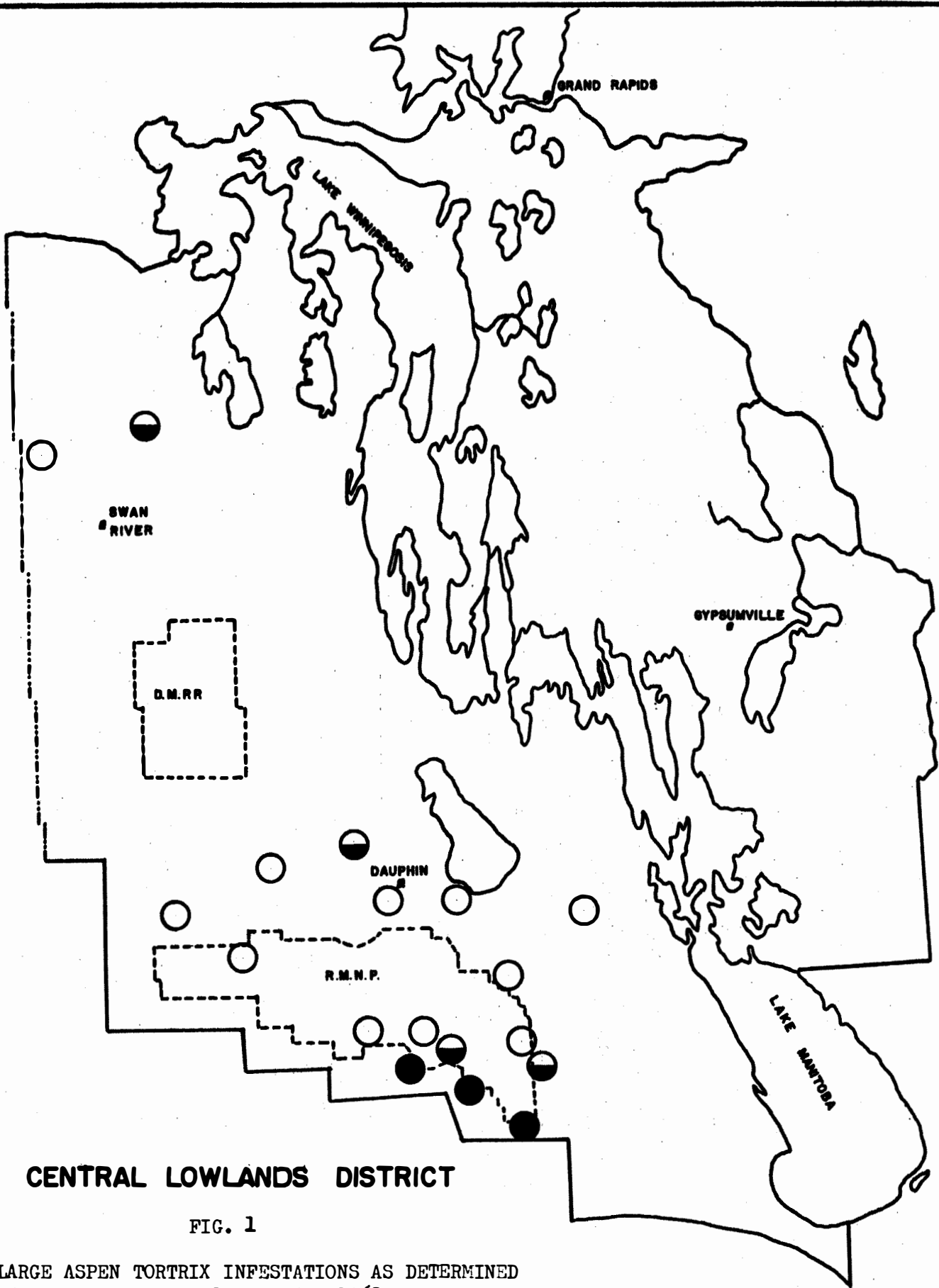
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Arceuthobium americanum</u> Nutt. ex Engelm. (Jack- pine mistletoe)	Pine, jack	Cowan, Long Point, Easter- ville and Grand Rapids	Jack pine in the Long Point- Easterville and Cowan areas moderately infected.
<u>Arceuthobium pusillum</u> Pk (Eastern dwarf mistletoe)	Spruce, black	Long Point and Devils Lake	A severe infection at Devils Lake; light at Long Point.

Organism and Disease	Host(s)	Locality	Remarks
<u>Chrysomyxa arctostaphyli</u> Diet. (Yellow witches' brooms of spruce)	Spruce, black and white	Riding Mountain National Park and Duck Mountain Provincial Park	Light infections.
<u>Chrysomyxa ledi</u> (Alb. & Schw.) deBary (A needle rust)	Spruce, black and white	Riding Mountain National Park, Grand Rapids and Gypsumville	A moderate infection of black spruce at Gypsumville; light infections elsewhere.
<u>Chrysomyxa ledicola</u> (Peck) Lagerh. (Spruce needle rust)	<u>Ledum</u> sp. Spruce, black, white and Colorado	Throughout the district	Ledum moderately infected at Devils Lake; 40% of ornamentals lightly infected at Wellman Lake.
<u>Ciborinia foliicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Riding Mountain National Park and Porcupine Provincial Forest	Very light infections.
<u>Ciborinia whetzellii</u> Seaver (An ink spot)	Aspen, trembling	Waterhen River, Devils Lake and Riding Mountain National Park	Twenty per cent of aspen regeneration had 1-5 per cent of foliage infected at Grayling Lake in Riding Mountain National Park.
<u>Coleosporium asterum</u> (Diet.) Syd. (Needle rust)	Pine, jack	Cowan	Light needle infections.
<u>Cronartium comandrae</u> Peck (Comandra rust)	Pine, jack	Blue Lakes and Whitefish Lake	Light infections.
<u>Cucurbitaria staphula</u> Dearn. ex R.H. Arnold & R.C. Russell	Aspen, trembling	Moon Lake Warden Station	Common in this area.

Organism and Disease	Host(s)	Locality	Remarks
<u>Cytospora</u> spp.	Aspen, trembling Willow Ash, green Elm, white	Dauphin, Roblin, Durban, Grand Rapids and at Grayling and Ebb and Flow lakes	Commonly associated with twig and branch dieback; <u>C. annulata</u> Ell. & Ev. on M. Maple, <u>C.</u> <u>ambiens</u> Sacc. on Apple.
<u>Elsinoe ledi</u> (Pk) Zeller (Leaf spot)	Ledum sp.	Devils Lake	Light infection of Labrador tea.
<u>Fomes igniarius</u> (L. ex Fr.) Gill. (Heart rot of poplar)	Aspen, trembling	Throughout the district	Infections light and widely scattered.
<u>Graphium</u> sp.	Elm, white	Dauphin and Makinak	Collected from elm in conjunction with bark beetle survey.
<u>Hypoxylon fuscum</u> (Pers. ex Fr.) Fr. (A canker)	Hazel Alder	Porcupine Provincial Forest and Riding Mountain National Park	Light infections.
<u>Hypoxylon</u> <u>mammatum</u> (Wahl) Miller (A canker)	Aspen, trembling Alder	Glencairn, Moosehorn, Ste. Rose, Roblin, Ebb and Flow Lake and Riding Mountain National Park	Generally light infections.
<u>Melampsora</u> <u>bigelowii</u> Thum. (Larch-willow rust)	Willow	Porcupine Provincial Forest and Whitewater Lake	Light infections.
<u>Peridermium</u> <u>harknessii</u> J.P. Moore (Western gall rust)	Pine, jack	McCreary, Birch River and Fork River	Light infections; Hyperparasites <u>Cladosporium</u> sp. and <u>Biatorella</u> <u>resinae</u> (Fr.) Mudd. from galls at McCreary.

Organism and Disease	Host(s)	Locality	Remarks
<u>Pollaccia elegans</u> (Serv.) (Leaf and twig blight of poplar)	Poplar, balsam	Devils Lake	Light infection of regeneration.
<u>Puccinia coronata</u> Cda (A leaf rust)	Buckthorn	Moon Lake	Severe infection.
<u>Rhytisma</u> <u>salicinum</u> Pers. ex Fr. (Tar spot of willow)	Willow	Throughout the district	Severe infections in Riding Mountain National Park; light elsewhere.
<u>Septoria musiva</u> Pk (A leaf spot)	Poplar, balsam Cottonwood, plains	Fork River, Waterhen River, Grand Rapids, Makinak, Rolling River and Bell Lake	Light infections.
<u>Taphrina</u> <u>pruni</u> (Fckl) Tul. (Plum pocket disease)	Plum, wild	Keld	Localized severe infection of fruit.
<u>Uncinula</u> <u>salicis</u> (Fr.) Wint. (Powdery mildew)	Poplar, balsam Cottonwood, plains	Waterhen River, Porcupine Provincial Forest and Makinak	Light infections.

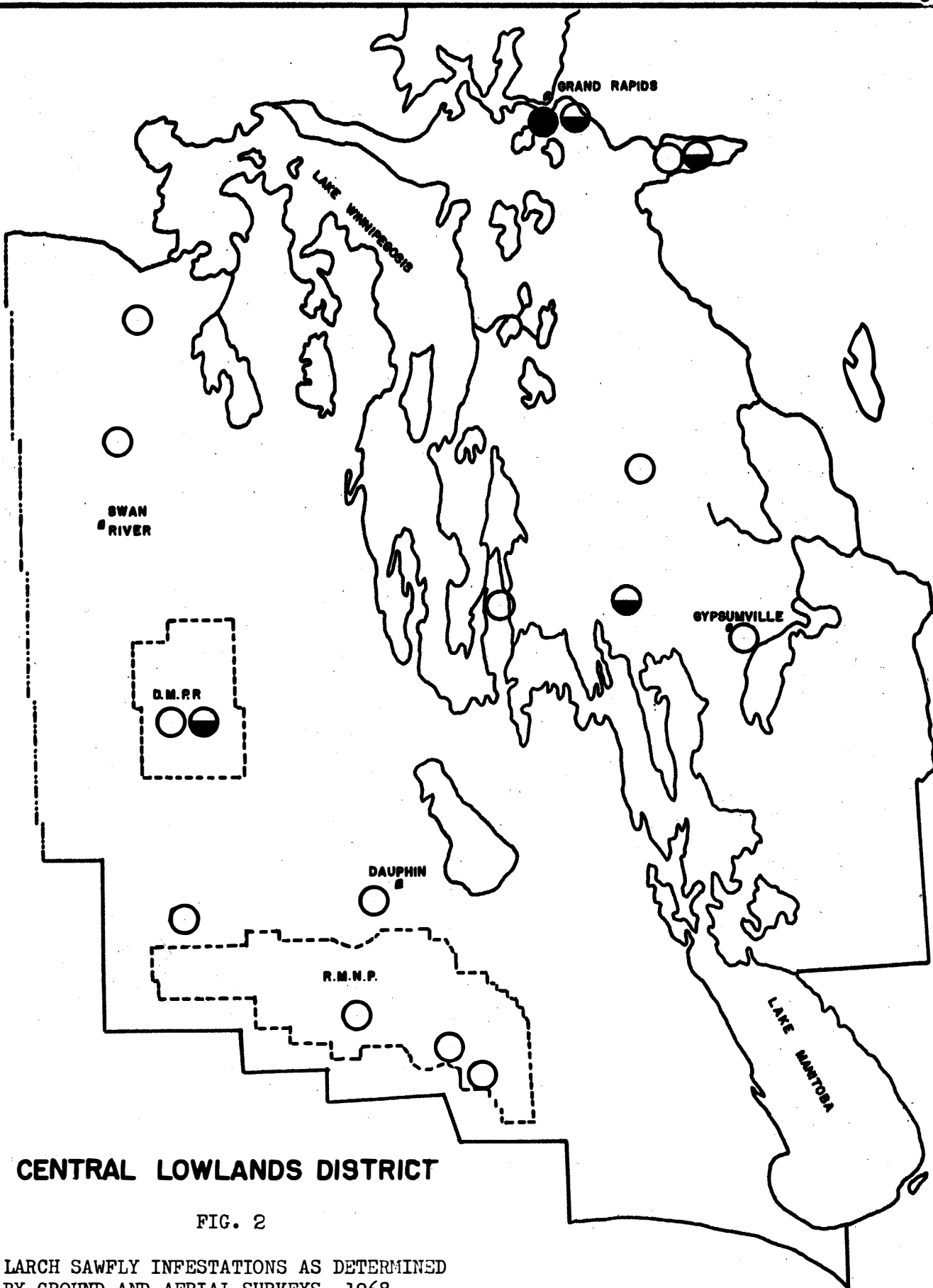


CENTRAL LOWLANDS DISTRICT

FIG. 1

LARGE ASPEN TORTRIX INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS--1968




- Light ○
- Moderate ◐
- Severe ●



CENTRAL LOWLANDS DISTRICT

FIG. 2

LARCH SAWFLY INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS--1968

Light 
 Moderate 
 Severe 

0 12 24

NORTHERN LOWLANDS DISTRICT
AND
NORTHERN MANITOBA

1968

by
R. C. Tidsbury

INTRODUCTION

Cool, wet weather prevailed throughout most of the field season. Field surveys commenced on May 23 and terminated on September 28, during which time 554 insect and 364 disease samples 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) releasing the introduced larch sawfly parasite Olesicampe sp. nr. nematorum Tschek in The Pas area; (d) sequential sampling of larch sawfly egg populations; (e) small mammal population survey; (f) collecting insect and disease material for personnel of the Winnipeg and other laboratories; and, (g) the ninth annual survey of the Thompson smoke Easement area. Approximately 24 hours of chartered flying and 12 hours supplied by the Manitoba Government Air Service was used for surveys and general mapping.

Changes were recorded in the distribution of the spruce budworm. These were extensions of the original Namew Lake spruce budworm infestation to include: moderate to severe defoliation at Iskwasum and Elbow lakes, moderate to severe defoliation at Kisseynew and Sipiweak lakes, and a decrease in defoliation from Simonhouse Lake to Flin Flon. A marked increase in populations of a blotch miner on willow, (Parornix sp.), and a slight increase in populations of the aspen leaf beetle were recorded. A decrease in populations of the yellow-headed spruce sawfly was noted from Makeking north to Prospector and populations of the grey willow leaf beetle declined slightly. A considerable decrease in larch sawfly defoliation occurred from The Pas to Root Lake but increased in the Granville and Highrock lakes area.

Changes in the status of diseases included a slight increase of tar spot on willow and decreases in the spruce needle rusts, Chrysomyxa spp., and the leaf and twig blight, Pollaccia radiosa (Lib.) Bald & Cif.

INSECT CONDITIONS

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):— Pockets of moderate to severe defoliation continued throughout the original Namew Lake infestation (Figure 1). However, decreases were observed along the south side of Simonhouse Lake, in the Mistik Creek-Neso Lake area, and from the North Star road to Flin Flon. Extensions of the 1967 infestation included an increase of moderate and severe defoliation from Third Cranberry Lake to Elbow and Iskwasum lakes. Black spruce and some balsam fir on islands within these lakes suffered moderate to severe defoliation. Further extensions were noted along the Sturgeon-Weir River east of Hanson Lake and along Kisseynew Lake for a distance of 12 miles east of the Saskatchewan boundary.

No change was noted in the varying degrees of defoliation surrounding the Namew Lake infestation. Moderate to severe defoliation was again recorded in the Cumberland Lake area at Pine Island, Buds' Point and north to Denison Bay. Similar defoliation occurred along the west side of Cormorant lakes, as well as between Mitchell and Cormorant lakes. Severe defoliation was detected on an island off the north shore of Clearwater Lake.

Moderate to severe defoliation of spruce and balsam fir was recorded on a few islands along the north shore of Sipiwesk Lake (immediately east of Bear Island) and one pocket of moderate defoliation was observed east of Bruneau Lake.

Throughout the above infestation, the most severe defoliation was observed between Rocky and Atik lakes, along the north side and two pockets on the west side of Namew Lake, along the east side of Waterfall Lake and west side of Goose Lake. Scattered pockets of moderate to severe defoliation occurred along the south side of Athapapuskow Lake and at the south end of Amisk Lake.

Very light defoliation was recorded on white spruce at Clearwater, Wekusko, Reed, Chisel, Tramping and Witchai lakes, Overflow Bay, The Pas and Westray. A trace of defoliation was recorded on black spruce and balsam fir at Chisel Lake.

LARCH SAWFLY, Pristiphora erichsonii (Htg.):— Ground checks during aerial surveys in late August indicated light populations at Nueltin, Lac Brochet, Wells, Fort Hall and Lynn lakes (Figure 3). The majority of larvae collected north of Lynn Lake were in the early stages of development.

Aerial observations indicated patches of moderate to severe defoliation between Granville and Highrock lakes. Smaller patches of similar defoliation were observed south of Moses Lake; near the southeast corner of Granville Lake; south of Guthrie Lake, and northeast of Sisipuk Lake.

Populations decreased considerably between The Pas and Root Lake; light occasionally moderate defoliation was noted on small reproduction (Figure 2). Defoliation was generally light throughout The Bog. Scattered patches of moderate to severe defoliation were recorded from Cranberry Portage south for a distance of 9 miles along Highway 10. Generally very light defoliation was recorded at Simonhouse, Jan, Neso, Gods, Chisel, Snow, Wekusko, Setting, Kiski, Sipiwesk, Egg, Atik and Clearwater lakes and in the Overflow Bay, Flin Flon and Wabowden areas.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):— Populations of this sawfly decreased considerably on black spruce reproduction from Clearwater Lake south to Mafeking. Scattered moderate to severe defoliation in the upper crowns was recorded in this area. Very light defoliation occurred on white spruce at Jan, Clearwater, Wintering, Simonhouse, Natawahunan, Harding, Chisel and Sipiwesk lakes, and at The Pas, Cranberry Portage, Nelson House and Overflow Bay. Similar defoliation was recorded on black spruce at Prospector, Overflow Bay, Cranberry Portage, Simonhouse, Mystic, Red Sucker, Wintering, and Witchai lakes.

ASPEN LEAF BEETLE, Chrysomela crotchii Brown:— Populations of this insect increased slightly from the previous year. Moderate defoliation was recorded on a few aspen reproduction at Sisipuk Lake. Very light defoliation was recorded on aspen reproduction at Wekusko, Twin, Amisk, Jan, Clearwater, Neso and Johnson lakes and Cranberry Portage. Larvae were also collected from balsam poplar at Amisk Lake.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:— Population levels remained unchanged from 1967. Moderate damage was recorded on aspen reproduction at Cranberry Portage and Oxford Lake. Very light to light damage was recorded on trembling aspen at Jan, Johnson, Annabel, Chisel, Sisipuk and Elbow lakes, and at Wabowden and Overflow Bay. Similar damage was recorded on balsam poplar at Sipiwesk, Gods, Kipahigan, Elbow and Chisel lakes and in the Overflow Bay area.

GRAY WILLOW-LEAF BEETLE, Pyrrhalta decora (Say):— Populations of this insect decreased slightly in 1968. Moderate skeletonizing was recorded on aspen reproduction at Goose Lake and on willow at Cranberry Portage. Very light damage on trembling aspen occurred at Rocky, Clearwater, Amisk, Simonhouse, Jan and Deschambault lakes; in the Carrot River Valley, Westray and at Overflow and Dawson bays. Similar damage was recorded on willow at Jan, Amisk, Norris, Rocky, Johnson, Harding, Atik and Wells lakes and in The Pas, Westray, Prospector, Wabowden, Overflow and Dawson bay areas. Very light damage was recorded on balsam poplar in The Pas area, Clearwater, Jan and Deschambault lakes.

A BLOTCH MINER, Parornix sp.:— Populations of this leaf miner increased considerably over the previous year. Severe damage to large patches of willow was recorded at Chisel, Snow, Kipahigan, Burntwood, Sipiwesk, Setting, Simonhouse and Wekusko lakes, Wabowden and Cranberry Portage. The largest area of severe defoliation was observed along the Chisel and Snow lakes roads. Moderate damage was recorded in the Overflow Bay and The Pas areas, and at Ospwagan and Thompson lakes. Light damage occurred at Sisipuk, Jan, Norris, Red Sucker, Witchai, Harding, Granville and Elbow lakes.

OTHER NOTEWORTHY INSECTS

<u>Insect</u>	<u>Host(s)</u>	<u>Locality</u>	<u>Remarks</u>
<u>Aceria</u> <u>parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling	Wintering and Sisipuk lakes and Overflow Bay	Very light populations on a few trees.
<u>Acleris</u> <u>variana</u> (Fern.) (Black- headed budworm)	Spruce, black and white	Amisk and Witchai lakes and Prospector	Low larval populations; no visible damage.
<u>Adelges</u> <u>lariciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, white	Tramping, Reed, Simonhouse and Clearwater lakes, Dawson Bay, The Pas and Westray	Generally light damage on scattered trees.
<u>Alsophila</u> <u>pometaria</u> (Harr.) (Fall cankerworm)	Maple, Manitoba	The Pas area (Carrot River Valley)	Light defoliation on small reproduction.

Insect	Host(s)	Locality	Remarks
<u>Amauronematus</u> spp. (Sawflies)	Willow Aspen, trembling Alder	Simonhouse, Chisel, Wekasko, Jan, Morris, Paint and Natawahuman lakes and Over- flow Bay	Severe defoliation on a few small willow clumps at Simonhouse Lake, a trace of defoliation elsewhere.
<u>Anoplonyx</u> <u>canadensis</u> Hgtm. (A sawfly)	Tamarack	Simonhouse, Chisel, and Jan lakes	Common but no noticeable defoliation.
<u>Anoplonyx</u> <u>luteipes</u> (Cress.) (A sawfly)	Tamarack	Throughout the Northern Low- lands District	Common, no defoliation.
<u>Archips</u> <u>cerasivoranus</u> (Fitch) (Ugly- nest caterpillar)	Cherry choke	The Pas-Clear- water Lake area and Overflow Bay	Localized infestations; moderate to severe damage.
<u>Arge clavicornis</u> Fab. (Willow sawfly)	Alder Birch, white	Simonhouse, Jan, Wintering, Witchai lakes and The Pas area	Very low larval populations; a trace of damage.
<u>Badebecia</u> <u>urticana</u> Hbn. (A leaf roller)	Poplar; balsam Aspen; trembling Alder	Rocky, Clearwater and Iskwasum lakes and Overflow Bay	Light damage of trembling aspen in the Overflow Bay area, very light elsewhere.
<u>Bucculatrix</u> <u>canadensisella</u> Cham. (Birch skeletonizer)	Birch, white	Meak, Island and Thompson lakes	Generally very light skeletoniz- ing.
<u>Calligrapha alni</u> (Schffr.) (A leaf beetle)	Alder	Kisseynew Lake and Overflow Bay	Light skeletoniz- ing on scattered clumps.
<u>Calligrapha</u> spp. (A leaf beetle)	Dogwood Willow	Nelson House and Norris Lake	Light skeletoniz- ing on dogwood at Norris Lake and on willow at Nelson House.

Insect	Host(s)	Locality	Remarks
<u>Campaea perlata</u> Gn. (Fringed looper)	Aspen, trembling Willow Maple, Manitoba	Rocky Lake, The Pas area, Westray and Overflow Bay	Very low larval populations.
<u>Cecidomyia</u> <u>balsamicola</u> Lintner (Balsam gall midge)	Fir, balsam	Wekusko and Chisel lakes and Overflow Bay	Generally light damage on individual trees.
<u>Chermes lariciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Wekusko and Red Sucker lakes and Overflow Bay	Light damage of occasional trees.
<u>Choristoneura</u> <u>conflictana</u> (Wlk.) (Large aspen tortrix)	Aspen, trembling Poplar, balsam	The Pas area, Overflow Bay and Simonhouse and Maligne lakes	Very light damage on scattered reproduction.
<u>Choristoneura</u> <u>pinus pinus</u> Free. (Jack-pine budworm)	Pine, jack	Clearwater and Atik lakes area	Very light defoliation.
<u>Choristoneura</u> <u>rosaceana</u> Harr. (Oblique-banded leaf roller)	Aspen, trembling Poplar, balsam	Simonhouse and Amisk lakes and Dawson Bay	Very light damage.
<u>Chrysomela knabi</u> Brown (A leaf beetle)	Poplar, balsam	Cranberry Portage, Nelson House and Overflow Bay	Very light skeletonizing on scattered reproduction.
<u>Chrysomelid</u> sp. (A leaf beetle)	Alder Dogwood Aspen, trembling Poplar, balsam	Paint, Kisseynew, Red Sucker, Elbow, Wintering, Sipiwesk lakes and Cranberry Portage, Lake Winnipegosis, Overflow Bay and Wabowden	Light skeletoniz- ing on alder at Cranberry Portage and Kisseynew Lake; very light elsewhere.

Insect	Host(s)	Locality	Remarks
<u>Cyphon variabilis</u> Thunb. (False flower beetle)	Spruce, white and black Willow Pine, jack Fir, balsam Tamarack Poplar, balsam Aspen, trembling	Throughout Northern Lowlands District	Generally low adult populations; no damage.
<u>Dioryctria</u> <u>reniculella</u> Grt. (Spruce coneworm)	Spruce, white and black	Clearwater, Wekusko, Reed, Iskwasum, Chisel, Twin, Maligne and Isbister lakes; Overflow and Dawson bays	Generally low populations in association with <u>C.</u> <u>fumiferana</u> .
<u>Epinotia</u> <u>solandriana</u> Linn. (A leaf roller)	Aspen, trembling Poplar, balsam Willow	Clearwater, Simon- house and Twin lakes	Very light damage.
<u>Eriosoma</u> <u>americanum</u> Riley (Woolly elm aphid)	Elm, white	The Pas area (Carrot River Valley)	Light damage.
<u>Fenusa dohrnii</u> Tischb. (European alder leaf miner)	Alder	Simonhouse, Chisel, Sisipuk, Kipahigan, Burntwood, Jan and Clearwater lakes, Overflow Bay and The Pas area	Moderate leaf mining on scattered clumps at Simonhouse and Chisel lakes, light elsewhere.
<u>Feralia iocosa</u> Gn. (Green- striped cater- pillar)	Spruce, white and black Fir, balsam	Clearwater, Island and Harding lakes, The Pas, Cranberry Portage and Wabowden	Very low larval populations.
* <u>Galerucella</u> <u>cavicollis</u> Lec. (Cherry leaf beetle)	Saskatoon	Reader Lake	Moderate to severe defoliation.
<u>Gonioctena</u> <u>americana</u> (Schaef) (American aspen beetle)	Aspen, trembling	Prospector and Lake Athapapuskow	Moderate larval defoliation on small reproduction at Prospector, very light defoliation elsewhere.

*Name revised to Pyrrhalta cavicollis Lec.

Insect	Host(s)	Locality	Remarks
<u>Hylurgopinus rufipes</u> (Eichh.) (Native elm bark beetle)	Elm, white	Sipanok Channel Sask., (Red Earth area) and Carrot River Valley (The Pas area)	Low populations from dead trees.
<u>Malacosoma pluviale</u> Dyar (Western tent caterpillar)	Aspen, trembling	Jan Lake	Light defoliation.
<u>Nematus limbatus</u> Cress. (A willow sawfly)	Willow	Atik and Jan lakes and The Pas area	Light defoliation on scattered reproduction.
<u>Nematus populi</u> Marl. (A sawfly)	Aspen, trembling Poplar, balsam	Simonhouse and Maligne lakes, Overflow Bay and Prospector	Light defoliation of individual branches.
<u>Neodiprion abietis</u> complex (Balsam-fir sawfly)	Spruce, black	Harding Lake	Very low larval populations.
<u>Neodiprion nanulus nanulus</u> Schedl. (Red-pine sawfly)	Pine, jack	Jan, Amisk and Clearwater lakes area	Single colony; very light defoliation
<u>Neodiprion prattii banksianae</u> Roh. (Black-headed jack-pine sawfly)	Pine, jack	Chisel Lake	Light defoliation of single tree.
<u>Neodiprion virginianus</u> complex (Red-headed jack-pine sawfly)	Pine, jack	Elbow and Thompson lakes	Single colony collections.
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Willow Poplar, balsam	Jan and Amisk lakes and Wabowden area	Light defoliation.
<u>Pandemis canadana</u> Kft. (A tortricid moth)	Poplar, balsam Birch, white Aspen, trembling Willow	Reader, Reed, Chisel, Amisk and Jan lakes, Overflow Bay and The Pas area	Low larval populations; very light damage.

Insect	Host(s)	Locality	Remarks
<u>Petrova</u> <u>albicapitana</u> Busck. (Pitch nodule maker)	Pine, jack	Chisel, Clear- water, Neso, Root, Atik and Annabel lakes and The Pas area	Very light damage.
<u>Phenacaspis</u> <u>pinifoliae</u> Fitch (Pine needle scale)	Spruce, black	Overflow Bay	Light infestation of reproduction.
<u>Phyllocnistis</u> <u>populiella</u> Cham. (An aspen leaf miner)	Poplar, balsam Aspen, trembling	Throughout the Northern Low- lands District and as far north as Kipahigan Lake	Generally low populations; light damage.
<u>Phyllocolpa</u> spp. (Leaf-folding sawflies)	Poplar, balsam Aspen, trembling Willow	Throughout the Northern Lowlands District and as far north as Sisipuk Lake	<u>P. nr. nigrata</u> - very light damage on a few willow at Harding and Sisipuk lakes. <u>P. nr.</u> <u>robusta</u> - moderate damage on trembling aspen at Paint Lake; light at Clearwater, Jan, Wintering lakes and Wabowden. <u>P. nr.</u> <u>agama</u> - widely distributed, light damage of small balsam poplar.
<u>Pikonema</u> <u>dimmockii</u> (Cress.) (Green-headed spruce sawfly)	Spruce, White and black	Throughout the Northern Lowlands and southern portion of the Northern Aerial districts	Low populations in association with <u>Pikonema alaskensis</u> (Roh.)
<u>Sciaphila</u> <u>duplex</u> Wlsh. (A leaf roller)	Aspen, trembling	Rocky, Clearwater, Simonhouse, Amisk, Jan and Maligne lakes and Overflow Bay	Generally light damage.
<u>Semiothisa</u> <u>sexmaculata</u> Pack (Green larch looper)	Tamarack	Throughout the Northern Lowlands District	Generally low populations; no damage.

Insect	Host(s)	Locality	Remarks
<u>Semiothisa</u> <u>sigmaria</u> <u>disrupta</u> Wlk. (A looper)	Spruce, black Fir, balsam	Simonhouse and Chisel lakes	Very low larval populations.
<u>Tenthredinid</u> spp. (Sawflies)	Willow Birch, white Poplar, balsam	The Pas area, Overflow Bay and Clearwater, Chisel and Sisipuk lakes	Very low larval populations; no appreciable damage.
<u>Trichiosoma</u> <u>triangulum</u> Kby. (A sawfly)	Willow Aspen, trembling Alder Poplar, balsam	Natawahunan, Jan Fort Hall and Burntwood lakes and Overflow Bay	Very low larval populations.
<u>Zeiraphera</u> <u>fortunana</u> Kft. (Spruce bud moth)	Spruce, white	Clearwater, Reed, and Tramping lakes	Low larval populations.
<u>Zeugophora</u> <u>scutellaris</u> Suffr. (Cottonwood leaf- mining beetle)	Aspen, trembling Poplar, balsam	Kipahigan, Sisipuk, Elbow lakes and Overflow Bay	Very light infestations.

DISEASE CONDITIONS

SPRUCE NEEDLE RUSTS, Chrysomyxa spp.:— Light infections of C. ledi (Alb. & Schw.) deBary were recorded on small pockets of reproduction black spruce at Simonhouse and Chisel lakes, and at Overflow Bay and Wabowden. Very light infections were recorded at Kisseynew, Jan, Kipahigan and Clearwater lakes, and on Ledum sp. at Clearwater, Simonhouse, Mystic, Johnson, Chisel, Wekusko, Sipiwesk, Setting and Lynn lakes, The Pas and Overflow Bay. Light infections of C. ledicola (Peck) Lagerh. were noted on several white spruce at Simonhouse, Chisel, Setting and Granville lakes. Infections were very light at Nelson House, Overflow Bay, Wabowden and Jan, Sipiwesk, Burntwood, Nueltin, Kipahigan and Sisipuk lakes. Small pockets of black spruce were lightly infected at Mystic, Jan, Johnson, Setting, Wekusko, Sipiwesk, Chisel, Granville, Burntwood, Wells and Reindeer lakes, The Pas, Lynn Lake, Overflow Bay and Cranberry Portage. Very light infections were recorded on Ledum sp. at Amisk, Jan, Maligne, Root, Ospwagan, Gods, Harding, Wekusko and Chisel lakes and The Pas. Cones of a few black spruce were lightly infected by C. pirolata Wint. in The Pas area.

A LEAF AND TWIG BLIGHT, Pollaccia radiosa (Lib.) Bald. & Cif.:— The intensity of this blight decreased slightly from the previous year. Moderate to severe intensities on scattered trembling aspen reproduction were recorded at Goose, Simonhouse, Rocky, Jan, Sipiwesk, Chisel and Thompson lakes, Overflow Bay and Cranberry Portage. Areas of highest incidence, from 25 to 50 per cent, were observed at Chisel, Jan, Sipiwesk and Rocky lakes. Light infections were recorded at Amisk, Paint, Moak, Granville, Oxford, Gods, Island, Wintering, Footprint, Kiskeynew, Setting, Clearwater and Kipahigan lakes and Wabowden.

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	1968	1966	1967	1968
Westray	45	15	0	2.3	0.3	0
Reed Lake	100	70	65	10.0	4.6	3.4
Jan Lake	100	95	80	48.5	18.4	3.9

A LEAF AND TWIG BLIGHT, Pollaccia elegans Serv.:— The incidence of this blight increased in 1968 and light infections of balsam poplar reproduction were recorded at Clearwater, Amisk, Chisel, Cumberland, Sisipuk and Thompson lakes, and at Nelson House, Overflow Bay and Wabowden.

A RUST BROOM, Chrysomyxa arctostaphyli Diet.:— Widely scattered infections of this rust, usually one or two brooms per tree, were common on black spruce throughout both districts. Single brooms were noted on one white spruce at Rocky Lake and Overflow Bay, and an average of two brooms per tree was recorded on twelve white spruce in the Reed Lake area. This pathogen was recorded on the alternate host, Arctostaphylos uva-ursi (L.) Spreng., at Wekusko and Reed lakes.

TAR SPOT OF WILLOW, Rhytisma salicinum (Pers.) Fr.:— Infections of this disease increased slightly from 1967. Moderate infections of scattered clumps and small patches of willow were recorded at Lac Brochet, Fort Hall and Sisipuk lakes. Very light infections were recorded at Oxford, Red Sucker, Simonhouse, Amisk, Setting, Chisel, Wekusko, Burntwood, Wells, Reindeer, Jan, Granville, and Thompson lakes, and at The Pas, Cranberry Portage, Wabowden and Lynn Lake.

A LEAF SPOT, Septoria musiva Pk.:— Moderate to heavy infections of this leaf spot occurred on patches of young balsam poplar at Jan, Clearwater, Goose, Simonhouse and Chisel lakes, Flin Flon, The Pas and Overflow Bay. Light infections were recorded at Kipahigan and Paint lakes. A severe infection on several small white birch was recorded at Chisel Lake and a light infection on the same species at Simonhouse Lake.

LARCH-WILLOW RUST, Melampsora bigelowii Thum:- There was no notable change in infections of this rust on willow throughout both districts. Moderate infections of a few clumps were recorded at Nelson House and Gods Lake, and light at Clearwater, Amisk, Jan, Cumberland, Sisipuk and Thompson lakes, and in the Cranberry Portage, Overflow Bay and Wabowden areas.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Arceuthobium americanum</u> Nutt. (A mistletoe of jack pine)	Pine, jack	Athapapuskow Lake (Mink Narrows)	Infection previously reported was examined and confirmed; approximately twenty trees with average of three small brooms per tree.
<u>Arceuthobium pusillum</u> Pk. (Eastern dwarf mistletoe)	Spruce, white	Miles 20, 30, 37 on Cumberland Lake road, Saskatchewan	Small pockets of moderate brooming of white spruce in the area.
<u>Ciborinia follicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Fort Hall Lake	A trace of infection on one clump.
<u>Ciborinia whetzelii</u> Seaver (Ink spot of aspen)	Aspen, trembling	Oxford, Rocky and Simonhouse lakes	Light to moderate infection on a dozen reproduction at Simonhouse Lake; light infection on a few reproduction at Rocky Lake; a trace on one tree at Oxford Lake.
<u>Coleosporium asterum</u> (Diet.) Syd. (Needle rust)	Pine, jack	Root Lake	Very light infection on regeneration.
<u>Euryachora betulina</u> (Fr.) Schroet. (A tar spot)	Birch, white and scrub	Simonhouse, Kipahigan, Sisipuk, Chisel and Burntwood lakes; Wabowden, The Pas and Overflow Bay areas	Heavy infection on a few white birch at Wabowden; moderate infection on scrub birch at the Overflow Bay area; light infections elsewhere.

Organism and Disease	Host(s)	Locality	Remarks
<u>Heminyriangium</u> <u>betulae</u> Reid & Pirozynski (A tar spot)	Birch	Nelson House	Light infection on one tree.
<u>Hypodermella</u> <u>nervata</u> Darker (Needle cast)	Fir, balsam	Tramping, Red Sucker, Island, and Simonhouse lakes; The Pas and Overflow Bay areas	Scattered patches of moderate infections at Red Sucker Lake; light infections elsewhere.
<u>Linospora</u> <u>tetraspora</u> Thompson (A leaf spot)	Poplar, balsam	Jan, Clearwater, Chisel and Simonhouse lakes and Overflow Bay	Generally light infections on scattered reproduction.
<u>Melampsora abieti-</u> <u>capraearum</u> Tubeuf (A rust)	Willow Fir, balsam	Amisk, Maligne, Clearwater and Wekusko lakes, Wabowden and Overflow Bay areas	Light infections on balsam fir at Maligne Lake and willow at Wabowden; very light elsewhere.
<u>Melampsora epilobie</u> Othh. (A leaf rust)	Fir, balsam	Amisk and Maligne lakes	Light infections.
<u>Melampsorella</u> <u>caryophyllacearum</u> Schroet. (Witches' broom)	Fir, balsam	Wekusko and Island lakes	One broom at each location.
<u>Phaeoramularia</u> <u>maculicola</u> (Rom. & Sacc.) Sutton (A leaf spot)	Aspen, trembling	Wekusko, Twin, Maligne, Jan, Clearwater, Goose, Island, Wintering, Root, Simon- house, Athapapuskow and Rocky lakes; Wabowden and Cranberry Portage	Light infections on scattered reproduction at Island, Wintering, and Athapapuskow lakes; moderate to severe pockets of infection elsewhere.
<u>Phyllosticta viridis</u> Ell. & Kell. (A leaf spot)	Ash, green	Cumberland House, Saskatchewan	Scattered patches of severely infected reproduction along the Cumberland Lake road.

Organism and Disease	Host(s)	Locality	Remarks
<u>Pucciniastrum epilobii</u> Otth. (A needle rust)	Fir, balsam Willowherb	Clearwater and Setting lakes; The Pas area	Heavy infection on willowherb at Setting Lake; light infections on balsam fir elsewhere.
<u>Pucciniastrum</u> spp. (A rust)	Spruce, white	Amisk and Clearwater lakes	Light infections on a few trees.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Sisipuk, Kipahigan, Granville, Jan, Thompson and Simonhouse lakes; Prospector and Overflow Bay	Moderate to severe infections on small patches at widely scattered locations.

SUMMARY OF FOREST INSECT AND TREE DISEASE CONDITIONS

IN THE

THOMPSON SMOKE EASEMENT AREA

1968

The ninth annual survey of this smoke easement area was conducted from July 15 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 Sipiwesk and Cotton lakes in the south. A total of eight and one half hours flying time was provided by the Manitoba Government Air Service, and 107 insect and 51 disease samples were collected in the vicinity of 10 sulphur dioxide stations.

Moderate sulphur dioxide fume damage was recorded on willow foliage at Ospwagan Lake (SO₂ #17). Light fume damage was recorded on white birch foliage at Paint Lake (SO₂ #18) and on juneberry foliage at Wintering Lake (SO₂ #5). Very light fume damage was recorded on high bush-cranberry foliage at Isbister Lake (SO₂ #9).

A rust broom, Chrysomyxa arctostaphylis Diet., was common on black spruce, with usually one or two brooms per tree. A further decrease in infections of the spruce needle rusts, Chrysomyxa spp., occurred 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

1968

<u>Insect</u>	<u>Host(s)</u>	<u>Location and Sampling Station No.</u>	<u>Remarks</u>
<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling	SO ₂ #5 Wintering Lake (N)	Very light infestation on two reproduction.
<u>Acleris variana</u> (Fern.) (Black- headed budworm)	Spruce, white	SO ₂ #12 Witchai Lake	Very low larval populations.
<u>Amauronematus</u> spp. (Sawflies)	Alder Willow	SO ₂ #18 Paint Lake SO ₂ #8 Natawahunan Lake	Very low larval populations; no appreciable damage.
<u>Arge clavicornis</u> Fab. (Willow sawfly)	Birch, white	SO ₂ #19 Wintering Lake (S) SO ₂ #12 Witchai Lake	Very light defoliation.
<u>Arge pectoralis</u> Leach. (Birch sawfly)	Birch, white	SO ₂ #5 Wintering Lake (N)	Very light populations; no appreciable defoliation.
<u>Bucculatrix</u> <u>canadensisella</u> Cham. (Birch skeletonizer)	Birch, white	SO ₂ #10 Burntwood River	Very light defoliation.
<u>Calligrapha</u> spp. (A leaf beetle)	Willow	SO ₂ #16 Nelson House	Light skeleton- izing on a few clumps.
<u>Choristoneura</u> <u>fumiferana</u> (Clem.) (Spruce budworm)	Spruce, white	SO ₂ #12 Witchai Lake	Very low populations; no defoliation.
<u>Chrysomela knabi</u> Brown (A leaf beetle)	Poplar, balsam	SO ₂ #16 Nelson House	Very light skeletonizing.

<u>Insect</u>	<u>Host(s)</u>	<u>Location and Sampling Station No.</u>	<u>Remarks</u>
<u>Chrysomelid</u> spp. (A leaf beetle)	Poplar, balsam Dogwood	SO ₂ #18 Paint Lake SO ₂ #19 Wintering Lake (S)	Light defoliation on dogwood at Wintering Lake; very light defoliation elsewhere.
<u>Feralia iocosa</u> Gn. (Green- striped caterpillar)	Spruce, white and black	SO ₂ #15 Harding Lake	Very low larval populations.
* <u>Galerucella</u> <u>decora</u> (Say) (Gray willow- leaf beetle)	Willow	SO ₂ #15 Harding Lake	Light skeletonizing.
<u>Gracillarid</u> spp. (A blotch miner)	Poplar, balsam Willow	SO ₂ #17 Oswagan Lake SO ₂ #10 Burntwood River SO ₂ #12 Witchai Lake SO ₂ #15 Harding Lake	Moderate infestation on a few willow at Oswagan Lake; light infestation on scattered balsa poplar elsewhere.
<u>Lexis bicolor</u> Grt. (The smoky moth)	Spruce, white and black	SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Very low larval populations; no damage.
<u>Lithophane</u> sp. (Owlet moth)	Willow	SO ₂ #17 Oswagan Lake	Very light defoliation.
<u>Macremphytus</u> <u>varianus</u> Nort. (A sawfly)	Dogwood	SO ₂ #15 Harding Lake	Light defoliation on one clump.
<u>Nematus</u> spp. (Sawflies)	Willow	SO ₂ #18 Paint Lake	Very light defoliation.
<u>Neodiprion</u> <u>abietis</u> complex (Balsam- fir sawfly)	Spruce, black	SO ₂ #15 Harding Lake	Very low larval populations.

*Name revised to Pyrrhalta decora (Say)

Insect	Host(s)	Location and Sampling Station No.	Remarks
<u>Nycteola frigidana</u> Wlk. (An owlet moth)	Willow	SO ₂ #18 Paint Lake SO ₂ #15 Harding Lake SO ₂ #5 Wintering Lake (N) SO ₂ #16 Nelson House	Very light larval damage.
<u>Orsodacne atra</u> (Ahr.) (A leaf beetle)	Aspen, trembling	SO ₂ #19 Wintering Lake (S)	Very light adult populations; no appreciable defoliation.
<u>Orthosia hibisci</u> Gn. (A fruit worm)	Willow	SO ₂ #16 Nelson House	Very low populations; no visible damage.
<u>Parorgyia plagiata</u> Wlk. (Grey spruce tussock moth)	Spruce, white	SO ₂ #18 Paint Lake	Very low larval populations; no damage.
<u>Parorgyia vagans</u> B. and McD. (A tussock moth)	Willow	SO ₂ #18 Paint Lake	Very low larval populations; no appreciable damage.
<u>Pemphigus populi-transversus</u> Riley (Poplar petiole gall aphid)	Poplar, balsam	SO ₂ #18 Paint Lake SO ₂ #9 Isbister Lake SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Generally very light populations.
<u>Phyllocnistis populiella</u> Cham. (An aspen leaf miner)	Aspen, trembling Poplar, balsam	SO ₂ #16 Nelson House SO ₂ #19 Wintering Lake (S)	Very light damage.
<u>Phyllocolpa nr. agama</u> (A leaf folding sawfly)	Poplar, balsam	SO ₂ #18 Paint Lake	Very light damage.
<u>Phyllocolpa nr. nigrata</u> (A leaf folding sawfly)	Willow	SO ₂ #15 Harding Lake	Very light damage.
<u>Phyllocolpa nr. robusta</u> (A leaf folding sawfly)	Aspen, trembling	SO ₂ #18 Paint Lake SO ₂ #19 Wintering Lake (S)	Light to moderate damage at Paint Lake; very light damage elsewhere.

Insect	Host(s)	Location and Sampling Station No.	Remarks
<u>Pikonema alaskensis</u> (Roh.) (Yellow-headed spruce sawfly)	Spruce, white and black	SO ₂ #5 Wintering Lake (N) SO ₂ #12 Witchai Lake SO ₂ #8 Natawahunan Lake SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Very light defoliation.
<u>Pikonema dimmockii</u> (Cress.) (Green-headed spruce sawfly)	Spruce, white and black	SO ₂ #17 Ospwagan Lake SO ₂ #18 Paint Lake SO ₂ #5 Wintering Lake (N) SO ₂ #8 Natawahunan Lake SO ₂ #12 Witchai Lake SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Very light populations; traces of defoliation.
<u>Syneta pilosa</u> Brown (A leaf beetle)	Spruce, White and black Fir, balsam	SO ₂ #18 Paint Lake SO ₂ #16 Nelson House	Very low adult populations; no damage.
<u>Tortricid spp.</u> (A leaf roller)	Willow Dogwood Birch, white	SO ₂ #5 Wintering Lake (N) SO ₂ #8 Natawahunan Lake SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Generally light damage.
<u>Trichiosoma triangulum</u> Kby. (A sawfly)	Aspen, trembling	SO ₂ #8 Natawahunan Lake	Very low larval populations; no appreciable damage.

TABLE II
TREE DISEASE CONDITIONS
SMOKE EASEMENT AREA, THOMPSON, MANITOBA
1968

<u>Organism and Disease</u>	<u>Host(s)</u>	<u>Location and Sampling Station No.</u>	<u>Remarks</u>
<u>Chrysomyxa arctostaphylii</u> Diet. (A rust broom)	Spruce, black	Throughout the area	One or two brooms per tree; widely scattered infections.
<u>Chrysomyxa ledicola</u> (Peck) Lagerh. (Spruce needle rust)	<u>Ledum</u> sp. Spruce, white	SO ₂ #17 Oswagan Lake SO ₂ #15 Harding Lake SO ₂ #16 Nelson House	Very light infection on white spruce at Nelson House.
<u>Hemimyriangium betulae</u> Reid & Pirozynski (A tar spot)	Birch	SO ₂ #16 Nelson House	Light infection on one tree.
<u>Melampsora bigelowii</u> Thüm (Larch-willow rust)	Willow	SO ₂ #16 Nelson House	Light to moderate infections on a few clumps.
<u>Phaeoramularia maculicola</u> (Rom. & Sacc.) Sutton (A leaf spot)	Aspen, trembling	SO ₂ #19 Wintering Lake (S)	Very light infection.
<u>Pollaccia elegans</u> Serv. (A leaf and twig blight)	Poplar, balsam	SO ₂ #16 Nelson House	Very light infections on a few reproduction.
<u>Pollaccia radiosa</u> (Lib.) Bald. & Cif. (A leaf and twig blight)	Aspen, trembling	SO ₂ #10 Burntwood River SO ₂ #18 Paint Lake SO ₂ #16 Nelson House SO ₂ #19 Wintering Lake (S)	Light infections on reproduction.
<u>Septoria musiva</u> Pk. (A leaf spot)	Poplar, balsam	SO ₂ #18 Paint Lake	Light infection on a few reproduction.

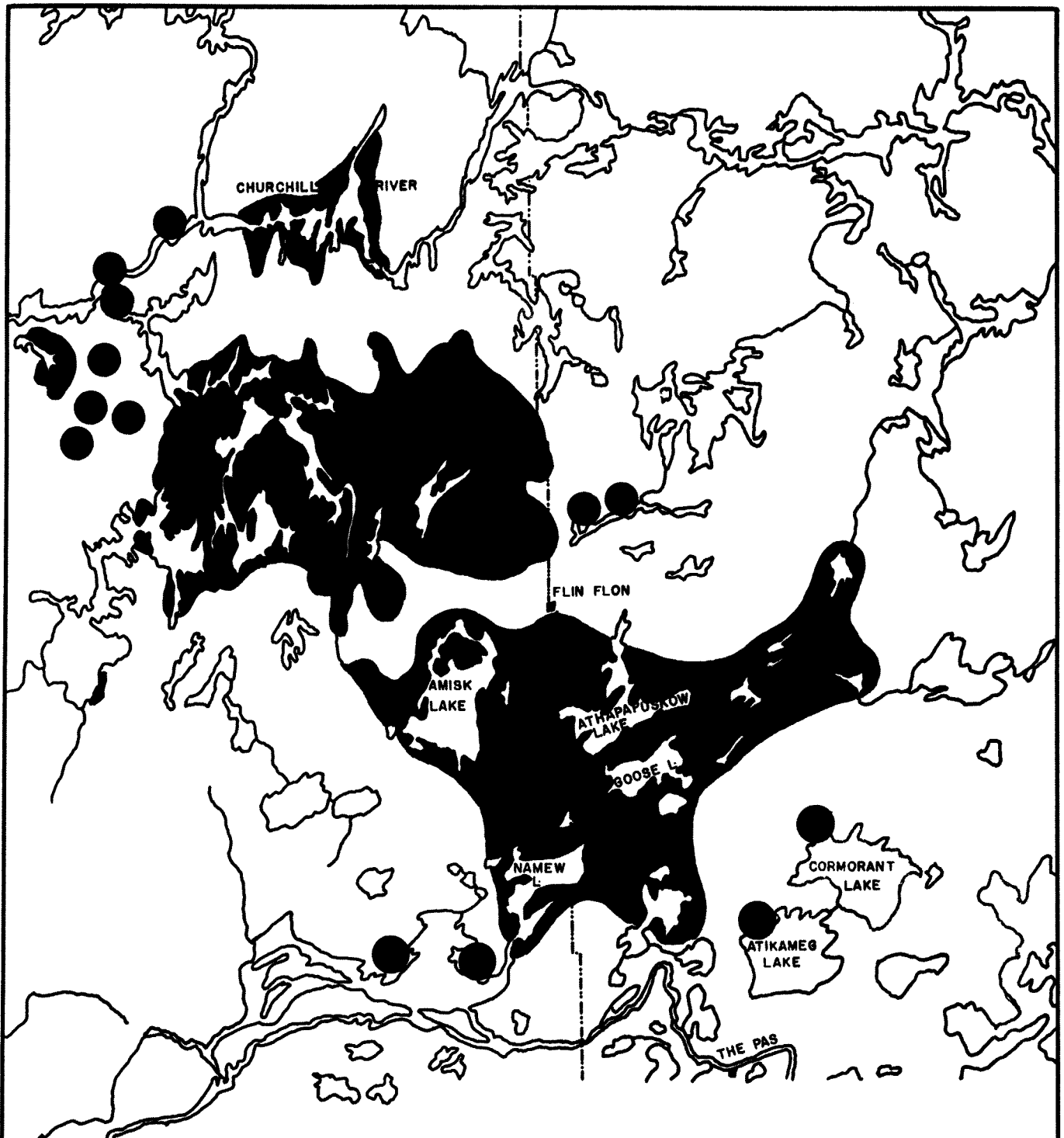
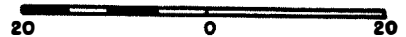
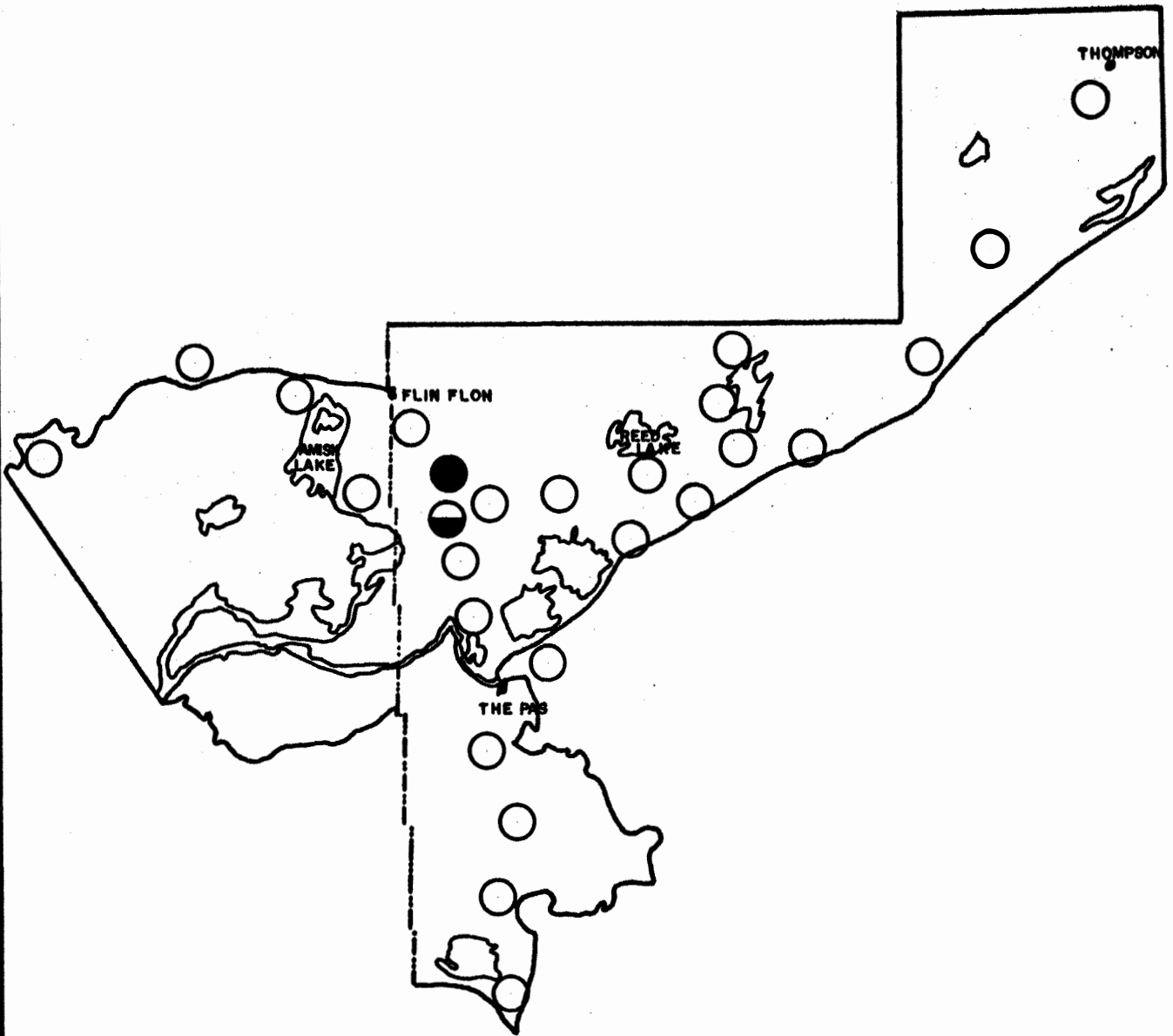


FIG. 1

SPRUCE BUDWORM INFESTATIONS
NORTHERN MANITOBA AND SASKATCHEWAN--1968
Small pockets of moderate to severe defoliation
Areas of continuous moderate to severe defoliation



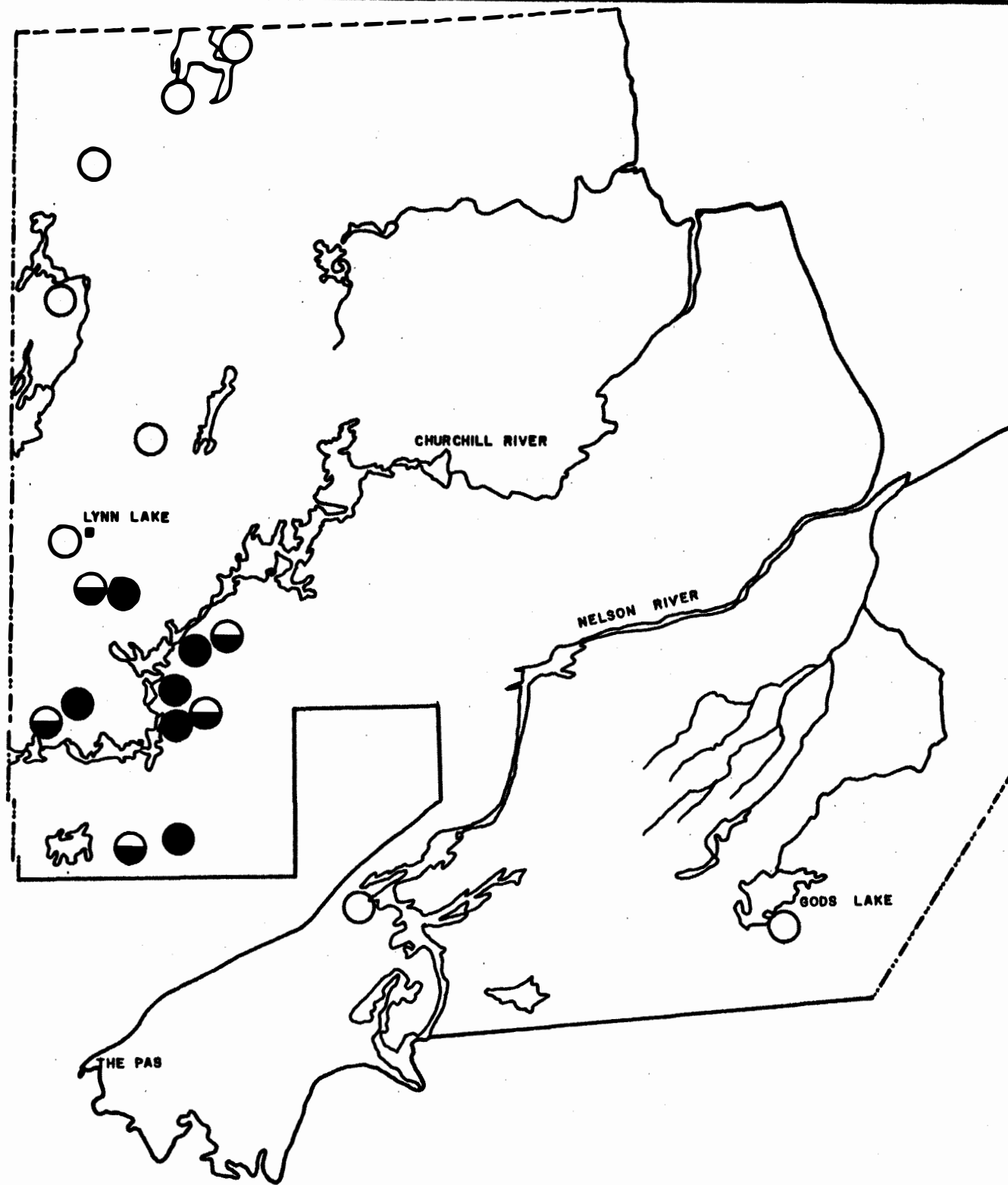


NORTHERN LOWLANDS DISTRICT

FIG. 2

LARCH SAWFLY INFESTATIONS AS DETERMINED BY
GROUND AND AERIAL SURVEYS--1968

- Light ○
- Moderate ◐
- Severe ●



NORTHERN MANITOBA DISTRICT

FIG. 3

LARCH SAWFLY INFESTATIONS AS DETERMINED BY
GROUND AND AERIAL SURVEYS--1968

Light ○
Moderate ◐
Severe ●

Scale 60mi-1in

**EASTERN MIXEDWOOD DISTRICT
SASKATCHEWAN**

1968

by
W. B. Crawford

INTRODUCTION

Field activities for the eastern mixedwood district in 1968 commenced May 21 and terminated September 19.

An exceptionally dry spring, followed by a cool summer and above average rainfall was responsible for reducing insect populations to below normal levels. However, these same conditions favored a forest disease complex which provided readily accessible collection areas of both common and uncommon pathogens.

Five hours of flying time by fixed-wing aircraft and three hours by helicopter were supplied by the Saskatchewan Department of Natural Resources.

The spruce budworm infestation along the Birch River continued at low population levels which were responsible for a few moderately defoliated trees in an otherwise lightly infested spruce-fir area. Larch sawfly populations continued to decline and yellow-headed spruce sawfly caused moderate defoliation to scattered trees in farm shelterbelts. Leaf beetles were generally distributed over the district and defoliation ranged from light to moderate.

Additional surveys were carried out to determine the distribution and incidence of hypoxylon canker, leaf blights of poplar and rusts on spruces.

A total of 570 insect and 537 tree disease samples were submitted to the Winnipeg laboratory along with a number of reports from ground and aerial observations. In addition to general sampling, the following survey sub-projects were continued: 1) larch sawfly collections for disease and parasite studies; 2) sequential sampling of the larch sawfly egg populations; 3) small mammal population studies; and 4) shoot counts of *Pollaccia radiosa* (Lib.) Bald. & Cif. Special collections of insect and disease material were made for personnel of the Winnipeg laboratory at various times during the field season.

INSECT CONDITIONS

LARCH SAWFLY, *Pristiphora erichsonii* (Htg.):— Populations remained at low levels throughout the district this year (Figure 1). Ground and aerial surveys showed very light defoliation in all areas visited.

Sequential sampling of egg populations was continued in permanent tamarack plots and the results are summarized in Table 1.

TABLE 1

Location and plot no.	No. of shoots examined	No. of shoots curled	Infestation rating for 1968
Armit, Sask. 01 13-69-585	50	0	Light
Peepaw Lake, 01 Sask.13-68-581	50	0	Light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):— The spruce budworm infestation along the Birch River decreased in intensity from the previous year and boundaries can no longer be clearly defined from the air. The general area of light defoliation encloses some 10 to 12 square miles of scattered, moderately defoliated trees. The infestation occurred in twp. 55, range 3, W 2nd mer. and generally followed the contours of the Birch River. Ground checks along the Birch River revealed low populations and light defoliation. Very low populations were present on the Sipanok Channel but no defoliation was noted.

Low populations in the Pasquia Hills were responsible for light defoliation in areas where spruce-fir stands were prevalent. Elsewhere, populations were very low and no defoliation was recorded.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaefer):— A severe infestation of this beetle to small pockets of regeneration trembling aspen occurred at mile 4 on the Fir River Road and between miles 6 and 7 on the Otosquen Road.

Moderate defoliation occurred in a small pocket of regeneration trembling aspen near Clemenceau, while elsewhere, defoliation ranged from a trace to light.

GRAY WILLOW-LEAF BEETLE, Pyrrhalta decora (Say):— The severe infestation in the northeastern portion of the district has declined in intensity but has now extended to most other portions of the district.

Moderate skeletonization of willow occurred at Carrot River, Bamock, Bertwell and Lintlaw. Trace to light skeletonization of willow, trembling aspen and balsam poplar occurred throughout the remainder of the district.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria para-populi</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar spp.	Nipawin Regional Park, Codette, Porcupine Plain, Preeceville, and Buchanan	Low populations; light damage.
<u>Acleris</u> spp. (Leaf rollers)	Aspen, trembling	Sturgis and Greenwater Lake Provincial Park	Single larval collection; a trace of damage.
<u>Adalia frigida</u> (A lady beetle)	Most deciduous spp.	Throughout the district	One to two adult collections on widely scattered hosts.

Insect	Host(s)	Locality	Remarks
<u>Adelges cooleyi</u> Gillette (Adelges gall aphid)	Spruce, white	Nipawin, Reserve, and Preeceville	Moderate infestation of individual tree at Reserve; light in other areas.
<u>Adelges lari-</u> <u>ciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Squaw Rapids, Nipawin Regional Park, Otosquen Road, (M.28 and 26), Fir River Road, (M.8.4), Erwood, Sylvania, Archer- will, Preeceville and Norquay	Trace to light infestations mainly of white spruce at all sample points.
<u>Altica populi</u> Brown (Poplar flea beetle)	Poplar, balsam	Otosquen Road, (M.76)	Single adult collection.
<u>Anoplonyx</u> <u>luteipes</u> (Gress.) (A sawfly)	Tamarack	Throughout the district	Light defoliation of most tamarack stands in the district.
<u>Aphid</u> spp.	Spruce, white and most deciduous trees	Throughout the district	Common; causing light defoliation to small groups of trees.
<u>Archips</u> <u>cerasiworanus</u> (Fitch) (Ugly-nest caterpillar)	Choke cherry, eastern Rose	Otosquen Road, (M.20), Hudson Bay, Erwood, and Porcupine Plain	Significant decline in populations; collections of single tents at all sample points.
<u>Archips</u> <u>negundanus</u> Dyar (A leaf roller)	Maple, Manitoba	Codette, Buchanan, and Canora	Light infestations of scattered shelterbelts.
<u>Badebecia</u> <u>urticana</u> Hbn. (A leaf roller)	Poplar, balsam Willow	Okla	A trace of defoliation.
<u>Bucculatrix</u> <u>canadensisella</u> Cham. (Birch skeleton- izer)	Birch, white	Reserve, Preeceville, and Duck Mountain Provincial Park	Light skeletoniz- ation; low populations.

Insect	Host(s)	Locality	Remarks
<u>Campaea perlata</u> (Gn.) (Fringed looper)	Aspen, trembling	Greenwater Lake Provincial Park, and Kelvington	Single larval collections.
<u>Cecidomyia</u> spp.	Aspen, trembling Willow Saskatoon	Otosquen Road, (M.60), Smoking Tent, Somme, Swan River Road, (M.2), Erwood, Archerwill, Wallwort, and Steen	Light damage mainly to trembling aspen.
<u>Choristoneura conflictana</u> (Wlk.) (Large aspen tortrix)	Aspen, trembling	Reserve, Lintlaw, Okla, and Preeceville	A trace of damage at all collection points.
<u>Choristoneura pinus pinus</u> Free. (Jack-pine budworm)	Pine, jack	Otosquen Road, (M.28)	Single adult collection; no defoliation.
<u>Choristoneura rosaceana</u> Harr. (Oblique-banded leaf roller)	Poplar sp.	Canora	A trace of damage to one tree.
<u>Chrysomela knabi</u> Brown (A leaf beetle)	Poplar, balsam	Swan River Road, (M.12.6)	Light infestation; light to moderate skeletonization of one tree.
<u>Chrysomela crotchi</u> Brown (Aspen leaf beetle)	Aspen, trembling Poplar, balsam Willow	Otosquen Road, (M.28), Reserve, Somme, Swan River Road, (M.2, 8 and 25), and Steen	Light skeletonization; low populations.
<u>Contarina virginianiae</u> (Felt) (Choke cherry midge)	Choke cherry, eastern	Hudson Bay, Ridge Road, (M.8), Etomami, Porcupine Plain, and Greenwater Lake Provincial Park	Common fruit infestations in all areas sampled.

Insect	Host(s)	Locality	Remarks
<u>Cynipid</u> spp. (Gall midges)	Aspen, trembling Willow Maple, Manitoba Caragana	Throughout the district	Low, scattered populations on aspen regeneration.
<u>Dicerca</u> spp. (Wood borers)	Aspen, trembling Poplar, balsam Alder Willow	Mistatim, Greenwater Lake Provincial Park, Wallwort, Preeceville, and Canora	Single adult collection; a trace of damage.
<u>Energia decolor</u> Wlk. (A noctuid)	Aspen, trembling Poplar, balsam Birch, white Spruce, white	Fir River Road, (M.11), Reserve, Greenwater Lake Provincial Park, and Duck Mountain Provincial Park	Light damage at all sample points.
<u>Epinotia</u> <u>solandriana</u> Linn. (A leaf roller)	Birch, white	Duck Mountain Provincial Park	A trace of damage.
<u>Fenusa dohñii</u> Tischb. (European alder leaf miner)	Alder	Cumberland Road, (M.2), Otosquen Road, (M.60, 28, and 19), Kennedy Lake, and Duck Mountain Provincial Park	Common, low populations through- out most of the district; light damage in all areas.
* <u>Galerucella</u> <u>cavicollis</u> (LeConte) (Cherry leaf beetle)	Choke cherry, eastern	Otosquen Road, (M.53)	Moderate defoliation of about three trees.
<u>Geometrid</u> spp. (Loopers)	Spruce, white Most deciduous trees	Throughout the district	Low populations; very light defoliation.
<u>Gracillariid</u> spp. (Blotch miners)	Elm, American and Chinese Poplar, balsam Willow	Throughout the district	Moderate infestation at Norquay, light damage in all other areas.

*Name revised to Pyrrhalta cavicollis (LeConte)

Insect	Host(s)	Locality	Remarks
<u>Gracillaria</u> <u>negundella</u> Chambers (Boxelder leaf roller)	Maple, Manitoba	Preeceville, Buchanan, and Canora	Light damage; low populations.
<u>Hylobius</u> <u>pinicola</u> Couper (Fine root collar weevil)	Tamarack	Otosquen Road, (M.19), Ridge Road, (M.12), Mistatim, Greenwater Lake Provincial Park, and Nobleville	Adult collections, low populations.
<u>Idiocerus</u> <u>populi</u> L. (A leaf hopper)	Aspen, trembling Poplar, balsam	Swan River Road, (M.2), Greenbush River Campsite, Reserve, and Duck Mountain Provincial Park	A trace of damage in all instances.
<u>Itame laricaria</u> Evers (A looper)	Aspen, trembling Willow Poplar, balsam	Carrot River, Arborfield, Mistatim, Swan River Road, (M.18), Greenwater Lake Provincial Park, Kelvington, Okla, Canora, and Duck Mountain Provincial Park	1-2 larval collections per sample point; negligible damage.
<u>Lecanium coryli</u> Linn. (Lecanium scale)	Aspen, trembling Willow	Otosquen Road (M.60), Bertwell, and Endeavour	Single collection; a minimum of damage.
<u>Lithocolletis</u> <u>salicifoliella</u> Cham. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Throughout the district	Very light leaf mining of scattered trees.
<u>Lopidea dakota</u> (Knight) (Caragana plant bug)	Caragana Poplar, balsam Ash, green	Preeceville and Buchanan	A trace of defoliation; low populations.
<u>Malacosoma</u> <u>lutescens</u> (N. & D.) (Prairie tent caterpillar)	Poplar sp. Choke cherry, eastern	Otosquen Road, (M.53) and Buchanan	Single nest collections; a trace of damage.

Insect	Host(s)	Locality	Remarks
<u>Mesochorus</u> <u>rigidus</u> (O.S.) (Beaked willow gall fly)	Willow	Cumberland Road, M.2); Squaw Rapids; otosquen Road, (Mile 19); Fir River Road, Miles 1, 8, 11, and 15), Red Deer River Road, (Mile 1), Greenbush River Campsite, Wallwort, Nobleville, Erwood and Lintlaw	Galls confined to scattered trees; a trace of damage.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Squaw Rapids, Carrot River, Arborfield, Erwood, Bannock, Peesane and Duck Mountain Provincial Park	Low, scattered populations; damage negligible.
<u>Nematus</u> spp. (Sawflies)	Willow Poplar, balsam Aspen, trembling Birch, white Poplar sp.	Nipawin Regional Park, Erwood, Greenbush River Campsite, Green- water Lake Provincial Park, Kelvington, Somme, Preeceville, Canora, and Duck Mountain Provincial Park	one to two larval collections at each sample point; a trace of damage in all instances.
<u>Nycteola</u> <u>frigidana</u> Wlk. (A webworm)	Willow Tamarack	Preeceville and McKague	A trace of damage.
<u>Nymphalis</u> <u>antopa</u> (L.) (Mourning cloak butterfly)	Willow	Crooked River	Light populations; a trace of defoliation to one tree.
<u>Oberaea</u> <u>schaumi</u> Lec. (A poplar twig borer)	Aspen, trembling	Squaw Rapids, Carrot River, and Red Deer River Road (Mile 1)	Low populations; light damage.

Insect	Host(s)	Locality	Remarks
<u>Operophtera</u> <u>bruceata</u> (Hulst) (Bruce spanworm)	Willow	Okla	Single larval collection.
<u>Orsodacne atra</u> (Ahr.) (A leaf beetle)	Aspen, trembling Spruce spp. Poplar, balsam Ash, mountain Maple, mountain Willow Rose	Throughout the district	Low adult populations; no visible damage.
<u>Orthosia</u> <u>hibisci</u> (Guen.) (A fruit worm)	Birch, white Poplar spp. Willow	Carrot River, Nipawin Regional Park, Fir River Road, (Mile 21); Swan River Road, Mile 18), and Greenwater Lake Provincial Park	Single larval collections; no significant damage.
<u>Pandemis</u> <u>canadana</u> Kft. (A tortricid moth)	Maple, Manitoba Elm sp. Willow Poplar sp.	Nipawin, Carrot River, Swan River Road, (Mile 18), Greenwater Lake Provincial Park, Kelvington, Swan Plain, Canora, and Buchanan	Very light damage to scattered individuals.
<u>Pemphigus</u> spp. (Aphids)	Poplar, balsam	Throughout the district	A trace of damage by <u>P. populi-caulis</u> Fitch, at Fir River Road, (Mile 11); common, but light damage by <u>P. populi-transversus</u> Riley, in other areas.
<u>Petrova</u> <u>albicapitana</u> (Busck) (Pitch nodule maker)	Pine, jack	Otosquen Road, (Mile 30), and Hudson Bay	Low populations; light damage. Some branch mortality in Hudson Bay area.
<u>Phenacaspis</u> <u>pinifoliae</u> (Fitch) (Pine needle scale)	Spruce, white	Otosquen Road, (Mile 1)	Moderate infestation in a small stand of spruce.

Insect	Host(s)	Locality	Remarks
<u>Phratora</u> spp.	Aspen, trembling Poplar sp. Willow	Fir River Road, (Mile 11), Kelvington, Preeceville, Canora, and Duck Mountain Provincial Park	Single collections of adults of <u>P. hudsonica</u> , and <u>P. purpurea</u> <u>purpurea</u> , Brown; light damage by <u>P. americana</u> <u>canadensis</u> , Brown at all other collection points.
<u>Phyllocnistis</u> <u>populiella</u> Chaw. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Throughout the district	Light leaf-mining common; low populations.
<u>Phyllocolpa</u> spp. (A sawfly)	Poplar, balsam Aspen, trembling	Nipawin Regional Park, Swan Plain, Otosquen Road, (Mile 28) and 76), Squaw Rapids, Somme, Wallwort, and Stenen	Light damage to trembling aspen by <u>P. sp. nr.</u> <u>robusta</u> and to balsam poplar by <u>P. sp. nr.</u> <u>agama</u> .
<u>Pikonema</u> <u>alaskensis</u> (Roh.) (Yellow-headed spruce sawfly)	Spruce, white	Erwood, Kelving- ton, Usherville, Canora, and Duck Mountain Provincial Park	Light defoliation at Erwood and Canora; moderate at Usherville, elsewhere populations were very low and only a trace of damage was noted.
<u>Pikonema</u> <u>dimmockii</u> (Cress.) (Green-headed spruce sawfly)	Spruce, white	Nipawin, Hudson Bay, Kelvington, Preeceville and Canora	Low, scattered populations; a trace of damage.
<u>Fontania</u> sp. (A sawfly)	Willow	Throughout the district	Low populations; common on willow; very light damage.
<u>Proteoteras</u> <u>willingana</u> (Kft.) (Boxelder twig borer)	Maple, Manitoba	Codette, Carrot River, Leacross, and Canora	Low populations causing very light damage.

Insect	Host(s)	Locality	Remarks
<u>Rhadinophaga strobiloides</u> (Walsh) (Willow cone gall midge)	Willow	Throughout the district	Small collections on scattered trees throughout the district.
<u>Saperda calcarata</u> Say (The poplar borer)	Aspen, trembling Poplar, balsam	Otosquen Road, (Mile 20), Arborfield, Wallwort, and Reserve	Low populations on widely scattered trees.
<u>Saperda populnea moesta</u> Lec. (Poplar-twig borer)	Poplar, balsam Aspen, trembling	Throughout the district	Light damage; low to moderate populations primarily on balsam poplar.
<u>Sciaphila duplex</u> Wlshm. (A leaf roller)	Aspen, trembling	Steen	A trace of damage.
<u>Semiothisa sexmaculata</u> Pack. (Green larch looper)	Tamarack	Petaigan, Mistatim, McKague, Nobleville, Wallwort, Norquay, Buchanan, and Duck Mountain Provincial Park	Low populations, no visible damage.
<u>Tenthredinid</u> spp. (Sawflies)	Willow Alder Poplar, balsam Elm, Chinese	Throughout the district	Light damage to hosts at all sampled areas.
<u>Tetralopha aplastella</u> Hlst. (A webworm)	Aspen, trembling	Squaw Rapids and Lintlaw	One to two larval collections; a trace of damage.
<u>Toumeyella numismaticum</u> (Pt. & McD.) (Pine tortoise scale)	Pine, jack	Hudson Bay	Low populations; light infestation.

Insect	Host(s)	Locality	Remarks
<u>Trichiosoma triangulum</u> Kby. (A sawfly)	Willow Alder	Otosquen Road, (Mile 60), Buchanan, and Duck Mountain Provincial Park	Single larval collections; a trace of defoliation.

DISEASE CONDITIONS

LEAF AND TWIG BLIGHTS OF POPLAR, Pollaccia spp.:— A blight of balsam poplar, P. elegans Serv. was collected along the Fir River Road at miles 11, 14 and 19. A light infection occurred at miles 11 and 14, and moderate on a small patch of regeneration at mile 19.

Emphasis on a blight of trembling aspen, P. radiosa (Lib.) Bald. & Cif. was stressed in the district this year and numerous collections were made throughout the district. A small patch of moderate infection was recorded at the Greenbush River Campsite on Highway No. 3.

All other observations and sampled areas in the district showed very light, scattered infections and were usually restricted to the upper crowns of regeneration trembling aspen.

Shoot counts were continued in a plot established on the Ridge Road in 1966 to study the recurrence and effects of this disease. New shoots on twenty previously tagged trees were counted and the incidence of this disease recorded. The results are summarized in Table II.

TABLE II

Location of plot	Year	Percent trees infected	Percent new shoots infected
Ridge Road,	1966	100.0	14.2
Sask.	1967	33.3	1.1
	1968	94.1	21.4

SPRUCE NEEDLE RUSTS, Chrysoomyxa ledicola (Peck) Lagerh. and Chrysoomyxa ledi (Alb. & Schw.) deBary:— A marked increase in distribution and intensity occurred in the northern portion of the district this year and could be attributed to the damp, cool weather during the latter part of the summer and early fall.

Moderate infections, with scattered, severely infected individual trees were observed in the Pasquia Hills area where the most severe infections were found near lakes, creeks and rivers on mature white spruce.

A moderate infection of C. ledicola occurred on regeneration black spruce at Mistatim and the Ministik Beach area of the Duck Mountain Provincial Park. Light infections of C. ledi on black spruce were noted on a small group of trees at Norquay and infections on the alternate host Ledum groenlandicum Oeder were noted at Mistatim.

Very light infections of black spruce were recorded at mile 15 on the Fir River Road and at McKague. Light infections of the alternate host L. groenlandicum were recorded at mile 26, on the Otosquen Road, mile 15 on the Fir River Road, and Norquay.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl.) Miller:- A special survey was carried out in the Duck Mountain Provincial Park to determine the occurrence of this disease on trembling aspen. It was collected in the Park as well as from surrounding areas.

This canker was common to most trembling aspen stands throughout the district causing very light tree mortality in most stands.

A MISTLETOE OF JACK PINE, Arceuthobium americanum Nutt. ex Engelm:- New areas of infection were located at miles 42 and 53 on the Otosquen Road and at mile 10.7 on the Cumberland Road near the Sipanok Channel. These locations were confined to small areas of mature moderately infected jack pine. No visible mortality was observed on the infected hosts on the Otosquen Road but light mortality was recorded in the Cumberland Road infection.

LEAF BLIGHTS OF BALSAM POPLAR:- The principal pathogens responsible for the conditions were Linospora tetraspora Thompson and Septoria musiva Pk.

Moderate infections of balsam poplar by L. tetraspora and S. musiva occurred at mile 76 on the Otosquen Road, and at miles 4 and 19 on the Fir River Road and in the vicinity of Wallwort.

Very light incidence, particularly to regeneration, of both pathogens were recorded in most portions of the district.

OTHER NOTEWORTHY DISEASES

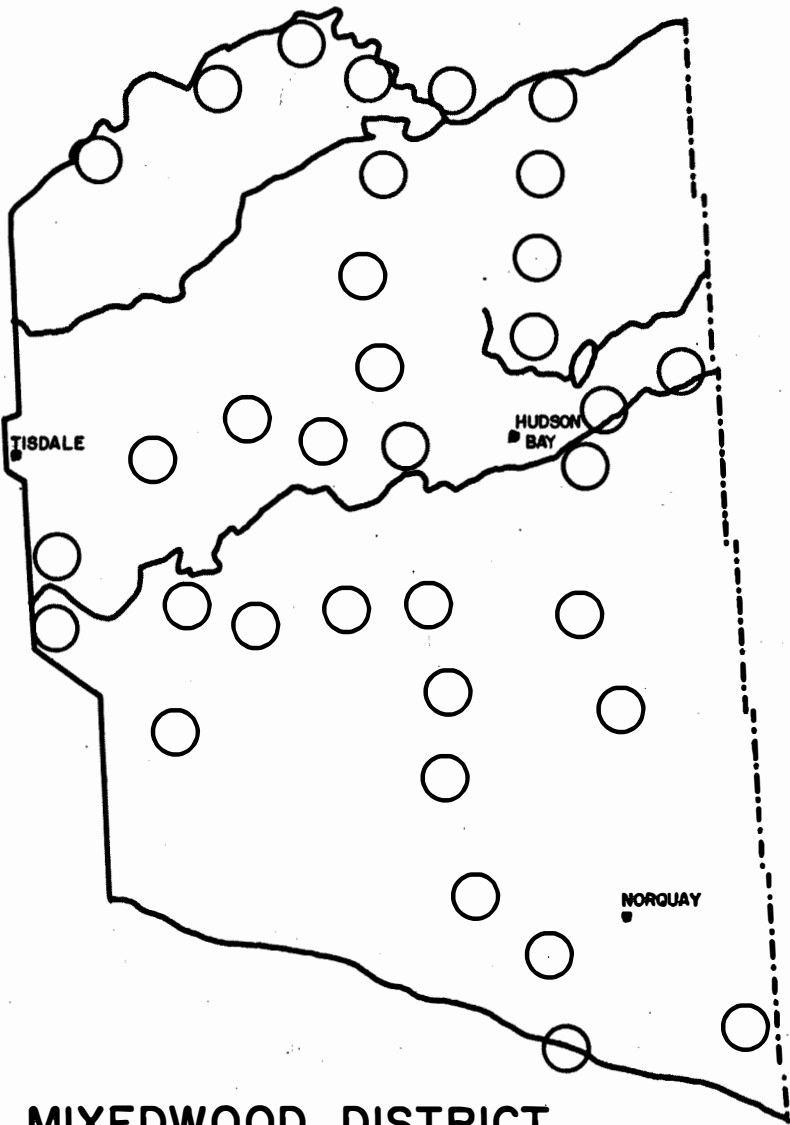
Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina collinsii</u> (Schw.) Hohn. (Witches' broom)	Saskatoon	Otosquen Road, (Mile 30), Nipawin, Carrot River, Greenbush River, Somme, Swan River Road, (Miles 2 and 25), Mikado, and Parr Hill Lake	Common throughout the district; moderate infections at Otosquen Road, (Mile 30), Green- bush River and Somme.

Organism and Disease	Host(s)	Locality	Remarks
<u>Caliciopsis calicioides</u> (Ellis & Ev.) Fitzp. (Bark fungus)	Poplar, balsam	Throughout the district	Common on most mature poplar stands in the district.
<u>Chrysomyxa arctostaphyli</u> Diet. (Yellow witches' broom)	Spruce, black and white	Throughout the district	Light brooming to both species.
<u>Ciborinia foliicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Cumberland Road, (Mile 2), Nipawin Regional Park, Wapisew Lake, Otosquen Road, (Miles 19 and 26), Ridge Road, (Mile 8), and Greenwater Lake Provincial Park	Mainly found in the northern portion of the district; a trace of infection of the leaves on widely scattered trees.
<u>Ciborinia whetzelii</u> Seaver (Ink spot of aspen)	Aspen, trembling	Otosquen Road, (Miles 19 and 26)	Approximately 5% of the foliage of a few individuals infected at both sample points.
<u>Coccomyces hiemalis</u> Higgins (Shot hole of cherry)	Choke cherry, eastern	Cumberland Road, (Mile 14), Kennedy Lake, Hudson Bay, Ridge Road, (Mile 8), and McBride Lake Road, (Mile 10)	Light to moderate infections restricted to small groups of shrubs in an area.
<u>Cronartium comandrae</u> Feck (Comandra blister rust)	Pine, jack Comandra sp.	Otosquen Road, (Miles 26 and 30)	Low incidence of galls at Mile 30; moderate to high infection of alternate host at Mile 26.
<u>Cytospora</u> sp. (A canker)	Most deciduous spp.	Throughout the district	Common, infections light, mainly of trembling aspen.

Organism and Disease	Host(s)	Locality	Remarks
<u>Dendryphiopsis atra</u> (Cda.) Hughes (A bark fungus)	Poplar, balsam Aspen, trembling Alder	Throughout the district	Infections light; restricted to individual trees.
<u>Diplodia</u> <u>tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Poplar, balsam	Veregin and Tisdale	A trace of damage to a small clump of trees.
<u>Dibotryon morbosum</u> (Schw.) T. & S. (Black knot of cherry)	Choke cherry, eastern	Sipanok Channel, Kennedy Lake, Pasquia Regional Park, Veregin, Mikado, Fir River Road, (Mile 8), and Porcupine Plain	Moderate infection observed along Ridge Road from Mile 11 to Mile 13 on roadside shrubs, light elsewhere.
<u>Drepanopeziza</u> <u>populorum</u> (Desm.) v. Hohn. (A leaf spot)	Aspen, trembling	Greenwater Lake Provincial Park and Pasquia Hills areas	Scattered, patchy, moderate infections.
<u>Euryachora betulina</u> (Fr.) Schroet. (A leaf spot)	Birch, white	Cumberland Road, (Mile 2), Reserve, and Greenwater Lake Provincial Park	A moderate infection of two trees on the Cumberland Road (Mile 2); light at other sample points.
<u>Fomes fomentarius</u> (L. ex Fr.) Kickx (White mottled rot)	Birch, white Aspen, trembling Poplar, balsam	Norther portion of the district	Very light infections in most areas.
<u>Fomes igniarius</u> (L. ex Fr.) Gill (White trunk rot)	Aspen, trembling	Throughout the district	Light infections.
<u>Fomes pinicola</u> (Swartz) Cke (Brown cubical rot)	Spruce, white Poplar, balsam	Kennedy Lake, and Roscoe River	Light infections confined to scattered individual trees.
<u>Fomes pini</u> (Thore) Lloyd (Red heart rot)	Spruce, black	Duck Mountain Provincial Park	Two collections.

Organism and Disease	Host(s)	Locality	Remarks
<u>Hemimyriangium betulae</u> Reid & Pirozynski (A tar spot)	Birch, white	Cumberland Road, (Mile 9), Otosquen Road, (Miles 19 and 50), Swan River Road, (Mile 2) and Mistatim	Low incidence on a few scattered trees.
<u>Hypoxylon fuscum</u> (Pers. ex Fr.) Fr. (A canker)	Alder, Hazelnut Willow Maple, Mountain Elm, American Choke cherry, eastern	Otosquen Road, (Mile 64), Fir River Road, (Miles 11 and 21), Erwood, Roscoe River, Swan River Road, (Mile 26), Greenwater Lake Provincial Park, and Preeceville	Common at Roscoe River, Fir River Road, and Greenwater Provincial Park.
<u>Lophodermium pinastri</u> (Schrad. ex Fr.) Chev. (A needle cast)	Pine, jack	Otosquen Road, (Miles 26 and 28), and Hudson Bay	A trace of infection to individual trees.
<u>Melampsora bigelowii</u> Thum. (Larch-willow rust)	Willow	Otosquen Road, (Mile 76), Greenwater Lake Provincial Park and Norquay	An increase over previous year but still low.
<u>Peridermium harknessii</u> J.P. Moore (Western gall rust)	Pine, jack	Otosquen Road, (Mile 30), Fir River Road, (Mile 19), and Greenbush River	Light to moderate infections.
<u>Phragmidium speciosum</u> (Fries) Cooke (A rust)	Rose	Throughout the district	Common, ranging from light to moderate on most plants.

Organism and Disease	Host(s)	Locality	Remarks
<u>Polyporus</u> spp. (A slash fungus)	Poplar, balsam Birch, white Aspen, trembling Willow Caragana Cherry spp.	Sipanok Channel, Kennedy Lake, Otosquen Road, (Miles 9, 30, 48, 53, and 64), Fir River Road, (Mile 11), Arborfield, Nipawin, Reserve and Preeceville	Various species of this fungus. Common on slash timber; <u>P. glomeratus</u> on balsam poplar.
<u>Puccinia</u> spp. (Rusts)	Currant Buckthorn Goldenrod	Otosquen Road, (Mile 1), Somme, and Kamsack	Light infections.
<u>Rhytisma salicinum</u> (Pers.) Fr. (A tar spot on willow)	Willow	Cumberland Road, (Mile 9), Otosquen Road, (Mile 76), and Norquay	Moderate infections of a small group of trees on Cumberland and Otosquen roads.
<u>Tubercularia ulmea</u> Carter (A dieback)	Maple, Manitoba Caragana Elm, Chinese	Otosquen Road, (Mile 53), Carrot River, Hudson Bay, Codette, Preeceville, and Canora	Common throughout most of the district; light infections.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam	Throughout the district	Moderate infections to small patches of willow at Etomami, Reserve, and Norquay. All other areas light.
<u>Tryblidiopsis pinastris</u> (Fr.) Karst. (A saprophyte)	Spruce, white and black	Throughout the district	Common on dead, lower branches.



EASTERN MIXEDWOOD DISTRICT

FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED
BY GROUND AND AERIAL SURVEYS--1968

Light ○

0 28 mi.
—————

CENTRAL MIXEDWOOD DISTRICT
AND
NORTHERN SASKATCHEWAN

1968

by
W. J. G. Beveridge

INTRODUCTION

Generally cool, damp weather persisted throughout most of the season. Between May 24 and September 23, a total of 588 insect and 653 disease samples were submitted to the Winnipeg laboratory. Major outbreaks were mapped and approximately 19 hours of charter and 4 hours of non-charter flying time were used for northern aerial surveys.

In addition to general collecting, survey sub-projects included: (1) sequential sampling of larch sawfly egg populations; (2) biological control of the larch sawfly at Crutwell; (3) population and defoliation studies of the larch sawfly at permanent plots; (4) small mammal population studies; (5) infected shoot counts in permanent disease plots.

A number of mass and special collections were made for personnel of the Winnipeg and other laboratories. *6 cone* *infected* *collection from trench Black spruce, white pine, poplar pine and balsam fir; 7 tree discs at S north end* *special spruce section* *sample station*

The jack-pine budworm infestation has completely subsided and a further decline in populations and defoliation of the larch sawfly occurred. The spruce budworm continued at infestation levels with some boundary changes and a few minor extensions. Disease organisms were generally low and no new outbreaks were recorded.

INSECT CONDITIONS

LARCH SAWFLY, Pristiphora erichsonii (Htg.):— A further decline in larch sawfly populations was evident throughout the central and northern portions of the province (Figure 1). Very low populations caused a trace of defoliation in the Fort à la Corne Provincial Forest and Nipawin Provincial Park, Prince Albert National Park and in the Crutwell, Red Rock and Candle Lake areas in the southern half of the district.

This same condition was present in the areas around Pelican Narrows, La Ronge and McLennan Lake.

Sequential sampling of egg populations was again carried out in 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 for 1968	
Crutwell 13-42-590	01	60	1	light
Red Rock Blk. 13-45-589	01	130	19	moderate
Mayview, P.A.N.P. 13-42-593	01	50	0	light
Lac la Ronge 13-47-607	01	50	0	light

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.):— The spruce budworm infestation in northeastern Saskatchewan remained essentially the same, except for some minor boundary changes. (See Figure 1 in Northern Lowlands District Report).

The main outbreak increased slightly in size in the Pelican Lake area, and the intensity increased in the Mirond, Wildnest, Corneille lakes area. Mortality of balsam fir was common at the northern end of Wildnest Lake.

The Churchill River outbreak in the Wintego, Pita, Pikoo lakes area, increased in size but declined somewhat in intensity. An extension of this infestation occurred south and east along the Churchill River from Pikoo Lake to Sokatisewin Lake and slightly in a north eastward direction. Mortality was confined to some regeneration balsam fir on the islands.

The Trade Lake infestation has now broken down into a number of pockets of moderate to severe defoliation and mortality was also confined to regeneration balsam fir.

An increase in the number of islands infested along the Churchill River system was recorded as far west as Besnard Lake, with the most notable increase occurring on Nistowiak Lake and Lac la Ronge. Mortality on these islands was confined to regeneration balsam fir. A new area of moderate defoliation was noted on an island in Wapawekka Lake.

A number of tree discs were taken within the infestation and will be used to determine increment loss attributed to the spruce budworm.

JACK-PINE BUDWORM, Choristoneura pinus pinus Free.:— The infestation in north-central Saskatchewan has now terminated and except for some light branch and top killing in the Nisbet and Fort à la Corne Provincial forests no mortality was recorded.

The Pinehouse Lake infestation northwest of La Ronge, which originally covered some 300 square miles, has now subsided.

BALSAM-FIR SAWFLY, Neodiprion abietis complex:— A further reduction in populations in Northern Saskatchewan occurred in 1968. The Sandfly Lake outbreak, which collapsed last year, remained inactive again this year. The infestation at Dead Lake, confined to one island, showed a further decline, but previous infestations have resulted in almost 100 per cent mortality of balsam fir. A mass collection of late-instar larvae was made at Dead Lake for the Winnipeg laboratory.

The balsam-fir sawfly was not recorded in any other part of the district.

GRAY WILLOW-LEAF BEETLE, Pyrrhalta decora (Say):— This leaf beetle, both larvae and adults, caused varying degrees of skeletonizing throughout the district. Light to moderate defoliation was recorded at Sealy, Big Sandy and Jan lakes along the Hanson Lake Road. Willow in the La Ronge area was heavily skeletonized and moderate to severe in the Pines, Nipawin and Fort à la Corne Provincial forests.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaefer):- Populations which were light last year continued to decline in 1968. Low populations were noted at Torch River, Crutwell, La Ronge and in the Fort à la Corne Provincial Forest. Feeding damage was insignificant in all areas.

A LEAF MINER OF WILLOW, Parornix sp.:- Severe infestations of this leaf miner occurred along the south shore of Lac la Ronge and extended southward along Highway No. 2 to No. 165.

Pockets of light defoliation were recorded in the vicinity of Prince Albert, Waskesiu and at Jan, Mirond, Pinehouse, Sandly and Dead lakes. Similar conditions were present at Daly Lake in Northern Saskatchewan.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria paropopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam	Waskesiu and Torch River	Low populations; damage nil.
<u>Acleris varians</u> (Fern.) (Black-headed budworm)	Spruce, white	10 miles west of Waskesiu	Low larval populations.
<u>Acronicta grisea</u> Wlk. (A dagger moth)	Alder	Reindeer Lake in Northern Saskatchewan	Low populations; light damage.
<u>Adelges cooleyi</u> Gill. (A spruce gall aphid)	Spruce, white	Waskesiu, Otter Rapids and Pelican Narrows	Damage very light.
<u>Adelges lariciatus</u> (Patch) (A spruce gall aphid)	Spruce, black	Ridge Tower, Mayview, Pinehouse Lake, Crutwell, MacDowall and Daly, Durrant and Reindeer lakes in Northern Saskatchewan	Low populations; light damage.
<u>Anoplonyx luteipes</u> (Cress.) (Marlatt's larch sawfly)	Tamarack	Waskesiu, Crutwell, Lynx Lake and Prince Albert	Defoliation very light.
<u>Archips cerasivoranus</u> (Fitch) (Ugly-nest caterpillar)	Choke cherry, eastern	Prince Albert, Lily Plain, Sturgeon Lake, MacDowall and Crutwell	Patches of severe defoliation around Prince Albert; elsewhere moderate.

Insect	Host(s)	Locality	Remarks
<u>Arge clavicornis</u> (Fab.) (A sawfly)	Alder	Waskesiu	Low populations; no damage.
<u>Badebecia urticana</u> Hbn. (A leaf roller)	Aspen, trembling Caragana Willow	Birch Hills	No noticeable damage.
<u>Campaea perlata</u> (Gn.) (Fringed looper)	Maple, Manitoba Alder	Hagen and MacDowall	Solitary defoliator; no visible damage.
<u>Chrysomela crotchi</u> Brown (Aspen leaf beetle)	Willow Aspen, trembling	Lily Plain, Fort à la Corne Provincial Forest, Anglin and Mirond lakes	Low adult populations; damage light.
<u>Chrysomela knabi</u> Brown (A leaf beetle)	Alder	Big Sandy Lake	Single collection; light damage.
<u>Cyphon variabilis</u> Thunb. (False flower beetle)	Aspen, trembling Poplar, balsam Pine, jack Fir, balsam Spruce, black and white Maple, Manitoba	Waskesiu, Hagen, MacDowall, Brancepeth, Fort à la Corne Provincial Forest, Crutwell, La Ronge and Candle Lake	Moderate populations at Waskesiu; light elsewhere.
<u>Epinotia solandriana</u> Linn. (A leaf roller)	Poplar, balsam Aspen, trembling	White Fox and Waskesiu	No noticeable damage.
<u>Femusa dohrnii</u> (Tischb.) (European alder leaf miner)	Alder	Crutwell, Pelican Narrows, La Ronge, Wabeno, Candle and Mirond lakes, and at Wollaston and Durrant lakes in Northern Saskatchewan	Light to moderate infestations throughout both districts.
* <u>Galerucella cavicollis</u> Lec. (Cherry leaf beetle)	Choke cherry, eastern Pin cherry	White Fox, Otter Rapids and Crutwell	Moderate defoliation of scattered bushes at Otter Rapids.
<u>Hemichroa crocea</u> (Fourcroy) (Striped alder sawfly)	Alder	Hatchet Lake in Northern Saskatchewan	Single colony; a trace of damage.

*Name revised to Pyrrhalta cavicollis Lec.

Insect	Host(s)	Locality	Remarks
<u>Itame loricaria</u> Evers. (A looper)	Aspen, trembling Poplar, balsam Ash, green Willow	Torch River, Birch Hills, Piprell, Lake and Fort à la Corne Provincial Forest	Low populations; no noticeable damage.
<u>Lithocolletis</u> <u>salicifoliella</u> Cham. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Prince Albert, Crutwell, MacDowall, Pelican Narrows, Wabeno, Sturgeon and Potato lakes	Very light infestations.
<u>Lopidea dakota</u> Knight (Caragana plant bug)	Caragana	Brancepeth and Hagen	Very low populations.
<u>Malacosoma</u> <u>lutescens</u> (N.&D.) (Prairie tent caterpillar)	Choke cherry, eastern	Crutwell, MacDowall, Prince Albert and Fort à la Corne Provincial Forest	High populations; moderate to severe defoliation in the Prince Albert area.
<u>Mayetiola rigidae</u> (O.S.) (Beaked willow gall fly)	Willow	Pinkney Lake	Low populations throughout the district.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Sturgeon Lake and Prince Albert National Park	Low populations; very light damage.
<u>Neodiprion</u> <u>nanulus nanulus</u> Schedl (Red-pine sawfly)	Pine, jack	Lily Plain, Anglin Lake, Fort à la Corne Provincial Forest	Single colony at Anglin Lake causing a trace of defoliation.
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Willow Aspen, trembling Elm, Chinese	Prince Albert, Briarlea, Wood Lake, Otter Rapids, Pelican Narrows and at Reindeer Lake in Northern Saskatchewan	Moderate defoliation of single, scattered trees.
<u>Operophtera</u> <u>bruceata</u> (Hulst) (Bruce spanworm)	Aspen, trembling Maple, Manitoba	Birch Hills and Brancepeth	Low populations; no visible damage.

Insect	Host(s)	Locality	Remarks
<u>Pandemis canadana</u> Kft. (A tortricid)	Willow Aspen, trembling Maple, Manitoba Choke cherry, eastern Birch, white	Waskesiu, Birch Hills, MacDowall, Lily Plain, Boundry Tower, Halkett and Hunters lakes	Low populations; light damage.
<u>Pemphigus populi-transversus</u> Riley (Poplar petiole gall aphid)	Poplar, balsam	MacDowall, Prince Albert, Fort à la Corne Provincial Forest and Sturgeon Lake	Light infestations; negligible damage.
<u>Petrova albicapitana</u> (Busck.) (Pitch nodule maker)	Pine, jack	MacDowall, Bear River, Fort à la Corne Provincial Forest and Wollaston Lake in Northern Saskatchewan	A slight increase in populations.
<u>Phyllocolpa</u> spp. (Sawflies)	Aspen, trembling Poplar, balsam Poplar, Russian	Crutwell, Waskesiu, Prince Albert, Brancepeth and Anglin Lake	Low populations throughout the district; very light damage.
<u>Pikonema alaskensis</u> (Roh.) (Yellow- headed spruce sawfly)	Spruce, white and black	Torch River, La Ronge, Fort à la Corne Provincial Forest, Sandfly and McLennan lakes and on Daly Lake in Northern Saskatchewan	Low populations; light, scattered defoliation.
<u>Pikonema dimmockii</u> (Cress.) (Green-headed spruce sawfly)	Spruce, white, black and Colorado Fir, balsam	Hagen, MacDowall, Peli an Narrows, Sandfly Lake and Nipawin Provincial Park	Low populations; light, scattered defoliation.
<u>Pissodes strobi</u> (Peck) (White- pine weevil)	Spruce, white and black Pine, jack	Crutwell and Fort à la Corne Provincial Forest	Some light leader mortality to black and white spruce at Crutwell.
<u>Proteoteras willingana</u> (Kft.) (Boxelder twig borer)	Maple, Manitoba	Hagen and Brancepeth	Low populations; damage very light.

Insect	Host(s)	Locality	Remarks
<u>Rhabdophaga strobiloides</u> (O. & S.) (Willow cone gall midge)	Willow	Throughout Central District and at Reindeer Lake in Northern Saskatchewan	Very low populations.
<u>Saperda calcarata</u> Say (Poplar borer)	Aspen, trembling Poplar, balsam	Fish and Mironde lakes	Low populations; light damage to regeneration.
<u>Saperda concolor</u> Lec. (Poplar-gall saperda)	Aspen, trembling Willow	Montreal River Road and at Wollaston Lake in Northern Saskatchewan	Light, scattered populations.
<u>Saperda populnea moesta</u> Lec. (Poplar-twig borer)	Aspen, trembling Poplar, balsam	Wasquesiu, Fish Lake, Crutwell, Fort a la Corne Provincial Forest and Nipawin Provincial Park	Scattered populations; light damage.
<u>Syneta pilosa</u> Brown (A leaf beetle)	Fir, balsam Spruce, black Tamarack	Little Bear Lake, La Ronge, Wasquesiu, Pinkney Lake and Nipawin Provincial Park	Low populations; no visible damage.

DISEASE CONDITIONS

SPRUCE NEEDLE RUSTS, Chrysomyxa ledicola (Peck) Lagerh. and Chrysomyxa ledi (Alb. & Schw.) deBary:- Despite above average precipitation, rust infections were generally light in the Central Mixedwood District and in Northern Saskatchewan on the host or alternate host.

Traces were found at Mayview, La Ronge, Piprell, Pinkney and Sealy lakes, and at Highrock, Darrant, Daly, Reindeer, Hatchet and Wollaston lakes in Northern Saskatchewan. Very little rust was found on the alternate host Ledum groenlandicum Oeder (Labrador-tea).

A LEAF SPOT, Drepanopeziza populorum (Desm.) Höhn.:- A slight increase was noted from 1967; light to moderate infections were observed along the southern boundary of Prince Albert National Park, throughout the Fort à la Corne Provincial Forest and in the Candle Lake area. Elsewhere infections were light.

LEAF A D TWIG BLIGHT OF POPLAR, Pollaccia radiosa (Lib.) Bald. & Cif.:— Traces of Pollaccia radiosa were found throughout the district and one heavy infection was noted on the west side of Anglin Lake.

Study plots established in 1966 were retallied and a summary of the results is shown in Table II.

TABLE II

Location of plot	Year	Percent of trees infected	Percent current shoots infected
Crutwell	1966	90	4.20
	1967	50	.22
	1968	30	.11
Mayview	1966	100	9.10
	1967	72.2	1.06
	1968	80	2.00

LEAF BLIGHTS OF BALSAM POPLAR, Linospora tetraspora Thompson and Septoria musiva Pk:— Infections were very light throughout the district and only a trace of Linospora tetraspora remains from last year's outbreak at Rabbit Creek in Prince Albert National Park. Septoria musiva was common, but no significant damage was recorded.

LEAF RUSTS, Puccinia spp.:— Above normal precipitation resulted in an increase of leaf rusts, however no widespread infections were recorded. Three new species, Puccinia calthae (Grev.) Link, Puccinia conglomerata (Str.) S. & K. and Puccinia heucherae (Schw.) Diet. were collected.

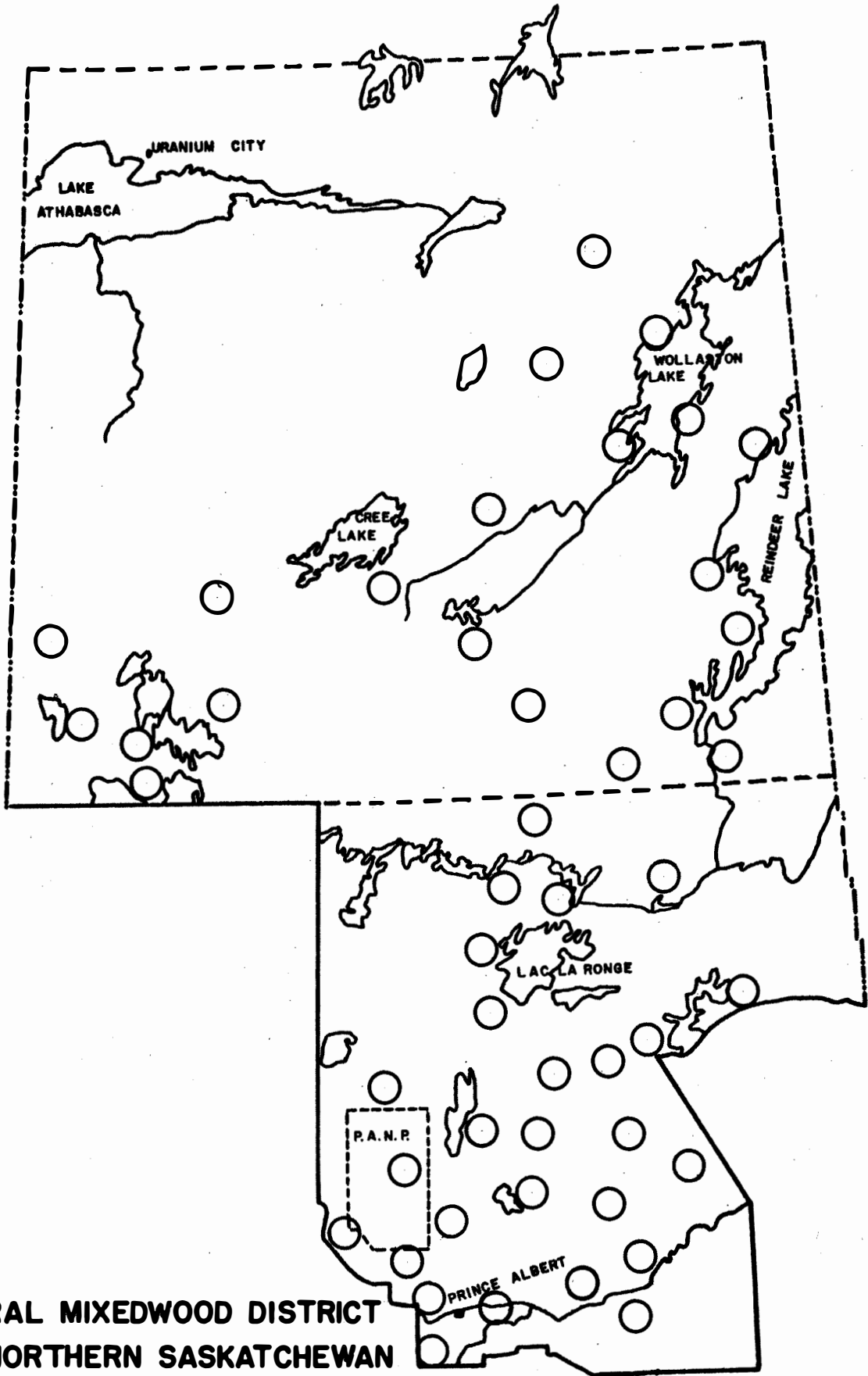
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Arceuthobium americanum</u> Nutt. ex Engelm. (Jack-pine mistletoe)	Pine, jack	Throughout the district	No new locations were found this year.
<u>Caliciopsis calicioides</u> (Ell. & Ev.) Fitzp. (Bark fungus)	Poplar, balsam	Sturgeon Lake and Prince Albert	Common on mature trees throughout the district.

Organism and Disease	Host(s)	Locality	Remarks
<u>Chrysomyxa</u> <u>arctostaphyli</u> Diet. (Yellow witches' broom)	Spruce, black and white	Ridge Tower, Choiceland, Wasquesiu, Pelican Narrows, Montreal River Road, Little Bear and O'Leary lakes	Single brooms on scattered trees.
<u>Ciborinia</u> <u>foliicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Prince Albert National Park and Reindeer Lake in Northern Saskatchewan	Very low incidence.
<u>Cronartium</u> <u>comandrae</u> Peck (Comandra blister rust)	Pine, jack	MacDowall	Very low incidence.
<u>Cronartium</u> <u>comptoniae</u> Arth. (Sweet fern blister rust of pine)	<u>Myrica gale</u> L.	Wollaston Lake in Northern Saskatchewan	Very light on lake shore shrubs.
<u>Diplodia</u> <u>tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling Poplar, balsam	White Fox, Fort a la Corne Provincial Forest, Fish, Hunters and Jan lakes	Moderate to severe infection on a small patch of aspen at Hunters Lake, Prince Albert National Park.
<u>Fomes fomentarius</u> (L. ex Fr.) Kickx (A slash fungus)	Birch, white	La Ronge, Wasquesiu, Little Bear, Althouse, Pine- house, and East Trout lakes and at Reindeer Lake in Northern Saskatchewan	Common on old dead birch.

Organism and Disease	Host(s)	Locality	Remarks
<u>Fomes igniarius</u> (L. ex Fr.) Gill. (White trunk rot)	Aspen, trembling Birch, white	MacDowall, Waskesiu, Molanosa, Pelican Narrows; Little Bear, Hunters, M rond, Jan and Pikoo lakes and at Reindeer Lake in Northern Saskatchewan	Common; light scattered infections.
<u>Hypoxylon fuscum</u> (Pers. ex Fr.) Fr. (A slash fungus)	Alder Birch, white	Waskesiu, Fort à Corne Provincial Forest; Otter, Fish, and Jan lakes and at Durrant and Highrock lakes in Northern Saskatchewan	Range extended to Durrant Lake in the Northern District.
<u>Hypoxylon mammatum</u> (Wahl) Miller (Hypoxylon canker)	Aspen, trembling Birch, white	Fish and Sturgeon lakes, Fort à la Corne Provincial Forest and at Highrock and Hatchet lakes in Northern Saskatchewan	No new infections; one sample was taken from white birch at Highrock Lake.
<u>Libertella betulina</u> Desm. (A die back)	Birch, white	Pelican Narrows, La Ronge and at Highrock and Hatchet lakes in Northern Saskatchewan	Range extended to Hatchet Lake in the Northern District.
<u>Melampsora bigelowii</u> Thum. (Larch- willow rust)	Willow	Mayview, Waskesiu, Highway 165 and La Ronge	Light, scattered infections.

Organism and Disease	Host(s)	Locality	Remarks
<u>Peridermium harknessii</u> J.P. Moore (Western gall rust)	Pine, jack	Molanosa, White Fox, White Gull Creek, Little Bear and Piprell lakes and at Reindeer Lake in Northern Saskatchewan	Very light infections in Central and Northern districts.
<u>Phaeoramularia maculicola</u> (Rom. & Sacc.) Sutton (A leaf spot)	Aspen, trembling	Waskesiu, Pelican Narrows, MacDowall, Sturgeon Lake, White Gull Creek and Fort à la Corne Provincial Forest	Light infections throughout the district; a moderate patch in the Fort à la Corne Provincial Forest.
<u>Pollaccia elegans</u> Serv. (Leaf and shoot blight)	Poplar, balsam	Pinkney and Dead lakes, Montreal River Road	Very low incidence.
<u>Rhytisma salicinum</u> Pers. ex Fr. (A tar spot)	Willow	Otter Rapids, Pelican Narrows, Fort à la Corne Provincial Forest and at Durrant and Reindeer lakes in Northern Saskatchewan	Light infections in all areas.
<u>Tryblidiopsis pinastri</u> (Fr.) Karst. (A saprophyte)	Spruce, black and white	Throughout the district	Common on dead branches of living trees.



**CENTRAL MIXEDWOOD DISTRICT
AND NORTHERN SASKATCHEWAN**

FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED
BY GROUND AND AERIAL SURVEYS--1968

Light ○

Scale 56mi-1 in

WESTERN MIXEDWOOD DISTRICT
SASKATCHEWAN

1968

by
C. L. Rentz

INTRODUCTION

Field surveys to determine the status of forest insects and tree diseases were carried out from the latter part of May to the end of September. Totals of 302 insect and 204 disease samples were submitted to the Winnipeg Laboratory, and 2 1/2 hours of chartered flying time was utilized to survey areas inaccessible by road in the northern portion of the district.

Survey sub-projects included: (1) sequential sampling of larch sawfly egg populations; (2) larch sawfly population studies at permanent plots; (3) population studies of small mammals; (4) shoot counts in Pollaccia radiosa (Lib.) Bald. & Cif. plots. In addition, mass and special collections were made for personnel of the Winnipeg laboratory.

Cool weather, with above average rainfall, during the 1968 field season retarded foliage production somewhat, and consequently insect and disease development was several weeks later than usual. Noteworthy changes in the status of forest insects and diseases were the increase in populations of the gray willow-leaf beetle, the collapse of the jack-pine budworm, and a continuing decline in populations of larch sawfly. Foliage rusts of conifers and deciduous trees continued to subside, and only scattered light infections were recorded.

INSECT CONDITIONS

LARCH SAWFLY, *Pristiphora erichsonii* (Htg.):- Very light defoliation was recorded on reproduction tamarack at Erinferry and Pierceland, and at Dore and Loon lakes. Elsewhere defoliation was negligible.

Sequential sampling of egg populations was carried out in three 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 for 1968
Loon Lake 01 12-62-598	50	0	light
Pierceland 01 12-57-602	50	0	light
St. Cyr 01 12-69-600	50	0	light

YELLOW-HEADED SPRUCE SAWFLY, *Pikonema alaskensis* (Roh.):- Although widely distributed, populations of this sawfly were slightly lower than in the previous year. Moderate to severe defoliation occurred in white spruce plantings at Loon Lake, Golden Ridge, Peerless, Loon River, Meadow Lake, Barthel and at Frenchman's Butte. In most instances only scattered trees were affected. A light to moderate infestation of regeneration white spruce was again recorded along the shoreline of Nessler Lake. In the remainder of the district defoliation was very light.

GRAY WILLOW-LEAF BEETLE, Pyrrhalta decora (Say):- This leaf skeletonizer was widespread throughout the entire district, but in most instances, populations were low. Moderate to severe skeletonizing of willow clumps was recorded along Highway 55 from St. Cyr to Green Lake, Big River and Debden. Scattered patches of willow along Highway 124 to Doré Lake were also moderately infested. In the remainder of the district, skeletonizing was very light.

AMERICAN ASPEN BEETLE, Gonioctena americana (Schaef.):- This leaf beetle caused several patches of moderate defoliation to aspen regeneration north and east of the Brightsand post office along the southern boundary of the Northern Provincial Forest. Larvae were also common south of Loon Lake to St. Walburg and west to Ministikwan and Fishing lakes, where defoliation was very light and restricted to trees under ten feet in height.

A BLOTCH MINER OF WILLOW, Parornix sp.:- A severe infestation of this species occurred on willow northward from Green Lake along Highway 155 through Beauval, Ile-a-la-Crosse, Buffalo Narrows, Lac la Loche, and north to the Clearwater River. High populations were also present in the Flotten, Keeley, and Cancee lakes areas. In the remainder of the district, populations were low, and caused only very light blotching of foliage on individual willow clumps.

ASPEN BLOTCH MINER, Lithocolletis salicifoliella Cham.:- A light to moderate infestation of this blotch miner was recorded in the Canwood Provincial Forest. Light infestations were recorded at Loon, Fishing, and Jeannette lakes, Golden Ridge, Lac des Iles, Steeles Narrows, Mont Nebo, Loon River, St. Cyr and at Mile 32 on Highway 155. In the remainder of the district, leaf mining was confined to a few leaves on individual trees.

OTHER NOTEWORTHY INSECTS

Insect

<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam	Meeting, Jeannette, and Loon lakes, Bolney and Turtleford	Usually only single galls.
<u>Acleris variana</u> (Fern.) (Black- headed budworm)	Spruce, white	Greig Lake	Trace only.
<u>Adelges cooleyi</u> Gillette (Adelges gall aphid)	Spruce, white	Meadow Lake Provincial Park, Green and Loon lakes	Light but commonly found.

Insect	Host(s)	Locality	Remarks
<u>Adelges</u> <u>lariciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, white and black	Loon, Shell, and Meeting lakes, and at Miles 32 and 70 on Highway 155	Light in all areas.
<u>Anoplonyx</u> <u>luteipes</u> (Cress.) (A sawfly)	Tamarack	Jeannette and Loon lakes	Very low populations; no noticeable damage.
<u>Archips</u> <u>cerasivoranus</u> (Fitch) (Ugly-nest caterpillar)	Choke cherry, eastern	Krydor, Canwood and Nelson Hill	Usually single tents.
<u>Badebecia</u> <u>urticana</u> Hbn. (A leaf roller)	Aspen, trembling	Jumbo Lake and Paradise Hill	Very light in both areas.
<u>Cecidomyia</u> <u>negundinis</u> Gill. (A midge)	Maple, Manitoba	Glenbush, and Vawn	Trace on foliage.
<u>Choristoneura</u> <u>conflictana</u> (Wlk.) (Large aspen tortrix)	Aspen, trembling	Brightsand and Mistohay lakes, Bolney and Paradise Hill	Low populations; no appreciable amage.
<u>Choristoneura</u> <u>fumiferana</u> (Clem.) (Spruce budworm)	Spruce, white	Mont Nebo and Turtle Lake	Very light; no conspicuous damage.
<u>Chrysomela</u> <u>crotchii</u> Brown (A leaf beetle)	Aspen, trembling	Canwood Regional Park and Buffalo Narrows	Very light on regeneration.
<u>Diorycytria</u> <u>reniculella</u> (Grt.) (Spruce coneworm)	Spruce, white	Loon Lake Beach, Brightsand and Meeting lakes	Low populations; no damage.
<u>Epinoxia</u> <u>solandriana</u> Linn. (A leaf roller)	Aspen, trembling Caragana	Southern half of the district	Some light leaf rolling evident.

Insect	Host(s)	Locality	Remarks
<u>Eriosoma</u> <u>americanum</u> (Riley) (Woolly elm aphid)	Elm, white	Southern portion of the district	Commonly found on planted elm; damage very light.
<u>Eupithecia luteata</u> Pack. (A looper)	Spruce, white Tamarack	Goodsoil and Loon Lake	Very low populations.
<u>Fenusa dohrnii</u> (Tischb.) (European alder leaf miner)	Alder	Rapidview, Lac des Iles, Loon, Green and Greig lakes	Some individual clumps moderately infested at Loon Lake; light in other areas.
<u>Feralia jocosu</u> (Guen.) (Green- striped spruce caterpillar)	Spruce, white	Loon Lake and Mont Nebo	Single larva collected.
<u>Gracillariid</u> spp. (Blotch miners)	Aspen, trembling Poplar, balsam Elm, white	Throughout the district	Low populations.
<u>Haploa confusa</u> Lyman (An Arctiid)	Aspen, trembling	Ministikwan Lake	Single collection of two larvae.
<u>Lepyrus palustris</u> Scop. (A weevil)	Aspen, trembling Willow	Mont Nebo and Greig Lake	Low adult populations.
<u>Malacosoma</u> <u>lutescens</u> (N. & D.) (Prairie tent caterpillar)	Choke cherry, eastern Rose	Edam, Turtle- ford, Ordale, Frenchman's Butte and Loon Lake	Usually single tents.
<u>Mayetiola piceae</u> Felt (Spruce bud scale)	Spruce, white and black	Mont Nebo and at Greig and Loon lakes	Low populations.
<u>Mayetiola rigidae</u> (O.S.) (Beaked willow gall fly)	Willow	Throughout the district	Light damage.
<u>Messa</u> <u>populifoliella</u> (Townsend) (A leaf mining sawfly)	Aspen, trembling	Canwood and Loon Lake	Light blotching of foliage.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond aphid)	Aspen, trembling	Throughout the district	Populations low; more common on regeneration.

Insect	Host(s)	Locality	Remarks
<u>Nematus limbatus</u> Cress. (The willow sawfly)	Willow	Loon Lake	Very low populations.
<u>Neodiprion abietis</u> complex (Balsam-fir sawfly)	Fir, balsam Spruce, white	Kazan Lake	One island severely defoliated in north end of lake.
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Willow Aspen, tre bling	Lac des Iles, Goose and Jumbo lakes	Light defoliation of single trees.
<u>Oligonychus ununguis</u> (Jac) (Spruce spider-mite)	Spruce, white	Pierceland, Meadow Lake Provincial Park and Loon Lake	Individual scattered trees lightly infested.
<u>Operophtera bruceata</u> (Hulst) (Bruce spanworm)	Aspen, tre bling	St. Walburg and Paradise Hill	Single larva in both collections.
<u>Pandemis canadana</u> Kft. (A leaf roller)	Aspen, trembling Willow	Jeannette, Meeting and Loon lakes, and olney	Very light leaf rolling.
<u>Pemphigus populi-transversus</u> Riley (Poplar petiole gall aphid)	Poplar, balsam	Throughout the district	Low gall concentrations.
<u>Petrova albicapitana</u> (Busck.) (Pitch nodule maker)	Pine, jack	Throughout the district	Very light on regeneration.
<u>Phyllocolpa</u> spp. (Leaf folding sawflies)	Poplar, balsam Willow Aspen, trembling	Throughout the district	<u>P. nr. agama</u> and <u>P. nr. robusta</u> found more commonly than <u>P. nr. nigrata</u> . Low populations causing only light damage to individual trees.
<u>Phyllocnistis populiella</u> Cham. (Aspen leaf iner)	Aspen, trembling Poplar, balsam	Throughout the district	Very light damage in all areas.

Insect	Host(s)	Locality	Remarks
<u>Pikonema dimmockii</u> (Cress.) (Green-headed spruce sawfly)	Spruce, white	Mont Nebo, Jumbo Lake and Loon River	Found in conjunction with <u>Pikonema alaskensis</u> ; very low populations.
<u>Pissodes strobi</u> (Peck) (White-pine weevil)	Pine, jack Spruce, white	Along Highway No. 155 and Loon Lake	Leader damage very light.
<u>Pissodes terminalis</u> Hopping (Lodgepole terminal weevil)	Pine, jack	Loon Lake and along the Otter Creek Trail	Very light damage.
<u>Pontania</u> sp. (A sawfly)	Willow	Throughout the district	High gall concentrations at Nesslin Lake; common but in low numbers in the remainder of the district.
<u>Rhabdophaga strobiloides</u> O.S. (Willow cone gall midge)	Willow	Throughout the district	Low populations; very little damage.
<u>Sciaphila duplex</u> Wlshm. (A leaf roller)	Aspen, trembling	Turtleford, Edam, St. Walburg, Brightsand and Loon Lake	Trace of leaf rolling damage.
<u>Semiothisa sexmaculata</u> (Pack.) (A geometrid)	Tamarack	Loon Lake and Mile 32 on Highway 155	Very low populations.
<u>Taniya albolineana</u> (Kearfoot) (Spruce needle miner)	Spruce, white	Brightsand Lake	Very light damage to needles.
<u>Tetralopha aplostella</u> Hlst. (Aspen webworm)	Aspen, trembling Willow	Flat Valley and Fowler Lake	Infestations light; damage insignificant.
<u>Trichiosoma triangulum</u> Kby. (A sawfly)	Willow	ac des Iles	Single collection.

Insect	Host(s)	Locality	Remarks
<u>Zeiraphera fortunana</u> Kft. (Spruce bud moth)	Spruce, white	Memorial Lake Regional Park and Sundance Tower	Damage negligible.
<u>Zengophora scutellaris</u> Suffr. (Cottonwood leaf mining beetle)	Poplar sp.	Battlefords Provincial Park	Light leaf mining on planted poplars.

DISEASE CONDITIONS

MISTLETOE OF JACK PINE, Arceuthobium americanum Nutt. ex Engelm.:— This parasitic plant occurs in almost all jack pine stands in the district. In some of the older stands where the majority of trees are infected, deterioration and mortality is quite evident. In young, vigorous stands, only occasional brooms may be noted.

YELLOW WITCHES' BROOM OF SPRUCE, Chrysomyxa arctostaphyli Diet.:— Brooms were common in most of the black spruce stands examined, but the heaviest infections usually occurred in the northern half of the district. Brooming of white spruce was less evident and in all instances only single brooms were observed.

LEAF AND SHOOT BLIGHTS OF POPLARS, Pollaccia radiosa (Lib.) Bald. & Cif.:— This pathogen was again found throughout the district. A small patch of severely infected aspen regeneration was recorded one half mile east of Turtle Lake but in the remainder of the district, only the occasional shoot was infected. Two special study plots, established in 1966 to study the recurrence and effect of this disease on trembling aspen regeneration were again retallied and a comparison of results are shown in Table II.

TABLE II

Location and size of plot	Year	Percent of trees infected	Percent current shoots infected
Goodsoil	1966	100	5.67
46.5' x 46.5'	1967	100	2.98
	1968	79	2.89
Nelson Hill	1966	90	1.83
46.5' x 46.5'	1967	53	0.76
	1968	90	3.15

STORM DAMAGE:- Hail and wind damage was recorded in a number of areas within the district. Wind damage was very apparent in a strip about twelve miles long, running along No. 55 Highway in the Big River area. Many trembling aspen, balsam poplar, and white spruce were uprooted or broken off. Within this area hail completely defoliated all trembling aspen and balsam poplar in a strip two miles wide. Small patches of hail damage were also recorded at Frenchman's Butte, Loon Lake, Goodsoil, Dorintosh, Krydor, Edam, Makwa, Meadow Lake, Brightsand and Barthel.

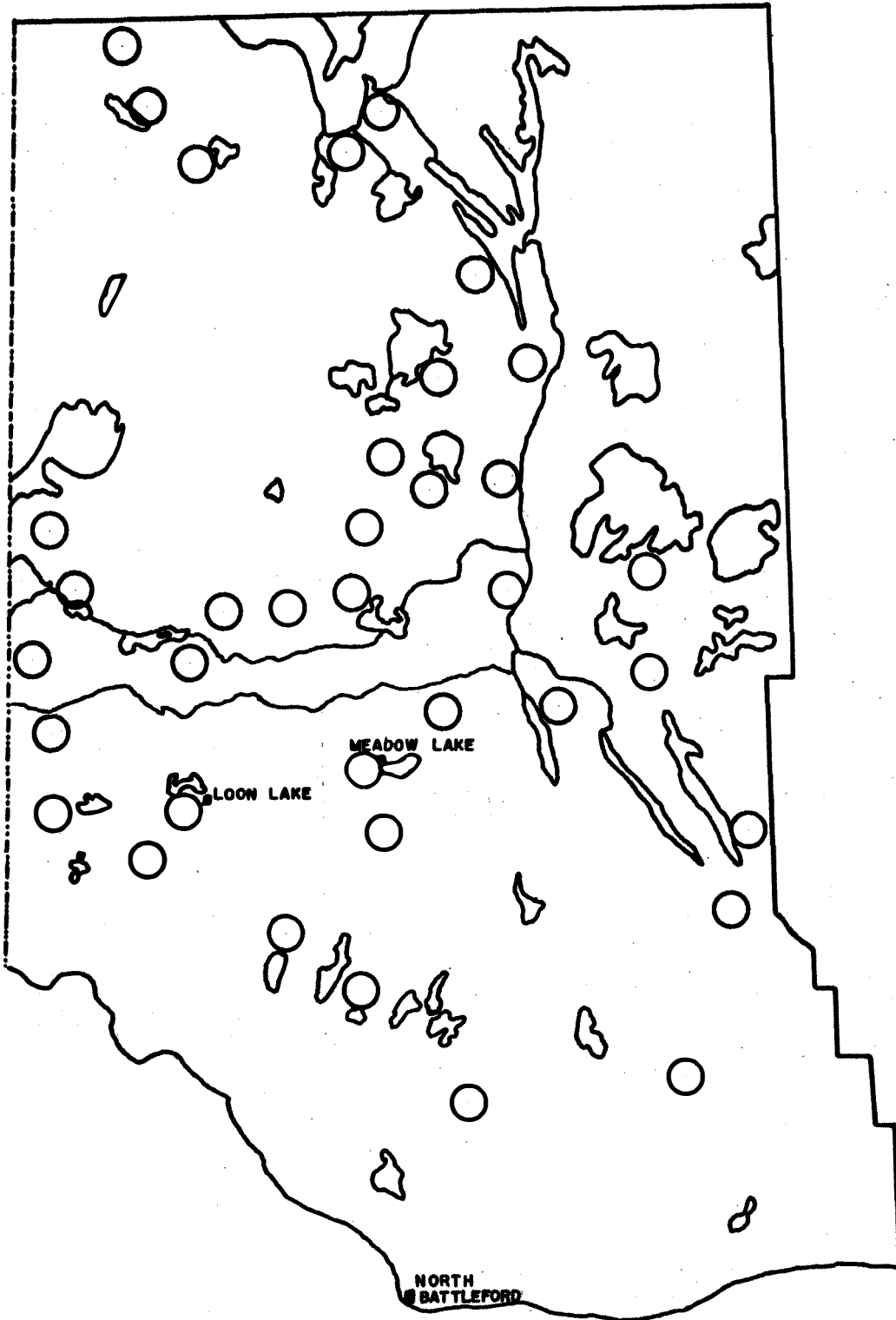
OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina collinsii</u> (Schw.) HÖhn. (A witches' broom)	Saskatoon	Throughout the district	Common in all areas but infections light.
<u>Caliciopsis calicioides</u> (Ell. & Ev.) Fitzp. (A bark fungus)	Poplar, balsam	Throughout the district	Common on most mature trees.
<u>Ciborinia foliicola</u> (Cash & Davidson) Whetzel (Black rib of willow)	Willow	Nelson Hill Tower	Light on individual clumps.
<u>Coccomyces hiemalis</u> Higgins (Shot hole of cherry)	Pin cherry Choke cherry, eastern	Loon River and Steeles Narrows	Light infections.
<u>Cronartium comandrae</u> Pk (Comandra blister rust)	Pine, jack	Goodsoil and Loon Lake	Very light infections.
<u>Daedalea confragosa</u> (Bolt.) Fr. (A slash fungus)	Willow	Pierceland and Cold and Bronson lakes	Light on dead willow
<u>Daedalea unicolor</u> (Bull.) Fr. (Sap and heart rot)	Birch, white	Jumbo Lake	Occasional dead tree lightly infected.
<u>Diplodia tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling	Loon Lake, mile 32 on Highway 155 and Martineau River	Light infections.
<u>Fomes fomentarius</u> (L. ex Fr.) Kickx (White mottled rot)	Birch, white Aspen, trembling	Martineau River and 20 miles north west of Big River	Light on older trees.

Organism and Disease	Host(s)	Locality	Remarks
<u>Fomes igniarius</u> (L. ex Fr.) Gill. (White trunk rot)	Aspen, trembling Birch, white	Kazan and Jeannette lakes and Buf- falo Narrows	Conks common on old trees.
<u>Fomes pinicola</u> (Swartz) Cke. (Brown cubical rot)	Spruce, white	Mile 124 on Highway 155, Bronson and Loon lakes	Common; infections light.
<u>Hypoxylen mammatum</u> (Wahl) Miller (A canker)	Aspen, trembling Willow	Throughout the district	Most common in southern half; usually infections light.
<u>Linospora tetraspora</u> Thompson (Leaf blight)	Poplar, balsam	Big River, St. Cyr, Mont Nebo and at Jeannette and Loon lakes	Light infections causing some early leaf fall.
<u>Lophodermium</u> <u>pinastri</u> (Schrad. ex Fr.) Chev. (A needle cast)	Pine, jack	Jeannette and Loon lakes	Light on old needles.
<u>Melampsora bigelowii</u> Thüm. (Larch-willow rust)	Willow	Throughout the district	Light except at Steeles Narrows where several clumps were moderately infected.
<u>Melampsora medusae</u> Thüm. (Larch-aspen rust)	Aspen, trembling	Pierceland, Mont Nebo and Loon Lake	Trace of infection.
<u>Melampsoridium</u> <u>betulinum</u> (Pers.) Kleb. (A rust)	Birch, scrub	Loon Lake area	Trace causing some early leaf fall.
<u>Nectria cinnabarina</u> (Tode ex Fr.) Fr. (Canker and dieback)	Maple, Manitoba Elm, Chinese	Battlefords Provincial Park and Glaslyn	Light in both areas.
<u>Peniophora aurantiaca</u> Bres. (A slash fungus)	Alder	Loon Lake and St. Cyr	Light on dead wood.

Organism and Disease	Host(s)	Locality	Remarks
<u>Peridermium harknessii</u> J.P. Moore (Western gall rust)	Pine, jack	Meadow Lake Provincial Park and Divide Tower	Moderate at Divide Tower; light infections elsewhere.
<u>Phaeoramularia maculicola</u> (Rom. & Sacc.) Sutton (A leaf spot)	Aspen, trembling	Loon Lake area and Whelan	Discoloration of foliage common.
<u>Phragmidium speciosum</u> (Fries) Cooke (Rust)	Rose	Throughout the district	Usually single bushes lightly infected.
<u>Polyporus hirsutus</u> (Wulf.) Fr. (The hairy conk)	Birch, white Aspen, trembling	Martineau River and at Loon and Jeannette lakes	Light on dead wood and cut stumps.
<u>Polyporus tomentosus</u> Fr. (White pocket rot)	Spruce, white	Loon Lake area	Only two collections of sporophores found.
<u>Poria punctata</u> (Fr.) Karst. (A decay)	Willow	Northern portion of the district	Common on large old willow.
<u>Puccinia caricis- shepherdiae</u> J.J. Davis (A rust)	Buffaloberry	Canwood Provincial Forest	Commonly found; very little damage.
<u>Rhytisma salicinum</u> Pers. ex Fr. (Tar spot on willow)	Willow	Throughout the district	Light infections causing little damage.
<u>Septoria musiva</u> Pk (A leaf blight)	Poplar, balsam	Throughout the district	Light in all areas.
<u>Septoria symphoricarpi</u> Ell. & Ev. (A leaf spot)	Snowberry	Nelson Mill Tower	A first regional record.
<u>Sphaeropsis albescens</u> Ell. & Ev. (A leaf spot)	Maple, Manitoba	Belney and Edam	Light on foliage.
<u>Trametes hispida</u> Bagl. (A slash fungus)	Poplar, balsam	Bronson Lake	Light infection.
<u>Tubercularia ulmea</u> Carter (Dieback)	Maple, Manitoba	Glaslyn and Rabbit Lake	Light in both areas.

Organism and Disease	Host(s)	Locality	Remarks
<u>Tryblidiopsis pinastri</u> (Fr.) Karst. (A saprophyte)	Spruce, white and black	Throughout the district	More common on white spruce; otherwise light.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Willow Poplar, balsam Aspen, trembling	Throughout the district	Common but light in all areas.
<u>Wallrothiella</u> <u>arceuthobii</u> (Pk) Sacc. (A hyperparasite)	<u>Arceuthobium</u> <u>americanum</u>	Canwood Provincial Forest, Loon Lake and Pierceland	Light infections on mistletoe plants.



WESTERN MIXWOOD DISTRICT

FIG. 1

LARCH SAWFLY INFESTATIONS AS DETERMINED
BY GROUND AND AERIAL SURVEYS--1968

Light ○

WESTERN PRAIRIE DISTRICT
SASKATCHEWAN

1968

by

A. N. Simpson and B. B. McLeod

INTRODUCTION

The Western Prairie District was surveyed for forest insects and tree diseases from May 15 to September 10. During this period, 1,107 insect and 386 disease samples were submitted to the Winnipeg laboratory for identification.

Below average precipitation was recorded in many areas of the southern portion of the district during the earlier part of the season.

In addition to general, mass, and special collections, the following survey sub-projects were carried out: (1) tree disease studies in permanent plots and (2) a small mammal survey in the Cypress Hills Provincial Park.

A new survey program was initiated to provide more information on farm shelterbelt insect and disease conditions. Forty-one shelterbelts, chosen by the Agriculture Representatives, were sampled twice during the season.

In Cypress Hills Provincial Park, the large aspen tortrix infestation was generally lighter than last year. The cottonwood leaf mining beetle, Zeugophora scutellaris Suffr., increased sharply while the fall cankerworm remained at about the same level.

INSECT CONDITIONS

POPLAR BUD-GALL MITE, Aceria parapopuli (Keifer):- Moderate to severe infestations of this gall mite were found on hybrid poplars in the Demaine, Birsay, Elrose, Eston, Leader, Maple Creek and Mortlach areas while light infestations were noted at a number of other widely scattered locations. Collections were made from aspen at Watrous, Hanley, Elbow, Pike Lake Provincial Park and Borden. A light infestation on balsam poplar, was recorded at Lucky Lake.

PINE NEEDLE SCALE, Phenacaspis pinifoliae (Fitch):- Severe infestations were recorded on white spruce at Gravelbourg, on Colorado spruce and Scots pine at Smiley, and on the occasional lodgepole pine in the Cypress Hills Provincial Park. Light to moderate infestations were noted in white spruce stands in the following areas: Kerrobert, Smiley, Waldeck, Wymark, Gull Lake, Maxstone, Cypress Hills Provincial Park, and east of Walsh, Alberta. Light infestations on Scots pine were recorded at Limerick, Neville and Kerrobert.

FALL CANKERWORM, Alsophila pometaria (Harr.): - Manitoba maple and elm shelterbelts were moderately to severely defoliated in the following areas: Bracken, Frontier, Gravelbourg, Shaunavon, Gull Lake, Swift Current, Herbert, Demaine, Asquith and Biggar. Light to moderate defoliation was recorded in the Wood Mountain, Crestwynd, Bounty, Kerrobert, Tramping Lake, Maymont and St. Isidore du Bellevue areas (Figure 1).

The linden looper, Erannis tiliaria (Harr.) was commonly associated with the fall cankerworm, but caused very little defoliation.

LARGE ASPEN TORTRIX, Choristoneura conflictana (Wlk.):— Light to severe defoliation of trembling aspen by this insect occurred in the Cypress Hills Provincial Park. The most severe damage was recorded along the road between the golf course and the fire tower and as far north as Section 25, Township 8, Range 27, West of the 3rd Meridian. Elsewhere in the Park Block, scattered patches of moderate to severe defoliation were recorded but damage was generally lighter than last year. In the West Block of the Cypress Hills, considerable defoliation occurred along the Battle Creek and in Section 30, Township 7, Range 28, West of the 3rd Meridian. Larval collections were made at Wood Mountain, Southfork, Maple Creek and Battleford, but defoliation was insignificant.

COTTONWOOD LEAF MINING BEETLE, Zeugophora scutellaris Suffr.:— Light to severe infestations of this leaf miner occurred on hybrid poplars in the southern half of the district and at several points in the northern portion. The heaviest damage was recorded at Thompson Lake Regional Park, the Trans-Canada Camp Grounds near Maple Creek, and at the Trans-Canada picnic site near Gull Lake. Light to moderate infestations were recorded at the following locations: Frontier, Ponteix, Hazenmore, Gravelbourg, Richmond, Hazlet, Kindersley, Kyle, Saskatchewan Landing, and Swift Current. A small light infestation was located north of Maple Creek on trembling aspen.

PRAIRIE TENT CATERPILLAR, Malacosoma lutescens (N. & D.):— This insect was common throughout the entire district. Collections were taken from rose-bush at the following points: Tompkins, Gull Lake, Lac Pelletier, Gravelbourg, Uren, Bishopric, Stewart Valley, Abbey, Elbow, Hanley, Pike Lake Provincial Park, Grandoro, and in Regional Parks located at Macklin, Tramping, and Attons lakes. In the McCord, Rush Lake, Battleford, Watrous, Stranraer, Borden, Biggar, St. Louis, Batoche, and Besant Provincial Park areas the host was choke cherry. At Frontier a single cottoneaster shrub was moderately infested, while at Battleford severe defoliation was noted on saskatoon and scattered trembling aspen. A number of egg bands were taken for parasite studies within these areas.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Acronicta americana</u> Harr. (Dagger moth)	Maple, Manitoba	Wymark and Maple Creek	No damage.
<u>Adelges cooleyi</u> Gillette (Cooley spruce gall aphid)	Spruce, white	Cypress Hills Provincial Park	Light gall infestations on the occasional tree.
<u>Adelges lariciatus</u> (Patch) (Spruce pineapple gall aphid)	Spruce, white	Cypress Hills Provincial Park and Demaine	Light infestations.
<u>Agrilus criddlei</u> Frost (A wood borer)	Willow	Cypress Hills Provincial Park	Single gall collection.

Insect	Host(s)	Locality	Remarks
<u>Aphid</u> spp.	Elm Maple, Manitoba Spruce, white Poplar, balsam	Frontier, Shanavon, Cypress Hills Provincial Park, Laird and Carlton	High populations; light damage.
<u>Archips</u> <u>cerasivoranus</u> (Fitch) (Ugly- nest caterpillar)	Choke cherry, eastern	Tramping Lake, Borden, Pike Lake Provincial Park and Elbow	Light infestations of roadside bushes.
<u>Archips</u> <u>negundanus</u> (Dyar) (A leaf roller)	Maple, Manitoba	Throughout the district	Light defoliation; common on farm shelterbelts.
<u>Arge clavicornis</u> (Fab.) (A sawfly)	Willow	Cypress Hills Provincial Park	No noticeable defoliation.
<u>Badebecia urticana</u> Hbn. (A leaf roller)	Ash, green Maple, Manitoba Willow Choke cherry, eastern Aspen, trembling	Throughout the northern portion of the district	Low populations; negligible damage.
<u>Biston cognataria</u> (Gn.) (Pepper-and- salt moth)	Caragana Elm, Chinese Maple, Manitoba	Stewart Valley, Eston and Chaplin	No damage.
<u>Campaea perlata</u> (Gn.) (Fringed looper)	Maple, Manitoba Aspen, trembling Elm, white Caragana	Borden, Speers, Battleford, Lone Rock and Mortlach	Low populations; a trace of defoliation.
<u>Cecidomyia</u> <u>negundinis</u> Gill. (Boxelder gall midge)	Maple, Manitoba	Throughout the district	Light infestations on farm shelter- belts.
<u>Chalcoides</u> sp. (A leaf beetle)	Aspen, trembling Poplar sp. Willow	Assiniboia, Ma stone, Consul and Conquest	Low populations; light defoliation.

Insect	Host(s)	Locality	Remarks
<u>Choristoneura fumiferana</u> (Clem.) (Spruce budworm)	Spruce, white and Colorado	Cypress Hills Provincial Park, Battleford, Laird, Rosthern and Marshall	Light defoliation along the Battle Creek; trace elsewhere.
<u>Choristoneura rosaceana</u> Harr. (Oblique-banded leaf roller)	Poplar sp. Choke cherry, eastern Ash Elm	Bounty, McCord, Pike Lake Provincial Park and Biggar	No apparent damage.
<u>Chrysonela</u> spp. (Leaf beetles)	Aspen, trembling Willow	Gull Lake and Cardell	Single collections of: <u>C. crotchii</u> Brown and <u>C. scripta</u> F.; damage nil.
<u>Cimbex americana</u> Leach (Elm sawfly)	El , white	Gull Lake	No damage.
<u>Compsolechia niveopulvella</u> Cham (A leaf tier)	Aspen, trembling	Mortlach	Light leaf rolling.
<u>Corythucha mollicula</u> O. & D. (A lace bug)	Poplar, balsam	Battleford	Severe on smaller trees.
<u>Cyphon variabilis</u> Thunb. (False flower beetle)	Aspen, trembling Poplar sp. Ash, green	Kerrobert Maidstone, Silver Beach Regional Park, Wilbert and St. Isidore	Adults only; no significant damage.
<u>Diorycytria reniculella</u> (Grote) (Spruce coneworm)	Spruce, white and Colorado	Cypress Hills Provincial Park, Battleford and Speers	Low populations; a trace of defoliation.
<u>Ectropis crepuscularia</u> Schiff. (A geometrid)	Maple, Manitoba	Elstow	No damage.
<u>Epinotia solandriana</u> Linn. (A leaf roller)	Willow Caragana	Southfork and Maple Creek	Low populations; very little damage.

Insect	Host(s)	Locality	Remarks
<u>Erannis tiliaria</u> (Harr.) (Linden looper)	Ash, green Maple, Manitoba	Bracken, Eastend, Tompkins and Gull Lake	Populations light; frequently associated with fall cankerworm.
<u>Eriophyes fraxiniflora</u> Felt (Ash flower gall)	Ash, green	Pike Lake Provincial Park	Light infestations throughout Park area.
<u>Eriosoma americanum</u> (Riley) (Woolly elm aphid)	Elm, white and Chinese	Throughout the district	Common on shelter- belts; damage light to severe.
<u>Eupareophora purca</u> (Cr) (Ash sawfly)	Ash, green	Highgate, Rutan, Biggar and Ma stone	Light to moderate damage.
<u>Eupithecia luteata</u> Pack. (A looper)	Spruce, white	Gull Lake	Damage negligible.
<u>Eupsilia tristigmata</u> Grt. (A noctuid)	Maple, Manitoba Saskatoon	Borden	Low populations; very light feeding damage.
* <u>Galerucella decora</u> (Say) (Gray willow- leaf beetle)	Willow Poplar sp. Aspen, trembling	Cypress Hills Provincial Park, Biggar and St. Isidore du Bellevue	Very light feeding.
<u>Gonioctena americana</u> (Schaefer.) (American aspen beetle)	Aspen, trembling Maple, Manitoba	Wood Mountain, Cypress Hills Provincial Park and Highgate	Small patches of moderate defoliation.
<u>Gracillaria negundella</u> Cham. (Boxelder leaf roller)	Maple, Manitoba	Bracken, South- fork, Cardell, Borden and Highgate	Populations light; trace of damage in five shelterbelts.
<u>Halisidota maculata</u> (Harr.) (Spotted tussock moth)	Willow Maple, Manitoba Apple	Stewart Valley and Neville	A trace of defoliation on the occasional shelterbelt tree.

*Name revise to Pyrralta decorata (Say)

Insect	Host(s)	Locality	Remarks
<u>Hyphantria</u> <u>cunea</u> (Drury) (Spotless fall webworm)	Choke cherry, eastern	Riverhurst	Bushes occasionally infested.
<u>Idiocerus</u> <u>lachrymalis</u> Fitch (A leaf hopper)	Aspen, trembling	Battleford, Silver Beach Regional Park and Maidstone	Low populations; no damage.
<u>Idiocerus populi</u> L. (A leaf hopper)	Aspen, trembling	Throughout the district	Adult collections; light oviposition damage in most ar as.
<u>Itame loricaria</u> Evers. (A looper)	Aspen, trembling Willow Ash	Throughout the district	Generally low populations; negligible damage.
<u>Lepyrus palustris</u> Scop. (A weevil)	Poplar, balsam	Silver Beach Regional Park	Adult collections; no damage.
<u>Leptocoris</u> <u>trivittatus</u> (Say) (Boxelder bug)	Maple, Manitoba Caragana Ash, green Elm Apple	Throughout the district	Infestations common but light.
<u>Lithocolletis</u> <u>salicifoliella</u> Cham. (Aspen blotch miner)	Aspen, trembling Poplar, balsam	Maidstone and Silver Beach Regional Park	Light infestations of reproduction in both locations.
<u>Lopidea dakota</u> (Knight) (Caragana plant bug)	Caragana Willow Elm Ash, green	Throughout the district	Populations low.
<u>Mayetiola</u> <u>rigidae</u> (. S.) (Beaked willow gall fly)	Willow	Cypress Hills Provincial Park	Light infestation on individual trees.
<u>Melanolophia</u> <u>canadaria</u> Gn. (A looper)	Maple, Manitoba Ash, green Elm Willow	Assiniboia and Macklin Lake Regional Park	Very low populations; no visible damage.
<u>Messa</u> <u>populifoliella</u> (Townsend) (A leaf mining sawfly)	Cottonwood	Elbow	Populations declined.

Insect	Host(s)	Locality	Remarks
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling Poplar sp.	Throughout the district	Light populations on scattered trees.
<u>Mulsantina</u> <u>hudsonica</u> Csy. (Ladybird beetle)	Pine, lodgepole Aspen, trembling Spruce, Colorado and white	Scattered points through- out the district	Low populations.
<u>Nematus</u> <u>limbatus</u> Cress. (A willow sawfly)	Willow	Lucky Lake	Single collection; light damage.
<u>Neoborus</u> <u>amoenus</u> Reut. (A mirid)	Ash, green	Frontier, McCord, Waldeck, Stewart Valley, Hazlet and Maidstone	Very low populations; no visible damage.
<u>Nymphalis</u> <u>antiopa</u> (L.) (Mourning cloak butterfly)	Caragana Willow Aspen, trembling Elm, Chinese	Saskatchewan Landing, Eston, Pike Lake and Highgate	Light to moderate feeding damage.
<u>Nycteola</u> <u>frigidana</u> Wlk. (An owlet moth)	Willow	Macklin Lake Regional Park	Single collection; no visible defoliation.
<u>Oberaea</u> <u>schaumi</u> Lec. (Poplar twig borer)	Aspen, trembling	St. Louis	Light local infestation of open growing reproduction aspen.
<u>Oligonychus</u> <u>ununguis</u> (Jac) (Spruce spider mite)	Spruce, white	Chaplin, Elstow, Speers and Laird	Light to moderate infestation of spruce in farm shelterbelts.
<u>Operophtera</u> <u>bruceata</u> (Hulst.) (Bruce spanworm)	Aspen, trembling Ash, green Maple, Manitoba Willow Poplar sp.	Throughout the southern portion of the district	Low populations; no appreciable damage.
<u>Orsodacne</u> <u>atra</u> (Ahr.) (A leaf beetle)	Aspen, trembling Maple, Manitoba Caragana Poplar, balsam Ash, green Choke cherry, eastern	Cypress Hills Provincial Park, Conquest, Hazlet, Maidstone, Waseca and Wilbert	Light infestations; no damage.

Insect	Host(s)	Locality	Remarks
<u>Orthosia hibisci</u> Gn. (An owlet moth)	Elm, Chinese Maple, Manitoba Poplar sp. Ash Willow	Borden, Highgate, Tramping Lake Regional Park, Demaine, Bounty, Hanley and Maxstone	Low populations; very light feeding damage.
<u>Pandemis canadana</u> Kft. (A tortricid)	Aspen, trembling Maple, Manitoba Willow Caragana Poplar sp. Saskatoon Elm, white and Chinese	Northern portion of the district and Maxstone	Generally low populations; no defoliation.
<u>Parorgyia yagana</u> B. & McD. (A tussock moth)	Elm, Chinese Maple, Manitoba Willow	Highgate, Borden and Maxstone	No significant defoliation.
<u>Pemphigus populi- caulis</u> Fitch (A gall aphid)	Poplar, balsam	Chaplin and Waldeck	Light gall infestations on scattered trees.
<u>Pemphigus populi- transversus</u> Riley (A Poplar petiole gall aphid)	Poplar, balsam	Macklin Lake Regional Park	Light populations on open growing reproduction.
<u>Phyllocolpa</u> spp. (Sawfly spp.)	Poplar, hybrid and balsam Aspen, trembling	Scattered points throughout the district	<u>P. nr. agama</u> was severe at Battleford, light elsewhere; <u>P.</u> <u>nr. robusta</u> was responsible for very light damage.
<u>Phyllocnistis</u> <u>populiella</u> Cham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam	Cypress Hills Provincial Park, Ponteix and Lucky Lake	Patches of heavy infestations in the Cypress Hills; otherwise light.
<u>Pikonema</u> <u>alaskensis</u> (Roh.) (Yellow-headed spruce sawfly)	Spruce, white and Colorado	Elbow, Highgate, Kerrobert, Waseca and Battleford	Moderate defoliation at Highgate; light elsewhere.
<u>Pissodes strobi</u> (Peck) (White- pine weevil)	Pine, jack	Cypress Hills Provincial Park	One adult collection.

Insect	Host(s)	Locality	Remarks
<u>Pontania</u> sp. (A sawfly)	Willow	Conquest, Borden, Laird, Elstow, and Pike Lake Provincial Park	Generally light infestations; some- what higher populations along the Saskatchewan River at Borden.
<u>Pristiphora</u> <u>erichsonii</u> (Htg.) (Larch sawfly)	Larch	Cypress Hills Provincial Park	One tree moderately defoliated.
<u>Protecteras</u> <u>willingana</u> Kft. (Boxelder twig borer)	Maple, Manitoba	Throughout the district	Light to moderate twig damage on farm shelterbelts.
<u>Saperda</u> <u>calcarata</u> (Say) (Poplar borer)	Aspen, trembling	Saskatchewan Landing	Several trees affected in a plantation.
<u>Saperda</u> <u>concolor</u> Lec. (Poplar-gall saperda)	Willow	Waseca and Furness	Light infestations in both areas.
<u>Sciaphila</u> <u>duplex</u> Wlshm. (Leaf roller)	Aspen, trembling Willow	Cypress Hills Provincial Park, Grandora and Maidstone	Light damage.
<u>Syngrapha</u> <u>alias</u> Ottol. (A semi- looper)	Spruce, white and Colorado	McCord and Tompkins	No noticeable defoliation.
<u>Taniva</u> <u>albolineana</u> (Kearfott) (Spruce needle miner)	Spruce, Colorado	Pambrun, Marshall and Waldheim	Low populations; damage negligible.
<u>Tetralopha</u> <u>aplastella</u> Hlst. (Aspen webworm)	Aspen, trembling	Cypress Hills Provincial Park	Light infestations of individual trees.
<u>Trichiosoma</u> <u>triangulum</u> Kby. (A sawfly)	Aspen, trembling Willow	El w	Low populations; damage insignificant.
<u>Zenobia</u> <u>pleonectusa</u> <u>manitobae</u> Stand (An owlet moth)	Aspen, trembling Poplar sp.	Biggar and Laird	Low populations; no damage.
<u>Zeugophora</u> <u>abnormis</u> Lec. (Leaf mining beetle)	Aspen, trembling	Lucky Lake	A trace of leaf mining.

DISEASE CONDITIONS

A STEM CANKER, Cucurbitaria caraganae Karst.:— This canker was very common in caragana farm shelterbelts, however, the intensity of the infections was light. Collections from the following areas indicate the widespread distribution of the disease: Bracken, Meyronne, Chaplin, Kindersley, Rutan, Biggar and Maidstone.

CYTOSPORA CANKER, Cytospora spp.:— Collections of this canker were made from trembling aspen, hybrid poplar, balsam poplar, caragana, willow and Chinese elm. At Eston, Leader, Lemsford Regional Park, Maple Creek and Maxstone the infections were severe and hybrid poplar were in very poor condition. Light to moderate infections were recorded at Consul, Hazenmore, Tompkins, Chaplin, Hanley and Smiley. In the Cypress Hills Provincial Park a localized pocket of trembling aspen was moderately infected. Elsewhere infections on caragana, Chinese elm and willow were light.

GYMNOSPORANGIUM RUSTS, Gymnosporangium spp.:— Five species of Gymnosporangium rust caused severe infections in 1968. Gymnosporangium clavipes Cke and Pk severely infected saskatoon bushes and to a lesser extent juniper shrubs along the South Saskatchewan River in the Borden area. Gymnosporangium comersii Parmelee severely infected hawthorn in the Pike Lake area and saskatoon at Saskatchewan Landing. Gymnosporangium corniculans Kern was severe on saskatoon bushes at Borden and Battleford and moderate to severe at Pike Lake Provincial Park. A severe localized patch of Gymnosporangium cornutum Arth. ex Kern was found infecting the mountain ash in the Cypress Hills Provincial Park. Gymnosporangium nidus-avis Thaxt. moderately infected saskatoon in the Pike Lake area and lightly infected saskatoon at Elbow.

HYPOXYLON CANKER, Hypoxylon mammatum (Wahl) Miller:— This canker was commonly found throughout the trembling aspen stands of the Cypress Hills and was frequently collected in the aspen grove section in the northern portion of the district. Other points of light infection included: Scout Lake, Crestwynd, Uren, Mortlach, Beechy, Elbow, Imperial and Watrous. A single collection was also taken from a clump of willows in the Mortlach area.

LEAF AND TWIG BLIGHT OF POPLARS, Pollaccia radiosa (Lib.) Bald. & Cif.:— This shoot blight of trembling aspen was recorded in the Borden, Imperial, Hanley, Beechy and Cypress Hills Provincial Park areas. Infections were generally light and confined to regeneration trees.

A permanent study plot of P. radiosa was established in the Cypress Hills Provincial Park in 1966. This plot was retallied again this year and a summary of the counts for the past three years is outlined in the following table:

<u>Locality</u>	<u>Year</u>	<u>Percent of trees infected</u>	<u>Percent of current shoots infected</u>
Cypress Hills	1966	100	64.1
Provincial Park	1967	85	1.4
	1968	80	4.3

OTHER NOTEWORTHY DISEASES

<u>Organism and Disease</u>	<u>Host(s)</u>	<u>Locality</u>	<u>Remarks</u>
<u>Atropellis</u> <u>piniphila</u> (Weir) Lohman and Cash (<u>Atropellis</u> canker of pine)	Pine, lodgepole	Cypress Hills Provincial Park	Light infection on the occasional tree.
<u>Camarosporium</u> <u>caraganae</u> Karst. (Slash fungus)	Caragana	Widely scattered throughout the district	Infections common, but light in shelterbelt plantings.
<u>Chrysomyxa</u> <u>arctostaphyli</u> Diet. (Witches' broom)	Spruce, white	Cypress Hills Provincial Park	One broom only.
<u>Coccomyces hiemalis</u> Higgins (Shot hole of cherry)	Choke cherry, eastern	Tramping Lake Regional Park, Pike Lake Provincial Park and Borden	Light infections on roadside shrubs.
<u>Cronartium</u> <u>comandrae</u> Peck (Comandra blister rust)	Comandra, pale	Cypress Hills Provincial Park	Patches of moderate intensity.
<u>Cryptochaete rufa</u> (Fr.) Karst. (Slash fungus)	Aspen, trembling	Throughout the district	Very light infection.
<u>Cucurbitaria</u> <u>staphula</u> Dearn. ex R.H. Arnold & R.C. Russell	Aspen, trembling	Watrous and Mortlach	Infections light.
<u>Cytospora annulata</u> Ell. & Ev.	Maple, Manitoba	Hazlet and Highgate	Light infection.
<u>Diatrype disciformis</u> (Hoffm. ex Fr.) Fr.	Birch, scrub	Elbow	Single collection.
<u>Diatrype stigma</u> (Hoffm. ex Fr.) Fr.	Saskatoon	St. Louis	Common on dead standing stems.
<u>Discella carbonacea</u> (Fr.) Berk. & Br.	Willow	Elbow	Occasional clump infected.

Organism and Disease	Host(s)	Locality	Remarks
<u>Fomes igniarius</u> (L. ex Fr.) Gill. (White trunk rot)	Aspen, trembling	Cypress Hills Provincial Park, Elbow, Pike Lake Provincial Park, Macklin Lake Regional Park and Waseca	Common on larger trees in the Pike Lake area; light elsewhere.
<u>Fomes ellisianus</u> Anderson	Shepherdia, argentina	Battleford and Borden	Common throughout the Battleford area; light at Borden.
<u>Hypodermella ampla</u> (Davis) Dearn. (A needle cast)	Pine, lodgepole	Cypress Hills Provincial Park	Heavy on one tree.
<u>Hysteroglyphium</u> <u>fraxini</u> (Pers. ex Fr.) de Not.	Ash, green	Pike Lake Provincial Park	No noticeable damage recorded.
<u>Lophodermium</u> <u>juniperinum</u> (Fr.) de Not.	Juniper	Borden	Common on juniper along the Saskatchewan River; infections very light.
<u>Lophodermium</u> <u>piceae</u> (Fekl) Hohn. (Needle cast)	Spruce, white	Cypress Hills Provincial Park	Moderate infection of understory.
<u>Libertella</u> <u>betulina</u> Desm.	Birch, white	St. Louis	Common on dead and dying trees along the Saskatchewan River in the St. Louis-St. Laurent area.
<u>Nectria cinnabarina</u> (Tode ex Fr.) Fr.	Willow Elm, Chinese	Borden and Rutan	Common on dead wood.
<u>Othia hypoxylon</u> (Ell. & Ev.) Shear (Slash fungus)	Maple, Manitoba Ash, green	Meyronne, Shaunavon, Borden, Denzil and Biggar	Low intensity in farm shelterbelts.
<u>Phaeoramularia</u> <u>maculicola</u> (Rom. & Sacc.) Sutton	Aspen, trembling	Battleford, Borden and Silver Beach Regional Park	Infections generally light in aspen woodlots.

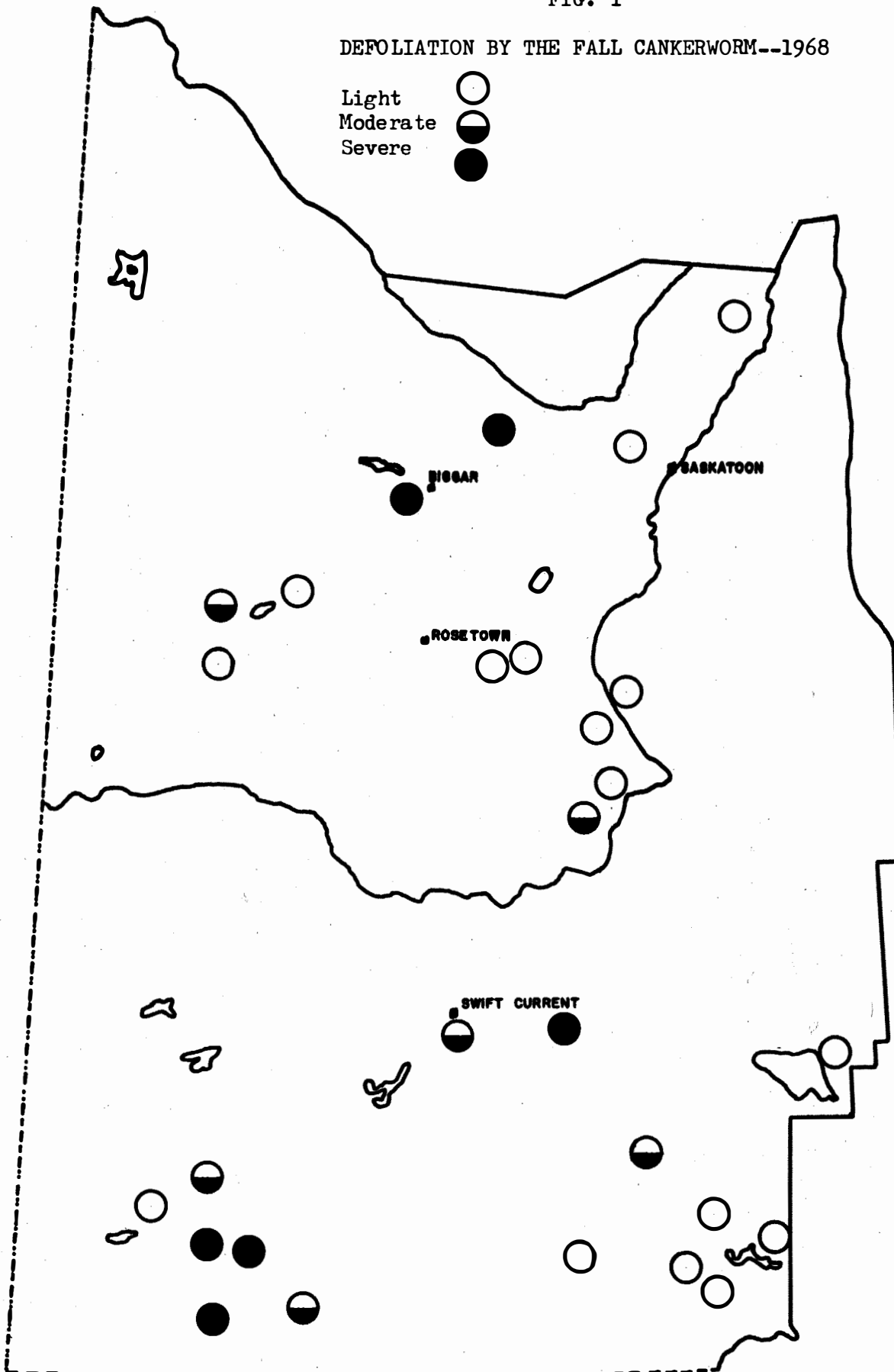
Organism and Disease	Host(s)	Locality	Remarks
<u>Phoma fumosa</u> Ell. & Ev.	Maple, Manitoba	Assiniboia, Kerrobot, Laird and Denzil	Associated with dieback; commonly found in maple plantings.
<u>Polyporus paragamenus</u> Fr.	Aspen, trembling	Laird and Wilbert	Mainly collected from dead wood.
<u>Polyporus tulipiferus</u> (Schw.) Overh.	Caragana	Denzil	Very light infection on dead stems.
<u>Rhytisma salicinum</u> Pers. ex Fr. (Tar spot of willow)	Willow	Borden	Light along the Saskatchewan River.
<u>Septoria caraganae</u> (Jacz.) Died. (A leaf spot)	Caragana	Battleford, Highgate and Borden	Infections light in shelterbelt plantings.
<u>Sphaeropsis albescens</u> Ell. & Ev. (Dieback)	Maple, Manitoba Ash, green	Assiniboia, Stranraer, Denzil, Maidstone, Laird and Battleford	Associated with dieback of twigs; generally light.
<u>Stereum cinerascens</u> (Schw.) Masee	Maple, Manitoba	Throughout the district	Commonly collected from deadwood in shelterbelts.
<u>Tubercularia vulgaris</u> Tode	Maple, Manitoba	Pambrun	Light; new regional distribution record.
<u>Tubercularia ulmea</u> Carter (Dieback)	Maple, Manitoba Elm, Chinese Caragana	Throughout the district	High incidence; damage insignificant.
<u>Tympanis spermatiospora</u> (Nyl.) Nyl.	Aspen, trembling	Scout Lake	Light infection.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Poplar, balsam Aspen, trembling	Battleford, Borden, Pike Lake Provincial Park and Silver Beach Regional Park	Severe on shaded foliage of regeneration balsam poplar at Battleford; light elsewhere.
<u>Valsa</u> sp. (Canker)	Willow	Conquest	Light infection on a dead branch.

WESTERN PRAIRIE DISTRICT

FIG. 1

DEFOLIATION BY THE FALL CANKERWORM--1968

Light ○
Moderate ◐
Severe ●



CENTRAL PRAIRIE DISTRICT
SASKATCHEWAN

1968

by

K. L. Mortensen and B. B. McLeod

INTRODUCTION

The 1968 field season was characterized by a drier than usual early summer followed by above normal precipitation from July to September. Totals of 461 insect and 272 disease samples were submitted during the field season. (May 21 to September 13).

In addition to general sampling for distribution purposes, mass collections of fall cankerworm were made for parasite studies, small mammals were trapped for population studies, and two disease plots were retallied.

Greater emphasis was placed in the sampling of farm shelterbelts in 1968. Twenty seven farms were chosen, through information received from Agricultural Representatives, and these shelterbelts were visited twice during the season.

The fall cankerworm was the most serious shelterbelt defoliator; most of the infestations occurred along the western boundary of the district from Imperial to Assiniboia. Isolated infestations of the pine needle scale and yellow-headed spruce sawfly also occurred at widely separated points. The woolly elm aphid, Eriosoma americanum (Riley) was present in the majority of white elm examined.

There was a marked decline in annual diseases such as, Pollaccia radiosa (Lib.) Bald. & Cif., Ciborinia whetzellii Seaver, Drepanopeziza populorum (Desm.) Hohn. and Septoria musiva Pk. Frost damage to trembling aspen was common throughout the Moose Mountain Provincial Park.

INSECT CONDITIONS

FALL CANKERWORM, Alsophila pometaria (Harr.):— Heavy infestations occurred in a number of shelterbelts along the west side of the district. Moderate to severe defoliation was recorded in Manitoba maple shelterbelts and field rows in the vicinity of Roncott, Assiniboia, Moose Jaw, Chamberlain, Liberty, Stalwart, Imperial, Govan and Hatfield. Eastward, light defoliation occurred at Radville and Khedive. Small collections of larvae were taken from native elm along the Roughbark Creek near Trossachs and from Chinese elm in the Trans-Canada Highway picnic site at Sentaluta.

Mass collections of late-instar larvae were made for parasite studies at Moose Jaw and Stalwart.

YELLOW-HEADED SPRUCE SAWFLY, Pikonema alaskensis (Roh.):— This spruce defoliator was common, but damage was predominantly light.

Moderate damage occurred in two Colorado spruce shelterbelts in the Sandy Beach-Balcarres area, where chemical control measures appear to have reduced populations to some extent. Moderate defoliation was also recorded in a field row of white spruce near Foam Lake. Some parasitism was evident in this older infestation and it appears that populations are now declining.

Elsewhere, very low populations were recorded in shelterbelts at widely scattered points such as: Regina, Canora, Wadena, Willowbrook, Grenfell, Creelman and Lemberg. Light feeding damage on the occasional tree was noted in the Good Spirit and Rowan's Ravine Provincial parks and in the Saltecoats Regional Park.

COTTONWOOD LEAF MINING BEETLE, Zeugophora scutellaris Suffr.:- Moderate leaf-mining damage of hybrid poplars occurred in the Rowan's Ravine Provincial Park. Elsewhere, populations were generally low. Collections were made from farm shelterbelts at Tregarva and Moose Jaw; the Indian Head Forest Nursery; the Echo Valley Provincial Park and from the Trans-Canada Highway campsite at Moosomin.

PRAIRIE TENT CATERPILLAR, Malacosoma lutescens (N. & D.):- These tent caterpillars were common throughout most of the district. Infestations were generally confined to patches of roadside rose and choke cherry, but light damage of ornamental shrubs occurred at Wilcox, Moose Jaw, Meacham, and Indian Head. Light to moderate infestations of choke cherry, rose, and saskatoon were noted in Echo Valley and Katepwa Provincial parks, and in the Kipabiskau Lake, Waldsea Lake and Wakaw Lake Regional parks.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Poplar spp. Aspen, trembling Poplar, balsam	Widely scattered throughout the district	Severe infestation of hybrid poplars near Wilcox.
<u>Adelges cooleyi</u> Gillette (Spruce gall aphid)	Spruce, white	Wolseley, Wadena and Ituna	Very light infestations.
<u>Adelges lariciatus</u> (Patch) (Pineapple gall aphid)	Spruce, white and black	Wadena, Saltcoats, Good Spirit Lake and Tuxford	Occasional galls.
<u>Altica populi</u> Brown (A poplar flea beetle)	Poplar spp.	Katepwa, Grenfell, Moosomin; Rowan's Ravine and Good Spirit Lake Provincial parks	Very light skeletonizing at Trans-Canada Highway campsite at Moosomin.
<u>Archips negundanus</u> Dyar (A leaf roller)	Maple, Manitoba	Throughout the district	Very low populations; trace of damage.
<u>Archippus packardianus</u> Fern. (A leaf roller)	Spruce, white	Langenburg	One larval collection.

Insect	Host(s)	Locality	Remarks
<u>Badebecia urticana</u> Hbn. (A leaf roller)	Deciduous trees	Throughout the district	Low populations; no appreciable damage.
<u>Camptocampa perlata</u> (Gn.) (Fringed looper)	Aspen, trembling Elm, white Saskatoon	McLean, Lemberg and Montmarte	Occasional larvae; no damage.
<u>Cecidomyia neundinis</u> Gill. (Boxelder gall midge)	Maple, Manitoba	Widely scattered throughout the district	Light damage.
<u>Choristoneura conflictana</u> (Wlk.) (Large aspen tortrix)	Aspen, trembling	Moosomin, Neudorf, Crystal Springs, Resource and Naicam	Very low populations.
<u>Chrysomela crotchii</u> Brown (Aspen leaf beetle)	Aspen, trembling	Widely scattered points	Adults only; no damage.
<u>Contarinia virginianiae</u> (Felt) (Choke cherry midge)	Choke cherry, eastern	Meacham and Lucien Lake Regional Park	Light to moderate damage of fruit.
<u>Corythucha</u> spp. (Lace bugs)	Saskatoon Hazelnut Choke cherry, eastern	Struthers Lake Regional Park	High populations of <u>C. cydoniae</u> (Fitch); moderate damage by <u>C. pallipes</u> Parsh.
<u>Erannia tiliaria</u> (Harr.) (Linden looper)	Maple, Manitoba Elm, white	Trossachs and Neudorf	Light infestation in native stands along Roughbark Creek near Trossachs.
<u>Eriophyes fraxiniflora</u> (Felt) (Ash flower gall)	Ash, green	Claybank and Buffalo Pound Lake Provincial Park	Moderate infestations confined to occasional trees.
<u>Eriosoma americanum</u> (Riley) (Woolly elm aphid)	Elm, white	Throughout the district	Generally light; moderate on occasional trees.

Insect	Host(s)	Locality	Remarks
<u>Eupareophora purca</u> (Cr) (Ash sawfly)	Ash, green	West-central portion of the district	Scattered light defoliation confined to lower branches.
* <u>Galerucelle decora</u> (Say) (Gray willow-leaf beetle)	Poplar spp. Aspen, trembling Willow	Rowan's Ravine Provincial Park, Lucien Lake and Struthers Lake Regional parks	Generally low populations; very light feeding damage.
<u>Gonioctena</u> <u>americana</u> (Schaeff.) (American aspen beetle)	Aspen, trembling	Grenfell, Melville and Wakaw Lake Regional Park	Very low populations.
<u>Gracillaria</u> <u>negundella</u> Cham. (Boxelder leaf roller)	Maple, Manitoba	More common in southern areas	Very low populations; no appreciable damage.
<u>Hyphantria cunea</u> (Drury) (Fall webworm)	Maple, Manitoba	Crooked Lake	Very low populations.
<u>Itame loricaria</u> Evers. (A looper)	Aspen, trembling Poplar spp. Willow	Scattered throughout the district	Occasional larvae; no appreciable defoliation.
<u>Lithocolletis</u> <u>salicifoliella</u> Cham. (Aspen blotch miner)	Aspen, trembling	Wakaw Lake Regional Park	Light infestation of reproduction trees.
<u>Lopidea dakota</u> Kngt. (Caragana plant bug)	Caragana	Common in all areas	Low populations; no visible damage.
<u>Malacosoma disstria</u> Hbn. (Forest tent caterpillar)	Aspen, trembling Ash, green Elm, white	Claybank and Willow Bunch	Occasional larvae; no noticeable defoliation.
<u>Mordwilkoja</u> <u>vagabunda</u> (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling	Struthers and Lucien lakes Regional parks	Light infestations.

*Name revised to Pyrrhalta decora (Say)

Insect	Host(s)	Locality	Remarks
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Aspen, trembling Willow Elm, white and Chinese	Scattered throughout the district	Defoliation generally confined to a single branch.
<u>Oligonychus</u> <u>ununguis</u> (Jac) (Spruce spider mite)	Spruce, white	Scattered throughout the district	Generally low populations.
<u>Operophtera</u> <u>bruceata</u> (Hulst) (Bruce spanworm)	Maple, Manitoba Aspen, trembling Elm, white	Lemberg, Weyburn, Muenster and Waldsea Lake Regional Park	Very low populations; no visible damage.
<u>Paleacrita vernata</u> (Peck) (Spring cankerworm)	Maple, Manitoba Elm, white	Trossachs and Alameda	Generally low populations.
<u>Pandemis canadana</u> Kft. (A leaf roller)	Aspen, trembling Willow Caragana Ash, green	Naicam, Muenster, Meacham, Lemberg, and at Lucien Lake and Struthers Lake Regional parks	Low populations; very light damage.
<u>Phenacaspis</u> <u>pinifoliae</u> (Fitch) (Pine needle scale)	Pine, Scots Spruce, white and Colorado	Scattered throughout the district	Fairly common; occasionally heavy in individual shelterbelts.
<u>Phyllocolpa</u> nr. <u>robusta</u> (A leaf- folding sawfly)	Aspen, trembling	Wakaw Lake Regional Park	Light on fringe growing reproduction.
<u>Pristiphora</u> <u>erichsonii</u> (Htg.) (Larch sawfly)	Larch sp.	Balcarres and Indian Head	Very low populations at Balcarres and in a plantation at Indian Head.
<u>Proteoteras</u> <u>willingana</u> (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the district	Common, but causing only light damage.
<u>Taniya</u> <u>albolineana</u> Kft. (A needle miner)	Spruce, white	Muenster and Langenburg	Very low populations.

DISEASE CONDITIONS

A DIEBACK, Tubercularia ulmea Carter:- This was the most prevalent disease throughout the district. Although common on Chinese elm, it was collected from a wide variety of hosts such as, white elm, hybrid poplars, Russian sandthorn, apple, caragana, and Manitoba, ginnala and silver maples. It was generally confined to twigs and branches, but was also collected from the stems of hybrid poplars at Rowan's Ravine Provincial Park.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina collinsii</u> (Schw.) Höhn. (Witches' broom)	Saskatoon	Marieval, Willow Bunch, Kipabiskau Lake and Struthers Lake Regional parks	Scattered patches of light infections.
<u>Caliciopsis calicioides</u> (Ell. & Ev.) Fitzp.	Poplar, balsam	Lucien Lake and Struthers Lake Regional parks	Light infections to bark of mature trees.
<u>Camarosporium caraganae</u> Karst.	Caragana	McLean, Naicam and Plunkett	Clumps of caragana with several infections per stem.
<u>Coccomyces hiemalis</u> Higgins (Shot hole of cherry)	Choke cherry, eastern	Struthers Lake Regional Park and Meacham	Light infections.
<u>Cucurbitaria caraganae</u> Karst.	Caragana	Plunkett and Muenster	Very light infections in farm shelterbelts.
<u>Dibotryon morbosum</u> (Schw.) Theiss. & Syd. (Black knot of cherry)	Choke cherry, eastern	Kipabiskau Lake and Struthers Lake Regional parks, and at Indian Head, Marieval and Willow Bunch	High incidence at Marieval.
<u>Diplodia tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling	Lucien Lake Regional Park	Light, but common throughout the park area.

Organism and Disease	Host(s)	Locality	Remarks
<u>Drepanopeziza</u> <u>populorum</u> (Desm.) Höhn. (Leaf spot)	Aspen, trembling	Kipling, Balcarres and Warman	Light at Balcarres; small pocket of moderate near Kipling and Warman.
<u>Fomes fraxinophilus</u> (Pk.) Sacc. (Heartwood rot)	Ash, green	Echo Valley Provincial Park and Trossachs	Light infections in mature stands.
<u>Fomes igniarius</u> (L. ex Fr.) Gill. (White trunk rot)	Aspen, trembling	Good Spirit Provincial Park, Moosomin and Willow Bunch	Up to 5% of some delimited, mature stands affected.
<u>Fomes pini</u> (Thore) Lloyd (Red heart rot)	Larch sp.	Wolseley	One conk from fallen tree in old plantation.
Frost Damage	Aspen, trembling	Moose Mountain area	Retarded foliage production in mature stands.
<u>Gymnosporangium</u> <u>corniculans</u> Kern (Leaf rust)	Saskatoon and Hawthorn	Buffalo Pound and Good Spirit lakes Provincial parks	Common but generally light infections.
<u>Hipsizygus</u> <u>tessulatus</u> (Bull. ex Fr.) Singer	Maple, Manitoba	Weyburn, Estevan; Buffalo Pound and Echo Valley lakes Provincial parks	Generally light, but common at Estevan.
<u>Hypoxyylon mammatum</u> (Wahl) Miller	Aspen, trembling	Throughout northern half of district	Generally less than 1% of stand affected.
<u>Kriegena</u> <u>juniperina</u> (Ell.) Sear.	Juniper, creeping	Good Spirit Lake Provincial Park	Common in small patches.

Organism and Disease	Host(s)	Locality	Remarks
<u>Melampsora bigelowii</u> Thüm. (Larch-willow rust)	Willow	Melville	Heavy on one clump.
<u>Melampsora medusae</u> Thüm. (Larch-aspen rust)	Willow	Echo Lake	Moderate on occasional clump.
<u>Otthia hypoxylon</u> (Ell. & Ev.) Shear (Slash fungus)	Maple, Manitoba	Tuxford	Trace infection in a shelterbelt.
<u>Pollaccia radiosa</u> (Lib.) Bald. & Cif. (Leaf and shoot blight)	Aspen, trembling	Moosomin, Willow Bunch, and Kipabiskau Lake and Struthers Lake Regional parks	Very light infections.
<u>Phragmidium speciosum</u> (Fries) Cooke (Rust)	Rose	Handsworth and Willow Bunch	Light infections.
<u>Ramularia stolonifera</u> Ell. & Ev. (Leaf spot)	Dogwood	Marieval and Duval	Light infections.
<u>Rhizogene symphoricarpi</u> Syd. (Tar spot)	Snowberry	Buffalo Pound Lake Provin- cial Park	Moderate to heavy infections over small area.
<u>Septoria musiva</u> Pk (Leaf spot)	Poplar, balsam and hybrid	Lucien Lake and Kipabiskau Lake Regional parks, Good Spirit Lake Provincial Park and Wadena	Moderate infection to fringe reproduction at Kipabiskau Park; light elsewhere.
<u>Sphaeropsis albescens</u> Ell. & Ev. (Dieback)	Maple, Manitoba and ginnala	Indian Head and Candiac	Light infections.
<u>Stigmina negundinis</u> (Berk. & Curt.) M.B. Ellis (Dieback)	Maple, Manitoba	Canora, Candiac and Earl Grey	Generally very low infections.

**EASTERN PRAIRIE DISTRICT
MANITOBA**

1968

by
P. W. Anderson

INTRODUCTION

Field surveys were conducted from May 21 to September 6, during which time 745 insect and 404 disease samples were submitted to the Forest Research Laboratory in Winnipeg. Approximately three hours of charter flying time was used to map the large aspen tortrix infestation in the Riding Mountain National Park and the Deleau area. Four days were utilized on egg sampling procedures of this insect. In addition to general collecting, a number of mass collections were made for parasite studies. These were: fall and spring cankerworm, large aspen tortrix, spruce budworm and a leaf roller of Manitoba maple.

Populations of the large aspen tortrix and a leaf roller on maple increased, while populations of the fall cankerworm and jack-pine budworm declined. The spruce budworm infestation in the Spruce Woods Provincial Forest remained at about the same level as 1967. The distribution of annual diseases remained much the same and perennial diseases, such as rusts and leaf blights, declined slightly from the previous year.

Special emphasis was placed on the sampling of farm shelterbelts throughout the district. The objective was to sample all tree species in five, well chosen, shelterbelts in each Agricultural Representative District.

INSECT CONDITIONS

FALL CANKERWORM, *Alsophila pometaria* (Harr.):- There was a marked reduction in population levels of this species throughout the district. The only notable defoliation was a small pocket of moderate damage along the Roseau River near Dominion City. Chemical control measures in the town of Emerson provided adequate control against this pest. Previous heavy infestations at Brandon, Crystal City, Holland and Treherne have now subsided.

A LEAF ROLLER, *Archips neundanus* Dyar:- Populations of this leaf roller increased in 1968. Moderate to severe defoliation of Manitoba maple was recorded along the Red River in the Winnipeg area and along the Boyne River four miles east and two miles west of Carman. Light infestations were observed at Rosburn, Brandon, Holland, Treherne, Cypress River, Glenlea, Letellier, Emerson and Dominion City.

LARGE ASPEN TORTRIX, *Choristoneura conflictana* (Wlk.):- A number of separate infestations occurred in the Eastern Prairie District (Figure 1).

The largest was on the south slopes of the Riding Mountain National Park where moderate to severe defoliation occurred from Mountain Road westward to Horod and southward to the Minnedosa River from Elphinstone to Minnedosa.

An infestation centered at Grande Clairiere covered approximately one township in the Pipestone-Lauder-Hartney-Deleau area. Defoliation within these boundaries was generally moderate with occasional patches of severe defoliation. Smaller pockets of moderate to severe defoliation occurred in the Spruce Woods Provincial Forest and in the Melbourne-Sidney area. Small patches of light to moderate defoliation were present in the vicinity of Rapid City, Kemnay, Brandon Hills, Minto and Turtle Mountain Provincial Park.

SPRUCE BUDWORM, Choristoneura fumiferana Clem.:— Populations of the spruce budworm remained much the same as in 1967, and caused scattered light to moderate defoliation in the northwest corner of the Spruce Woods Provincial Forest. Low populations and light defoliation were observed in white spruce plantations in the Turtle Mountain Provincial Park. Moderate defoliation of a white spruce shelterbelt was noted at Cypress River while low populations caused very light defoliation on ornamentals at Morris and Dominion City.

OTHER NOTEWORTHY INSECTS

Insect	Host(s)	Locality	Remarks
<u>Aceria parapopuli</u> (Keifer) (Poplar bud-gall mite)	Aspen, trembling Poplar, balsam Poplar spp.	Deleau, Rackham, St. Claude, Pilot Mound, Boissevain, Lyleton, Beulah and Brandon Hills	Severe infestations on Poplar spp. at Pilot Mound, Boissevain, Deleau and Lyleton.
<u>Acleris variana</u> (Fern.) (Black-headed budworm)	Spruce, white	Treherne	Single collection from shelterbelt.
<u>Acraspis villosa</u> Gill. (Hairy oak gall)	Oak, bur	Beulah, Glenlea, Carman, Turtle Mountain Provincial Park and Spruce Woods Provincial Forest	Light but common in all areas.
<u>Adelges lariciatus</u> (Patch) (Spruce Pineapple gall aphid)	Spruce, white	Brandon, Morris, Alexander, Turtle Mountain Provincial Park and Spruce Woods Provincial Forest	Localized pockets of heavy populations in Turtle Mountain Provincial Park and Spruce Woods Provincial Forest.
<u>Anisota virginienensis</u> (Drury) (Pink-striped oak worm)	Oak, bur	Kaleida	Light damage in Pembina Valley.

Insect	Host(s)	Locality	Remarks
<u>Archips</u> <u>cerasivoranus</u> (Fitch) (Ugly- nest caterpillar)	Choke cherry, eastern	St. Malo, Minto and Spruce Woods Provincial Forest	Light infestations.
<u>Badebecia</u> <u>urticana</u> Hbn. (A leaf roller)	Most deciduous species	Minnedosa, Rossburn, Brandon, Letellier, Brandon Hills and Spruce Woods Provincial Forest	Very low populations at all locations.
<u>Bucculatrix</u> <u>canadensisella</u> Cham. (Birch skeletonizer)	Birch, white	Max Lake	Very low populations; a trace of damage.
<u>Choristoneura</u> <u>pinus pinus</u> Free. (Jack-pine budworm)	Pine, Scots and jack	Spruce Woods Provincial Forest	Low populations; very light feeding damage.
<u>Chrysomela</u> <u>crotchii</u> Brown (Aspen leaf beetle)	Aspen, trembling	St. Malo and Spruce Woods Provincial Forest	Very low adult populations.
<u>Compsolechia</u> <u>niveopulvella</u> Cham (Leaf tier)	Aspen, trembling	Kemnay, Glenlea, Tolstoi and Spruce Woods Provincial Forest	Very light defoliation.
<u>Contarina</u> <u>virginianiae</u> (Felt) (Choke cherry midge)	Choke cherry, eastern	Beulah and Hartney	Low populations infesting fruit.
<u>Corythucha</u> <u>arcuata</u> (Say) (A lace bug)	Oak, bur	Souris, Miniota, Beulah, Ninette, Kaleida, Oak Lake, Turtle Mountain Provincial Park, Spruce Woods Provincial Forest and Brandon Hills	Moderate damage to occasional trees in the Turtle Mountain Provincial Park, Ninette and Kaleida.

Insect	Host(s)	Locality	Remarks
<u>Corythucha elegans</u> Drake (A lace bug)	Willow	Turtle Mountain Provincial Park	Moderate infestations causing notable discoloration to foliage.
<u>Dioryctria reniculella</u> (Grt.) (Spruce coneworm)	Spruce, white	Rivers, Turtle Mountain Provincial Park and Spruce Woods Provincial Forest	Moderate populations in Spruce Woods Provincial Forest near Carberry.
<u>Erannis tiliaria</u> (Harr.) (Linden looper)	Maple, Manitoba Elm, white	Carman and Treherne	Very low populations.
<u>Eriosoma americanum</u> (Riley) (Woolly elm aphid)	Elm, white	Throughout the district	Moderate infestations at Morris, Souris, Glenboro, Emerson, Killarney and Deloraine.
<u>Eriophyes fraxiniflora</u> (Felt) (Ash flower gall)	Ash, green	Throughout the district	Localized pockets of high populations at Hartney, Brandon, Souris and Portage la Prairie.
* <u>Galerucella decora</u> (Say) (Gray willow- leaf beetle)	Aspen, trembling Maple, Manitoba Spruce, white	Russell, Virden, Miniota, Reeder and Emerson	Low adult populations.
<u>Gonioctena americana</u> (Schaef.) (American aspen beetle)	Aspen, trembling Poplar, balsam	Minnedosa, Deleau and Spruce Woods Provincial Forest	Moderate defoliation of reproduction aspen throughout the Spruce Woods Provincial Forest.
<u>Gracillaria negundella</u> Cham. (Boxelder leaf roller)	Maple, Manitoba	Winnipeg, Glenle , Rossburn, Dominion City, Letellier, Carman, Emerson, Brandon, Cy ress River, Treherne and Portage la Prairie	Moderate defoliation at Emerson and Treherne.

*Name revised to Pyrrhalta decora (Say)

Insect	Host(s)	Locality	Remarks
<u>Itame loricaria</u> Evers. (A looper)	Aspen, trembling Willow Saskatoon	Throughout the district	Low larval populations.
<u>Lecanium coryli</u> L. (Lecanium scale)	Elm, white Maple, Manitoba Oak, bur Ash, green Choke cherry, eastern	Winnipeg, Glenboro, Reeder, Dominion City, Emerson, Morris and Portage la Prairie	Light infestations.
<u>Lithocolletis salicifoliella</u> Cham. (Aspen blotch miner)	Aspen, trembling Poplar spp. Willow	Emerson, Glenboro and Spruce Woods Provincial Forest	Very low populations.
<u>Malacosoma disstria</u> Hbn. (Forest tent caterpillar)	Aspen, trembling	Sidney and Deleau	Scattered collections of pupae and egg bands.
<u>Malacosoma lutescens</u> (N. & D.) (Prairie tent caterpillar)	Choke cherry, eastern Rose	Throughout the western portion of the district	Tents common in the Spruce Woods Provincial Forest.
<u>Mordwilkoja vagabunda</u> (Walsh) (Poplar vagabond gall aphid)	Aspen, trembling Poplar sp.	Throughout the western portion of the district	High populations on poplar sp. at Souris.
<u>Neodiprion abietis</u> complex (Balsam- fir sawfly)	Spruce, white	Killarney	Light defoliation in a single shelterbelt.
<u>Nymphalis antiopa</u> (L.) (Mourning cloak butterfly)	Aspen, trembling Willow	Lyleton, Glenlea and Spruce Woods Provincial Forest	Single colonies; defoliation confined to individual branches.
<u>Oberea schauumi</u> Lec. (Poplar twig borer)	Aspen, trembling	Deleau, Minnedosa, St. Claude and Spruce Woods Provincial Forest	Moderate infestation on reproduction at Deleau.

Insect	Host(s)	Locality	Remarks
<u>Oligonychus ununguis</u> (Jac.) (Spruce spider-mite)	Spruce, white	Brandon and Glenboro	Very low populations.
<u>Operophtera bruceata</u> (Hulst.) (Bruce spanworm)	Aspen, trembling Saskatoon	Deleau, Rossburn, Minnedosa, Kemnay, Minto and in the Brandon Hills	Low larval populations.
<u>Paleacrita vernata</u> (Peck) (Spring cankerworm)	Maple, Manitoba Elm, white	Willow Bend Creek, Emerson, Morris and Dominion City	Moderate defoliation along Willow Bend Creek west of Portage la Prairie.
<u>Pemphigus populi-transversus</u> Riley (Transverse poplar petiole gall)	Poplar, balsam Poplar sp.	Throughout the district	Moderate populations at Ninette, Souris, Deloraine and Boissevain.
<u>Phenacaspis pinifoliae</u> (Fitch) (Pine needle scale)	Spruce, white Pine, Scots	Throughout the district	Generally light infestations in shelterbelts.
<u>Phyllocnistis populiella</u> Gham. (Aspen leaf miner)	Aspen, trembling Poplar, balsam Poplar sp.	Widely scattered throughout the district	Moderate populations in Spruce Woods Provincial Forest.
<u>Proteoteras willingana</u> (Kft.) (Boxelder twig borer)	Maple, Manitoba	Throughout the district	Moderate damage at Oakner.
<u>Saperda concolor</u> Lec. (Poplar-gall saperda)	Willow	Lyleton and Ninette	High populations at Lyleton.
<u>Saperda populnea moesta</u> Lec. (Poplar twig borer)	Poplar, balsam Poplar sp.	Glenboro and Spruce Woods Provincial Forest	Moderate infestation on reproduction in Spruce Woods Provincial Forest; light at Glenboro.

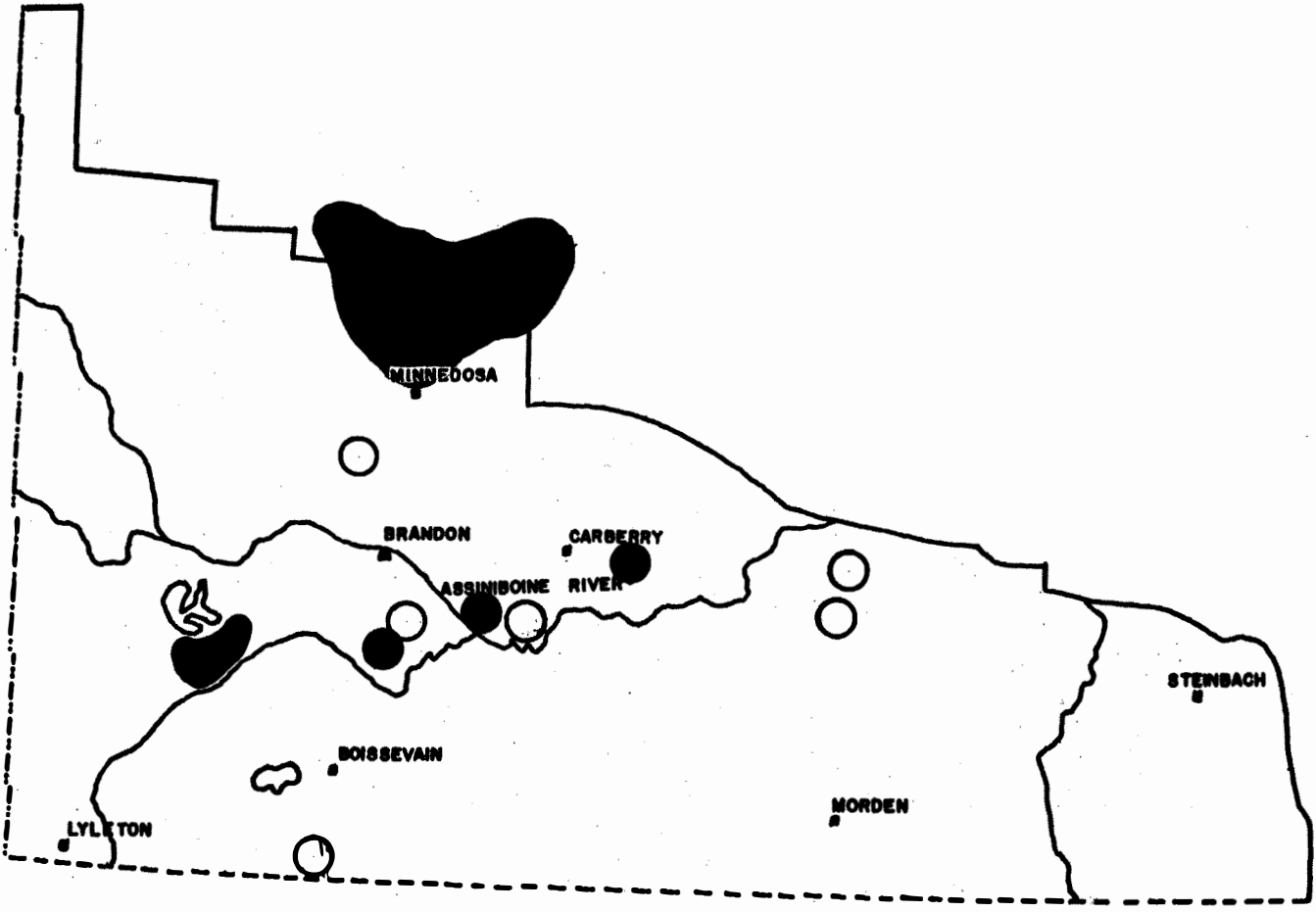
DISEASE CONDITIONS

LEAF AND SHOOT BLIGHT OF POPLAR, Pollaccia radiosa (Lib.) Bald. and Cif.:— This leaf and shoot blight disease was not as common as in the previous year. Small pockets of reproduction as en were severely infected at Max Lake in the Turtle Mountain Provincial Forest while light infections were recorded throughout the Spruce Woods Provincial Forest and in the Brandon Hills area.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
<u>Apiosporina collinsii</u> (Schw.) Höhn. (Witches' broom)	Saskatoon	Beulah and Spruce Woods Provincial Forest	Brooms common.
<u>Coccomyces hiemalis</u> Higgins (Shot hole of cherry)	Choke cherry, eastern	Wawanesa, Hartney, Miniota, Beulah, Spruce Woods and Turtle Mountain Provincial forests and Brandon Hills	Common in the Turtle Mountain and Spruce Woods Provincial forests and Brandon Hills.
<u>Dibotryon morbosum</u> (Schw.) T. & S. (Black knot of cherry)	Choke cherry, eastern	Widely scattered throughout the district	Severely infected bushes common at Deleau, in the Brandon Hills and Spruce Woods Provincial Forest.
<u>Diplodia tumefaciens</u> (Shear) Zalasky (Globose gall of poplars)	Aspen, trembling	Spruce Woods Provincial Forest	Light infections.
<u>Fomes fraxinophilus</u> (Peck) Sacc. (Heart-wood rot)	Ash, green	Dominion City, Wawanesa and Brandon	Heavy infections along the Souris River at Wawanesa and the Assiniboine River at Brandon.
<u>Hypoxyton mammatum</u> (Wahl) Miller (Hypoxyton canker)	Aspen, trembling	Throughout the district	Pockets of light to moderate infections.

Organism and Disease	Host(s)	Locality	Remarks
<u>Melampsora bigelowii</u> Thum. (A larch-willow rust)	Willow	Melbourne and Souris	Moderate infection on one bush at Melbourne.
<u>Peridermium</u> <u>harknessii</u> J. P. Moore (Western gall rust)	Pine, Scots and jack	Turtle Mountain Provincial Park and Spruce Woods Provincial Forest	High incidence with some branch mortality on several plantations in the Spruce Woods Provincial Forest; light at Turtle Mountain Provincial Park.
<u>Poris punctata</u> (Fries) Karst. (A decay)	Willow	Spruce Woods Provincial Forest, Turtle Mountain Provincial Park and Brandon Hills	Pockets of heavy infection at all locations.
<u>Rhytisma salicinum</u> Pers. ex Fr. (Tar- spot on willow)	Willow	Norgate, Melbourne, Spruce Woods Provincial Forest and Turtle Mountain Provincial Park	Occasional small pockets of severe infection in Turtle Mountain Provincial Park.
<u>Taphrina pruni</u> (Fckl) Tul. (Fruit rot)	Plum	Souris	Several heavy infections in shelterbelts.
<u>Uncinula salicis</u> (Fr.) Wint. (Powdery mildew)	Poplar, balsam Willow	Turtle Mountain Provincial Park and Spruce Woods Provincial Forest	Small pockets of severe infections on understory trees at both localities.



EASTERN PRAIRIE DISTRICT

FIG. 1

LARGE ASPEN TORTRIX INFESTATIONS AS DETERMINED BY GROUND AND AERIAL SURVEYS--1968

Light ○
 Moderate to severe ●

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