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FOREST BIOLOGY RANGER REPORTS, 1955

ALBERTA

INTERIM REPORT 1955-1

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

CANADA

DEPARTMENT OF AGRICULTURE

SCIENCE SERVICE

FOREST BIOLOGY DIVISION

March, 1956

FOREST BIOLOGY RANGER REPORTS

ALBERTA

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

by

J.K. Robins, P.F. LaRue, E.F. Thornton, J. Petty

V.B. Patterson, E.J. McNeil, R.R. Stanley

INTERIM REPORT 1955-1

FOREST BIOLOGY LABORATORY

CALGARY, ALTA.

(Based on investigations carried out in 1955)

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INTRODUCTION

Field activities of the Forest Insect and Disease Survey for Alberta and the Northwest Territories were carried out from mid-May to the end of September in 1955. An early spring and a relatively dry summer were experienced over most of the region. Favorable weather and a longer field season, resulted in increased coverage of more isolated areas. A total of 1682 insect and 303 disease collections were contributed by the Forest Biology Ranger staff.

Forest Biology Ranger district boundaries underwent considerable revision prior to the 1955 field season (see attached map). In an effort to standardize the field work of rangers, the agricultural district, formerly the responsibility of 1 ranger, was divided into 4 portions and attached to the adjoining Forest Divisions. Northern Alberta was divided into 3 districts, one shown as vacant pending an expected increase in personnel. All districts were arranged to conform as closely as possible with existing Alberta Forest Service Divisions, Agricultural Districts, and National Park boundaries.

The assignment of F.B.R. personnel to the various districts was as follows:

District 1	Crowsnest-Bow River	P. F. LaRue	FBR Gr. 1
" 2	Clearwater	E. F. Thornton	" Gr. 2
" 3	National Parks	J. Petty	" Gr. 1
" 4	Brazeau-Athabasca	V. B. Patterson	" Gr. 1
" 5	Lac La Biche	E. J. McNeil	" Gr. 1
" 6	Slave Lake-Grande Prairie	Temporarily vacant	
" 7	Peace River	R. R. Stanley	" Gr. 2

The vacant Slave Lake-Grande Prairie District was covered by E. J. McNeil and R. R. Stanley. A line running north and south through the town of High Prairie formed the dividing line. R. R. Stanley was also responsible for the forested areas of the Northwest Territories.

Major items of equipment acquired during 1955 included a 22 foot National house trailer and a 21 foot Aroline aluminum outboard cabin cruiser. This boat, used on the Peace and Mackenzie rivers, proved to be quite satisfactory. A tandem wheeled trailer was used to transport the boat. Using this trailer the boat could be launched or taken out of the water in about 30 minutes. Accommodation was cramped but afforded 2 or 3 men reasonable safety and comfort for extended trips.

As in the previous year, 3 insect species were of major concern to the Alberta Forest Insect Survey. Although the spruce budworm outbreak around Wadlin Lake decreased in intensity, a new and much larger infestation was discovered along the Mackenzie River in the Northwest Territories. Larch sawfly was present in nearly all tamarack stands examined in 1955. The severity of attack appeared to lessen in some areas of eastern Alberta. Elsewhere the attack was more widespread and heavier than in previous years. Unseasonably cold weather in the fall of 1954 contributed to a reduction in the population of lodgepole needle miner in Banff National Park. The only evidence of damage by the forest tent caterpillar, a serious defoliator of aspen in west-central Alberta from 1951-1953, was found in a small outbreak along the Mackenzie Highway in northern Alberta.

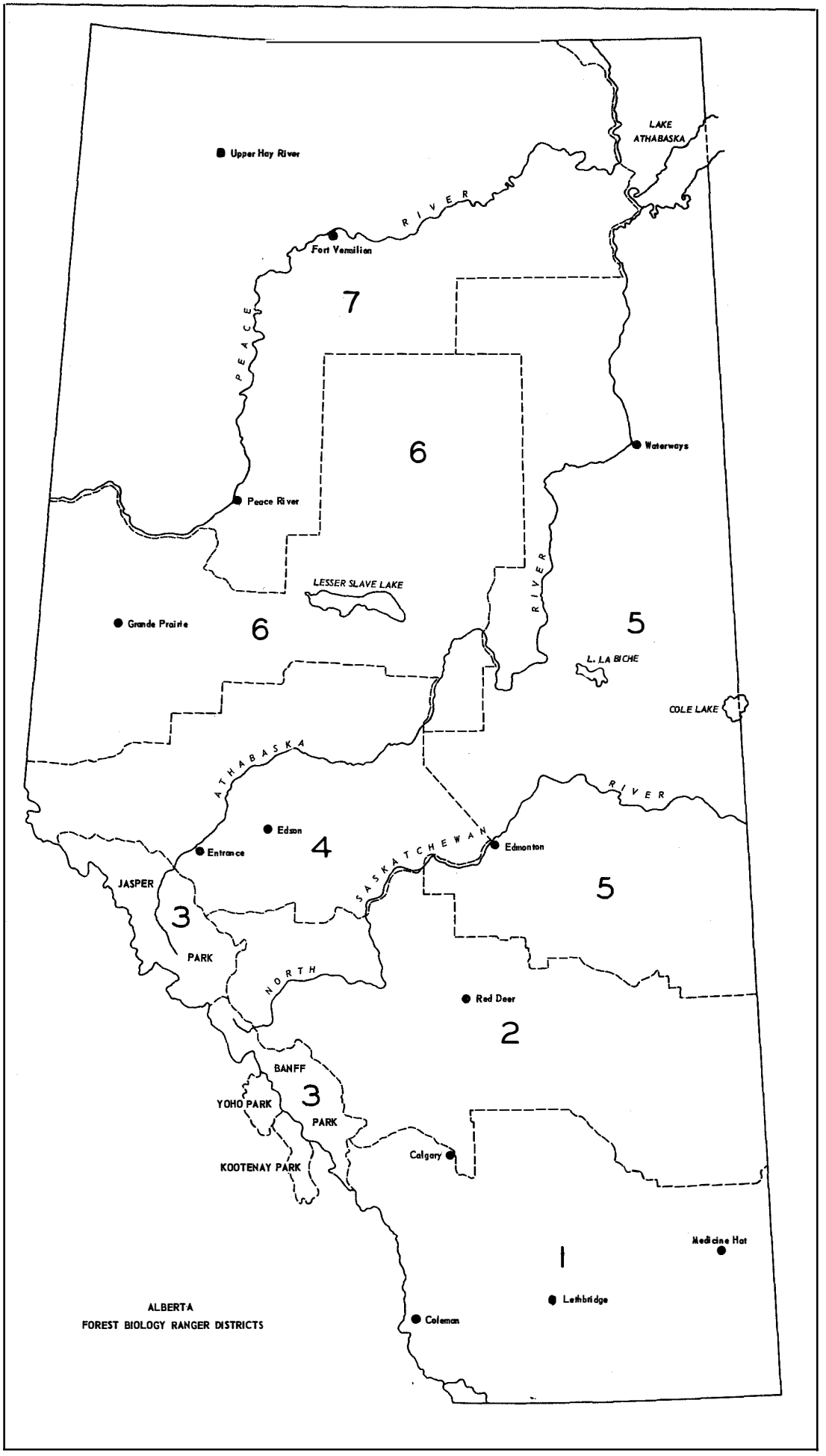
Field surveys of forest diseases were mainly concerned with the detection of major outbreaks and the collection of specimens of the family

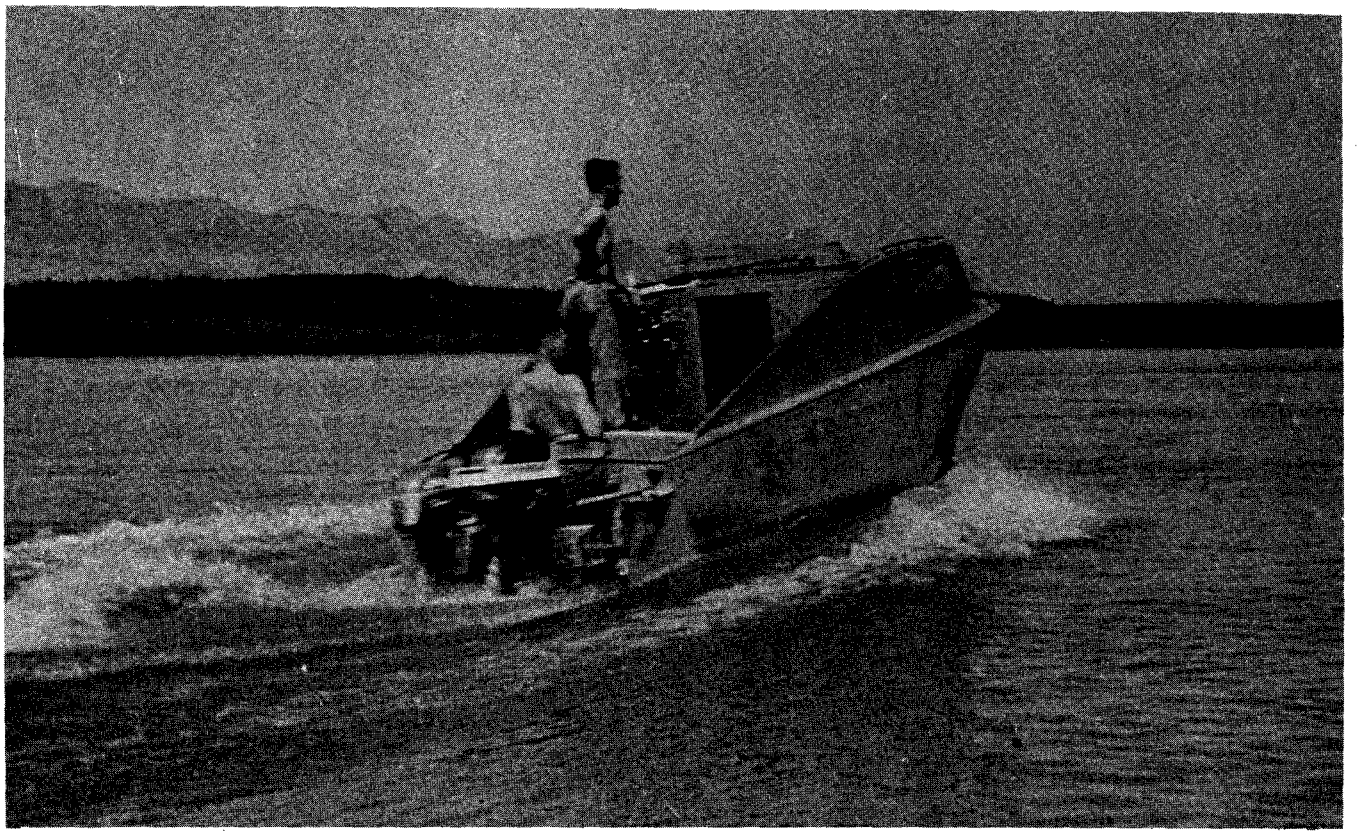
Thelephoraceae, a group of fungi which cause decay in living trees but do not fruit until after the host has died. Some new outbreaks of Atropellis canker of pine were discovered in the Crowsnest Pass area and on the Elbow River. White spruce stands in the vicinity of Lac La Biche and Imperial Mills were heavily attacked by spruce needle rust. In Banff National Park, needle cast of lodgepole pine was again present in epidemic proportions in many stands.

Because of the increased activity of the larch sawfly over large areas in northern Alberta, it was considered advisable to institute some form of quantitive sampling in the fall of 1955. A modification of the system used by the Winnipeg Laboratory was adopted. Sampling stations were established at approximately 50 mile intervals along the main roads throughout the affected area. At each sampling station 5 trees, representative of the general stand, were selected and marked. An estimate of defoliation was made on each of the tagged trees. Branch tips were taken from the cardinal compass points on 4 unmarked trees to obtain ratios of curled to uncurled tips. Cocoons were collected for rearing and dissection for parasite estimates. During the winter the material was examined and results tabulated.

Forest Biology Rangers assisted the Federal Forestry Branch by examining seed traps and collecting data on white spruce seed production.

J. K. Robins
Forest Biology Ranger Supervisor
Forest Insect and Disease Survey


Upper Hay River
LAKE ATHABASKA
RIVER
Fort Vermilion
PEACE
7
6
Waterways
Peace River
LESSER SLAVE LAKE
RIVER
Grande Prairie
6
5
L. LA BICHE
COLE LAKE
ATHABASKA
RIVER
Edson
4
Entrance
SASKATCHEWAN
Edmonton
JASPER
3
5
PARK
NORTH
Red Deer
2
BANFF
YOHO PARK
3
PARK
Calgary
KOOTENAY PARK
Medicine Hat
1
Lethbridge
Coleman
ALBERTA
FOREST BIOLOGY RANGER DISTRICTS



Forest Biology boat on the Mackenzie River, 1955.

Method used in transporting Forest Biology boat from one waterway to another.

Forest Insect Survey personnel collecting Spruce Budworm in the outbreak along the Mackenzie River, 1955.

FOREST BIOLOGY RANGER REPORT

CROWSNEST-BOW RIVER DISTRICT

ALBERTA 1955

by

P.F. LaRue

Forest Biology Laboratory

Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March 1956

1.1 INTRODUCTION

The area covered by this report consists of the forested and agricultural lands in Forest Biology Ranger District No. 1. This district includes: Waterton Lakes National Park, the Crowsnest Forest Reserve, that portion of the Bow River Forest Reserve lying south of the Bow River and the adjoining agricultural lands east to the Saskatchewan boundary.

Routine sampling and special investigations were made to determine the prevelance of forest insects and diseases.

A total of 345 insect samples and 53 disease samples were submitted. Sixty-five of these samples were made in cooperation with Alberta Forest Service personnel. Collections from cooperators within this district numbered 7, not including those made by the Forest Biology Staff at the Kananaskis Field Station.

The only new insect outbreak recorded in 1955 was that of the pine needle scale. This infestation occurred along a 3 mile strip, 1 mile south of Hillcrest. Populations of the large aspen tortrix in the Porcupine Hills and in Waterton Lakes National Park appeared to have decreased slightly in intensity. The American poplar beetle remained at approximately the same levels in the Porcupine Hills and in Waterton Lakes National Park as in 1954. Isolated areas northwest of Waterton Lakes National Park, in the Twin Butte district and in the southern section of the Castlemount district of the Crowsnest Forest Reserve were heavily infested by this beetle. The infestation of the yellow-headed spruce sawfly southeast of the Gap Ranger Station in the Livingstone district showed little change from 1954. Some trees in this area have been greatly weakened and will probably die due to the heavy

defoliation of the past 3 years. Atropellis piniphila (Weir) Lohman & Cash., causing a canker on lodgepole pine was found in 4 new areas. The heavily infected area at Red Rock Canyon in Waterton Lakes National Park reported in 1953 was the object of a detailed study in August by the staff of the Forest Pathology Laboratory.

June 6 to June 13 was spent mapping the outbreak of the fall canker-worm in the agricultural lands in the Medicine Hat and Lethbridge areas.

During the later 2 weeks of July, 7 shipments of the black-headed budworm were sent to the Forest Insect Laboratory, Sault Ste. Marie. The samples were collected in the Crowsnest and Bow River Forest reserves.

On August 2, the author accompanied Mr. G. R. Hopping on a trip into a timber stand west of Dutch Creek in the Livingstone District. The purpose of this trip was to check reports of bark beetle and spruce budworm activities.

On September 16, the author assisted Dr. Salt and Mr. Hewitt from the Department of Agriculture Laboratory at Lethbridge, in obtaining insects that overwinter above the snow level. Terminal shoots of lodgepole pine and Englemann spruce infested by Pissodes were taken and stems of trembling aspen infested by the poplar borer were cut into 4 foot lengths and taken to Lethbridge. An additional trip was made on October 13 to collect trembling aspen stems with borer damage 2 miles north of Beaver Mines in the Castlemount area. These stems were delivered to Dr. Salt in Lethbridge.

From September 19 to October 1, the author assisted personnel of the Forest Pathology Laboratory in examining slash and recording pathological data in the Strachan area.

In the company of J. K. Robins, an investigation was conducted on

October 12 in Waterton Lakes National Park to determine the cause of mortality to Douglas-fir trees on the slope above the Prince of Wales Hotel and on the golf course. (See Appendix C)

Permanent sampling plots in the Crowsnest and Bow River Forest reserves and Waterton Lakes National Park were sampled 4 times during the season. Those in the Cypress Hills were only visited twice owing to heavy rains. The new plots were established in Englemann spruce. The first was located 1 mile east of the Highwood Ranger Station in the Bow River Forest Reserve and the second, 3 miles south of the Kananaskis Forest Experiment Station.

1.2 INSECT CONDITIONS

Lodgepole Needle Miner, Recurvaria sp.

This insect was again found in endemic proportions in the Lynx Creek Valley, south of Hillcrest in the Crowsnest Forest Reserve. Small numbers of infested needles were also found on the Spray Lakes Road in the Bow River Forest Reserve.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Populations of this budworm remained at a low level throughout most of the district. Last years pupae cases were found in the Dutch Creek area. Observations led to the belief that these budworm had a 2 year cycle. Only light defoliation and some discoloration of the tips of alpine fir were observed at this time. Larvae, pupae and adults in comparatively large numbers were found 20 miles north of Pincher Station in the Porcupine Hills in 1955. It has not been definitely established, but it is believed that the budworm in this area have a 1 year cycle. Light defoliation of Douglas-fir was noted on fringe and isolated trees.

Black-headed Budworm, Acleris variana (Fern.)

The current outbreak of the black-headed budworm has increased slightly in intensity and range. Douglas-fir trees in the West Porcupine Hills were heavily attacked with as many as 300 larvae being recovered from a single open grown tree 10 feet high. Fringe defoliation was observed on many of the mature trees. The heaviest population in this area was found in the vicinity of the permanent sampling station at the summit of the Porcupine Hills and north of Pincher Station in the Peigan Indian's Timber Tract.

Heavily infested Engelmann spruce trees were found throughout the Cypress Hills. The most severely attacked trees were found 1 mile south of Elkwater. Higher than normal populations were found in all areas visited throughout the Crowsnest and Bow River Forest Reserves. In Waterton Lakes National Park, a reduction in populations was noted.

American Poplar Beetle, Gonioctena americana (Schaeff.)

This insect was again found in 1955 closely associated with the large aspen tortrix outbreak in all aspen stands examined in Waterton Lakes National Park. It was also found in conjunction with the large aspen tortrix outbreak in the West Porcupine Hills. Isolated patches of trembling aspen in the southern end of the Crowsnest area were infested this year. Another area affected by this beetle was found 1 mile east of Twin Butte in a strip approximately 3 miles long. Larvae and adults of this beetle could be found in all the forested areas of the Crowsnest and Bow River Forest reserves in small numbers.

Large Aspen Tortrix, Archips conflictana (Wlk.)

The outbreak of the large aspen tortrix was again severe in 1955. This leaf roller along with the American poplar beetle caused conspicuous defoliation and discoloration to trembling aspen throughout the Porcupine Hills and south through the Crowsnest Forest Reserve and Waterton Lakes National Park. The outbreak in Waterton Park remained at approximately the same levels as in 1954. Defoliation was very noticeable along the Chief Mountain Road and on the golf course. Patches of trembling aspen were found light to moderately defoliated throughout the Crowsnest Forest Reserve, while in the Bow River Reserve light defoliation was spotted in small areas in the Sentinel and Elbow Districts.

Fall Cankerworm, Alsophila pometaria (Harr.)

This insect was found in varying numbers throughout the agricultural lands in the Medicine Hat and Lethbridge areas. In the Lethbridge District light to heavy defoliation occurred on green ash, boxelder and white elm. The heaviest outbreaks occurred in shelterbelts north of Chin and Coaldale where defoliation was noticeable.

In the Medicine Hat District, light to medium defoliation was recorded in all shelterbelts inspected. Numerous larvae were collected from farms north of Foremost, but as the larvae were very small at the time the collections were taken, defoliation was not noticeable.

Western Tent Caterpillar, Malacasoma pluvialie (Dyar)

Tents of this caterpillar were most numerous in the southern part of the district this year. In Waterton Lakes National Park, clusters of these larvae were commonly found feeding on rose, chokecherry and saskatoon.

Tents in smaller numbers were found on rose at Medicine Hat, Coleman, Cardston and south of Hillcrest.

A Weevil, Pissodes spp.

Approximately 50 Englemann spruce and lodgepole pine trees were attacked by this weevil in the vicinity of the Castlemount Ranger Station in the Crowsnest Forest Reserve. Isolated infested trees were seen in all areas covered by this report.

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

The small outbreak of the yellow-headed spruce sawfly 1.5 miles southeast of the Gap Ranger Station persisted in 1955. Due to continued heavy defoliation during the past years, a large percentage of the infested trees have died. A lighter population occurred in the Cameron Lakes area of Waterton Lakes National Park.

Balsam-fir Sawfly, Neodiprion abietis (Harr.)

Three colonies of this sawfly were collected during the field season. Single feeding larvae were commonly found on Douglas-fir, Englemann spruce and lodgepole pine in the forested sections of southern Alberta.

Pine Needle Scale, Phenacaspis pinifoliae (Fitch.)

An outbreak of this needle scale was found along a 3 mile strip 1.5 miles south of Hillcrest along the Adanac Mine Road. Defoliation and discoloration was very noticeable on lodgepole pine. This outbreak has been developing over the past 2 or 3 years, and probably due to favorable weather conditions, the population has increased to outbreak proportions.

Cooley Spruce Gall Aphid, Adelges cooleyi (Gill.)

Adelge damage to spruce trees was conspicuous in southern Alberta. In the Bow River Reserve, heavy populations were found west of Calgary and throughout the Elbow and Jumping Pound districts. Heavy populations were noted in the Cypress Hills and Waterton Lakes National Park.

Manitoba Maple Psyllid, Psylla negundinis (Mally)

Nymphs of this insect were present on boxelder in nearly all shelterbelts examined in the Lethbridge and Medicine Hat areas.

Brown Pine Looper, Caripeta angustiorata (Wlk.)

Numerous larvae of this insect were found on lodgepole pine in the Bow River and Crowsnest Forest reserves. Population levels were slightly higher in the Waterton Lakes National Park and the southern end of the Crowsnest district than elsewhere, but defoliation was not noticeable. In the Cypress Hills, an average of 20 larvae were taken from lodgepole pine trees.

Poplar Borer, Saperda calcarata (Say.)

Trees infested by this borer occurred throughout the Crowsnest Forest Reserve and the Porcupine Hills. The heaviest damage occurred south of Burmis along a 15 mile strip to Beaver Mines. Isolated outbreaks were spotted in the Castlemount district and in Waterton Lakes National Park where heavily attacked and dying trees were observed opposite the fish hatchery and on the park golf course.

1.3 TREE DISEASE CONDITIONS

Red Ring Rot of Conifers, caused by Fomes pini (Thore) Lloyd.

The new areas of infection were found this season. Fruiting bodies were found on living alpine fir trees in the Dutch Creek timber stands in the Livingstone district. They were again found at the mill site of the Blairmore Lumber Company, 6 miles south of Blairmore on mature Englemann spruce trees. The range of this disease has now been established to include nearly all the areas covered by conifers in southern Alberta.

Heart Rot of Hardwoods, caused by Fomes igniarius (L. ex. Fr.) Gill.

This common rot of trembling aspen was found occasionally in all areas visited in the Crowsnest and Bow River Forest reserves. In most stands of mature trembling aspen, conks were commonly found.

Stem Canker of Pine, caused by Atropellis piniphila (Weir) Lohman & Cash.

Infections of this canker were found in 4 new areas during the 1955 field season. The first was found in a small area in a lodgepole pine stand near the permanent sampling station 6 miles northwest of Coleman, Alberta. The second area was found approximately 1 mile south of the Waterton Lakes Park Gate. The third, was discovered 2.5 miles north of the Castlemount Ranger Station in the Crowsnest Forest Reserve. This outbreak covered an area of approximately 7 square miles. The last area was found 12 miles northwest of the Elbow Ranger Station in the Bow River Forest Reserve. A more detailed study of these outbreaks is planned for the 1956 field season by the members of the Forest Pathology Laboratory in Calgary.

The outbreak in the Red Rock Canyon area of Waterton Lakes National Park covering over 6 square miles, was found to be 70 per cent infected.

Root Rot caused, by Armillaria mellea (Vahl. ex. Fr.) Quel.

Mature Douglas-fir trees were found to be infected by this root fungus on the mountain slope above the Prince of Wales Hotel and on the golf course in Waterton Lakes National Park. During the investigation conducted October 12 on the southeast slopes of Mount Crandell, 45 red topped trees were examined. All of these trees were found to be heavily attacked. A large percentage of the living Douglas-fir trees were also infected.

For detailed report see Appendix "C"

Unknown Galls of Aspen

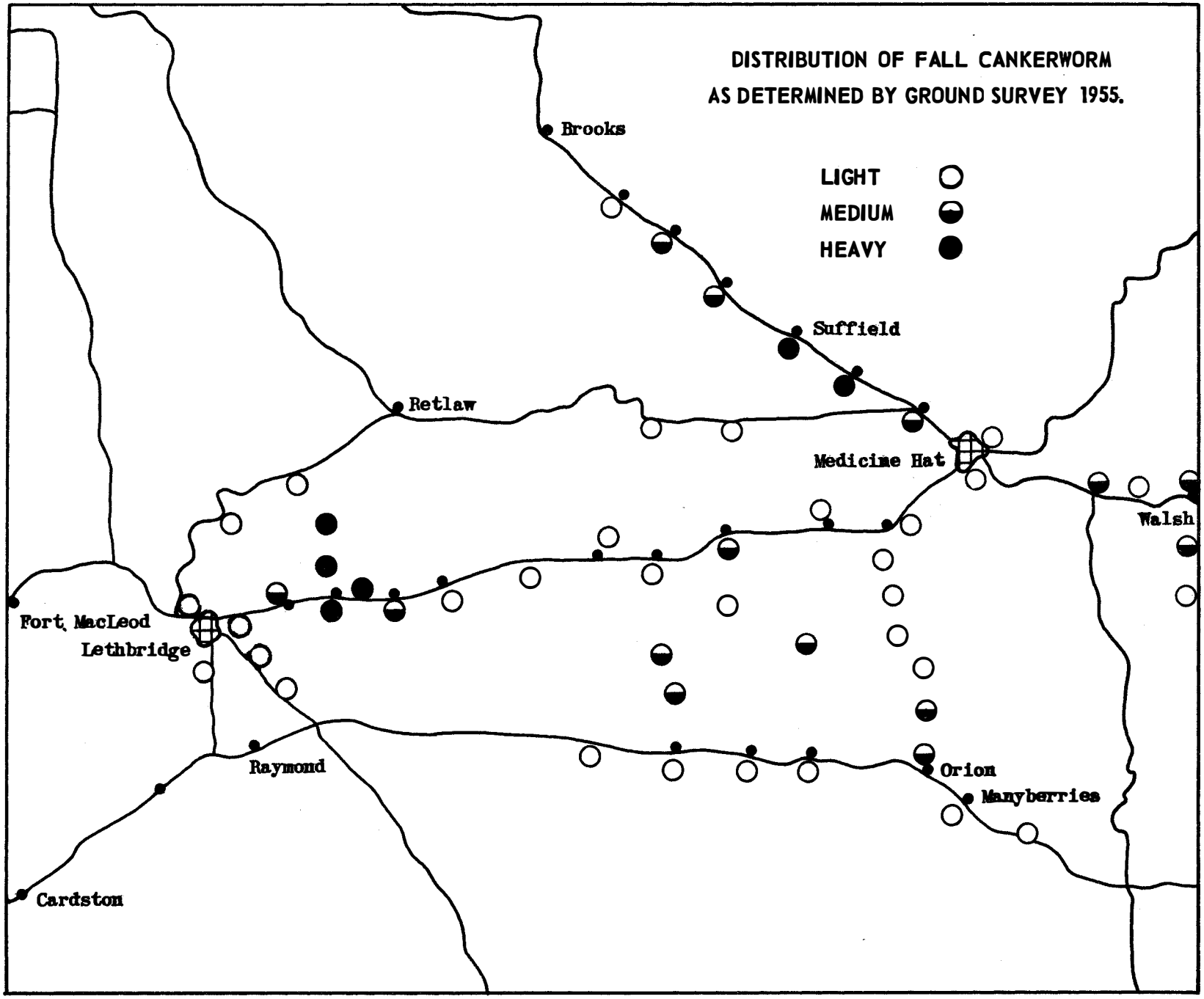
Black galls were commonly found on aspen in many parts of the district. An area heavily attacked by these galls was found 3 miles north of Crowsnest Lake. At present, no explanation for this disorder has been found.

Thelephoraceae

Collections of members of this family of wood rot fungi were made to provide material for a proposed detailed study at the Forest Pathology Laboratory in Calgary. Samples were taken from widely distributed areas of the Bow River and Crowsnest Forest reserves.

Indian Paint Fungus, caused by Echinodontium tinctorium E. & E.

In the vicinity of the Blairmore Sawmill in the Crowsnest Forest Reserve, sporophores of this disease on overmature alpine fir trees were found. These trees are not being logged by the company due to the heavy percentage of rot. In many instances only 2 or 3 inches of solid wood remained. Samples of this fungus were also found on alpine fir trees in the Dutch Creek area.


DISTRIBUTION OF FALL CANKERWORM
AS DETERMINED BY GROUND SURVEY 1955.
LIGHT
MEDIUM
HEAVY
Brooks
Suffield
Retlaw
Medicine Hat
Walsh
Fort MacLeod
Lethbridge
Raymond
Orion
Manyberries
Cardston

FOREST BIOLOGY RANGER REPORT

CLEARWATER DISTRICT

ALBERTA 1955

by

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Forest Biology Laboratory

Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March 1956

1.1 INTRODUCTION

District number 2 with which this report is concerned consists of the Clearwater Forest Reserve, that portion of the Bow River Forest Reserve lying north of the Bow River, and the adjacent agricultural land eastward to the Saskatchewan boundary.

Field work began May 23 and ended October 7. Routine sampling in the forested areas, and inspections of shelterbelts in the agricultural area occupied the greatest portion of the season. During the field season 185 insect collections and 30 pathology collections were submitted.

A 20 foot house trailer was supplied for the Clearwater district this year. A propane refrigerator was installed on an experimental basis; both the trailer and the refrigerator proved to be very satisfactory.

At the request of the Provincial Horticulturist, Mr. P. D. McCalla, several days were spent at the Bowden and Lacombe nurseries during the annual pest control inspection.

Five spruce seed production plots set up by the Federal Forestry Branch were sampled.

Four larch sawfly plots were set up in the Clearwater Reserve and one in the agricultural area northeast of Red Willow. These plots were spaced at approximately 50 mile intervals and will be used for population and parasite incidence studies.

Lodgepole pine were examined at 5 mile intervals on the trunk road from Nordegg to the Ghost Ranger Station in an effort to fill in a gap in the known distribution of Atropellis piniphila (Weir) Lohman & Cash. in the foothills. This fungus causes a canker disease of pine.

1.2 INSECT CONDITIONS

Black-headed Budworm, Acleris variana (Fern.)

The black-headed budworm was distributed throughout the forested area of the district in very small numbers. The heaviest population was found about 12 miles north of Harlech on the Atlas Lumber Companie's Haul Road. The population was very light and there was little sign of damage.

Larch Sawfly, Pristiphora erichsonii (Htg.)

Larch sawfly populations were found in varying degrees of intensity in the tamarack stands of the district. The heaviest population was found in an isolated stand of tamarack 10 miles northeast of Red Willow, where individual trees showed up to 90 per cent defoliation. It was estimated that 70 per cent of the cocoons had been opened by rodents. In the vicinity of Pigeon Lake and westward to Buck Lake a medium population was found. From Rocky Mountain House to the southern and westward limits of tamarack, the population of larch sawfly was very light. (See Appendix A)

Five population study plots were established at the following locations: James River Store, Willow Creek, Ferrier, Poplar Creek and Red Willow. Another plot will be established in the Buck Lake area next year.

Large Aspen Tortrix, Archips conflictana (Wlk.)

Curled leaves resulting from the activities of the large aspen tortrix were noted in nearly every aspen stand in the district. The heaviest population was observed around Stettler.

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

In the agricultural area of the district on both sides of No. 2 Highway from Calgary to Ponoka, yellow-headed spruce sawfly were found in

varying degrees of intensity. From the Highway westward to the merging of farm and forested lands, few shelterbelts escaped damage. Olds was considered the hub of the infestation. Here outbreak conditions prevailed. Many white spruce shelterbelts suffered defoliation, in some instances resulting in tree mortality. The infestation diminished eastward as the distance between shelterbelts became greater.

Many shelterbelt owners were aware of the threat to their trees and on the advice of the District Agriculturist or Field Supervisor many gallons of insecticide were applied. It is thought that timely hints by radio or local newspaper would alert people to the threat to their trees in time to apply control measures.

Spruce Spider Mite, Paratetranychus ununguis (Jac.)

Spruce spider mite was found in most of the shelterbelts of the district. Young trees seemed to be the most heavily attacked. Collections were sent in from Consort, Stettler, Lacombe, Buck Lake, Rocky Mountain House, Bowden, Three Hills and Morrin. Because of the insidious nature and minute size of the spruce spider mite its attack often goes undected until considerable damage has been done. Advice on spraying was given to many shelterbelt owners.

Aphids on Elm, Eriosoma americana Riley

The attack on white elm by E. americana an aphid that causes the leaves of elm to thicken and curl was widespread but moderate in intensity. Collections were sent in from the Hand Hills, Drumheller, Bowness, Bowden and Coronation.

Adelgidae

Tamarack cones in the vicinity of Sundre, Rocky Mountain House and Buck Lake were found to be infested with an unidentified adelgid.

Cecidomyidae

The pupae of an unidentified fly were found deep in the core of white spruce buds in early June, in the Clearwater Forest Reserve. The population appeared to be heavier at lower elevations. It was found from Sundre in the south to the Blackstone River in the north and from Nordegg in the west to Red Deer in the east. These insects were successfully reared and will be submitted to the Systematic Unit for identification.

1.3 TREE DISEASE CONDITIONS

Stem Canker of Pine, caused by Atropellis piniphila (Weir) Lohman & Cash.

Lodgepole pine were examined at 5 mile intervals on the Trunk Road from the Ghost Ranger Station to the Ram River to establish the degree of A. piniphila infection in this area. The heaviest infections occurred between the Ghost and Red Deer Ranger stations and near the Clearwater Ranger Station. From the Red Deer Ranger Station north for 30 miles infected trees were scarce and the samples taken showed no fruiting stage.

Adjacent to the Atlas Lumber Companie's Haul Road 10 miles north of Harlech a severe outbreak of A. piniphila was found. A number of lodgepole pine growth study plots set up by the Federal Forestry Branch in this area were found to be infected.

Mushroom Root Rot of Pine or Other Hosts, caused by Armillaria mellea (Vahl. ex. Fr.) Quel.

Relatively high mortality of regeneration lodgepole pine associated

with the mushroom root rot fungi A. mellea was found in a burn a few miles north of the David Thompson Highway near the Clearwater Forest Reserve boundary. The burn is several miles in extent and the trees average about 4 feet in height.

Pine Rust Galls, caused by Cronartium harknessii (Moore) Meinecke

A stand of pole sized lodgepole pine 3 miles east of Harlech, adjacent to the David Thompson Highway was found to be heavily infected with rust galls.

Cherry Black Knot, caused by Dibotryon morbosum (Schw.) T. & S.

A collection from Red Deer and one from Donalda helped to fill in a gap in the known distribution of cherry black knot. The incidence was not heavy.

FOREST BIOLOGY RANGER REPORT

NATIONAL PARKS DISTRICT

ALBERTA 1955

by

J. Petty

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Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March, 1956

1.1 INTRODUCTION

This report covers insects and diseases common to the trees in Banff, Jasper, Kootenay and Yoho national parks. Insect populations in these parks were at a low level in the 1955 season. The lodgepole needle miner has declined in all the areas sampled throughout the parks. Information on the needle miner in Banff Park was obtained from R. W. Stark, and in the other parks from sequential sampling carried out during the latter part of August. Spruce budworm were more common in Yoho Park than in the other parks but only light damage was evident. Larvae of the black-headed budworm were numerous around Banff but again only light damage was caused. Larch sawflies were found in a small stand of tamarack along the Miette Hot Springs Road in Jasper Park.

A needle cast of lodgepole pine was found in all areas that were surveyed in the Park District. The most notable discoloration caused by needle cast was up the Cascade and Spray River valleys. Atropellis canker was present in a stand of lodgepole pine a short distance up the Geraldine Lake Road, Jasper Park.

In the latter part of May, Jasper Park experienced a heavy wet snowfall, causing considerable breakage in immature lodgepole pine stands between Athabasca Falls and Jasper.

Surveys were conducted in the National Parks from June 20 until September 9 when the ranger moved to Seebe to assist with rearing until the field station there was closed. The late start in the spring was attributable to the transfer from Indian Head not being completed until the middle of June. Approximately 4 days in mid-August were spent examining and making

collections from plots set up by the Federal Forestry Branch to determine spruce seed production. Two hundred and eight insects and 42 disease collections were submitted. An additional 5 insect collections were sent in by cooperators.

Accommodation in the field was an 18 foot house trailer which was used as headquarters. On extended trips away from the trailer a car top tent provided sleeping quarters.

Roads in the district were in good condition and favorable weather prevailed throughout the season.

1.2 INSECT CONDITIONS

Lodgepole Needle Miner, Recurvaria sp.

Populations of this insect declined in all the areas examined. Sequential sampling was carried out in Kootenay, Yoho and Jasper national parks, but showed only light infestations. Observations in Banff Park showed that light infestations prevailed in all areas with the exception of 2 of limited extent. These areas were in the valley mouth of the Cascade River and on the shoulder of Mount Girouard where medium-light infestations were present.

In Kootenay Park, sampling was done at Numa Valley, Hawk Creek and Kootenay Crossing. Light infestations were found at Hawk Creek and Numa Valley.

Of the 5 locations sampled in Yoho Park between Ottertail Creek and the Great Divide, 3 had light infestations. These were at Dempster Creek, 1.5 miles north on Emerald Lake Road, and below the west end of the Spiral Tunnels.

Sampling in Jasper Park was done at various locations between Poboktan Creek and the north gate. Results of this sampling showed that a light infestation was still present between Leach Lake and Portal Creek. It also extended up the Edith Cavell Road about 2.5 miles.

Representative collections of dead larvae, which were frequently found were submitted to Seebe for examination but no results have been obtained as yet.

Spruce Budworm, Choristoneura fumiferana (Clem.)

This budworm was common throughout Yoho Park. Light damage to Douglas-fir, alpine fir and spruce was general along the Ice River Road at Ottertail and Boulder creeks, up the Amiskwi Road to the lumber camp, along the Emerald Lake Road, and at the Kicking Horse Camp Grounds.

In Kootenay Park there was light damage to alpine fir and spruce between Marble Canyon and the mouth of the Simpson River.

Collections of this budworm in Banff Park were made at the permanent plots at Redearth Creek, Boom Creek and Saskatchewan Crossing. Damage was very light in these places.

At mile 29 of the Jasper-Banff Highway in Jasper Park only a trace of damage was caused by the spruce budworm.

Black-headed Budworm, Acleris variana (Fern.)

The distribution of the black-headed budworm in Banff Park extended from the main gate to approximately mile 95 of the Banff-Jasper Highway. Throughout this area the damage to spruce and fir was very light. Around the golf course at Banff, larvae were numerous but they did not cause much damage.

In Jasper Park there was very light damage to the trees between Athabasca View Point and Celestine Lake Road.

Along the Ice River Road and at the Kicking Horse Camp Grounds in Yoho Park there was a trace of damage.

Collections of this budworm were made between Simpson River and Marble Canyon in Kootenay Park. Only light damage to alpine fir and spruce was observed.

Larch Sawfly, Pristiphora erichsonii (Htg.)

A small isolated area of tamarack, about 1 mile long and 300 yards wide, along the road to Miette Hot Springs, was found to be infested with larch sawfly. Defoliation up to about 10 per cent was caused this year.

A Spruce Weevil, Pissodes sp.

Many of the open grown young spruce trees between Kootenay Crossing and the south boundary of Kootenay Park were attacked by this spruce weevil.

Near Ottertail Creek in Yoho Park a small number of open grown regeneration spruce have been attacked.

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

A few larvae of this sawfly were found in various locations throughout Banff and Jasper parks. The damage caused by these larvae was negligible.

Balsam-fir Sawfly, Neodiprion abietis (Harr.)

Although larvae of this sawfly were found in several locations throughout Banff, Jasper and Kootenay parks, there was no place where more than a trace of damage occurred.

Spruce Spider Mite, Paratetranychus ununguis (Jac.)

Planted spruce and fir in the townsites of Banff and Jasper were moderately infested with spruce spider mite.

Pine Needle Scale, Phenacaspis pinifoliae (Fitch)

There was a light infestation of pine needle scale on Douglas-fir between the Hot Springs and south gate of Kootenay Park.

Adelgidae

Many of the new needles of Douglas-fir reproduction near Banff and Jasper were disterted as a result of feeding by Adelges cooleyi (Gill.) nymphs. Galls caused by this species were found throughout the parks.

Adults of Pineus pinifoliae (Fitch) were found on the needles of limber pine near the north fork of the Saskatchewan River and, at the east end of Lake Minnewanka.

Fir Shoot Sawfly, Prob. Pleroneura borealis (Felt)

This sawfly was present in the new shoots of small alpine fir growing between Lake Louise and Nigel Creek in Banff Park and at Emerald Lake in Yoho Park. Very light damage was evident.

Bark Beetles

A report of reddening of pine in a small area on King mountain, up from the bridge crossing the Otterhead Creek in Yoho Park, was investigated by R. Shepherd and the author. The trees were overmature and there was considerable windfall. Living trees were being attacked by Ips sp. Dendroctonus monticolae (Hopk.) was found infesting live windfall.

Along the east side of the Kootenay River, from Pitts Creek, south to the park boundary, Ips were infesting lodgepole pine that had recently been damaged by animals.

In Banff Park some Douglas-fir and a few limber pine at the east side of Lake Minnewanka are infested with Ips. A few lodgepole pine on Tunnel Mountain have also been attacked by Ips.

The only collection of bark beetles from Jasper Park was that of Ips in lodgepole pine, 5 miles north of Jasper townsite.

1.3 TREE DISEASE CONDITIONS

Fungus Parasite of Dwarf Mistletoe, Wallrothiella arceuthobii (Pk.) Sacc.

This fungus parasite was found attacking mistletoe in 2 separate locations in the park area. One was at the south end of the Settlers Road in Kootenay Park and the other in Jasper Park about 1 mile up the trail to Marmot Basin.

Stem Canker of Pine, caused by Atropellis piniphila (Weir) Lohman & Cash.

An immature stand of lodgepole pine along the Geraldine Lake Road in Jasper National Park, has been attacked by this stem canker.

Needle Cast of Pine, caused by Hypodermella montivaga (Petrak.) Dearn.

Discoloration of lodgepole pine foliage, due to needle cast, was evident throughout most of the park area that was surveyed in 1955. The heaviest damage occurred for about 6 miles up the Cascade River Valley and 15 miles up the Spray River Valley.

Poplar Tar Spot, caused by Sclerotium sp.

This tar spot was present in a stand of aspen poplar along the

east side of the Kootenay River about 5 miles north of the south boundary of Kootenay National Park. The area in which damage occurred was small but about 25 per cent of the foliage was affected.

Blister Rust of White Bark Pine, Cronartium ribicola Fischer.

The first report of this rust in the park area comes from Emerald Lake, Yoho National Park. One limber pine tree was affected.

Needle Cast of Larch, Hypodermella laricis Tub.

The foliage of western larch along the Settlers Road, Kootenay National Park, was again in 1955, seriously discolored by this needle cast.

FOREST BIOLOGY RANGER REPORT

BRAZEAU-ATHABASCA DISTRICT

ALBERTA 1955

by

V.B. Patterson

Forest Biology Laboratory

Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March 1956

1.1 INTRODUCTION

Field work was carried out from June 19 to September 27 in the Brazeau-Athabasca Forest Biology Ranger District. This district is comprised of the Edson Forest Division, the Whitecourt Forest Division and the adjoining agricultural area east to Edmonton.

The first month was spent on random sampling while becoming familiar with the sampling plots and stations. General survey work was terminated at the end of the first week in September when heavy frosts occurred. A ranger meeting was held the following week at Athabasca to decide on a sampling programme for the larch sawfly. The remaining time in the field was spent setting up and sampling plots in tamarack stands throughout the district.

The ranger cabin at Entrance was used as headquarters and a cartop tent was used on extended trips.

Permanent sample plots were established near McLeod River Post Office and northwest of the Muskeg River Ranger Cabin at the beginning of the new forestry road. Tentative locations south of Entwistle and west of Whitecourt were chosen and will be established next season.

In cooperation with the Federal Forestry Branch, data was collected from 2 spruce seed investigation plots. This project required approximately 1 day per plot during the second and third week of August.

An overnight trip was made to Strachan with Dr. V.J. Nordin to assist in recording data on tree diseases in permanent sample plots.

A total of 195 insect samples and 13 disease samples were collected in the district.

Spruce and larch sawflies were responsible for much of the serious

defoliation to conifers. The yellow-headed spruce sawfly was found in every plantation checked east of Alberta Beach and Carvel. A high percentage of these locations showed moderate defoliation. Small populations were recorded on native stands of spruce throughout the district. There was a sharp rise in numbers of larch sawfly in 1955.

1.2 INSECT CONDITIONS

Black-headed Budworm, Acleris variana (Fern.)

A light infestation of the black-headed budworm was recorded in the Entrance area between a point a few miles north of the town and the east gate of Jasper Park. Larvae were collected outside of this general area at: Sterco and Weald on the Coal Branch, and Edson and Evansburg on No. 16 Highway. Only a few larvae were collected at each location and injury was light.

Forest Tent Caterpillar, Malacosoma disstria (Hbn.)

There was no evidence of the forest tent caterpillar outbreak that was centered around McKay for the past several years.

Larch Sawfly, Pristiphora erichsonii (Htg.)

The larch sawfly was found generally from Edmonton west to Peers along No. 16 Highway and north of this line to Whitecourt, Ft. Assiniboia and Barrhead. Heavy defoliation occurred from Edmonton to Spruce Grove and gradually became lighter toward the west. In the Spruce Grove area, defoliation was as high as 95 per cent but north and west of this point the infestation was light with moderate defoliation in scattered "pockets". The presence of larvae, and light injury were recorded at a few isolated locations

west of Niton: at McLeod River, Bickerdike, Foothills, on the Oil Road at Twelve Mile Creek and northwest of the Muskeg River Ranger Cabin.

Permanent sample plots were set up at Edmonton, Gainford, Peers, Barrhead, Whitecourt and Twelve Mile Creek. Curled tip samples were taken from all plots, and cocoons from all plots excepting Peers and Twelve Mile Creek. No cocoons were collected at these plots due to snow conditions.

Large Aspen Tortrix, Archips conflictana (Wlk.)

Injury typical of the large aspen tortrix was noted at a few locations in the Entrance area and on the Coal Branch. No larvae were collected anywhere in the district.

A Spruce Weevil, Pissodes sp.

Injury by this spruce weevil was recorded on the Drayton Valley Highway south of Entwistle, and near MacKay. Only a few tips were affected at each location. Injury occurred on open grown trees approximately 12 feet in height.

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

Larvae of the yellow-headed spruce sawfly were found throughout the forested area west of the Entrance Turnoff on No. 16 Highway and in the Whitecourt-Rochfort Bridge area. Only a few larvae were collected at each location and injury was very light. In the area west from Edmonton to Carvel and north to Sangudo and Barrhead, planted white spruce were infested in varying degrees. The injury was generally moderate, but at several locations, particularly in the Carvel-Alberta Beach area, defoliation was as high as 90 per cent. No damage was found south of No. 16 Highway.

Balsam-fir Sawfly, Neodiprion abietis (Harr.)

Two small collections of the balsam-fir sawfly were made; one outside the east gate of Jasper Park and the other near Carvel on No. 16 Highway. Only a few colonies were present at each location and injury was negligible.

Spruce Spider Mite, Paratetranychus ununguis (Jac.)

Spruce spider mite was not recorded on any native spruce throughout the district. A moderate infestation was found on planted spruce west of Spruce Grove.

Spotted Tussock Moth, Halisadota maculata (Harr.)

Larvae of the spotted tussock moth were found in small numbers at 2 locations: one along the McLeod River south of Whitecourt and the other north of Stony Plain.

1.3 TREE DISEASE CONDITIONS

Heart Rot of Hardwoods, caused by Fomes igniarius (L. ex. Fr.) Gill.

This disease was recorded in a stand of mature trembling aspen near MacKay. Conks were found generally on dead windfalls and also on living trees.

Shoot Blight of Poplar, caused by Fusicladium radiosum (Lib.) Lind.

This condition was general on balsam poplar in a small area on the south shore of Lake Obed.

Poplar Tar Spot, caused by Sclerotium sp.

Light damage caused by this disease was present at almost every location throughout the district where trembling aspen were examined.

Root Rot of Pine, caused by Armillaria mellea (Vahl. ex. Fr.) Quel.

This condition was general in regeneration of lodgepole pine along the Coal Branch Road. Dead pine up to 5 feet in height were noted along the Sterco and Mercoal roads and as far north as the old burn 6 miles north of Robb. The same condition exists on the saw mill road on the north bank of the Athabasca near the Entrance Cabin.

Saskatoon Witches Broom, caused by Apiosporina collinsii (Schw.) von Hohnel

This sooty mold was noted at locations scattered throughout the district. At 1 location west of Brule there was heavy injury to almost every tree, several terminals having died back 12 to 18 inches.

FOREST BIOLOGY RANGER REPORT

NORTHEASTERN DISTRICT

ALBERTA 1955

by

E.J. McNeil

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Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March 1956

1.1 INTRODUCTION

The Northeastern District covered by this report consists of Forest Biology Ranger District 5 and the eastern portion of District 6, comprising the Lac La Biche and Slave Lake Forest divisions and the adjoining agricultural area.

Insect and disease surveys in this district commenced May 10 and ended September 26, 1955. During this time a total of 345 insect samples and 83 disease samples were submitted.

In May, 9 new sampling stations were set up at the following points: Moose Portage, Athabasca, Wetaskiwin, Elk Island Park, St. Paul, Cold Lake, Lac La Biche, Conklin and Waterways.

In early June the author accompanied Mr. W. E. Coast, Forest Superintendent for the Lac La Biche Forest Division on a speeder trip from Lac La Biche to Waterways to inspect larch stands for sawfly damage. A canoe trip was taken up the Clearwater River as far as the Saskatchewan border to inspect all timber types in the area.

From September 8 to September 26, 10 larch sawfly plots were established at approximately 50 mile intervals along the main roads in districts 5 and 6.

The cooperation and help of the Alberta Forest Service and the District Agricultural Service was very much appreciated.

1.2 INSECT CONDITIONS

Black-headed Budworm, Acleris variana (Fern.)

Although these budworm were found in nearly all white spruce stands examined, comparison counts revealed a decrease in population from the previous year.

Larch Sawfly, Pristiphora erichsonii (Htg.)

Heavy infestations of larch sawfly were found at Calling Lake, Slave Lake, Lac La Biche, Spedden and Millet. In the St. Paul - Cold Lake area where a heavy population was found in 1954 there was a decrease in numbers. Medium infestations were found along the Northern Alberta Railway Line at Conklin and Waterways. West of Slave Lake the larch sawfly population decreased to medium at Joussard and light at High Prairie. (See Appendix A)

In the St. Paul - Cold Lake area where heavy defoliation has occurred over a number of years, tree mortality as high as 20 per cent was observed.

On September 8 and 9 a field meeting was held at Athabasca to discuss methods of setting up population study plots for larch sawfly. Two trial plots were established to familiarize rangers with the technique. Following this meeting 8 study plots were set up in the district.

American Poplar Beetle, Gonioctena americana (Schaeff.)

There has been a noticeable decrease in the populations of this insect during the past season. A few larvae and adults were found at intervals throughout the district.

Large Aspen Tortrix, Archips conflictana (Wlk.)

Although the large aspen tortrix was collected at many locations in the district, larvae were not numerous and no extensive defoliation was encountered.

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

The yellow-headed spruce sawfly was found in outbreak proportions

in the following areas in 1955: Westlock, Edmonton, Fort Saskatchewan, Spedden, St. Paul, Wetaskiwin, Camrose, Wainwright and Provost. In Edmonton, Wainwright and Provost several trees have been killed by repeated defoliation.

Spruce Spider Mite, Paratetranychus ununguis (Jac.)

Medium infestations of spruce spider mite were found at Lac La Biche, Edmonton and Wetaskiwin, although no appreciable damage was noted. Low populations were found in many parts of the district.

Spotted Tussock Moth, Halisidota maculata (Harr.)

Several samples of this insect were taken in the Lac La Biche area. Large numbers of larvae were found in some localities but no appreciable defoliation was noted.

Ugly-nest Tortrix, Archips cerasivorana (Fitch)

Many chokecherry bushes in the vicinity of Lac La Biche and Cold Lake were infested with these tortricids. Very few nests were found in these areas in 1954.

1.3 TREE DISEASE CONDITIONS

Hypoxylon Canker of Poplar, caused by Hypoxylon pruinatum (Klotzsch) Cke.

The known distribution of this canker was extended north to Waterways with the collection of samples along the Northern Alberta Railroad between Lac La Biche and Waterways.

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

A severe attack of this organism was in evidence on white spruce within a 12 mile radius of Imperial Mills. Heavily infested trees were also

found in the Smith-Spurfield area. Premature fall of infected needles occurred. No tree mortality is expected unless weather conditions favorable to this disease persist for a numer of years.

Defoliation of Aspen (cause unknown)

Aspen stands in an area 4 miles long by 9 miles wide at Derwent were completely devoid of leaves this summer from early June until fall. On close examination no evidence of the defoliating agent could be found. There is however, a possibility of hail damage. Careful examination of the area next year may throw considerable light on the cause of this years blight.

FOREST BIOLOGY RANGER REPORT

NORTHWESTERN DISTRICT

ALBERTA 1955

by

R.R. Stanley

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Calgary, Alta.

Canada Department of Agriculture

Science Service

Forest Biology Division

March, 1956

1.1 INTRODUCTION

The area covered in this report consists of Forest Biology Ranger Districts 7, 8 and the western part of District 6, comprising the Peace River Forest Division, the Grande Prairie Forest Division and the forested area in the Northwest Territories. Activities commenced on May 7 and continued to October 4.

During 1955, little rain, good road conditions and an extended field season resulted in an exceptionally good year for Forest Insect and Disease Survey work in the northern districts. It was possible to enter isolated timber stands by using oil company and logging roads that were impassable in previous years. Very few days were lost through weather, and it was possible to spend more time in infested areas than previously. Another important factor contributing to increased coverage was the 21 foot cabin cruiser purchased to work the larger rivers and lakes in the north. Approximately 1600 miles of territory, inaccessible by road, were covered with this craft.

Two special trips were made during the past season. The first one was a ground and aerial check of the spruce budworm outbreak near Wadlin Lake and along the Wabiskaw River. This survey was made in company with C. E. Brown, Officer-in-Charge of the Forest Insect Survey. On completion of this survey, a trip was made by boat from Hay River to Norman Wells, N.W.T., to investigate the spruce budworm outbreak along the Mackenzie River. The latter inspection was made by C. E. Brown, J.K. Robins, F.B.R. Supervisor, and R. Stanley, F.B.R. (See Appendix B)

In July the cabin cruiser was launched at the town of Peace River and a trip was made up the Peace to the B.C. boundary. Samples were

taken from areas inaccessible by road. Logging operations along the river were inspected for bark beetle outbreaks.

During September, 6 larch sawfly plots were established in the following localities: Grande Prairie, Valleyview, Watino, Grimshaw, 25th Baseline on the Mackenzie Highway and mile 158 on the Mackenzie Highway. These plots were set up to estimate sawfly populations.

Observations made during 1955 suggest that there was a general decrease in 3 of the more important insects in the district; the yellow-headed spruce sawfly in the agricultural areas of Peace River, Grande Prairie, and High Prairie, the black-headed budworm along the Mackenzie Highway north of Peace River, and the spruce budworm in the Wadlin Lake area. The only insects to increase in numbers and distribution were the large aspen tortrix which caused defoliation to aspen over a widely scattered area, and the larch sawfly which has established itself in nearly all the tamarack stands throughout the district.

There was little change in tree disease conditions in 1955, except the noticeable absence of Chrysomyxa ledicola (Pk.) Lagerh., a spruce rust that was heavy in this district during 1954.

A total of 326 insect samples and 109 tree disease samples were submitted by the Forest Biology Ranger in this district.

1.2 INSECT CONDITIONS

Spruce Budworm, Choristoneura fumiferana (Clem.)

The limits of the spruce budworm infestation along the Mackenzie River in the Northwest Territories were traced from a point 15 miles upstream from Ft. Simpson to approximately 90 miles downstream from Norman Wells; a distance of 400 miles. The outbreak was continuous, and defoliation

ranged from very light in some areas to large areas where a distinct browning of crowns was visible from a great distance. It was not known how far back from the River this condition extended as the streams flowing into the Mackenzie throughout the infested area were too small to navigate with the boat. The only way of locating these boundaries would be by aircraft.

The outbreak of this insect near Wadlin Lake, and along the Wabiskaw River which caused fairly heavy defoliation of white spruce and balsam fir in 1953 and 1954 declined sharply in 1955. Defoliation was not visible from the air and a ground check proved that although larvae were present in what appeared to be fairly high numbers, defoliation was light. The area involved extended from a point 10 miles upstream from the mouth of Muddy River (in tp. 97, rge. 9, w. of the 5th mer.) to approximately 3 miles below the mouth of the creek flowing out of Wadlin Lake (tp. 100, rge. 9, w. of the 5th mer.), a distance of 27 miles. The reason for the decrease in populations is not known, as parasitism was light.

Black-headed Budworm, Acleris variana (Fern.)

There was a slight decline in population levels in the Peace River and Keg River regions, where black-headed budworm were quite numerous in 1954. Elsewhere in the district a few larvae were taken in nearly all white spruce samples.

Forest Tent Caterpillar, Malacosoma disstria (Hbn.)

There was no appreciable change in the distribution of these caterpillars in 1955. As in previous years very few larvae of this species were found, except for a small outbreak at mile 103 on the Mackenzie Highway;

here medium defoliation of trembling aspen occurred. This is the same stand that has been attacked by these insects for the past 3 years and the population appeared to be building up.

On the basis of an egg survey which showed 4.5 egg bands per 4 inch tree, a further intensification and spread is not expected. The percentage of parasitism was low. The affected area included not more than 30 or 40 acres.

Larch Sawfly, Pristiphora erichsonii (Htg.)

The marked increase in populations of larch sawfly in the Peace River-Grande Prairie divisions, reported in 1954, continued in 1955 over a much larger area. Evidence of this insect's presence was found in nearly all swamps where tamarack trees grew, varying in intensity from a mere trace in the western and northern parts, to scattered small trees completely stripped in the southeastern part of the district. These insects were not present in sufficient numbers to be considered serious as yet, but appeared to be spreading westward across the province.

American Poplar Beetle, Gonioctena americana (Schaeff.)

Very little feeding by this insect was apparent. The light infestation along the Mackenzie Highway from mile 70 to mile 150 during the previous year, declined noticeably in 1955.

Large Aspen Tortrix, Archips conflictana (Wlk.)

The aspen stands around Ft. Vermilion which were heavily defoliated by these insects during 1954 suffered another attack this year, although not nearly as severe as in the previous summer. Defoliation in

patches was quite noticeable from the air within an area approximately 10 miles long and from 2 to 3 miles wide. Parasites (Apanteles sp.) were quite numerous throughout the infested area in 1954 and possibly were partly responsible for the decline in population.

Small, less severe infestations were found at several other points in this district. The most important were; near Grovesdale, where light defoliation was observed in a stand of young aspen approximately 10 square miles in extent, along the roadside from mile 289 to 291 on the Mackenzie Highway, on small scattered patches between Beaverlodge and the B.C. boundary, and in a small patch 3 miles north of the Ft. Vermilion Ferry.

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

Observations over the past 6 years indicate that this species is more generally distributed in this district than the forest tent caterpillar, M. disstria, but does not seem capable of causing serious defoliation to plants other than rose, willow and some small shrubs. They are usually found in small localized outbreaks and appear to remain in the same location from year to year with little change in severity of attack or distribution.

There was a slight increase in the number of these insects from the Alberta boundary to Hay River, N.W.T.; this outbreak has been persistent for the past 3 years. Defoliation was light and confined to the cleared right-of-way along the roadside. In a few spots defoliation extended back from the road a few hundred yards in open muskegs. It was difficult to determine the preferred host as the larvae web up and feed on nearly all small shrubs. They do, however, appear to be more plentiful on scrub-birch, rose and willow.

For the purpose of gathering more information on these insects, a field count of parasites was made from 6 colonies, the results showed that 19 per cent of the larvae were parasitized.

A Spruce Weevil, Pissodes sp.

There was no appreciable change noted in the distribution of this insect during the past season. A few affected terminals were present in white and black spruce stands in nearly all areas.

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

White spruce shelterbelts and planted trees in the agriculture districts of Peace River, Grande Prairie, and High Prairie were infested by these sawflies again in 1955. The attack was not as severe as in the previous summer, but was heavy enough to cause complete defoliation of some of the smaller trees. In the forested area they were commonly collected but damage was negligible.

Needle-Miner, Recurvaria new sp.

Observations, and samples submitted in 1955 showed that needle miner was present in both white spruce and jack pine in this district. South of Grande Prairie these insects were found on jack pine. At Peace River they were collected from both white spruce and jack pine. On opening a few needles it was found that the larvae from both tree species appeared identical and do not resemble the lodgepole needle miner found farther south. Damage resulting from these insects was negligible, but it is of interest as it is the first known record of their presence in this northern district. Adults reared from larvae collected during the summer have been sent to

Ottawa for determination.

Nodule Makers on Jack Pine, Petrova sp.

These insects are causing quite serious damage to stands of regeneration jack pine in this district. Deformed tops or trees broken off by wind after the main trunk has been weakened by these insects, affected up to 30 per cent of the young trees in some localities. The areas most heavily attacked were along the Wapiti River from its mouth to approximately 35 miles upstream, near the town of Peace River, and west of Clear Prairie near the B.C. boundary. These were small scattered stands of little economic value.

1.3 TREE DISEASE CONDITIONS

Hypoxylon Canker of Poplar, caused by Hypoxylon pruinatum (Klotzsch) Cke.

There was a westward extension of the known distribution of this disease to within 10 miles of the B.C. boundary, the previous westward limits were Grande Prairie. The known northern boundary remains the same as in 1954, with the most northerly sample collected at mile 250 on the Mackenzie Highway.

Dwarf Mistletoe of Pine, Arceuthobium americanum Nutt.

This parasite is well established in jack pine stands along the Wapiti River south of Grande Prairie. The typical spike-top condition caused by heavy mistletoe attack was apparent over an area approximately 15 miles in length along the river banks. Some tree mortality has been caused by this pest.

Shoot Blight of Poplar, Fusicladium radiosum (Lib.) Lind.

This fungus was fairly widespread in the area south of Wembley

during 1955, but is not likely to cause permanent damage to the trees affected.

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

Very few samples of this disease were collected during 1955, the field observations indicate a very noticeable decline in its occurence throughout the district. In 1954 spruce stands in this area suffered heavy attacks and damage is still apparent in the lack of the previous year needles.

Retinocyclus sp. Associated with Spruce Canker

This fungus associated with cankers on small white spruce, has been found widely distributed in this district and as far north as Ft. Simpson in the Northwest Territories. Whether this fungus causes the canker or is a saprophyte on wounds has not been determined. One of the affected patches is known to be at least 2 miles long and one half mile wide. Here 75 per cent of the small spruce show a heavy resin flow on the main trunk about 2.5 feet from ground level.

Cytospora sp. on Tamarack

A species of Cytospora has been found associated with cankers on a few tamarack south of Grande Prairie. These organisms on conifers seem relatively rare and this area should be carefully watched for possible build-up.

Unidentified Thelephoraceae

Fourteen collections of Thelephoraceae were made on several hosts throughout the district. Many of these organisms are a known cause of decay

and material was collected for future detailed study at the Forest Pathology Laboratory, Calgary.

Unexplained Clumping of Aspen

Patches of trembling aspen throughout the district were affected by this unexplained disease. Thinning of foliage, and the remainder of foliage forming clumps at the tip of the branches is characteristic of this disease.

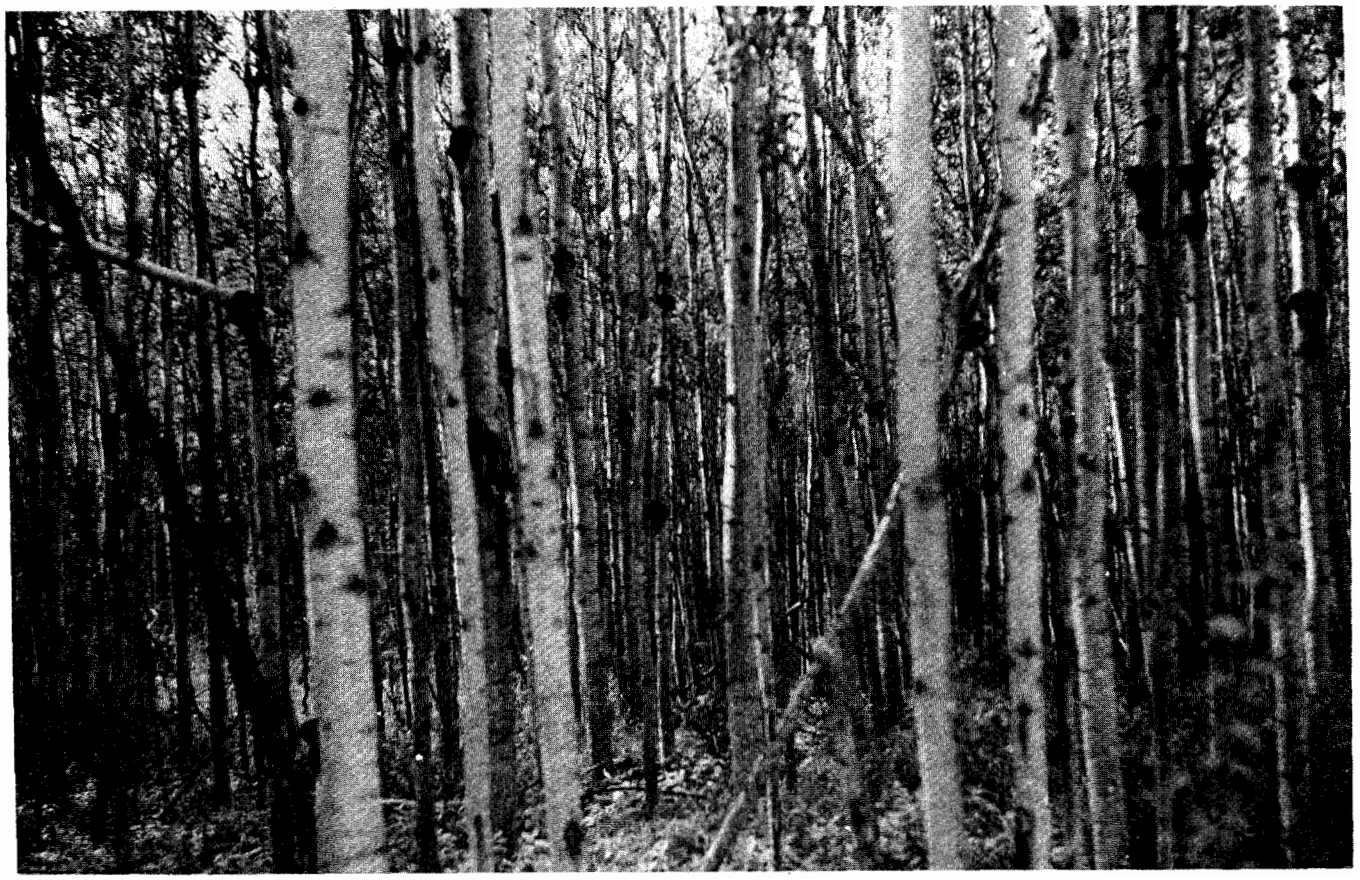
Unknown Galls of Aspen

Approximately 80 per cent of the aspen in a small patch 8 miles west of Worsley was affected by this disease which attacks the main trunk of the tree causing death by girdling or breaking off. The cause of this canker is not known and will bear watching for evidence of spread in future years.

Polyporus abietinus Dicks. (Ex.) Fr.

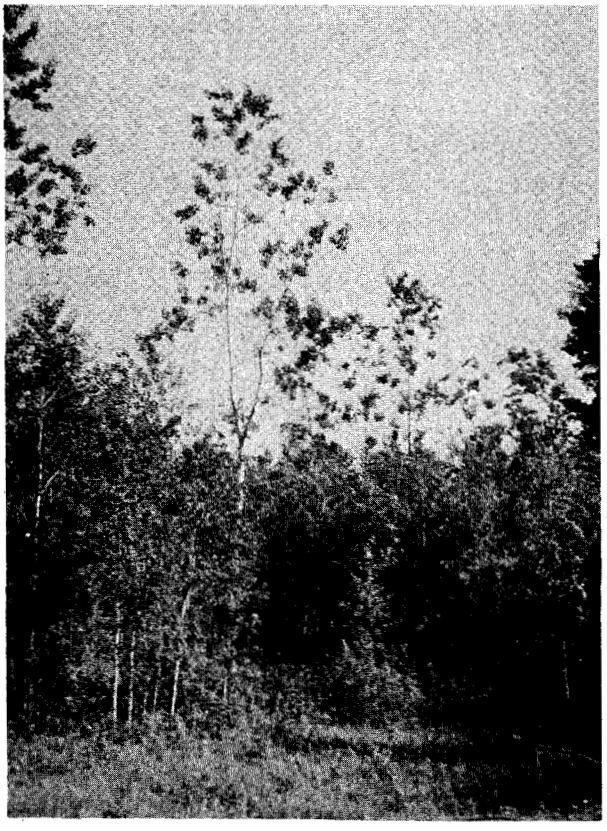
This slash decay organism, common on conifers, was collected as far north as Ft. Providence in the Northwest Territories. This was the most northerly known distribution recorded in this region.

1.3.4 Dwarf mistletoe of pine, Grande Prairie, Alta.



1.3.31 Black canker on Poplar - Worsley, Alta.

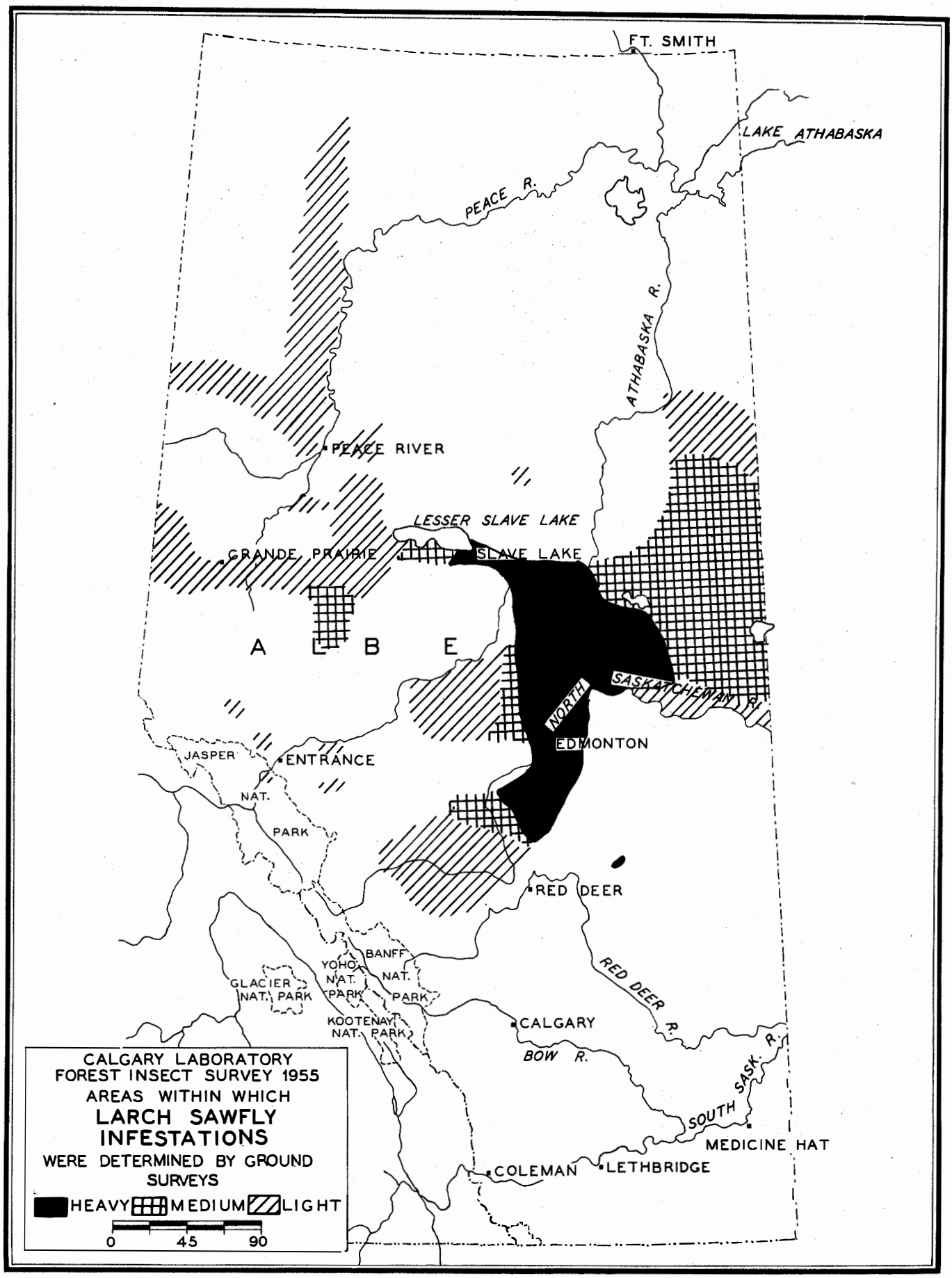
1.2.7 Defoliation by large Aspen Tortrix, Archips conflictana (Wlk.) Ft. Vermilion, Alta.



1.3.30 Unexplained clumping of Aspen foliage - Ft. Vermilion, Alta.

APPENDIX A

Larch Sawfly Infestation Map


FT. SMITH
LAKE ATHABASKA
PEACE R.
ATHABASKA R.
PEACE RIVER
LESSER SLAVE LAKE
GRANDE PRAIRIE
SLAVE LAKE
A L B E
NORTH SASKATCHEWAN R.
EDMONTON
JASPER NAT. PARK
ENTRANCE
RED DEER
BANFF NAT. PARK
YOHO NAT. PARK
GLACIER NAT. PARK
KOOTENAY NAT. PARK
CALGARY
RED DEER R.
BOW R.
SOUTH SASK. R.
MEDICINE HAT
COLEMAN
LETHBRIDGE
CALGARY LABORATORY
FOREST INSECT SURVEY 1955
AREAS WITHIN WHICH
LARCH SAWFLY
INFESTATIONS
WERE DETERMINED BY GROUND SURVEYS
HEAVY
MEDIUM
LIGHT
0
45
90

APPENDIX B

Spruce Budworm Reports and Infestation Map

A REPORT ON THE SPRUCE BUDWORM OUTBREAK IN THE VICINITY OF WADLIN LAKE, ALTA. JUNE 1955

In 1953 members of the Alberta Forest Service reported an outbreak of spruce budworm, Choristoneura fumiferana Clem., along the Wabiskaw River south of Wadlin Lake. In 1954 personnel of the Forest Zoology Laboratory, Calgary, visited the area and reported an outbreak extending for 25 miles up river from the mouth of the creek flowing out of Wadlin Lake. Defoliation was reported to be as high as 50 per cent at some places.

On June 24, 1955 this area was surveyed from the air. On June 25 and 26 ground samples were taken along the Wabiskaw River.

A float equipped Beaver aircraft was used for the aerial survey. The survey partly consisted of C. E. Brown and R. R. Stanley of the Forest Zoology Laboratory, Calgary, and Mr. Stan Smith of the Alberta Forest Service, Fort Vermilion.

The aircraft took off from Fort Vermilion about 9:50 A.M., circled south of the Fort for a look at the large aspen tortrix damage in that area and then flew southeast until the Wabiskaw River was reached. The aircraft flew south along the River to a point approximately 10 miles below the Muddy River and then northeast paralleling the Wabiskaw River and about 5 miles west, to the east end of Wadlin Lake. It flew westward to beyond the end of the Lake, then circled back between Wadlin Lake and the Muddy River. A landing was made near the mouth of the creek running out of Wadlin Lake.

The aircraft then returned to Fort Vermilion on a course a little east of that used on the outward journey, circuits were made around 2 fires to observe their progress.

The second trip to land the ground party on the Wabiskaw River had to be postponed until evening due to very hot weather and unstable flying conditions.

On the aerial survey no discolouration which could be attributed to the spruce budworm was observed. A slight brownish color was evident on most of the trees but it was believed to be due to a large number of last years cones on the trees.

Several patches of mixed balsam fir and spruce along the River contained red topped trees. These were later checked on the ground and the cause of death was believed to be due to a needle cast belonging to the genus Hypodermella.

Defoliation caused by the large aspen tortrix was very obvious from the air. It occurred in a semi-circular area south of the Peace River centered around the town of Fort Vermilion. The damage caused by this insect was less than in 1954. Most of the area was lightly defoliated with scattered patches of medium to heavy defoliation.

Approximately 35 per cent of the large aspen tortrix pupae collected in this area were parasitized.

On June 25, Brown and Stanley travelled up the Wabiskaw River from their camp near "Wadlin Creek" to within 3 or 4 miles of the Muddy River, checking for spruce budworm at frequent intervals. A few larvae were observed at almost every stop but not enough were present to cause noticeable defoliation or discolouration of the trees. Larvae were most plentiful in a stand of white spruce at a bend in the River located in Tp. 99, Rge. 9, but even here defoliation was classed as light. About 600 larvae were collected in 2 hours. These larvae were sent to the laboratory in order that an estimate of the control expected by parasitism could be obtained. On June 26 the party returned by river to Fort Vermilion. Spruce budworm in very small numbers were found as far as the mouth of the Wabiskaw River.

The surveys in the Wadlin Lake area in 1955 showed that there was no serious outbreak of spruce budworm in that area. No tree mortality is expected.

The population has declined from that in 1954. Mortality from parasitism was approximately 30 per cent. Capsule virus and microsporidial diseases were also present.

It is recommended that no survey work other than that which can be done by truck be carried on in 1956 in that area. In 1957 a canoe trip up the Wabiskaw River about June 15 is recommended.

A REPORT ON THE SPRUCE BUDWORM OUTBREAK ALONG THE MACKENZIE RIVER, N.W.T. JULY 1955

In 1954 Warden R. C. Timmons of the Department of Northern Affairs and National Resources reported the presence of spruce budworm in white spruce stands along the Mackenzie River near Fort Norman, N.W.T. A survey trip to determine the extent of the damage caused by this insect was carried out between June 30 and July 10, 1955. The trip was made by C. E. Brown, Officer-in-Charge of the Forest Insect Survey, J. K. Robins, Chief Ranger and R. R. Stanley, Forest Biology Ranger for the northern area.

A 21 foot outboard cabin cruiser was used for the trip between Hay River, N.W.T. and Norman Wells, N.W.T.

Little evidence of insect activity was observed from the mouth of the Mackenzie River to a point approximately 15 miles above Fort Simpson where larvae and pupae of the spruce budworm were found; damage was light. A short trip was made up the Liard River upon the return journey and spruce budworm in small numbers were found when checks were made. A few budworm were found below Fort Simpson but colouring of the trees was negligible.

At a point 15 miles above the mouth of the North Nahani River very noticeable discolouration caused by the feeding of the spruce budworm was observed. The infestation extended from this point to approximately 90 miles below Norman Wells; a distance of approximately 375 miles by river. The degree of damage varied from light to severe although most of the feeding was confined to the new growth. Many of the trees in the severely infested areas were bare of foliage for several feet down from the top. The moderate and severe classifications shown on the accompanying map were determined by the colour of the foliage.

Much of the area, bordering the Mackenzie River has been burnt over and is at present covered with aspen, balsam poplar and alder. These stands together with the lightly infested spruce stands make up the blank areas in the map.

Defoliation was often most noticeable on spruce covered islands in the River. Frequently the infestation was very noticeable on one side of the River while little discolouration could be seen on the other. At McGern Island (62° 45' N 123° 10' W). Approximately 25 per cent of the insects collected in a beating sample were the spruce needleworm, Dioryctria reniculella (Grote), which is sometimes a predator of the spruce budworm and sometimes a defoliator of spruce.

The defoliation beyond Norman Wells was reported by Mr. S. Hill, Canadian Pacific Airlines pilot, regularly flying between Fort Norman and Aklavik.

Preliminary parasite counts indicate that parasitism was less than 20 per cent. There was evidence of some disease among the larvae.

Very few other insects were observed feeding on spruce. The black-headed budworm was present but in very small numbers. Bark beetles in small numbers were present in slash at a lumber operation near Fort Simpson. Alder, aspen, balsam poplar and willow were free from serious insect damage. A high concentration of a leaf miner, Phyllocnistis sp., was observed in a small area near Fort Wrigley. Rust brooms caused by Peridermium coloradense (Diet.) Arth. & Kern. were observed throughout the area.

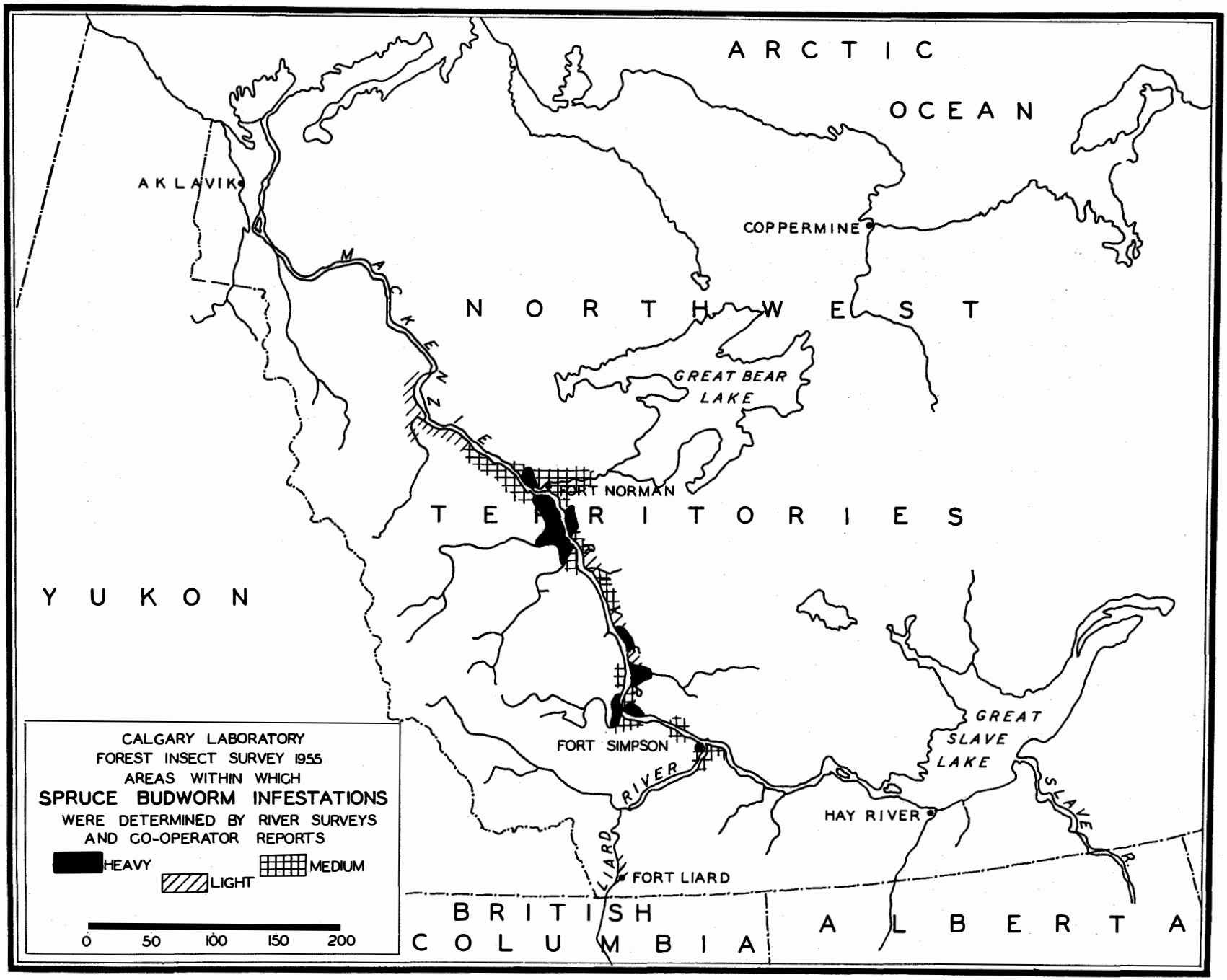
Conclusions and Recommendations

It may be safely assumed that the spruce budworm completes its life cycle in one year in this area.

The current infestation probably first became severe enough to cause noticeable reddening of the trees in 1954. It may be expected to continue in 1956. Although the infestation is classed as severe in many areas no tree mortality is expected to result from the defoliation which has taken place to date. Parasitism was low and will not seriously affect the population this year.

The width of the area infested could not be determined due to the difficult travel conditions in the area but extended up valleys entering the Mackenzie for at least 15 miles. It is recommended that a survey similar to that carried out in 1955 be made next year and that if funds are available it be supplemented by an aerial reconnaissance.

The boat survey should commence approximately June 15. Since spruce budworm has been reported from the Liard River it is recommended that the boat trip in 1956 be made via the Nelson and Liard Rivers.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FOREST INSECT SURVEY 1955
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WERE DETERMINED BY RIVER SURVEYS
AND CO-OPERATOR REPORTS
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APPENDIX C

Report on Tree Mortality in Waterton Lakes National Park

A REPORT ON FACTORS CONTRIBUTING TO TREE MORTALITY IN DOUGLAS-FIR AND LODGEPOLE PINE STANDS IN THE VICINITY OF WATERTON TOWNSITE

J. K. Robins and P. F. LaRue

1955

Personnel of the Forest Zoology and Forest Pathology Laboratories in Calgary have, at various times in the past, reported the presence of dead and dying trees in the stands of Douglas-fir and lodgepole pine around Waterton townsite, especially on the southeast slope of Mount Crandell. Subsequent examinations had established the existence of bark beetles, a root rot Armillaria mellea (Vahl. ex. Fr.) Quel., and a stem canker of pine caused by Atropellis piniphila (Weir) Lohman and Cash.

A special survey of the area was conducted on October 12, 1955, to determine, if possible, the prime cause of mortality, to identify the contributing organisms and to estimate the extent and severity of damage.

Red topped trees were very noticeable on the southeast slopes of Mount Crandell, above the Prince of Wales Hotel and the golf course. Douglas-fir from 6 inches to 18 inches D.B.H. predominate in this area, about 2 per cent of which were red-topped. A few red-topped trees were noted on the eastern slopes of Mount Richards and Bertha Peak where lodgepole pine formed the bulk of the forest cover. A number of dead or dying Douglas-fir were found on the valley bottom around the camp grounds and near Cameron Falls.

On the lower and middle slopes of Mount Crandell, above the hotel, 45 red-topped Douglas-fir trees were examined. All of these trees were heavily attacked by A. mellea. A large percentage of live Douglas-fir were also infected. This organism was present on the only red-topped lodgepole pine found. A large percentage of the live lodgepole pine examined were infected with A. piniphila. Bark beetle attack was in evidence on all dead

and dying stems examined. Buprestid larvae were also present on most dead trees. All adult bark beetles recovered were subsequently identified as Scolytus unispinosus (Lec.), a secondary beetle. No primary bark beetles were found.

The sequence of events resulting in tree mortality on this slope is considered to be as follows:

1. Young Douglas-fir trees become well established on the shallow, rocky, well drained soil of the slope.

2. As the trees grow older competition for soil nutrients and moisture becomes keener until at about pole size the stand is in a very weakened condition. Frequent snow and rock slides on the upper slopes also contribute to an unhealthy stand condition.

3. During this period of low vigour the trees are very susceptible to attack by tree diseases and at this point most of the larger trees become infected with A. mellea.

4. The further weakening of the trees by disease makes it possible for secondary bark beetles to become established.

5. A combination of poor growing conditions, and the attack by disease and insects soon results in tree mortality.

Poor growing conditions are also found in many areas on the valley floor where high winds contribute to low tree vigour. A few trees around roadways were apparently dead or dying as a result of mechanical injury.

The present unhealthy state of the large stand of Douglas-fir and lodgepole pine on the slope of Mount Crandell will probably remain unchanged as long as the present stand composition is maintained. It is possible that in time the Douglas-fir will die out to be replaced by lodgepole pine which seems to be a species more suitable to the existing growth conditions.

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