## INTERIOR FORESTS

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#### IMPORTANT INSECTS

Spruce Budworm, Choristoneura fumiferana (Clem.).—During 1953 the 2-year-cycle spruce budworm infestations in the Fort George Forest District remained at high levels. Increases and decreases in population density were detected in a few localities, although as is usual in a non-flight year, the degree and extent of change is difficult to determine.

In the Fort George District, quantitative sampling indicated a slight drop in population density about Bowron Lake, Antler Creek, and in an area south of Barkerville. The infestation increased in the vicinity of Jack of Clubs Lake and extended to a point west of Stanley. Little or no change in the Nation River and Crooked River areas was observed.

In the Kamloops District, very light infestations of 2-year-cycle budworm persisted in spruce-alpine fir stands at the following localities: Bolean Lake, Martin Creek, Monashee Summit (continuous into Nelson Forest District), Powers Creek, and Sock Lake. The light infestation east of Bugaboo Glacier, Nelson Forest District, persisted; larvae were more numerous on spruce than on alpine fir.

The population of 1-year-cycle budworm in Fountain Valley near Lillooet decreased markedly.

Mountain Pine Beetle, Dendroctonus monticolae Hopk.—The mountain pine beetle infestations in interior British Columbia continued to be very active but apparently no great change in the population status occurred during 1953.

In the Kamloops District, beetles were active throughout much of the white pine stand west of Shuswap Lake between Cape Horn and Albas, a distance of 10 miles. On a half-mile sample strip at Beach Bay, Shuswap Lake, 5 per cent of the white pine trees had been infested recently, and of these 30 per cent were green-infested. Fairly rapid destruction of white pine continues about Mt. McPherson, and north of Revelstoke to Mile 60 on the Big Bend Highway. This bark beetle persisted in white pine stands in the northern portion of Upper Arrow Lake, the Nakusp area, and Granby River area. Current logging in the last mentioned area, where stumpage rates have been lowered, will reduce the bark-beetle hazard locally. A light infestation of mountain pine beetles was discovered in a small stand of overmature lodgepole pine near Puntchesakut Lake, Fort George District.

A few changes in the area of infestation were observed in the eastern portion of the Nelson Forest District. The beetle continued to spread in Windermere Valley on lodgepole pine, except along Toby Creek where no green infested trees were observed. The Steamboat Mountain infestation spread northward, and the White Tail Lake infestation expanded in all directions. A newly reported active infestation was discovered near Adra, north of Naramata. This infestation has not been surveyed completely, nevertheless it is estimated that some 100 to 160 acres of lodgepole pine trees are, or recently have been, infested by mountain pine beetles.

The mountain pine beetles.

The mountain pine beetle population increased in the ponderosa pine stands near Alleyne Lake in the Aspen Grove region.

Western Pine Beetle, Dendroctonus brevicomis Lec.—A few ponderosa pine trees were infested with this bark beetle in the following localities: Rutland, several points along the west side of Okanagan Lake, the north side of Little Shuswap Lake, and Hat Creek. It was associated with mountain pine beetle at Alleyne, Otter, and Ludwick lakes.

Spruce Bark Beetles, Dendroctonus spp.

Englemann Spruce—Small infestations of Dendroctonus sp. occurred on Van, Little Jim, and Lamb creeks, Nelson Forest District. The current logging of these areas should reduce the beetle hazard locally. At Boundary Lake, 3 beetle-infested trees were recorded along cruise strips totalling about 3 miles in length. At Freeman Creek there were 4 green-infested and 12 grey-crowned trees among 1,109 stems (over 7 inches D.B.H.) along 270 chains of cruise strips. Near Canuck Creek, 3 green-infested and 5 grey-crowned trees were recorded among 118 stems (over 7 inches D.B.H.) along a 50-chain cruise strip.

One hundred and thirty-two spruce trees within a 10-by 2-chains area near Princeton had been killed, mostly during 1952, by *Dendroctonus* sp. Few trees were attacked during 1953.

Woodpecker work was evident on the majority of spruce trees infested by bark beetles.

White Spruce—Spruce bark beetle activity has increased in mature white spruce trees in a mixed stand of spruce, alpine fir, and cedar north of Penny. S. Hale of Nance Lumber Co., reported that bark beetles have killed many mature white spruce in a small section of Slim Creek Valley, 13 miles southwest of Dome Creek. Bark beetles were active within a spruce-alpine fir stand north of Sinclair Mills; about 7 per cent of the stems, 12-inches D.B.H. and over, on two sample areas totaling 12.9 acres were dead or dying from Dendroctonus attacks. Small patches of grey-crowned spruce were observed in the Wells-Barkerville area but the infestation is currently inactive.

**Douglas-fir Beetle,** Dendroctonus pseudotsugae Hopk.—Infestations of the Douglas-fir beetle in the interior of British Columbia continued at about the same level as in 1952 and in the same general areas.

In the Fort George Forest District, an intensive outbreak occurred following a temporary cessation of logging from July 1952 to August 1953 on the east bank of the Fraser River, north of Cottonwood Canyon. At least 300,000 f.b.m., were infested by the spring and summer flights of 1953. The infestation on the west bank of the Fraser River between Narcosli Creek and Diamond Isle continued as the most active in the interior of British Columbia. The infestation resulted from overmaturity of much of the timber and the excessive slash in the area. Spot infestations were reported for the first time from Churchill Lookout, 4 miles east of Giscombe. Spot-infestations were again reported from Pinchi, Tezzeron, and Stuart lakes.

In the Kamloops Forest District, the infestation at Bestwick and the spotinfestations along the Vernon-Kamloops road, particularly between Falkland and Westwold, remained at about the same level as in 1952. Spot-infestations were reported for the first time at Shingle Creek, Lawless Creek, and southwest of the Skagit River on the west boundary of Manning Park.

The status of the beetle population in the Beaverdell area, Nelson Forest District, was unchanged with several spot-infestations showing up at Ingram Creek in the Kettle Valley and north of Fairmont Hot Springs along the east side of Windermere Lake.

Ambrosia Beetles, Trypodendron sp.—During 1953, half a million feet of decked tree-length logs at a sawmill at Dewey were heavily infested by Trypodendron sp. Logs in the deck were piled six deep. The two upper layers escaped serious attack but the lowest logs were heavily infested.

Pitch Moths in White Pine.—The pitch moths reported infesting white pine trees in the area between Shuswap and Arrow lakes during 1952 have been identified as Vespamima novaroensis (Hy. Edw.), Dioryctria zimmermani (Grote), and Laspeyresia spp. These insects apparently are closely associated with white pine blister rust.

Douglas-fir Tussock Moth, Hemerocampa pseudotsugata McD.—Larvae of this insect were taken in random collections at a few points in the eastern portion of the Kamloops, and the western portion of the Nelson forest districts. The greatest concentration of larvae occurred in the vicinity of Cascade, on the site of a former outbreak; no defoliation was apparent.

Western Hemlock Looper, Lambdina fiscellaria lugubrosa (Hlst.).—Populations of this insect continued to increase gradually; no defoliation was noticeable. Hemlock loopers were notably numerous in hemlock-cedar stands along the mountain slopes near McBride.

False Hemlock Looper, Nepytia canosaria Wlk.?—A continued, although slight, increase in population density was apparent throughout most of the Nelson District and eastern portion of the Kamloops District.

Larch Sawfly, Pristiphora erichsonii (Htg.).—Larch sawfly populations remained at a low level.

Sawflies, Neodiprion spp.—Larvae of Neodiprion sp., abietis (Harr.) group, were numerous on white spruce at Necoslie Creek in the Fort St. James area; 1952 growth on some trees was lightly defoliated. No other noteworthy infestations of sawflies on coniferous trees were observed during 1953.

Satin Moth, Stilpnotia salicis (L.).—A 1-acre grove of aspen at Currie Lake, near Kamloops, was heavily defoliated for the third successive year. A second patch of trees about ½ mile distant, was defoliated during 1953. D. G. Finlayson reports that: "An infestation of the satin moth was observed on a small strip of willow and poplar trees along the lake at Savona, B.C."

Forest Tent Caterpillar, Malacosoma disstria Hbn.—Heavy defoliation recurred in many portions of the Interior. In general, infestations described in the 1952 Annual Survey Report expanded, notably in the Fort George District. The larval population in the Golden-Spillimacheen area decreased in 1953. However, defoliation was fairly heavy, particularly in the southern section of this infestation.

Defoliation of aspen trees was general throughout the southern portion of the Fort George Forest District from Macalister north to Woodpecker. Scattered patches of stripped trees ranging up to several hundred acres in extent, were observed as far north as Salmon River on the Hart Highway, at Cluculz Lake, and from McBride to Mt. Robson along the upper Fraser River Valley. The most northerly infestations occurred near the Parsnip River bridge on the Hart Highway and about Fort Nelson.

Heavy populations of larvae recurred in the trembling-aspen belts about Revelstoke, south to Arrowhead, north to Mile 3, and in the discontinuous patches of aspen at Mile 17 and Mile 40 on the Big Bend Highway. A new outbreak occurred southeast of Bear Lake at 3,500-feet elevation.

The accompanying table gives the average number of egg masses per tree for samples taken at the localities designated, and the probable infestation intensity in 1954. In some instances egg mortality by November 1 is included in the table. These mortality figures were determined from dissection data; five masses of eggs (if available) were dissected from each tree sample.

FOREST TENT CATERPILLAR EGG SURVEY BASED ON THE EXAMINATION OF 3 TREMBLING-ASPEN TREES AT EACH POINT

Location	Average D.B.H.	Average crown length (feet)	Average number of egg masses per tree	*Percentage egg mortality by Nov. 1953	Infestation forecast for 1954 ""
East Nelson— Nicholson	6 6 5 5 6 5	19 19 19 16 18 20	$     \begin{array}{c}       1 \cdot 3 \\       3 \cdot 0 \\       1 \cdot 0 \\       0 \cdot 3 \\       0 \cdot 0 \\       0 \cdot 7     \end{array} $	8 14 23	Light
West Nelson— Pingston Ridge Sproat Mountain (Sidmouth) Summit Lake. Granby River.	5 6 6 7		9 30 29 31		Heavy
East Kamloops— Williamson Lake Big Bend Highway (Mile 17) Mount McPherson	5 5 6	19 19 24	20 7 109	16 21 6	Heavy Medium Heavy
Fort George— Reid Lake Prince George Woodpecker Yardley Lake Dragon Lake Cottonwood River Bridge Barlow Creek	5 5 5 5 6 5 5	20 23 13 16 14 14 14	95 118 70 29 48 35 39	11 10	Heavy

<sup>\*</sup> Data obtained from dissections of 5 egg masses per sample, where available; includes parasitism.

Egg mass counts indicate that forest tent caterpillars will recur in large numbers during 1954 throughout the aspen stands of the Fort George and Kamloops forest districts where infestations existed during 1953. A decline may be expected in the Golden-Brisco area and a further increase in the population density is forecast for western portions of the Nelson Forest District, particularly in the New Denver and Granby River areas.

A Tent Caterpillar, Malacosoma sp., nr. pluviale (Dyar).—The 1950-52 outbreak in scrub birch and willow in the Fort George Forest District has subsided. During 1953, a few specimens were collected at Fort Nelson, a new locality record.

Spotless Fall Webworm, Hyphantria textor Harr.—Light infestations were fairly common along roadsides in the Nelson and eastern portions of the Kamloops forest districts.

Dipterous Needle Miners.—During the fall of 1952, a needle-mining maggot was discovered in the Elko area. No further evidence of the occurrence of these insects was observed until mid-October 1953 when samples of injured Douglas-fir Christmas trees were brought to the Vernon Laboratory. Early in November, a sample of mined Douglas-fir needles was submitted from Birch Island together with a report to the effect that the Christmas tree crop in that district was being ruined. The miner works rather inconspicuously for some time and injury does not appear to be very noticeable until fall. Surveys by laboratory personnel indicate that the maggot increased in 1953 and is common throughout much of the Okanagan Valley and portions of the Nelson Forest District.

Lodgepole Pine Needle Miner, Recurvaria sp.—A light infestation of needle-miners persisted in the lodgepole pine stands near Squilax.

Birch Sawfly, Arge pectoralis (Leach).—The recent outbreak at Dragon Lake and Beaver River road collasped in 1953. A light infestation was observed between Mile 8 and Mile 50 on the Big Bend Highway.

**Poplar and Willow Borer,** Sternochetus lapathi (L.).—Borers were prevalent in willow and aspen trees during 1953 and continued to spread throughout the central portion of the Nelson Forest District. They have caused some tree mortality, notably among willows in the Cranbrook area, near Cherry Creek, along Bull River, and at Castlegar.

A Pine Root Weevil, Hypomolyx piceus (DeG.).—On one sample plot near Prince George, nine out of ten lodgepole pine trees examined showed root damage, presumably caused by this weevil.

Large Aspen Tortrix, Archips conflictana (Wlk.).—Light infestations of the aspen tortrix were observed at many localities along the Alaska Highway, between Fort St. John and Fort Nelson. This species was associated with Malacosoma disstria in numerous areas in the Interior. At Quesnel, where both species co-existed, many aspen tortrix larvae migrated to and fed on the white spruce understory.

Patches of heavy infestation occurred between Bridge and Quesnel lakes, Kamloops Forest District.

Black-headed Budworm, Acleris variana (Fern.).—A further small increase in the black-headed budworm population level occurred in some areas during 1953; however no defoliation was apparent. The areas of greatest larval concentrations were: Mission Creek Valley, the valley of the south fork of Kaslo River, Nelson Forest District; and the Fort St. James area, Fort George District. Hemlock was the preferred host in the Nelson Forest District and Douglas fir was the chief host in the Fort George Forest District.

Green-striped Forest Looper, Melanolophia imitata Wlk.—The light infestation of loopers on hemlock observed during 1952 between Miles 7 and 16 and at Downie Creek on the Big Bend Highway, subsided in 1953.

**Saddle-back Looper,** Ectropis crepuscularia Schiff.—Heavy defoliation occurred for the third successive year in a mixed conifer stand north of Blue River.

Pine Needle Scale, Phenacaspis pinifoliae Fitch.—A severe infestation of this scale insect persisted throughout the ponderosa pine belt between Kelowna and Okanagan Mission. Infested trees within the area appeared to be in poor condition. The scale was abundant in the Penticton area and between Rutland and Oyama.

Poplar Leaf-miner, Phyllocnistis populiella Cham.—This species was numerous throughout much of northern B.C. during 1953. Trembling-aspen trees in the Liard River Valley adjacent to the Alaska Highway were again severely infested; almost 100 per cent of the leaves on the extensive mature aspen stands in the vicinity of the Lower Liard Crossing were mined.

A Willow Leaf-miner, Lyonetia saliciella Bsk.—A large proportion of the willows in the Slocan Valley and in the Nakusp and Edgewood Forest Ranger districts, Nelson Forest District, was heavily infested by this miner. It was also abundant in the Cherryville area, Kamloops Forest District.

A Willow Leaf Beetle, Galerucella carbo (Lec.).—A severe infestation of leaf beetles occurred on willows over an area some 2 miles long and half a mile wide, near Giscombe, Fort George Forest District. Patches of skeletonized willows were observed at Wire Cache and at various points along the North Thompson River, Kamloops Forest District.

# LIST OF COLLECTORS

#### Co-operators

	Collections	Name	Collections
Name		Brewis, D. W	4
Abernethy, G. M	. 1	Briggs, B. T	2
Ades, D	. !	Brooks, F. T	8
Aldred. A	. 1	Brooks, T	2
Allison, D. W	. 0	Brown, A. S. B	4
Anderson, O. J	. 4	Brown, W. G	4
Anderson, W. R	. 0	Burns, E. J	10
Angly, R	. 1	Carr, W. S	
Antonelli, M	. 10	Carradice, J	0
Antonenko, J	. 14	Carter, D. R.	3
Apsouris, J	. 4	Cartwright, G. M	6
Ashton, L. J	. 0	Cayle, W. B	
Avers. M. J	. 50	Chamberlin, L. C	3
Avlett. R. W	. 2	Charnell, G. S	5
Bailey, J. D		Chase, L. H	1
Bailey, J. F.	. 2	Chingy, H	1
Roker F		Christie, F	1
Bancroft, H. G		Clark, J. D	11 11 11 11 11 11
Barbour, H. T	4	Clay, D	
Barge, V	1	Cochrane, F. M	1
Barker, H	0	Cochrane, M. C	1
Barrett, R. J	4	Collier, R	9
Barritt, H		Collins, B. G	1
Beckett, D. A. E	1	Connolly, J. E	1
Bell. W. A		Cooper, S	100
Bell. P. A	4	Cooper, S. G	1
Bellmond C. N		Cosens, A. S	4
Bennett, C. R		Crowle, D	
Benteli S	1	Cuthbert, J. A	2
Benwell, W. G	3	Dearing, J. H	1
Berard, K		Decie, T. P	1
Berry, W. L	1	Donaghy, F. W	
Bertram, C. D	1	Donnelly, R	2
Black, W	2	Durrel, G	1
Bodman, C. O	"	Eidsvik, H	1
Braathen, R	*	Erickson, M	1
Brandner, V. E	2	Effekson, M	

### LIST OF COLLECTORS—Continued

LIST OF COLLECTORS—Continued				
Name	Collections	Name	Collections	
Ewer, E. H	1	Langlands, R	1	
Fisher, S	1	Larsen, A. G.	. 1	
Fodchuck, M	6	LaRue, M. R.	9	
Fraser, D. P		Layton, A. T	. 2	
French, C. L.	3	Layton, A. T. Letoumeau, W	.) 19	
Frost, S. C		Levangie, L	3	
Garman, E. H	1	Lindstrom, W	. 8	
Gatehouse, T.	8	Little, J. Ó	1	
Gibb, W	2	Little, R Lonneberg, M	. 4	
Gierl, J. B.	1	Lorentsen, L. H	. 3	
Gilgan, N. P.	2	MacAskie, I. B	. 4	
Gill, R. G	1	MacKechnie, M. A		
Gilmour, J. R	2	McAllister, P	. 1	
Ginnever, A. F. W	10	McCullaugh, R	. 6	
Glassford, R. J	5	McDaniel, R. W		
Goddard, E. L	redr IT	McDonald, L. E		
Goodsell, D. R.		McDougall, R		
Graham, P	7	McFarland, F		
Gray, S. J	1	McGhee, W		
Greenhouse, J. P		McGulican, R. D		
Gussow, H. T.	$\frac{2}{1}$	McKenna, L. J		
Haggart, W. D.	1	McKenzie, R. A	. 2	
Haldeman, J	3	McKinnon, D	. 1	
Haley, K		McLean, D. M		
Hall, J. G	3	McLeod, D. M		
Hamilton, D	oibl 1//	McNabb, K. J		
Hammer, H. B	2	McPhee, D		
Harris, T	1/7	McPhee, W	oarabr12	
Harrison, J	2	McQueen, L		
Harston, S	1	McRae, M. A		
Hatfield, J. B	3	McWilliams, H		
Hawkins, R. M Hazlett, H. B	$\frac{2}{4}$	Mackle, B. A		
Healy, L. G	4	Main,		
Hellenius, R. A.	2	Mann, D Martin, J. E. H		
Hempell, F. W	1	Mason, K. R		
Henderson, C. L	2	Mastin, T		
Henderson, J. E	5	Meents, C. E		
Hesketh, A. E	2	Miller, G		
Hill, F. R.	2	Mills, C. R		
Hilton, B	4	Mills, G		
Hlady, E	1	Mitchell, B	. 2	
Holliday C. T.	4	Moilliet, J. L	. 5	
Holliday, C. T Hollingshead, S. B	4	Moore, W	3	
Hollingsworth, J. A.	12	Mudge, M. H.	. 8	
Hombrook, J. W.	2	Mudge, W	. 4	
Hooper, E. G.	1	Munro, J. F	. 4	
Hope, L	3	Murray, J. G		
Hopkins, V	14	Muskett, P. T		
Hopkins, V. Howard, W.	3	Mutch, W		
Humphreys, J. L	1 1	Neidig, M. E	. 3	
Huva, G. G.	l/L	Nielsen, P	. 40	
Ildstad, Mrs. C Ingham, W. E	1	Norbirg, H. P		
Isenor, M	2	Old, F. G		
Ivens, J. H.	3 7	Olson, S O'Meara, A. V	. 3	
Jannings, H. A	1	Ormond, L. D. D	. 7	
Jepson, L. S	4	Orrock, M	i 1	
Jones, R. W	2	Oxley, R. J		
Jupp, C. C	3	Paquette, O	. 2	
Kast, K. H	4	Parks, D	. 1	
Keef, J. J	gmill 7//	Parlow, A. L		
Kerr, R. J Killough, J. F		Parsey, R. R	. 8	
Kullander, M. O	0	Parsons, E	10	
Transmission, and Ottom.	TOTAL	Patterson, G	. 10	

# LIST OF COLLECTORS—Concluded

List of doubletone				
Name	Collections	Name	Collections	
Pement, A. R	1	Sorensen, N	. 2	
Perdue, J. E	1	Specht, G	. 1	
Peterson, S	2	Speer, R. C	. 1	
Peterson, S	9	Steele, M. F	. 1	
Petty, A. P		Stillwell L	. 1	
Potter, G		Stinson, F. T	. 2	
Powell, O. V	1	Stobbe, L. H	. 1	
Powers, P	1	Stroud, C. W	. 1	
Prochnau, A. E	1	Sutherland, F. E		
Raven, J. H	4	Sykes, S. J	. 6	
Rawlins, W. P		Taft, L. G	. 2	
Reaney, R. J. C		Teindle, T. J.	1	
Reid, E	. 0	Thomas, F. M	1	
Reith, W. D	. 5	Thornton, S	3	
Richards, G	. 2	Thornton, S	1	
Richardson, G	. 8	Tooth, W. R	1	
Rhodes, J	. 1	Tourond, A. L	1 1 1	
Rice, R. M	. 1	Tretheney, G. A	1	
Ridler, T	. 3	Tribble, G. B	1	
Robertson, C. E	. 1	Trumpour, M. P. C	10	
Robinson, I. C	. 1	Uphill, W. T		
Robinson, J. H	. 6	Van Tine, L. E		
Robinson, R. E	. 2	Varga, Ed		
Rockwell, I		Vennard,	1	
Rohn, C	2	Verge, W. L	1	
Rouse, F	1	Vivian, R. K	8	
Rouse, F		Wagner, G. J	3	
Ross, A. G	be 1	Waldon, W	3	
Rowland, G		Waldie, F	io little I	
Sacho, W. C		Wardell, (Mrs.) C	1	
Sandberg, H. G	1	Warner,	3	
Sanderson, W. L		Webb, R. A	3	
Scallon, F. B		Webber, F. V	4	
Schmidt, J. T		Webster, G. R	4	
Sherwood, C. L		Webster, J. B		
Sherwood, L. E		Weinard, J. P	1	
Shires, F		Weller, J. B	1	
Silke, S	1	Wezr, S	1	
Simmons, C	1	Williams, R. W	3	
Smith, A	. 1	Wilson, R. S	3	
Smith. D. R	. 3	Wittner, D. S	0	
Smith, H	1	Woods, S. J		
Smith, R. P		Vouce W T		
Snider, J. I	6	Young, W. T		
Snowball, A. F	1	Zeller, R		

# Forest Biology Division

Name of the control of the control of	Collections	Name	Collections
Name	10	Molnar, A. C	1
Alexander, N	414	Northam, L. B	
Avison, E. L	400	Obana, J	
Bitz, W. E.		Paynter, D	
Brown, G. S		Porter, W. A	
Bugslag, C		Reiss, M. E	
Collis, D. G		Richmond, H. A	
Cottrell, C. B		Ross, D. A	
Evans, D	. 6	Robertson, K. W	100
Farris, S. H	. 44	Ruppel, D. H	0
Fiddick, R. L	. 118	Salisbury, P. J	450
Grant, J	. 439	Simms, W. G	0
Harvey, E. G		Smith, D. N	004
Hawkins, E. F		Sugden, B. A	110
Hughes, J. M. T	. 299	Taylor, D. W	_
Jones, G. M	. 161	Wallington, L. M	COF
Jones, M. G		Walters, J	4
Kinghorn, J. M		Whitecross, A. F	
Mathers, W. G		Ziller, W. G	
Metcalfe, G. R	. 5	Zillel, II. G	

