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ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
BRITISH COLUMBIA, 1975
PART III, PRINCE GEORGE FOREST DISTRICT

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by

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PACIFIC FOREST RESEARCH CENTRE

CANADIAN FORESTRY SERVICE

VICTORIA, BRITISH COLUMBIA

- FILE REPORT -

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 1975, 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.

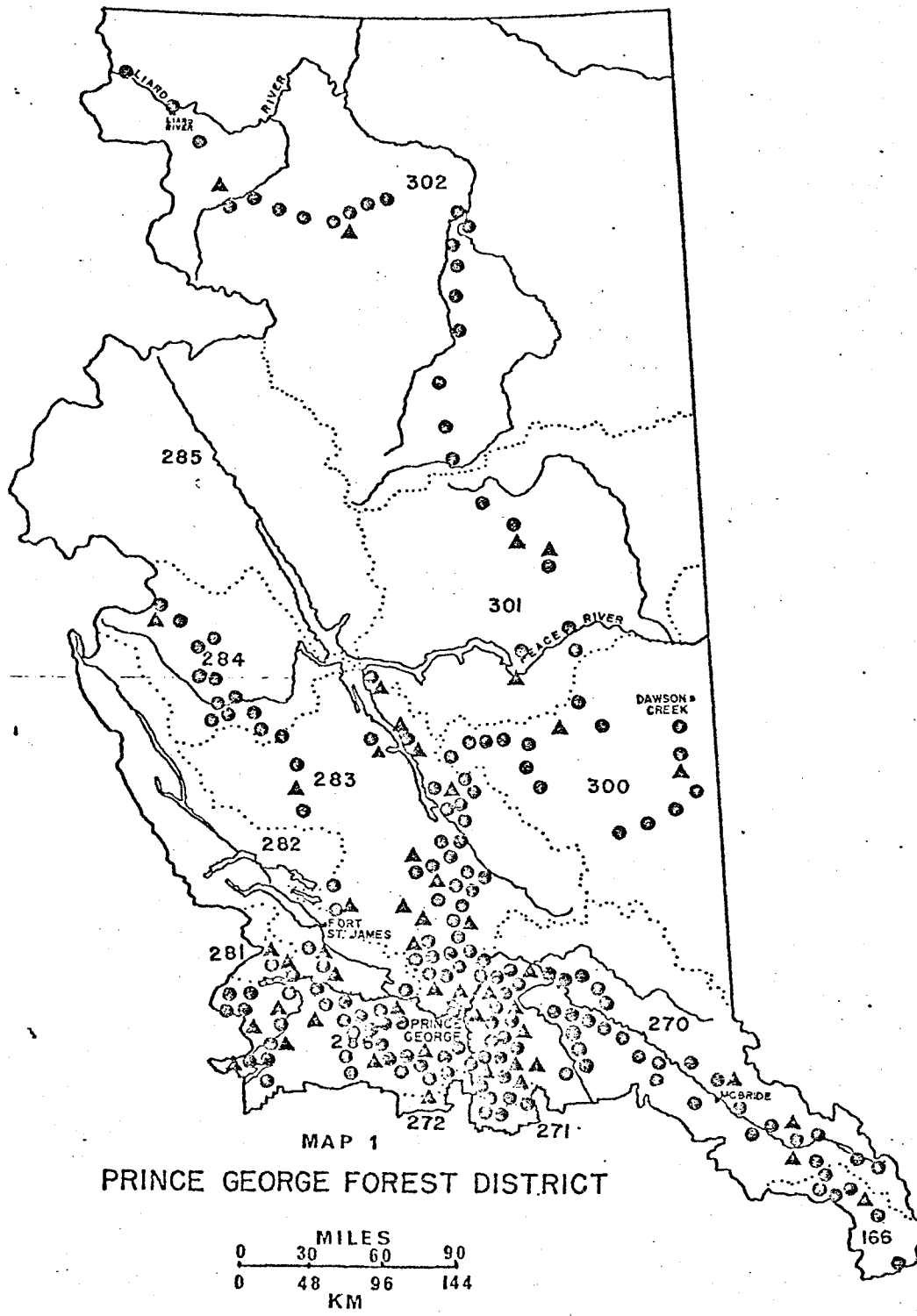
Regular field work in the District extended from May 27 to August 5. Special surveys were as follows: survey of winter and spring windthrown white spruce for current spruce beetle attacks, June 6, July 17-23; check for black army cutworm infestations, June 6-10; setting out and collecting spruce budworm "pheromone" traps, July 17, August 2 and 4; attending meeting at Jasper re *Sirococcus strobilinus* disease, June 11, 12; *Endocronartium harknessii* survey, June 6-10, July 16, July 24-26; cone collections, July 26-29.

A total of 325 insect and 57 disease collections were submitted in 1974. Map 1 shows collection localities and drainage divisions.

Numbers of larval defoliators decreased generally from 1974 levels; 70% of collections taken contained larvae. One-year-cycle spruce budworm caused moderate to heavy defoliation in the Liard Hotsprings-Fireside area; forest tent caterpillar populations increased and caused heavy defoliation in the McBride area. The black army cutworm population collapsed. Blackheaded budworm populations subsided and the two-year-cycle spruce budworm population remained at a static endemic level. Mountain pine beetle attacks occurred in the Stuart-Takla Lakes area for the first time in nearly four years.

Weather damage during 1974-75 winter caused reddening of lodgepole pine and Douglas-fir trees in several areas in the eastern and southern portions of the District similarly to 1974.

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



MAP 1
PRINCE GEORGE FOREST DISTRICT

Location of points where one or more collections were made and field records taken in 1975

- Insect ●
- Disease ▲

FOREST INSECT CONDITIONS

Currently Important Insects

Bark Beetles

Mountain pine beetle, *Dendroctonus ponderosae*

After a non-active period of some five years, mountain pine beetle infestations began to re-occur in the District in the Stuart-Takla Lakes area. Red-topped lodgepole pine trees were observed at the west end of Whitefish Lake, 150 trees on 40 acres; Nancut southwest, 60 trees on 15 acres; Takla Lake, south end, 60 trees on 10 acres; Takla Landing southeast, 20 trees on 5 acres; northwest arm of Takla Lake, (west of Wedge Mountain), 10 trees on 4 acres. These affected trees appeared to be mostly 1974 attack. With the large areas of mature pine present in these areas it is likely the infestations will increase and expand.

Previous infestations occurred from 1955 to 1966 causing extensive tree mortality in the Stuart-Takla Lakes region. During the 12-year period, some 715,000 trees totalling around 30,000,000 cubic feet were killed.

Spruce beetle, *Dendroctonus rufipennis*

Light spruce beetle populations prevailed in the Bowron, Willow and McGregor River valleys, and in the Naver PSYU. These minor populations were confined to butt areas of recently thrown white spruce trees. Many susceptible recent windfalls were unattacked or had been attacked by *Ips* species beetles.

Reports of a few light stem attacks in the Naver area were received but no discolored trees were seen from the air.

Douglas-fir beetle, *Dendroctonus pseudotsugae*

The Douglas-fir beetle population remained at a low level throughout the Prince George District with a few minor attacks in the Tete Jaune Cache and Bear Lake areas, where only the odd tree was killed.

Western balsam bark beetle, *Dryocoetes confusus*

This beetle was active in several areas throughout the District in 1975. The following counts were taken: east of Moose Lake, 150 red-tops; Slim Creek headwaters, 85; Link Creek, 35; Garbitt Creek, 110; Bennett Creek, 40, and George Mountain, 40.

Defoliators

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

The spruce budworm infestations continued in the Fireside to Liard Hotsprings area with increased larval numbers and caused moderate to heavy defoliation in 1975. Larvae were in the 2nd to 5th instar during the first part of June. Despite the heavy population, defoliation was just over 30% at the time of examination, possibly due to cool, moist weather. These conditions in turn probably increased the growth of current foliage to the point of being able to withstand budworm feeding.

Forest tent caterpillar, *Malacosoma disstria*

Forest tent caterpillar infestations on trembling aspen trees increased in intensity in the McBride area from McKale Creek to Horsey Creek along both sides of the Fraser River Valley. Approximately 10,000 acres of defoliation were mapped from the air on June 18; this included most of the aspen stands throughout the infestation area. Heavy feeding caused 80 to 100% defoliation, contrary to the trend predicted in 1974, when defoliation was reduced from 1973 and an even lighter population had been forecast for 1975. Small areas of defoliation were found near Miworth, northwest of Prince George and near Mackenzie.

No signs of disease were found in the larvae.

Pine needle sheathminer, *Zelleria haimbachi*

Pine needle sheathminer defoliated and caused some dieback of young lodgepole pine on the west side of Williston Lake near Blackwater Creek and 11 miles north of Endako.

At Williston Lake the infestation occurred in a 12-year-old stand

and caused heavy defoliation or death of 40% of the terminal shoots. Laterals have replaced the dead terminals. Additional deformity may follow the 1975 defoliation.

Defoliation north of Endako was evident on 200 to 300 acres with about 50% of the new foliage affected. Apparently defoliation was of little significance in 1974.

The sheathminer was in the pupal stage on July 24 at the time of the examination. It overwinters as a first instar larva. Defoliation in 1976 will probably be more noticeable unless natural controls check the population.

Infestations have been known to continue indefinitely in California causing intermittent defoliation and considerable loss of increment, but no outright tree killing has been observed.

A leaf blotch miner on white birch, *Lyonetia saliciella*

Heavy leaf blotch miner attacks caused discoloration of white birch trees from McBride to Yellowhead Pass, from Tete Jaune Cache to Albreda, and in the Canoe River Valley. Alder and willow foliage was also heavily attacked.

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

Mature budworm larvae were collected from Douglas-fir and lodgepole pine at Crystal Lake and Davie Lake sample points. The size of the larvae and the host tree species indicate these may have been one-year-cycle budworm, *C. occidentalis*.

Traps baited with a pheromone sex attractant were set out on July 17 and collected on August 4. The traps caught a high number of male moths, almost equivalent to the number caught in 1974 (Table 1). These may have been one-year cycle budworms from the closest of both northern and southern budworm infestations, or off-phase two-year-cycle budworms. Use of the baited traps has shown the presence of a spruce budworm population in an area where the moth stage should be present only during the even years.

The highest numbers of moths were again found at Beaver Creek and Pine Pass, where totals of 157 and 104 moths were caught in the five traps at each area, averages of 31.4 and 20.8 moths per trap.

Other areas where significant numbers of moths were caught were Narrow Lake, George Creek and Naver access road (mile 16), with averages of 14.6, 12.0 and 12.4 moths per trap, respectively. These numbers may not necessarily indicate an increase in budworm populations, but they do indicate the presence of spruce budworm in a heavier than endemic population.

Table 1. Results from 3-tree beating samples and pheromone traps at spruce budworm sample points, Prince George Forest District

Location	PSS #	Hosts	No. larvae per beating	Dates traps in field	No. moths per trap (75)	Avg no. moths 1975	Avg no. moths 1974	Budworm species c Choristone
Mi. 16 Naver Rd.	22	alF, wS	0	July 17-Aug.4	11 14 8 14 13	12	6	<u>C. biennis</u>
George Cr	18	alF, wS	0	" "	11 13 15 9 12	12	28	" "
Hay L	-	alF, wS	-	" "	11 8 8 5 5	7.4	30	" "
Hwy. 16 - Willow R	50	alF	0	" "	0 0 0 0 0	0	2	" "
Crystal L	15	alF, D	1	" "	0 3 0 0 0	0.6	2	<u>C. occident</u>
Davie L	17	wS, 1P	1	" "	1 0 0 1 0	0.4	-	" "
Tudyah L	-	alF	0	" "	0 2 1 3 0	1.2	4	<u>C. biennis</u>
Pine Pass	38	alF	0	" "	34 18 22 13 6	31.	38	<u>C. fumifera</u>
Beaver Cr	66	alF, wS	0	" "	36 34 33 19 35	31.	36	" "
Link Cr	67	alF, wS	0	" "	24 25 14 11 4	16.	25	" "
Narrow L	-	alF, wS	0	" "	16 8 24 16 9	14.	53	<u>C. biennis</u>

Blackheaded budworm, *Acleris gloverana*

Blackheaded budworm populations dropped in 1975 (Table 2), and only a trace of defoliation was noticeable at Pine Pass. Minor populations prevailed at Tudyah Lake, Pine Pass, Bowron River near Spruce Creek, McGregor River and Nelson River, where collections of from 7 to 55 larvae per 3-tree-beating were taken from white spruce and alpine fir trees.

Populations have decreased since 1974, and the trend is expected to continue in 1976.

Table 2. Summary of blackheaded budworm collections by drainage division, Prince George Forest District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1973	1974	1975	1973	1974	1975	1973	1974	1975
166	15	7	5	0	14	40	-	2.0	1.5
270	145	112	145	36	45	27	6.5	5.6	2.5
282	7	18	10	28	61	80	5.0	5.0	1.6
283	53	50	45	81	76	38	9.3	19.0	9.9
284	9	12	8	44	67	12	12.0	6.8	1.0
286	11	22	29	64	45	14	2.0	6.6	1.0
300	11	16	14	18	75	7	5.0	36.5	1.0
Totals	251	237	256	54	55	29	7.4	9.9	4.0

Sawflies, *Neodiprion* spp.

These sawflies caused moderate to heavy defoliation of old foliage of western hemlock between Bowron River and McBride in the tributary valleys of the Fraser Valley. Up to 60% defoliation was found at Hungary Creek, Ptarmigan Creek, Goat River and Dore River.

While the population tripled in the hemlock-cedar stands in this area, it decreased in the Stuart-Takla Lakes and Germansen areas (Table 3). The population increase in the McBride area coincided with the rise in populations in the Columbia River region and the coastal strip of the Prince Rupert District on shore pine.

Table 3. Summary of *Neodiprion* spp. sawflies in the Prince George District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1973	1974	1975	1973	1974	1975	1973	1974	1975
270	127	154	118	33	25	27	8.2	13.2	37.7
282	15	21	30	0	24	17	-	3.0	1.2
283	53	40	55	19	20	11	1.4	1.8	6.2
286	19	57	45	26	37	27	1.2	2.0	1.8
Totals	214	272	248	27	29	22	6.4	9.7	23.0

Other Noteworthy Insects

Black army cutworm, *Actebia fennica*

No larvae of the black army cutworm were found in the District in 1975, either by planting crews or by survey personnel. During 1974, infestations occurred at Purden Mountain, Carpet Lake Road, Ptarmigan Creek and Karina Lake, but no lodgepole pine or white spruce seedlings were damaged since ground cover plants were plentiful and were the preferred hosts of the cutworm.

Large aspen tortrix, *Choristoneura conflictana*

Larvae caused light to moderate defoliation of trembling aspen at mile 233, Hart Highway near Chetwynd, and in the Clayhurst area on approximately 400 acres.

Hemlock looper, *Lambdina fiscellaria lugubrosa*

Looper populations dropped to a lower level in 1975; one larva was found compared to 16 larvae in 1974, showing a steady decrease since 1973. (Table 4).

Table 4. Summary of hemlock looper in Prince George Forest District

Drainage division	No. samples taken during larval period			% samples containing larvae			Avg no. larvae per sample		
	1973	1974	1975	1973	1974	1975	1973	1974	1975
166	17	7	5	47	14	0	2.9	1.0	-
270	130	71	123	25	14	0.8	2.2	1.2	1.0
282	6	12	30	0	0	0	-	-	-
283	48	44	56	19	9	0	3.2	1.0	-
Totals	201	134	214	25	11	0.5	2.5	1.1	1.0

Cone insects

A heavy white spruce cone crop materialized in the Prince George Forest District in 1975. Cone samples were taken from three tree species at 10 areas. Moderate populations of eight species of cone and seed insects were found in up to 50% of the cones (Table 5).

Table 5. Insects infesting cones, Prince George Forest District, 1975

Insect	Host(s)	Locality	Remarks
<i>Barbara colfaxiana</i>	D	Giscome	Cone moth, 1/20 cones infested.
<i>Dasineura abies</i>	alF	Bowron R, Giscome	Seed midge, 11 larvae in 20 cones.
<i>D. canadensis</i>	wS	Ormond L	Gall midge
<i>D. rachiphaga</i>	wS	Ormond L	Axis midge, 14 larvae in 20 cones.
<i>Euromyia abietum</i>	alF	Giscome	Seed midge, 59 larvae in 20 cones.
<i>Hylemya anthracina</i>	wS	Giscome, Aleza L, Bowron R, Teare Mtn, Dog Cr, Johnson Cr	Seed maggot, 28 larvae in 80 cones.
<i>Laspeyresia youngana</i>	wS	Bowron R, Aleza L, Johnson L	Cone insect, 6 larvae in 60 cones.
<i>Megastigmas rafni</i>	alF	Aleza L	Seed chalcid, 2 larvae in 20 cones.

Table 6. Other insects of current minor significance

Insect	Host(s)	Locality	Remarks
Cooley spruce gall aphid <i>Adelges cooleyi</i>	wS	South half of District	Sucking insect. Light attack, drop from 1974
Green velvet looper <i>Epirrita autumnata</i>	wS, aIF, wH	Throughout south half of District	Defoliator. Light population, increased to double 1974.
Lodgepole terminal weevil <i>Pissodes terminalis</i>	1P	Bear Lake, Opatcho L, Merton L	Terminal borer. Very light attack (1-4%), similar to 1974.
Spruce sawflies <i>Pikonema</i> spp.	wS, bS	Throughout Dist- rict within host range	Defoliators. Light population, increased in 1975.
Spruce tip moths <i>Zeiraphera</i> spp.	wS	Bowron R, Aleza L, McGregor, Merton L, Hixon- Yardley L	Bud miner and defoli- ator. Light population.
Spruce weevil <i>Pissodes strobi</i>	wS	Aleza L, Willow R, Chuchinka R, Fishhook L	Terminal borer. 4-100 tree plots 1-2% attacks.

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.

Currently Important Diseases

Stem Diseases

Globose gall rust, *Endocronartium harknessii*

A survey of the globose gall rust in lodgepole pine was conducted in the Prince George Forest District. Incidence of infection on both stems and branches was recorded in forty-two separate 100-tree plots (Table 7).

Table 7. Incidence of globose gall rust infection of lodgepole pine trees, Prince George Forest District

Location	Age description	No./trees unattacked	No./trees stem attacked	No./trees branch attacked
Willow R (Hwy.16)	young	89	1	10
N. Willow R access road	young	65	13	22
Wansa L road	semi-mature	55	17	28
Opatcho L	semi-mature	65	18	18
W. end Frances L	young	100	-	-
Crystal L	mature	83	3	14
4 mi. S/O'Dell	young	68	7	25
S/Bear L	semi-mature	57	2	41
Chuchinka R road	young	69	12	19
Merton L road	young	88	5	7

Table 7 - Cont'd.

Location	Age description	No./trees unattacked	No./trees stem attacked	No./trees branch attacked
Squaw L	mature	93	4	3
Tete Jaune Cache	young	74	13	13
Naver road mi. 21	mature	85	7	8
Ferguson L road	young	93	4	3
Finlay Forks mi. 30	mature	74	11	15
Punchaw L road	semi-mature	92	3	5
Mi.69 Finlay Forks road	mature	87	6	7
Oona L	young	87	11	2
Uslika L	mature	96	4	0
Nation R	mature	99	1	0
Bearcub Cr road	semi-mature	92	9	0
Murray R	semi-mature	95	5	0
Mi. 40 Boundary road	mature	79	21	0
Mi. 7 Johnson Cr	young	78	17	5
Sinkut Lookout road	semi-mature	102	0	0
Tatuk L road	semi-mature	104	0	0
Kenny Dam road	young	94	4	2
Kenny Dam	young	90	5	5
Cobb L	mature	110	1	1
Bednesti L	semi-mature	101	0	0
Fort St. James	young	86	11	3
Mi. 8 Oop L road	over mature	108	0	6
Teardrop L Jct.	semi-mature	73	15	10
Chief L	semi-mature	91	0	9
Mi. 450 Alaska Hwy.	young	99	0	1
Mi. 354 " "	mature	86	9	5
Mi. 109 " "	young	76	20	3
Buick	young	88	7	5
Borel L	mature	98	2	0
Blackwater road	mature	60	26	14
Mi. 8 Mackenzie road	mature	90	4	6
Mi. 38 Finlay Forks road	mature	80	8	12
Total		3,599	306	327
Avg		85.7	7.3	7.8

Cone Disease

Spruce cone rust, *Chrysomyxa pyrolata*

A heavy white spruce cone crop materialized in the Prince George Forest District in 1975, but the incidence of cone rust infection was light. Rust was present in cones at Aleza Lake, Giscome, McBride, Endako and Johnson Creek (near Hudson Hope), where 6%, 1%, 3%, 2% and 2% of the cones, respectively, were infected. Several plants of the secondary host of this disease, one flowered pyrola, were examined but no signs of infection were found.

Weather Damage

Red belt

Red belt of lodgepole pine, white spruce and some Douglas-fir was caused in 1975 from McBride southeast to Yellowhead Pass on the southwest side of the Rocky Mountains. Further discoloration appeared by late June from Tete Jaune Cache to Albreda and on the east side of the Bowron River in the Grizzly Creek-Spruce Creek drainages and east as far as Centennial Creek. Some of the damage occurred in 1974 when some red belt was observed between McBride and Yellowhead Pass, however, further reddening of 1974 foliage became apparent in late June and was most visible from the air.

Wind damage

Local windstorms caused several areas of windthrown lodgepole pine and trembling aspen trees over approximately 50 to 75 acres in the Punchaw Lake area. The damage consisted of trunk-broken aspen and butt-broken or up-rooted pine trees. Since the particular area is used extensively for cattle range, the trees are valued for shelterbelt purposes.