ANNUAL DISTRICT REPORT

FOREST INSECT AND DISEASE SURVEY

BRITISH COLUMBIA, 1974

PART III, PRINCE GEORGE FOREST DISTRICT

by

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- FILE REPORT -

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INTRODUCTION

This report outlines the status of forest insect and disease conditions in the Prince George Forest District for 1974, and attempts to forecast population trends.

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

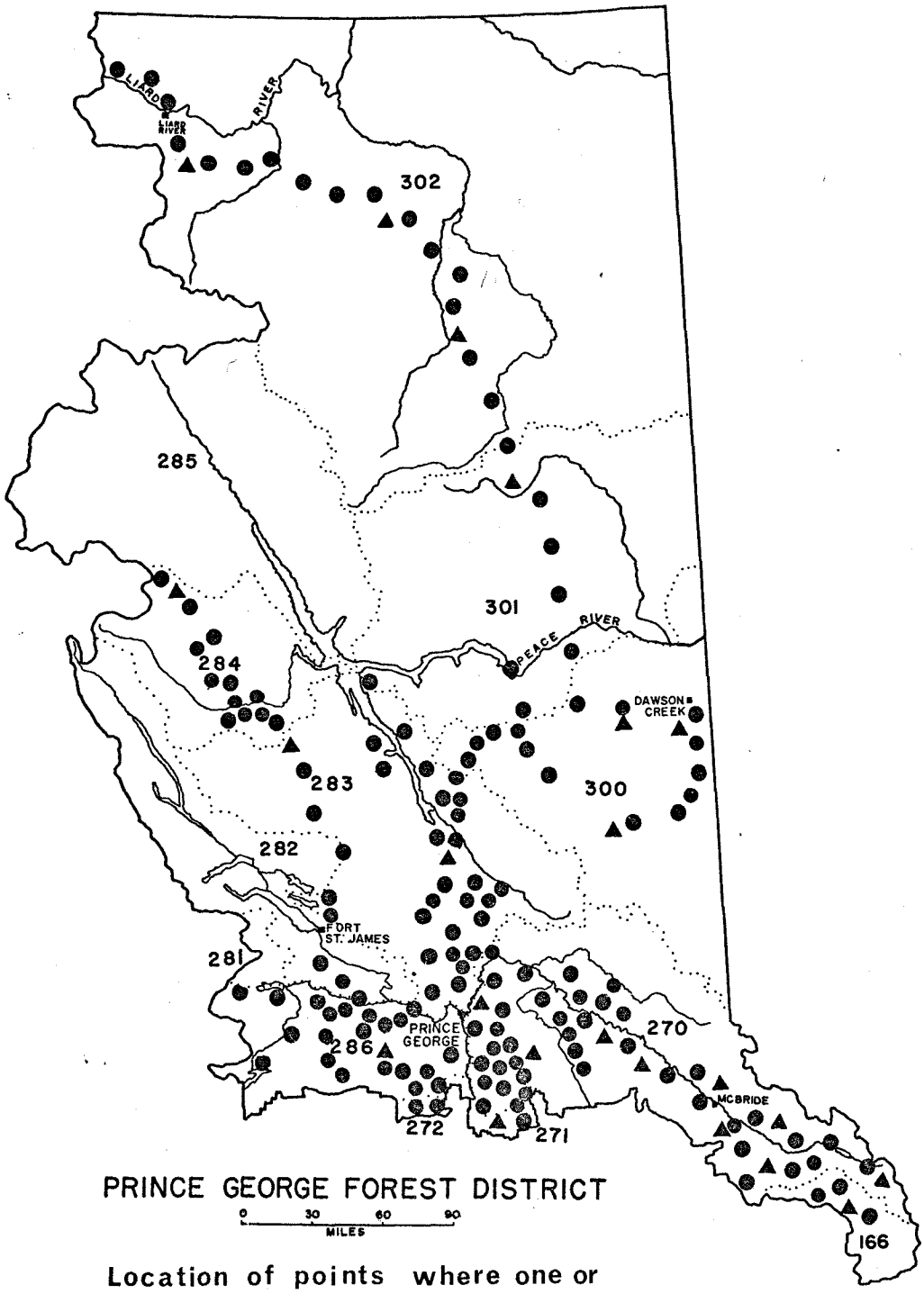
Regular field work in the District extended from May 28 to August 22. Special surveys were as follows: survey of winter and spring windthrown white spruce for current spruce beetle attacks, May 28 - June 21 and August 8 - 13; survey of black army cutworm infestations, May 31 - June 20 and July 4; setting out and collecting spruce budworm "pheromone" traps, July 14 - 15 and August 14 - 15.

A total of 525 insect and 40 disease collections were submitted in 1974. Map 1 shows collection localities and drainage divisions.

Numbers of larval defoliators found in collections increased slightly from 1973 levels; 80% of collections taken contained larvae. One-year-cycle spruce budworm caused light to moderate defoliation in the Liard Hotsprings - Fireside area. Forest tent caterpillar populations subsided, causing intermittent defoliation of aspen stands around Prince George and McBride. Moderate numbers of black army cutworm occurred in several plantations but did not defoliate lodgepole pine and white spruce seedlings. Blackheaded budworm populations more than doubled the 1973 level, while two-year-cycle spruce budworm adult population increased over 1973. Spruce beetle populations remained at a low level.

Foliage diseases remained light on coniferous trees. Weather damage during the 1973-74 winter caused reddening of lodgepole pine and Douglas-fir trees in several areas in the eastern and southern portions of the District.

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



PRINCE GEORGE FOREST DISTRICT

Location of points where one or more collections were made and field records were taken in 1974

Insect ●

Disease ▲

FOREST INSECT CONDITIONS

Currently Important Insects

Bark Beetles

Spruce beetle, *Dendroctonus rufipennis*

Beetle populations remained light in white spruce stands throughout the District. They were reduced to very low levels by exceptionally cold weather prior to snow-pack in the winters of 1972 and 1973. During the 1973-74 winter, ideal snow conditions existed for the beetle, and survival increased. During the 1974 spring and summer, the number of windfall attacks increased slightly. The adult beetles emerged and attacked late in July in the recent windfalls found in Tumuch Lake and Wendle Creek areas. These attacks were light and no green attacked trees were found.

Mountain pine beetle, *Dendroctonus ponderosae*

No 1974 beetle-killed lodgepole pine trees were recorded in the District. Beetle-killed lodgepole pines had been recorded in the Punchaw Lake, Sundown Creek and Canoe River areas in 1972.

Douglas-fir beetle, *Dendroctonus pseudotsugae*

Beetle-attacked Douglas-fir trees were found in the Crystal Lake area near Bear Lake, where 12 red-tops were counted. No new attacks were observed in the Canoe River area where 200 beetle-killed Douglas-firs were seen at Foster Creek in 1973.

Balsam fir bark beetle, *Dryocoetes confusus*

Approximately 490 red-topped alpine fir trees were counted near Pine Pass at the Bennett - Callazon creeks area on the north side of Highway 97 and 110 were counted at the east end of Moose Lake east of Mount Robson. Access into both areas was impractical, so no close-up ground examinations were conducted.

Defoliators

One-year-cycle spruce budworm, *Choristoneura fumiferana*

Larval numbers dropped to one-quarter of the 1973 level in the Liard River Valley infestation between Liard Hot Springs and Fireside. Though the overall population dropped, there were high numbers of larvae at Mile 540, where up to 50% of the trees had stripped tops from former defoliation. Feeding is expected to increase slightly in 1975, and cause light to moderate defoliation.

Defoliation has occurred annually in this area since 1957, and some increment loss has no doubt occurred in mature stands in the infestation area. Continued defoliation will further weaken and expose the trees to secondary attacks by other insects or disease.

Forest tent caterpillar, *Malacosoma disstria*

Forest tent caterpillar populations dropped, causing patchy defoliation in Prince George, McBride and Mt. Robson areas. Egg samples taken during the fall of 1973 indicated that high populations would occur around the Prince George to Strathnaver area in 1974, and very high in the McBride - Yellowhead Pass area. However, the Prince George - Strathnaver infestations declined, and only the odd patch of minor defoliation was observed. Intermittent, moderate defoliation occurred between Prince George and Chilako. Along Highway 16 from McBride to Yellowhead Pass the population also subsided, and intermittent, heavy patches of defoliation occurred.

Suspected causes of the drop in population were pupal virus disease and mortality of young larvae due to cold, wet conditions during May.

No egg survey was conducted in 1974.

Black army cutworm, *Actebia fennica*

Black army cutworm populations dropped in 1974 especially in areas of 1973 epidemics. Feeding began in late May and early June on pioneer ground cover plants such as fireweed, raspberry, thimbleberry and elderberry which was well advanced and plentiful enough to sustain the cutworm larvae throughout their feeding period. Lodgepole pine and white spruce seedlings which were planted in 1974 sustained no defoliation.

Reports of cutworm outbreaks from B. C. Forest Service planting crews started around May 29 and the following areas were noted and examined:

Purden Mountain - moderate to heavy

Carpet Lake Road - heavy

Ptarmigan Creek - moderate to heavy

Checks on 1973 outbreak areas were conducted at:

Bearcub Creek - light

Naver Rd., Mi. 16 - light

Canoe River - Horsey Creek - light

Purden Lake east - no larvae found

Known infestations occurred in plantations totalling some 3,000 acres, however cutworm larvae were present on only a portion of the cleared area, moving continuously and causing light to moderate defoliation to the herbaceous growth.

Pupal collections were taken in two of the heavier 1974 infestations at Carpet Lake and Ptarmigan Creek. There was an average of 1.9 and 1.4 pupae per square foot in 25 one-foot-square duff samples. At the time of sampling, predation by robins, crows and other birds was in progress, therefore survival of the population will probably be minor in 1975.

Two-year-cycle spruce budworm, *Choristoneura biennis*

Larvae have been scarce for several years. Beating samples since 1971 show little change in the light population with minor fluctuations in larval numbers (Table 1).

Table 1. Summary of two-year-cycle spruce budworm collections by drainage divisions, Prince George District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
166	10	16	4	0	0	0	-	-	-
270	165	141	110	4	6	12	1.5	1.2	1.7
282	21	13	15	5	0	0	1.0	-	-
283	42	53	49	2	15	12	1.0	1.1	1.0
284	5	9	15	0	0	0	-	-	-
285	46	20	32	16	0	0	2.1	-	-
Totals	289	252	225	8	6	12	1.9	1.1	1.5

In 1972 and 1974, flight years, several adults were trapped at former spruce budworm damage plots in Sectar traps baited with a pheromone attractant. The number of adults found in 1974 showed a substantial increase over 1972 (Table 2).

Table 2. Results from 3-tree beating samples and pheromone traps at spruce budworm sample points, Prince George District

Location	PSS #	Hosts	No. larvae per beating	Dates traps in field	No. moths per trap (74)					Avg no. moths 1974	Avg no. moths 1972	Budworm species of *Choristoneura*
Mi. 16 Naver Rd.	22	alF, wS	2	July 16 - Aug. 14	0	2	11	4	15	6	1.6	*C. biennis*
George Cr	18	alF, wS	3	July 16 - Aug. 14	25	25	31	2	55	28	-	" "
Hay L	-	alF, wS	0	July 16 - Aug. 14	26	19	25	44	34	30	-	" "
Hwy. 16 - Willow R	50	alF	2	July 16 - Aug. 14	0	12	0	0	0	2	-	" "
Crystal L	15	alF	1	July 16 - Aug. 14	2	3	0	3	4	2	-	" "
Davie L	17	wS	1	discontinued in 1974						-	-	" "
Tudyah L	-	alF	1	July 16 - Aug. 16	5	4	4	3	2	4	-	" "
Pine Pass	38	alF	0	July 16 - Aug. 16	51	61	33	35	11	38	-	?*C. fumiferana*
Beaver Cr	66	alF, wS	0	July 15 - Aug. 16	34	31	39	32	44	36	-	?*C. fumiferana*
Link Cr	67	alF, wS	0	July 15 - Aug. 16	37	23	24	15	-	25	-	?*C. fumiferana*
Narrow Lake	-	alF, wS	2	July 15 - Aug. 16	48	54	57	54	-	53	-	*C. biennis*

In 1973, a non-flight year, the number of adults collected in Sectar traps increased over 1972, but these were probably *C. fumiferana* carried by air currents from the north.

Blackheaded budworm, *Acleris gloverana*

Populations increased significantly in 1974, and caused up to 50% current defoliation on some understory alpine fir trees. The population had remained light until 1973, when it increased slightly.

In the Tumuch Lake area the population dropped in 1974, while in the Pine Pass - McLeod Lake area it increased and the percentage of samples containing larvae remained near 80% (Table 3). Highest larval counts were at Kerry Lake, Whiskers Point and Pine Pass, where 91, 84 and 150 larvae, respectively, were taken in 3-tree beating collections.

Table 3. Summary of blackheaded budworm collections by drainage divisions, Prince George District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
166	10	15	7	0	0	14	-	-	2.0
270	163	145	112	14	36	45	3.0	6.5	5.6
282	23	7	18	9	28	61	1.3	5.0	5.0
283	39	53	50	30	81	76	2.1	9.3	19.0
284	5	9	12	20	44	67	1.0	12.0	6.8
286	43	11	22	23	64	45	1.4	2.0	6.6
300	14	11	16	36	18	75	1.2	5.0	36.5
Totals	297	251	237	17	54	55	2.2	7.4	9.9

Lodgepole pine needle miner, *Zelleria haimbachi*

A report* of this needle miner having attacked lodgepole pine over 6,000 acres (1,500 ha) on the west side of Williston Lake in the Blackwater Creek area was received from the British Columbia Forest Service at Mackenzie in conjunction with British Columbia Forest Products Ltd. during October, 1974.

This insect, when in epidemic population, normally causes needle loss and some loss of increment, but has not been known to cause any mortality.

*This report was sent by Lorne Hunter of the British Columbia Forest Service, who received the report from Fred Deidrickson of British Columbia Forest Products Ltd., of Mackenzie.

Other Noteworthy Insects

Hemlock looper, *Lambdina fiscellaria lugubrosa*

Hemlock looper populations remained at a low level in 1974. While 1973 samples showed an increase over 1972, the population decreased in 1974 (Table 4).

Table 4. Summary of hemlock looper collections by drainage divisions, Prince George District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
166	14	17	7	36	47	14	1.6	2.9	1.0
270	168	130	71	8	25	14	2.5	2.2	1.2
282	6	6	12	0	0	0	-	-	-
283	30	48	44	10	19	9	1.3	3.2	1.0
Totals	218	201	134	10	25	11	2.1	2.5	1.1

Large aspen tortrix, *Choristoneura conflictana*

Populations remained at a low level in the District with the only defoliation found in the Dawson Creek area at Ground Birch, where some three miles of intermittent light to moderate defoliation of trembling aspen was recorded along Highway 97.

Spruce weevil, *Pissodes strobi*

There was a slight decrease in the number of weevil attacks on young white spruce throughout the District. Seven 100-tree plots were examined in the Aleza Lake - Willow River area. A total of four current attacks were found compared to nine in 1973. In the Monkman area, no increase was noted.

Conifer sawflies, *Neodiprion* spp.

Neodiprion spp. larvae were more plentiful in 1974 and caused light, almost unnoticeable defoliation to western hemlock in areas around McBride at Goat River, Dore River, McKale Creek and Ptarmigan Creek. Light populations were found elsewhere throughout the District.

A leaf blotch miner, *Lyonetia* sp.

Foliage of white birch was infested and discolored to a bright brown from McBride to Yellowhead Pass and from Tete Jaune Cache south to Hugh Allan Creek.

The browning effect accompanied the higher elevation redbelt lodgepole pine and greying trembling aspens in the McBride to Yellowhead Pass area which had been frost-damaged at an earlier date.

A pine twig beetle, *Pityophthorus* sp.

Damage to current twigs of lodgepole pine was caused by larvae of this insect around Mile 395 Alaska Highway near Summit Lake. Twenty per cent of the pine stand was affected, while approximately 40% of the branch tips were infested. The species may be injurious to smaller trees or ornamentals, but normally does not cause other than minor damage to a natural stand.

Table 5. Other insects of current minor significance

Insect	Host(s)	Locality	Remarks
Cooley spruce gall aphid *Adelges cooleyi*	white spruce, Douglas-fir	South half of District	Sucking insect, heavy localized populations, more prevalent on D-fir in 1974.
European larch sawfly *Pristiphora erichsonii*	eastern larch	Chetwynd, Moberly	Defoliator. Light localized populations.
Green velvet looper, *Epirrita autumnata*	white spruce, alpine fir, western hemlock	Willow R, Naver R, Bowron R	Defoliator. Light population.
Lodgepole terminal weevil *Pissodes terminalis*	lodgepole pine	Kenny dam road	Terminal borer, 6-8 attacks per linear mile on roadside.
Spruce sawflies *Pikonema* spp.	white spruce, black spruce	Throughout District within host range	Defoliator. Population very light.
Spruce tip moths *Zeiraphera* spp.	white spruce	Evans Cr, Naver Rd., Stone Cr, McLeod L, Pine Pass	Bud miner and defoliator. Light population.
Tussock moths *Parorgyia* spp.	white spruce, alpine fir, western red cedar, western hemlock	Willow R, Ptarmigan Cr, Bowron R, Hart Hwy., McBride, Canoe R	Defoliator. Light population.
Yellow-lined forest looper *Nyctobia limitaria*	white spruce, alpine fir	Crooked R, Purden L, Tete Jaune, McGregor	Defoliator. Light population.

FOREST DISEASE CONDITIONS

The organisms 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, 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 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.

Physiological Diseases

Weather damage

A band of red belt injury occurred from McBride to the Alberta boundary on the north side of the Fraser River in 1974. From McBride to Mt. Robson the damage was sporadic and narrow, but in the Lucerne area there was a 400' (120 m) wide band of mainly lodgepole pine damaged at the east end of Lucerne Lake.

Other occurrences of red belt were south of Valemount on the west side of the Selwyn Range, the Malton Range, and at Mile 170 on the Alaska Highway. Ground examinations were conducted and samples submitted from McBride and Mt. Thompson south of Valemount, but no living organisms were found.

Trembling aspen and willow were damaged by an unseasonal late frost which caused bud and twig mortality at 4,000 to 4,500' (1,200 to 1,250 m) elevation from McKale Creek to Mount Teare near McBride. Similar damage was evident from 6 to 16 miles (10 to 26 km) west of Chetwynd. Most of the aspen trees in these areas remained leafless except for a few adventitious buds which flushed in mid-July, and partly refoliated by August. *Cytospora* sp., a secondary fungus, was found on some of the damaged twigs.

These areas will be examined for tree recovery or mortality in 1975.

Climatic injury (early fall frosts)

Frost damage was reported on white spruce in the Torpy River Valley, near McGregor, where current foliage injury extended over several miles.

Table 6. Other diseases of current minor significance

Organism	Host(s)	Locality	Remarks
Stalactiform blister rust *Atropellis piniphila*	lodgepole pine	Norman L, Willow R	Light infection, found on primary host, typical elongate.
Spruce Labrador-tea rust *Chrysomyxa ledicola*	*Ledum* sp., white spruce	S. side Narrow L, Chetwynd	Common occurrence in 1974.
Spruce needle rust *Chrysomyxa weirii*	white spruce	Yardley L	Scarce in 1974.
Orange stalactiform blister rust *Cronartium coleosporioides*	lodgepole pine	Wansa L Rd., Endako, Willow R	Stem cankers causing girdling or partial girdling of stems or branches.
Western gall rust *Endocronartium harknessii*	lodgepole pine	Chetwynd, Hudson Hope, Fort Fraser	Distribution samples.
A canker disease of trembling aspen *Hypoxylon mammatum*	trembling aspen	Farrel Cr	Several acres of dead aspen; spreading.
Lophodermium pinastri	Scots pine	Aleza L	Lesion causing dieback; one only found in exotic plantation of Scots pine.
Fir-willow rust *Melampsora epitea*	willow, Douglas-fir	McKale Cr	Rust; light incidence.
Fir-cottonwood rust *Melampsora occidentalis*	black cottonwood, Douglas-fir	Canoe R, at Yellowjacket Cr	Rust; light incidence.