

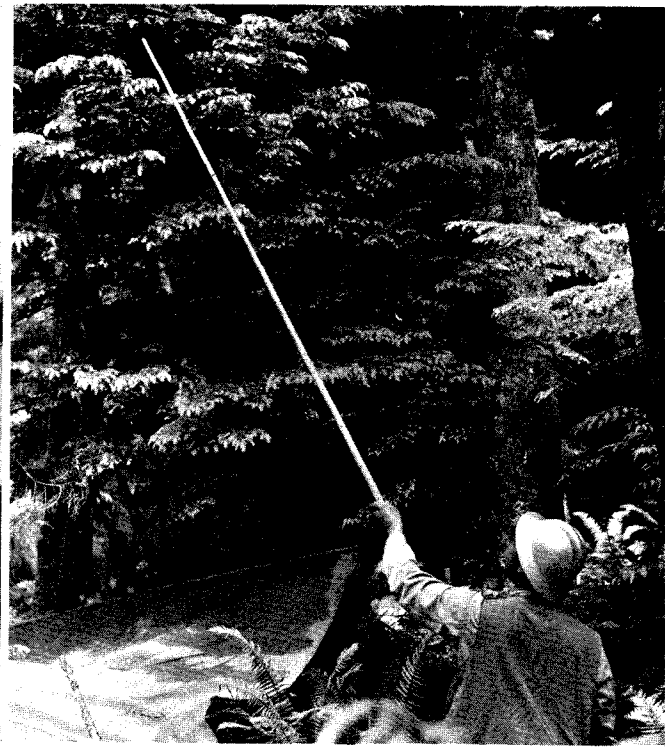
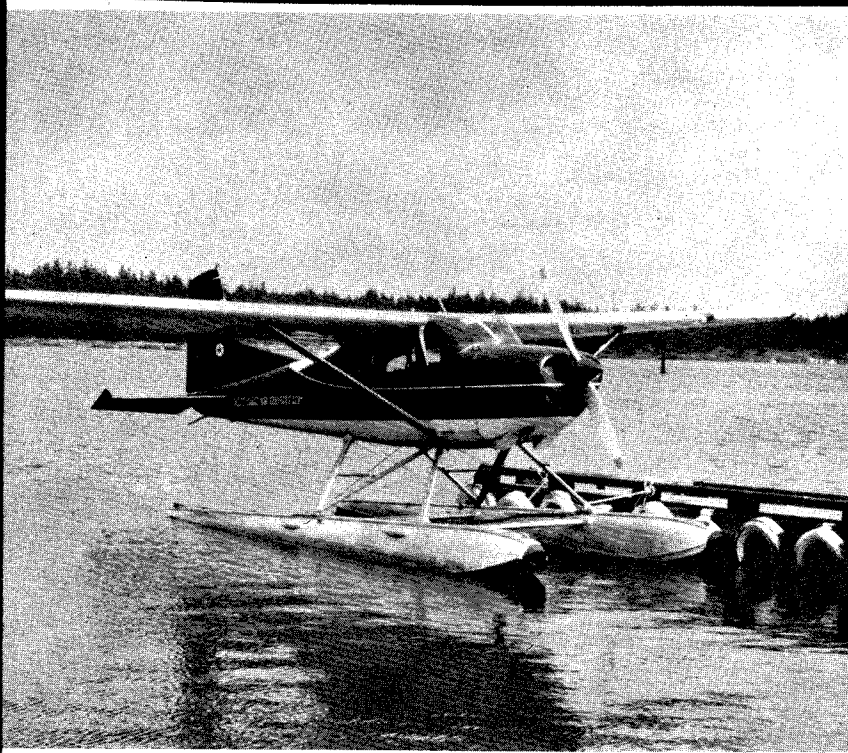
1972 ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY

Cariboo Forest District

BC-X-77 PART SIX

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ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
BRITISH COLUMBIA, 1972
PART VI, CARIBOO FOREST DISTRICT

by
D. F. Doidge^{1/}

PACIFIC FOREST RESEARCH CENTRE
CANADIAN FORESTRY SERVICE
VICTORIA, BRITISH COLUMBIA
INFORMATION REPORT BC-X-77

DEPARTMENT OF THE ENVIRONMENT

January, 1973

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INTRODUCTION

This report outlines the status of forest insect and disease conditions in the Cariboo Forest District for 1972, and attempts to forecast pest population trends. Emphasis is placed on pests capable of sudden, damaging outbreaks.

Reports of forest pest infestations to the Forest Insect and Disease Survey by public or private cooperators assist in interpretation of the general pest situation and in gauging population trends.

Regular field work in the District extended from May 29 to September 15. Special surveys were as follows: annosus root rot spore survey, May 29 to June 2; aerial surveys totalling 15 hours' flying time were done in August (Map 2).

A total of 192 insect and 56 disease collections were submitted to the Pacific Forest Research Centre in 1972. Map 1 shows collection localities and drainage divisions.

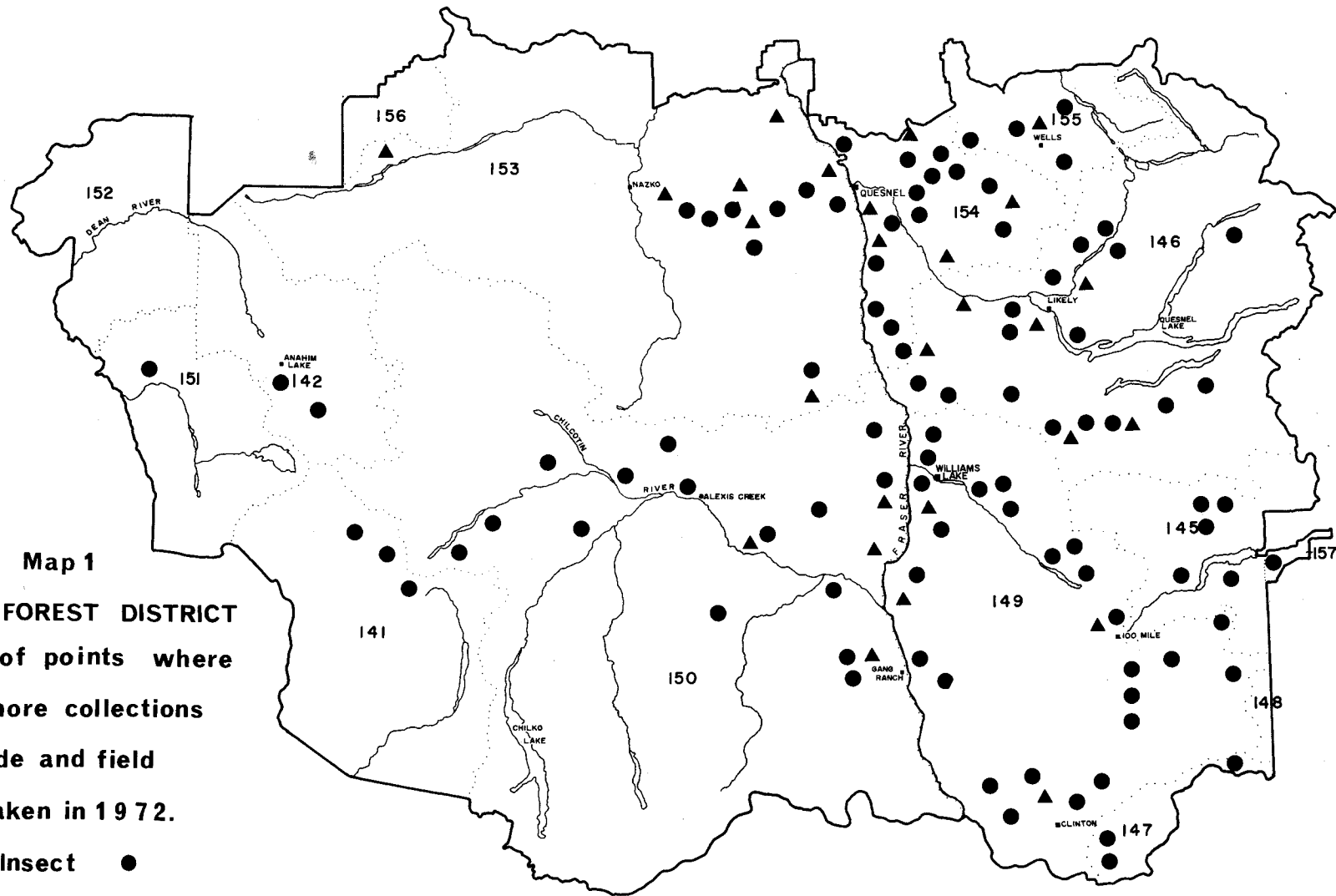
The numbers of larval defoliators found in field collections increased in the eastern portion of the District but changed little in the western part. Throughout the District, 71% of the collections contained larvae, compared with 73% in 1971. Although there was little change in the percentage of positive collections, the average number of larvae per positive collection doubled in 1972.

Bark beetles are the most destructive insects in the Cariboo Forest District, even though at present they are at low population levels. Mountain pine beetle attacks in the Cariboo Lake region continued. Small groups of beetle-killed Douglas-fir trees were scattered throughout the Cariboo and Chilcotin regions. Western balsam bark beetle and the associated disease, Ceratocystis, killed small groups of alpine fir trees in high-elevation stands. Spruce beetle was at its lowest population level since 1968.

Forest tent caterpillar populations increased in the Quesnel area and caused severe defoliation of trembling aspen at 11 locations. One-year-cycle spruce budworm lightly defoliated regeneration Douglas-fir near Stuie. Other defoliating insects remained at low density levels.

Disease problems were mainly restricted to the noninfectious type, such as the winter damage in the Likely, Granite Mountain and Clinton areas. Dwarf mistletoe continued to infect lodgepole pine stands throughout the Cariboo and Chilcotin.

Details on individual insect and disease problems appear in subsequent sections.



Map 1
CARIBOO FOREST DISTRICT
 Location of points where
 one or more collections
 were made and field
 records taken in 1972.

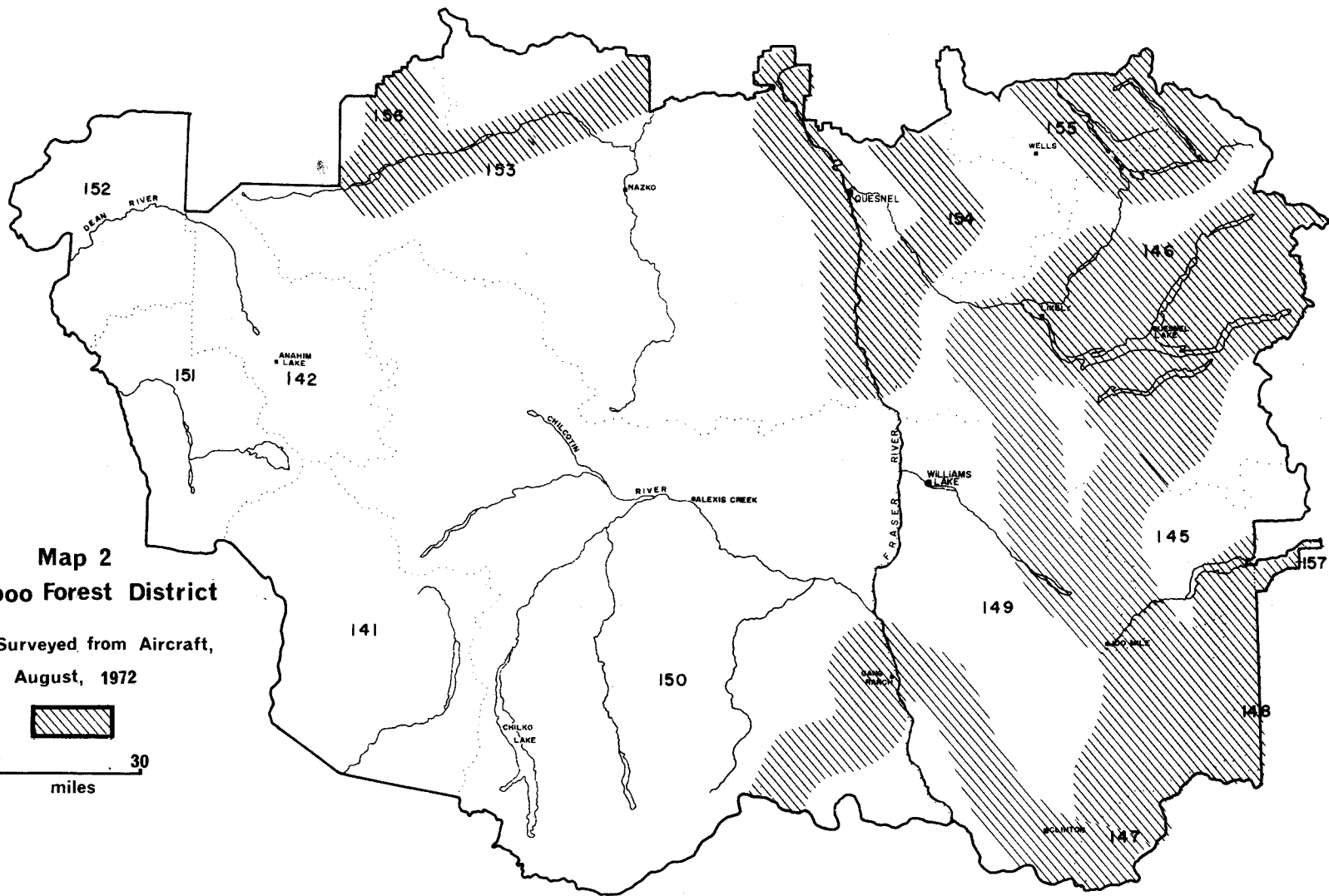
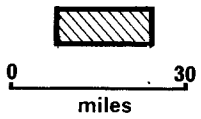
Insect ●

Disease ▲

0 30

Map 2
Cariboo Forest District

Areas Surveyed from Aircraft,
August, 1972



FOREST INSECT CONDITIONS

Currently Important Insects

Bark Beetles

Mountain pine beetle, Dendroctonus ponderosae

Populations of this bark beetle were at a low level in 1972. The only epidemic situation was at the north end of Cariboo Lake near the mouth of the Little River, where 720 red-tops were counted. This is an increase from the 160 beetle-killed trees counted in 1971. Populations are expected to show an increase in 1973.

Dryocoetes-Ceratocystis complex

The western balsam bark beetle in association with the fungus, Ceratocystis dryocoetidis, continued to kill small groups of high-elevation alpine fir trees in the Cariboo District. A total of 750 red-tops were counted in the Quesnel area in 1972, compared with 180 in 1971. The largest groups of dead alpine fir trees were at Bonaparte Lake, 300; Isaac Lake, 140; Hendrix Creek, 130, and Spanish Lake, 110.

Douglas-fir beetle, Dendroctonus pseudotsugae

In 1972, there was an increase in the number of Douglas-fir trees killed by this bark beetle. In 1971, only 80 red-tops were recorded in the District. In 1972, small groups of 5 to 10 red-topped Douglas-fir trees were noted throughout the Cariboo and Chilcotin regions. In the Gang Ranch - Dog Creek - Gaspard Creek area alone, there was a total of 470 red-tops. The survey in 1972 indicated that Douglas-fir beetle populations are on the increase.

Defoliators

Forest tent caterpillar, Malacosoma disstria

Forest tent caterpillars caused 60-80% defoliation of trembling aspen over 9,280 acres in 1972 (Map 3). The most severe damage occurred around Higdon Creek and Dragon Lake, where defoliation was 80% over 5,120 acres. Sixty per cent defoliation of trembling aspen trees occurred in two other areas of the District in 1972; 2,560 acres south of the Cottonwood River and 1,600 acres between Bouchie Lake and Moose Heights. Although no egg samples were taken, the healthy condition of the larvae indicated a possible expansion of the infestation in 1973.

One-year-cycle spruce budworm, Choristoneura occidentalis

Light defoliation of regeneration Douglas-fir occurred in the Stuiie area on the extreme western border of the Cariboo Forest District. This population is expected to continue in 1973. Collections throughout the rest of the Cariboo District showed a slight decrease in numbers of positive samples; 18% positive collections, compared with 22% in 1971.

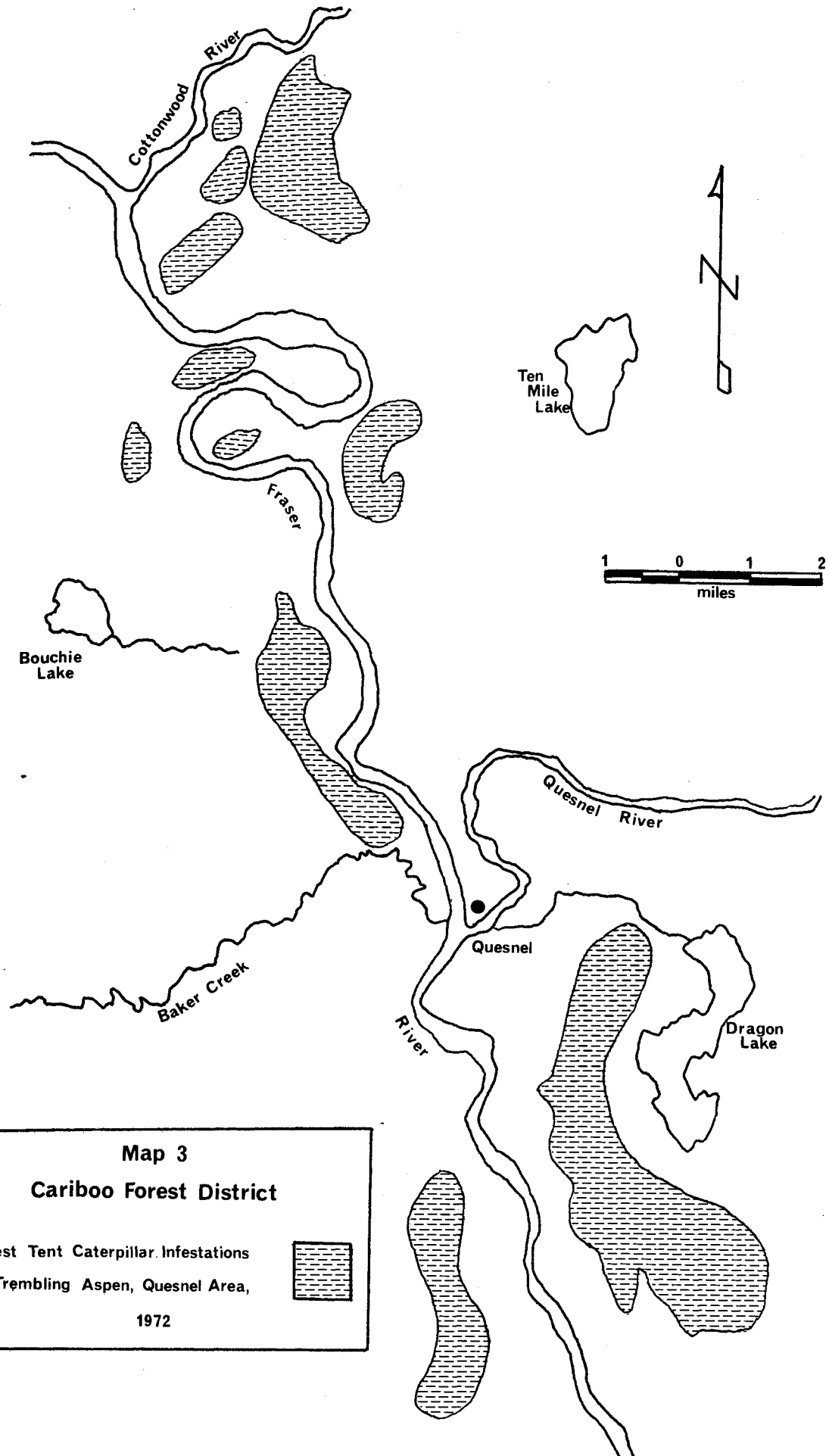
Two-year-cycle spruce budworm, Choristoneura biennis

This insect has not caused any damage recently, but routine samples show that larval populations increased for the first time in five years. Populations will be closely monitored.

Other Noteworthy Insects

Spruce beetle, Dendroctonus rufipennis

Tree mortality caused by this bark beetle extended over 31,500 acres in the Quesnel - Cariboo lakes areas during 1968 and 1969. Populations are presently at low density levels.



Map 3
Cariboo Forest District

Forest Tent Caterpillar Infestations
 on Trembling Aspen, Quesnel Area,

1972

Table 1. Other insects of current minor significance

Insect	Host(s)	Locality	Remarks
<u>Acleris gloverana</u> Western black-headed budworm	White spruce	Quesnel area, Wingdam-Wells, Kersley and Umiti Cr	Defoliator. No damage; average 1 larva per collection, 30% of collections were positive.
<u>Melanolophia imitata</u> Green-striped forest looper	Douglas-fir	General	Defoliator. Light populations, only 1 larva in 49 collections.
<u>Neodiprion</u> spp. Conifer sawflies	Douglas-fir, lodgepole pine, alpine fir	General	Defoliator. Most common insect collected, no damage; average 0.5 larvae per collection, 12% of collections were positive.
<u>Pikonema alaskensis</u> Yellow-headed spruce sawfly	Engelmann spruce, white spruce	Umiti Cr	Defoliator. Light population; average 0.06 larva per collection, 6% of collections positive.
<u>Pikonema dimmockii</u> Green-headed spruce sawfly	Engelmann spruce, white spruce	Quesnel area	Defoliator. Light population; average 0.3 larva per collection, 17% of collections positive.
<u>Pissodes terminalis</u> Pine terminal weevil	Lodgepole pine	Cariboo, Chilcotin	Terminal borer. Scattered attacks on regeneration lodgepole pine along roads and in clearings.

FOREST DISEASE CONDITIONS

The organisms currently causing most of the tree mortality, growth loss, and quality reduction attributed to diseases are dwarf mistletoes and stem and root rot fungi which, once established in a stand, persist for many years. They usually intensify at a slow rate, making annual summaries of their status repetitious; for this reason, the following report may omit some of the more important diseases. Emphasis is placed on current outbreaks, the status of annually varying foliage diseases and abnormal weather conditions, i.e., frosts, drought, snow damage, etc., which immediately affect tree appearance and often cause dieback and mortality. Other aspects of the Disease Survey dealing with mortality, growth loss and factors influencing the occurrence of the more important diseases are summarized elsewhere.

Currently Important Diseases

Stem and Branch Diseases

Lodgepole pine dwarf mistletoe, Arceuthobium americanum

A road reconnaissance survey, to determine the incidence and intensity of A. americanum, was conducted in the lodgepole pine stands of the Cariboo Forest District. Of the 700 road miles of lodgepole pine type sampled, 28% was in healthy stands, 41% in lightly, 20% in moderately and 11% was in severely infected dwarf mistletoe stands.

Larvae of Lycaenopsis cinerea, common blue butterfly, were found feeding heavily on A. americanum aerial shoots in the Alexis Lake area. Approximately 30% of the mistletoe-infected regeneration examined supported feeding larvae.

The mistletoe hyperparasite, Wallrothiella arceuthobii, on A. americanum aerial shoots was collected at Tsacha Lake near the northern boundary of the Cariboo Forest District.

Atropellis canker, Atropellis piniphila

Approximately 15% of the lodgepole pine trees near Puntat-aenkut Corner, along the Nazko road, were infected by A. piniphila. At Fountain Creek on the Swift River access road, 24% of the lodgepole pine examined were infected. The disease was common throughout the District at low intensity level.

Stalactiform rust, Cronartium coleosporioides

This stem rust was found at high infection levels on lodgepole pine at Pelican, MacLeese and Tyee lakes. Four to 10% of the stems were infected at Twan Creek, Exeter and Nazko roads.

Western gall rust, Endocronartium harknessii

This gall rust has been common throughout the District on regeneration lodgepole pine along roadsides and in small clearings. However, in 1972, it was detected in an extensive area between Drewry, Horsefly and MacLeese lakes. All regeneration trees were infected and the number of cankers in the young stands reached eight per tree.

Foliage Diseases

Elytroderma disease of pines, Elytroderma deformans

At a permanent sampling plot near Clinton, there was little change in the incidence of the disease on ponderosa pine since 1970, as shown in the following table.

Location	<u>Foliage infected</u>			<u>No. dead trees</u>		
	<u>%</u>			1970	1971	1972
	1970	1971	1972			
Clinton	25	20	25	12	14	14

Bark beetles probably contributed to the mortality of the ponderosa pine trees.

Elytroderma deformans also infects lodgepole pine, and the disease was detected in the Alexis Creek area in 1972.

A foliage rust, Melampsora medusae

Forty per cent of Douglas-fir trees, 5 to 10 feet tall, were infected by this rust for approximately 10 miles along the Meldrum and Soda Creek roads. No significant damage is expected.

Physiological Diseases

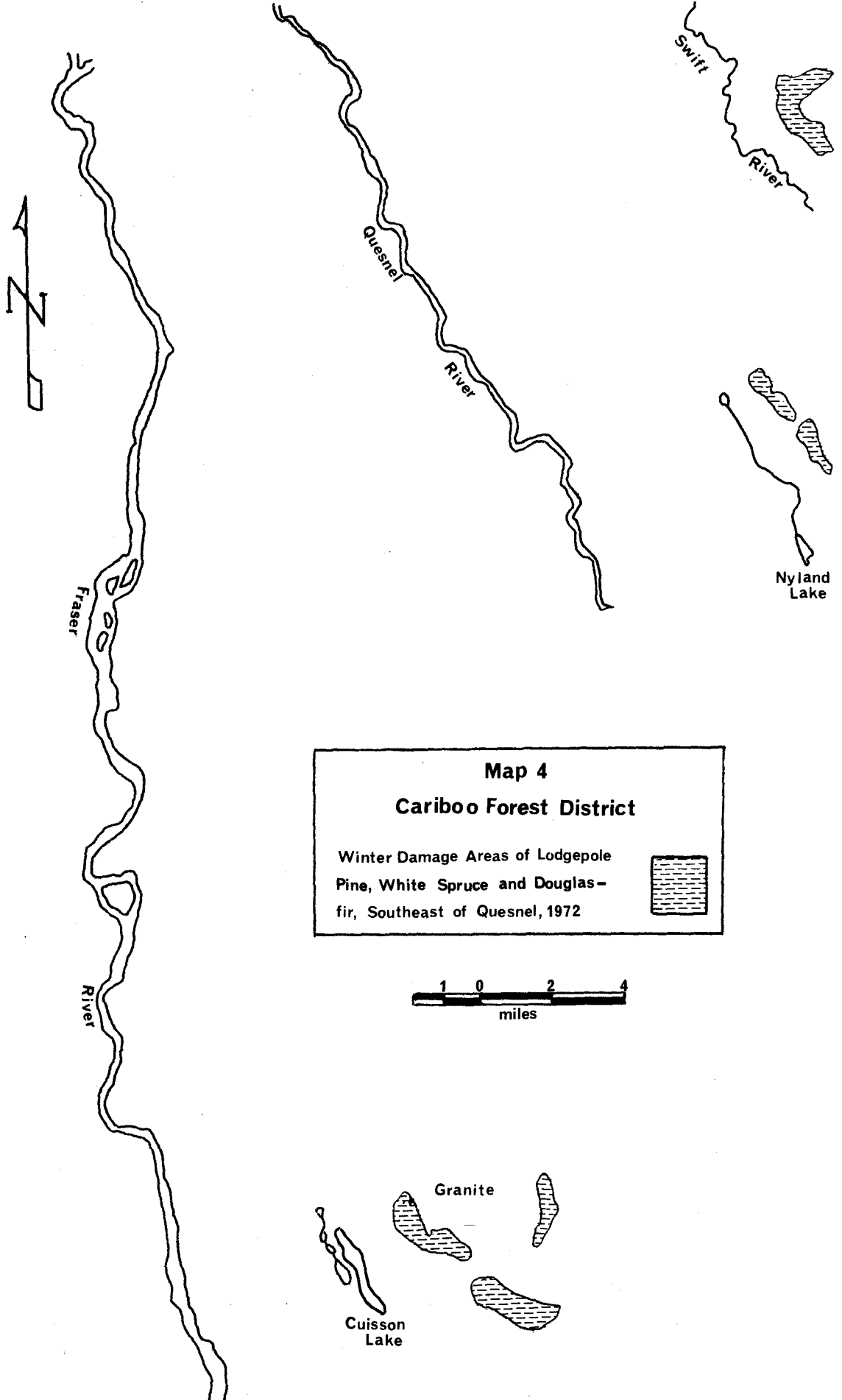
Winter drying

Large areas of winter-damaged conifers were mapped in the Cariboo Forest District during aerial surveys in August (Maps 4, 5 and 6). A total of 29,000 acres of damaged lodgepole pine, white spruce, western red cedar and Douglas-fir were affected. Lodgepole pine trees at 6,000 feet on the Marble Range near Clinton were damaged in a strip 10 miles long and approximately 1/8 mile wide (Map 6). Lodgepole pine, western red cedar and, to a lesser degree, Douglas-fir were damaged for the third successive year over 13,000 acres along the Quesnel and Cariboo rivers and near Spanish Lake (Map 5). Some mortality of lodgepole pine has occurred in this area. Lodgepole pine and white spruce around Granite Mountain and near Nyland Lake were damaged for the second successive year and some lodgepole pine mortality has occurred (Map 4). Widespread ambrosia beetle attacks were noted on dead trees in the Granite Mountain area.

Other Noteworthy Diseases

Annosus root rot, Fomes annosus

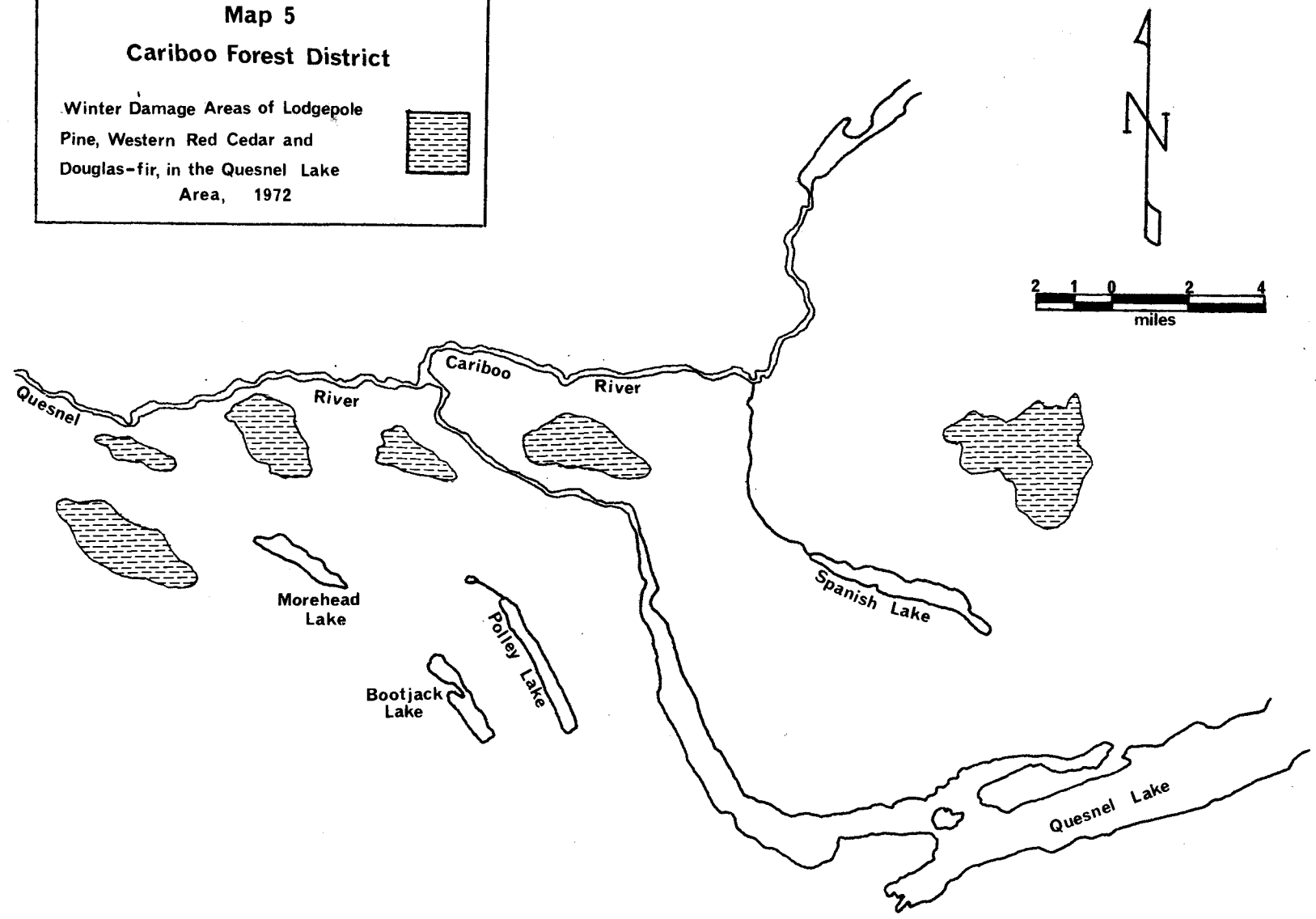
This root rot causes mortality in immature conifer forests as well as butt rot in old-growth stands. In 1972, spore trapping was attempted at Big Bar Lake near Clinton, Alkali Lake, Likely, Black Creek road near Horsefly and on Sheep Creek Hill on the Bella Coola Highway with negative results.

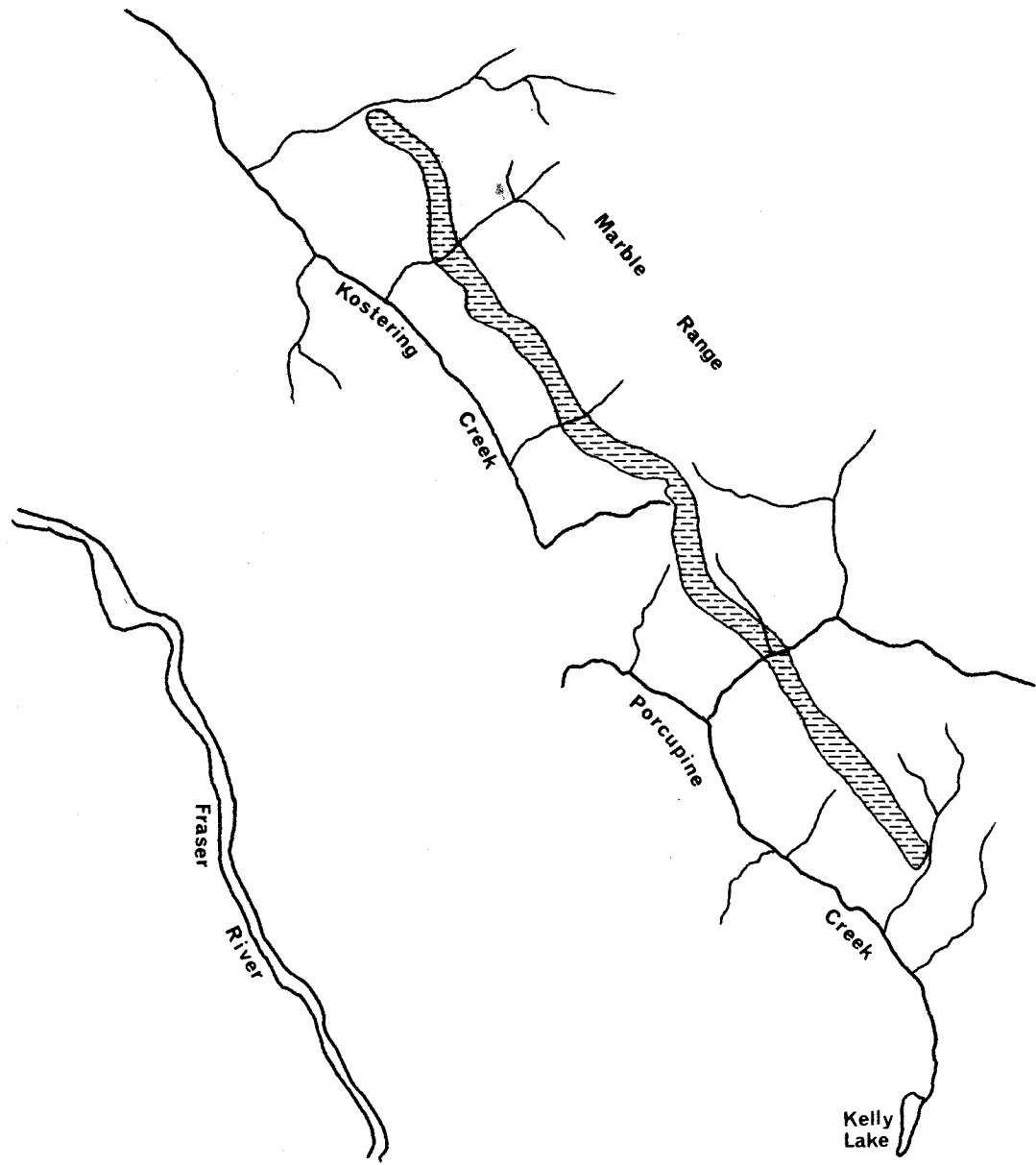


Map 4
Cariboo Forest District
Winter Damage Areas of Lodgepole Pine, White Spruce and Douglas-fir, Southeast of Quesnel, 1972

1 0 2 4
miles

Map 5
Cariboo Forest District
Winter Damage Areas of Lodgepole
Pine, Western Red Cedar and
Douglas-fir, in the Quesnel Lake
Area, 1972





Clinton

Map 6
Cariboo Forest District
Winter Damage of Lodgepole Pine
Along the Marble Range,
1972




Table 2. Other diseases of current minor significance

Organism	Host(s)	Locality	Remarks
<u>Chrysomyxa arctostaphyli</u> Spruce broom rust	White spruce, black spruce, kinnikinnick	General	Infects all spruces, causing large unsightly witches brooms. Common.
<u>Chrysomyxa pirolata</u> Spruce cone rust	White spruce, pyrola	Nyland Lake	Destroys spruce seed crop. Light damage.
<u>Cronartium comandrae</u> Comandra blister-rust	Lodgepole pine, pale bastard toad - flax	Range of lodgepole pine	Causes growth loss and tree mortality by girdling stems.
<u>Gymnosporangium nelsonii</u> Nelson's juniper rust	Saskatoon, juniper	Gaspard Cr, Lee's Corner	Common on Saskatoon in the Cariboo, causing yellow leaf spots.
<u>Lophodermella concolor</u> Needle cast	Lodgepole pine	Westwick Lake (Dog Creek road)	Kills year-old needles.
<u>Hendersonia pinicola</u> Hyperparasite of needle cast fungi	Lodgepole pine	Westwick Lake	Controls <u>L. concolor</u> by competing vigorously for the food supply of <u>L. concolor</u> on damaged needles.
<u>Lirula abietis-concoloris</u> Needle cast	Alpine fir	Umiti Creek	Causes increment loss of infected tree.
<u>Melampsora epitea</u> Leaf rust	Willow, western and mountain hemlock	Nyland Lake	Willow is the alternate host. Light damage.
<u>Phragmidium</u> sp. Leaf rust	Rose	General	Rust affecting leaves of wild roses throughout the District. Common.

Table 2. (Concluded)

Organism	Host(s)	Locality	Remarks
<u>Puccinia</u> <u>asteris</u> Leaf rust	Aster	Quesnel	Light damage.
<u>Puccinia</u> <u>coronata</u> Leaf rust	Soopolallie	Horsefly	Common throughout the District.
<u>Puccinia</u> <u>crandallii</u> Leaf rust	Waxberry	Lee's Corner	Common in the Cariboo.
<u>Puccinia</u> <u>recondita</u> Leaf rust	Sitka columbine	Umiti Creek	Light damage.
<u>Puccinia</u> <u>rubefaciens</u> Leaf rust	Northern bedstraw	Alkali Lake	Common in this area of the Cariboo.