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ANNUAL DISTRICT REPORT FOREST INSECT AND DISEASE SURVEY BRITISH COLUMBIA, 1970 PART III, PRINCE GEORGE FOREST DISTRICT

by
C. B. Cottrell and C. S. Wood

FOREST RESEARCH LABORATORY
CANADIAN FORESTRY SERVICE
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INFORMATION REPORT BC-X-51

DEPARTMENT OF FISHERIES AND FORESTRY
MARCH, 1971

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BRITISH COLUMBIA, 1970

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INTRODUCTION

This report outlines the status of forest insect and disease conditions in the Prince George Forest District for 1970 and attempts to forecast pest population trends. It places stress on the level of pest populations capable of sudden, damaging outbreaks.

Reports of forest pest outbreaks to the Forest Insect and Disease Survey by public or private cooperators assist in the interpretation of the general pest situation and improve our ability to gauge population trends.

Regular field work in the District in 1970 began on May 19 and ended on September 8. Special surveys were: spruce beetle overwintering mortality studies, May 26 to June 2; aerial surveys of beetle and defoliator infestations, August 10-14; and ground surveys for spruce beetle, September 1-11. During the season emphasis was placed on surveys for dwarf mistletoe distribution, spruce weevil and cone insects.

The location of collections and drainage divisions are shown on Map 1. Four hundred and five insect and thirty-seven disease collections were taken during the year.

Bark beetles attacking white spruce, Douglas-fir and lodgepole pine were scarce in 1970. Western balsam bark beetles continued to cause extensive tree mortality in high elevation alpine fir stands.

Except for one-year-cycle spruce budworm, which caused moderate defoliation of alpine fir and white spruce, defoliators of coniferous trees were scarce. Large areas of trembling aspen and white birch were attacked by the large aspen tortrix and a leaf blotch miner respectively.

There were heavy infestations of Cooley spruce gall aphids on Douglas-fir.

Populations of a weevil attacking the leaders of immature white spruce declined from 1969 levels but continued to cause tree deformity in scattered areas throughout the District.

Cone insects and a cone rust destroyed a large proportion of the white spruce seed crop.

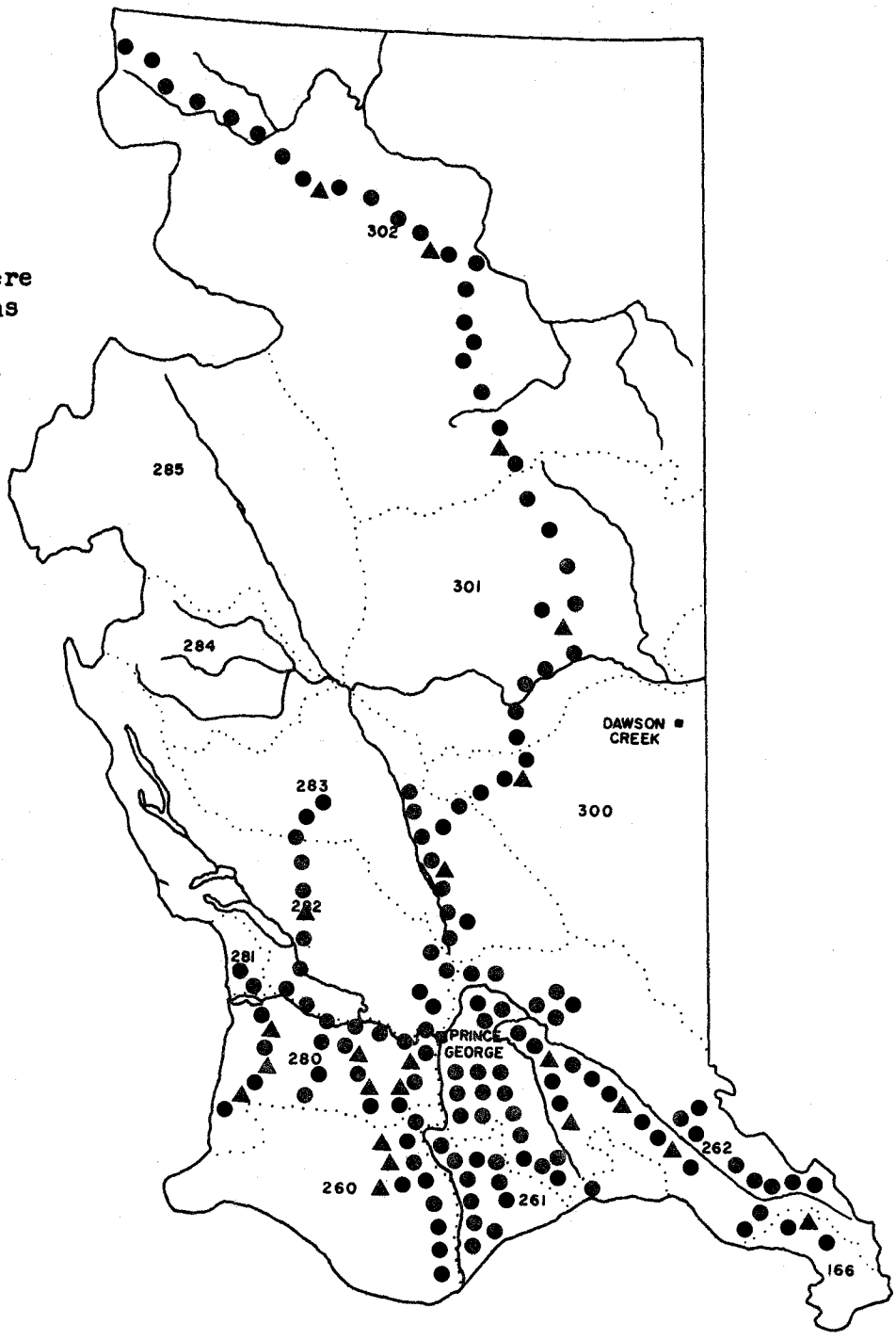
Map 1

PRINCE GEORGE FOREST DISTRICT

20 MILES

Location of points where one or more collections were made and field records taken in 1970.

- ● Forest insect
- ▲ Forest disease



FOREST INSECT CONDITIONS

Currently Important Insects

Bark Beetles

Spruce beetle, Dendroctonus rufipennis (Kirby) (formerly D. obesus)

Beetle populations were greatly reduced during the winter of 1968-69 and to date have shown little sign of recovery. In May 1970, beetle broods in white spruce windfalls, logs and standing trees were examined at scattered points in the District. Beetles were scarce in all areas except the upper Willow River Drainage where moderate numbers were found.

In early August, 1969-killed trees were mapped from the air. An estimated 400,000 cubic feet of spruce had been killed, although most dead trees had been partially attacked in 1968. The largest concentrations of 1969-beetle attack were in the Stony, Ahbau Lakes - Rebman Creek area.

In late August, the 1970 attack was assessed in six, mile-long prism plot strips. Of 1,245 trees examined only three had been attacked in 1970 and two of these had been pitched-out. There were few recent windfelled trees on the strips: of four windfalls, two contained moderate numbers of beetles. The majority of beetles entered the winter of 1970-71 in the larval stage and will not contribute to a 1971 attack. Because of the small numbers of adults from 1969 and 1970 broods, no significant attack on standing spruce trees is expected in 1971.

Douglas-fir beetle, Dendroctonus pseudotsugae

The number of red-topped Douglas-fir trees (killed in 1968 and 1969) declined. Approximately 525 red-tops were counted during an aerial survey in August, 1970. The largest numbers of trees were in: Canoe River Valley, 215; Narcosli Valley, 110 and in the Stuart - Tezzeron Lakes area, 100. Few beetles were found in trees felled in 1970 and little a attack is expected in 1971.

Mountain pine beetle, Dendroctonus ponderosae

Populations remained at a low density level. In the Canoe River Valley 150 mature western white pine were killed by beetles. Along Cuisson Creek, south of Quesnel, 30 lodgepole pine were killed.

Dryocoetes confusus - Ceratocystis complex

The western balsam bark beetle in association with a lesion-causing disease annually kills large numbers of mature and overmature alpine fir. The greatest tree mortality recorded in 1970 occurred in the following: Pine Pass area; north of the Fraser River from Dome Creek to McKale Creek; along Thursday Creek in the Willow River Drainage, and near Sovereign Mountain in the Swift River Drainage (Table 1).

Table 1. Number of alpine fir trees killed by Dryocoetes - Ceratocystis complex 1968-1970, as determined by aerial surveys, 1970, Prince George Forest District

Drainage	Est. no. red-tops
Misinchinka/Pine R.	2,900
Parsnip R.	800
Crooked R.	200
Stuart/Takla L.	1,150
Fraser R., Prince George to Moose L.	3,400
Fraser R., Prince George to Quesnel	825
Willow R.	2,375
Bowron R.	1,250
Swift R.	1,500
Canoe R.	200
Total	14,600

Defoliators

Spruce budworms, Choristoneura spp.

The one-year-cycle spruce budworm, C. fumiferana, declined from 1969 levels but caused moderate defoliation of white spruce and alpine fir at Mile 247 and from Miles 506 to 540, Alaska Highway.

Two-year-cycle spruce budworm, C. biennis, larvae were scarce on white spruce and alpine fir in 1970. No major infestations have occurred in the District since 1964.

Large aspen tortrix, Choristoneura conflictana

Severe defoliation of trembling aspen occurred at nine locations. There was an estimated 2,500 acres of defoliation northwest of McBride, 1,000 west of Vanderhoof Airport, and a total of 4,000 in the Stuart, Pinchi Lakes - Ft. St. James areas. In all instances defoliation was so complete in the early summer that trees re-leafed in July. This insect has been scarce since the 1950's when widespread infestations occurred in the Vanderhoof, Salmon River and Quesnel areas. Pupal counts indicate that further defoliation will occur in 1971.

A leaf blotch miner, Lyonetia saliciella

The foliage of white birch in 40 square miles from Dunster to Red Pass and Valemount was heavily infested for the fourth consecutive year. The discolored leaves fell prematurely but no tree mortality is expected.

Sucking Insects

Cooley spruce gall aphid, Adelges cooleyi

There was a moderate attack on white spruce in the southern portion of the District; the alternate host, Douglas-fir was heavily attacked. An increased attack on white spruce may occur in 1971.

Terminal Borers

A weevil, Pissodes strobi (formerly P. engelmanni)

Sporadic attacks on the leaders of immature white spruce occurred throughout the District in 1970. An examination of ten 50-tree-plots in 1969 and 1970 did not indicate a clear cut increase or decrease in populations (Table 2). Areas of extensive 1970 attack were: Misinchinka R., 24% of trees attacked; Cut Thumb Creek, 30%; Clear Lake, 20%; Aleza Lake, 40% and Kiwa Creek, 35%.

Table 2. Per cent white spruce attacked by a weevil, P. strobi in 50-tree-plots, Prince George Forest District

Location	% trees attacked	
	1969	1970
Pine Pass	14	24
Merton L.	20	10
Upper Mud R.	0	6
Vanderhoof	4	0
Sinkut L.	2	2
Kenny Dam	2	14
Jeep L.	4	2
Wansa L.	4	4
Willow R.	10	6
Strathnaver	24	4

Cone Insects

A variety of cone and seed insects caused extensive damage to white spruce and Douglas-fir seed crops throughout the District. Only high elevation (over 4,000 feet) spruce stands were relatively free from attack.

A cone maggot, Hylemya anthracina was the most common and destructive to spruce cones. A cone moth, Laspeyresia youngana caused localized damage.

Douglas-fir cones were heavily infested by the Douglas-fir cone moth, Barbara colfaxiana.

In some areas a spruce cone rust, Chrysomyxa pirolata, and cone insects, caused the destruction of up to 80% of the seed crop.

Exotic Plantations

Two plantations of exotic species were examined in 1970.

At Aleza Lake terminals of three Scots pine were attacked by spruce weevil, Pissodes strobi. Multi-leader development was the most common disorder, affecting approximately 60% of the stand.

At the Prince George Experimental Farm light aphid damage affected 5% of the mixed exotic conifers.

Table 3. Other insects of current minor significance

Insect	Hosts	Locality	Remarks
Acleris variana Black-headed budworm	White spruce, alpine fir, western hemlock	McGregor, Torpy Rivers	Defoliator. Further decline, light populations.
Aphids	White birch	Steamboat Mtn., general in District	Sucking insects. Destroyed leaves of upper crowns. Also found in residential gardens in Prince George.
Archips cerasivoranus Ugly-nest caterpillar	Chokecherry	Kersley	Defoliator. Numerous road-side bushes infested.
Dichelonyx spp. A needle-feeding scarabaeid	Douglas-fir	Quesnel to Macalister	Up to 25 adults per collection. No significant damage.
Lambdina fiscellaria lugubrosa Western hemlock looper	White spruce, alpine fir	Throughout District	Defoliator. Decline, light population.
Melanophila drummondi Flatheaded fir borer	Douglas-fir	Alexandria	Wood borer. Large flights of adults attacked recently-felled trees.
Phyllocnistis populiella Aspen leaf miner	Trembling aspen	McBride to Valemount	Leaf miner. Moderate to severe infestations.
Pissodes terminalis Lodgepole terminal weevil	Lodgepole pine	Slough Cr., west of Wells	Stem borer. Approximately 10% of trees 6 to 40 feet in height attacked in 300 acres.

FOREST DISEASE CONDITIONS

The organisms currently causing much of the 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 mention of some of the more important diseases. Emphasis is placed on new outbreaks, the status of the 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

Dwarf mistletoe of lodgepole pine, Arceuthobium americanum

A survey to determine the distribution of dwarf mistletoe, started in 1969, was continued during 1970.

Distribution records were extended 50 miles north of the formerly known limit; Germansen Landing, with collections at Lafferty and Davis Creeks on the Finlay River.

The dwarf mistletoe is most prevalent in the southwestern and extreme southeastern parts of the District, and drier sites on the Crooked and Parsnip Rivers. Additional collections were made in these areas to complete the distribution records.

Foliage Diseases

Leaf and shoot blight of poplars, Venturia populina

Infection of trembling aspen foliage was much less widespread and severe than in 1969.

A localized infection of approximately 50 acres south of Finlay Forks, affected 75% of the foliage in 25% of the stand.

Sporadic light infections persisted in the vicinity of Endako and Fraser Lake.

Cone Diseases

Inland spruce cone rust, Chrysomyxa pirolata

Infection of white spruce cones was widespread throughout the host range in the District.

Intensity of infection ranged from 1 to 40%, the heavier infection occurring in the northern areas.

The cone rust, in combination with heavy cone maggot attacks, resulted in up to 80% destruction of white spruce cone crops in some northern areas.

Other Noteworthy Diseases

Western Gall Rust, Endocronartium harknessii

This stem and branch disease was common and widespread throughout the District.

Stem infections were generally light in incidence, except in the Tete-Jeune - Valemount area, where dead seedlings were common.

Lodgepole pine stem canker, Atropellis piniphila

An infected stand at mile 71, Finlay Forks Road was the most northerly recorded incidence of the disease. The previously known northern limit was at the Parsnip River Bridge on the Hart Highway.

The disease is most common in the Prince George area and along the Kenny Dam Access Road.

Fir-Fireweed rust, Pucciniastrum epilobii

Light to heavy infections of alpine-fir foliage were recorded in localized areas in the Willow River Drainage, and along the Hart Highway to Pine Pass.