

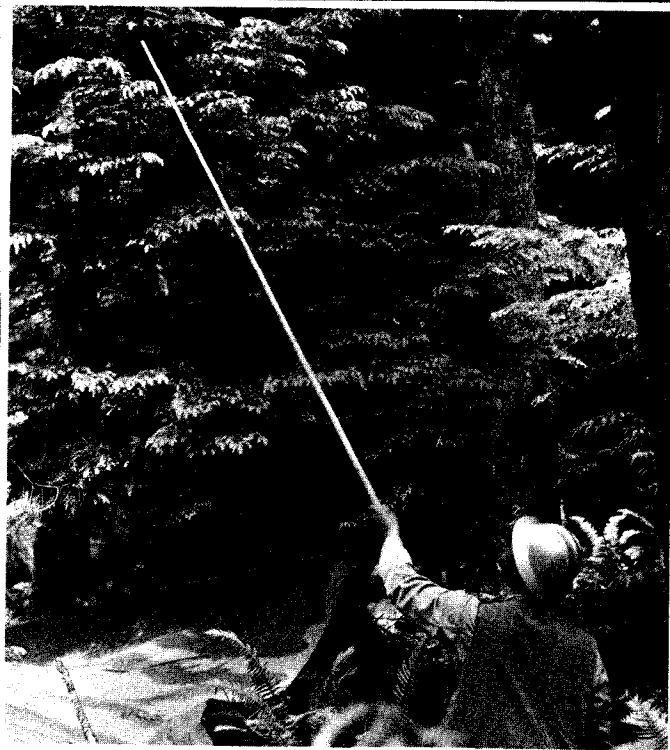
1972 ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY

● Prince Rupert Forest District

BC-X-77 PART TWO

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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 II, PRINCE RUPERT FOREST DISTRICT

by

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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 Rupert Forest District for 1972, and attempts to forecast pest populations capable of sudden, damaging outbreaks.

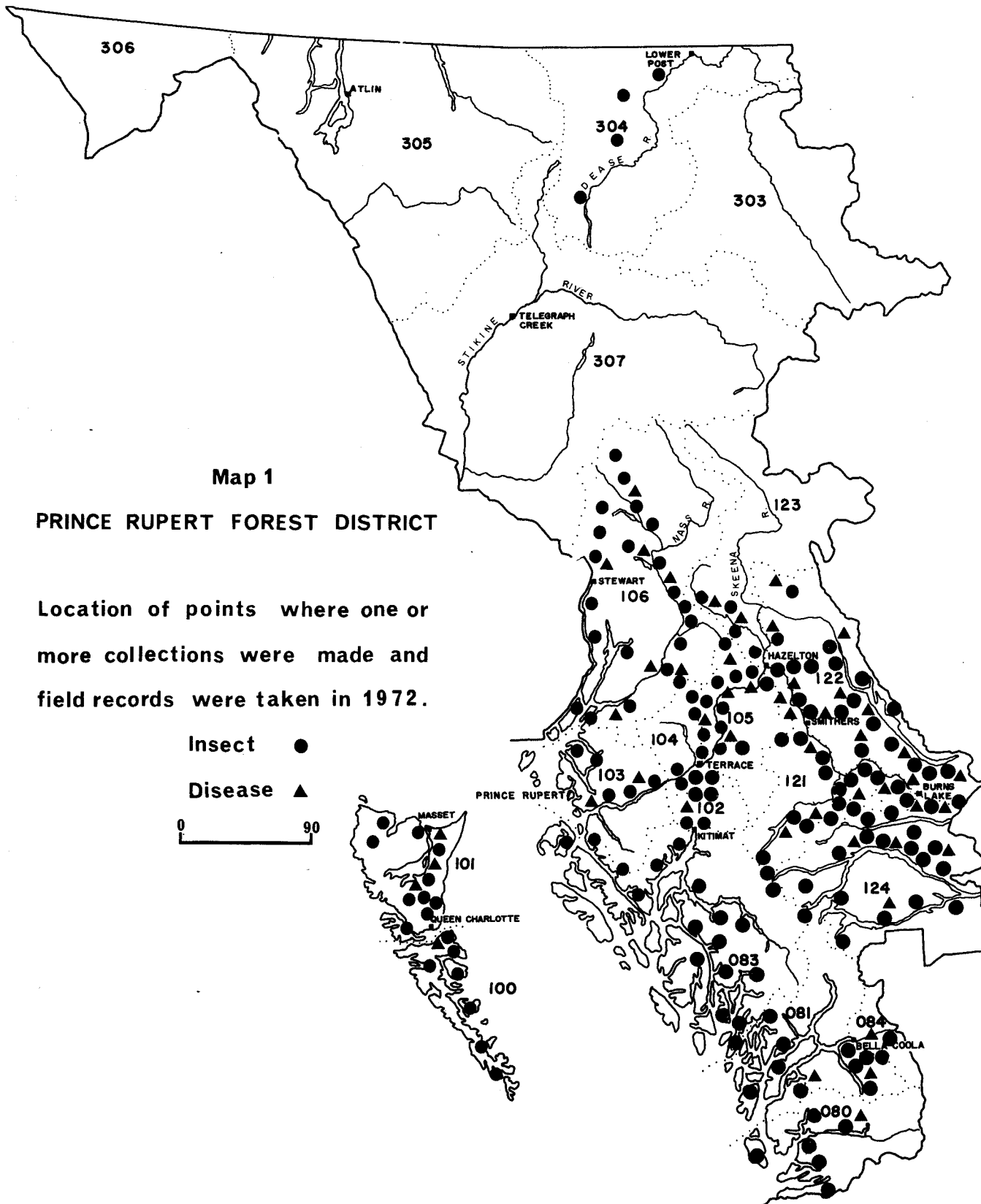
Reports of forest pest infestations to the Forest Insect and Disease Survey by public or private cooperators help in the interpretation of pest situations and in gauging population trends.

Regular field work in the District extended from the end of May to the end of September. Special surveys were carried out for the mountain pine beetle and western blackheaded budworm. Aerial surveys were carried out over most of the District.

A total of 544 insect and 99 disease collections were submitted to the Pacific Forest Research Centre in 1972. Map 1 shows the collection localities and drainage divisions. Numbers of defoliators found in field collections increased greatly from 1971. In 1972, 84 and 82% of the beating collections in the western and eastern parts of the District, respectively, contained larvae.

Mountain pine beetle infestations increased in intensity and extent in the Kispiox and Kitwanga River areas. Extensive cruising of beetle-damaged areas was done by the British Columbia Forest Service. The western balsam bark beetle and an associated disease continued to cause moderate to heavy mortality of alpine fir in the McKendrick Creek and Telkwa River areas. The western blackheaded budworm increased greatly in the southern portion of the coastal area and in the Queen Charlotte Islands.

A shoot blight, causing considerable damage to advanced regeneration in Alaska, was found on regeneration and pole-sized trees in the areas near the Kitimat, Skeena and Nass rivers. Trembling aspen continued to show light to moderate damage caused by a shoot and foliage blight. Moderate to heavy infection by needle diseases was again predominant on amabilis and alpine fir in the interior portions of the District.



Map 1

PRINCE RUPERT 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

Mountain pine beetle, Dendroctonus ponderosae

Scattered mountain pine beetle attacks in lodgepole pine stands were observed near Date Creek in 1969, followed by an outbreak near Weegett Creek in 1970. Aerial surveys in 1971 indicated an increase in the number of pine trees killed near Weegett Creek. In addition, there were scattered infestations near Kitwanga, east along the Skeena River to Hazelton and north of Kispiox Village along the Kispiox River to Kline Lake.

During 1972, there was a general increase in all known infestations, including new patches of infestation within the same general area. The stand type in the damaged area is predominantly lodgepole pine, mixed with spruce and/or western hemlock and deciduous species.

On sample strips near Seeley Lake and Carnaby in 1971, up to 48% of the stems were attacked. In May 1972, samples taken to determine possible overwintering brood mortality indicated that beetles in up to 50% of the stems attacked near Carnaby had been drowned out by heavy exudation of resin. This denoted strong resistance of the trees to attack. Near Seeley Lake, fewer trees were able to pitch-out attacking beetles and large broods successfully overwintered.

In August and September 1972, cruise strips with prism plots every two chains were run at seven locations in the infested areas (Table 1). All lodgepole pine trees seven inches dbh and over were tallied as: unattacked; currently attacked; red, attacked in 1971; and gray, attacked before 1971.

Table 1. Information on cruise strips at seven locations, Prince Rupert Forest District, 1972

Location	Length of strip (in chains)	Total no. of stems examined	Avg no. stems per acre	Avg age of infested stems	Avg tree dbh 7+" unattacked attacked	
Weegett Cr #1	110	273	169	84	9	13
#2	100	206	142	84	9	14
Sammon L	130	151	57	95	12	13
Date Cr	128	181	93	86	11	12
Seeley L	70	159	195	100	9	13
Natlan Cr	50	85	63	111	13	15
5 Mi (Kitwanga)	30	58	102	98	11	13

Table 2 shows a breakdown of the stands in categories by per cent of unattacked and attacked stems at seven locations cruised by Canadian Forestry Service personnel, and two locations where similar information was obtained by British Columbia Forest Service personnel.

Table 2. Percentage of healthy and mountain pine beetle-infested trees at nine locations in Kitwanga and Hazelton Ranger Districts, 1972

Location	Unattacked	Year attacked		
		1972	1971	Prior to 1971
Weegett Cr #1	41	14	30	15
#2	46	24	19	11
Sammon L	36	22	23	19
Date Cr	60	14	4	21
Seeley L	27	23	33	17
Natlan Cr	52	33	15	0
5 Mi (Kitwanga)	25	0	54	21
Pintz L	55	15	24	6
Keynton L - Burdick Cr	60	27	8	5

The following table shows the change in intensity of beetle attack in all areas cruised.

Year of attack	1970	1971	1972
Year of foliage discoloration	1971	1972	1973
Avg no. red trees in all locations cruised	24	47	*30

* Green-infested (red in 1973)

The greatest increase in tree mortality occurred between 1970 and 1971. The percentage of attacked trees in 1972 was slightly greater than in 1970.

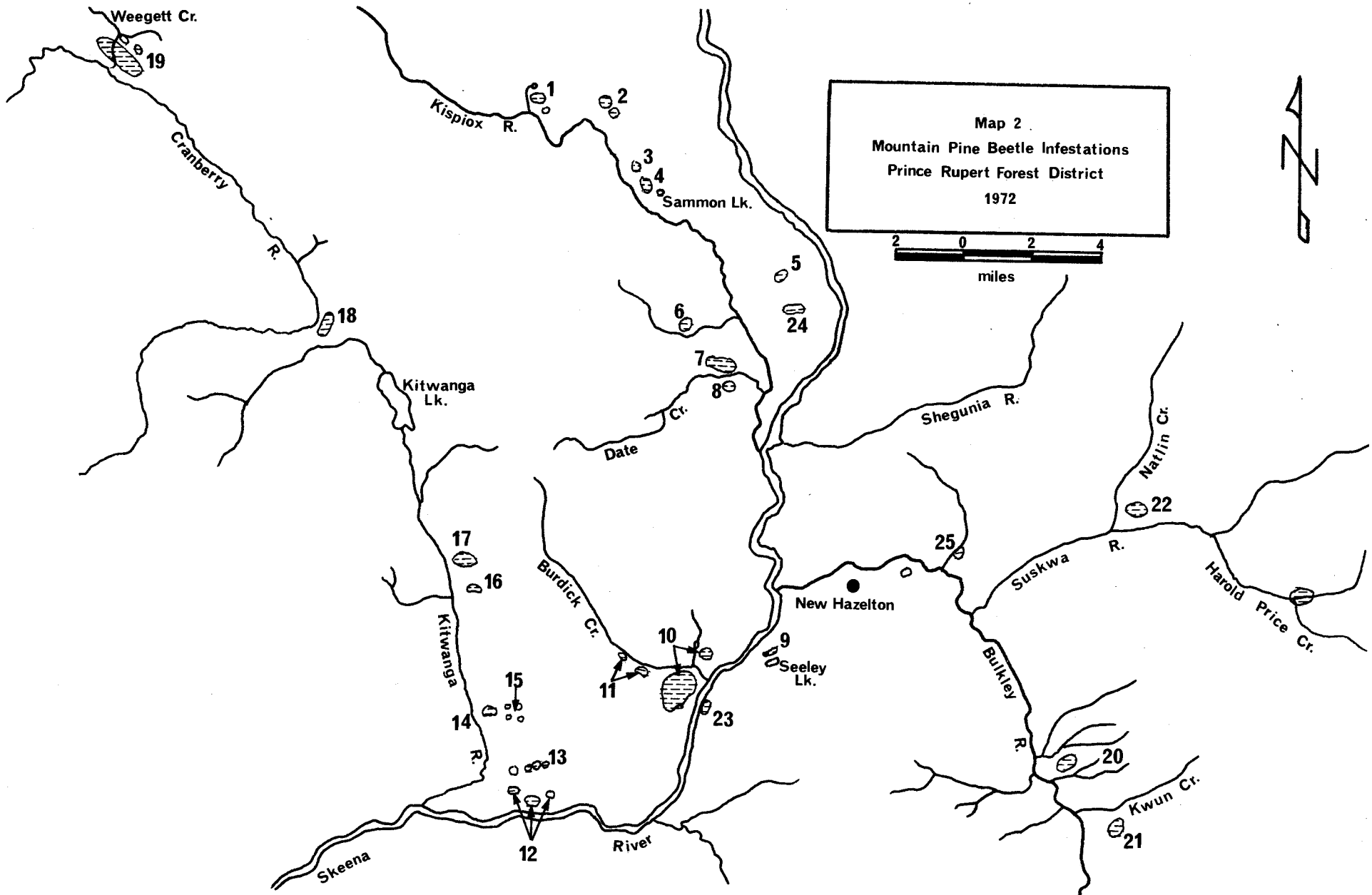
Cruising by British Columbia Forest Service personnel in some of the same areas indicated a slightly higher percentage of freshly attacked trees than that found by the Canadian Forestry Service survey (Table 3) (Map 2).

Table 3. Summary of data from mountain pine beetle infestations cruised by British Columbia Forest Service personnel, Prince Rupert Forest District, 1972

Map key no.	Location	Area (acres)	Volume (M.c.f.)	*Infestation classification
1	Kline L	50	75	H
2	Mi 7 Kispiox F.D.R.	10	20	L-M
3	Pintz L #1	41	53	H
4	#2	300	250	H
5	Bras L	100	120	M-H
6	Sunday L	80	120	L-M
7	Date Cr #1	300	450	M-H
8	#2	20	25	H
9	Seeley L	60	45	H
10	Burdick Cr #1	1,500	2,200	M-H
11	#2	10	13	M
12	Andimaul Cr	50	35	-
13	Kitwanga L 2 Mi	25	30	H
14	7 Mi	100	110	H
15	5 Mi	10	15	H
16	12 Mi	60	90	M-H
17	Kitwancool	15	12	L
18	Kitwanga L	150	160	L-M
19	Weegett Cr	1,750	2,000	H
20	Sharpe Cr	30	25	-
21	Kwun Cr	10	12	-
22	Natlan Cr	700	1,050	H
23	Carnaby	30	50	H
24	Tenas Hill	60	75	M-H
25	Nine Mi Cr	5	7	L-M
26	Gramophone Cr	40	50	L
Total		5,506	7,092	

*British Columbia Forest Service infestation classification:

Light: 0 - 30%
 Medium: 30 - 60%
 Heavy: over 60%



Broods in currently attacked trees varied in development. Larvae, in a number of stages, and eggs were present at all locations in mid-September, indicating a prolonged flight period during 1972. However, mild weather prevailed in the infested areas during late September and the majority of the eggs hatched. With favorable winter weather, a population comparable to that of 1972 could survive and emerge in 1973.

Beetle populations were especially heavy at Natlan and Burdick creeks and, considering the maturity of these stands, attacks in 1973 might be appreciably higher than in 1972. In the other infestations examined, the populations are expected to be about the same as in 1972. It is not feasible to forecast the course of an epidemic beyond the next season. However, we do know that mature and overmature stands are the most susceptible to attack, and the greater the average dbh of these stands, the greater the brood-producing potential and thus the greater the rate of tree mortality. On the basis of this knowledge, coupled with the observation that past epidemics of the mountain pine beetle in lodgepole pine lasted from 5 to 18 years, with an average of about 9 to 10 years, it is probable that high-level beetle activity will continue in the pine stands of susceptible age and size in the Hazelton-Kitwanga areas for a number of years.

Western blackheaded budworm, Acleris gloverana

A general increase in budworm populations was evident throughout the Prince Rupert Forest District (Table 4). The population in western hemlock stands on the Coast posed the greater threat, although light to moderate defoliation was noted on alpine fir and white spruce west of Babine Lake.

Ground surveys in July revealed light to heavy larval populations at Peel Inlet and Burnaby Island in the Queen Charlotte Islands, and in localized stands from Calvert Island north to Douglas Channel on the mainland coast.

Table 4. Summary of blackheaded budworm collections, Prince Rupert Forest District

Host	1/ Drainage division	No. samples during larval period		% samples containing budworm		Avg no. larvae per positive sample	
		1971	1972	1971	1972	1971	1972
W. hemlock	* 080	13	7	15	85	1	17
	* 081	18	5	0	100	-	18
	* 083	9	13	22	84	1	86
	* 100	6	14	0	50	-	86
	* 101	12	17	0	18	-	4
White spruce	121	32	29	15	62	1	10
	122	35	36	17	47	1	5
Alpine fir	121	20	21	20	86	2	20
	122	22	13	22	93	2	10

*Sampled July 2-15 only

1/ See Map 1

During September, Rayonier Canada Limited reported discoloration of western hemlock on Lyell and Burnaby islands. Investigations disclosed medium to heavy blackheaded budworm defoliation of western hemlock at these locations, and light defoliation along Peel Inlet.

Egg sampling at Peel Inlet, Lyell and Burnaby islands showed a light to medium population (Table 5).

Table 5. Summary of blackheaded budworm infestations, Prince Rupert Forest District, 1972

Location	Avg no. eggs per 18" branch	% total defoliation	Defoliation prediction for 1973*
Peel Inlet	23	10	Light
Takelley Cove (Lyell Is)	34	30	Medium
Burnaby Island #1	41	30	Medium
#2	54	30	Medium

*Egg density and predicted defoliation (Silver)^{1/}
 1 - 26 = light
 27 - 59 = medium
 60+ = heavy

Medium defoliation is expected in 1973 at Lyell and Burnaby islands, and light defoliation near Peel Inlet.

No egg sampling was done on the mainland coast, but populations are expected to continue or increase in numbers and areas in 1973.

Spruce budworm, Choristoneura spp.

One- and two-year-cycle spruce budworm populations remained low in the Prince Rupert Forest District in 1972.

Soolure traps containing magicaps with pheromone attractant were set up in the Kitimat and Terrace areas to measure adult populations in areas where one-year-cycle budworm have been noted in the past. No adults were caught. The same type of traps were set up in four locations in the eastern part of the District where two-year-cycle spruce budworm infestations have occurred. The numbers of adults taken at each location were as follows: Smithers Landing, 8; Skunsnat Cr, 69; and 2 each at West Morice F.D.R. and Morice River. Earlier detection surveys indicated light larval populations.

^{1/}Silver, G.T. 1959. A Method for Sampling Eggs of the Blackheaded Budworm. J. Forest. Vol. 57, No. 3.

Cone Insects

There were few cones on most major coniferous tree species in 1972. Fifteen collections of 20 cones each were made from coniferous hosts in the east and west portions of the District. Cones from lodgepole and whitebark pines at four locations were not infested, but cones from other tree species were infested by a number of insects (Table 6).

Table 6. Infestations of seed and cone insects at ten locations, Prince Rupert Forest District, 1972

Tree sp. sampled	Collection locations	Damaging pest species
White spruce	Hudson Bay Mtn, Kline L, Shegunia R, Moore Cr, Bell Irving R	<u>Hylemya anthracina</u> <u>Dasineura rachiphaga</u> <u>canadensis</u> <u>Mayetiola carpophaga</u> <u>Laspeyresia youngana</u>
Alpine fir	Cronin Mine Rd, Hudson Bay Mtn, Kelinweliks Cr	<u>Faromyia aquilonia</u> <u>Dasineura</u> sp. <u>Mayetiola carpophaga</u> <u>Dasineura abiesemia</u> <u>Resseliella</u> sp.
Black spruce	Carr Cr	<u>Hylemya anthracina</u> <u>Laspeyresia youngana</u> <u>Dasineura rachiphaga</u>

Other Noteworthy Insects

A pine midge, Cecidomyia spp.

Moderate to heavy damage was common on lodgepole pine branch tips along the Skeena River from Terrace to Hazelton, Beam Station road south of Terrace, Kalum River Block in T.F.L. 1 and near Kitwancool. Up to 40% of the branch tips were killed.

Western tent caterpillar, Malacosoma californicum pluviale

Damage by the western tent caterpillar decreased in the Terrace area and was not detected in the lower Nass River Valley. Individual bushes and trees in Terrace were partially defoliated, but overall defoliation was light.

A winter moth, Erannis vancouverensis

Light populations with corresponding defoliation were noted on white birch trees from Little Oliver Creek to Cedarvale.

Table 7. Other insects of current minor significance

Insect	Host	Locality or drainage division	Remarks
<u>Choristoneura conflictana</u> Large aspen tortrix	Trembling aspen	Hazelton, Terrace	Defoliator. Light to moderate populations. Defoliation light.
<u>Dendroctonus rufipennis</u> Spruce beetle	White spruce	Bell Irving R	Bark beetle. Scattered old-tree mortality as a result of right-of-way clearing.
<u>Lambdina f. lugubrosa</u> Western hemlock looper	Western hemlock	083,102	Defoliator. Low populations.
<u>Neodiprion</u> sp. A sawfly	Western hemlock	083,100,101	Defoliator. Of 78 collections made, 30% were positive containing an average of 10.6 larvae.
<u>Nyctobia limitaria</u> Green balsam looper	Western hemlock	083,100	Defoliator. Of 59 collections made, 40% were positive containing an average of 2.7 larvae.
<u>Phyllocnistis populiella</u> Aspen leaf miner	Trembling aspen	Houston, Smithers	Leaf miner. Light to moderate populations.
<u>Pikonema</u> spp. Spruce sawfly	White and Sitka spruce	100,101,083 081,121	Defoliator. Of 39 collections, 69% were positive containing an average of 4.2 larvae. Of 55 collections, 32% were positive with an average of 1.7 larvae.

FOREST DISEASE CONDITIONS

The organisms currently causing much of the tree mortality, growth loss and wood quality reduction attributed to diseases are 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, making 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., frost, 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.

Winter Damage

Red belt in lodgepole pine stands was observed in the Prince Rupert Forest District from Little Oliver Creek north for approximately five miles; south of Kitwanga for approximately three miles; from Terrace Junction to Lakelse Lake on a west-facing slope, and near Sheedy Creek. The stands affected were predominantly immature and on rocky south- or west-facing slopes.

Foliage Diseases

Shoot blight of conifers, Sirococcus strobilinus

This disease is endemic throughout the coastal forest, causing negligible damage in most areas. In 1972, intensification of the disease was observed on western hemlock in areas around Terrace and the Lower Nass River.

Severe damage and mortality was reported from Thomas Bay, Alaska, and other nearby points.

Leaf and twig blight of poplar, Venturia spp.

The high incidence of this disease during the past three years decreased in 1972. Light to moderate damage was observed on trembling aspen from Terrace to Seeley Lake; 80% of the foliage was affected around Hazelton, and disease intensity declined to light from there along the Suskwa River to Natlan Creek.

Fir-fireweed needle rust, Pucciniastrum epilobii

Disease intensity was moderate to heavy on current year's growth of alpine fir over much of the interior portion of the District.

Table 8. Other diseases of current minor significance

Organism	Host	Locality	Remarks
<u>Coleosporium</u> <u>asterum</u> Pine-aster rust	Lodgepole pine	Telkwa, Morice L Jct	Up to 90% of trees infected in a small area with estimated 20% of foliage affected.
<u>Cronartium</u> <u>comandrae</u> Commandra blister rust	Lodgepole pine	Flint Cr, Topley Ldg	Common on regeneration.
<u>Endocronartium</u> <u>harknessii</u> western gall rust	Lodgepole pine	Kispiox Village	Heavy in dense re- generation.
<u>Lirula</u> <u>macrospora</u> A spruce needle cast	Sitka and white spruce	Sandspit, Gray Bay, West Morice F.D.R.	Moderate to heavy on two-year-old needles.
<u>Melampsora</u> <u>medusae</u> Fir-aspen rust	Douglas-fir	Perow burn	5-30% of the foliage of 6-foot planted trees infected.