

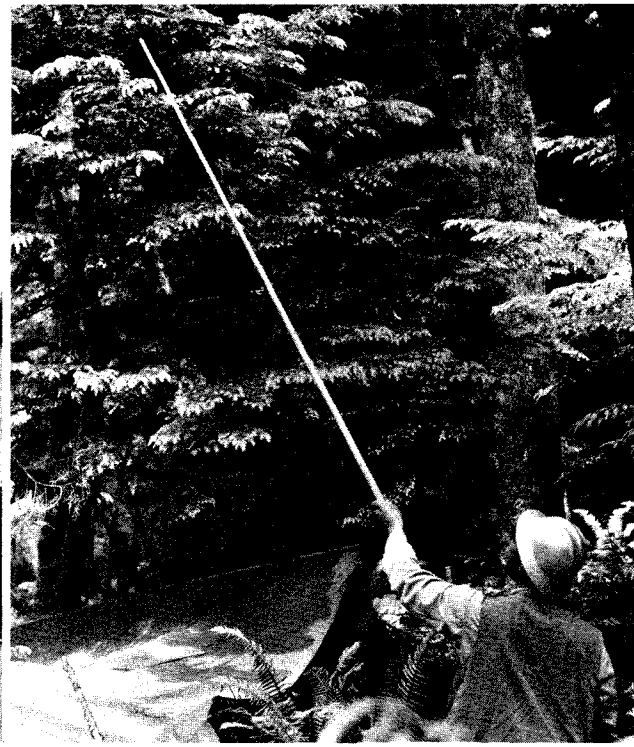
1972 ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY

● Prince George Forest District

BC-X-77 PART THREE

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PACIFIC FOREST RESEARCH CENTRE • CANADIAN FORESTRY SERVICE • VICTORIA, B.C.



ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
BRITISH COLUMBIA, 1972
PART III, PRINCE GEORGE FOREST DISTRICT

by
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PACIFIC FOREST RESEARCH CENTRE
CANADIAN FORESTRY SERVICE
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DEPARTMENT OF THE ENVIRONMENT

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INTRODUCTION

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

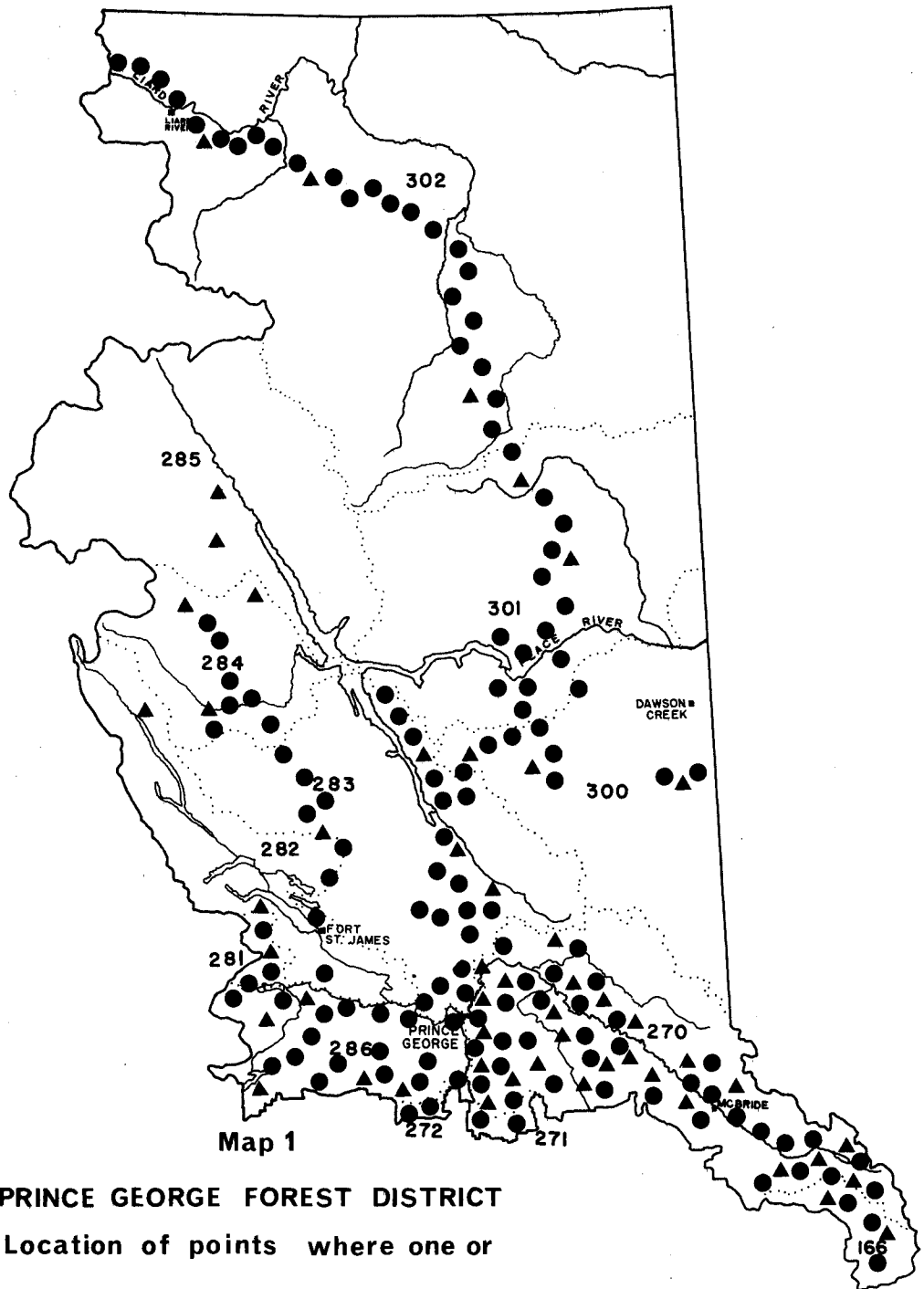
Forest pest infestations reported to the Forest Insect and Disease Survey by public and private cooperators assist in the interpretation of the general situation and in gauging pest trends.

Regular field work in the District extended from May 20 to September 22. Special surveys carried out during the period included: determination of spruce beetle overwintering mortality, May 23 to June 8; aerial surveys of beetle and defoliator infestations, July 31 to August 4; ground surveys for spruce beetle and Douglas-fir beetle, September 19 to 21; examination of spruce weevil plots, August 14 to 16, and September 12 to 15; testing the effectiveness of attractant traps on 2-year-cycle spruce budworm, July 5 and August 17, and the Forest Insect and Disease survey of Cariboo District drainages 146, 153 and 154, June 18 to 29.

Three hundred and eighty-nine insect and 205 disease collections were submitted to the Pacific Forest Research Centre in 1972. Map 1 shows the collection localities and drainage divisions. Defoliating insects increased in number from 1971. Bark beetles attacking white spruce remained at a low population level in 1972. Western balsam bark beetles continued to cause mortality of alpine fir, but less than in 1971. Douglas-fir and mountain pine beetle populations increased slightly.

One-year-cycle spruce budworm caused light to moderate defoliation of white spruce and alpine fir. The large aspen tortrix and the forest tent caterpillar defoliated large areas of trembling aspen.

The dwarf mistletoe survey was continued to record new distribution records and to record the occurrence of some of its hyperparasites. Winter injury (Red belt) caused foliage loss on lodgepole pine, Douglas-fir, white spruce and western red cedar.



PRINCE GEORGE FOREST DISTRICT
 Location of points where one or more collections were made and field records were taken in 1972.

Insect ●

Disease ▲



FOREST INSECT CONDITIONS

Currently Important Insects

Bark Beetles

Spruce beetle, Dendroctonus rufipennis

Spruce beetle populations were light in white spruce stands in the District. Beetles were present in small numbers in individual hand-felled trap and wind-thrown trees. No attacks were observed on randomly chosen trees or trees on prism plots in three strip cruises at or near former infestation areas. No significant change is expected in 1973.

Douglas-fir beetle, Dendroctonus pseudotsugae

Approximately 50 over-mature Douglas-fir trees were killed at four locations in the Summit Lake - Bear Lake areas, and 25 in one group on Teapot Mountain; this is a slight increase from 1971.

Mountain pine beetle, Dendroctonus ponderosae

There was an increase in the number of western white and lodgepole pine trees killed by mountain pine beetle in 1972. In the Canoe River Valley, some 770 red-top pines were observed from the air, as follows: southeast of Bulldog Rapids, 140; Windfall Creek, 200; Hugh Allan Creek, 100; north of Ptarmigan Creek, 100; Dave Henry Creek, 80. There were 50 red-top lodgepole pine north of Pinchi Lake.

The presumed increase in the susceptibility of winter-damaged trees to the mountain pine beetle may result in an increase in attacks in 1973.

Western balsam bark beetle, Dryocoetes confusus

Western balsam bark beetle and the associated lesion-causing fungus, Ceratocystis dryocoetidis, caused sporadic mortality of alpine fir trees at high elevations throughout the Prince George Forest District similar to that of 1971 (Table 1).

Table 1. Number of alpine fir trees killed by Dryocoetes-Ceratocystis complex as determined by aerial surveys, Prince George Forest District

Location	1970	1971	1972
Misinchinka/Pine R	2,900	250	0
Parsnip R	800	320	0
Crooked R	200	15	65
Stuart/Takla	1,150	0	600
Fraser R, Prince George to Moose L	3,400	160	140
Fraser R, Prince George to Quesnel	825	20	0
Willow R	2,375	140	210
Bowron R	1,250	0	0
Canoe R	200	121	80
Total	13,100	1,026	1,095

Defoliators

One-year-cycle spruce budworm, Choristoneura fumiferana

A light to medium budworm population defoliated understory regeneration and the upper crowns of overstory white spruce trees along the Alaska Highway from mile 494 to mile 540 (Liard Hot Springs to Fireside) and along the Smith River Falls access road. Spruce budworm populations have fluctuated in this area over the past four years, causing moderate to severe defoliation.

Further defoliation is predicted for 1973.

Two-year-cycle spruce budworm, Choristoneura fumiferana

Larvae of the two-year-cycle spruce budworm have been scarce in the Prince George Forest District since 1964. In 1972, a flight year, sectar traps baited with a pheromone attractant, were set out in mid-July to determine their effectiveness in attracting budworm adults, in this case, in an area of light population where budworm larvae had been found in beating collections at the permanent sample stations. The pheromone traps were successful in attracting moths, as shown below.

Location	Avg no. larvae per beating sample	No. adults trapped (5 traps)	Avg no. adults per trap
Naver-Genevieve rds Jct. (a)	4	8	1.6
(b)	4	1	0.2
1.4 miles W of Naver-Genevieve rds Jct.	1	0	0

Six plots, established in areas of 2-year-cycle spruce budworm defoliation in 1959, were examined in 1972. No tree mortality in the plots could be attributed to spruce budworm defoliation.

Large aspen tortrix, Choristoneura conflictana

Populations decreased in 1972 throughout the trembling aspen stands from Fraser Lake to Prince George and at McBride. There was a total of 19,520 acres of heavy defoliation in the Hixon and Strathnaver areas, but the trees had partially recovered by August. Three successive years of defoliation caused no tree mortality. There is minor twig mortality but it may be the result of winter damage during late 1970 and early 1971. Light defoliation is expected in the Prince George, Hixon and Strathnaver areas in 1973.

Forest tent caterpillar, Malacosoma disstria

Tent caterpillar populations increased in small scattered patches east of Tete Jaune Cache, resulting in 40% defoliation of trembling aspen over 320 acres. There was light defoliation on 100 acres in the Cinema area. More widespread and heavier defoliation of trembling aspen is expected in 1973.

Other Noteworthy Insects

Hemlock looper, Lambdina fiscellaria lugubrosa

Hemlock looper populations increased throughout the southern portion of the Prince George Forest District in 1972. There was an evenly distributed light population over a widespread area in the Bowron

River and Stone Creek valleys. In 1972, 15 collections contained larvae, compared with eight in 1971 (Table 2). An increase in population is expected in 1973.

Table 2. Summary of hemlock looper collections by drainage divisions, Prince George Forest District, 1972

Drainage divisions *	No. samples during larval period			% samples containing larvae			Avg no. larvae per positive sample		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
	270	123	118	147	4	8	8	1.0	1.9
271	11	6	10	0	0	10	-	-	1.0
272	1	12	1	0	0	0	-	-	-
166	4	18	7	0	6	71	0	1.0	1.6
	139	154	165	4	7	11	1.0	1.7	2.3

* See Map 1.

Table 3. Other insects of current minor significance

Insect	Host	Locality	Remarks
<u>Acleris gloverana</u> Blackheaded budworm	White spruce, alpine fir, western hemlock, Douglas-fir	Throughout District	Defoliator; light population, even distribution, similar to 1971.
<u>Adelges cooleyi</u> Cooley spruce gall aphid	White spruce, Douglas-fir	South half of District	Sucking insect; light population.
<u>Neodiprion</u> spp. conifer sawflies	White spruce, alpine fir, western hemlock, lodgepole pine, Douglas-fir	Throughout District	Defoliator; light population.
<u>Orgyia antiqua badia</u> Rusty tussock moth	White spruce, alpine fir, Douglas-fir, western hemlock	South half of District	Defoliator; light population, increasing since 1970; 28% of samples contained larvae.
<u>Phyllocnistis populiella</u> Aspen leaf miner	Trembling aspen	Throughout District	Leaf miner; light occurrence similar to 1971.
<u>Pissodes strobi</u> A weevil	White spruce	Throughout District	Terminal borer; 1-15% current attack, similar to 1971.

FOREST DISEASE CONDITIONS

The organisms currently causing tree mortality, growth loss and quality reduction attributed to diseases are dwarf mistletoes, and stem and root rot fungi. These organisms, once established in a stand, persist for many years. They usually intensify at a slow rate, which makes annual summaries of their status repetitious; for this reason the following report may omit some of the more important diseases. Emphasis is placed on new 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 Diseases

Lodgepole pine dwarf mistletoe, Arceuthobium americanum

Surveys were continued in 1972 to determine the northern distribution limit of lodgepole pine dwarf mistletoe, with emphasis on the presence of its hyperparasites Wallrothiella arceuthobii and Colletotrichum gloesporioides.

Aerial and ground observations were made north of Ingenika Bay, the current northern distribution point, but mistletoe-infected stands were not found.

Specimens of dwarf mistletoe containing W. arceuthobii were collected at several locations in the western and southern parts of the District, with new distribution records at Tsatsa Lake, Chedakuz Lake and Aiken Lake. The hyperparasite was also found at Fort St. James road, Dog Creek, near Siman Bay, near Fraser Lake, Kenny Dam road, Tatuk Lake road, Highway 16 and Swanson Road, and Pelican Lake road.

Foliage Diseases

Fir-fireweed rust, Pucciniastrum epilobii

This rust caused moderate to heavy damage to current foliage of alpine fir from Eaglet Lake to McGregor River and in the Bowron and Willow River valleys. The most heavily affected area was north of Sinclair Mills near McGregor, where nearly 100% of the current foliage was infected over a one-acre area. From 10 to 30 per cent of the current foliage was infected on trees from Strathnaver to Pine Pass and in the McBride - Valemount area.

Physiological Diseases

Red belt

Red belt, a winter injury, occurred at widespread locations, resulting in reddening, then loss of foliage from lodgepole pine, Douglas-fir, white spruce and cedar. Trees affected varied from isolated individuals to large groups; the severity of damage varied according to the location and elevation. The 1971 winter injury resulted in up to 80% needle loss from lodgepole pine in stands between Summit Lake and Muncho Lake along the Alaska Highway. Damage caused to these stands was severe on Sinkut and Baldy mountains and may result in some tree mortality.

There was no further twig injury on trembling aspen and white birch in 1972 and trees recovered from the 1971 damage.

Discoloration of western red cedar

In 1971, discoloration of cedar was reported over 47,000 acres near McBride from Goat River to Castle Creek as a result of the severe winter conditions in 1970-71. The old reddened foliage gradually fell from the trees until early August, and a trace of green current foliage became visible throughout most of the affected area. By late August, more recovery was apparent except for about 100 acres near Twin Creek adjacent to Highway 16, where the cedars remained red.

Winter damage

Reddened alpine fir, white spruce and western red cedar trees were examined in the Tumuch Lake area east of Bowron River. The tops of dominant white spruce trees were defoliated and the foliage on the exposed sides was discolored. Branches were still living and adventitious shoots had formed near the tips.

There was a small amount of reddened 1971 foliage on young alpine fir trees and some older alpine firs had been killed by Dryocoetes-Ceratocystis attacks. Reddened western red cedar appeared similar to that at McBride, but the damage had occurred during the winter of 1971-72. Signs of recovery were evident.

Fume injury

Fume emission from a natural gas plant at mile 94.5 on the Alaska Highway apparently killed approximately 500 mature white spruce trees over a five-acre area.

Table 4. Other diseases of current minor significance

Organism	Host	Locality	Remarks
<u>Chrysomyxa</u> <u>arctostaphyli</u> Spruce broom rust	White spruce, black spruce, kinnikinnick	Clucultz L, Carina L, Lucerne, Tete Jaune Cache, Canoe R, Blackwater R	Common in most white spruce stands.
<u>C. ledicola</u> Needle rust	Labrador tea, white spruce, black spruce	Butcher flats, Lucerne, Grant Brook, Pelley L, Carina L, Germansen L, Mile 22, Boundary Road, Finlay Forks	Causes orange dis- coloration and loss of spruce foliage.
<u>C. ledi</u> Needle rust	White spruce, black spruce, Labrador tea	Pelley L, Carina L	Causes orange dis- coloration and loss of spruce foliage.
<u>C. weirii</u> Needle rust	White spruce	Blackwater Rd., Uslika L	Light incidence.
<u>C. woroninii</u> Spruce shoot rust	White spruce, Labrador tea, black spruce	Alaska Highway miles 354, 402, 433	Light incidence. New host record for B.C. on black spruce.
<u>Cronartium</u> <u>coleosporioides</u> Stalactiform blister rust	Lodgepole pine	Wansa L road	Severe damage in pockets in this area.
<u>Cronartium</u> <u>comandra</u> Comandra blister rust	Lodgepole pine	Chedakuz Arm	Light incidence.
<u>Echinodontium</u> <u>tinctorium</u> Indian paint fungus	Western hemlock, alpine fir	Tacheeda L access road, Hart Highway, Carp L road, West Twin Cr, Penny road, Dore Cr	Causes serious heart-rot of hemlock and fir.

Table 4. (Concluded)

Organism	Host	Locality	Remarks
<u>Hirschioporus abietinus</u> The purple conk	Black spruce	Aiken L	Decay fungus, new host record.
<u>Melampsora epitea</u> Needle rust	Douglas-fir, willow	Finlay Forks, Kiwa Cr, Fyfe L(s) access road, Prince George	Common on willow in these areas.
<u>M. paradoxa</u> Needle rust	Eastern larch	Monkman Pass road	New host record for B.C.
<u>M. occidentalis</u> Needle rust	Douglas-fir, black cottonwood	Bowron R access road, Hansard, Stuart L	Moderate on black cottonwood.
<u>Melampsorella caryophylacearum</u> Fir broom rust	Alpine fir	Indata L, South of McLeod L, Sinclair Mills road	Occurrence is sporadic.