Not for publication

FOREST BIOLOGY RANGER ANNUAL REPORTS

ALBERTA

1958

INTERIM REPORT 1958 – 2

FOREST BIOLOGY LABORATORY

CALGARY, ALBERTA

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

Earl F. Thornton

Mr. E.F. Thornton of the Forest Biology Staff, passed away on September 16, 1958. Mr. Thornton joined the staff as a Forest Biology Ranger on June 1, 1949 and since that time had served throughout most of the Province.

Mr. Thornton was born July 2, 1910 at Woodstock, Ontario. He homesteaded at Wapiti, Alberta from 1930 to 1942. From 1942 to 1945, he served as a private in the Canadian Army in the European theatre of war. He is survived by his wife and three children. Although he had been ill since June 1957, his passing was a great shock to his many friends and associates.

FOREST BIOLOGY RANGER REPORTS

ALBERTA

(Forest Insect and Disease Survey No. 30.01-6)

by

J.K. Robins, J. Petty, P.F. LaRue, N.W. Wilkinson
R.R. Stanley, J.H. McNeil, F.J. Emond
V.B. Patterson, G.C. Bigalow

INTERIM REPORT 1958

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

(Based on investigations carried out in 1958)

CANADA

DEPARTMENT OF AGRICULTURE

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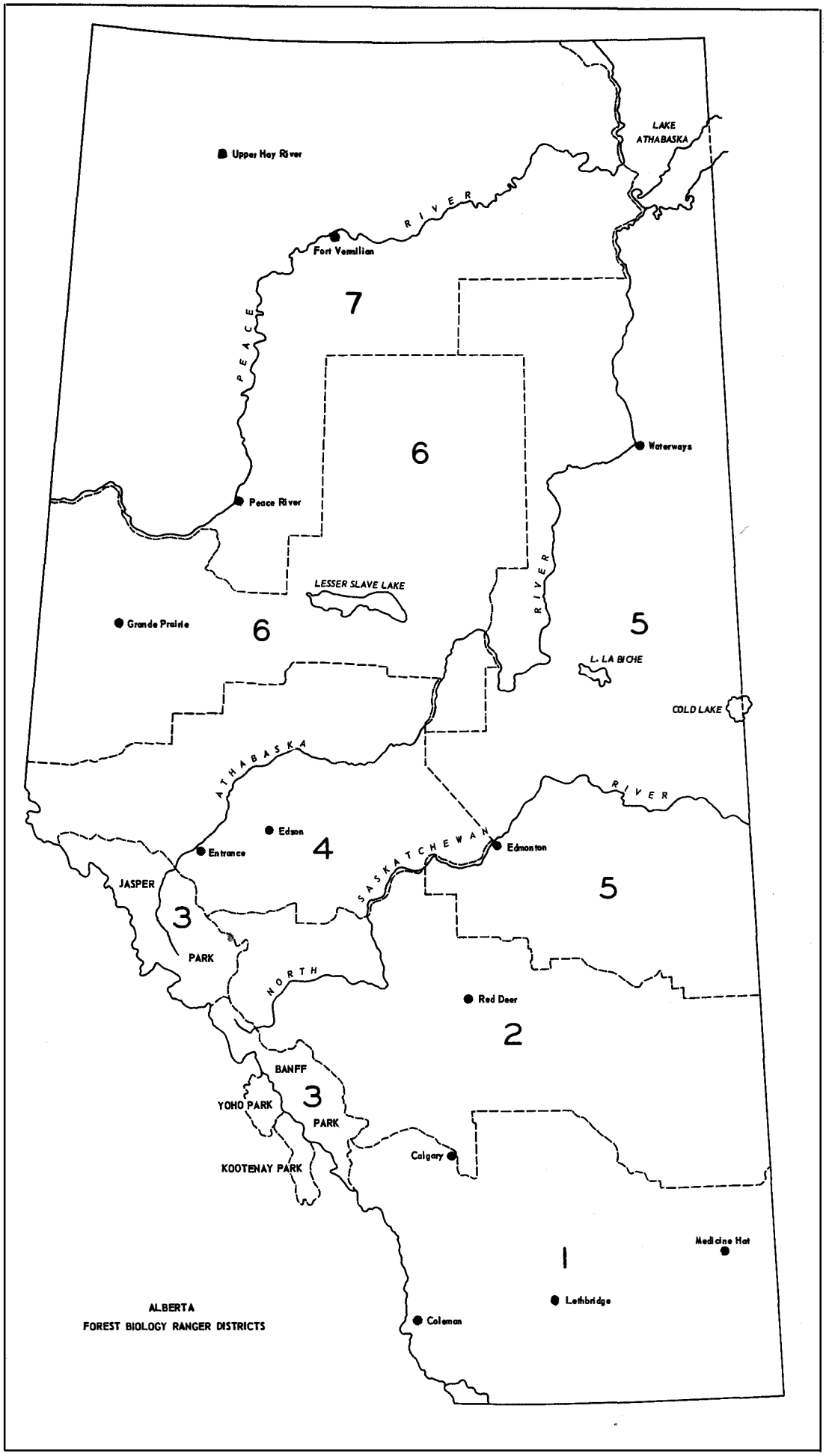
March, 1959

INTRODUCTION

Forest Biology Rangers were engaged in field survey activities from the latter part of May until mid-September in 1958. The following is a summary of forest insect and disease conditions in Alberta, Yoho and Kootenay National Parks in British Columbia and the Mackenzie District of the Northwest Territories as determined by ground and aerial surveys. In carrying out these surveys, Rangers travelled approximately 100,000 miles by motor vehicle, 1,800 miles by fixed-winged aircraft and 200 miles by helicopter. During the field season, 2,027 insect and 49 disease samples were taken.

In a move designed to improve the organization of field activities by decentralizing supervision, Ranger districts were grouped into three divisions with a Grade II Ranger responsible for the supervision of activities within each division. District assignments and divisional responsibilities were set up as follows:-

	Southern Division		
District 1	Crowsnest - Bow River	Jack Petty	F.B.R. Gr. II
District 2	Clearwater	Paul LaRue	F.B.R. Gr. I
District 3	National Parks	Norm Wilkinson	F.B.R. Gr. I
	Central Division		
District 4	Brazeau - Athabasca	Ralph Stanley	F.B.R. Gr. II
District 5	Lac La Biche	Joe McNeil	F.B.R. Gr. I
	Northern Division		
District 6	Slave Lake - Grande Prairie	Jim Emond	F.B.R. Gr. I
District 7	Peace River	Vern Patterson	F.B.R. Gr. II
District 8	Northwest Territories	Glen Bigalow	F.B.R. Gr. I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Upper Hay River
RIVER
Fort Vermilion
PEACE
7
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Waterways
Peace River
LESSER SLAVE LAKE
RIVER
Grande Prairie
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5
L. LA BICHE
COLD LAKE
ATHABASKA
RIVER
Edson
Entrance
4
SASKATCHEWAN
Edmonton
JASPER
5
3
PARK
NORTH
Red Deer
2
BANFF
YOHO PARK
3
PARK
KOOTENAY PARK
Calgary
Medicine Hat
1
Lethbridge
Coleman
ALBERTA
FOREST BIOLOGY RANGER DISTRICTS

Glen Bigalow joined the Ranger staff in the spring of 1958 replacing the late E. F. Thornton. Although assigned to the Northwest Territories District, he spent the greater part of the season in district 6 and 7 assisting the district rangers and receiving instruction in the field aspects of the Survey.

Fine dry weather throughout most of Alberta, especially in the northern portions, was experienced during the field season. This condition greatly aided survey work in areas served by unimproved roads. The continued activity by oil companies and timber operators resulted in a number of areas being opened up for ground surveys.

Activities in the Northwest Territories decreased from those carried out in 1957. A large portion of Wood Buffalo Park was covered by air, and ground surveys were made along the Mackenzie and Yellowknife Highways.

A 28 foot house trailer was purchased for the National Parks District, replacing a small unsuitable unit. A replacement sedan delivery was purchased for this district. A prefabricated log cabin was built at Crimson Lake near Rocky Mountain House and improvements were made to the cabin built in the fall of 1957 at Peace River.

The following special surveys and co-operative projects were carried out during 1958:-

(1) An aspen bud count was taken on 70 trees at intervals throughout the accessible range of aspen in Alberta. The results of these counts are to be used in a project designed to develop an improved sequential sampling technique for tent caterpillar populations.

(2) A weather station was set up near Elk Point on the site of a heavy forest tent caterpillar outbreak. Weather records were taken and egg bands and larvae were under observation during the critical post hatching period.

(3) Phenology stations were established at 28 locations. The seasonal development of a lateral terminal bud was measured on 10 spruce trees at each location. It is expected that these studies will lead to a better understanding of the seasonal development of insects at different elevations and latitudes.

(4) Sequential sampling methods were used at 28 larch sawfly sampling stations situated at intervals throughout the accessible range of tamarack in Alberta.

(5) A sequential sampling method developed by the New York State Science Service involving a count of tent caterpillar egg bands was applied in 14 locations in Alberta. The results of this survey indicate areas in which noticeable defoliation is liable to occur in 1959. Sampling was carried out in the foothills between Nanton and the International Boundary, in the Cypress Hills and east of Edmonton between Highways 13 and 28.

(6) Rangers continued to co-operate with the Federal Forestry Branch in the examination of seed traps and estimation of cone crops in plots previously established in central and southern Alberta.

(7) Requests for material for projects and sub-projects being carried out by the Forest Insect Survey and other personnel attached to the Calgary Laboratory were met by special collection of the following: diseased insects, adelgids, leaf rollers on aspen, pitch nodule makers, cecropia larvae, shoot weevils, leaf eating beetles, needle miners, tent caterpillars, poplar galls and oleothreutids.

(8) The following material was collected for agencies outside the Calgary Laboratory: aphids, Neodiprion spp., lady beetles, larch twig borers, larvae of Amphidasis cognataria Guen. and Papilio glaucus L., gall aphids on poplar and geometridae on birch and aspen.

The continued co-operation and assistance given to field personnel by the Alberta Forest Service, the Provincial Agricultural Extension Service, and the Department of Northern Affairs and Natural Resources was greatly appreciated.

SUMMARY OF INSECT CONDITIONS

Although the damage to tamarack caused by the larch sawfly was undoubtedly the most serious insect problem in the region, the widespread and severe defoliation of trembling aspen by a combination of insect species was probably the most spectacular feature of the 1958 field season. Increased activity by the forest tent caterpillar was evident over most of Alberta. Spruce budworm populations have risen along the Slave and Wabiska rivers and in the Cypress Hills.

Larch sawfly, Pristiphora erichsonii (Htg.).

Increased aerial and ground surveys carried out during 1958 added greatly to our knowledge of the larch sawfly outbreak in Alberta and the Northwest Territories. Although aerial surveys did not cover the area west of the Mackenzie Highway it is believed that this is the only sizeable portion of the range of tamarack in Alberta where extensive infestations did not occur. Elsewhere heavy defoliation was prevalent in tamarack stands in northeastern Alberta, and extended into the Northwest Territories for 15 miles beyond Fort Smith. Severe defoliation also occurred in an area bounded by Edmonton, Whitecourt, Fawcett Lake and Lac La Biche, and east of Rocky Mountain House and near Sundre. North of Cold Lake, light, moderate and severe defoliation appeared in a patch-work pattern. Light to moderate damage occurred between the centers of heavy infestation. A gradual westward shift in populations has been evident for some years with numbers slowly decreasing in the eastern part of the Province and increasing in the western portion.

Bruce spanworm, Operophtera bruceata (Hulst).

Larvae of the Bruce spanworm accounted for most of the heavy defoliation of aspen in the southern two-thirds of the Province. Severe loss of foliage was in evidence along the foothills from the Old Man River to Caroline, between the Ram and Brazeau rivers and from Highway 16 between Edson and Entrance to the Berland and Athabasca rivers. Elsewhere within the infected area, Bruce spanworms were numerous, but the presence of a number of species of leaf rollers made it difficult to assess the contribution of these larvae to the total damage.

Leaf rollers on aspen.

Aspen throughout most of its range in Alberta and especially in the central portion of the Province took on a ragged appearance during the summer of 1958 due to the leaf tying habits and feeding of three species of leaf rollers. These larvae were identified as Compsolechia niveopulvella Cham., Choristoneura conflictana (Wlk.) and Pseudexentera improbana oregonana Wlshm. The latter species, although never before recorded as an insect pest in Alberta, accounted for at least 75 per cent of the rolled leaves in most stands. Larvae of C. niveopulvella were not as numerous as in the previous year, the decline in numbers being most noticeable in the National Parks. Although the number of rolled leaves at the fringes of many aspen stands ran as high as 75 per cent, many were not destroyed and defoliation seldom exceeded 40 per cent.

Forest tent caterpillar, Malacosoma disstria Hbn.

A sharp increase in the abundance of forest tent caterpillar larvae in 1959, following their reappearance in aspen stands east of Edmonton in 1957, indicates the approach of another peak in their population cycle. Small patches of light to severe defoliation occurred at widely separated points throughout central Alberta from the Saskatchewan border to the Peace River Block, the largest infestation appearing south of Elk Point. In southern Alberta a light infestation was found in the Cypress Hills. Hybrid poplars in the cities of Lethbridge and Medicine Hat were partially defoliated and larvae were collected along the foothills from the International Boundary to Stavely.

Spruce budworm, Choristoneura fumiferana (Clem.).

An aerial survey along the Wabiskaw River revealed an increase in the size and severity of the spruce budworm outbreak reported in 1954 and believed to have been on the decline in 1955. In 1958 large areas of severely defoliated spruce and balsam fir were observed along the lower 15 miles of the Muddy River. Light to moderate defoliation was evident along the Wabiskaw between the Loon and Muddy rivers. The infestation reported in the Cypress Hills in 1957 increased in severity. Moderate to severe damage was reported along the Slave River from Le Grand Detour to within 35 miles of the mouth of the River. No survey of the outbreak on the Mackenzie River was undertaken. Larvae of the two-year cycle spruce budworm were very scarce in the National Parks and no defoliation was detected.

OTHER NOTEWORTHY INSECTS

INSECT SPECIES	REMARKS
Yellow-headed spruce sawfly, *Pikonema alaskensis* (Roh.)	Caused heavy defoliation of shelterbelts in area bounded by Camrose, Beaverhill Lake, Gibbons, Barrhead and Drayton Valley, between Airdrie and Ponoka and around Hanna, Drumheller and Valleyview.
Pine root weevils, *Hylobius* spp.	No new infestations reported in 1958. Two adults of *H. pinicola* (Couper) taken at Grassland.
Spruce spider mite, *Oligonychus ununguis* (Jac.)	Damage light but widespread. Severely attacked spruce trees between Calgary and Hanna and at Widewater and McLennan.
Leaf eating beetles,	
Phytodecta americana Schffr.	Present throughout forested areas causing light to moderate damage in a few locations.
Dichelonyx backi Kby.	Defoliated rose and saskatoon at Entrance, Erith, Beaver Lodge and Highwood River.
Galerucella decora (Say.)	Defoliated willow in insolated patches in Peace River Block.
Altica sp.	Caused severe defoliation of young balsam poplar on the east side of Lesser Slave Lake.
Fall cankerworm, *Alsophila pomitaria* (Harr.)	Light to moderate infestations in area bounded by Medicine Hat, Claresholm, Magrath and Foremost. Caused light defoliation of shelterbelts around Cranford, Barnwell, Winnifred, Whitlaw, Foremost and Magrath.
Black-headed budworm, *Acleris variana* (Fern.)	Light infestations reported from Banff and Waterton Parks. Caused moderate damage to alpine fir at Marble Canyon.

OTHER NOTEWORTHY INSECTS (Cont'd.)

INSECT SPECIES	REMARKS
Lodgepole needle miner, *Recurvaria starki* Free	Populations remained at a low level in the National Parks. A few mined needles were found in the Cypress Hills.
Pine needle scale, *Phenacaspis pinifoliae* (Fitch)	The York Creek infestation remained active although a late fall scale count fell below that of the previous year.

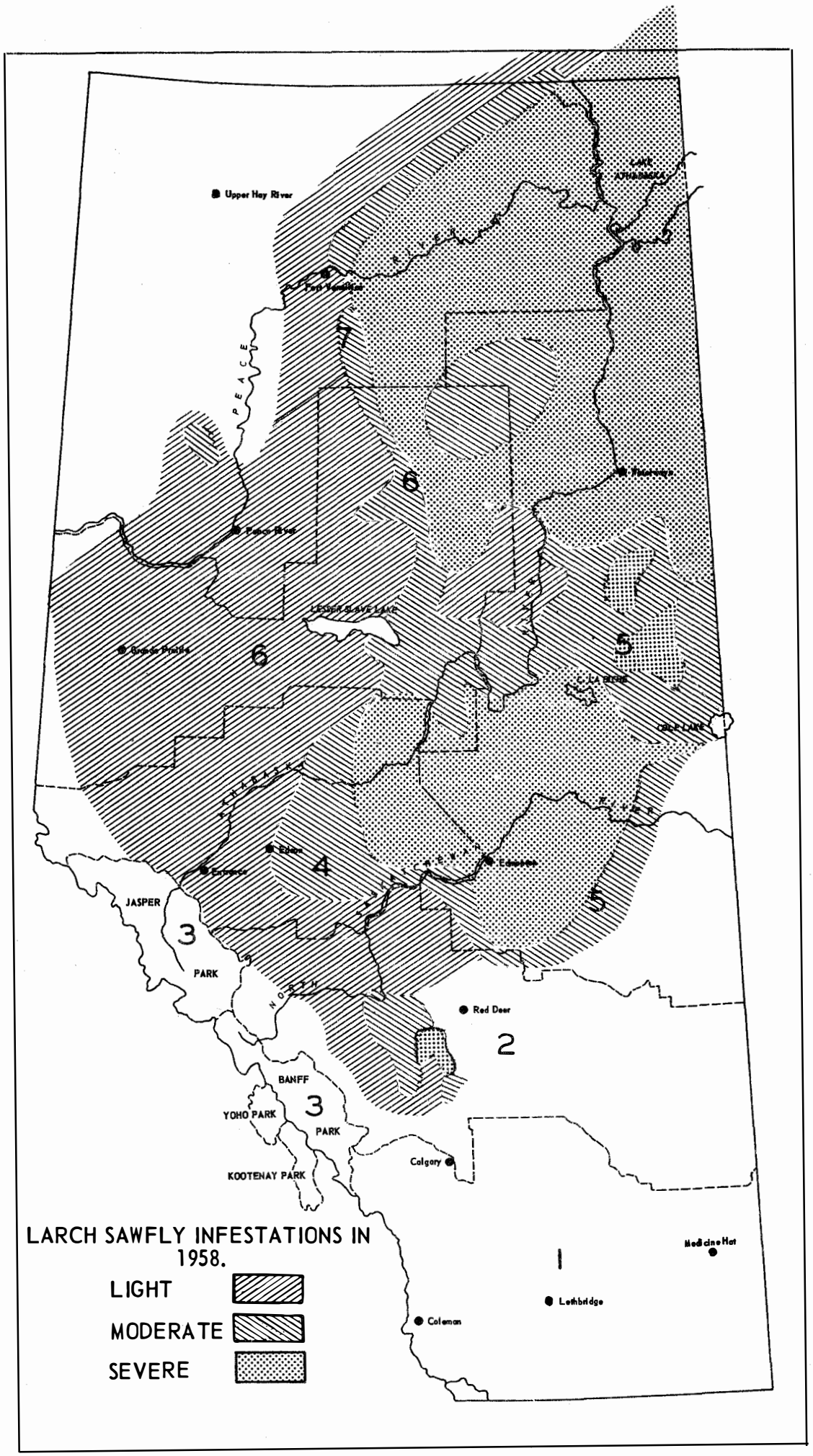
TREE DISEASES

As in 1957, the forest disease aspects of the Survey consisted of the reporting of new infections over 160 acres in extent, involving over 50 per cent of the trees, and the re-examination of known outbreaks on a pre-determined schedule.

No serious new disease outbreaks were detected in 1958. Two types of weather injury frequently occurring in Alberta, "red-belting" of lodgepole pine and clumping of aspen foliage were not as serious as in previous years.

Needle cast of pine caused by *Hypodermella montivaga* (Petrak) Dearn found in Banff and Jasper National Parks from 1955 to 1957 was not reported from these areas in 1958. Outbreaks of spruce needle rust, *Chrysomyxa ledicola* (Pk.) Lagerh reported in northern Alberta from 1954 to 1957 had subsided in 1958.

The first report of white pine blister rust, *Cronartium ribicola* Fischer, in Alberta, came from Waterton Lakes National Park in 1958; cankers caused by this organism were found on limber pine.


Upper Hay River
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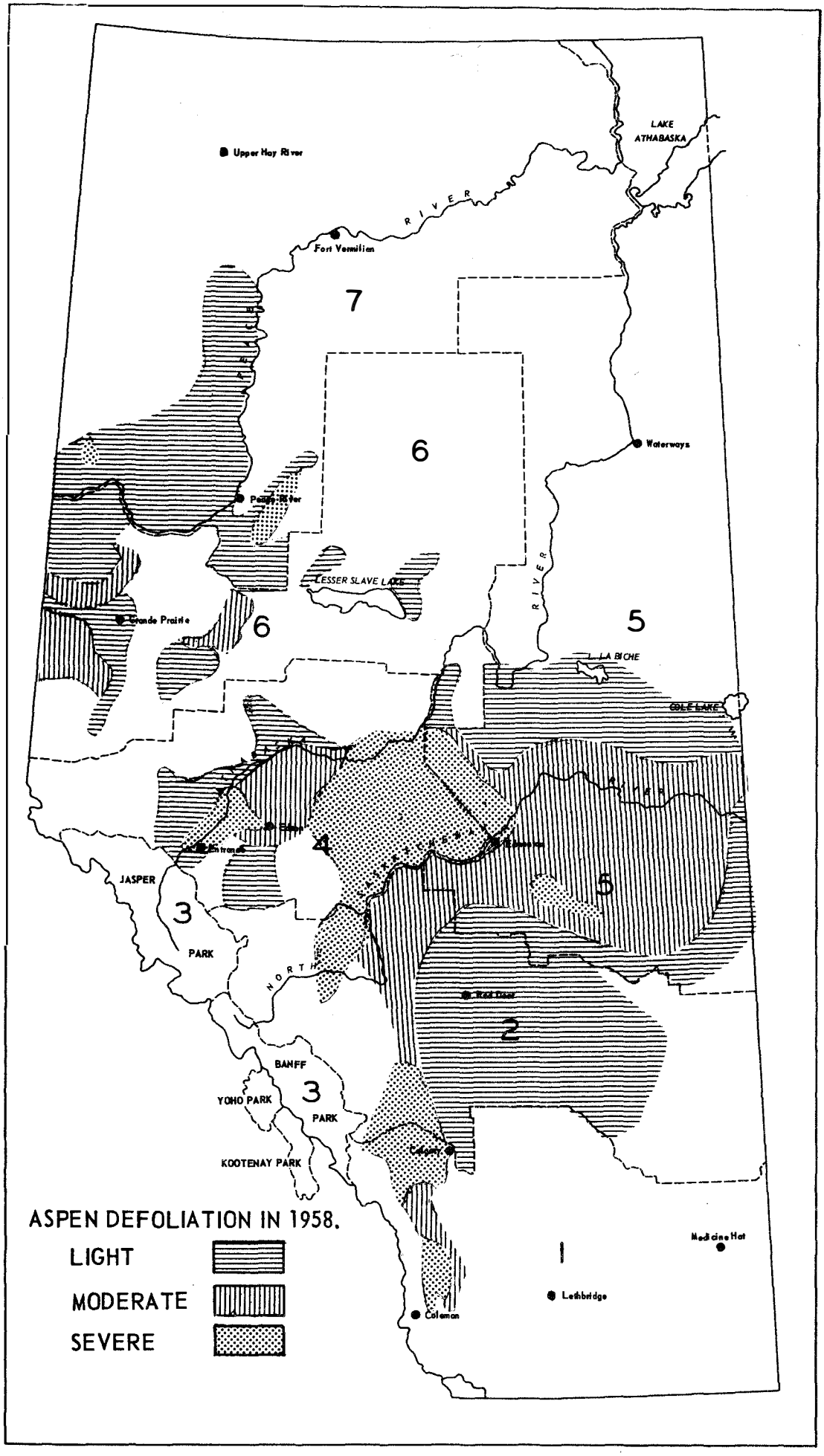
LARCH SAWFLY INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE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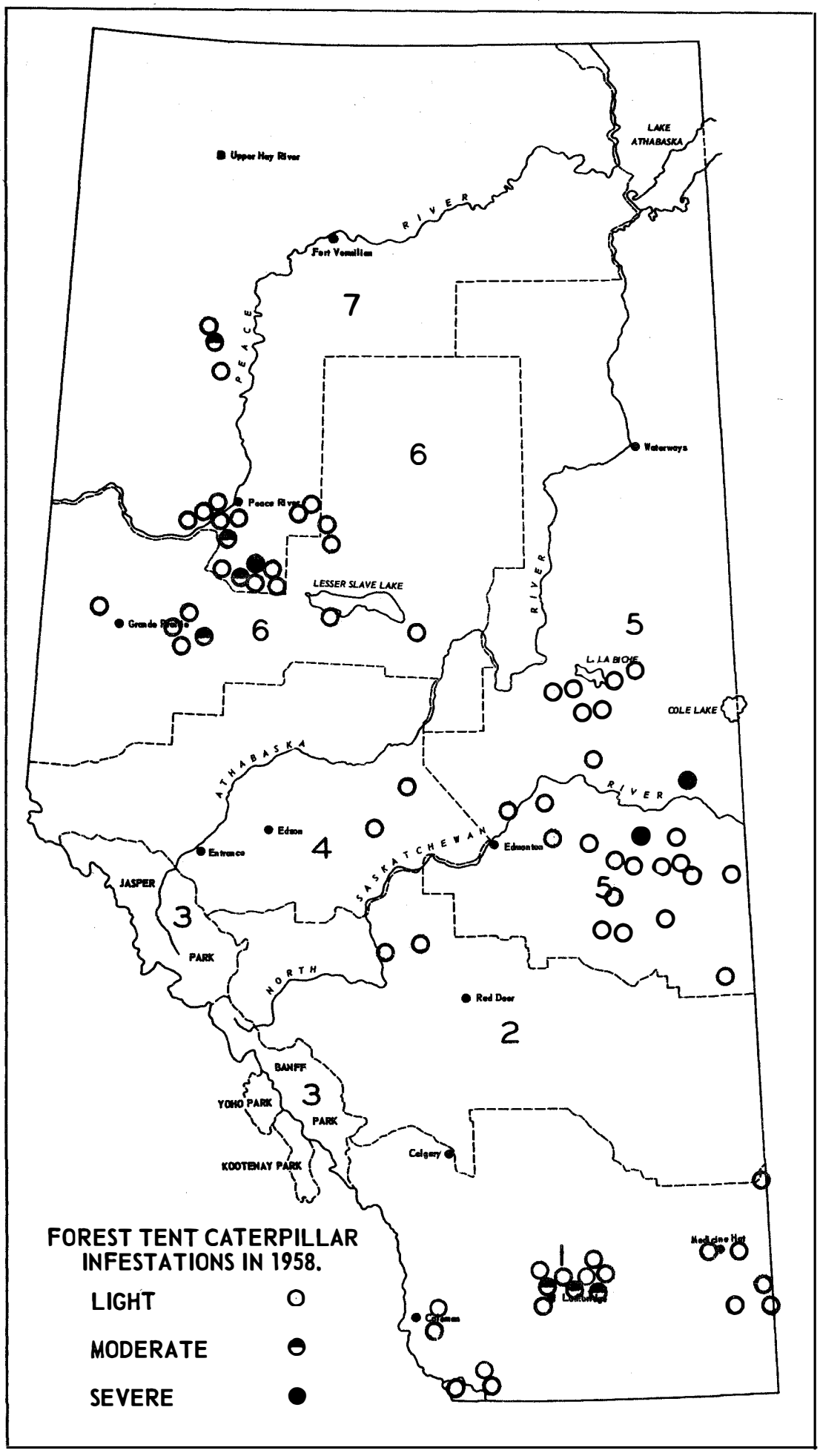
ASPEN DEFOLIATION IN 1958.
LIGHT
MODERATE
SEVERE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PARK
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BANFF
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3
PARK
KOOTENAY PARK
Calgary
Medicine Hat
Coleman
FOREST TENT CATERPILLAR
INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE

A

Ugly nest tortrix, Archips cerasivorana (Fitch). Tents on roadside chokecherry near Grimshaw, Alberta.

by - G. C. Bigalow

B

Bruce spanworm, Operophtera bruceata (Hulst). Defoliation of trembling aspen on the Range Experimental Station near Stavely, Alberta, being examined by staff of the Forest Biology Laboratory, Calgary.

W. Watson, J. Petty, C. Brown,

by - J. K. Robins

C

Fall cankerworm, Alsophila pometaria (Harr.). Defoliation of Manitoba maple in a shelterbelt near Barnwell, Alberta.

by - J. Petty

D

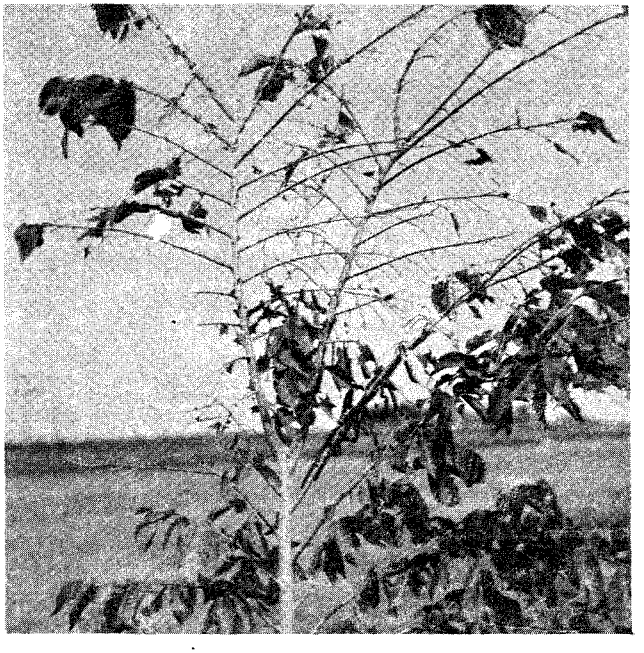
Spiny elm caterpillar, Nymphalis antiopa L. Defoliation of American elm at the School of Agriculture, Fairview, Alberta.

by - G. C. Bigalow

A

B

C



D

A

Bruce spanworm, Operophtera bruceata (Hulst). Forest Biology Ranger, J. Petty doing a larval count prior to spraying on the Range Experimental Station near Stavely, Alberta.

by - J. K. Robins

B

Forest Biology Survey boat, Borealis, on the Clearwater River near Ft. McMurray, Alberta. Forest Biology Ranger V. Patterson, writing up insect collections.

by - J. K. Robins

C

Forest Biology Ranger Cabin under construction at Peace River, Alberta, in the spring of 1958.

by - V. B. Patterson

D

Refueling helicopter at Pine Lake, Wood Buffalo National Park, Alberta.

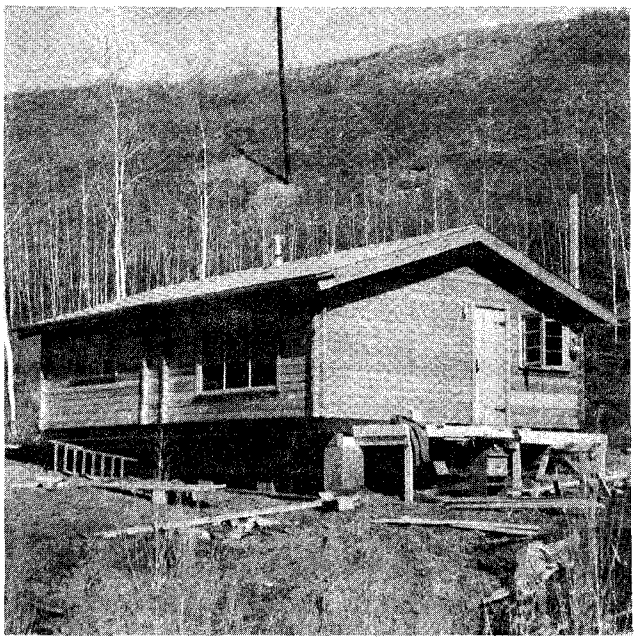
H. Tom (Pilot)

V. Patterson

by - J. K. Robins

A

B



C

D

FOREST BIOLOGY RANGER REPORT

BOW RIVER - CROWSNEST DISTRICT

ALBERTA 1958

by

J. PETTY

FOREST BIOLOGY LABORATORY

CALGARY, ALBERTA

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

INTRODUCTION

The Forest Biology survey in the Crowsnest-Bow River District was carried out from May 21 to mid-September. During this time, 12,163 miles were travelled by truck and 307 insect samples and 22 tree disease samples were submitted.

Phenology plots were established at various locations to determine seasonal growth on spruce and measurements were taken at these plots twice during the summer. As part of the forest tent caterpillar project 10 aspen trees were examined to determine the number of leaf clusters per tree. With Ranger N. Wilkinson, a forest tent caterpillar egg count was made in the areas where this species was found earlier in the year. Alpine larch at Highwood Pass and in Banff National Park, at Sunshine and Mt. Temple, were again examined during the season. All pathology outbreaks, except those near Seebe, were re-examined with G. Stevenson. The seed plots established by Dominion Forestry were again visited.

Prior to the field season assistance was given in building the Ranger Cabin at Crimson Lake. Assistance was given to Ranger P. F. LaRue with the larch sawfly plots in the Clearwater District. Approximately 400 miles were travelled doing an aerial survey northwest of Cold Lake in District 5.

The infestation of Bruce spanworm increased in intensity, although the infested area remained much the same as in 1957. The forest tent caterpillar infestation showed little change in the agricultural regions but increased slightly in the aspen stands west of Highway 2. There was little change in the status of the fall cankerworm throughout the Agricultural

Districts of Lethbridge, Taber and Medicine Hat. Along the east side of the Cypress Hills the spruce budworm outbreak increased in size and intensity.

Re-examination of disease outbreaks in the southern part of the District showed very little change over previous years. An outbreak of white pine blister rust on limber pine was found on Sofa Mountain in Waterton Lakes National Park.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
Spruce	41	Manitoba maple	53
Pine	26	Trembling aspen	61
Blue Douglas fir	12	Misc. poplars	22
Alpine fir	8	Willow	23
Larch	11	American elm	4
	98	Ash	9
			172
Collections from miscellaneous hosts			37
		Grand Total	307

INSECT CONDITIONS

Spruce budworm, Choristoneura fumiferana (Clem.).

Defoliation by spruce budworm was again evident on the east side

of the Cypress Hills along the Alberta-Saskatchewan border. The infested area extended south along the Border from Battle Creek for approximately 3.5 miles, and west from the Border for about 1.5 miles at the widest point. This was an increase in the size of the infestation reported last year and is an extension of the outbreak which is present in the Saskatchewan side of the Cypress Hills. The heaviest defoliation occurred on trees in the valley bottom where the current year's growth of these trees was severely damaged. A few larvae were found south and west of Elkwater townsite and light damage occurred in 2 shelterbelts near Medicine Hat. Light infestations were found on Douglas fir in the Porcupine Hills and south of Blairmore.

In a small area south of Coleman, Choristoneura prob. pini Free. caused light damage to regeneration lodgepole pine.

Black-headed budworm, Acleris variana (Fern.).

Collections containing black-headed budworm were sent in from most of the forested areas of the District. Except in Waterton Lakes National Park, where larvae were the most numerous, there was no notable defoliation. In Waterton Lakes National Park larvae were most numerous along the Chief Mountain Highway and near Cameron Lake. At the latter, light defoliation to alpine fir and Engelman spruce was seen, while along the Chief Mountain Highway the damage was not so conspicuous. On the east side of Waterton Lake, at Hell-Roaring cabin, and on the west side of the lake, at Boundary cabin, light defoliation was evident although larvae and pupae were not as common.

Forest tent caterpillar, Malacosoma disstria Hbn.

Large numbers of tent caterpillars were again present in Lethbridge and on farm shelterbelts east of Lethbridge to Taber. Although numerous larvae were found in this area, the amount of damage was light. Chemical sprays were used in Lethbridge and on a few farm shelterbelts. Larvae were found throughout the city of Medicine Hat and a few householders complained of defoliation to individual trees but generally the damage was light.

Clusters of larvae were seen in all parts of the Cypress Hills but not in large enough numbers to cause noticeable defoliation. A few collections of this insect were made along the Eastern Slopes from Waterton Lakes National Park north to Willow Creek.

Sequential sampling and the 3 tree egg count was carried out in the areas in which tent caterpillars were found but the results were negative.

Tent caterpillars, Malacosoma lutescens (N. & D.) and Malacosoma pluviale (Dyar).

There was a decline in the numbers of tent caterpillars throughout the agricultural portion of the District this year.

M. pluviale was found throughout the western part of the District south of the Highwood River. Although not as numerous as M. pluviale, M. lutescens was also present in this area and was commonly found in the Cypress Hills and in the agricultural area surrounding Medicine Hat.

Leaf-eating beetles, Dichelonyx backi Kby. and Phytodecta americana Schffr.

The green rose chafer D. backi, was the most destructive leaf-eating beetle this year. A high population of this chafer caused moderate to heavy

defoliation of rose, willow and occasionally aspen poplar in the area north of Lundbreck through to High River, west to the Highwood River and south to Coleman along the Trunk Road. A few of these beetles were found between Burmis and Beaver Mines.

In Waterton Lakes National Park, the American aspen beetle, P. americana, was the cause of light defoliation from Waterton townsite to the registration office, around the golf course, and along the Chief Mountain Highway and the Red Rock Canyon Road. Moderate defoliation of small patches of aspen was seen along Dutch Creek, at the Experimental Range Station west of Stavely, and throughout the Cypress Hills.

Fall cankerworm, Alsophila pometaria (Harr.).

Manitoba maple, ash and elm in many farm shelterbelts in the southern part of the agricultural region of the District were infested with fall cankerworm. Two large windbreaks north of Barnwell were completely stripped of leaves and the larvae had migrated to corn and sugarbeets adjacent to the trees. Heavy infestations were found in the Winnifred-Whitlaw area, south of Foremost, and at Purple Springs, Magrath and Pearce. Areas in which moderate damage resulted were Iron Springs - Turin, south of Bow Island and Grassy Lake, and between Wrentham and Foremost. Throughout the remainder of the area a trace to light defoliation was seen.

Chemical sprays were used successfully on a few farm shelterbelts to reduce populations.

Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

The infestation of spruce by yellow-headed spruce sawfly east of the

Gap Ranger Station continued in 1958. The area involved has not increased over last year. Fifty per cent defoliation of the new growth, which was very short this year, left many of the trees with very little foliage.

Larvae were present throughout Waterton Lakes National Park but not in great enough numbers to cause noticeable defoliation.

Pine needle scale, Phenacaspis pinifoliae (Fitch).

The outbreak of pine needle scale along York Creek Road south of Coleman was examined to determine the extent of the infestation. The area, smaller than at first anticipated, was one-half mile wide by one mile long. In the centre of this area a smaller area about one-quarter mile in diameter was heavily infested and many of the trees had lost about 50 per cent of their foliage. Fewer new scale were present than in 1957. This was probably due to predation by the twice-stabbed lady beetle, Chilocorus stigma Say, which has been present during the last 2 years.

South of Hillcrest, the trees that had been heavily damaged by scale 2 years ago showed a marked improvement in vigor. There was very little new scale this year.

On the north side of Island Lake a light infestation of scale was present on lodgepole pine. A few individual branches on some trees had a high population.

A light infestation of scale was seen for about 2 miles along the trail to Bertha Lake in the area south of Waterton townsite.

In the Cypress Hills the infestation reported in 1957 remained unchanged.

Bruce spanworm, Operophtera bruceata (Hulst).

This looper was found throughout the entire aspen belt west of Highway 2 from the Bow River south to within 5 miles of Highway 3. The fringe of this area, with the exception of the north side along the Bow River, sustained light damage.

Extensive patches of complete defoliation were observed throughout the general area defined above. The pattern of defoliation was common to the whole area. There was light defoliation to the fringe and patches within the bluff while the remainder of the bluff was completely denuded. Aspen poplar and willow were the preferred hosts but where heavy defoliation occurred, all species of shrubs in the understory were attacked. Balsam poplar appeared to be fairly free from attack.

Chemical sprays, applied by aircraft, were used to control an outbreak at the Experimental Range Station west of Stavely. The larvae on 3 trees were counted before spraying. After spraying, 3 more trees were selected with approximately the same diameter, height and crown depth as the first 3 and a count made of the larvae that were still living. Ninety-nine per cent control was obtained. This percentage was arrived at by using the formula:

$$\frac{(\text{Number of larvae before spraying} - \text{number of larvae after spraying}) \times 100}{\text{Number of larvae before spraying}}$$

TABLE II

Tree No.	Height	D.B.H.	Crown Length	Defoliation	No. Larvae
Before Spraying					
1	20'	3"	10'	Severe	1208
2	15'	2½"	6'	Severe	917
3	12'	2"	5'	Slight	536
				TOTAL	2661
After spraying					
4	20'	2½"	10'	Moderate	1
5	18'	2½"	6'	Severe	6 *
6	15'	2"	5'	Slight	1
				TOTAL	8

* All affected by spray.

Leaf-tiers, Compsolechia niveopulvella Cham., Pseudexentera improbana oregonana Wlshm. and Choristoneura conflictana (Wlk.).

Evidence of leaf-tiers was found in all stands of aspen in the District. Most of the rolled leaves were caused by either P. improbana oregonana or C. niveopulvella. The amount of damage caused by these 2 species was light, with the exception of west of Stavely where rolled leaves were numerous. C. conflictana was found at 2 locations: at the Experimental Range Station west of Stavely, and 9 miles west of Midnapore. Only a few larvae or pupae were collected and the damage was negligible.

Blister beetles, Lytta viridana Lec. and Lytta nutalli Say.

After not being reported for several years, blister beetles have again been found in the southeast part of the District. Between Bow Island and Medicine Hat several farm shelterbelts had a few beetles on caragana hedges. If the outbreak of grasshoppers increases the populations of blister beetles are likely to increase as well.

Cecropia moth, Hyalophora cecropia (L.).

The number of farm shelterbelts between Taber and Medicine Hat in which H. cecropia was found, has increased in the past year. Most of the farms where cecropia was found had a very light infestation, but there was the occasional shelterbelt where larvae or pupae were more numerous.

Larch sawfly, Pristiphora erichsonii (Htg.)

Siberian larch planted at the headquarters of Kananaskis Forest Experiment Station, around the main camp, and near the south boundary of the Experiment Station were infested by larch sawfly. Curled tips containing eggs were evident on all trees. At the field station the curled tips were cut off prior to

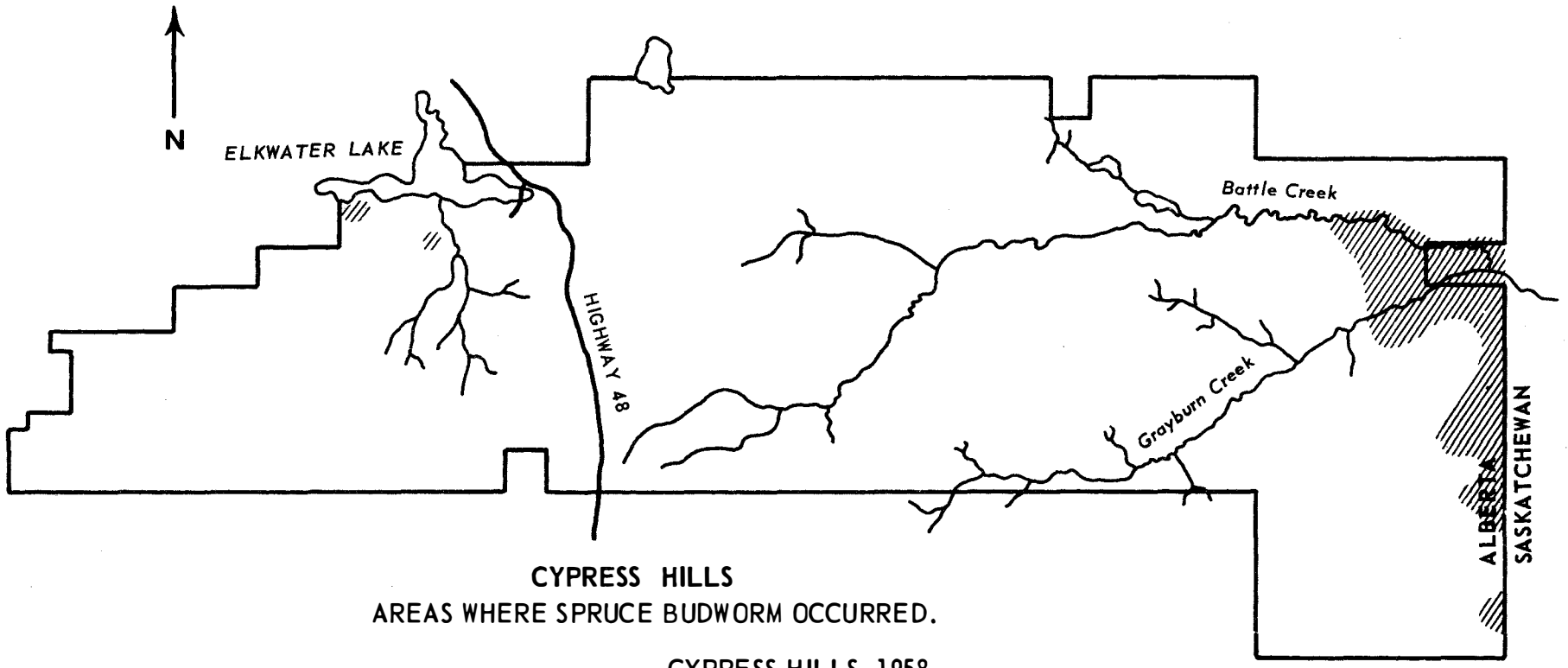
hatching but elsewhere light defoliation occurred. Chemical sprays were used but because of adverse weather conditions were not applied soon enough to be effective.

TABLE III

OTHER NOTEWORTHY INSECTS

(which occurred in Crowsnest-Bow River District, 1958)

Insect species	No. of coll.	Host	Remarks
Fruit tree leaf roller, *Archips argyrospila* (Wlk.)	6	Caragana Wolf willow	Light damage to caragana hedges between Taber and Medicine Hat.
Ugly nest tortrix, *Archips cerasivorana* (Fitch)	3	Chokecherry Willow	Light damage in Waterton Lakes National Park and Crowsnest Pass from Ft. McLeod to Blairmore.
Pine root weevil, *Hylobius* sp.	1	Lodgepole pine	Still present in Cypress Hills.
Fall webworm, *Hyphantria cunea* Dur.	2	Chokecherry Plum	Few large nests found around Medicine Hat.
Elm lecanium, *Lecanium corni* Bouche	2	Caragana Green Ash	Heavy infestations at Experimental Farm, Lethbridge.
Spiny elm caterpillar, *Nymphalis antiopa* L.	9	Willow American elm	Found throughout the District, but to a lesser degree than 1957.



CYPRESS HILLS

AREAS WHERE SPRUCE BUDWORM OCCURRED.

CYPRESS HILLS, 1958.

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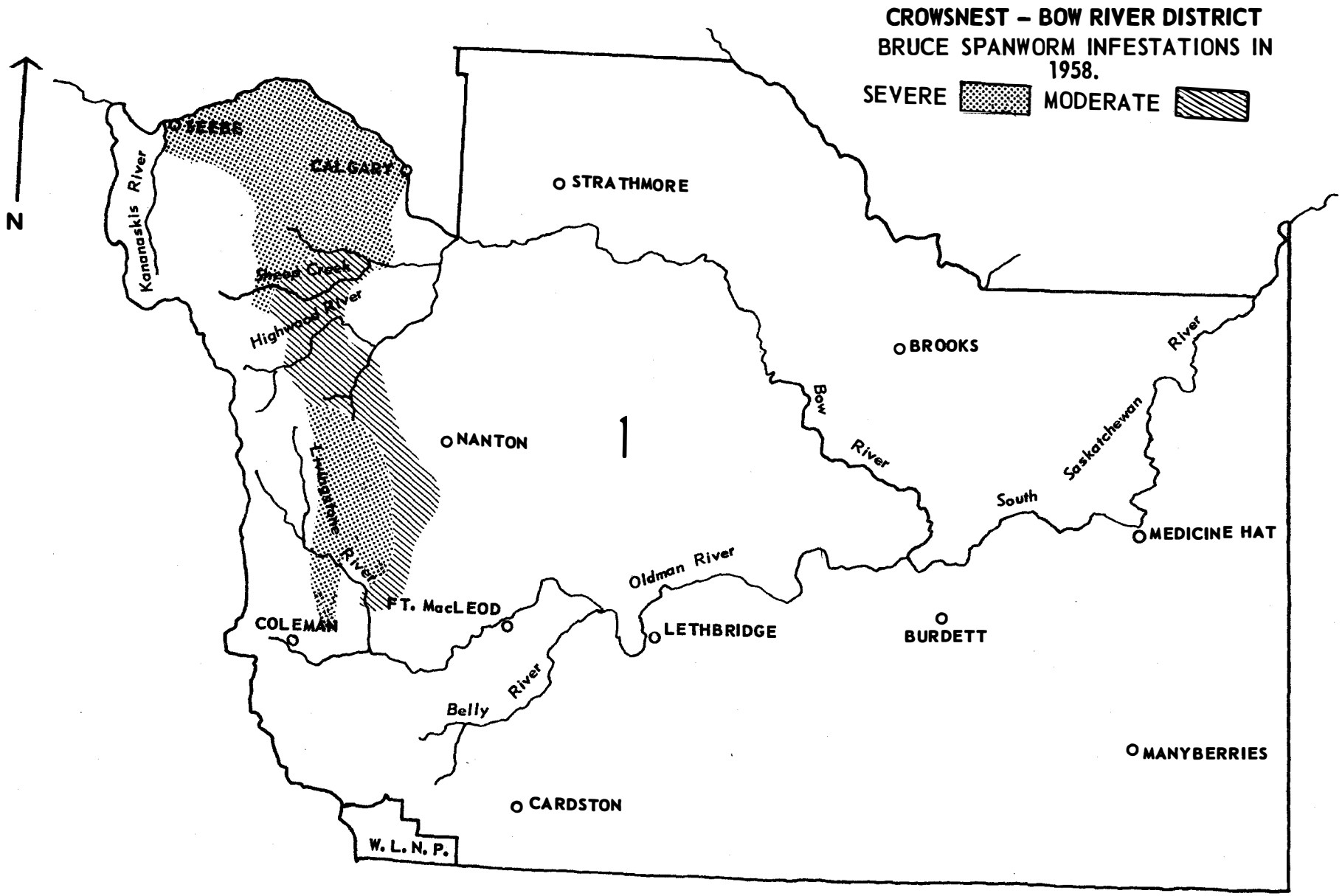
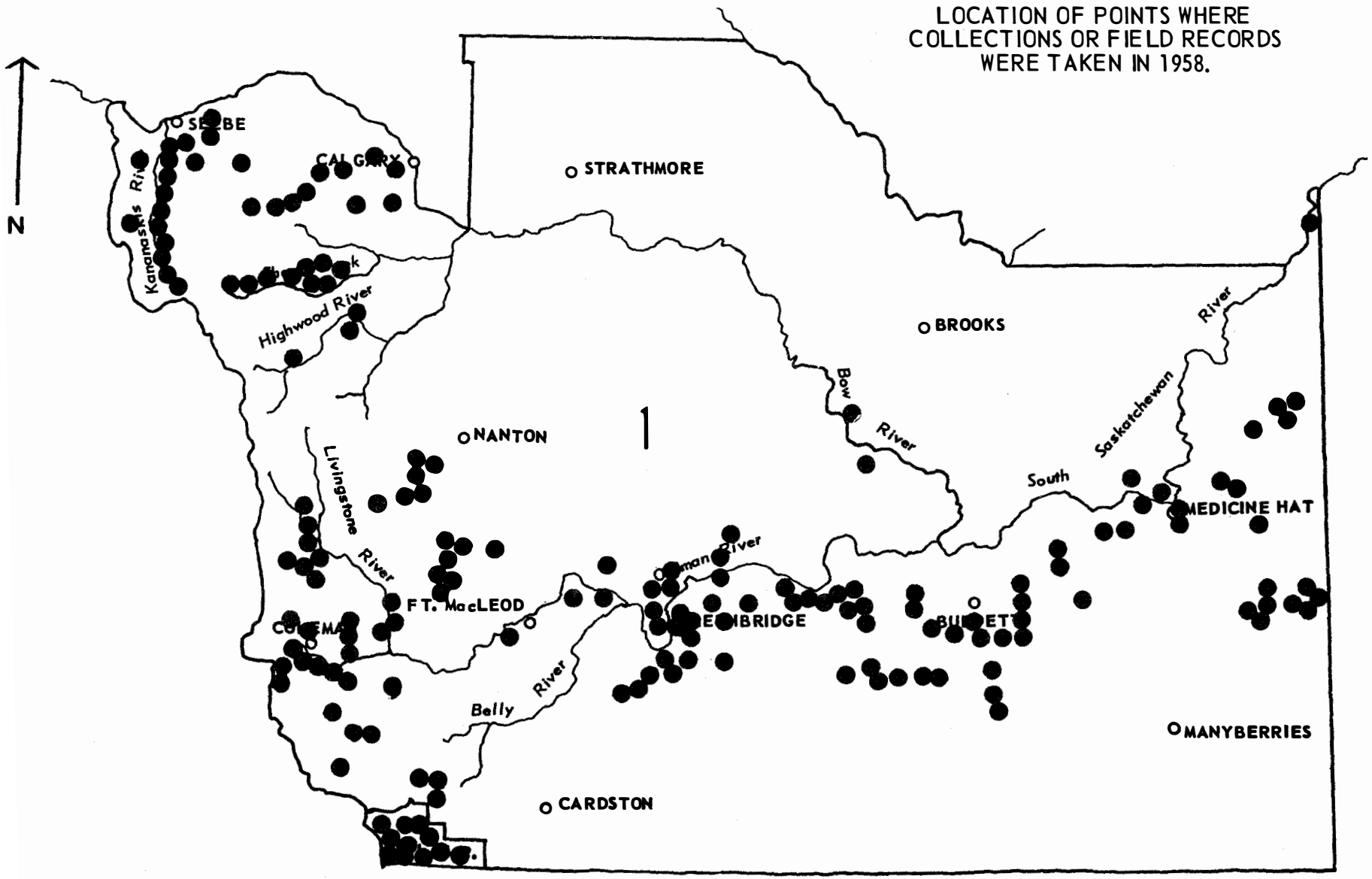

CROWSNEST – BOW RIVER DISTRICT
BRUCE SPANWORM INFESTATIONS IN 1958.
SEVERE
MODERATE
N
TO SEEBE
CALGARY
STRATHMORE
Kananaskis River
Sheep Creek
Highwood River
BROOKS
Bow River
South Saskatchewan River
NANTON
1
Livingstone River
MEDICINE HAT
Oldman River
FT. MacLEOD
COLEMAN
LETHBRIDGE
BURDETT
Belly River
MANYBERRIES
CARDSTON
W. L. N. P.
SCALE
(28 MI. - 1 IN.)
APPROX.


CROWSNEST – BOW RIVER DISTRICT
LOCATION OF POINTS WHERE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1958.
N
STRATHMORE
CALGARY
BROOKS
NANTON
1
Highwood River
Bow River
South Saskatchewan River
Livingstone River
MEDICINE HAT
FT. MacLEOD
Belly River
MANYBERRIES
CARDSTON
SCALE
(28 MI. - 1 IN.)
APPROX.

FOREST BIOLOGY RANGER REPORT

CLEARWATER DISTRICT

ALBERTA 1958

by

P. F. LaRUE

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

INTRODUCTION

The objective of this report is to give the status of forest insect and disease conditions as found during the 1958 survey in Forest Biology Ranger District 2. The field season commenced June 2 and terminated September 13. During this period 327 insect and 6 disease samples were submitted.

Field accomodation consisted of a new Panabode cabin erected in May at Crimson Lake, 9 miles north of Rocky Mountain House. A total of 12,000 miles were travelled by truck on field survey work. An exceptionally dry summer enabled the ranger to get much better coverage than in the previous year.

From April 22 until May 31 the time was used in the erection of the cabin at Crimson Lake. Two weeks were spent during the fall from September 15 until September 27 in the finishing and oiling of the cabin. At the request of the Federal Forestry Branch, data were again collected from the 5 spruce seed plots in the District. Three days were used on this project. An aspen bud count was taken to secure data for a sampling system of the forest tent caterpillar. Three phenology plots were established during the summer: one at Crimson Lake which was examined weekly, the others, near the city of Red Deer, and at the Red Deer Ranger Station in the Bow River Forest Reserve, were visited twice during the season. Five days were spent with John Hopkins and Grant Stevenson of the Forest Pathology Laboratory examining outbreaks of the stem canker, Atropelis piniphila (Weir) Lohman and Cash, and checking disease outbreak reports.

Surveys in the agricultural section of the district showed that the yellow-headed spruce sawfly was still in the outbreak category. There was an increase in damage to ornamental and shelter belt spruce trees caused by the spruce spider mite. Infestations of the American aspen beetle, the Bruce spanworm, and a leaf-tier, Pseudexentera improbana oregonana Wlshm., caused conspicuous defoliation throughout the District. There was a decline in the population of the leaf-tier, Compsolechia niveopulvella Cham. An increase in distribution and numbers of the larch sawfly was evident in all larch stands examined.

TABLE I

SUMMARY OF INSECT CONDITIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
White spruce	121	Trembling aspen	48
Lodgepole pine	60	Poplar sp.	3
Larch	33	Willow	18
Fir	4	Birch	13
	218	Alder	21
		Maple	3
			106
Collections from miscellaneous hosts			5
		GRAND TOTAL	329

INSECT CONDITIONS

Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

The outbreak of this sawfly on ornamental and shelterbelt spruce trees was present again during the 1958 season in the agricultural portion of the District. Although many shelterbelts had been sprayed in early summer, defoliation was noticeable in most areas. Only in the Drumheller-Hanna districts was a decrease in populations observed. Defoliation was heaviest east of Highway 2 in the Airdrie - Three Hills area north to the Ponoka-Stettler area. No change in population levels were observed with moderate damage again being found. West of Highway 2 to where the forested and agricultural areas merge, the numbers of this insect were found to be comparatively low.

Larch sawfly, Pristiphora ericksonii (Htg.).

An increase in the population level and a wider distribution of this sawfly was evident in the larch stands in the District. The heaviest defoliation occurred south from Rocky Mountain House and Sylvan Lake to the southern limit of larch near Sundre.

In the vicinity of the larch plot 12.5 miles south of the Clearwater Ranger Station on the East Slopes Road, heavy defoliation was also noted.

Other areas of heavy defoliation were found in the Winfield-Buck Lake region with the highest populations occurring south of Breton and near the sampling plot at Winfield.

Larvae were taken from larch wherever it occurred in the remainder of the District, with light to moderate defoliation evident in most places.

TABLE II

RESULTS OF SEQUENTIAL SAMPLING

LARCH SAWFLY PERMANENT SAMPLE STATIONS

Station No.	Location	Infestation class 1958	Infestation class 1958
2 - 1	Winfield	Light	Moderate
2 - 2	Rocky Mt. House	Light	Light
2 - 3	Nordegg	Light	Light
2 - 4	Clearwater	Light	Moderate
2 - 5	Caroline	Light	Light

Aspen defoliators, Compsolechia niveopulvella Cham., Pseudexentera improbana oregonana Wlshm. and Phytodecta americana Schffr.

Defoliation by the leaf-tiers, C. niveopulvella, and P. improbana oregonana, along with the American aspen beetle, P. americana, caused conspicuous damage to aspen throughout District 2. Since these 3 species and the Bruce spanworm were found feeding together, an accurate estimate of damage caused by any one of them could not be determined.

The widely distributed infestation of the leaf-tier, C. niveopulvella, evident in 1957, showed a marked decline in 1958. Larvae of this insect were found only in light numbers in aspen samples taken during the season.

Rolled and discolored leaves caused by P. improbana oregonana, were found throughout the agricultural and forested regions.

There was an increase in the populations and distribution of the American aspen beetle, P. americana. Larvae and adults were confined chiefly

to the forested part of the District. Samples were taken from the Ghost Ranger Station north to Nordegg and in the Sundre and Alder Flats districts. There was no apparent change in the status of the previous outbreaks reported from Saunders and west of Sundre in the Clearwater Forest Reserve. High populations were again noted west of Water Valley and in the vicinity of Bearberry.

Bruce spanworm, Operophtera bruceata (Hulst).

Noteworthy increases in the distribution and numbers of this Geometrid occurred throughout the aspen stands in the District. Larvae were found wherever aspen was present. In the agricultural districts populations were generally light with pockets of heavy defoliation; heaviest defoliation was found in the Hand Hills south of Delia. In the forested area, heavy defoliation was observed from Cochrane west to the Ghost Ranger Station and north to Sundre. Another area of heavy defoliation extended from the Scab River in the Clearwater Forest Reserve north to the Nordegg River.

Moderate defoliation was found south of the North Saskatchewan River in the Buck Lake-Rimbey district through to Rocky Mountain House. Infestations were light throughout the remainder of the aspen forest.

Spruce spider mite, Oligonychus ununguis (Jac.).

A pronounced increase in population levels of this mite was noticeable throughout the agricultural areas and sections of the forested district during 1958. An early, dry, spring provided conditions suitable for mating and oviposition, resulting in a rapid buildup of the spring generations.

Heaviest outbreaks were found on ornamental and shelterbelt trees from Calgary north to Ponoka, east to Stettler and south into the Drumheller and Three Hills districts. Westward to where the forested and agricultural areas merge, trees were less severely attacked but dead and webbed needles were in evidence. In the forested regions populations were found to be generally light with the exception of Crimson Lake Provincial Park where white spruce along roadsides were found to be more heavily attacked.

A root weevil, Hylobius sp.

Larvae and galleries of this weevil were again present in most of the pine stands examined in the Clearwater Forest Reserve. The known distribution remained much the same as in 1957 with the exception of 2 areas not previously reported. Mature lodgepole pine 6 miles southwest of Bearberry, were found to be infested. Although 40 per cent of the trees were dead or dying, it is doubtful if the root weevil was solely responsible for tree mortality in this stand.

Northwest of Rocky Mountain House in the Chippewa Indian Reserve on the Nordegg Flats, both living and dead lodgepole pine were examined and found to be infested by this weevil. Of 20 living trees examined, 18 were found to have been infested.

Prairie tent caterpillar, Malacosoma lutescens (N & D).

An outbreak of this tent caterpillar was found feeding on rose in the Hanna district. This infestation extended from Hanna south for 25 miles to Sunnybrook. A few isolated tents were spotted in the Drumheller and Big Valley areas.

Manitoba maple gall midge, Contarinia negundifolia Felt.

Larvae of this gall midge were again found infesting Manitoba maple from Drumheller east to Hanna and north to Stettler. Many trees were infested and in some shelterbelts 40 per cent of the leaves were damaged.

Petrova sp. on Lodgepole pine.

There was an increase in the number of pitch nodule-makers collected in the northern part of the forested area. Numerous nodules were found on regeneration pine from 9 miles south of Breton to a point 17 miles west of Rimbey. Numerous nodules were also observed on young pine 8.5 miles west of Sundre and again on the Indian Reserve approximately 22 miles northwest of Rocky Mountain House. A few nodules were found in most pine stands in the Oras-Leedale district northeast of Rocky Mountain House.

Large aspen tortrix, Choristoneura conflictana (Wlk.).

The outbreak of this leaf roller subsided greatly in 1958. The only area still infested was within a 25 mile radius of Stettler; here moderately heavy populations were recorded with light damage in the fringe areas. It was difficult to assess the damage caused by the large aspen tortrix because of the presence of the leaf-tier, P. improbana oregonana Wlshm., and the Bruce spanworm. No larvae were taken in the forested parts of the District.

Neodiprion sp. on spruce.

Light defoliation by this sawfly was in evidence in farm shelterbelts in the Drumheller-Stettler area west to Red Deer. The heaviest damage was found near Lacombe. In the forested portion of the District, populations appeared in endemic proportions again during 1958.

Neodiprion sp. on lodgepole pine.

Larvae, feeding singly, were recorded on pine throughout the forested sections of the District. Heaviest populations were found within 35 miles radius of Rocky Mountain House. Only 7 clusters of these sawflies were taken during the field season. No defoliation was evident in any of the stands visited.

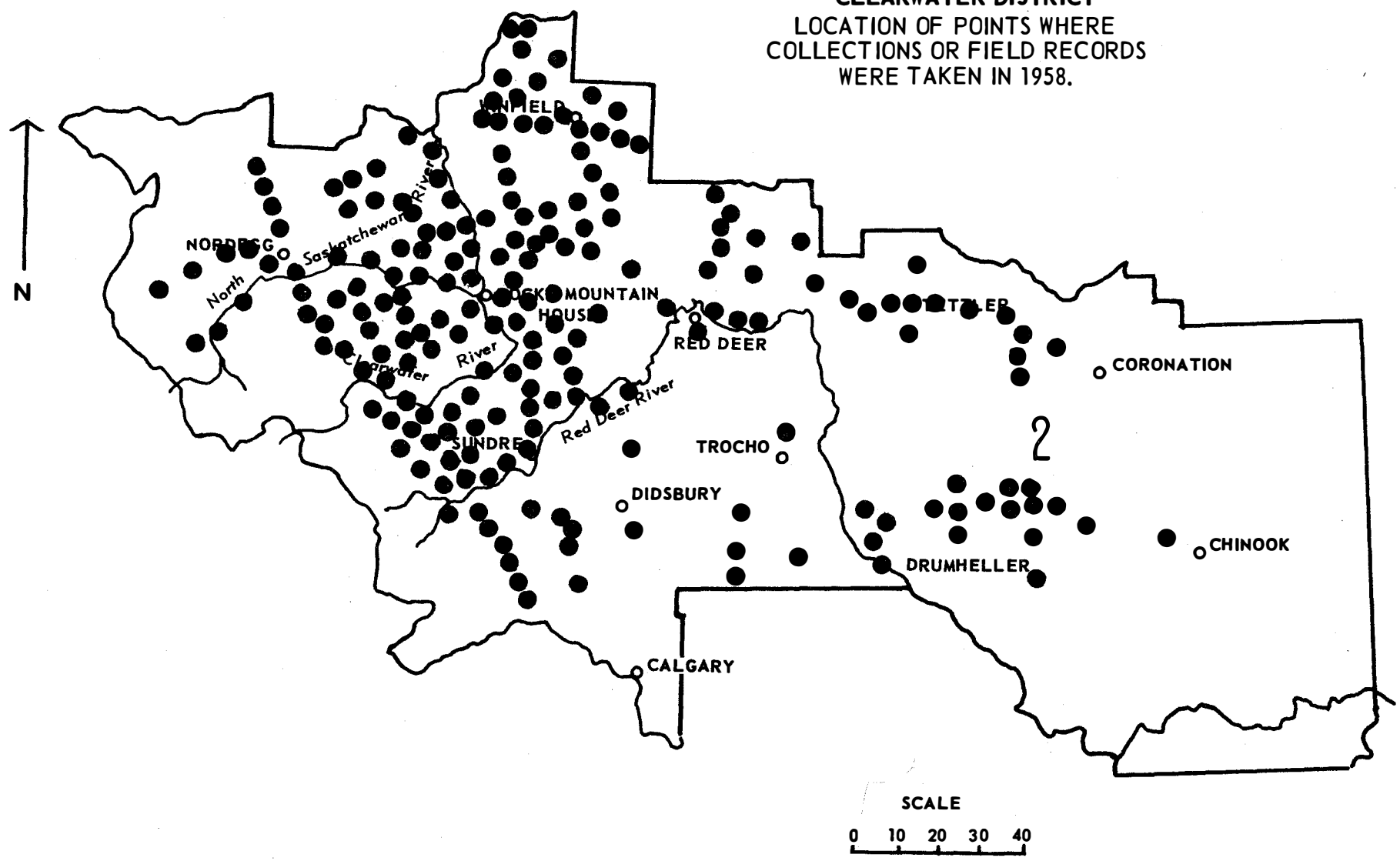
OTHER NOTEWORTHY INSECTS

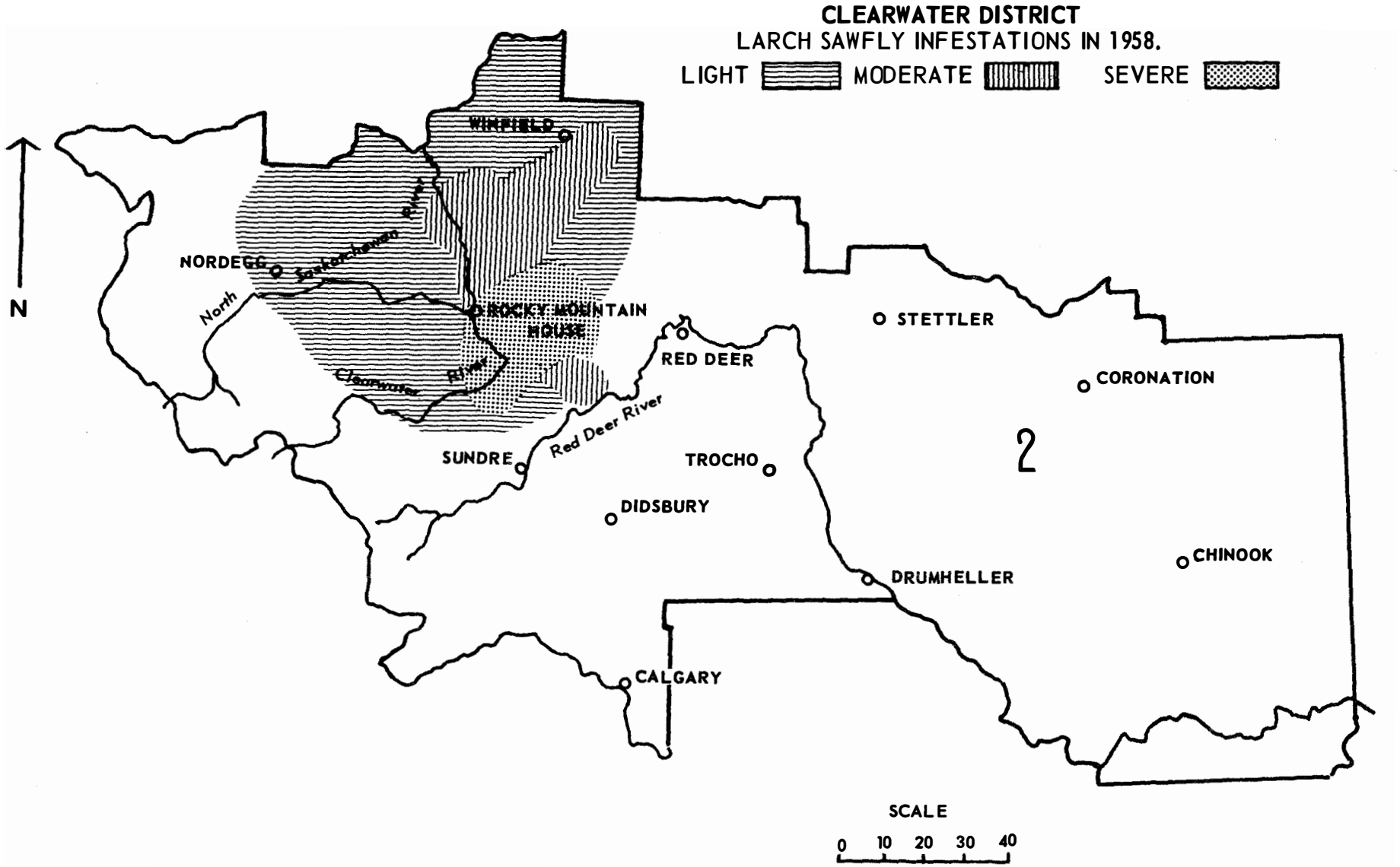
(which occurred in the Clearwater District, 1958)

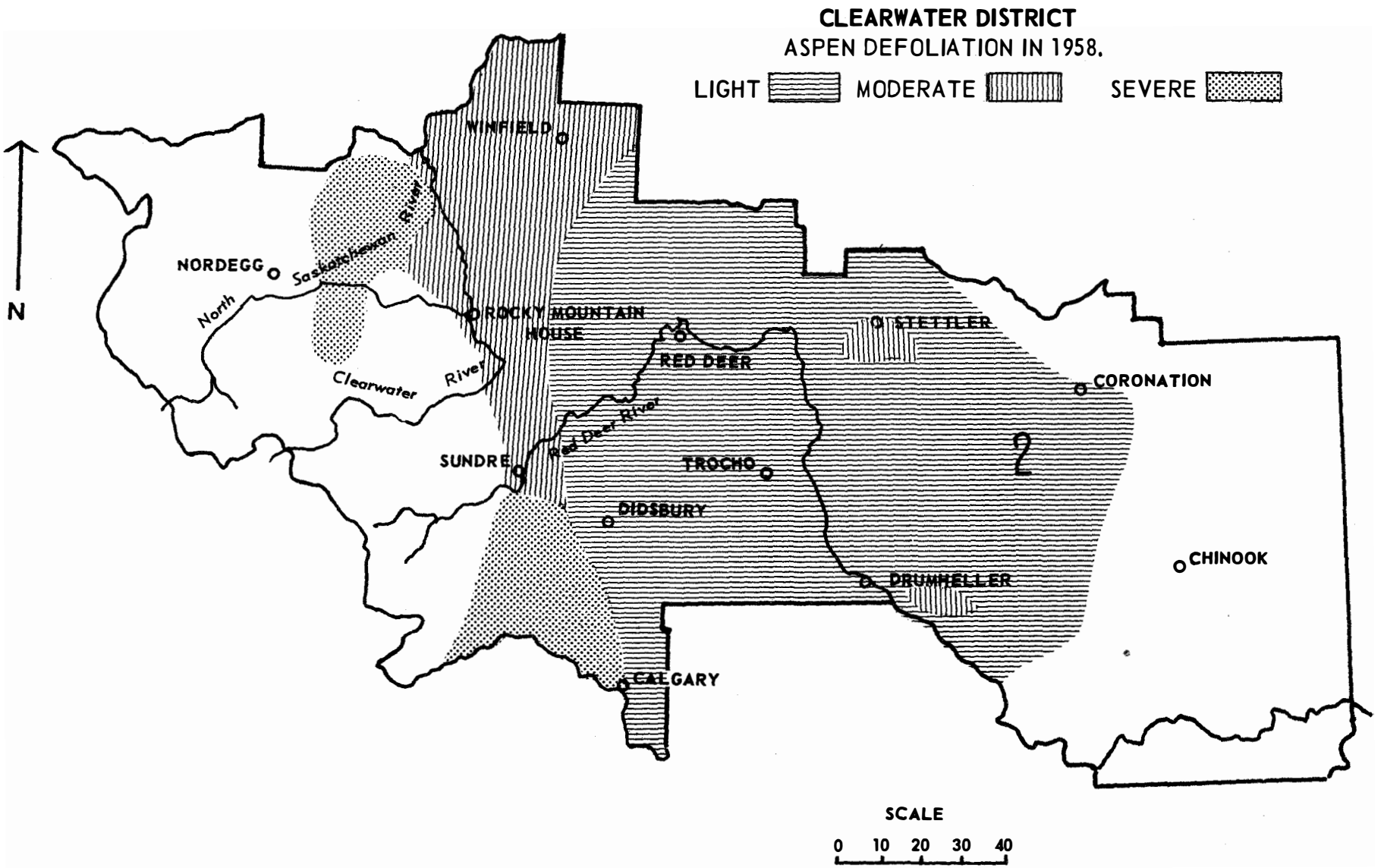
Insect species	No. of coll.	Host	Remarks
Green-striped caterpillar, Feralia Jocosa Gn.	12	W. spruce	Low populations in natural growing spruce.
Black-headed budworm, Acleris variana (Fern.)	20	W. spruce	Found in more locations than in 1957.
Green spruce looper, Semiothisa granitata Gn.	39	W. spruce	Taken generally throughout forested areas.
Green-headed spruce sawfly, Pikonema dimockii (Cress.)	56	W. spruce	Present in all spruce stands in small numbers.
Spruce budworm, Choristoneura fumiferana (Clem.)	2	W. spruce	Found in vicinity of Rocky Mountain House.
A looper, Nyctobia limitaria Wlk.	14	W. spruce	Small numbers of larvae (scattered).
A looper, Eupithecia filmata Pears.	48	W. spruce	Common on spruce in all areas in spring.
An Oleothreutid, Griselda radicana Wlshm.	9	W. Spruce	Small numbers obtained by beating trees.
A looper, Semiothisa perplexa McD.	36	L.P. pine	Taken generally in pine forests.
Grey pine looper, Caripeta angustiorata Wlk.	13	L.P. pine	Common on pine in fall
A looper, Eufidonia notataria Wlk.	14	L.P. pine	Taken generally from lodgepole pine.
Green larch looper, Semiothisa sexmaculata Pack.	8	Larch	Found in all larch stands examined.
Forest tent caterpillar, Malacosoma disstria Hbn.	2	Willow	Only 2 larvae taken, none in 1957.

Other noteworthy insects...continued

Insect species	No. of coll.	Host	Remarks
Spotted tussock moth, *Halisidota maculata* Harr.	4	Willow	Noted on willow in most areas
A. Phalaenid, *Orthosia hibisci* Gn.	12	T. aspen	Common on aspen
A looper, *Ectropis crepuscularia* Schiff.	Numerous	Willow Aspen W. birch Alder	Found commonly on deciduous hosts (forested).
A weevil, *Pissodes* sp.	6	W. spruce	Found in endemic numbers in District 2.
Leaf beetles, *Altica ambiens* Lec.	2	Alder	Junction of Baptiste and Athabasca rivers.
Spiny elm caterpillar, *Nymphalis antiopa* L.	3	Willow	Fairly common in agricultural area.
Tenthredinidae on alder	3	Alder	90 acres infested east of Breton


CLEARWATER DISTRICT
LOCATION OF POINTS WHERE
COLLECTIONS OR FIELD RECORDS
WERE TAKEN IN 1958.
N
NORDEGG
North Saskatchewan River
ROCKY MOUNTAIN HOUSE
RED DEER
Clearwater River
Red Deer River
SUNDRE
TROCHO
DIDSBURY
CORONATION
2
CHINOOK
DRUMHELLER
CALGARY
SCALE
0 10 20 30 40


CLEARWATER DISTRICT
LARCH SAWFLY INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE
N
WINFIELD
NORDEGG
Saskatchewan River
North
ROCKY MOUNTAIN HOUSE
Clearwater River
RED DEER
STETTLER
CORONATION
Red Deer River
SUNDRE
TROCHO
2
DIDSBURY
CHINOOK
DRUMHELLER
CALGARY
SCALE
0 10 20 30 40


CLEARWATER DISTRICT
ASPEN DEFOLIATION IN 1958.
LIGHT
MODERATE
SEVERE
N
WINFIELD
NORDEGG
Saskatchewan River
North
ROCKY MOUNTAIN HOUSE
STETTLER
RED DEER
CORONATION
Clearwater River
Red Deer River
SUNDRE
TROCHO
DIDSBURY
CHINOOK
DRUMHELLER
CALGARY
2
SCALE
0 10 20 30 40

FOREST BIOLOGY RANGER REPORT

NATIONAL PARKS DISTRICT

ALBERTA 1958

by

N. W. WILKINSON

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

INTRODUCTION

The annual Forest Biology Survey of the National Parks District closed September 12 after a field season which began the 29th of May. A 28 foot house trailer parked at the Eisenhower Field Station was used as field living accommodation for the season. Approximately 14,000 miles were travelled by motor vehicle. Two hundred and forty-four insect and 13 disease samples were submitted.

In addition to the general survey, work on a number of special projects was carried on during the season. Six phenology study plots were established throughout the District. Data and seed collections were gathered on the 5 Federal Forestry seed plots in the District. Accompanied by G. Stevenson of the Forest Pathology Laboratory, approximately one week was spent in re-examining disease outbreak areas in the District. Eleven and one half days were expended on the aspen bud count project. After the field season tent caterpillar sequential sampling required 2 weeks.

Insect populations were light throughout the National Parks District with the exception of Phyllocnistis sp. which appears to be building up along the western boundary of this District. The spruce budworm populations continued to decline in 1958. The size and intensity of the lodgepole needle miner infestation remained much the same.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll
Spruce	50	Trembling aspen	43
Lodgepole pine	54	Poplar	19
Douglas fir	2	Willow	21
Alpine fir	19	Alder	8
Larch	7	Birch	5
Cedar	1		
	133		96
Collections from miscellaneous hosts			12
		GRAND TOTAL	241

Lodgepole needle miner, Recurvaria starki Free.

Sequential sampling in the National Parks District indicated there were light populations in each of the Parks. There has been some increase in populations at lower elevations in Banff and Kootenay National Parks and a slight decrease in populations at the intermediate levels. This shift in population may be due to emigration of moths from the higher elevations. There has been a substantial reduction in actual parasite numbers. Defoliation by the needle miner has not increased significantly over the past 5 years.

Spruce budworm, Choristoneura fumiferana (Clem.).

The numbers of this insect decreased greatly this year. Although late instar larvae were found, defoliation was light. Small populations were active at mile 85 on the Jasper Highway north of Banff and in a small area in Yoho National Park between the Otterhead River and Emerald Lake. In the latter area there was a high mortality in the spring; almost one-third of the larvae taken were dead.

Black-headed budworm, Acleris variana (Fern.).

Light populations of this insect were found in 3 of the 4 parks covered by this report; no specimens were found in Jasper National Park this year. Medium defoliation occurred on alpine fir in the Marble Canyon area of Kootenay National Park. A trace of defoliation on spruce and alpine fir was evident in Banff National Park at the Banff Golf Course, in the Spray Valley and Brewster Creek Valley. Very few larvae were collected in Yoho National Park; those taken were from the Amiskwi and Yoho valleys. Damage was inconspicuous in these areas.

Larch sawfly, Pristiphora erichsonii (Htg.).

Larch sawfly was again active in the s all larch stand at mile 4 on the Miette Hotsprings Road in Jasper National Park. Numbers and damage have greatly increased this year. Approximately 10 per cent defoliation of the stand has occurred. One hundred per cent of the trees were attacked; a few were from 80 to 90 per cent defoliated.

A pine root weevil, Hylobius sp.

These weevils were found in Yoho and Kootenay National Parks. In Yoho National Park the infestation was found within a 3 mile radius of Leanchoil. Sampling in this area has shown a very light population is existant. Although a few lodgepole pine may have been killed by this weevil, most of the mortality was caused by rodent debarking. In Kootenay National Park the infested area is approximately from Kootenay Crossing south to the Park Boundary on both sides of the Kootenay River; here the numbers are greater than in Yoho National Park and appear to be the only reason some lodgepole pine are dead or dying.

A spruce weevil, Pissodes sp.

This weevil was found in Yoho and Kootenay National Parks infesting and killing tops of regeneration spruce. The area affected in Yoho National Park is from the Ottertail River bridge 6 miles west of Field to approximately 7 miles south at Chancellor Camp Ground. Damage in this area was light and widespread. Populations in Kootenay National Park ran from heavy in the Kootenay Crossing area through moderate and light to the south boundary of the Park on the west side of Kootenay River. One collection of Pissodes was taken from leader growth of lodgepole pine in this area.

Spruce spider mite, Oligonychus ununguis (Jac.).

Examination of previously known infested areas in Banff and Jasper townsites indicated very low populations. Cutting of the thick under branches of spruce near the Cave and Basin Pool in Banff National Park has reduced the number of mites in this area. Nymphs and eggs only, were found in Jasper townsite on native spruce. Ornamental Koster blue spruce were examined but no spider mite was found.

Gall aphids on conifers, Adelginae.

Galls of Adelges cooleyi (Gill.), though evident throughout the National Parks District, were not as plentiful in 1958 as in the previous year. Pineus pinifoliae (Fitch) galls were very scarce and were found only in Banff and Yoho National Parks.

Bark beetles, Scolytidae.

No injury to live trees in the National Parks District was found, although Ips were present in road slash and windthrown trees. The scene of past logging operations in the Amiskwi Valley is being cleaned up and will reduce the chance of an outbreak in this area. The only collection of Dendroctonus was taken from a dead Douglas fir in the Kootenay Valley.

Leaf-tiers on aspen, Compsolechia niveopulvella, Cham. and Epinotia sp.

Populations of these leaf-tiers were low in the National Parks District this year. Kootenay National Park is the only park where Epinotia sp. was found. C. niveopulvella was found in Banff and Kootenay National Parks. Larval mortality was high this spring; most of the rolled leaves examined were empty and therefore few larvae were collected. Damage was negligible at Baker and Carrot creeks in Banff National Park, where heavier populations were reported last year.

A leaf miner, Phyllocnistis sp.

Damage caused by this insect was found generally throughout the District where aspen stands occurred. High populations were found along the west boundaries of Yoho and Jasper National Parks. The heaviest attack occurred in an area along the Yellowhead Pass Road from the Park Boundary to a point 3 miles east in Jasper National Park. In this area 88 per cent of the

leaves were mined, giving the aspen foliage a silvery appearance. Aspen near the west boundary of Yoho National Park had approximately 30 per cent of their leaves mined. These leaf miners were found from the valley bottom to the 7,000 foot elevation level.

Pitch nodule maker, Petrova sp.

A few pitch nodules on the main stem of spruce were found near Eisenhower Junction, at Saskatchewan Crossing in Banff National Park, and at the south end of Kootenay National Park. Many old nodules and scars were present in the above areas and also at mile 100 on the Banff-Jasper Road and on the Banff Golf Course in Banff National Park. In Jasper National Park old nodules and scars were observed in the vicinity of the fish hatchery northeast of Jasper. Nodules near Eisenhower Junction were caged in an attempt to collect adults for identification.

DISEASE CONDITIONS

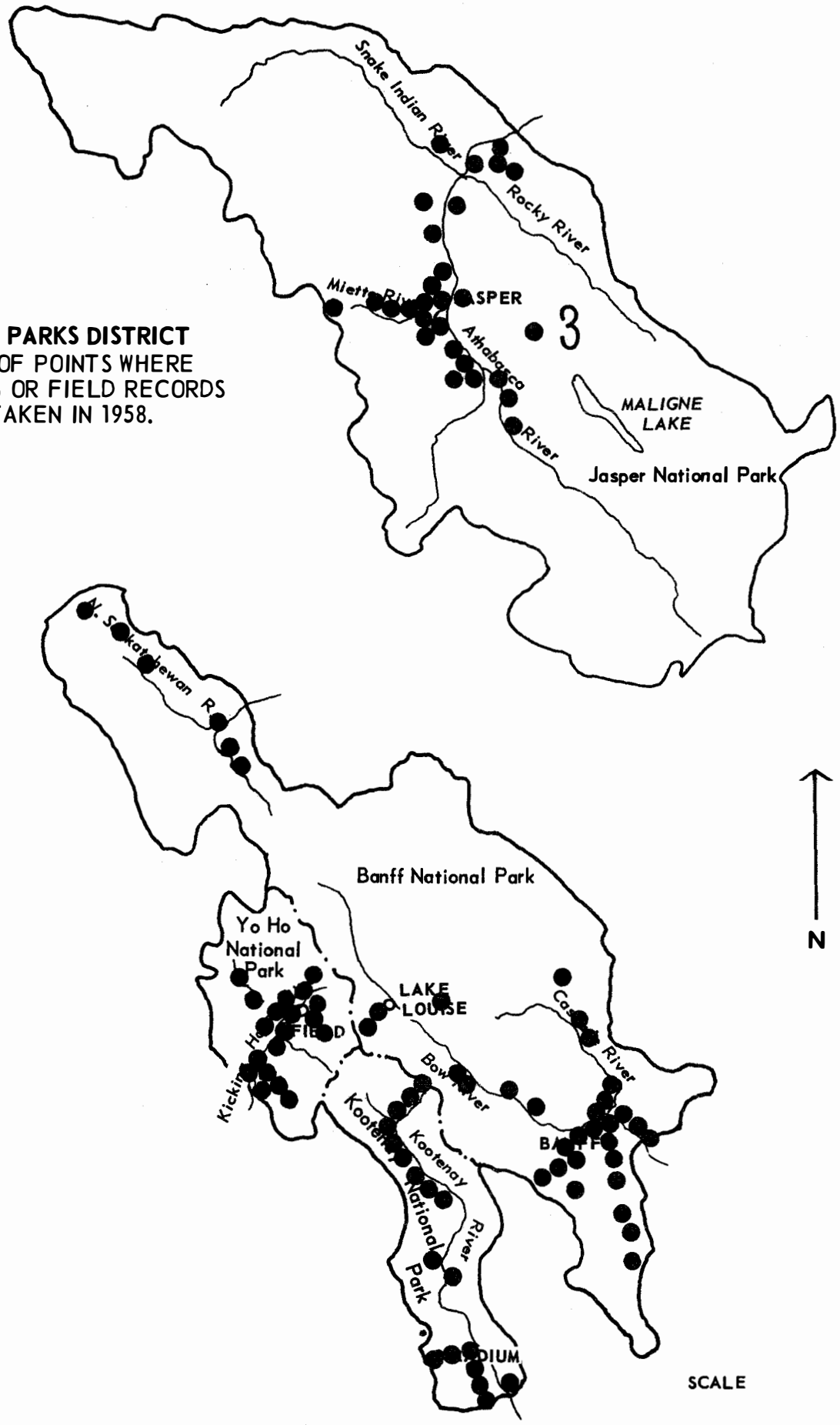
The known boundaries of the outbreak Atropellis piniphila (Weir) Lohm. and Cash in the Geraldine Lake area were extended. One new outbreak was reported along the Marmot Basin Trail this year. Periodic examination of areas formerly affected by Hypodermella montivaga (Petrak.) Dearn. was cancelled due to the virtual disappearance of needle cast. The red belting which occurred near Jasper in 1957 was not evident in 1958 and the trees appeared to have recovered from last year's injury.

OTHER NOTEWORTHY INSECTS

(which occurred in the National Parks District in 1958)

Insect species	No. of coll.	Host	Remarks
Balsam shoot sawfly, *Pleuroneura borealis* Pelt	8	Alpine fir	Not plentiful.
A pyralid, *Griselda radicana* Wlshm.	10	Spruce	Found mining *A. cooleyi* and *P. pinifolia* galls.
Grey pine looper, *Caripeta angustiorata* Wlk.	8	Lodgepole pine	Very few taken in beating samples.
Spiny elm caterpillar, *Nymphalis antiopa* L.	3	Aspen	Not as plentiful as last year.
Grey willow leaf beetle, *Galerucella decora* Say	1	Willow	Not plentiful.

NATIONAL PARKS DISTRICT
LOCATION OF POINTS WHERE
COLLECTIONS OR FIELD RECORDS
WERE TAKEN IN 1958.



FOREST BIOLOGY RANGER REPORT

BRAZEAU-ATHABASCA DISTRICT

ALBERTA 1958

by

R. R. STANLEY

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1959.

INTRODUCTION

This report covers Forest Insect and Disease Survey activities in the Brazeau-Athabasca District. Survey work began on May 14 and continued until September 20. During this period 332 insect and 6 disease samples were submitted. The District was worked from a headquarters cabin located at Entrance. During the field season approximately 13,000 miles were travelled by truck on survey work. The 1958 season was an exceptionally good year for survey work: the hot dry summer made it possible to get into areas that were inaccessible last year and very little time was lost because of rain.

Two aerial surveys were conducted in the late summer on the larch sawfly outbreak in northern Alberta and the Northwest Territories (See appendix A & B). The known outbreaks of forest diseases were re-examined and no change in boundaries was noted. One new disease outbreak was found in the area west of Mercoal. A considerable amount of time was spent investigating reports of timber damaged by insects and tree diseases. Sequential sampling in larch sawfly plots was done during the last 2 weeks in September. Three phenology plots were established. A count of buds on 10 aspen trees was made to obtain information to be used in developing the sequential sampling system for the forest tent caterpillar.

The important insects of 1958 were: yellow-headed spruce sawfly, larch sawfly, Bruce spanworm, and leaf-tiers, Compsolechia niveopulvella Chamb. and Pseudexentera improbana oregonana Wlshm. There was a notable decrease in population levels of the yellow-headed spruce sawfly in the agricultural areas west of Edmonton. The larch sawfly declined in some of

the older outbreaks in the eastern and southern parts of the District, but a further extension of heavy defoliation was recorded in the central and northern parts. Heavy defoliation was apparent in nearly all aspen stands due to a sharp increase of a number of leaf-eating insects. A stand of pine and spruce in the MacKay district was heavily damaged by long-horned borers.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
Spruce	62	Trembling aspen	86
Pine	55	Poplar	9
Eastern larch	102	Willow	7
Balsam fir	5	Birch	1
	224	Alder	1
			104
Collections from miscellaneous hosts			4
		GRAND TOTAL	332

INSECT CONDITIONS

Aspen defoliators, Phytodecta americana Schffr., Operophtera bruceata (Hulst), Compsolechia niveopulvella Cham., Pseudexentera improbana oregonana Wlshm.

Defoliation of aspen caused by these 4 species, the American aspen beetle, P. americana, Bruce spanworm, O. bruceata and the leaf-tiers, C. niveopulvella and P. improbana oregonana, was much more severe and widespread than in the previous year. Defoliation ranging from light to very heavy was recorded in nearly all aspen stands throughout the District during May and early June. Since these insects were feeding together in most areas it was difficult to determine the amount of damage for which each species was responsible.

In the Hinton, Obed, Marlboro, and Bickerdike areas most of the damage was caused by Bruce spanworm. In these districts defoliation was very heavy in large patches and when a stand became completely defoliated larvae began feeding on nearly all species in the understory including willow, alder, balsam poplar, and shepherdia. It is suspected that light damage to spruce understory was caused by these insects in the heavily infested areas, although they were not actually seen feeding on the needles. The aspen stands most severely affected covered an area 50 miles long and 35 miles wide along both sides of the Athabasca River from Hinton to 35 miles north of Marlboro. This area was approximately the same as that affected in 1957. Other locations where this species was responsible for most of the damage were in an area covering nearly 2 sections near Erith and a smaller area of approximately 100 acres 5 miles northeast of Robb. Larvae of this looper were taken in samples throughout most of the remaining parts of the District in smaller numbers and usually associated with other leaf-eating insects.

Large areas of heavy defoliation were found throughout the central and eastern parts of the District, but due to the condition previously mentioned where the 4 insect species were causing defoliation in varying degrees, it was impossible to make an accurate assessment of the damage caused by each species individually. This condition also occurred to a lesser degree in the area north of Edson, in the Whitecourt area, and north of Entrance. Samples taken southwest of Edson showed similar results but other than the two small outbreaks of Bruce spanworm, defoliation was light.

Many large black beetles, Calosoma fridgidum Kby., were present in most areas affected by P. improbana oregonana and P. americana and were observed feeding on these larvae.

It was noted that although the aspen stands in many areas were severely defoliated during May and early June, a new crop of leaves had developed by mid-July, leaving little evidence that the stands had been attacked by insects.

Larch sawfly, Pristiphora erichsonii (Htg.).

The distribution of this insect has been gradually increasing over the past few years until at present it is considered to be in all larch stands throughout the District. Previously it was confined to the eastern sections, gradually disappearing towards the central parts. In 1958 the area of heavy defoliation extended as far west as Chip Lake. Although defoliation in the western sections of the District was considered light, there were scattered pockets which were severely damaged. There were indications of a slight decrease in population levels in the eastern and southern parts of the District

and a definite increase in the central and western portion.

Heavy defoliation was recorded in all stands of larch east of a line running from Ft. Assiniboine to Chip Lake and north of Highway 16. Moderate defoliation occurred west of these points to a line running from Whitecourt to Peers and for approximately 20 miles south of Highway 16 from Peers east to Edmonton. West of Peers and Whitecourt and in the extreme southern portions of the District along the Saskatchewan River, defoliation was light except for a few isolated patches of heavy defoliation. Many larch stands in the Edmonton, Stony Plain, and Barrhead districts produced short needles which gave the appearance of heavier defoliation than actually occurred. This condition, as mentioned in previous annual reports, possibly resulted from continuous heavy defoliation which these stands have experienced in the past several years.

Sequential sampling stations were sampled during the latter part of September.

TABLE II

RESULTS OF SEQUENTIAL SAMPLING

LARCH SAWFLY PERMANENT SAMPLE STATIONS

Station no.	Location	Infestation class 1957	Infestation class 1958
4 - 1	Edmonton	Severe	Severe
4 - 2	Gainford	Moderate	Moderate
4 - 3	Peers	Light	Light
4 - 4	Mercoal	Light	Light
4 - 5	Obed	Light	Light
4 - 6	Entrance	Light	Light
4 - 7	Whitecourt	Moderate	Severe
4 - 8	Iosegun Lake	Light	Light
4 - 9	Barrhead	Moderate	Severe

Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

The outbreak of this insect in the eastern part of the District continued in 1958. Defoliation was confined to spruce shelterbelts and ornamental trees in the agriculture areas lying east of a line running from Barrhead to Drayton Valley. The heaviest concentration of these insects was in the northeastern portion of this section.

In the Spruce Grove, Stony Plain and Drayton Valley districts there was a very noticeable decrease in the occurrence of these sawflies. In 1957 shelterbelts in these areas suffered heavy defoliation but this year

only a few trees in widely scattered locations were attacked. It is believed the increased spraying operations and high populations of Hymenopterous parasites in 1957 were responsible for this decrease. Throughout the remaining parts of the infested area there was little change from the previous year. Spruce shelterbelts are scarce, but where they were found, yellow-headed spruce sawfly was also found. Defoliation ranged from light to very heavy.

Long-horned borers, Cerambycidae.

A severe outbreak of these wood borers was recorded south of MacKay (Sections 14,15 and 22, twp. 52, rge. 11, W 5th mer.). Approximately 1000 acres of pole-sized pine and spruce which had been fire killed some 5 months prior to the examination were affected. In this short period of time (June to November) these larvae had caused sufficient damage by boring and tunnelling in the main trunk of the trees, to render this timber unsuitable for any purpose other than for posts or fire wood. It was estimated that 80 to 90 percent of the trees in the stand were affected. There was no evidence that green, healthy trees adjacent to this outbreak had been attacked.

Needle miner, Recurvaria canusella Free.

Larvae of this needle miner were found in many areas of the District in 1958. Although black spruce was the preferred host, they also fed on lodgepole and jack pine. In areas where they were collected from pine, population levels were low and only a few larvae could be found. In the Chip Lake area and 12 miles north of Gunn, larvae were numerous on black spruce but defoliation was negligible.

TABLE III

COLLECTIONS OF RECURVARIA CANUSELLA FREE. TAKEN IN 1958

Location	Tree species	No. of larvae
20 miles N.W. of Sangudo	Black spruce	Mined needles only
15 miles N.W. of Spruce Grove	Black spruce	Numerous
12 miles N. of Gunn	Black spruce	Numerous
13 miles S. of Chip Lake	Black spruce	Numerous
Granada	Black spruce	5
Pass Creek	Lodgepole pine	12
6 miles E. of Whitecourt	Jack pine	3
5 miles S.E. of Duffield	Jack pine	4

Pine root weevil, Hylobius sp.

A considerable amount of time was spent searching for adult root weevils in lodgepole pine. The procedure used was; to locate late instar larvae or pupae, mark the tree and return later to collect the adults. This system did not prove very successful. However, by digging in the duff at the base of the trees, 9 adults were collected during the summer.

Root weevils were found 4 miles southwest of Whitecourt and 35 miles north of Marlboro. These are new distribution records. Damage to the root collar was quite heavy in both locations but there was no evidence of tree mortality.

Poplar leaf miner, Phyllocnistis populiella Chamb.

There was a noticeable increase in the abundance of this insect in 1958. At the Muskeg Ranger Station all aspen inspected had evidence of miner activity. On some of these trees up to 30 percent of the leaves were affected but damage was apparent only on close inspection. Other places where these larvae were numerous were: the Forest Biology Ranger cabin at Entrance, near Brule, and along the Coal Branch Road at Weald, McLeod River, and Robb.

Forest tent caterpillar, Malacosoma disstria Hbn.

Only 2 larvae were taken in samples during the summer; one at Chip Lake and the other 9 miles north of Cherhill.

Pitch nodule maker, Petrova sp.

Lodgepole pine regeneration in a burned over area 5 miles north of Robb was infested by these nodule makers. Damage consisted mainly of a few dead branches, otherwise there appeared to be little harmful effect to the trees. It was estimated that in this stand, covering approximately 300 acres, 50 per cent of the trees were attacked.

Green rose chafer, Dichelonyx backi Kby.

Rose and willow were attacked by this chafer at 2 locations. The larger of these areas extended north along the Athabasca River for a distance of approximately 3 miles from the Forest Biology Ranger cabin at Entrance and defoliation was moderate. The other area was at Erith, where a small patch about 30 acres in size, was heavily defoliated.

Spiney elm caterpillar, Nymphalis antiopa L.

A small light infestation of this insect was present on willow near the Forest Biology Ranger cabin at Entrance. The area affected was a narrow strip approximately one-half mile in length, along the west side of the Athabasca River. Many Dipterous parasites were found attached to the branches near these larvae.

Bark beetles, Pityophthorus sp.

These beetles were found in many dead or dying trees in a stand of regeneration lodgepole pine. The affected area, approximately 200 acres in size, was located 5 miles north of Robb. All trees affected by bark beetles had been weakened by Armillaria mellea (Vahl ex Fr.) Quil. These beetles were not found in healthy trees.

TABLE IV

OTHER NOTEWORTHY INSECTS

(which occurred in the Brazeau-Athabasca District in 1958)

Insect species	No. of collections	Host	Remarks
A looper, Eupithecia filmata Pears.	10	W. spruce	Well distributed throughout District.
A looper, Eupithecia luteata Pack.	8	W. spruce Balsam fir	Well distributed throughout District.
Black-headed budworm, Acleris variana (Fern.)	4	W. spruce	Very scarce, defoliation negligible.
Green-headed spruce sawfly, Pikonema dimmockii (Cress.)	12	W. spruce	Well distributed throughout District, very light defoliation.

Other noteworthy insects.....continued

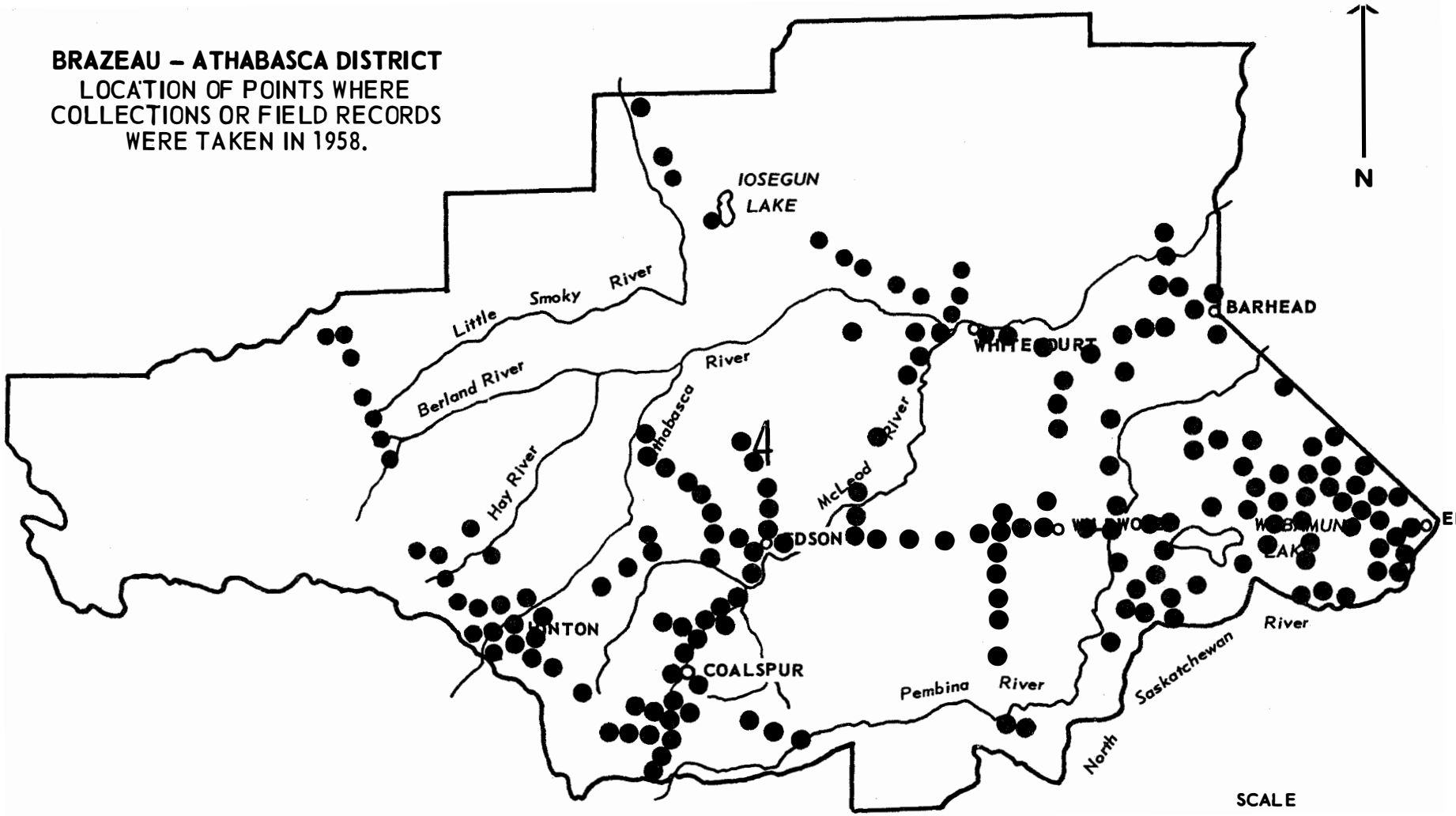
Insect species	No. of collections	Host	Remarks
Gall aphids, *Adelges lariciatus* (Patch)	8	W. spruce B. spruce	Found in widely scattered patches, defoliation negligible.
A looper, *Nyctobia limitaria* Wlk.	5	W. spruce	Very scarce, defoliation negligible.
A wireworm, *Ctenicera triundulata* Rand	4	W. spruce L.P. pine	Very scarce, defoliation negligible.
A sawfly, *Neodiprion* sp.	9	W. spruce L.P. pine	Common on spruce and pine, defoliation very light.
Aphids, *Cinara* spp.	5	E. larch W. spruce L.P. pine	Found in widely scattered areas, damage very light.
Green spruce looper, *Semiothesia granitata* Gn.	11	W. spruce Balsam fir	Well distributed throughout District, defoliation very light.
Transverse lady beetle *Coccinella transversoguttata* Fald.	10	W. spruce	Found in many areas, defoliation negligible.
Green larch looper, *Semiothesa sexmaculata* Pack.	7	E. larch	Found in nearly all areas where larch grows. Damage light.
A looper, *Itame loricaria* Evers.	9	Willow Aspen	Well distributed throughout aspen stands, damage very light.

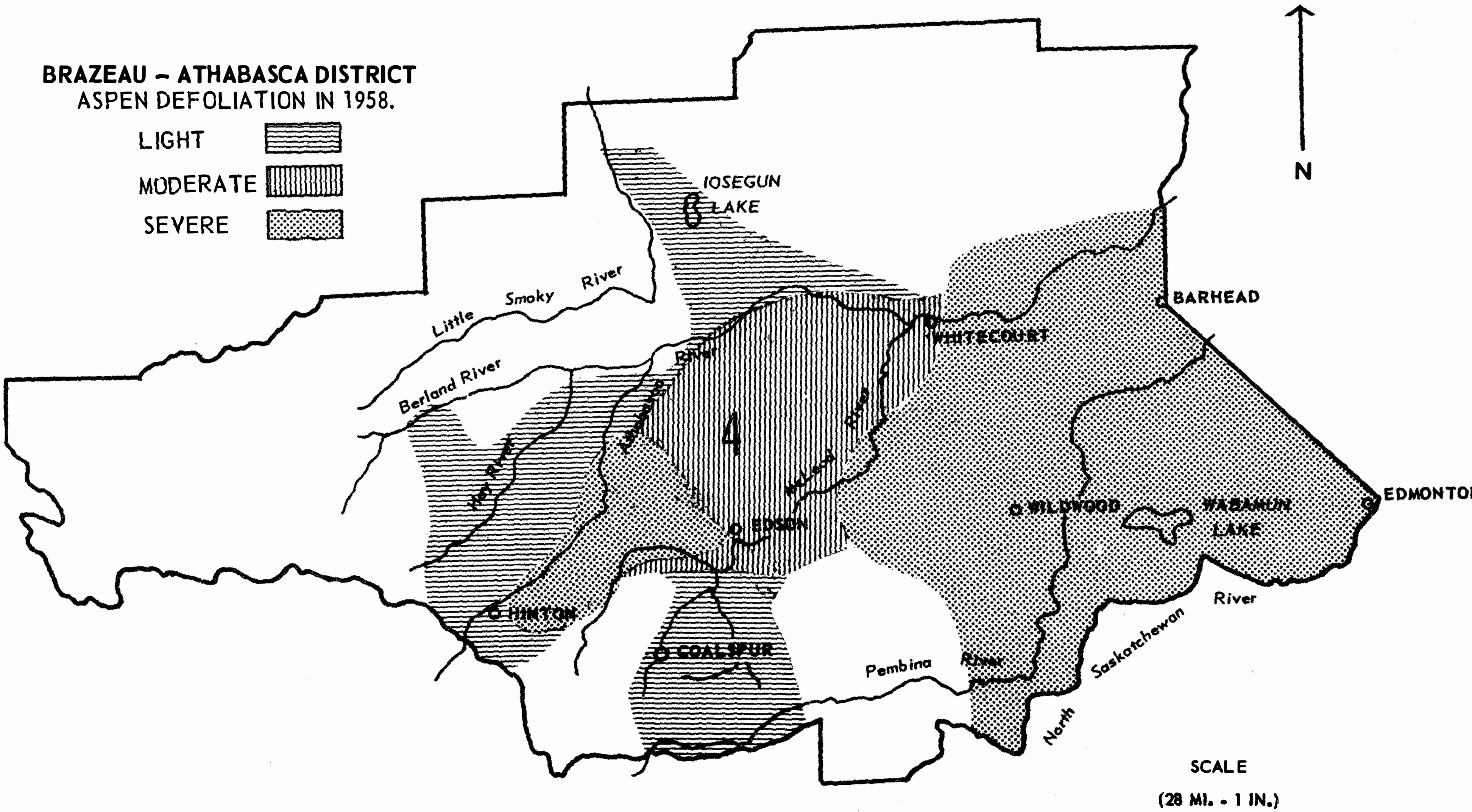
DISEASE CONDITIONS

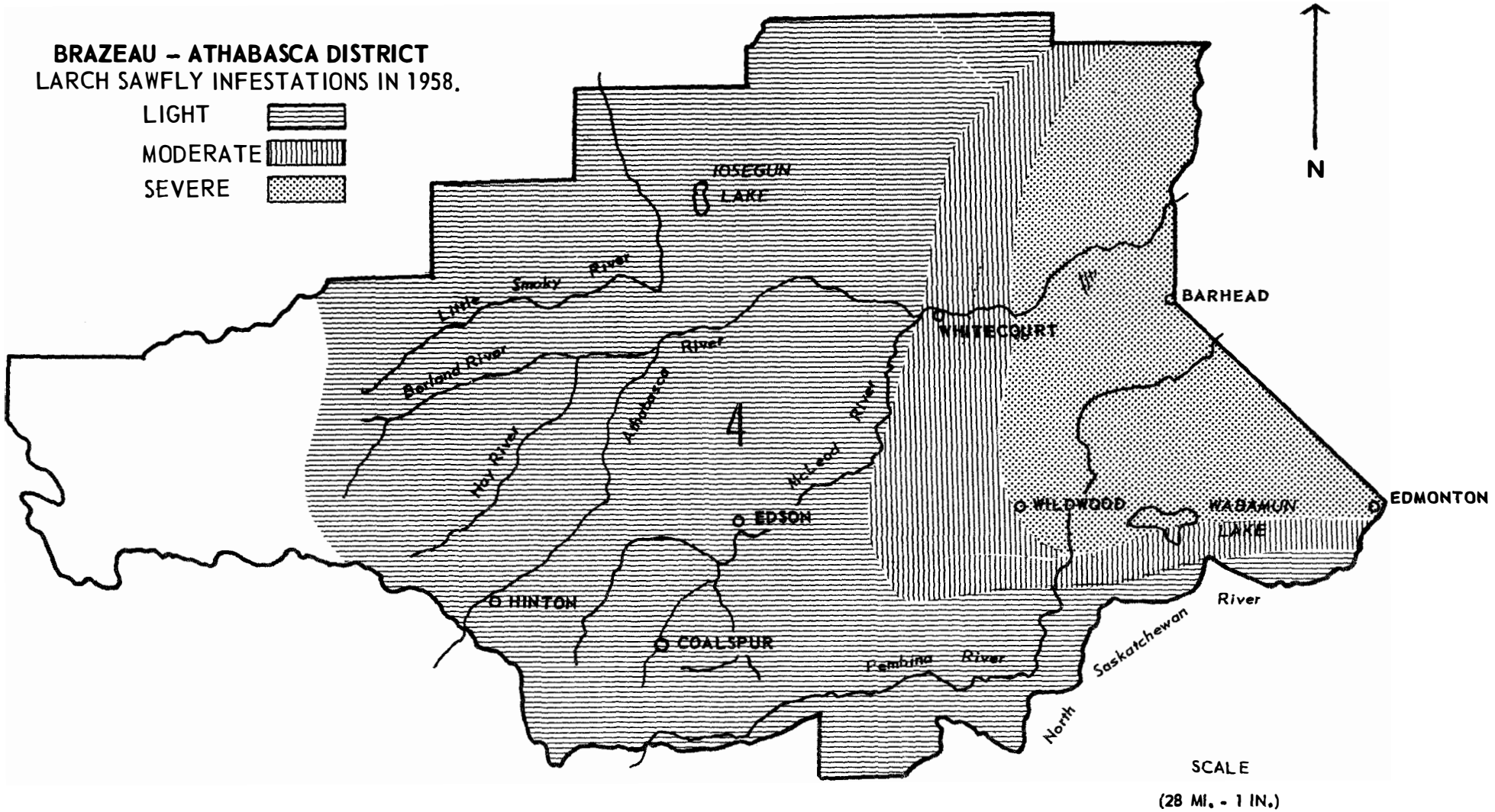
The yearly re-examination of forest disease outbreaks in the District, including Armillaria mellea (Vahl ex Fr.) Quil on pine at Robb and Arceuthobium americanum (Nutt. ex Englem.) on pine at Whitecourt, revealed little change in boundaries. A trip was made into the area approximately 12 miles west of Mercoal to determine the cause of needles on lodgepole pine turning brown and breaking off. Samples were brought back to the Pathology Laboratory at Calgary but to date there is no definite information on what is causing this injury. This was the only new outbreak of a tree disease recorded in the District in 1958. Forest Biology Assistant, G. Stevenson of the Forest Pathology Laboratory, Calgary, assisted in the re-examination of the disease outbreaks and the re-examination of the lodgepole pine west of Mercoal.

Hail damage was recorded at 2 locations in 1958. At Mercoal, damage to lodgepole pine in a strip 2 miles wide and approximately 20 miles in length occurred. In most of this area the west sides of the trees in exposed places were practically stripped of needles. The entire area had a distinct discoloration throughout the remainder of the summer. A report of damage to trees in an area 10 miles northwest of Sangudo was investigated and it was found that a severe hail storm had heavily damaged the aspen in a strip one mile wide. It is not known how far eastward this damage extended.

BRAZEAU – ATHABASCA DISTRICT
LOCATION OF POINTS WHERE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1958.



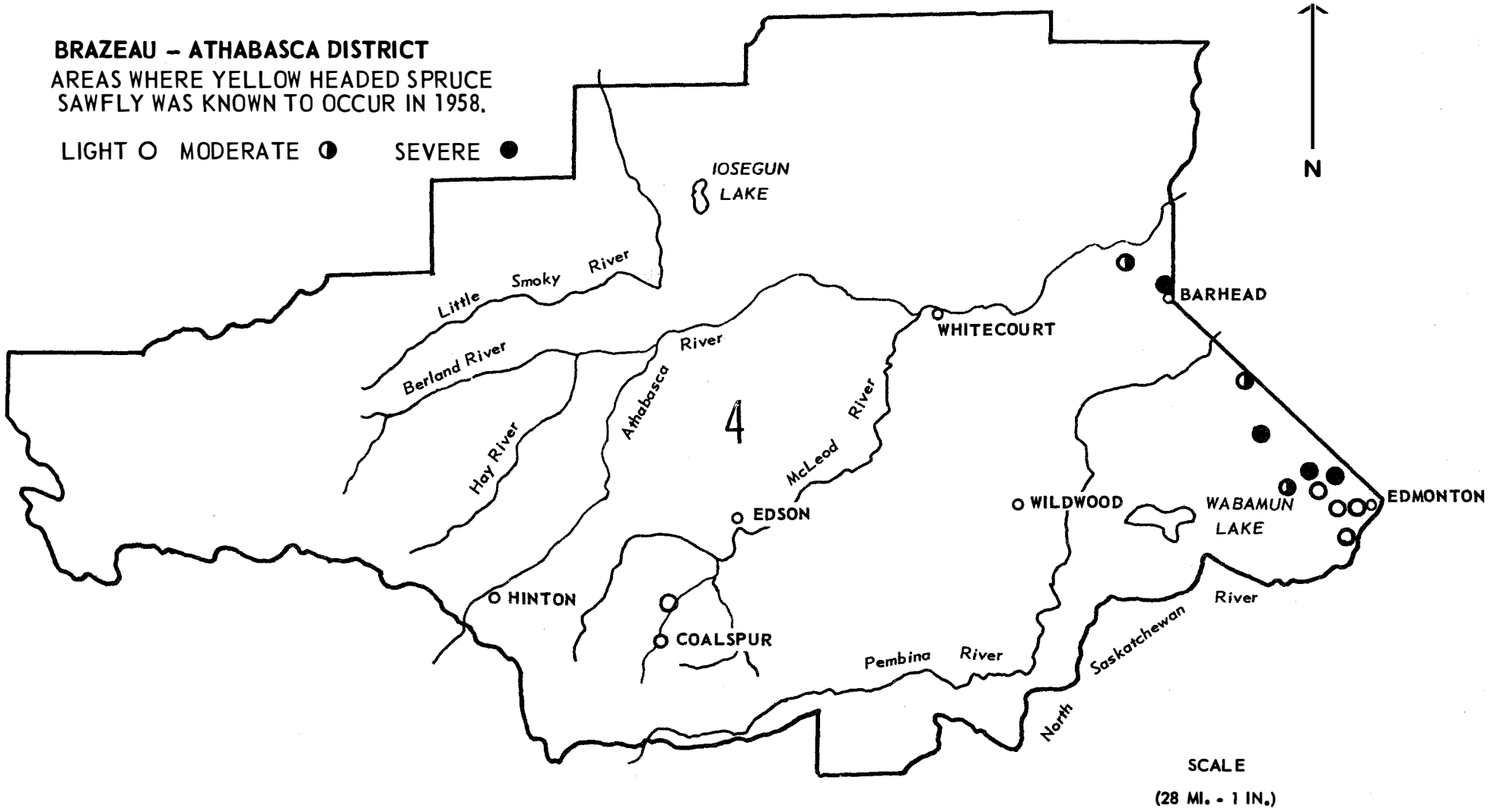

BRAZEAU – ATHABASCA DISTRICT
ASPEN DEFOLIATION IN 1958.
LIGHT
MODERATE
SEVERE
N
IOSEGUN
LAKE
Little Smoky River
Berland River
River
4
McLeod River
WHITECOURT
BARHEAD
EDMONTON
WILDWOOD
WABAMUN
LAKE
EDSON
HINTON
COALSPUR
Pembina River
North Saskatchewan River
SCALE
(28 MI. - 1 IN.)


BRAZEAU – ATHABASCA DISTRICT
LARCH SAWFLY INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE
N
IOSEGUN LAKE
Little Smoky River
Borland River
Athabasca River
Hay River
McLeod River
4
WHITECOURT
BARHEAD
WILDWOOD
WABAMUN LAKE
EDMONTON
EDSON
HINTON
COALSPUR
Pembina River
North Saskatchewan River
SCALE
(28 MI. - 1 IN.)

BRAZEAU – ATHABASCA DISTRICT

AREAS WHERE YELLOW HEADED SPRUCE SAWFLY WAS KNOWN TO OCCUR IN 1958.

LIGHT ○ MODERATE ◑ SEVERE ●



FOREST BIOLOGY RANGER REPORT

LAC LA BICHE DISTRICT

ALBERTA 1958

by

R. R. Stanley

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH, 1959

INTRODUCTION

J. H. McNeil, the Forest Biology Ranger assigned to the Lac La Biche District, resigned in November. As a result, the report for this District was prepared by R. R. Stanley from material submitted by Mr. McNeil prior to his resignation.

The field season in District 5 commenced on May 22 and continued until September 14. During this time, 214 insect samples were taken to determine the distribution and status of forest insects in the District. Prior to the field season, 5 weeks were spent in the Elk Point area conducting a special study in connection with the forest tent caterpillar outbreak. Late in the fall, larch sawfly sequential sampling stations were sampled at 6 locations.

Little change in insect conditions was noted. The larch sawfly, forest tent caterpillar and yellow-headed spruce sawfly outbreaks remained much the same as in the previous year. Defoliation of aspen was widespread and slightly heavier than in 1957.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
Spruce	23	Aspen	114
Pine	5	Poplar	3
Larch	30	Alder	1
	58	Elm	1
		Willow	35
		Chokecherry	1
			155
Collections from miscellaneous hosts			1
		GRAND TOTAL	214

Aspen defoliators, Phytodecta americana Schffr., Operophtera bruceata (Hulst), Compsolechia niveopulvella Cham., and Pseudexentera improbana oregonana Wlshm.

Defoliation caused by these 4 species was recorded throughout the southern half of District 5 during May and early June. South of the Saskatchewan River defoliation was heavy, with complete defoliation occurring in fairly large patches in the Camrose and Viking areas. North of the Saskatchewan River to a line running from Barrhead to Cold Lake defoliation was medium. North of this line defoliation was light, gradually disappearing in the northern parts of the District. Throughout this area the combined feeding of these 4 species made it impossible to assess the damage caused by any one species individually.

Larch sawfly, Pristiphora erichsonii (Htg.).

There was little change in the outbreak of this insect in 1958 other than a slight decline in population levels in the area from Cold Lake north to within 50 miles of Ft. McMurray. In this area defoliation was moderate with a few scattered patches considered heavy. Throughout the remainder of the District heavy defoliation was recorded in nearly all larch stands.

TABLE II

RESULTS OF SEQUENTIAL SAMPLING
LARCH SAWFLY PERMENENT SAMPLE STATIONS

Station No.	Location	Infestation class 1957	Infestation class 1958
5 - 01	Calling Lake	Light	Moderate
5 - 02	Perryvale	Light	Light
5 - 03	Millet	Severe	Moderate
5 - 04	Grande Centre	Light	Moderate
5 - 05	Lac La Biche	Moderate	Moderate
5 - 06	Spedden	Moderate	Moderate

Forest tent caterpillar, Malacosoma disstria Hbn.

The outbreak of this insect in the southern and central parts of District 5 remained unchanged in 1958. The only area where heavy defoliation was recorded was at Elk Point. Here, aspen and nearly all deciduous understory in an area one mile wide and 4 miles long was completely stripped of foliage. Larvae of this species were also collected in the vicinity of Elk Island National Park, Vegreville, Vermilion and Lac La Biche. Throughout this area defoliation was confined to small localized areas.

A special project was carried out in April in the Elk Point area to determine the effect of weather on these larvae at the time of hatching.

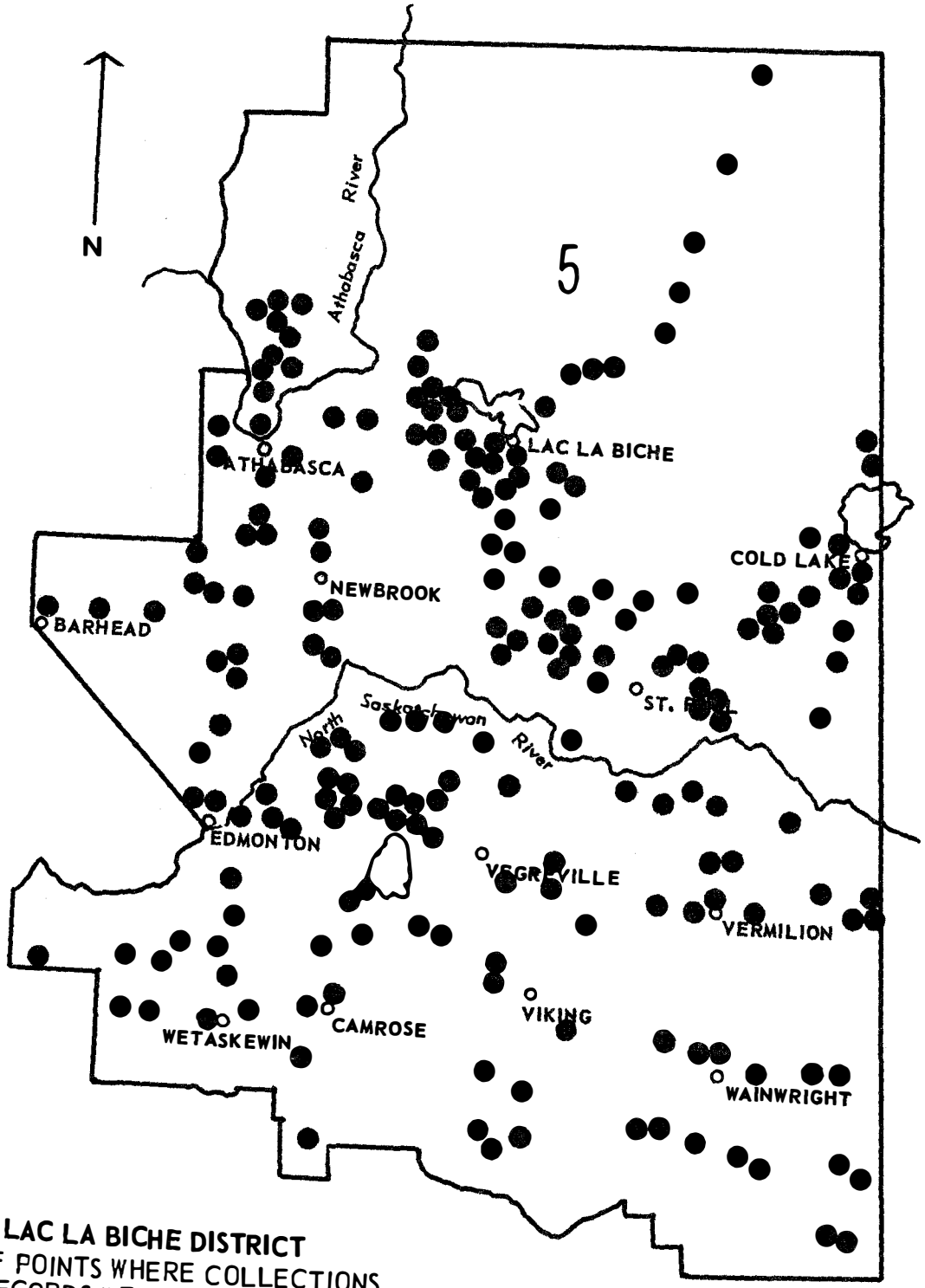
Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

The outbreak of this insect on ornamental and shelterbelt spruce in the agricultural section was less severe than in 1957. However, heavy damage was noted in widely scattered locations; at Gibbons, Edmonton and vicinity, Leduc, Morinville, Camrose, St. Paul and Tofield. In the many other places where this sawfly was found, damage was very light. Spraying operations in many areas is believed to have resulted in the decreased number of shelterbelts affected by this sawfly.

OTHER NOTEWORTHY INSECTS

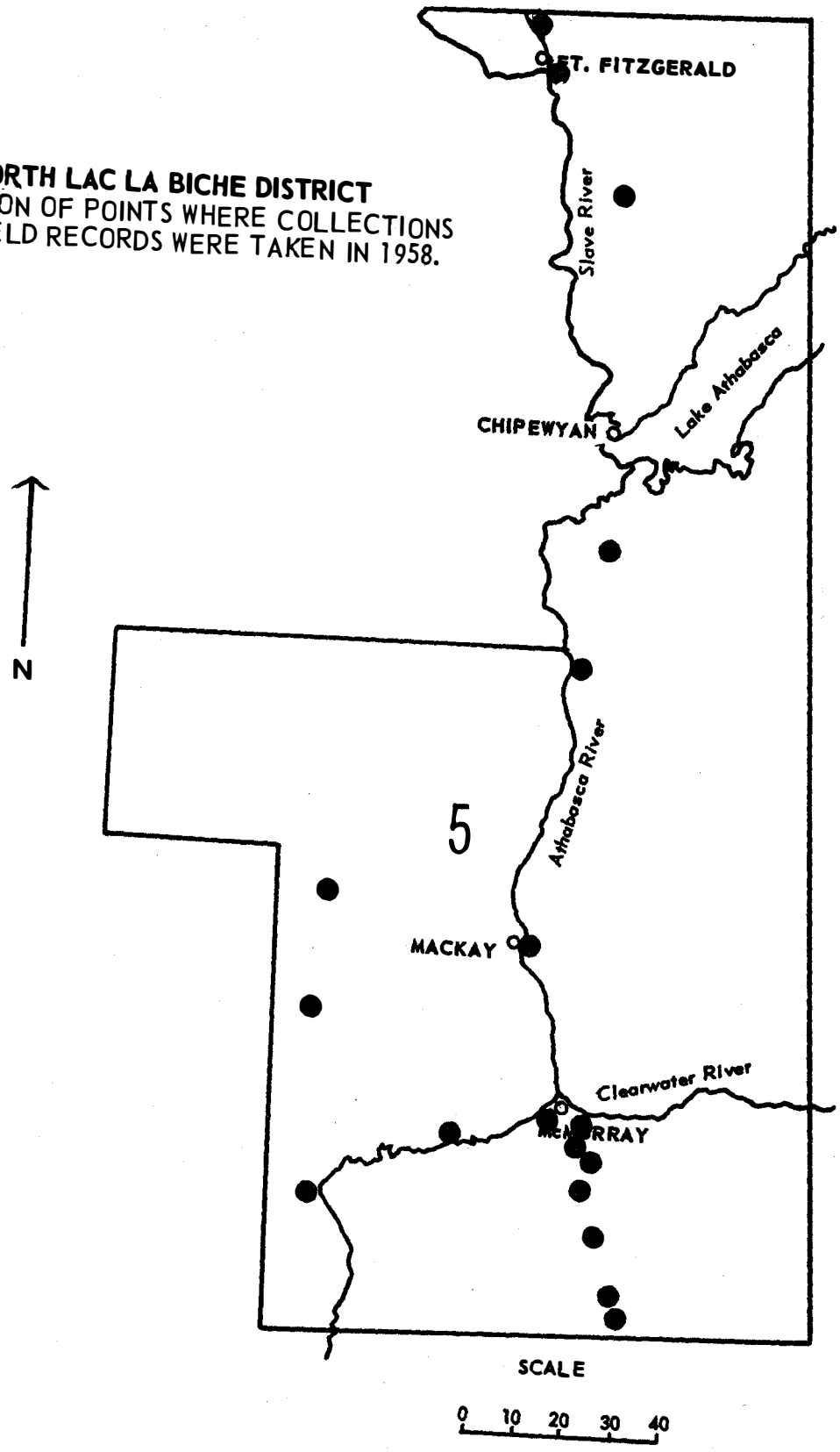
(which occurred in the Lac La Biche District, 1958)

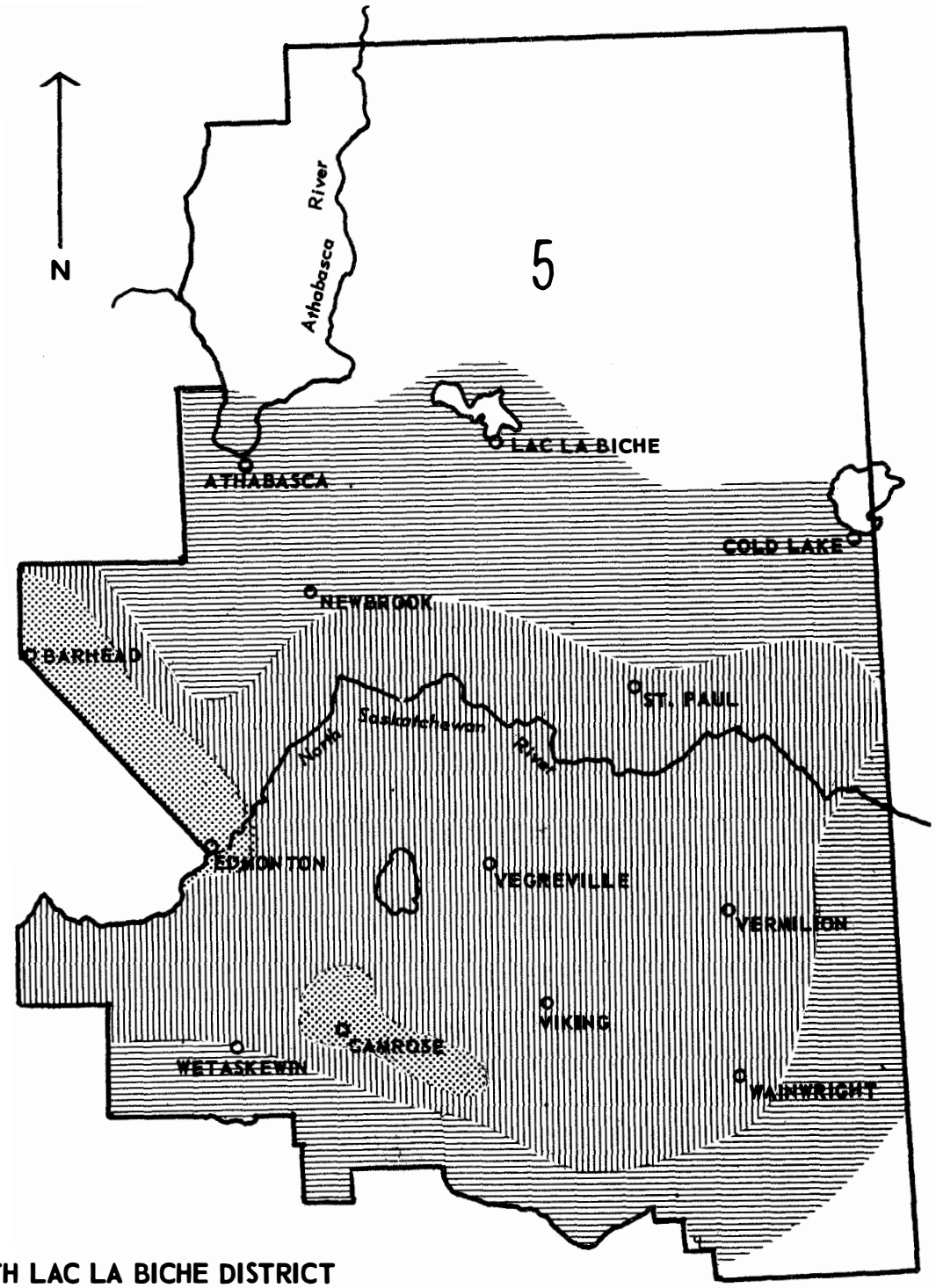
Insect species	No. of coll.	Host	Remarks
Transverse lady beetle, Coccinella transversoguttata Fald.	5	W. spruce	Very light defoliation.
A wireworm, Ctenicera triundulata Rand.	8	W. spruce L.P. pine	Quite common, damage negligible.
Green rose chafer, Dichelonyx backi Kby.	6	Willow	Very light defoliation in scattered areas.
A pitch nodule maker, Petrova sp.	2	J. pine	Damage negligible.
A weevil, Pissodes sp.	3	W. spruce	Light damage in Lamont area.
A root weevil, Hylobius sp.	1	Larch	Damage negligible.



SOUTH LAC LA BICHE DISTRICT
LOCATION OF POINTS WHERE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1958.

NORTH LAC LA BICHE DISTRICT
LOCATION OF POINTS WHERE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1958.

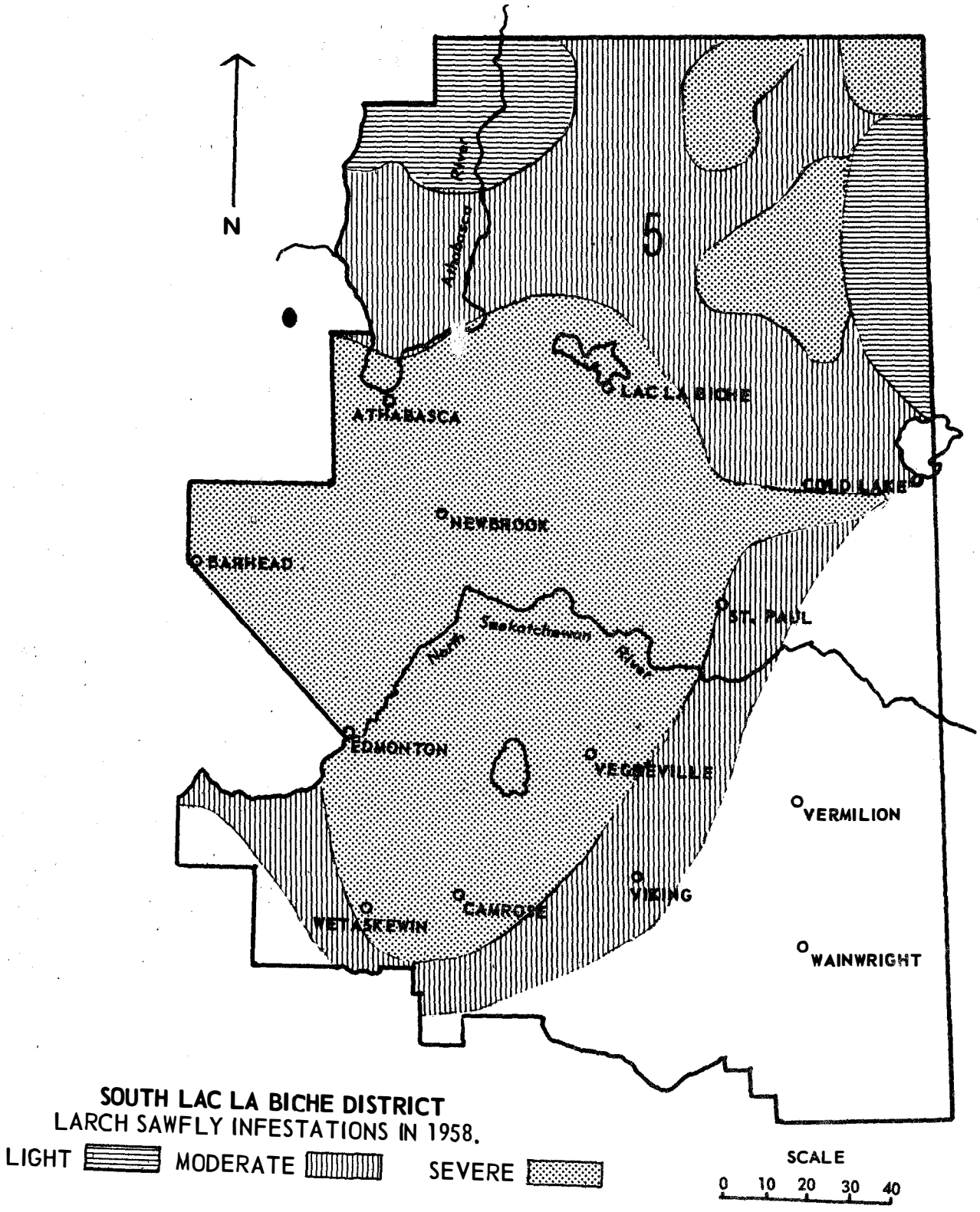




SOUTH LAC LA BICHE DISTRICT
ASPEN DEFOLIATION IN 1958.

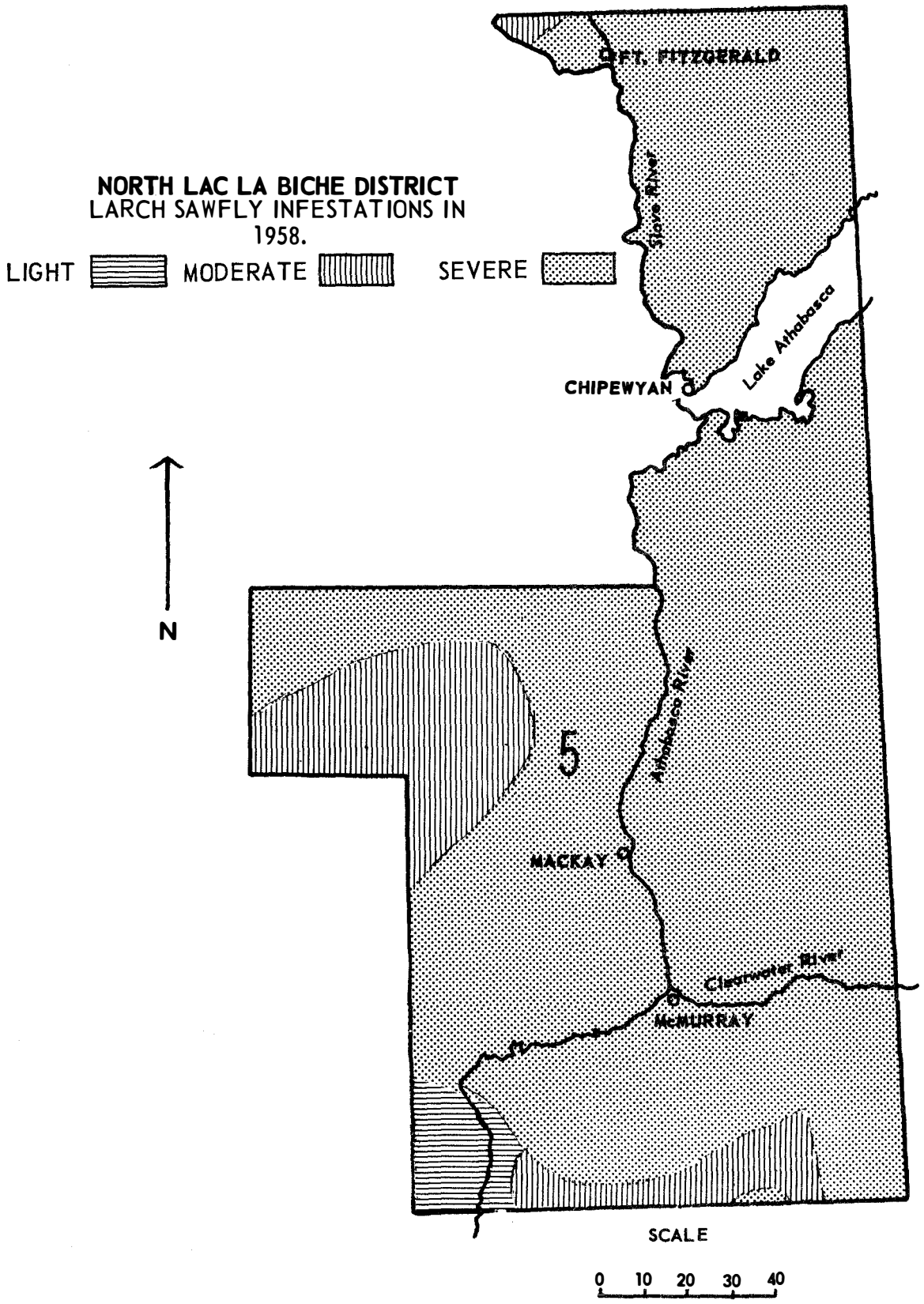
LIGHT MODERATE SEVERE

SCALE
0 10 20 30 40



SOUTH LAC LA BICHE DISTRICT
LARCH SAWFLY INFESTATIONS IN 1958.

LIGHT MODERATE SEVERE


NORTH LAC LA BICHE DISTRICT
LARCH SAWFLY INFESTATIONS IN
1958.
LIGHT
MODERATE
SEVERE
FT. FITZGERALD
Slave River
Lake Athabasca
CHIPEWYAN
N
5
Athabasca River
MACKAY
Clearwater River
McMURRAY
SCALE
0 10 20 30 40

FOREST BIOLOGY RANGER REPORT

SLAVE LAKE - GRANDE PRAIRIE DISTRICT

ALBERTA 1958

by

F.J. EMOND

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

INTRODUCTION

The following report covers the forest insect and tree disease survey conducted in the Slave Lake-Grande Prairie District. The field survey commenced on May 27 and was terminated September 12. During this period 12,800 miles were travelled by motor vehicle. Three hundred and eight insect samples and 2 tree disease samples were submitted; co-operators submitted an additional 3 insect samples. A fairly dry spring and summer resulted in a better coverage of the district than in the previous year. A 24 foot house trailer, located at Grande Prairie, was used for field headquarters.

Approximately 3 weeks in May were spent assisting V. Patterson at Peace River in the construction of a garage and the completion of the new cabin. The author also assisted N. Wilkinson for a week during October on a tent caterpillar egg sampling survey in the Elk Point area of District 5. Other projects carried out, with the assistance of G. Bigalow, were the examination of Federal Forestry seed plots, the measurement of seasonal growth on the spruce phenology plots, sequential sampling at the larch sampling stations and a bud count on aspen.

Distribution and population levels of the different species of insects remained much the same as in the previous season with the exception of 3 broad-leaf defoliators: the Bruce spanworm, the forest tent caterpillar, and a leaf-tier, Pseudexentera improbana oregonana Wlshm. Moderate to severe defoliation was caused by these insects throughout the western half of the District.

No disease outbreaks were reported from District 6 in 1958.

The co-operation of the Alberta Forest Service, the District Agriculture Service, Dominion Experimental Farms personnel and private co-operators was greatly appreciated.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
Spruce	83	Trembling aspen	71
Larch	30	Willow	45
Pine	33	Poplar	20
B. Fir	5	Birch	13
	151	Alder	6
			155
Collections from miscellaneous hosts			7
		GRAND TOTAL	313

INSECT CONDITIONS

Aspen defoliators, Tortricidae, Gelechiidae, Olethreutidae and Geometridae.

Two of the above mentioned insects were chiefly responsible for most of the aspen defoliation throughout the District. One was a Geometrid, Operopthera bruceata (Hulst), more commonly known as the Bruce spanworm; the other, an Olethreutid, Pseudexentera improbana oregonana Wlshm. was a leaf-tier. These 2 species caused severe defoliation around Woking townsite and extended southward approximately 15 miles along both sides of Highway 2. Defoliation was heavy in this particular section during the month of June, but because the aspen produced new foliage after the attack, it was hardly noticeable by late July.

Considerable defoliation was evident in several small areas of 4 to 10 acres both south and west of Grande Prairie in the Wembley and Hythe districts and north of Valleyview along Highway 34 extending to a point just north of the Little Smoky Bridge 12 miles south of Triangle.

The large aspen tortrix, Choristeneura conflictana (Wlk.), and a Gelechiid Compsolechia niveopulvella Cham., were also present in the above areas, but in small numbers; little defoliation is accredited to these species.

Larch sawfly, Pristiphora erichsonii (Htg.).

Defoliation of tamarack by the larch sawfly was evident throughout the district ranging from light to moderate with the eastern portion of the District sustaining the heaviest attack. Moderate defoliation occurred from Canyon Creek eastward to Smith and continued south along Highway 44 to the town of Jarvie. All tamarack stands in this area were heavily defoliated, with damage occurring mainly to the mid and upper crowns. Elsewhere in the District population levels were low and very little damage was noted.

An aerial survey to determine the amount of damage caused by the larch sawfly in northeastern Alberta was made by R. Stanley and C.E. Brown. Their observations revealed that this sawfly is well established throughout the northern part of District 6. The heaviest defoliation occurred in the Wabiscaw Lakes and River areas with a definite lighter trend of damage towards the west. (For further information on this aerial survey refer to Appendix A.)

TABLE II

RESULTS OF SEQUENTIAL SAMPLING

LARCH SAWFLY PERMANENT SAMPLE STATIONS

Station no.	Location	Infestation class 1957	Infestation class 1958
6 - 1	Grande Prairie	Light	Light
6 - 2	Flatbush	Moderate	Moderate
6 - 3	Slave Lake	Light	Moderate
6 - 4	Grouard	Light	Light

Spruce budworm, Choristoneura fumiferana (Clem.).

Defoliation and discoloration of white spruce was observed during an aerial survey in northern Alberta and was attributed to the spruce budworm. This survey was made along the west side of the Wabiscaw River from the mouth of the Muddy River to the mouth of the Loon River and up the Loon River for approximately 12 to 15 miles. This damage was also noted on the south side of the Muddy River towards Talbot Lake, but no boundary could be determined due to unfavourable flying conditions.

(For a more detailed report on spruce budworm in the above area see Appendix A).

Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

The yellow-headed spruce sawfly was again present on all spruce shelterbelts and ornamental trees inspected. In all areas where spraying was employed for insect control, damage was very light, but in areas where no control was used, defoliation was moderate to heavy. The heaviest defoliation occurred in an area immediately north of Valleyview, where one spruce shelterbelt was heavily damaged.

Several collections were taken from native spruce in the Saddle Hills, Heart Valley and Sturgeon Lake areas but populations were very low and damage was negligible.

Spruce spider mite, Oligonychus ununguis (Jac.).

Damage caused by the spruce spider mite was evident in the majority of spruce shelterbelts inspected. In Widewater townsite, damage was heavy enough to cause concern and spraying was recommended. Elsewhere throughout the District populations of this insect were low and no serious damage occurred.

The green rose chafer, Dichelonyx backi Kby.

Adults of this leaf-eating beetle were collected mainly on tamarack and saskatoon throughout the western half of District 6 during the 1958 field season. Considerable damage by this beetle was reported from the Beaverlodge area, and spraying was necessary to protect the saskatoon fruit crop at the Dominion Experimental Farm located there. Throughout the remainder of the District population levels were low, and no extensive damage was noted.

Nodule makers on jack pine, Petrova sp.

Damage resulting from this nodule maker was severe in regeneration pine in the areas south of Grande Prairie, and 2 miles south of Smith. Weakening of the main stem near the top affected up to 35 per cent of the young trees. Larvae were present in other pine stands in the District, but damage was light and in no way comparable to the aforementioned areas.

Forest tent caterpillar, Malacosoma disstria Hbn.

Larval populations of this species showed a definite increase over the previous year. Two small outbreaks were reported: one 6 miles east of Crooked Creek where defoliation was fairly heavy in an area of 5 acres, the other covering approximately 3 acres immediately west of the Smoky River Bridge on Highway 34. Defoliation in these areas is expected to be heavy in 1959.

Small numbers of larvae and cocoons were also collected near Grande Prairie, Woking, Driftpile, Slave Lake, Flatbush, and Goodwin. No serious defoliation is expected in these areas in 1959.

American aspen beetle, Phytodecta americana Schffr.

Larvae of this leaf eating beetle were collected at only 3 locations during the 1958 field season; Flatbush, Chisholm and 44 miles north of Slave Lake on the Wabiscaw Trail. Little defoliation is attributed to this species.

A pine root weevil, Hylobius sp.

Considerable time was spent in trying to determine the distribution and severity of the damage caused by this weevil in pine and spruce stands throughout the District. Girdling of the root collar of young trees was especially noticeable in the lodgepole pine stands south of Grande Prairie. No mortality of large trees was observed although galleries were very numerous.

Results of these observations are contained in the following table.

TABLE III

SUMMARY OF HYLOBIUS SAMPLING

Location	Tree sp.	No. of trees	No. of trees damaged	No. of trees not damaged
8 miles south of Grande Prairie	Jack pine	8	0	8
41 miles south of Grande Prairie	L.P. pine	8	6	2
51 miles south of Grande Prairie	L.P. pine	8	8	0
56 miles south of Grande Prairie	L.P. pine	8	4	4
2 miles west of Demmitt	Jack pine	8	8	0
4.5 miles north of Fawcett	Jack pine	8	0	8
3 miles south of Smith	Jack pine	8	0	8
20 miles south of Valleyview	W. spruce	8	2	6

A leaf-eating beetle, Chrysomela semota Brown.

Larvae and adults of this species were the main cause of severe defoliation of young balsam poplar and willow along the eastern shore of Lesser Slave Lake from Slave Lake town to a point just east of the Wabiscaw Trail turnoff. Moderate defoliation to willow occurred on the banks of the Simonette River south of Sturgeon Heights and Goodwin. Population levels of this insect were low throughout the remainder of the District, and very little damage was observed.

Grey willow leaf beetle, Galerucella decora (Say).

Adults and larvae of the grey willow leaf beetle were found at the following locations: Chisholm, Grouard, Smith, Fawcett, Jarvie and Slave Lake. Defoliation by this species was light and confined mainly to the Slave Lake area.

Birch skeletonizer, Bucculatrix canadensisella Chamb.

This insect, although present on the majority of white birch inspected, showed a definite decline in populations over the previous year. Few larvae were present and damage was negligible.

TABLE IV

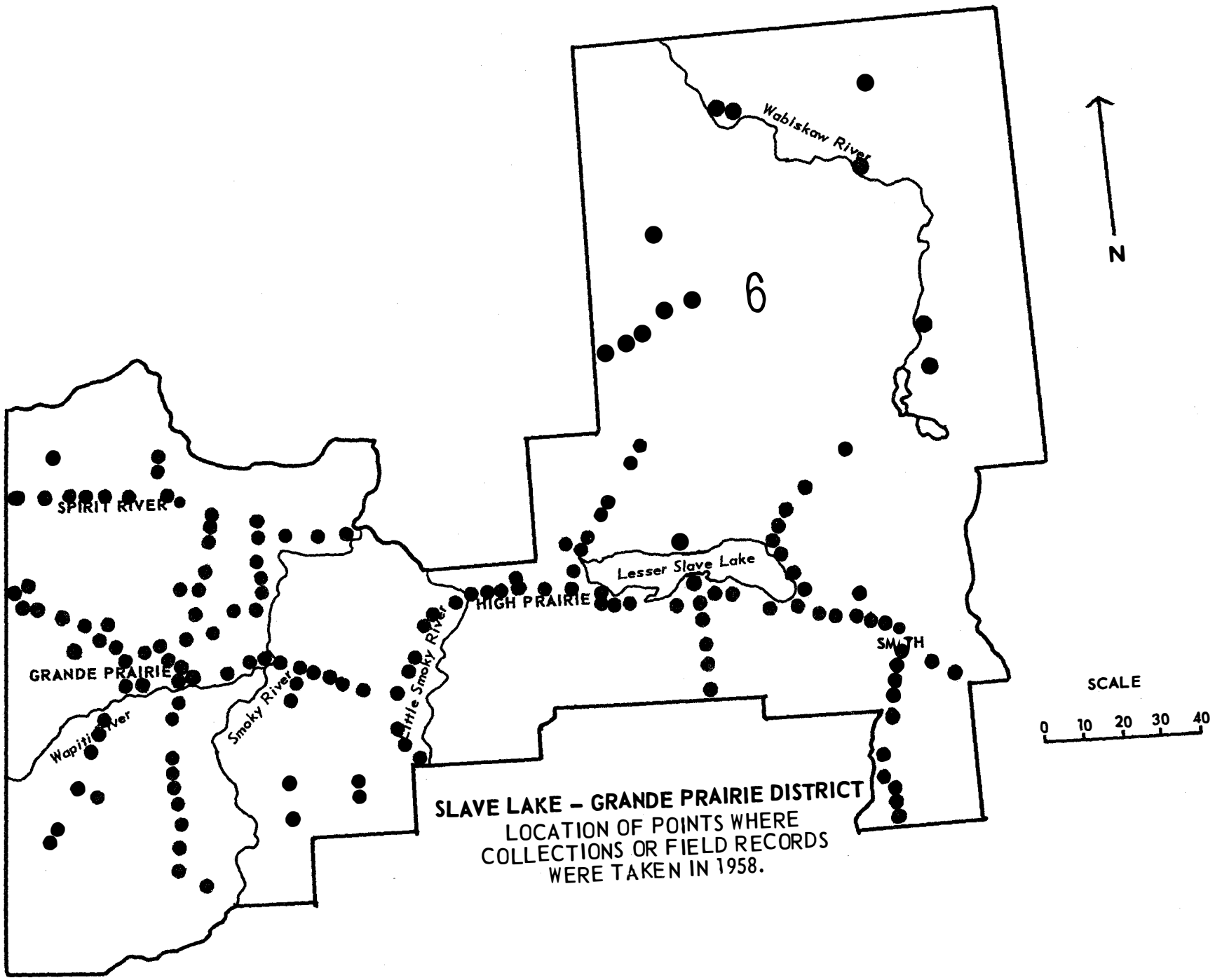
OTHER NOTEWORTHY INSECTS

(which occurred in the Slave Lake-Grande Prairie District in 1958)

Insect species	No. of coll.	Host	Remarks
A weevil, Pissodes sp.	2	W. spruce Larch	Very few in the District.
Green larch looper, Semiothisa sexmaculata Pack.	5	Larch	In most larch stands but in low numbers.

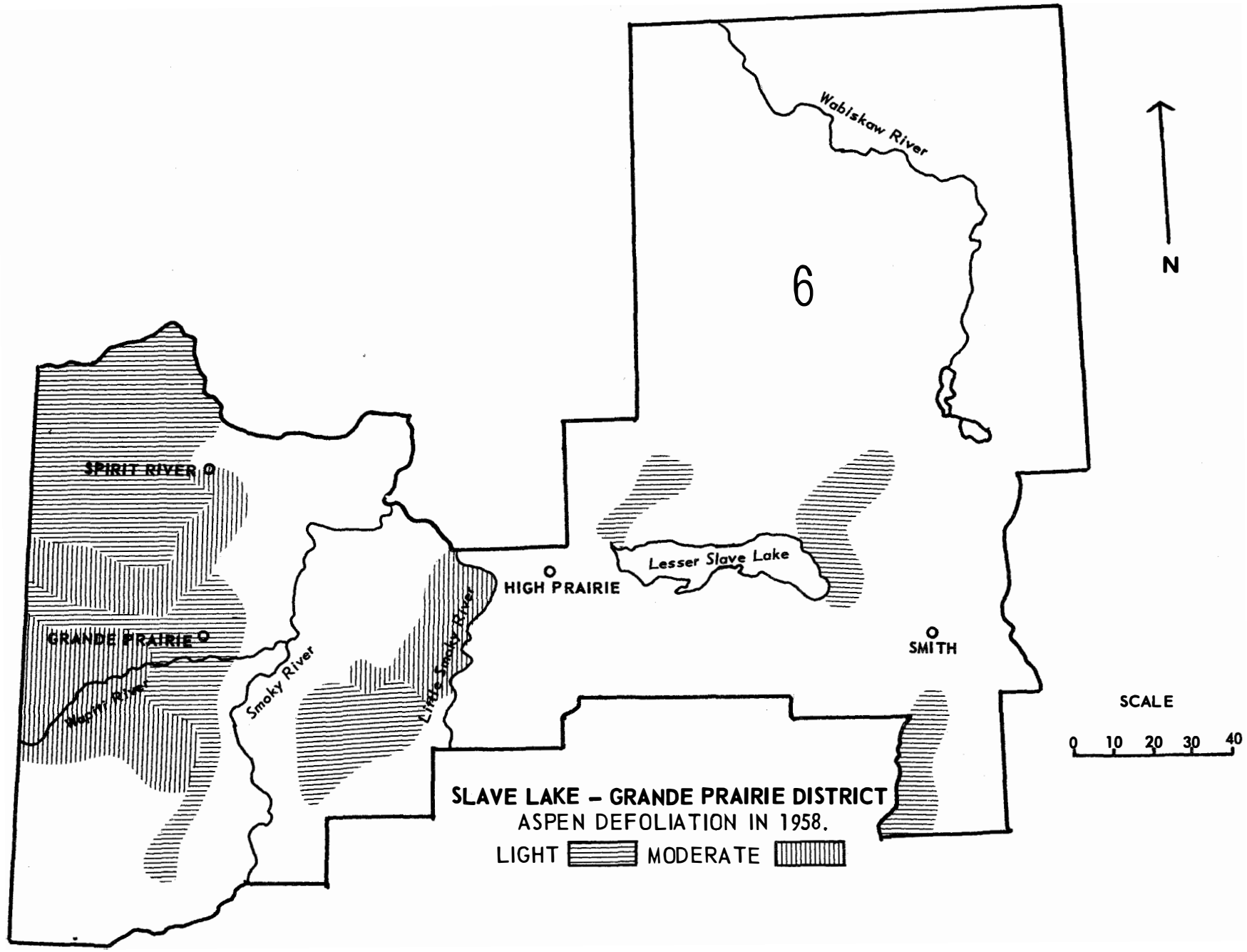
Other Noteworthy Insects.....continued

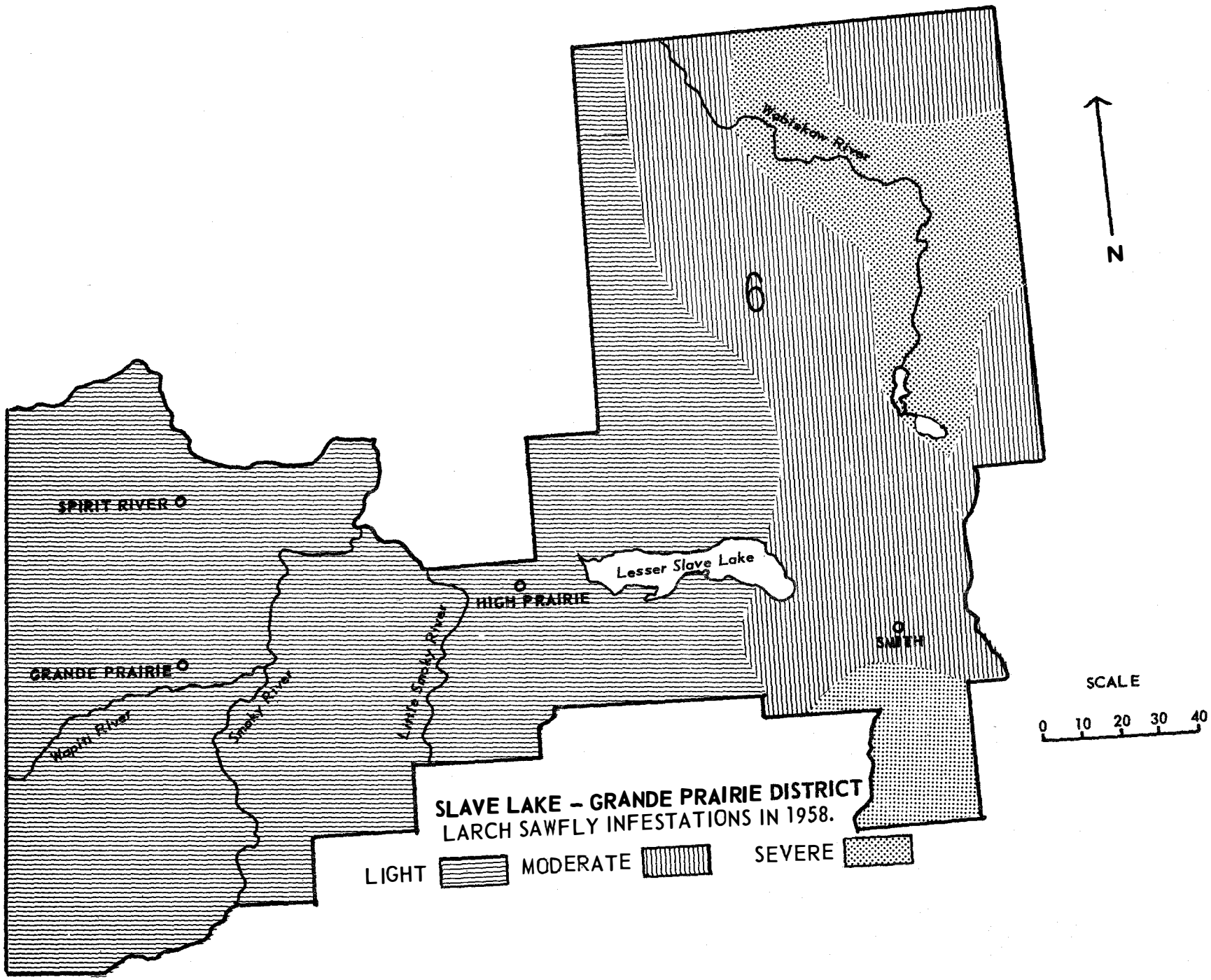
Insect species	No. of coll.	Host	Remarks
Gall aphids, *Adelges lariciatus* (Patch)	3	W. spruce	Common in most spruce stands but few collections made.
A gall mite, *Eriophyidae*	2	Aspen	Numerous in the area of Slave Lake.
A leaf beetle, *Chrysomelidae*	4	Willow B. poplar	Common in all areas but populations low.
A sawfly, *Trichiosoma* sp.	7	Willow	In most willow collections but caused little defoliation.
A sawfly, *Nematus* sp.	2	Willow	Only 2 collections.
Fringed looper, *Campaea perlata* Gn.	5	Aspen	Also found on willow and birch, very little damage.
A looper, *Itame loricaria* Evers.	10	Aspen	Found throughout the District.
A sawfly, *Anoplonyx* sp.	2	Larch	Present in most larch stands in eastern half of District.
A sawfly, *Neodiprion* sp.	4	Jack pine W. spruce	Found in various locations but in small numbers.
Green-headed spruce sawfly, *Pikonema dimmockii* (Cress.)	2	W. spruce	Occasionally found, no damage observed.
A bark beetle, *Ips* sp.	5	W. spruce	Found mostly on cut logs, few samples taken.

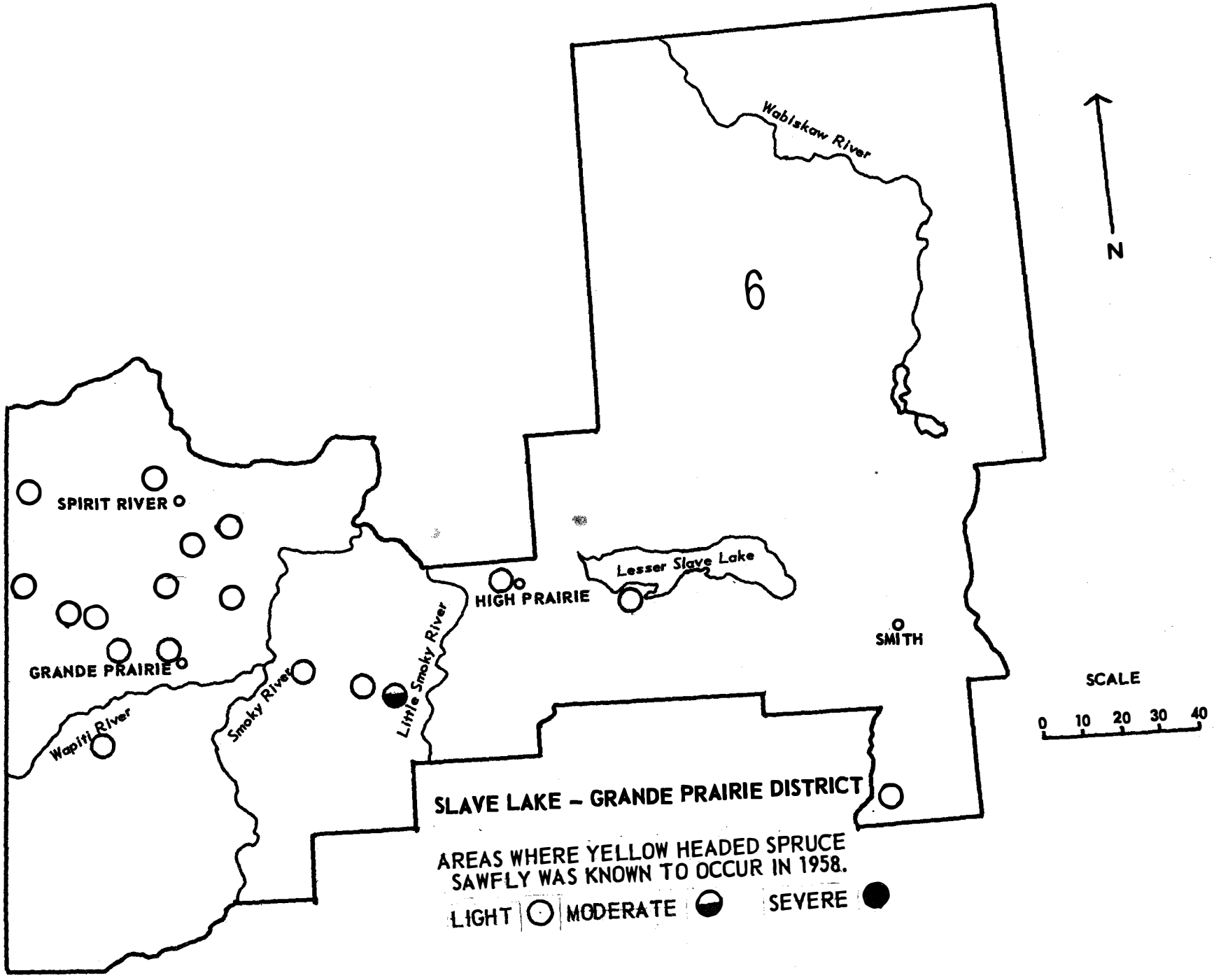


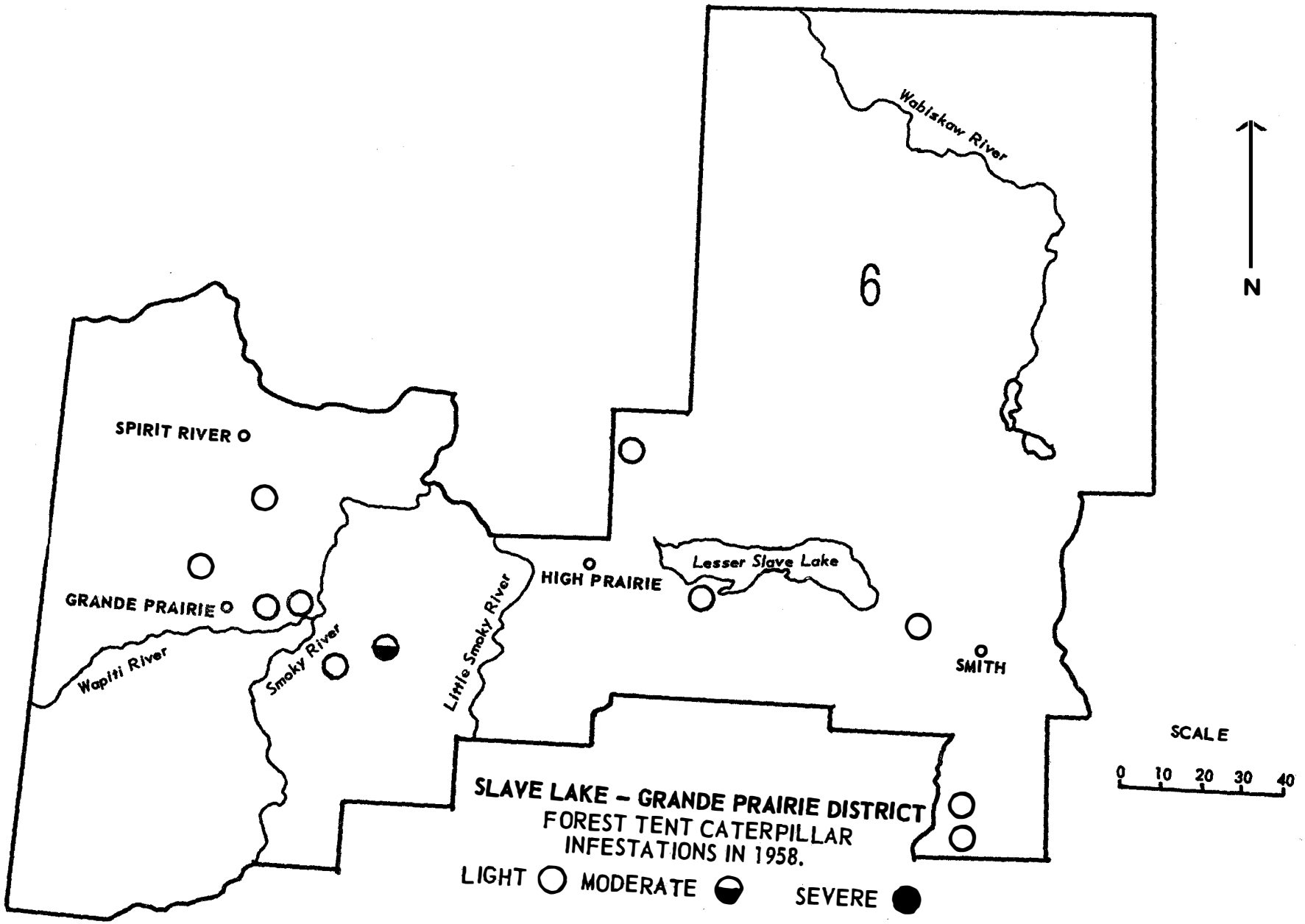
SLAVE LAKE – GRANDE PRAIRIE DISTRICT

LOCATION OF POINTS WHERE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1958.


6
Wabiskaw River
N
SPIRIT RIVER
GRANDE PRAIRIE
Wapiti River
Smoky River
Little Smoky River
HIGH PRAIRIE
Lesser Slave Lake
SMITH
SCALE
0 10 20 30 40
SLAVE LAKE – GRANDE PRAIRIE DISTRICT
ASPEN DEFOLIATION IN 1958.
LIGHT
MODERATE


6
N
Wapiti River
SPIRIT RIVER
GRANDE PRAIRIE
Wapiti River
Smoky River
Little Smoky River
HIGH PRAIRIE
Lesser Slave Lake
SMITH
SCALE
0 10 20 30 40
SLAVE LAKE – GRANDE PRAIRIE DISTRICT
LARCH SAWFLY INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE


6
Wabiskaw River
N
SPIRIT RIVER
GRANDE PRAIRIE
HIGH PRAIRIE
Lesser Slave Lake
SMITH
Wapiti River
Smoky River
Little Smoky River
SCALE
0 10 20 30 40
SLAVE LAKE – GRANDE PRAIRIE DISTRICT
AREAS WHERE YELLOW HEADED SPRUCE SAWFLY WAS KNOWN TO OCCUR IN 1958.
LIGHT
MODERATE
SEVERE


6
Wabiskaw River
N
SPIRIT RIVER
GRANDE PRAIRIE
HIGH PRAIRIE
Lesser Slave Lake
SMITH
Wapiti River
Smoky River
Little Smoky River
SCALE
0 10 20 30 40
SLAVE LAKE – GRANDE PRAIRIE DISTRICT
FOREST TENT CATERPILLAR
INFESTATIONS IN 1958.
LIGHT
MODERATE
SEVERE

FOREST BIOLOGY RANGER REPORT

PEACE RIVER - NORTH WEST TERRITORIES DISTRICT

ALBERTA 1958

by

V.B. PATTERSON & G. BIGALOW

FOREST BIOLOGY LABORATORY

CALGARY, ALBERTA.

CANADA DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

MARCH 1959

INTRODUCTION

This report covers tree insect and disease conditions in the Peace River District and the Northwest Territories District (7 & 8). General field survey work commenced May 26 and terminated September 10. Prior to the field season, 5 weeks were spent working on the new headquarters cabin at Peace River. An additional 2 weeks work was done on the cabin at the end of the field season. During this period 10,000 miles were travelled and 2 tree disease samples and 291 insect samples and reports were submitted. Three special projects were carried out: the setting up of 3 study plots to gather phenological data on white spruce, a 10-tree bud count on aspen to secure data in conjunction with the tent caterpillar sequential sampling study, and sequential sampling of larch sawfly plots.

There were no insect outbreaks on a large scale in any part of the Peace River District nor in the area surveyed in the Northwest Territories. However, there were a number of species which caused severe defoliation in small, fairly well defined areas in native stands and also to planted trees on farms.

Defoliators of aspen were the most common insects and up to 5 species were collected in a single sample. The American aspen beetle was responsible for heavy defoliation in the Reno-Harmon Valley area. The grey willow leaf beetle severely defoliated young aspen poplar in the understory of bluffs in the Girouxville area. The forest tent caterpillar caused almost complete defoliation of 5 or 6 acres of aspen and willow 8.5 miles south of Donnelly and were also recorded generally in the area south and southwest of Peace River town. An unknown defoliator caused severe injury to aspen and balsam poplar along the west side of the Clear Hills in the vicinity of the Clear Hills Tower. This was

believed to be Bruce spanworm which was present in large numbers along the highway east of this point.

The spiny elm caterpillar was found in unusually large numbers within a 50 mile radius of Fairview.

The only serious pest to spruce was the yellow-headed spruce sawfly. It was found generally on planted spruce throughout the agricultural area.

TABLE I

SUMMARY OF INSECT COLLECTIONS BY HOST TREES

Coniferous hosts	No. coll.	Deciduous hosts	No. coll.
Spruce	84	T. aspen	77
Pine	15	Poplar	14
Larch	26	Willow	41
	125	Birch	7
		Alder	12
		Caragana	3
		Chokecherry	5
		Elm	4
			163
Collections from miscellaneous hosts			3
		GRAND TOTAL	291

INSECT CONDITIONS

Black-headed budworm, Acleris variana (Fern.).

Larvae of the black-headed budworm were found on white spruce at 4 locations in the Peace River District north of Keg River and at almost every location where white spruce was sampled in the Northwest Territories. Light injury was recorded at a point along the Hay River, 12 miles south of Great Slave Lake.

Ugly nest tortrix, Archips cerasivorana (Fitch).

Tents of the ugly nest tortrix were found in three general areas on chokecherry. Roadside bushes along Highway 2 from Peace River to Berwyn were heavily infested. Approximately 2 acres of young chokecherry in the Paddle Prairie area were also heavily infested, 90 per cent of the branches being encased in tents. There was a light infestation in the Smoky River Valley a few miles north of Watino.

Large aspen tortrix, Choristoneura conflictana (Wlk.).

There was a very light infestation of the large aspen tortrix along the Peace River Valley southwest of the town and in bluffs in the agricultural area lying north of the valley. The northern limit of the infestation was along a line extending from Peace River to Fairview.

Spruce budworm, Choristoneura fumiferana (Clem.).

A few larvae of the spruce budworm were found on white spruce in the Northwest Territories along the Mackenzie and Yellowknife Highways. Injury was generally light and confined to young trees of the understory.

A leaf-tier, Compsolechia niveopulvella Cham.

Injury caused by this leaf-tier was negligible in the Peace River District. A few larvae were collected along the Red Earth Trail between Nampa and Loon Lake, and along the north side of the Peace River Valley in the Berwyn area.

Grey willow leaf beetle, Galerucella decora (Say).

Adults of the grey willow leaf beetle were collected at widely separated points throughout the agricultural area from Dixonville south to the Girouxville - Fahler area. The largest populations were recorded around Girouxville where moderate injury was confined to very small aspen in the understory; elsewhere injury was light.

American aspen beetle, Phytodecta americana Schffr.

The american aspen beetle was responsible for moderate to heavy defoliation of aspen at a number of locations in the southeast section of the District. The highest population counts were taken in the Harmon Valley-Reno area and south of Donnelly. Light injury was recorded in the Keg River-High Level area.

Forest tent caterpillar, Malacosoma disstria Hbn.

There is evidence that an infestation of the forest tent caterpillar is building up in the Peace River District. Sixteen collections were made and all but 4 of these were in the southeastern corner of the District.

Larvae were found at 3 points along the Shaftsbury Trail in the Peace River Valley. A few colonies were recorded feeding on aspen and injury was light. Larvae, cocoons and eggs were found at 3 locations in the agricultural area east of the Smoky River, but there was very little injury. A bud count of aspen near Judah revealed the presence of 3.2 cocoons per tree in a 10-tree count. Larval parasites were present in a number of cocoons. This count was made several weeks after moth emergence, but only one new egg band was found. South of the Northern Alberta Railway from Girouxville to McLennan, this insect was recorded at 7 locations in various stages of development. Injury was light except in an area covering 5 to 6 acres, 8.5 miles south of Donnelly. Defoliation was approximately 90 per cent to aspen and willow. Egg band counts made on 2 trees one inch DBH, produced 10 and 12 egg bands. On the Red Earth Trail approximately 90 miles northeast of Nampa in the Loon Lake area, larvae were found at 2 points about 10 miles apart.

In previous years a small outbreak was reported at Mile 104 on the Mackenzie Highway, south of Keg River; only one cocoon was found this year. Approximately 20 miles northwest of this area, on the Naylor Hills tower road, hundreds of cocoons were counted along a 2 mile stretch of road. Injury was light to moderate. Cocoons were collected at 2 other points; west of Notikewin and at Steen River.

Spiny elm caterpillar, Nymphalis antiopa L.

The spiny elm caterpillar was recorded in unusually large numbers over a large portion of the agricultural area of the District. Hosts were elm, aspen, and willow. The heaviest infestation was centred around Fairview and extended northwest almost to Clear Prairie and east to Berwyn. Approximately 25 per cent of the American elm at the Fairview Agricultural School were

completely defoliated and 50 per cent of the rest were infested with at least one colony of larvae. On the east side of the Smoky River in the Jean Cote-Culp area, a number of colonies were found on willow and poplar but injury was light.

Bruce spanworm, Operophtera bruceata (Hulst).

Bruce spanworm was collected throughout the agricultural area of the Peace River District south of Notikewin on willow, aspen and balsam poplar; injury was generally very light. The highest population counts were in the Fairview-Hines Creek-Worsely area and increased in intensity toward the west. For several miles along the hillside below Clear Hills Tower, defoliation of aspen and balsam poplar was 80 to 90 per cent. However, this area was not inspected during the larval feeding, and although the injury was typical of Bruce spanworm it was not definitely established that it was responsible for all or any of the defoliation.

Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.).

Injury by the yellow-headed spruce sawfly was general on planted spruce in the agricultural area of the Peace River District and at a few locations on native spruce in the Northwest Territories.

Between 80 and 90 per cent of the spruce shelterbelts inspected in the Grimshaw-Brownvale-Fairview area were infested; injury was light on 75 per cent of these. In the more recently settled area from Hines Creek west to Clear Prairie, the few shelterbelts that have been established are already infested. There was moderate injury to a high percentage of planted spruce in the area from Girouxville to Guy and also near Nampa and Three Creeks.

A few larvae were collected at each of 4 locations along the Mackenzie and Yellowknife highways in the Northwest Territories.

Larch sawfly, Pristiphora erichsonii (Htg.).

Larvae of the larch sawfly were found at almost every location where tamarack occurred in the southern part of the Peace River District. However, injury was generally very light. Sequential sampling of established plots showed only a trace of curled tips and no cocoons at 4 of 5 locations. At the Watino plot, injury was severe as compared to light in 1957.

An aerial survey indicated that larval feeding was general east of the Peace River and extended northeasterly from Fort Vermillion into the Northwest Territories. Injury was light along the western border of this area, increasing to heavy east of the Wabiska River.

TABLE II

RESULTS OF SEQUENTIAL SAMPLING

LARCH SAWFLY PERMANENT SAMPLE STATIONS

Station no.	Location	Infestation class 1957	Infestation class 1958
7 - 1	Grimshaw	Light	Light
7 - 2	Keg River	Light	Light
7 - 3	High Level	Light	Light
7 - 4	Watino	Light	Heavy
7 - 5	Clear Prairie	-	Moderate

Tenthredinidae on Alder.

An undetermined species of sawfly was found on alder at 3 general locations. There was complete defoliation of this host along the west bank of the Peace River across from the Town and also in a small bluff 7 miles north of Triangle. In the Three Creeks area there was light defoliation to roadside alder.

TABLE III

OTHER NOTEWORTHY INSECTS

(which occurred in the Peace River and Northwest Territories Districts in 1958)

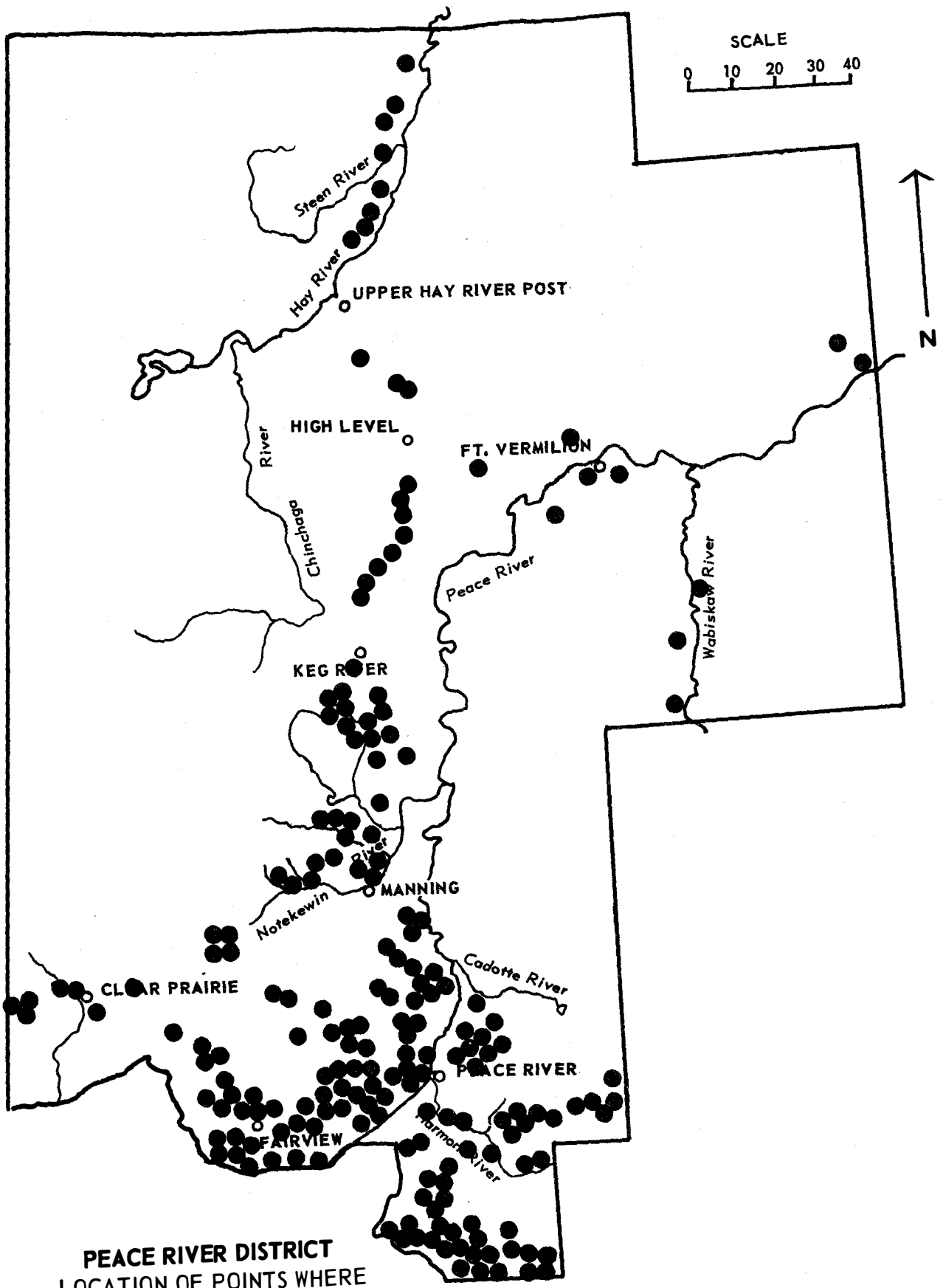
Insect species	No. of coll.	Host	Remarks
Fringed looper, *Campaea perlatta* Gn.	14	Aspen Birch Willow	A few larvae generally throughout the south.
A looper, *Itame loricaria* Evers.	23	Aspen Willow	Light generally throughout southern part of District.
Tent caterpillars, *Malacosoma* spp.	12	Aspen Alder Elm Rose B. poplar Willow	Tents scattered throughout southern part of District.
Sawflies, *Neodiprion* spp.	8	W. spruce Jackpine	Few colonies at scattered points throughout District.
A Phalaenid, *Zenobia pleonectusa* Grt.	9	Aspen	A few larvae generally but the only noticeable damage was at Meikle River.

Other Noteworthy Insects....continued

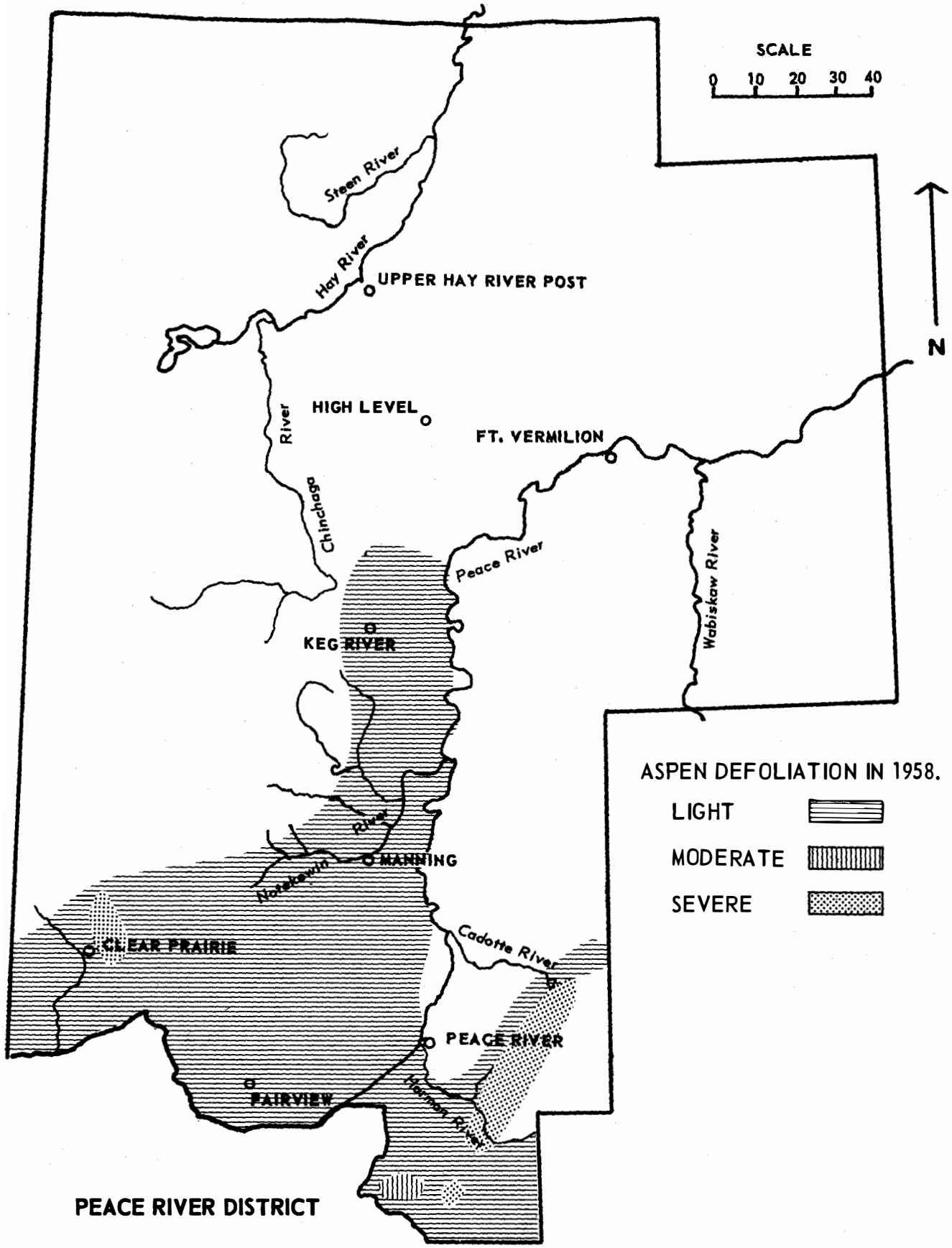
Insect species	No. of coll.	Host	Remarks
Aspen poplar gall, *Asiphum sacculi* Gillette	2	Aspen	Heavy near Naylor Hills Tower and from Mile 220-227 on Mackenzie Highway near Upper Hay River Post.
A psyllid *Psylla ulni* (L.)	2	Alder	Heavy at a few locations but injury negligible.

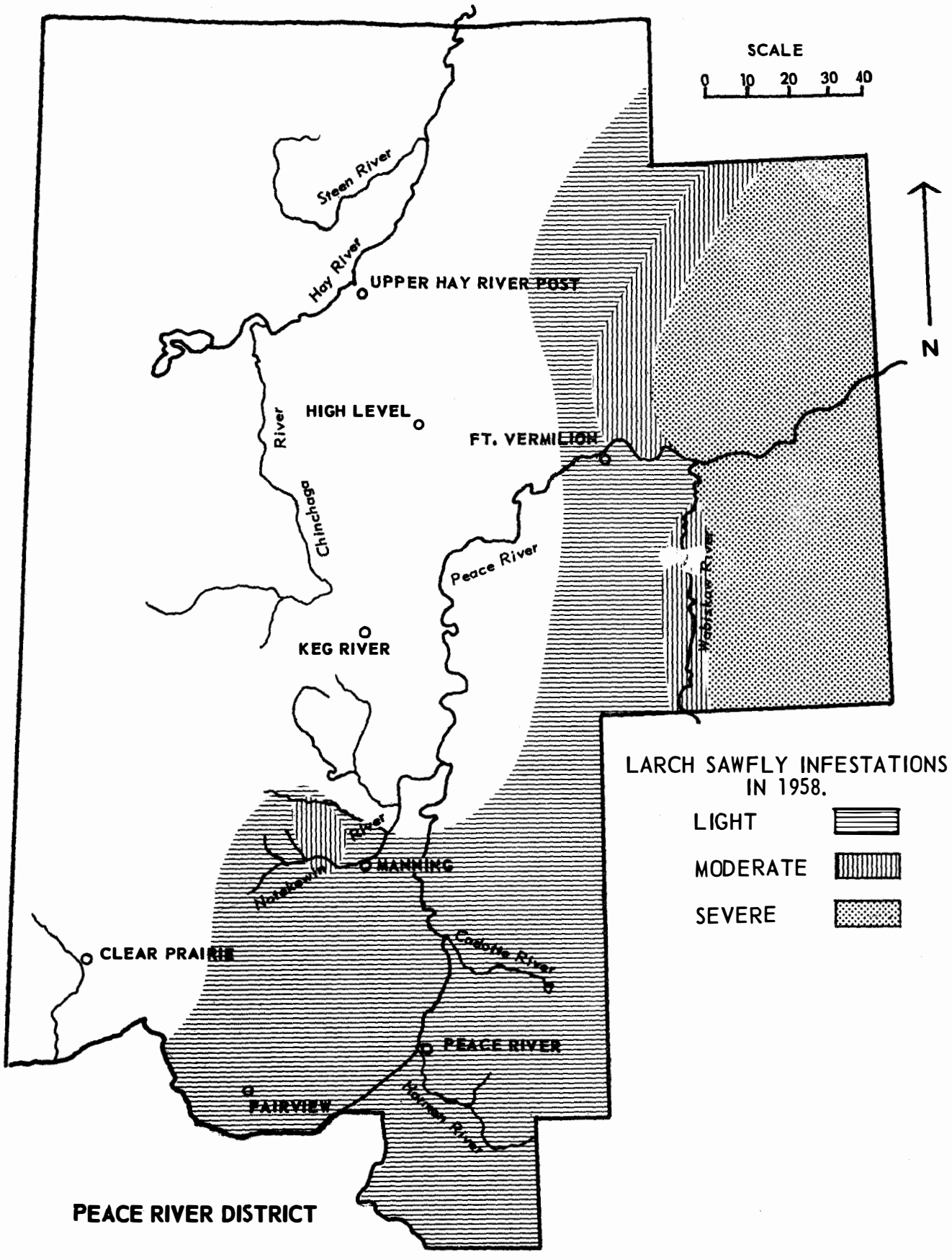
DISEASE CONDITIONS

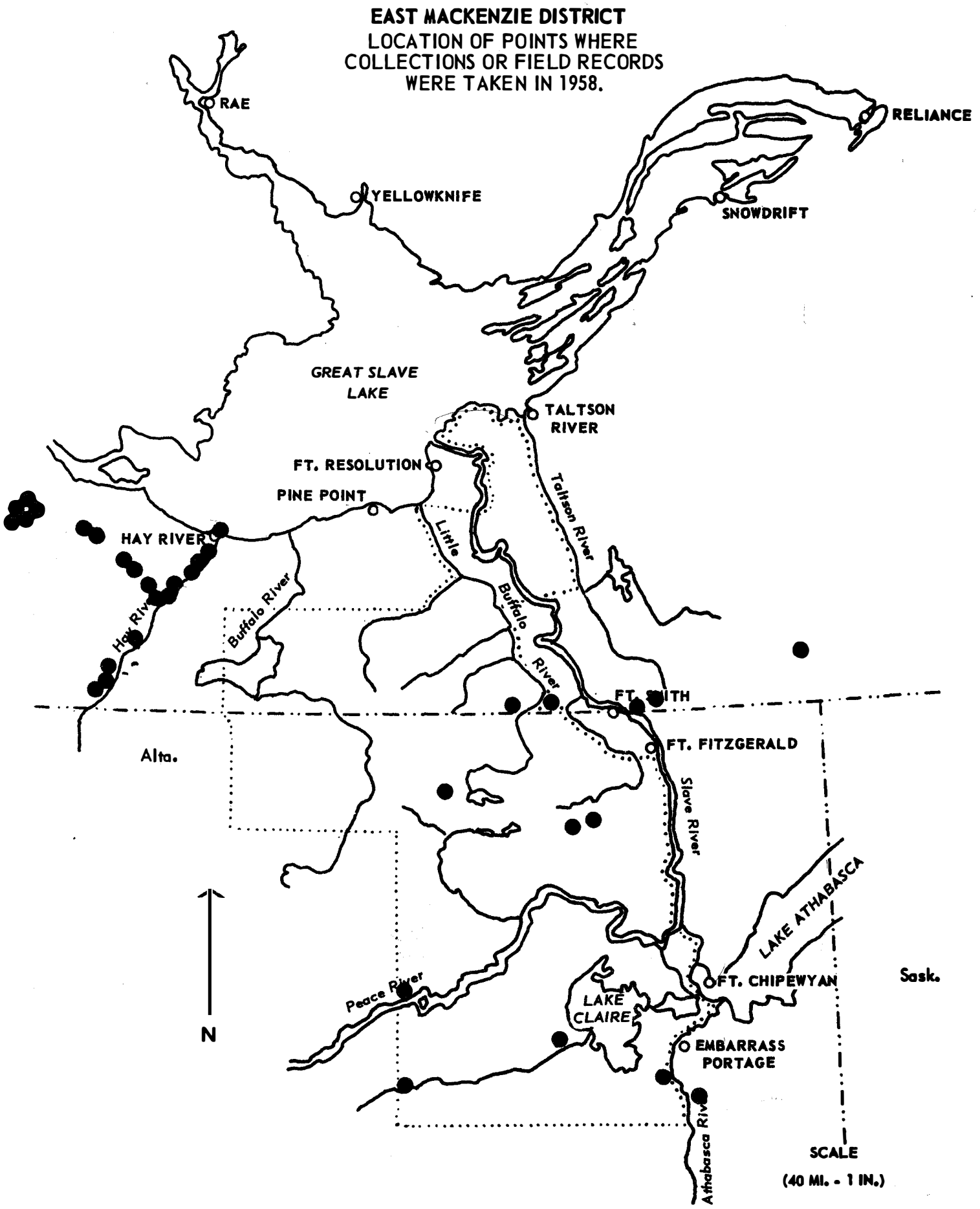
Only 2 records of tree diseases were made in the Peace River District in 1958; both were of the dwarf mistletoe, *Arceuthobium americanum* (Nutt. ex Englem.). Mature jack pine in a small area southeast of Deadwood near the junction of the Whitemud and the Peace rivers, was heavily broomed; there was no tree mortality. In another small area along the Red Earth Trail northeast of Harmon Valley, there was some brooming but the mistletoe was not so well established.



PEACE RIVER DISTRICT
LOCATION OF POINTS WHERE COLLECTIONS OF FIELD RECORDS WERE TAKEN IN 1958.


SCALE
0 10 20 30 40
N
Steen River
Hay River
UPPER HAY RIVER POST
River
HIGH LEVEL
FT. VERMILION
Chinchaga
Peace River
Wabiskaw River
KEG RIVER
River
MANNING
Notekewin
Cadotte River
CLEAR PRAIRIE
PEACE RIVER
FAIRVIEW
Harmon River
ASPEN DEFOLIATION IN 1958.
LIGHT
MODERATE
SEVERE
PEACE RIVER DISTRICT


SCALE
0 10 20 30 40
N
Steen River
Hay River
UPPER HAY RIVER POST
HIGH LEVEL
River
Chinchaga
FT. VERMILION
Peace River
Wabasca River
KEG RIVER
LARCH SAWFLY INFESTATIONS
IN 1958.
LIGHT
MODERATE
SEVERE
MANNING
CLEAR PRAIRIE
Loon River
PEACE RIVER
FAIRVIEW
Notikewin River
PEACE RIVER DISTRICT


EAST MACKENZIE DISTRICT
LOCATION OF POINTS WHERE
COLLECTIONS OR FIELD RECORDS
WERE TAKEN IN 1958.
RAE
RELIANCE
YELLOWKNIFE
SNOWDRIFT
GREAT SLAVE
LAKE
TALTSON
RIVER
FT. RESOLUTION
PINE POINT
Taltson River
Little
Buffalo
River
HAY RIVER
Hay Riv
Buffalo River
FT. SMITH
FT. FITZGERALD
Alta.
Slave River
LAKE ATHABASCA
FT. CHIPEWYAN
Sask.
Peace River
LAKE
CLAIRE
EMBARRASS
PORTAGE
Athabasca Riv
N
SCALE
(40 MI. - 1 IN.)

APPENDIX A

Report on an Aerial Survey in Northeastern Alberta 1958

REPORT ON AN AERIAL SURVEY IN NORTHEASTERN ALBERTA

R.R. Stanley

August, 1958

An aerial survey of the timbered area in northeastern Alberta was conducted by C. E. Brown and R. Stanley of the Forest Zoology Laboratory, Calgary.

A float equipped Cesna 180 operated by Gateway Aviation of Edmonton was used and proved very satisfactory for this type of work.

The area surveyed included approximately the northeastern quarter of the province and required 3 days to complete. During this time approximately 1400 miles were flown in 13.5 hours at altitudes between 500 and 1200 feet above the ground.

On August 19, the aircraft took off from Cooking Lake and went north to Calling Lake, then northeast to Ft. McMurray, then north to Embarras Portage where the first night was spent. The following morning after flying west of Embarras Portage for 50 miles the aircraft swung directly south and continued on to Pointe la Biche on the Athabasca River, then southwest to North Wabiskaw. From North Wabiskaw the survey party went north as far as the fifth meridian on the Peace River, then west to Ft. Vermilion where the second night was spent. From Ft. Vermilion the flight continued southeast to the Wabiskaw River and followed this river to its junction with the Loon River. The Loon River was then followed to Loon Lake and from this point a direct route south to Slave Lake was taken. From Slave Lake a southeasterly course was set and the party arrived back at

Cooking Lake in the afternoon of the third day. During the course of this flight ground checks were made at several locations to check on the insect species responsible for the defoliation observed from the air.

Larch sawfly, Pristiphora erichsonii (Htg.).

From observations taken in the flight over the outbreak in the northeastern part of the province, it can best be described as a heavy infestation throughout. There were sections where defoliation was medium and in some places so light that it was not visible from the air, but these sections were very small in comparison with the large areas of heavy defoliation. Along the western part of the area surveyed, north of Slave Lake to Ft. Vermilion, the outbreak was undoubtedly less severe than in the area further east indicating that the infestation gradually became lighter towards the Peace River Block in northern Alberta.

On checking the larch stands in the Calling Lake area, it was found that the needles were very short, possibly the result of continuous defoliation over the past few years reducing the vigor of the trees.

Spruce budworm, Choristoneura fumiferana (Clem.).

Defoliation and discoloration of white spruce was observed throughout a fairly large area along the west side of the Wabiskaw River from the mouth of the Muddy River to the mouth of the Loon River and up the Loon for a distance of 12 to 15 miles. This outbreak also extended up the south side of the Muddy River towards Talbot Lake for an unknown distance. The northwestern boundary was not checked due to poor flying conditions and poor visibility in the hills into which the damage extended. It was not

possible to land on the Wabiskaw River to check on the species of insect causing this damage due to very low water, but there is little doubt that it is spruce budworm as the stands affected are an extension to the white spruce and balsam fir stands that were infested by this species in 1954 and 1955. Defoliation throughout this section was estimated to be moderate with a few heavy patches.

Miscellaneous Damage.

Ft. McMurray: small patches of dead standing white spruce scattered throughout stand, some red-tops; resembles beetle damage. Location is 5 to 10 miles below McMurray on west side of Athabasca River. There is an old mill at this location, one-half to one mile back from the river, probably logged over.

Embarass Portage: jack pine stand quite heavily infected with dwarf mistletoe approximately 20 miles east of the Department of Transport at Embarras Portage; probably could be found closer to the river in this area.

Lake Claire: heavy defoliation to willow along shoreline on southeast side near Welstead Lake.

Namur Lake: light defoliation to aspen around the lake extending back one-half to one mile.

It is suggested that the above areas be checked on the ground should an opportunity arise.

APPENDIX B

Report on Aerial Survey in Wood Buffalo National Park and the Northwest Territories

1958

REPORT ON AN AERIAL SURVEY IN WOOD BUFFALO NATIONAL PARK AND THE NORTHWEST TERRITORIES AUGUST 28 - SEPTEMBER 5, 1958.

R. R. Stanley.

On August 28, F.B.R. Stanley left Edmonton by C.P.A. plane for Ft. Smith, N.W.T., to conduct a survey of the larch sawfly outbreak in that area. The reason for this survey was to locate the northern boundary of the outbreak and to estimate the damage caused by this insect. It was also an excellent opportunity to check for any other insect activity as no other Forest Biology personnel were in the area in 1958.

At Ft. Smith a helicopter was supplied by the Forestry Branch of the Department of Northern Affairs and 6 hours flying time was set aside for this survey. Engine trouble developed and reduced this time to 4 hours.

At 3.30 p.m. August 29, the helicopter left Ft. Smith and travelled due west along the Alberta-Northwest Territories boundary for a distance of approximately 50 miles, then swung south to Thultue Lake. From Thultue Lake the flight turned eastward to Pine Lake where a stop was made to refuel, then continued on east to Cockscombe Lake east of the Slave River. From this point a course north to the north end of Lesard Lakes was followed, then west to Ft. Smith arriving at 7.30 p.m.

Most of the area was covered at about 800 feet above the ground and defoliation was very easily observed in the moderate to heavy category. In places where defoliation was very light it was possible to drop down to within 30 feet of the tree tops and hover, giving the observer an excellent chance to

get a thorough look. In this respect the helicopter is much more satisfactory than an aeroplane for this work. The only disadvantage in the helicopter is the limited time of operation on the fuel it can carry. Approximately 150 miles is all it is capable of flying before refueling and in this area it is sometimes impossible to get gas within this distance.

On this flight of approximately 200 miles, the western boundary of the outbreak was mapped. On the east side the larch stands were in the Canadian Shield; to the south defoliation continued heavy beyond the range of this survey.

The following day, August 29, Mr. Flanigan, Superintendent of Forestry, arranged a trip by aeroplane from Ft. Smith to Ft. Resolution. This flight was made in a Beaver aircraft, flying at low altitudes and following along the east side of the Slave River. On the return trip the west side of the river was followed resulting in a wider area inspected. On this survey the northern boundary of the larch sawfly outbreak was found and a check on the outbreak of spruce budworm near Long Island was possible.

INSECT CONDITIONS

Larch sawfly, Pristiphora erichsonii (Htg.).

The outbreak of this insect in the N.W.T. and Wood Buffalo National Park has spread to a distance of approximately 40 miles west and 12 to 15 miles north of Ft. Smith. From the settlement to approximately 25 miles west, defoliation was heavy, gradually getting lighter towards the west until at 35 to 40 miles from Ft. Smith defoliation was negligible. To the north of the settlement defoliation was heavy in all larch stands up to a distance of approximately 10 miles then decreasing rapidly so that at 15 miles there was

little or no defoliation. East of Ft. Smith damage was heavy in the few scattered stands of larch that are present; this condition was traced for approximately 30 miles. At this point there were very few larch trees so it is probably correct to state that the infestation extends eastward to the limit of the larch stands. South of Ft. Smith defoliation was heavy and continuous for a distance of 30 miles. There was no survey between this point and the Peace River but there is good reason to believe that the infestation is continuous throughout this area, as it is known that heavy defoliation occurred up to 15 miles north of the Peace River at fifth meridian. The helicopter pilot had flown over this district and noticed the brown color of the larch stands.

Spruce budworm, Choristoneura fumiferana (Clem.).

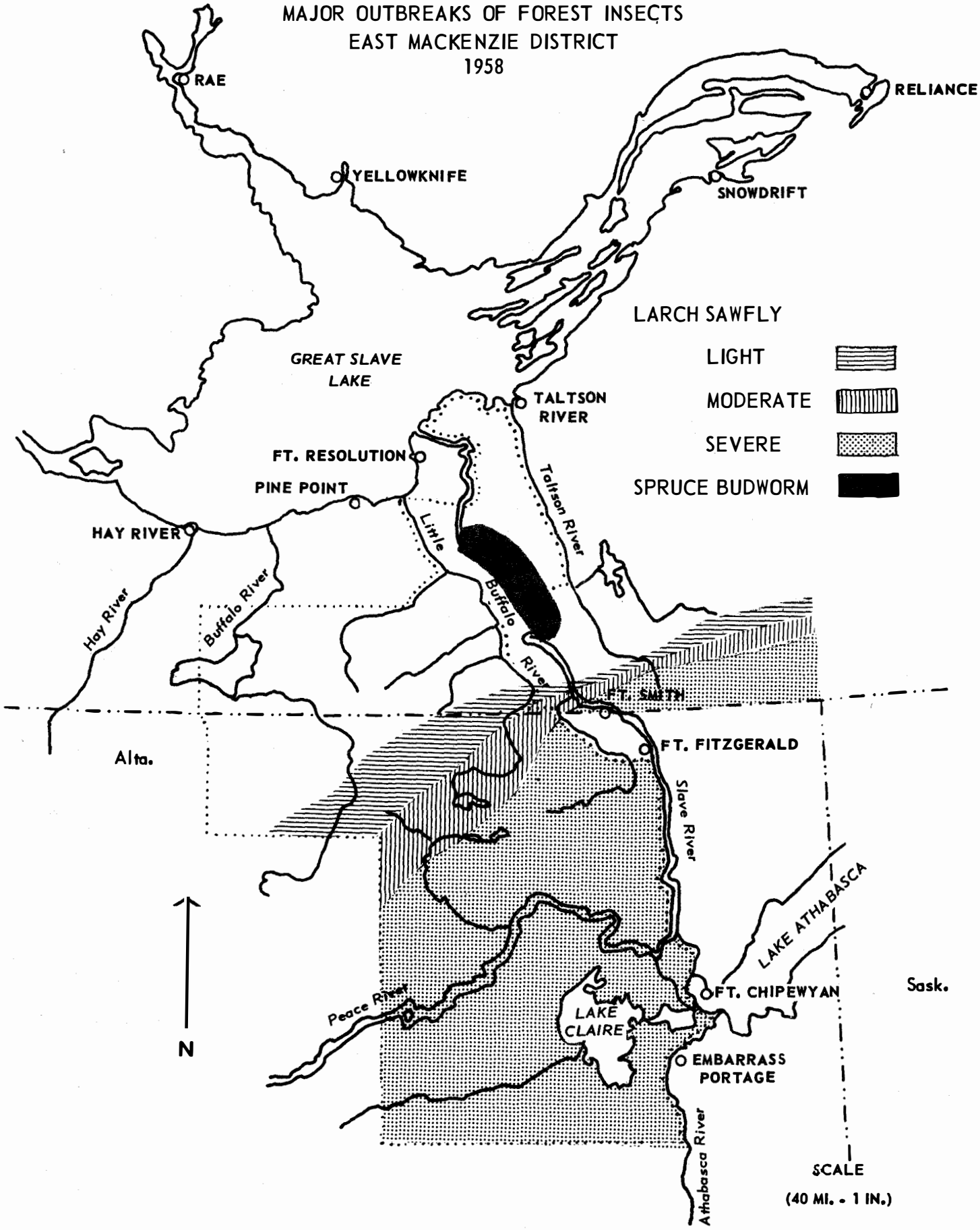
The area north of Long Island where this insect had previously caused defoliation to white spruce was flown over, but due to a very heavy crop of cones it was impossible to distinguish defoliation from the brown appearance the cones gave the tree crowns.

A needle-miner on jack pine, Recurvaria sp.

Empty, mined needles were found in low numbers on jack pine in the vicinity of Ft. Smith; damage was negligible.

This aerial survey was made possible by the Forestry Branch at Ft. Smith and appreciation is hereby extended to Mr. Flanigan and staff for their excellent co-operation in this project.

Forest Biology Laboratory,
102-11th Avenue E., Calgary, Alberta.
September 10th, 1958.


EAST MACKENZIE DISTRICT
MAJOR OUTBREAKS OF FOREST INSECTS
EAST MACKENZIE DISTRICT
1958
RAE
RELIANCE
YELLOWKNIFE
SNOWDRIFT
LARCH SAWFLY
LIGHT
MODERATE
SEVERE
SPRUCE BUDWORM
GREAT SLAVE LAKE
TALTSON RIVER
FT. RESOLUTION
PINE POINT
HAY RIVER
Little Buffalo River
Taltson River
Hay River
Buffalo River
FT. SMITH
FT. FITZGERALD
Alta.
Slave River
LAKE ATHABASCA
Sask.
FT. CHIPEWYAN
Peace River
LAKE CLAIRE
EMBARRASS PORTAGE
Athabasca River
N
SCALE
(40 MI. - 1 IN.)

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