ANNUAL REPORTS FOREST BIOLOGY RANGERS
British Columbia
(Interior Area)

FOREST BIOLOGY LABORATORY
Vernon, B. C.
1952

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Forest Insect Ranger Personnel

Vernon Forest Biology Laboratory

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S. H. Farris, Chief Ranger, Grade 3

J. Grant - Ranger Grade 2, in charge Prince George Forest District.

D. H. Ruppel, Ranger Grade 1, Assistant to J. Grant.

A. F. Whitecross - Ranger Grade 1, in charge West Kamloops District.

B. A. Sugden - Ranger Grade 2, in charge East Kamloops District.

W. E. Bitz - Ranger Grade 1, in charge West Nelson District.

C. B. Cottrell, Ranger Grade 1, Assistant to W. E. Bitz.

W. G. Simms - Ranger Grade 2, in charge East Nelson District.

L. M. Wallington, Ranger Grade 1, Assistant to W. G. Simms to August 31, 1952.

J. A. Redmond[1], Ranger Grade 1, Assistant to W. G. Simms during September, 1952.

1. Appointed July 28, 1952, vice P.I. Wood resigned May 31, 1952.

ANNUAL REPORT

PRINCE GEORGE FOREST INSECT DISTRICT

by J. Grant

- 1952 -

INTRODUCTION

Personnel assigned to the Prince George Forest Insect District in 1952 were Forest Biology Rangers J. Grant and D. H. Ruppel. They were in the field from June 2 to September 11. Mr. E.D.A. Dyer, Chief Ranger R. L. Fiddick, and Senior Ranger S. H. Farris spent the period from June 4 to 14 in the District in connection with budworm mapping.

As in previous years, most of the time in the field was devoted to random collecting of foliage insects. However, during the latter part of June and early July, quantitative sampling for spruce budworm was conducted and egg sampling of forest tent caterpillar occupied most of the time between September 4 and 11. In northern British Columbia and southern Yukon, bark beetles were given more attention. Nine permanent sampling stations were established and sampled.

Thirty-three forest pathological samples were sent to the Laboratory of Forest Pathology at Victoria.

Coverage of the District in 1952 was considerably increased over previous years owing to the completion of the road linking Prince George and Dawson Creek. This gave access to the Peace River area, and to northern British Columbia and the southern Yukon by way of the Alaska Highway. Continued expansion of logging roads and highway improvement made improved coverage possible in central British Columbia, but there are still immense areas that are inaccessible by motor vehicles.

Contacts made with British Columbia Forest Service and Yukon Forestry Division Officers were as follows:

Ranger District	Personnel Contacted
R.D. 1 - McBride	Ranger J. S. Macalister Ass't. Ranger R. Hawkins Ass't. Ranger J. Wilson Lookout Man G. Chartrand
R.D. 2 - Penny	Ranger R. A. MacKenzie Ass't. Ranger K. Northrup Ass't. Ranger J. S. Larson Patrolman D. Houghtaling
R.D. 3 - Prince George (East)	Ranger A. F. Specht Ass't. Ranger F. Shires
R.D. 4 - Prince George (North)	Ranger C. L. French
R.D. 5 - Fort St. James	Ranger A. V. O'Meara Ass't. Ranger J. D. Bailey Ass't. Ranger L. Persian
R.D. 6 - Quesnel (East)	Ranger G. G. Jones Ass't. Ranger J. D. Bailey Ass't. Ranger W. H. Smith
R.D. 7 - Pouce Coupe	Ranger T. Barbour Ass't. Ranger S. Cosens
R.D. 8 - Aleza Lake	Acting Ranger K. B. MacAskie Ass't. Ranger H. D. Hamilton
R.D. 9 - Vanderhoof	Ranger N. Threatful Ass't. Ranger R. Bennett Ass't. Ranger C. J. Wall
R.D. 10 - Fort St. John	Ranger L. McQuenn Ass't. Ranger T. Mastin Acting Ass't. Ranger D. B. Leslie
R.D. 11 - Fort Fraser	Acting Ranger A. Cuthbert Ass't. Ranger R. Braathen
R.D. 12 - Fort McLeod	Acting Ranger K. Irwin Ass't. Ranger W. McPhee Patrolman H. Chingy
R.D. 13 - Quesnel (West)	Ranger G. Meents Ass't. Ranger W. J. Irwin

Contacts with B. C. Forest Service Personnel (Cont.)

Ranger District	Personnel Contacted
R.D. 14 - Prince George (West)	Ranger R. B. Angly Ass't. Ranger G. A. Paterson
R.D. 15 - Hixon	Acting Ranger D. M. McLean Ass't. Ranger D. Varner
Aleza Lake Forest Experimental Station	Supt. T. Decie
Prince George Headquarters	District Forester C. Phillips Ass't. District Forester S. Henning Fire Inspector L. Willington Forester-in-Training D. R. Glew Forester-in-Training R. Robbins
Yukon Forestry Division Whitehorse, Y. T.	Mr. D. J. Learmonth Mr. F. Bailey Mr. P. A. Ferguson

The generous assistance and co-operation rendered by members of the British Columbia Forest Service and the Yukon Forestry Division is gratefully acknowledged.

Only one air flight was undertaken in 1952, when on July 15 Senior Ranger S. H. Farris and Forest Biology Ranger J. Grant made a budworm reconnaissance between Prince George and Horsefly Lake in the British Columbia Forest Service plane.

Highlights of Insect Infestations

Spruce budworm, Choristoneura fumiferana:- Although 1952 was a flight year for the two-year cycle form of budworm, damage to the sub-alpine forests of the District was not nearly as conspicuous as in 1950. This was attributed to several factors resulting from the cold wet weather in June, and in some localities to a slight decrease in the budworm population. Because of the absence of unmistakable discolouration even in stands known to support high populations, the aerial mapping that had been planned was not carried out. In general, there was very little change in the status of the budworm infestationsin the Prince George District from the 1950 level. Along the Crooked and Pack river valleys, the population increased slightly but not to the extent indicated by branch sampling in 1951, while there was apparently a decrease in the Pine Pass area and in a few parts of the Wells-Bowron Lake infestation. Populations near Nation River and

northeast of Sinclair Mills remained unchanged. A light infestation in Sitka spruce was observed in the Klehini River valley in extreme northwestern British Columbia.

Douglas Fir Beetle, Dendroctonus pseudotsugae:- Patches of infested trees increased in number in Quesnel Ranger Districts 6 and 13, in 1952 with the largest concentration being in the Buck Ridge District southwest of Quesnel. Eight miles northwest of Quesnel a residual stand and surrounding trees had been heavily infested in 1951. Between Pinchi and Tezzeron lakes, beetle activity continued. The infestation on Western Plywoods Management License, first reported in 1950, subsided following logging but several other patches were reported from the same general area.

Forest Tent Caterpillar, Malacosoma disstria:- A further increase in both intensity and extent of infestations occurred in 1952. Medium to heavy defoliation of trembling aspen occurred in many localities in the Quesnel, Hixon, Prince George and McBride Ranger districts. Egg-mass counts taken in the fall indicate that heavy defoliation will occur in these districts again in 1953.

TABLE I

Summary of Forest Insect Survey Collections

PRINCE GEORGE Forest Biology Ranger District - 1952

By Whom Submitted		RD. 1	RD. 2	RD. 3	RD. 4	RD. 5	RD. 6	RD. 7	RD. 8	RD. 9	RD. 10	RD. 11	RD. 12	RD. 13	RD. 14	RD. 15	Yukon	TOTALS
Forestry Personnel Independently	No. of Collections	1	15	6	5	7	7	11	15	6	17	-	6	4	2	4	6	112
	No. of Personnel Involved	1	5	2	2	4	3	4	6	3	6	-	3	4	1	3	2	49
Forestry Personnel with Biology Rangers		15	6	-	-	-	-	-	6	-	-	15	-	-	-	-	1	43
Biology Rangers Independently	Insects	17	25	12	71	70	129	19	28	34	79	1	64	29	44	52	74	748
	Pathological	1	1	-	5	3	4	1	-	1	5	-	-	1	2	2	7	33
Other Forest Biology Personnel																		
Biology Rangers with Other Forest Biology Personnel																		
Other Co-operators																		

TABLE II

Number of Forest Insect Ranger Collections
from Host Species and Semi-Monthly Periods.

PRINCE GEORGE Forest Biology Ranger District - 1952

Dates Collected	Alpine fir	Douglas fir	White spruce	Lodgepole pine	Cedar	Hemlock	Birch	Aspen	TOTALS
June 1 - 15	25	7	16	6	-	-	5	11	70
June 16 - 30	21	7	31	6	-	2	1	1	69
July 1 - 15*	76	11	60	13	-	1	3	8	172
July 16 - 31	39	14	45	14	2	6	2	1	123
Aug. 1 - 15	4	-	47	27	-	1	6	6	91
Aug. 16 - 31	21	2	45	20	-	-	1	3	92
Sept. 1 - 15	5	11	10	10	-	-	6	29	71
TOTALS	191	52	254	96	2	10	24	59	688

* Includes 36 Ba and 7 Sw Collections by Farris and Fiddick.

TABLE III

Number of Forest Insect Survey Collections
from Host Species

PRINCE GEORGE Forest Biology Ranger District - 1952

Coniferous		Broad-leafed	
Spruce, White & Engelmann	254	Aspen	59
Alpine fir	191	Birch spp.	24
Lodgepole pine	96	Willow spp.	20
Douglas fir	52	Alder spp.	15
Black spruce	34	Cottonwood	4
Eastern Larch	10	Chokecherry	1
Hemlock	10	Pin cherry	1
Rocky Mt. juniper	6	Red Osier dogwood	1
Sitka spruce	3	Saskatoon	1
Cedar	2	Miscellaneous	6
Common juniper	1		
	659		132

Detailed Report on Forest Ranger Districts

McBRIDE Ranger District - R.D. 1

Period Worked: July 19 to 23.

McBride Ranger District, covering roughly 3,600 square miles, occupies the southeastern corner of Fort George Forest District. It is bisected longitudinally by the Fraser River which rises in the extreme southern corner and, after entering the Rocky Mountain Trench at Tete Jaune, flows in a northwesterly direction. It is along this broad valley from the vicinity of Tete Jaune to the district boundary near Goat River that the development of farm lands and most of the logging operations are confined.

The sub-alpine forest of white or Engelmann spruce and alpine fir is the most important timber type; in areas of heavy precipitation it is intermixed with, and often replaced by, the Columbia forest type composed of western red cedar and western hemlock. Lodgepole pine and a deciduous growth of aspen, birch and willows cover wide areas where the original stands have been burnt off. Douglas fir is of some local importance.

Although this District is not directly accessible by road from the rest of the Fort George Forest District, the local road system extending from Lamming Mills to Jasper and southward to Valemount is usually passable.

Insect Conditions

Forest Tent Caterpillar:- Patches of defoliation from 20 to 30 acres in extent were noted along the northeast side of the Fraser at McBride, Dunster, Shere, Rearguard, and Swiftwater.

Western Hemlock Looper, Lambdina fiscellaria lugubrosa:- A few individual larvae were taken in western hemlock and alpine fir collections near McBride.

Summary of Forest Insect Survey Collections

McBRIDE Forest Ranger District - R.D. 1

By Whom Collected		No. of Collections					Totals
		May	June	July	Aug.	Sept.	
Forestry Personnel Independently				1			1
Forestry Personnel with Biology Rangers				15			15
Biology Rangers Independently	Insects			17			17
	Pathological			1			1
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

PENNY Ranger District - R.D. 2

Periods worked: June 19, July 16 to 18.

Penny Ranger District, with an area of roughly 2,700 square miles, lies immediately northwest of McBride Ranger District and is topographically very similar. The principal timber type is spruce-alpine fir. Stands where cedar and hemlock predominate are common, but of comparatively small economic importance.

Sinclair Mills is the only point within the District that is accessible by road.

Insect Conditions

Spruce Budworm:- The infestation northeast of Sinclair Mills continued at much the same level as in 1950. Beating collections on June 19 averaged 192 larvae from alpine fir and 42 from white spruce; the latter figure is somewhat misleading as the spruce bud-scales were not yet shed and the larvae were difficult to dislodge. There was no noticeable discolouration of the stand at that time.

Saddled Larch Looper, Ectropis crepuscularia:- Forest Ranger R. MacKenzie reported defoliation of hemlock by this insect one and a half miles south-east of Kidd.

Summary of Forest Insect Survey Collections

PENNY Forest Ranger District - R.D. 2

By Whom Collected		No. of Collections					Totals
		May	June	July	Aug.	Sept.	
Forestry Personnel Independently			7	4	4		15
Forestry Personnel with Biology Rangers				6			6
Biology Rangers Independently	Insects		10	15			25
	Pathological		1				1
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

PRINCE GEORGE (EAST) Ranger District - R.D. 3

Prince George (East) Ranger District extends from Shelley southward to Stone Creek, and from the Fraser River eastward to the divide between the Willow and Bowron rivers. The lower sections of the District lie within the transition section of the Montane Forest Region, while at higher levels the sub-alpine forest of spruce and alpine fir is prevalent. On burned-over areas lodgepole pine, aspen, birch and willows are usually the first to appear.

The western and northern parts of the District are comparatively accessible by road, but the remainder is at present undeveloped.

Insect Conditions

Spruce Budworm:- A light infestation on alpine fir caused an estimated 90 per cent defoliation of the current growth of the understory along Northern Spruce Mills road northeast of Buckhorn Lake. Damage to the overstory was not heavy enough to cause noticeable discolouration.

Western Hemlock Looper:- Four collections from alpine fir and hemlock, taken during the second week of July, all contained this species, with an average of four larvae per sample.

Forest Tent Caterpillar:- Light to medium defoliation of aspen was observed in the vicinity of Tabor Lake.

Summary of Forest Insect Survey Collections

PRINCE GEORGE (EAST) Forest Ranger District - R.D. 3

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	5			6
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			8			8
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel				4			4
Other Sources							

PRINCE GEORGE (NORTH) Ranger District - R.D. 4

Periods Worked: June 11 to 14, July 22 to 25, and September 4.

Prince George (North) Ranger District, with an area of roughly 1,700 square miles, extends from the Reid Lake road northward to the vicinity of Davie Lake. Its topography is quite level and the greater part of the District lies between 2,000 and 3,000 feet above sea level. The principal timber type is white spruce-alpine fir. Lodgepole pine forms a large part of the forest cover in some areas and there are also extensive stands of aspen and other deciduous growth where the original forest has been destroyed by fire. Douglas fir is scattered, occurring chiefly on ridges and the more exposed sites.

The District is served by the Hart Highway, and, in the southern portion, by several secondary and logging roads.

Insect Conditions

Spruce Budworm:- The budworm population in the Crooked River valley continued at much the same level as in 1950. Although branch sampling in 1951 had indicated that heavier defoliation would occur in 1952, very little evidence of feeding was visible except on scattered trees in the understory.

Western Hemlock Looper:- This species was more abundant than in recent years, and was taken on a wide variety of hosts: alpine fir, white spruce, alder, lodgepole pine, and huckleberry.

Forest Tent Caterpillar:- Medium to heavy defoliation of aspen occurred on the Reid Lake road and a mile south of Salmon River on the Hart Highway.

Large Aspen Tortrix, Archips conflictana:- This species was commonly associated with the forest tent caterpillar and was particularly abundant in aspen stands north of the Reid Lake road where it caused light defoliation.

Tent Caterpiller, Malacosoma nr. pluviale:- Dwarf birch and willows in swamps along the Crooked River valley were again partially defoliated by this species in 1952. The surrounding forest was not affected.

Summary of Forest Insect Survey Collections

PRINCE GEORGE (NORTH) Forest Ranger District - R.D. 4

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	2	1	1	5
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		14	36	9	12	71
	Pathological		3	2			5
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

FORT ST. JAMES Ranger District - R.D. 5

Periods Worked: July 8 to 10, July 16 to 20, August 29 to 31, and September 3.

Fort St. James Ranger District, with an area of roughly 11,700 square miles, extends northward from the Vanderhoof and Fort Fraser District boundaries to the headwaters of the Osilinka and Ominica rivers. Its topography, particularly in the northern half, is considerably more mountainous than that of the districts lying to the south and east, and there are many lakes, of which Stuart, Takla, and Trembleur are the largest.

The most commercially important tree species is white pine which occurs rarely in pure stands, being commonly associated with lodgepole pine, aspen, and black spruce, and at higher elevations with alpine fir. Douglas fir is locally common in the southern part of the District but is not known to occur further north than the vicinity of Tezzeron Lake. Over much of the central and northern sections, lodgepole pine is by far the most abundant tree, forming stands many miles in extent.

This District is very sparsely populated and large parts are inaccessible by automobile; however, Germansen Landing can be reached by means of a fair road and boat travel is possible as far as the north end of Takla Lake.

Insect Conditions

Spruce Budworm:- Alpine fir and white spruce along the ridge between Mile 83 and the Manson Creek road, and Nation River Mine showed noticeable discolouration on July 17 as a result of medium to heavy defoliation. Light feeding was observed in a mature spruce-alpine fir stand in the vicinity of Sylvester Creek. Although budworm were taken elsewhere in small numbers throughout the District as far north as Germansen Lake, damage was negligible.

Black-headed Budworm, Acleris variana:- Larvae were common on white spruce and alpine fir along the Manson Creek road between Fort St. James and Nation River. There was no noticeable defoliation, with 24 larvae being the largest number taken in one collection.

Douglas fir beetle:- The infestation in an overmature stand of Douglas fir on the ridges between Pinchi and Tezzeron lakes was still active in 1952.

Summary of Forest Insect Survey Collections

FORT ST. JAMES Forest Ranger District - R.D. 5

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				5	2		7
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			49	11	10	70
	Pathological			3			3
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

QUESNEL (EAST) Ranger District - R.D. 6

Periods Worked: June 5 and 6, June 23 to 28, July 6 to 9, and September 6 to 11.

Quesnel (East) Ranger District occupies the south-central part of the Fort George Forest District east of the Fraser River and south of the Cottonwood River. The Cariboo Mountains, occupying the eastern portion, are the major topographical feature. The terrain of the western third of the District, although somewhat broken, is less precipitous, with rounded mountains and gentler slopes.

The forest cover is varied. On the southern dry benches along the Fraser, Douglas fir and aspen types predominate; towards the north they merge into mixed stands of spruce and lodgepole pine. In the vicinity of Quesnel are some quite extensive stands of aspen and birch. The sub-alpine forest of spruce and alpine fir is the climax type at higher levels and western red cedar is common in the moist eastern valleys.

The western part of the District is quite accessible by means of a number of secondary and logging roads. Road travel in the eastern section is limited to the area around Wells, Barkerville, and Bowron Lake.

Insect Conditions

Spruce budworm:- Defoliation in the Wells, Bowron Lake, and Barkerville areas was not as conspicuous as in 1950, the previous flight year. In a few localities, particularly in open-second growth, there was a considerable

drop in the budworm population, but in most areas the absence of discolouration was attributed to cold, wet weather during June which slowed budworm development and prevented the accumulation of dead foliage in the webbing. In the alpine fir stands, southeast of Barkerville, very little new foliage was produced as a result of persistent budworm attack in recent years, which in turn worked a hardship on the budworm larvae, which were forced to feed on the old foliage. Although no actual counts were made, it was observed that there has been appreciable mortality of alpine fir in this area.

Forest Tent Caterpillar:- Heavy defoliation of aspen was general over much of the western part of the District from the vicinity of Beaver Creek north to the Cottonwood River. Although in some instances young Douglas fir and white spruce were attacked after all deciduous growth had been denuded, the damage was negligible.

Egg-mass sampling was conducted in September in four localities where heavy defoliation had occurred. The results indicate that on the basis of 10 egg masses per tree of 6 inches d.b.h., producing sufficient larvae to cause heavy defoliation, these areas will be stripped again in 1953.

The following table shows the number of fresh egg masses per tree in September 1952, with the comparative figures of 1951.

	1952 (Average, 3 trees)	1951 (Average, 3 trees)
P.G.E. Bridge, Cottonwood River	179	56
5 miles East of Barlow Creek, Wells Road	143	61
Dragon Lake	74	-
Cottonwood River, Cariboo Highway	120	-

Large Aspen Tortrix:- Larvae were numerous in most of the aspen stands sampled in June, with the exception of the southern section along the Fraser River.

Birch Sawfly, Arge pectoralis:- Defoliation of white birch ranged from 20 to 100 per cent in the mixed stands bordering Dragon Lake and southeastward for 8 miles along the Beaver River road. Overall defoliation averaged about 30 per cent for the entire stand.

Summary of Forest Insect Survey Collections

QUESNEL (EAST) Forest Ranger District - R.D. 6

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	1	4	1	7
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		58	4		41	103
	Pathological		4				4
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel				26			26
Other Sources							

PEACE COUPE Ranger District - R.D. 7

Periods Worked: July 28, and August 19 and 20.

Peace Coupe Ranger District lies between the continental divide on the west, and the Alberta boundary on the east; on the north it is bordered by the Peace River and on the south by Aleza Lake Ranger District.

The western part of the District, embracing the eastern slope of the Rockies, is mountainous, although the peaks are rather low compared with those further south. The terrain gradually becomes more level towards the Alberta boundary, and in the northeastern part of the District is much gently rolling, agricultural land through which the major streams have cut deep valleys.

The forest cover over most of the District consists of mixed stands of aspen, lodgepole pine, and white spruce, with varying quantities of white birch and black spruce. Eastern larch, Larix laricina, occurs in many of the swamps. In the mountains the climax type is spruce-alpine fir.

Except for the agricultural area in the northeastern corner, there are few roads. The Hart Highway is the only one giving access to the western part of the District.

Insect Conditions

Spruce Budworm:- Medium to heavy defoliation occurred in the upper Pine River valley and for a undetermined distance along its tributary valleys.

Discolouration, although not as conspicuous as in 1950, was noticeable in this area on July 27. Large numbers of adults were flying around the tree-tops in bright sunshine on that date.

Engelmann spruce Weevil, Pissodes engelmanni:- Approximately 30 per cent of the white spruce reproduction along a 2-mile section of the Pine River valley, 8 miles northwest of Azouzetta Lake, had been damaged by weevils in recent years.

Summary of Forest Insect Survey Collections

POUCE COUPE Forest Ranger District - R.D. 7

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			4	2	3	2	11
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			4	15		19
	Pathological				1		1
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ALEZA LAKE Ranger District - R.D. 8

Periods Worked: June 19 to 21, and August 24 to 26.

Aleza Lake Ranger District, with an area of about 4,200 square miles, embraces the lower Bowron River valley, a cross-section of the Fraser valley from Dewey to Shelley, and a large irregular area stretching eastward to the Alberta boundary. The greater part of the District is inaccessible except by boat or on foot, as development of farm lands and logging has been confined to a narrow belt adjacent to the Canadian National Railway.

The sub-alpine forest of white spruce and alpine fir prevails over most of the District. Douglas fir, hemlock, cedar, and lodgepole pine are of little economic importance.

Insect Conditions

Spruce Budworm:- This insect did not approach infestation proportions anywhere in the accessible portions of the District, although small numbers were found consistently throughout mature and second growth spruce and alpine fir stands.

Spruce Bark Beetle, Dendroctonus ? borealis:- Although spruce bark beetles were common in logs, stumps and windfalls on the Aleza Lake Forestry Experimental Station, the population was regarded as endemic. Near the western boundary a few dying trees were heavily infested, but no fresh attacks were noted.

Balsam twig aphid, Mindarus abietinus:- Second-growth alpine fir on a logged-over area south of Hansard Lake had been attacked by this species, with a heavy loss of the young needles.

Summary of Forest Insect Survey Collections

ALEZA LAKE Forest Ranger District - R.D.8

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				9	2	4	15
Forestry Personnel with Biology Rangers			1		5		6
Biology Rangers Independently	Insects		7		21		28
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

VANDERHOOF Ranger District - R.D. 9

Periods Worked: June 6 and 7, and August 27 and 28.

Vanderhoof Ranger District is of fairly uniform topography, embracing parts of the Nechako, Chilako, and Stuart River drainage systems. The mountains are low and rounded and rarely exceed 4,500 feet in height. Precipitation is lower than in the districts to the east; consequently there are several differences in the forest cover. The sub-alpine forest, of

which alpine fir is a climax species, is restricted to the higher ridges; white spruce, the other major component of this type, occurs occasionally in pure stands, but more often is mixed with black spruce, aspen or lodgepole pine. The two last-named species are particularly abundant and occupy wide areas which were burned off many years ago. Douglas fir, although apparently more common in the past, is now of little importance and tamarack is found in a few of the swamps.

The northern section of the District is accessible by road but the remainder is largely undeveloped.

Insect Conditions

Pine Budworm, Choristoneura sp:- A few larvae were taken from lodgepole pine in July.

Leaf Beetle, probably Phytodecta americana:- Approximately five acres of aspen were defoliated by leaf beetles six miles west of Vanderhoof.

Summary of Forest Insect Survey Collections

VANDERHOOF Forest Ranger District - R.D.9

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				3	2	1	6
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		2	30	2		34
	Pathological			1			1
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

FORT ST. JOHN Ranger District - R.D. 10

Periods Worked: July 29 and 31, August 7 and 8, and August 12 to 18.

For the purpose of this report all of that part of British Columbia north of the Peace River which was visited in 1952 will be considered as part of the Fort St. John Ranger District.

The southern section of the District is very similar in most respects to Pouce Coupe Ranger District. Agricultural development is confined to the southern fringe, and road travel, except along the Alaska Highway, is restricted to this area.

The Alaska Highway, from Charlie Lake (Mile 50) to the Sikanni Chief River (Mile 161), follows a northwesterly direction; the terrain is characterized by broad shallow valleys and low rounded hills. The road climbs gradually from 2,300 feet at Charlie Lake to between 3,000 and 3,500 feet slightly beyond Blueberry where it levels off for 50 miles before dropping sharply into the deep narrow valley of the Sikanni Chief River.

Over most of this section the forest may be classed as a transition between Halliday's "mixed wood" and "foothills section" of the boreal forest region. Stands are very mixed with only aspen and lodgepole pine forming pure stands of any extent. Growing conditions, particularly at lower levels, are good and white spruce and lodgepole pine reach merchantable size. Black spruce and white birch are common and cottonwood occurs chiefly along watercourses. Alpine fir and tamarack are represented by only scattered trees. Although immense areas have been swept by fire, considerable logging is carried on in this section.

North of the Sikanni Chief River the road runs in a general northerly direction to Fort Nelson Junction, (Mile 299), following at first a series of narrow ridges which in places rise above 4,000 feet. Dense, scrubby stands of lodgepole pine and black spruce predominate. From Trutch, (Mile 197), the road descends gradually from about 3,000 feet to 900 feet at Muskwa River bridge, (Mile 296.7), paralleling first the northward-flowing Minnaker and then the Prophet River, and the forest growth becomes more luxuriant with white spruce forming limited stands of merchantable size. Aspen and white birch are abundant and tamarack flourishes on the moister sites. Growing conditions in the Fort Nelson and Muskwa River valleys are excellent. The weather station records at Fort Nelson show an average frost-free period of 109 days and adequate summer precipitation which is reflected in a dense and vigorous forest growth.

For 130 miles beyond Fort Nelson the road averages due west, then turns north and northwestward again for 200 miles, before reaching the Yukon boundary. From Muskwa, (Mile 300), to Steamboat Creek, (Mile 365), the road follows the Muskwa valley westward through generally low, rolling country. Mature aspen forest is prevalent over much of this section, usually with small amounts of birch, cottonwood and white spruce. Tamarack up to 16 inches d.b.h., are common, attaining their best development around swamp margins.

Between Steamboat Creek and Mill Creek the road leaves the Muskwa valley which comes in from the south and continues through increasingly mountainous country, up Tetsa River to its headwaters at Summit Lake, (Mile 402). With higher elevation, the forest composition becomes more predominantly coniferous except for occasional burns and valley bottoms where aspen, cottonwood and willows are common. At Summit Lake the forest is very sparse with only a fringe of lodgepole pine and white spruce between the valley floor and timberline.

From Summit Pass the road descends through the narrow valley of McDonnell River, crosses Racing River, and after following Toad River upstream for 20 miles, turns abruptly northward through a narrow valley to Muncho Pass. Skirting Muncho Lake, it follows down the valley of Trout River, dropping into the heavily timbered valley of the Liard. Throughout this section the terrain is rough; peaks rising to 7,000 and 8,000 feet flank both sides of the highway and the forest cover consists chiefly of small spruce and pine.

From Lower Liard Crossing, (Mile 496), to Lower Post, (Mile 620), the road follows the Liard upstream through a wide gap separating the Rockies from the ranges to the north. Along the valley floor and on the lower slopes growing conditions are excellent, with mixed stands of aspen, lodgepole pine, white and black spruce, birch, and cottonwood. Tamarack in this region occurs on some of the benches and attains good size in mixed stands of other species, as well as growing in the swamps. Towards the westward the climate gradually becomes drier and open patches appear on the southward-facing slopes. Lodgepole pine and aspen types predominate in this area.

The road enters Yukon Territory a few miles above Lower Post and reenters British Columbia again 100 miles to the westward where for 35 miles it follows the McNaughton River valley before turning northward again. The country here is mountainous, with high peaks of the Cassiar range to the south. The forest, much of which has been burned, is composed of rather small white and black spruce, lodgepole pine and aspen. A few alpine fir grow here but larch is absent.

Bennett Lake, about 100 miles to the west, was visited on August 8 and 9. The Lake lies in a deep narrow valley on the north side of the Coast Mountains. The forest is small and stunted, with lodgepole pine, white spruce and alpine fir being the most common tree species.

The only other section of northern British Columbia visited was the small part traversed by the Haines road which runs southward from Mile 1,016 of the Alaska Highway to Haines, Alaska. Proceeding southward from

Yukon Territory, the road at first climbs up the Tatshenshini River valley where tree growth is confined to the valley floor and the lower slopes, and is composed almost entirely of white spruce, much of which has been beetle killed. Rising to about 3,000 feet, the road passes through 16 miles of treeless alplands before dropping down into the heavily timbered Klehini River valley. A dense forest of Sitka spruce and western hemlock cloth the lower mountain slopes and the understory is a tangle of Sitka alder, salmon berry and other shrubs.

Insect Conditions

Spruce Budworm:- The only locality where this species has caused noticeable damage was in the Klehini River valley on the Haines road, where understory Sitka spruce had lost an estimated 75 per cent of its current growth. This infestation extended about four miles north from the Alaska boundary.

Black-headed Budworm:- A light infestation was found on scattered alpine fir at the south end of Bennett Lake. Three collections on August 7 yielded an average of 14 larvae and 21 pupae.

On the evening of August 9, numerous adults of this species were in flight among Sitka spruce and hemlock in the Klehini River valley. Light defoliation was observed on understory hemlock.

Northern Spruce Beetle, Dendroctonus ? borealis:- Up to 80 per cent of the white spruce bordering the Haines road south of the Yukon boundary had been killed by bark beetles four or five years ago. From 40 to 60 per cent of the Sitka spruce in the Klehini River valley had succumbed to attack of either this insect or the Sitka spruce beetle, Dendroctonus obesus, at about the same time.

Larch Sawfly, Pristiphora erichsonii:- Five last-instar larvae were taken in a collection from tamarack at Mill Creek, 66 miles west of Fort Nelson. No evidence of feeding nor of curled branch tips could be found, nor was this species encountered in collections taken at nine other scattered localities along the highway.

Hemlock Sawfly, Neodiprion tsugae:- On August 10, four dead larvae, of which two were parasitized, were taken in a collection from western hemlock at Mile 43.5 on the Haines road.

Aspen Leaf Miner, Phyllocnitis populiella:- Aspen throughout the 150-mile section of the Liard valley followed by the Alaska Highway were so heavily infested that the trees presented a silvery white appearance. In aspen types close to 100 per cent of the leaves were infested, but in mixed stands, the attack was considerably lighter. Adults were very numerous on July 30 and 31.

Summary of Forest Insect Survey Collections

FORT ST. JOHN Forest Ranger District - R.D. 10

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	3	7	5	1	17
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			3	76		79
	Pathological			2	3		5
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

FORT FRASER Ranger District - R.D. 11

Period Worked: July 11 and 12.

Fort Fraser Ranger District, covering roughly 1,200 square miles, lies directly west of Vanderhoof Ranger District, which it resembles quite closely in most respects, although the topography is more uneven. Forest types are very similar, with Douglas fir being perhaps a little more common.

Insect Conditions

A Sawfly, Neodiprion sp.:- Small numbers of larvae were taken in the majority of white spruce and Douglas fir collections during the second week in July.

Summary of Forest Insect Survey Collections

FORT FRASER Forest Ranger District - R.D. 11

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				1			1
Forestry Personnel with Biology Rangers				15			15
Biology Rangers Independently	Insects						
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

FORT McLEOD Ranger District - R.D. 12

Periods Worked: June 13 to 15, and August 21.

Fort McLeod Ranger District borders on Districts No. 4 and No. 8 in the south, and runs northward, conforming roughly with the area known as the Rocky Mountain Trench. It is drained by the Parsnip and Finlay River systems.

Except where it has been replaced by lodgepole pine and deciduous growth following fires, the sub-alpine forest of white spruce and alpine fir is the prevailing type over much of the District. Douglas fir is of minor importance and reaches the northern extremity of its range near Fort McLeod. The Hart Highway is the only road serving the District, but boat travel is possible on the Pack, Parsnip and Finlay rivers.

Insect Conditions

Spruce Budworm:- In the Parsnip and Missinchinka valleys, discoloration resulting from budworm feeding was not nearly as widespread or conspicuous as in 1950, but a reddish tinge was visible on July 28 along this section of the Hart Highway. In the Pack and Crooked River valleys, defoliation of understory alpine fir was observed in several localities, and a light population was general throughout.

Forest Tent Caterpillar, Malacosoma nr. pluviale:- Dwarf birch and willows in many of the swamps in the Crooked and Pack River valleys were infested by this species in 1952. No tree species were affected.

Summary of Forest Insect Survey Collections

FORT McLEOD Forest Ranger District - R.D. 12

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently					2	4	6
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		17	34	13		64
	Pathological						
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

QUESNEL (WEST) Ranger District - R.D. 13

Periods worked: June 7 to 9, June 27, and September 9.

This District, with an area of 6,100 square miles, occupies what was formerly the western half of Quesnel R.D. 6, lying west of the Fraser River.

Most of the District lies within the Montane Forest Region. At medium elevations the Douglas fir type predominates. With increased altitude lodgepole pine, white spruce and aspen become more abundant. The climax forest at high elevations is comprised of white spruce, alpine fir, and black spruce, the latter being predominate on poorly drained sites. Only a small area along the eastern part of the District is adequately served by roads; access to the central portion is limited to the Nazko and Blackwater roads.

Insect Conditions

Douglas Fir Beetle:- Beetle activity increased in the Douglas fir stands west of the Fraser in 1952. The heaviest attack was centred at Buck Ridge southwest of Quesnel and seven miles northwest of Quesnel, where a high percentage of the residual stand on a logging sale had been killed.

Forest Tent Caterpillar:- Medium to heavy defoliation of aspen occurred along the west side of the Fraser from Quesnel northward for nine miles, and for twelve miles along the Nazko road, west of Bouchie Lake. In the valley of Whittier Creek on the old Telegraph trail, most of the aspen were denuded.

Birch Sawfly:- Defoliation of white birch was very light at Narcosli Creek, where 10 acres had been heavily infested in 1951.

Large Aspen Tortrix:- This species caused noticeable defoliation of aspen in several places between Bouchie and Puntchesakut Lake, and was found in most other sections of the District except the southern tip.

Summary of Forest Insect Survey Collections

QUESNEL (WEST) Forest Ranger District - R.D. 13

By Whom Collected		No. of Collections						Totals
		May	June	July	Aug.	Sept.	Oct.	
Forestry Personnel Independently			1			2	1	4
Forestry Personnel with Biology Rangers								
Biology Rangers Independently	Insects		21			8		29
	Pathological		1					1
Other Forest Biology Personnel								
Biology Rangers and Other Forest Biology Personnel								
Other Sources								

PRINCE GEORGE (WEST) Ranger District - R.D. 14

Periods Worked: June 17 and 18, August 27, and September 4.

Prince George (West) Ranger District, covering roughly 1,200 square miles, is made up of what was formerly that section of Ranger District No. 3, lying west of the Fraser, together with a strip north of the Nechako River.

The topography is comparatively level except for a few low, rounded mountains and the valleys of the Fraser, Nechako and Chilako rivers.

The predominant timber type over much of the District is lodgepole pine, but of more importance commercially are Douglas fir, which is well represented although apparently more restricted in range than in the past, and white spruce, which may be associated with aspen, lodgepole pine or alpine fir. Black spruce, in spite of its abundance, is of little importance owing to the small size attained.

Insect Conditions

Forest tent Caterpillar:- Patches of medium to heavy defoliation were scattered over an area of about one square mile at the junction of the Beaverley road and No. 16 Highway. Tent caterpillars were also found stripping aspen and birch in the Reid Lake district and an extensive infestation was reported near Punchaw Lake.

Fairly good coverage of the northern part of the District is possible but most of the remainder is inaccessible by road.

Summary of Forest Insect Survey Collections

PRINCE GEORGE (WEST) Forest Ranger District - R.D. 14

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	1			2
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		20	15	8	3	44
	Pathological		2				2
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

HIXON Ranger District - R.D. 15

Periods Worked: June 4, July 3, July 5, July 10 to 11, July 25 and 26, and September 5 and 6.

Hixon Ranger District is comprised of that part of Prince George (East) Ranger District lying south of Stone Creek, and the territory lying north of the Cottonwood River which was formerly part of Quesnel (E) Ranger District.

Topographically the District is similar to Quesnel (East) Ranger District. It is bordered on the west by the Fraser and is drained by several westward-flowing creeks and by the Willow River system in the east.

The sub-alpine forest of white spruce and alpine fir is the most important timber type, being found over most of the District. There are extensive stands of lodgepole pine, often mixed with black spruce, and deciduous growth of aspen, birch and alders. At one time, Douglas fir apparently predominated on the benches along the Fraser and some valuable stands still remain in this area.

The Cariboo highway and several logging roads give access to only the western part of the District.

Insect Conditions

Spruce Budworm:- A light to medium infestation was found at several points along the ridge separating the Fraser and Willow River valleys, and is probably general throughout this region at elevations of 3,000 feet and higher. Samples were taken at Genevieve Lake, Hixon Creek, and at the junction of Stone and Control creeks. The heaviest defoliation had occurred at Control Creek where the overall defoliation of alpine fir was estimated at 42 per cent and of white spruce, 25 per cent.

Forest Tent Caterpillar:- Heavy defoliation of aspen occurred near Woodpecker, Hixon Creek, Yardley Lake, Genevieve Lake and in several localities near Cinema. Egg mass counts taken in September indicated that although there had been a decrease from the 1951 level at Woodpecker and Yardley Lake, sufficient larvae would emerge from the overwintering eggs to cause heavy defoliation again in 1953.

Douglas Fir Beetle:- The infestation on Western Plywoods Management License, first reported in 1950, was logged in 1951. Other patches up to 40 acres in extent were reported from the same locality in 1952.

Western Hemlock Looper:- This species was taken more frequently than in previous years. The maximum number of larvae in one collection was 25, from alpine fir at Genevieve Lake.

Saddled Larch Looper:- This species was often taken in alpine fir collections, and was particularly abundant 10 miles east of Hixon Creek where 111 larvae were taken in one alpine fir collection and 38 in another.

Summary of Forest Insect Survey Collections

HIXON Forest Ranger District - R.D. 15

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				2	2		4
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		3	41			44
	Pathological			2			2
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

YUKON TERRITORY

Periods Worked: June 31 to August 6, and August 9 to 11.

Investigations in Yukon Territory in 1952 were carried out along the Alaska Highway from Watson Lake to Haines Junction, the Haines road, and the Carcross and Whitehorse districts north of Richthofen Lake.

Yukon Territory covers about 207,000 square miles, of which roughly one-eighth lies within the Arctic Circle. The Yukon River and its tributaries drain most of the region. The Liard rises in the southeastern corner and flows into the MacKenzie, and, in the southwest, the Alsek River cuts directly through the mountains to the Coast.

About half of the territory is covered by forest growth, the remainder being treeless tundra which borders on the Beaufort Sea and extends southward in an irregular pattern along the mountain ranges. With the exception of a limited intrusion of the coastal forest in the Alsek River valley, the boreal forest occupies all of the timbered areas. Its chief components are white spruce, aspen, lodgepole pine, balsam popular and black spruce. Tamarack and white birch are common in the Liard valley, but rare or absent elsewhere in the southern part of the territory. Alpine fir occurs locally in the mountains.

Road travel is limited to the southern and central parts of the Yukon Territory. The Alaska Highway traverses the southern and southwestern portion for 500 miles. A 200-mile road serves the mining district around Mayo, and the Haines road gives access to the Coast. A road to Dawson was under construction in 1952.

Insect Conditions

Spruce Bark Beetle, Dendroctonus ? borealis:- An infestation in white spruce was first reported from the Haines road in 1945. In 1948 it extended from Dezadeash Lake southward into British Columbia and northeastward along the Upper Dezadeash River to within seven miles of Champagne.

In 1952, the infestation had apparently subsided, although Warden J. Langvin reported finding freshly infested trees at Mush Lake, 20 miles west of the south end of Dezadeash Lake.

Tree mortality in the section covered by the Haines road had been heavy, extending 60 miles from the northern end of the infestation to the limit of timber in the Chilkat Pass. Over 90 per cent of the stand had been killed in the Tatshenshini valley close to the British Columbia boundary, and about 40 per cent at the northern end of the infestation near Dezadeash Lake.

Climatic Injury:- Climatic injury to lodgepole pine, white spruce, and rarely, alpine fir was widespread in southern Yukon and northern British Columbia in 1952 and was the cause for reports of bark beetle infestations in that region. Damage ranging from partial needle discoloration to outright killing was found from Teslin Lake westward to Haines junction. While injury was usually most severe on open, rocky southern slopes, there was the tree species most often affected, but this was because of its abundance on exposed slopes, spruce being rather uncommon on such sites.

Many of the trees sustaining winter injury that were examined supported a variety of bark beetles, almost all of which were species that normally attack weakened trees only.

Lodgepole Pine Beetle, Dendroctonus murrayanae:- This species was found in small numbers around the root collars of most of the dead or dying lodgepole pine examined. It is not known to attack healthy trees.

Engraver Beetles, Ips spp.:- Beetles of this genus were abundant in both white spruce and lodgepole pine that were dead or dying.

Spruce Budworm:- This species was represented in two spruce collections, near Carcross and on the Alaska Highway near Upper Rancheria River.

Green-headed and Yellow-headed Spruce Sawflies, Pikonema dimmockii and Pikonema alaskensis:- These species were taken in white spruce collections over a wide area in southern Yukon.

Cone Insects, Lepidoptera spp.:- White spruce cones in the Lewes River valley near Whitehorse were heavily infested by lepidopterous larvae which are as yet unidentified.

Summary of Forest Insect Survey Collections

YUKON TERRITORY

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				5	1		6
Forestry Personnel with Biology Rangers					1		1
Biology Rangers Independently	Insects			2	72		74
					7		7
Other Forest Biology Personnel							
Biology Rangers and other Forest Biology Personnel							
Other Sources							

ANNUAL REPORT

WEST KAMLOOPS FOREST INSECT DISTRICT

- 1952 -

A. F. Whitecross

INTRODUCTION

Field work in the West Kamloops Forest Insect District was carried on this year from June 2 to August 30 by Forest Biology Ranger A. F. Whitecross. Senior Forest Biology Ranger S. H. Farris accompanied Mr. Whitecross from August 4 to August 9.

The following is a list of Forest Ranger Districts and the time spent in each:

Ranger District	Dates
Kamloops R. D. 4 and Merritt R. D. 17	June 2-7, July 4-12
Clinton, R. D. 12	June 9-14
100 Mile House R. D. 21	June 16-21, August 20-23
Barriere R. D. 3	June 23-28, August 11-16
Birch Island R. D. 2	June 30-July 3, August 4-7, & 9
Williams Lake R. D. 13	July 14-19, August 26-29
Alexis Creek, R. D. 14	July 21-23
Wells-Gray Park R. D. 16	August 8
Blue River R. D. 18	July 28 - August 2

Insect collections made in these ranger districts throughout the season totaled 445. Forest Biology Rangers and other Forest Biology personnel accounted for 419 collections, of which 6 were made in co-operation with British Columbia Forest Service personnel. Employees of the Forest Service made 23 collections independently and 3 were made by other co-operators. No Forest Pathology collections were made this year.

Seven permanent sampling stations were established during the season. Two of these stations were in the Barriere Ranger District; two in 100 Mile House Ranger District; two in Williams Lake District, and one in Alexis Creek Ranger District.

Coverage of the West Kamloops District was not as extensive this season as in previous years owing to periodic ill health of Mr. Whitecross which caused his return from the field before the completion of the field season.

The following tables have been compiled to show collections by forest ranger district, Table I; by months, Table II; and by principal hosts and semi-monthly periods, Table III.

TABLE I

Summary of Forest Insect Survey Collections

WEST KAMLOOPS Forest Insect Ranger District - 1952

By Whom Submitted		FOREST RANGER DISTRICTS										
		RD.2	RD.3	RD.4	RD.12	RD.13	RD.14	RD.16	RD.17	RD.18	RD.21	Totals
Forestry Personnel Independently	No of Collections		10	4		4			4	1		23
	No. of Personnel Involved		4	4		2			4	1		15
Forestry Personnel with Biology Rangers		6										6
Biology Rangers Independently	Insects	24	87	51	42	42	21	3	68	17	53	408
	Pathological											
Other Forest Biology Personnel												
Biology Rangers with Other Forest Biology Personnel				5								5
Other Co-operators			1	1					1			3

TABLE II

Summary of Forest Insect Survey Collections by Month

WEST KAMLOOPS Forest Insect Ranger District-1952

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		8	4	10	1		23
Forestry Personnel with Biology Rangers				6			6
Biology Rangers Independently	Insects	1	175	149	88		413
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources		1	1			1	3

TABLE III

Number of Forest Insect Ranger Collections
from Host Species and Semi-Monthly Periods.*

WEST KAMLOOPS FOREST INSECT RANGER DISTRICT - 1952

Dates Collected	Red Cedar	Douglas fir	Alpine fir	Hemlock	Lodgepole pine	Ponderosa pine	Engelmann spruce	Birch	Aspen	TOTALS
June 1 - 15	-	21	-	-	9	29	3	-	18	80
June 16 - 30	1	41	6	-	8	7	8	3	9	83
July 1 - 15	-	48	9	3	-	24	4	1	2	91
July 16 - 31	1	27	2	8	12	-	6	1	5	62
Aug. 1 - 15	2	27	7	1	2	5	7	-	-	51
Aug. 16 - 31	1	28	-	-	-	-	5	1	-	35
Sept. 1 - 15	-	-	-	-	-	-	-	-	-	-
TOTALS	5	192	24	12	31	65	33	6	34	402

Co-operation by the British Columbia Forest Service was, as in previous years, a great aid to Survey personnel, and is thankfully acknowledged. Forest Service employees who were contacted during the season and aided in carrying out the Survey were as follows:

District	Personnel Contacted
Kamloops H. Q.	Ass't District Forester, J. R. Johnson Foresters-in-Training, I. W. Lehrle A. Schutz
Birch Island R. D. 2	Ranger H. W. Campbell Ass't Ranger E. Pement
Barriere R. D. 3	Ranger W. Smith
Kamloops R. D. 4	Ass't Ranger D. DeWitt
Clinton R. D. 12	Ranger C. E. Robertson Ass't Ranger J. St. Laurent Patrolman M. Taylor
Williams Lake R. D. 13	Ranger K. N. Peterson Ranger R. V. Williams
Alexis Creek R. D. 14	Ranger T. L. Gibbs
Wells Grey Park R. D. 16	Ranger L. E. Cook Patrolman C. Gaglardi
Merritt R. D. 17	Ranger R. C. Hewlett Ass't Ranger B. LeDuc Ass't Ranger K. Morrissey
Blue River, R. D. 18	Ranger A. G. Cameron Ass't Ranger P. Muskett
100 Mile House R. D. 21	Ranger G. Specht Ass't Ranger D. Hilsden

Important Insect Conditions

Population trends of important forest insects in the West Kamloops District during 1952 are described below.

Spruce budworm, Choristoneura fumiferana - 1952 was the flight year of the 2-year-cycle spruce budworm, hence damage by this insect was readily noticed in the areas where populations were large. Collections were made at Sock Lake, Caudle Creek, Johnston Lake, and South Barriere Lake. All these areas showed some reddening of the crown and tops of branches, although the Sock Lake area produced the largest populations.

Satin moth, Stilpnotia salicis - This insect was prevalent in exatly the same aspen grove as last year; that is, on the east shore of Currie Lake in the Kamloops Ranger District.

Saddled looper, Ectropis crespuscularia - Population of this looper was still large in basically the same area as last year, except that consistent occurrence appeared from Blue River to Albreda, which is a considerably larger area than was noted previously. A report of this insect being in infestation proportions along the South Fork of Otter Creek in the Birch Island Ranger District was received but positive identification was not made.

Douglas-fir beetle, Dendroctonus pseudotsugae - A number of stands of Douglas fir, Pseudotsuga taxifolia, throughout the West Kamloops District showed evidence of attack by the Douglas-fir beetle. Some of the stands which maintained the heaviest populations were Louis Lake and Bestwick areas in the Kamloops Ranger District; Mamette Lake in the Merritt Ranger District; Upper Louis Creek in the Barriere Ranger District; Clinton to Maiden Creek in the Clinton Ranger District, and around Lac la Hache and on the north west side of Canim Lake in the 100 Mile House Ranger District.

Mountain pine beetle, Dendroctonus monticolae - No new outbreaks of this beetle in white pine, Pinus monticola, were recorded this year, but observations showed that the infested groups between Messiter and Thunder River, reported last year, appear to be maintaining an active population. No appreciable spread was noted.

A stand of ponderosa pine, Pinus ponderosa, near Alleyne Lake in the Merritt Ranger District, was examined and it was established that heavy populations of mountain pine beetle were scattered throughout the stand.

Forest tent caterpillar, Malacosoma disstria - This insect was in sufficiently large numbers to cause heavy defoliation of deciduous trees in several areas: Canac Mountain in the Blue River Ranger District, the south hills of the North Thompson River valley from Vavenby to Birch Island, and in an area around Miocene in the Williams Lake Ranger District.

Large aspen tortrix, Archips conflictana - This leaf roller appeared in large numbers throughout the same stands of deciduous trees as the forest tent caterpillar in the Miocene area, and was the cause of a large percentage of the defoliation of aspen in this locality.

Detailed Reports on Forest Ranger Districts

BIRCH ISLAND Ranger District - R.D. 2

The Birch Island Ranger District was covered twice this year. The first coverage was made from July 30 to July 3, and the second was from August 4 to August 9.

Road travel is restricted in this District to two main roads. The Upper Clearwater road gives access north and south, while the North Thompson highway roughly bisects the District in a northeast-southwest direction. With the exception of a few branching logging roads, foot trails are the only other means of coverage. Engelmann spruce, Picea engelmanni, and alpine fir, Abies lasiocarpa, are the two most important tree species from a merchantable viewpoint. Douglas fir, Pseudotsuga taxifolia, and western red cedar, Thuja plicata, are also common, especially at the lower elevations.

Insect conditions.

Spruce budworm, Choristoneura fumiferana - The two-year cycle spruce budworm infestation at Sock Lake was investigated and collections made at various points throughout the stand. Defoliation on brach tips and top crown was noticeable, although it did not appear to be as severe as in previous flight years. Larval counts made from branch samples at Sock Lake showed 29 larvae on 228 inches of alpine fir branches examined. The Sock Lake area is the only one in the Birch Island District where a very heavy population was found to exist.

Saddled looper, Ectropis crepuscularia - R. D. Thomas of the British Columbia Forest Service engineering staff, described larvae that were in what he termed as infestation quantities in the vicinity of Otter Creek. From Mr. Thomas's description it was assumed that the insect was the saddled looper and an investigation was made. Unfortunately a time lapse, which could not be avoided, took place and when a trip into the area was finally made, it was discovered that the defoliating insect had pupated. Numerous cadavers of saddled looper were found however, which tends to add to the belief that this insect was in fairly large proportions.

Forest tent caterpillar, Malacosoma disstria - Collections of this insect were made from a mixed deciduous stand on the southern hills above Birch Island. Defoliation caused by the forest tent caterpillar in this area was heavy although it did not completely denude the stand. Observations established this area of defoliation to stretch from Birch Island to Vavenby along the hills bordering the North Thompson River.

Summary of Forest Insect Survey Collections

BIRCH ISLAND Forest Ranger District - R. D. 2

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently							
Forestry Personnel with Biology Rangers				6			6
Biology Rangers Independently	Insects		1	9	14		24
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

BARRIERE Forest Ranger District - R.D. 3

The Forest Insect Survey was carried on in the Barriere Forest Ranger District from June 23 to June 28, and from August 11 to August 16.

Douglas fir and ponderosa pine, Pinus ponderosa, are the two main coniferous species, although Engelmann spruce is probably the most commercially important.

The road system is adequate enough in the district to allow reasonable coverage of the forested areas.

Insect Conditions

Spruce budworm, Choristoneura fumiferana - The Johnson Lake and South Barriere Lake stands of alpine fir and Engelmann spruce were examined and collections showed that a large population of two-year cycle budworm persisted in each of these areas.

Summary of Forest Insect Survey Collections

BARRIERE Forest Ranger District - R. D. 3

By whom collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2	2	6			10
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		50		37		87
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources						1	1

KAMLOOPS Forest Ranger District - R. D. 4

The Kamloops Ranger District was covered in conjunction with the Merritt Ranger District. The dates spent in these districts were June 2 to June 7, and from July 4 to July 12.

The Kamloops District is in the interior dry belt and is timbered mainly by Douglas fir, ponderosa pine, and lodgepole pine, Pinus contorta. Accessibility of the area by car is reasonably good in dry weather, but many of the roads can not be travelled following a heavy rain. Open range land is prevalent throughout most of the District.

Insect Conditions:

Satin moth, Stilpnotia salicis: - Collections of satin moth larvae were made at Currie Lake from the same group of trembling aspen, Populus tremuloides, that were infested last year. The trees in this grove were showing signs of retarded leafing out which was probably caused by the complete denuding the previous year. A large population of this insect was still present when collections were made.

Douglas-fir beetle, Dendroctonus pseudotsugae - Two heavy infestations of Dougals-fir beetle are present in the Kamloops Ranger District. One of these infestations is in an all-aged stand of Douglas fir, near Bestwick, where 11.8 per cent of the trees were killed on 200 acres by beetles emerging from slash the year after logging ceased. The other infested area is at Fleet Mountain near Louis Lake, where numerous small infested patches of trees are scattered for several miles around. Although 300,000 f.b.m., of logs were left for 3 years in log decks at Fleet Mountain, and were heavily infested by beetles, it is not known whether the patches of infested trees are attributable to these decks. This information was a result of investigations carried out by J. Walters and K. Graham during 1952.

Ponderosa pine sawfly, Neodiprion sp. - This sawfly still remains in infestation proportions in a very localized area near Deadman River. Some mortality of ponderosa pine has resulted.

Summary of Forest Insect Survey Collections

KAMLOOPS Forest Ranger District - R. D. 4

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		3			1		4
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects Pathological		27	24			51
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel		1	4				5
Other Sources		1					1

CLINTON Forest Ranger District - R. D. 12

Collecting was done in the Clinton Forest Ranger District from June 9 to June 14.

Except for the western portion of this Ranger District, a good network of roads exists which allows expedient coverage. Douglas fir is the most commercially important tree species, while ponderosa pine and lodgepole pine are fairly abundant.

Insect Conditions

Spruce budworm, Choristoneura fumiferana - Owing to inclement weather during the period spent in the Clinton Ranger District, no collections of this insect were made at Fountain Valley. The long-existing infestation in this area was visited, however, and although the larvae were extremely small, it was noted that they were present in large numbers.

Douglas-fir beetle, Dendroctonus pseudotsugae - This beetle is continuing to infest small groups of Douglas fir in the vicinity of Clinton. Probably the most concentrated attack is along the Cariboo Highway between Clinton and Maiden Creek.

Ugly nest caterpillar, Archips cerasivorana - Chokecherry, Prunus demissa, and several other small shrubs were found to be infested by this caterpillar. Nests were observed mainly on roadside bushes near Lytton on the No. 1 highway and between Lytton and Pavilion.

Summary of Forest Insect Survey Collections
CLINTON Forest Ranger District - R.D. 12

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently							
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		42				42
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

WILLIAMS LAKE Forest Ranger District - R. D. 13

The Williams Lake Forest Ranger District was visited twice in 1952. From July 14 to July 19, and from August 26 to August 29 were the dates of coverage.

A relatively good system of roads provides access to the southern portion of this District, but the mountainous region in the north is practically inaccessible except by boat and by foot.

Two permanent sampling stations were established in the Williams Lake Ranger District this year. One of these is located four miles south of Chimney Creek on the Alkali Lake road and is numbered 605. The other station is just off the Cariboo Highway, one-half mile north of Knife Creek and is numbered 606. Each of these stations contains five acres and is in a second growth stand of Douglas fir.

Insect Conditions

Forest tent caterpillar, Malacosoma disstria, and Large aspen tortrix, Archips conflictana - These two insects caused heavy defoliation of aspen, Populus tremuloides, in scattered groups throughout an area east of Williams Lake and stretching from Likely south to Knife Creek. Both of these insects were responsible for the defoliation, and although together they caused considerable damage, in some cases complete denuding, either one alone would have been responsible for only minor defoliation.

Summary of Forest Insect Survey Collections

WILLIAMS LAKE Forest Ranger District - R. D. 13

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1		3			4
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			34	8		42
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ALEXIS CREEK Forest Ranger District - R. D. 14

Only three days were spent in the Alexis Creek District this year, and they were July 21, 22 and 23. The object of the trip into the District was to check for the presence of mountain pine beetle, Dendroctonus monticolae, at Tatla Lake. A diligent search revealed none of these bark beetles.

No important insects were included in collections made in this District.

The Alexis Creek Ranger District contains several good stands of Douglas fir along the eastern edge of the District, but lodgepole pine is the most abundant tree species over the remainder and Engelmann spruce is very common. Coverage of the District is made very difficult owing to the lack of roads.

Summary of Forest Insect Survey Collections

ALEXIS CREEK Forest Ranger District - RD No. 14

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently							
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			18	3		21
	Pathological						
Other Forest Biology Personnel							
Forest Biology Rangers and Other Forest Biology Personnel							
Other Sources							

WELLS GRAY PARK Forest Ranger District - R. D. 16

Only one day was spent in Wells Gray Park this year as the road was impassable for a portion of the season and it was not convenient to cover it at a later date, as more urgent coverage was required in other areas. Three collections were made in the Park.

Summary of Forest Insect Survey Collections

WELLS GRAY PARK Forest Ranger District - R.D. 16

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently							
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects				3		3
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

MERRITT Forest Ranger District - R. D. 17

Merritt Ranger District and Kamloops Ranger District were covered jointly during 1952 and the dates were June 2 to June 7, and July 4 to July 12.

The largest part of the Merritt Ranger District is in the interior dry belt and has as its main timber types Douglas fir and ponderosa pine. Some fairly extensive stands of lodgepole pine are also present. Much of the area is rolling grassland spotted with groves of aspen.

Insect Conditions

Mountain pine beetle, Dendroctonus monticolae - A survey was conducted in the Alleyne Lake stands of ponderosa pine where populations of this beetle were noted as being on the increase last year. This year's survey showed that an increase in population was continuing and that loss by volume of timber was greater than in previous years. A special report on this year's survey has been prepared by S. H. Farris, who conducted the investigation.

Douglas-fir beetle, Dendroctonus pseudotsugae - Between Mamette Lake and Lower Nicola this beetle is infesting stands of Douglas fir on the hills on either side of Guichon Creek. Considerable amounts of green timber are being killed in this valley by Douglas-fir beetle and the infestation is almost positively attributable to a breeding ground created by logging slash.

Summary of Forest Insect Survey Collections

MERRITT Forest Ranger District - R. D. 17

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2	2				4
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		21	47			68
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources			1				1

BLUE RIVER Forest Ranger District - R. D. 18

July 28 to August 2 were the dates spent in the Blue River Ranger District during 1952.

Douglas fir, hemlock, cedar, and Engelmann spruce are the most important tree species found in this District. The area is generally mountainous and has only one road which is open for travel for only a very short period each year.

Insect Conditions

Saddled looper, Ectropis crepuscularis - This insect was collected in larger numbers than in 1951 and the extent of heavy population was also greater. From Thunder River through to Albreda, all collections made contained larvae of the saddled looper, and hemlock, Tsuga heterophylla, throughout this area showed noticeable defoliation.

Summary of Forest Insect Survey Collections

BLUE RIVER Forest Ranger District - R.D. 18

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				1			1
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			14	3		17
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

100 MILE HOUSE Forest Ranger District - R. D. 21

June 16 to June 21, and August 20 to August 23 were the periods during which collecting in the 100 Mile House District was carried out.

This District is composed topographically of rolling hills with many lakes, rivers and streams. Douglas fir is the most important tree

species although lodgepole pine is probably the most abundant. Accessibility is moderately good owing to a system of secondary roads.

Two permanent sampling stations were laid out in this District. One is two miles north of 100 Mile House and numbered 603, and the other is on the Tinsothy Lake road east of Lac la Hache and is numbered 604. Both of these are in Douglas fir stands.

Insect Conditions

Douglas-fir beetle, Dendroctonus pseudotsugae - This beetle is active in many spots throughout the 100 Mile House District, but an area on the northwest shore of Canim Lake and another on the western side of Lac la Hache are the largest and most active.

The Canim Lake infestation was examined by J. Walters and it was found that 20,000 f.b.m., of logs were unclaimed for two years thereby providing an excellent breeding medium for beetles already active in the slash. In 1951 beetles emerging from the loggs, killed 157 trees (17,000 f.bm.) but, owing to overcrowding of the broods, it appears that considerable brood mortality has been caused in the infested trees.

The area on the west side of Lac la Hache was examined and, although no figures were gathered, it was evident that the beetles were active. A great deal of felled timber was left in the woods and all logs examined either had been, or were at present, infested by beetles. Many "green infested" and "red-topped" trees were noted.

Summary of Forest Insect Survey Collections

100 MILE HOUSE Forest Ranger District - R. D. 21

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently							
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		30	3	20		53
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ANNUAL REPORT

EAST KAMLOOPS FOREST INSECT DISTRICT

by B. A. Sugden

- 1952 -

INTRODUCTION

The 1952 field season commenced June 2 and continued until September 30. Prior to June, three trips were made to the southern portion of the District to collect ponderosa pine and Douglas fir cones, and to investigate a report concerning the discoloration of ponderosa pine needles. During November, four days were spent in the Shuswap Lake area investigating insect-damaged white pine.

One Biology Ranger, B. A. Sugden, was assigned to the East Kamloops Forest Insect District. Senior Ranger Farris and Biology Ranger Cottrell participated in field work for short periods during the summer and early fall.

The East Kamloops Forest Insect District is comprised of the following British Columbia Forest Service ranger districts: Vernon (R.D.1), Chase (R.D.5), Salmon Arm (R.D.6), Sicamous (R.D.7), Revelstoke (R.D.8), Vernon (R.D. 9), Penticton (R.D. 10), Princeton (R.D. 11), Kelowna (R.D. 15), Enderby (R.D. 19) and Manning Park (R.D. 20). Contacts were made whenever possible with the personnel of these districts. The following table shows the contacts made during the field season:

Ranger District	Personnel Contacted
Vernon, R. D. 1	Ranger M. Johnson Ass't Ranger A. E. Beckett
Chase, R. D. 5	Ranger H. G. Mayson Ass't Ranger C. Whelen Ranger L. J. McKenna (Falkland) Ass't Ranger R. L. Sweet (Falkland)
Salmon Arm, R. D. 6	Ranger J. Boydell

Cont.....

Cont.....

Ranger District	Personnel Contacted
Sicamous, R. D. 7	Ranger C. W. Mizon Ass't Ranger D. Crosby Patrolman P. Neilsen
Revelstoke, R. D. 8	Ranger O. Kettleson Ass't Ranger F. M. Baker Patrolman J. Hollingworth
Vernon, R. D. 9	Ranger J. W. Hayhurst Ass't Ranger R. C. Jackson
Penticton, R. D. 10	Ranger E. L. Scott Ass't Ranger J. B. Cawston Patrolman D. Cawston
Princeton, R. D. 11	Ranger J. H. Dearing Ass't Ranger J. Weinard
Kelowna, R. D. 15	Ass't Ranger Sutherland Ass't Ranger K. Berard
Enderby, R. D. 19	Ranger H. C. Hewlett Ass't Ranger J. LaForge
Kamloops District Office	District Forester, L. F. Swannell
Woodlands Manager for S. M. Simpson Ltd., Forest Management License Area	Mr. A. Moss
Forest Manager for Saskatchewan Federated Co-op Ltd.	H. W. Perry

The information, boat transportation, and co-operation in general received from members of the British Columbia Forest Service, and those connected with the forest products industry, were indeed appreciated. Their aid has increased the area now under survey and has, in many cases, made more detailed information available.

During the field season, 709 collections of insects and 3 pathological collections were made in the District. Co-operators contributed 84 collections, making a grand total of 793, an increase of 91 over last year.

Most of the field season was devoted to sampling trees in forested areas for insect populations. Other work consisted of special surveys of mountain pine beetle, pitch moth, spruce budworm and forest tent caterpillar activity. Four permanent sampling stations were established and many reports of insect damage or suspected insect damage were investigated.

Highlights of Insect Conditions

Dendroctonus spp. - The mountain pine beetle, Dendroctonus monticolae, continued to destroy white pine, Pinus monticola, in the northern portions of the District during 1952. The main infestations were located in the Chase Ranger District near Celista, the Sicamous Ranger District in the Shuswap Lake area, and the Revelstoke Ranger District north along the Columbia and south of Revelstoke to Greenslide.

Outbreaks of the Douglas fir beetle, Dendroctonus pseudotsugae, occurred near Lumby, Cherryville, Silver Creek, Whiteman Creek and Falkland. The number of "red top" Douglas fir, Pseudotsuga taxifolia, in these areas ranged from 4 to 77, trees which had probably been attacked during 1951.

Spruce budworm, Choristoneura fumiferana - The 2-year-cycle budworm remained active in the sub-alpine forests at Bolean Lake, Martin Creek, Monashee Summit, Silver Hills, and Powers Creek areas. Damage to Engelmann spruce, Picea engelmanni, and alpine fir, Abies lasiocarpa, was generally light. Occasionally trees were observed that had a slight reddish cast, indicating moderately heavy feeding. The most severe defoliation occurred on understory spruce and alpine fir, some of which had 50 to 75 per cent of the current foliage destroyed.

Forest tent caterpillar, Malacosoma disstria - An increase in the populations of the forest tent caterpillar was apparent this year. Small, moderately severe infestations were reported from the Revelstoke district at Williamsons Lake, Mt. McPherson and Mile 17 adjacent to the Big Bend Highway. Defoliation ranged up to 80 per cent. A severe infestation on a small area, about three miles by one quarter of a mile also bordered Keremeos where, in general, the black cottonwood, Populus trichocarpa, aspen, Populus tremuloides, birch, Betula occidentalis, and willow, Salix sp., were completed defoliated. Egg surveys conducted during the last week in September in the Revelstoke District indicated that a large population of this moth may be expected next year.

The Hemlock looper, Lambdina fiscellaria lugubrosa - Larvae of this species were collected from hemlock in the Big Bend district for the first

time since the infestation of 1947. Larvae appeared in 19 collections, the maximum number to a collection was 4 and the average was 1.5. Adult moths were observed frequently while working in that area during September.

Green-striped forest looper, Melanolophia imitata - The large population noted during 1951 in the forests adjacent to the Big Bend Highway developed to infestation proportions this year. Light infestations were located between Revelstoke and Downie Creek and east up Downie Creek for approximately 6 miles. Defoliation was light, but evident on hemlock, particularly the smaller trees of that species. Over 1,000 larvae were collected and in those reared at Vernon mortality was high. A disease appeared to be responsible for this condition. During September a search for pupae produced an average of 1.9 pupae for each square foot of moss and duff examined.

TABLE I

Summary of Forest Insect Survey Collections

EAST KAMLOOPS Forest Insect Ranger District - 1952

By Whom Submitted		FOREST RANGER DISTRICTS											
		RD.1	RD.5	RD.6	RD.7	RD.8	RD.9	RD.10	RD.11	RD.15	RD.19	RD.20	Totals
Forestry Personnel Independently	No. of Collections	3	3	2	18	7	13	12	2	4	2	2	68
	No. of Personnel Involved	2	3	2	2	4	2	4	2	1	2	1	25
Forestry Personnel with Biology Rangers					59								59
Biology Rangers Independently	Insects	66	41	70	17	139	68	64	29	56	88	13	651
	Pathological												
Other Forest Biology Personnel			1	3		3							7
Biology Rangers with Other Forest Biology Personnel													
Other Co-operators		1		1						6			8

TABLE II

Number of Forest Biology Ranger Collections
from Host Species and Semi Monthly Periods.

EAST KAMLOOPS Forest Insect Ranger District - 1952

Dates Collected	Douglas fir	Ponderosa pine	Western white pine	Lodgepole pine	Western hemlock	Engelmann spruce	Alpine fir	Western larch	Western red cedar	Birch	Trembling aspen
June 1 - 15	24	34	-	1	1	15	22	2	-	3	-
June 16 - 30	74	4	3	5	18	17	23	3	4	1	1
July 1 - 15	52	-	3	-	26	9	4	-	2	2	-
July 16 - 31	41	3	4	-	41	1	39	6	1	1	-
August 1 - 15	14	1	-	1	-	2	4	1	2	-	-
August 16 - 31	7	1	2	-	29	-	-	-	2	14	1
September 1 - 15	-	-	-	-	-	-	-	-	1	8	2
September 16 - 31	-	-	3	-	-	-	-	-	-	1	3

TABLE II

Number of Forest Biology Ranger Collections from Host Species and Semi Monthly Periods.

EAST KAMLOOPS Forest Insect Ranger District - 1952

Dates Collected	Douglas fir	Ponderosa pine	Western white pine	Lodgepole pine	Western hemlock	Engelmann spruce	Alpine fir	Western larch	Western red cedar	Birch	Trembling aspen
June 1 - 15	24	34	-	1	1	15	22	2	-	3	-
June 16 - 30	74	4	3	5	18	17	23	3	4	1	1
July 1 - 15	52	-	3	-	26	9	4	-	2	2	-
July 16 - 31	41	3	4	-	41	1	39	6	1	1	-
August 1 - 15	14	1	-	1	-	2	4	1	2	-	-
August 16 - 31	7	1	2	-	29	-	-	-	2	14	1
September 1 - 15	-	-	-	-	-	-	-	-	1	8	2
September 16 - 31	-	-	3	-	-	-	-	-	-	1	3

TABLE III

Number of Forest Insect Survey Collections
from Host Species

EAST KAMLOOPS Forest Insect Ranger District - 1952

Coniferous		Broad-leaved	
Douglas fir	232	Alder	38
Western hemlock	123	Birch	33
Ponderosa pine	59	Chokecherry	18
White pine	18	Cottonwood	10
Lodgepole pine	9	Hazel	2
Larch	14	Aspen	9
Spruce	58	Saskatoon	3
Alpine fir	94	Willow	28
Cedar	16	Miscellaneous	26
Juniper	3		
	626		167

Detailed Report on Forest Ranger Districts

VERNON Ranger Districts - R. D. 1 & R. D. 9

The Vernon Ranger districts are located about centrally in the East Kamloops Forest Insect District. They have a total area of approximately 1,908 square miles. The districts are comparatively well supplied with roads, making reasonably good coverage possible.

Three forest regions are found in the districts. In the southern and central sections the Montane Forest of Douglas fir and ponderosa pine is dominant. Increased precipitations in the north-eastern sections encourages mixed stands of Douglas fir, cedar, hemlock, larch and white pine of the Columbia Forest. Between the Montane and Columbia Forest there is a transition forest of a Douglas fir-larch-ponderosa pine association. On the high plateaux and mountain ranges, above 4,000 feet, the sub-alpine forests of Engelmann spruce and alpine fir are general.

Insect Conditions

Spruce budworm - The infestations of spruce budworm remained active at Bolean Lake, Monashee Summit, Silver Hills, and Martin Creek. The

budworm in these areas have a 2-year-cycle. Where this cycle occurs the bulk of the feeding and subsequent damage may be expected during the flight year. The flights take place in the sub-alpine forests during even numbered years, such as this year, 1952. Defoliation in the areas listed above was generally light. Occasionally a few spruce or alpine fir were noted with a slight reddish cast caused by the feeding larvae. Throughout the areas surveyed the reproduction up to 10 feet high suffered the most damage. This may have been due to a habit of dropping, which is employed by the late instar budworm when disturbed by birds, mammals, high wind, or heavy rain.

The average number of larvae from 40 samples made was 17, and the maximum was 34. The average and maximum were based on the sample unit of one beating from one tree.

Douglas fir beetle - Increased beetle activity was apparent in the vicinity of Lumby and Cherryville this year. Eleven infestations were reported with groups of dead trees ranging in numbers from 4 to 77. Most of the fir attacked was of merchantable size.

Spotless fall webworm, Hyphantria textor - Sporatic outbreaks of this defoliator occurred throughout the drier sections of the Vernon Ranger districts. Their favourite host plant appeared to be chokecherry, Prunus demmisa, although larvae were observed frequently on alder, Alnus sitchensis, birch, Betula papyrifera, cotton wood, Populus trichocarpa, and rose, Rosa sp. Occasionally a shrub or small tree was entirely encompassed by the webs of the larvae. Near Lavington 4.6 webs were counted bordering the Vernon-Lumby road for one mile.

Douglas fir tussock moth, Hemerocampa pseudotsugata - Populations of the tussock moth have not increased appreciably this year. No damage was noted and only one larva was collected in the Vernon districts.

Sawfly on Douglas fir, Neodiprion sp. - A large endemic population of a sawfly on Douglas fir was present again this year above Oyama on Long Mountain. Little defoliation was evident, though a few isolated trees were observed with some discoloration on the lower third of the crown, a condition probably caused by feeding sawfly larvae.

False hemlock looper, Nepytia canosaria? - Larvae of this geometrid were more numerous this year especially in the Douglas fir stands in the lower Whiteman Creek area on the west side of Okanagan Lake. A maximum of 32 and an average of 16 larvae were taken in 14 collections.

Cone insect - Due to a poor cone crop in Douglas fir in the Vernon Ranger districts this year, there were few cone collections from this species. Ponderosa pine cones were again heavily infested with Dioryctria xanthoenobarea and Laspeyresia piperana in the timber around the north end of Okanagan Lake.

Insects common in collections, but at present of little economic importance, were Melanolophia imitata, Pero sp., Semiothisa granitata, and Schizura concinna.

Collections made in the Vernon Ranger districts are shown in the following tables. The districts were visited during June 10-14, June 17, July 21, July 23-25, August 8-19 and August 21-22.

Summary of Forest Insect Survey Collections

VERNON Forest Ranger District - R.D. 1

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1		2		3
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects	2	43	12	9		66
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

VERNON Forest Ranger District - R.D. 9

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		10	1	1	1		13
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		25	28	5		58
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

CHASE Ranger District - R.D. 5

The Chase Ranger District, with an area of approximately 1,908 square miles, is one of the largest ranger districts in the East Kamloops Forest Insect District. The northern two-thirds is bisected longitudinally by the Adams River and Adams Lake. This section lies within the boundaries of the interior wet belt. Here is found the Columbia Forest of hemlock, cedar, white pine and Douglas fir, bordered by a large transitional zone. In the southern section the Douglas fir of the Montane Forest is dominant and grades into the spruce and alpine fir of the sub-alpine forest at higher levels.

Travel by boat and on foot is necessary in the northern sections, where no roads of any consequence exist. The southern portions are well supplied with main, secondary, and logging roads, making much of this area easily accessible most of the year.

Insect Conditions

Spruce budworm:- A large endemic population of spruce budworm was located on the Adams Plateau at about 4,300 feet. Most of the budworm were in the pupal and adult stages when the area was surveyed. Adults were noted often in flight and appeared to be moderately abundant. Damage was light, little discoloration appeared on the spruce and alpine fir in the area examined.

Douglas Fir Beetle:- This beetle continued to destroy Douglas fir in the Chase Ranger District. Patches of 10 to 100 killed trees are numerous along the Vernon-Kamloops road at Pineus Lake, Falkland, Spanish Lake and Westwold. The preceding sentence was taken from a report on the Douglas fir beetle by Mr. J. Walters.

Mountain Pine Beetle:- The infestations of this beetle remained active in the white pine between Meadow Creek and Magna Bay. Much of the white pine in this area has been salvaged. On timber sales in areas of infestation, the Forest Service has reduced the diameter limit of white pine to 8 inches.

Pitch moth, Dioryctria sp.:- An outbreak of a pitch moth in white pine was discovered near Magna Bay this year. It was estimated that 30 to 40 per cent of the pine, 6 inches to 14 inches d.b.h., had been affected over an area of 2 square miles. The initial attack generally occurred near the base of the crown and from that point a marked pitch flow was evident. Shortened needle growth, yellowish-green foliage, thin crowns and spike tops were other signs of attack by the pitch moth.

Needle Miner on Lodgepole Pine, Recurvaria sp.:- A light infestation of needle miner persisted in lodgepole pine on the Niskonlith Indian Reserve west of Squilax. Damage was light, although mined needles were easily located. Examination of 50 branches 12 inches long showed an average of 1.7 larvae to each branch. The needle miner larvae each appear to destroy 2 or 3 needles by the time they reach maturity.

Sawfly on Douglas Fir, Neodiprion sp.:- The light infestation of sawfly near Squilax had subsided this year. Some larvae were found, but little defoliation was evident, Elsewhere in the District surveyed, the sawfly occurred in endemic numbers.

Fall Webworm, Hyphantria textor:- Sporatic outbreaks of webworm were noted in the Chase Ranger District. They were most numerous in the vicinity of Little Shuswap Lake. Defoliation was not widespread, but was generally restricted to marginal growth of chokecherry, cottonwood and rose.

Larvae common, but not numerous, in collections from conifers were Semiothisa granitata, Eetropis crepuscularia, Nematocampa filamentaria, and Feralia sp.

Some defoliation occurred on willow, Salix sp., from the larvae of Schizura concinna and on birch by Datana ministra. The larvae of Schizura concinna appeared to be heavily parasitized by both dipterous and hymenopterous parasites.

The following table shows the collections made in the Chase Ranger District. The District was surveyed June 18-21, August 6-7, August 20, and November 17-18.

Summary of Forest Insect Survey Collections

CHASE Forest Ranger District - R.D. 5

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2	1				3
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		21		20		41
	Pathological						
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel		T					
Other Sources				1			1

SALMON ARM Ranger District - R.D. 6

The Salmon Arm Ranger District is the smallest of the ranger districts which comprise the East Kamloops Forest Insect District. It has an area of approximately 380 square miles. The southern sections are drained by the Salmon River and the northern sections by the Shuswap Lake system. The District, located partly within the interior dry and wet belts, has three forest regions. They are (a) the Montane Forest of Douglas fir and ponderosa pine, (b) the Columbia Forest of western red cedar, hemlock, white pine, larch and Douglas fir, and (c) the sub-alpine forest of spruce and alpine fir. A forest of Douglas fir, ponderosa pine and larch is often found in the transitional zone between the dry and wet belts.

Good coverage may be obtained through the use of the many roads, which make most of the District accessible.

Insect Conditions.

Spruce Budworm:- A large endemic population of spruce budworm remained active in the sub-alpine forest near Bolean and Arthur lakes. Little damage occurred on the overstory; the heaviest defoliation was suffered by some of the understory spruce and alpine fir.

Douglas Fir Beetle:- A small outbreak of Douglas fir beetle was located on the steep hillside on the eastern side of the Salmon River valley near Silver Creek. A group of 37 "red tops" was counted, a marked increase over last year, when only a few discolored fir were present in that area.

Larvae of Semiothisa granitata, Melanolophia imitata, Nepytia canosaria, Feralia sp., and Neodiprion sp., were common but only in endemic numbers.

The following table shows the collections made in the District throughout the field season. The District was visited during the periods of June 16-18, July 22, and August 5-6.

Summary of Forest Insect Survey Collections

SALMON ARM Forest Ranger District - R.D. 6

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently					2		2
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		58	12	17	5	70
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources			2	2			4

SICAMOUS Ranger District - R.D. 7

The Sicamous Ranger District is located north of the Salmon Arm and east of the Chase Ranger districts. Approximately 1,264 square miles of mountainous terrain comprise the District, which lies almost wholly within the boundaries of the interior wet belt. Douglas fir, hemlock, cedar, and white pine of the Columbia Forest Region are found growing in mixed stands on the steep hillsides and in the narrow, winding valleys. Drainage for the District is supplied mainly by the Shuswap Lake system.

Transportation by boat is the most convenient method of gaining access to the central and northern sections of the District. Road travel is confined mainly to southern and eastern portions.

Insect Conditions

Mountain Pine Beetle:- This beetle has continued to destroy white pine in the forests adjacent to Shuswap Lake during 1952. The heaviest toll of white pine has been taken between Cape Horne and Encounter Point on the western side of Seymour Arm. There, 1,365 "fresh red" pine were counted this fall. No salvage cutting has been instigated in this area to date, consequently much of the timber destroyed during the last 4 years will now be of little value.

Near Beach Bay, on the east side of Seymour Arm, beetle activity has not been widespread. Fresh "red top" still occurred on the southern slope and on the plateau north of the bay. Part of the infestation is located on a timber sale being logged for the Saskatchewan Federated Co-op Ltd., mill.

Beetle activity has subsided somewhat at the northeastern end of Anstey Arm. "Green infested" trees were difficult to locate and only 27 "red top" pine were counted. Most of this stand of white pine has now been destroyed.

On the west side and about a mile south of the main arm of Shuswap Lake, about 2 miles south of Ginnemousun Narrows, has increased in size since 1951. It has spread generally in a southerly direction. Fifty-six "red tops" were counted. Part of the infestation is located on privately-owned land.

Some recently-destroyed pine were observed on the western slopes east of the Narrows. A total of 15 beetle-infested pine were located in 2 groups. These infestations have not increased appreciably since 1951. They are, however, located near a stand of merchantable white pine. The possibility of an attack on these trees should be considered.

North of Sicamous near Malakwa and Gambie the infestations of mountain pine beetle have remained active in the stands of white pine. The beetles have been particularly destructive northwest of Gambie, where 67 fresh "red tops" were recorded. This infestation has more than doubled in size since 1951.

While making the survey in the Shuswap Lake area, many white pine were observed that, from a distance, presented a yellowish-green appearance. Closer examination of these trees revealed lesions from which pitch had flowed, shortened needle growth and sparsely-foliaged crowns. The majority of the trees examined were well removed from scenes of beetle activity. The only evidence of beetle damage in 75 pine checked was to 7 pine which had been destroyed at least 3 years prior to this survey. A later survey in this area indicated that many pine having the characteristics described above had been attacked by pitch moth.

Fall Webworm:- This moth has become increasingly common along the shoreline of Shuswap Lake. Very heavy defoliation was suffered this year by alder and birch in the vicinity of Ginnemousun Narrows.

Larvae of Feralia sp., were common on Douglas fir and hemlock. They appeared in 43 out of 50 collections made from these species. Other larvae that were common, but not numerous, were Caripeta sp., Semiothisa granitata, and Pero sp.

The Sicamous Ranger District was visited this year during July 7-11, September 9-12, and November 21. The following table shows the collections made in the District.

Summary of Forest Insect Survey Collections

SICAMOUS Forest Ranger District - R.D. 7

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	2	11	4	18
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			37		22	59
	Pathological			9	8		17
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

REVELSTOKE Ranger District - R.D. 8

The Revelstoke Ranger District is located on the northeastern side of the East Kamloops Forest Insect District. Its area of approximately 4,096 square miles is bisected longitudinally by the Columbia River. Parts of two mountain ranges are located in the District, the Monashee on the west and the Selkirks on the east of the Columbia River. The valley of the Columbia is narrow, with mountains rising steeply to an altitude of 10,000 feet on some of the higher peaks. The entire District is located within the interior wet belt. Mixed stands of hemlock, cedar, white pine, spruce and Douglas fir are found at lower altitudes in the Columbia Forest region. This forest grades into the sub-alpine forest of spruce and alpine fir on the higher benches and hillsides.

The Big Bend Highway, following the east side of the Columbia River, is the chief access route to the greatest portion of the District which lies north of the city of Revelstoke. In the district located south, southwest and southeast of Revelstoke, secondary and logging roads make much of the area accessible by motor vehicle.

Insect Conditions

Mountain Pine Beetle:- During 1952 the mountain pine beetle has continued to destroy white pine in the Revelstoke Ranger District in all areas reported in preceding years, with one exception. The infestation located at Mile 54, west of the Big Bend Highway, has subsided, due possibly to the scarcity of host trees, most of these having been destroyed during the past three years. The few living pine left are well distributed in a stand composed mainly of hemlock and cedar.

North of Revelstoke to Big Mouth Creek, a distance of approximately 70 miles, 12 groups of "red top" white pine were noted. The most extensive infestation was located in the Downie Creek area, where a total of 258 fresh "red top" was observed. The infestation has been active west of the river since 1947 and the beetles have destroyed many white pine annually. This condition has resulted in a large area liberally populated with standing dead timber, which may create a forest fire hazard.

A new infestation of 7 "red top" and 22 "green infested" white pine was located on the north bank of Nichol Creek about one quarter of a mile east of the bridge. White pine was common in this area. With a good supply of host trees the infestation could develop rapidly, judging from past infestations in the Revelstoke Ranger District.

South of Revelstoke, near Mt. McPherson and Greenslide, pine infested during 1952 were common. The infestation at the base of Mt. McPherson was the larger; 128 "red top" were counted in this area. Logging operations

were in progress near both infestations and it is possible that many of the dead pine will be salvaged in the near future.

The lower Jorden Valley, west of Revelstoke, was the site of 4 small infestations of mountain pine beetle in white pine. These infestations are located on, or near, timber sales.

Hemlock Looper:- The larvae of this geometrid were collected from hemlock throughout the site of the former infestation, extending from Downie Creek north to Columbia Crossing. These larvae were the first collected from this area since the infestations subsided during 1947-48. Hemlock looper larvae were taken in about half the collections made in this area. The maximum number of larvae to a collection was 4 and the average was 1.5.

During the latter part of September, while working in the area north of Revelstoke, adult moths of this species were noted often in flight and at rest.

Green-striped Forest Looper:- A light infestation of the green-striped forest looper on hemlock occurred from about 7 miles north of Revelstoke to the southern edge of a large burn, and from the northern edge of the burn to Downie Creek. It was reported also as extending east up Downie Creek for almost six miles. The maximum number of larvae to a collection was 73 and the average was 24. Light defoliation was evident on hemlock, particularly the smaller understory trees of this species.

The preferred host was hemlock. However, larvae were also common on white pine and cedar within the area of infestation. There was some variation in the size and color of the larvae where they were most numerous. Many were small and of a yellowish-green color, not the bright green usually associated with larvae of this species. These observations may not be significant.

Some predation may be attributed to birds. The western tanager, Piranga ludoviciana, Stellars jay, Cyanocitta stelleri annectens, black cap chickadee, Parus atricapillus sptentrionalis, and unidentified species of warbler were observed feeding on the larvae.

Forest Tent Caterpillar:- Infestations of tent caterpillar were reported from the Revelstoke Ranger District during June. When the areas of infestation were surveyed the moth flight appeared to be at its peak. Large numbers of adults were observed in the vicinity of Williamson Lake, Mile 17 of the Big Bend Highway and on a small area of about six acres on the lower slopes of Mt. McPherson. Defoliation generally ranged from 25 to 75 per cent, occasional trees were completely stripped. Host trees were mainly aspen, black cottonwood, birch and willow.

Results of an egg survey made during the last week in September are shown in the following table.

Egg Survey on Aspen

Location	Average D.B.H. (inches)	Average crown length (feet)	Average No. of Egg Masses	% Egg Mortality by Nov. 1952	Forecast for 1952
Williamson Lake	4	28	82	Nil	
Big Bend Highway (Mile 17)	5	25	58	Nil	
Mount McPherson	4	30	128	4	

Hemlock Sawfly, Neodiprion tsugae:- Sawfly larvae of this species were collected from hemlock generally in the Revelstoke Ranger District. They were not, however, numerous. The maximum number of larvae to a collection was 9, and the average only 2.

Larvae of Hetropis crepuscularia and Nematocampa filamentaria were very common in collections made from hemlock. They were not numerous, but were represented in 67 collections out of the 71 collections made in the Revelstoke District during the second week in July.

The Revelstoke Ranger District was surveyed during the days of July 14-18, and August 25-29. The following table shows the collections made in the Revelstoke Ranger District.

Summary of Forest Insect Survey Collections

REVELSTOKE Forest Ranger District - R.D. 8

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				7			7
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			73	56	10	139
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

PENTICTON Ranger District - R.D. 10

The Penticton Ranger District is located in the southeastern portion of the East Kamloops Forest Insect District. It is bisected longitudinally by the southern end of Okanagan Lake and the Okanagan River system. It lies within the boundaries of the interior dry belt, much of the valley is sparsely timbered, with large areas of open range-land of grass and sage brush, Artemisia trifida and Artemisia tridentata and antelope bush Purshia tridentata. Open-growing stands of Douglas fir and ponderosa pine are found on the mountain sides up to the 3,000-foot level, where larch and lodgepole pine begin to appear in the stands.

This Ranger District is accessible over much of its area of about 2,016 square miles, through the use of main, secondary and logging roads. With the exception of the latter, the roads are usually in moderately good condition.

Insect Conditions

Douglas Fir Beetle:- The Douglas fir beetle has become active in Douglas fir north of Yellow Lake. Three groups of freshly killed fir were found with a total of 32 "red top" trees. Accumulations of slash and debris resulting from recent logging operations were noted in the vicinity of the infestations.

Spruce Budworm:- An endemic population of spruce budworm was found on Douglas fir in the Penticton District. The larvae, though common, were not numerous and no damage by this species was noted.

False Hemlock Looper:- Throughout most of the Montane Forest larvae of the false hemlock looper were common. They did not, however, occur in large enough numbers to cause damage. The average number of larvae of this species to a collection was 7.

Zelleria haimbachi :- The infestation of this species on ponderosa pine near Campbell Mountain has subsided. Damage by this species was generally lighter. However, larvae were still common throughout the pine stands in the District.

Neodiprion spp:- Sawfly larvae continued to be plentiful on ponderosa pine in the open-growing stands. Damage was usually not severe, though occasionally the lower branches of the smaller trees were stripped of needles. The larvae seem to prefer the preceding year's needles to those of the current year's growth.

Forest Tent Caterpillar:- An infestation of tent caterpillar was located about 2.5 miles north of Keremeos. About 30 acres of deciduous forest were involved bordering Keremeos Creek. Defoliation was severe; most of the large cottonwood, birch and aspen were completely defoliated.

Western Tent Caterpillar, Malacosoma pluviale:- The western tent caterpillar remained active on Anarchist Mountain in light infestation proportions. Moderate to heavy defoliation occurred on chokecherry, wild rose and currant, Ribes cereum. The infestation, though still active, had not increased appreciably since 1951.

Dioryctria xanthoenobares:- Ponderosa pine cones were heavily infested by larvae of the moth, Dioryctria xanthoenobares, again this year. In the open-growing pine east of Oliver, counts of all cones low enough on the trees to be examined showed that some trees had as high as 64 per cent of their cones infested.

Other defoliators that were common, but not abundant, were Lambdina fiscellaria lugubrosa, Feralia sp., Semiothisa sexmaculata, Melanolophia imitata, Hyphantria textor, Neodiprion abietis ?, Pristiphora sp., and Anoplonyx laricivorus.

During the field season insect conditions were checked from June 2 to 4 and July 28 to 30. Collections by months are shown in the following table.

Summary of Forest Insect Survey Collections

PENTICTON Forest Ranger District - R.D. 10

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		3	6	1	1	1	12
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects	4	36	24			64
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

PRINCETON Ranger District - R.D. 11

The Princeton Ranger District lies west of the Penticton Ranger District with its southern border along the International Boundary. The District is mountainous, with many areas of open grassland. Open-grown stands of Douglas fir and ponderosa pine of the Montane Forest are general. At higher levels lodgepole pine, spruce and alpine fir begin to appear in the stands. Moderatley good coverage is possible by road over portions of the 1,904 square miles which comprise the District.

Insect Conditions

False Hemlock Looper:- Throughout the Douglas fir stands between Princeton and Hedley and Princeton and Copper Mountain, larvae of the false hemlock looper were common. The maximum number to a collection was 22 and the average was 6. No noticeable damage was attributable to the species.

Poplar Leaf Beetle, Chrysomela scripta:- Sporatic outbreaks of this leaf feeder occurred between Princeton and Hedley along the banks of the Similkameen. Defoliation on black cottonwood ranged up to 50 per cent over small areas. Larvae were most numerous, though some adults were collected when the infestations were examined.

Dioryctria xanthoenobares:- Ponderosa pine cones attacked by Dioryctria xanthoenobares were scarce in the Princeton Ranger District. This year a light attack occurred in the stand of pine just north of Princeton bordering the Princeton-Merritt road.

Endemic populations of the following species appeared to exist in the Princeton District: Melanolophia imitata, Semiothisa granitata, Pero sp., Lambdina fiscellaria lugubrosa and Neodiprion sp.

Due to unavoidable circumstances the District was worked only once this year from July 1 to 3. The table following shows the collections made in the District.

Summary of Forest Insect Survey Collections

PRINCETON Forest Ranger District - R.D. 11

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1		1			2
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			29			29
	Pathological			2			2
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

KELOWNA Ranger District - R.D. 15

The Kelowna Ranger District is situated due north of the Penticton Ranger District in the Okanagan Valley. The climate is dry; open and semi-open range-land account for much of the acreage in the valley and on the lower hillsides. The Montane Forest of Douglas fir and ponderosa pine is general throughout the District. This forest grades into the sub-alpine forest of spruce and alpine fir found at the higher levels.

Moderately good coverage may be attained through the use of the many roads which made accessible much of the 960 square miles comprising the District.

Insect Conditions

Spruce Budworm:- A report concerning an infestation of spruce budworm in the Powers Creek area was checked early in August. Slight discoloration was noted occasionally on the upper third of the crown of the overstory spruce and alpine fir. Damage to these trees did not appear to be severe. The understory of the two tree species suffered more damage. Many of the spruce and alpine fir from 3 to 7 feet in height had their leaders completely defoliated. Adults of the spruce budworm were very common throughout the area surveyed.

Douglas Fir Beetle:- Between Terrace Mountain road and Shorts Creek, high winds during the spring caused some blow-down in the stands of Douglas fir. These trees, examined later in the season, were found to be hosts to colonies of Douglas fir beetle. This condition may encourage an upward trend in the beetle population in this area.

Zelleria haimbachi:- The infestation of this species on ponderosa pine at Westbank had subsided this year. Larvae were still numerous, but the damage to the needles was light in comparison with last year. Throughout the remainder of the pine stands Zelleria haimbachi were present, but only in endemic numbers.

Black-headed Budworm, Acleris variana:- Pupae and some larvae were collected from spruce and alpine fir in the vicinity of Beaver Lake, above Winfield. They appeared in all the collections made from these trees in the area, but were not abundant. Maximum number was 15, average was 6.

Pine Needle Scale:- From East Kelowna south to Okanagan Mission the pine needle scale has reached epidemic proportions. Entire groves of ponderosa pine have become so heavily infested that the trees are of a silvery-white color. Some of the pine will probably die, others may be so weakened that

an attack by secondary insects could ultimately result in the death of these trees. Sporatic outbreaks of pine needle scale also occurred between Kelowna and Winfield. They were not as severe as the East Kelowna infestation.

Dioryctria xanthoenobares:- The cones of ponderosa pine were severely attacked again this year in the Kelowna Ranger District. Open-grown stands appeared to have more infested cones than the pine in close-growing stands. This, however, may not be true as adequate sampling is very difficult in close-grown timber.

Other defoliators that were present in the District, but not in large numbers were: Pikonema dimmockii, Pikonema alaskensis, Neodiprion spp., Semiothisa granitata, Pero behrensarius, Eupithecia spp., and Hyphantria textor.

The District was surveyed from June 4-6, July 30 to August 1 and November 27-28. The following table shows the collections by monthly periods made in the District.

Summary of Forest Insect Survey Collections

KELOWNA Forest Ranger District - R.D. 15

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	2			1	4
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects	9	28		19		56
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ENDERBY Ranger District - R.D. 19

The Enderby Ranger District is located north of the Vernon Ranger districts and about centrally in the East Kamloops Forest Insect District. It is heavily timbered over most of its area of approximately 560 square miles. The District is largely located within the interior wet belt with cedar, hemlock, white pine, larch and Douglas fir comprising the Columbia Forest. In the southern sections of the District, a transition forest of Douglas fir, larch, and ponderosa pine grades into the Columbia Forest. On the high plateaux and mountain tops, Engelmann spruce and alpine fir abound.

The forest products industry is a major source of income to the residents of the District. Logging operations are numerous. Large areas of the District are made accessible by logging and secondary roads.

Insect Conditions

Mountain Pine Beetle:- Some mountain pine beetle activity was located in white pine on the western shores of Mabel Lake north of Dolly Varden beach. It was not severe. Apparently throughout the site of the former infestation there was only a light population of beetles remaining.

Spruce Budworm:- Larvae of spruce budworm were collected from hemlock in the Hidden Lake area. They were common, but not numerous. No damage was observed.

Hemlock Looper:- An endemic population of this species apparently exists in the stand of mature and semi-mature hemlock in the Hidden Lake area. The average number of hemlock looper larvae to a collection was 2, the maximum number 7.

False Hemlock Looper:- The larvae of the false hemlock looper were collected consistently throughout the Enderby Ranger District from Douglas fir. There was a slight increase in number over 1951. In 30 collections made from fir, the maximum number of larvae to a collection was 14 and the average was 3. Defoliation was not evident in the section surveyed.

Hemlock Sawfly:- Along the east shore of Mara Lake and in the vicinity of Hidden Lake, larvae of the hemlock sawfly were taken regularly in collections from hemlock. They were not numerous, 20 was the largest number of sawfly in a collection.

The webs of ugly nest caterpillar, Archips cerasivorana, were very numerous between Armstrong and Enderby this year. Severe defoliation occurred on chokecherry along the roadside and in isolated groups on the lower hillsides. Other species common in collections made from the conifers were: Semiothisa granitata, Nematocampa limbata, Ectropis crepuscularia, Melanolophia imitata, and Neodiprion abietis ?.

During the field season insect conditions in the Enderby Ranger District were checked between June 25-27 and August 5. The following table is a summary of collections made in the District.

Summary of Forest Insect Survey Collections

ENDERBY Forest Ranger District - R.D. 19

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				1		1	2
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		83		5		88
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

MANNING PARK Ranger District - R.D. 20

Manning Park is located west and south of the Princeton Ranger District. The terrain is mountainous, most of its 288 square miles are above 3,500 feet, with the major part of the timber located in the sub-alpine region. Spruce-alpine fir is the climax species. In areas of old burn the transitional species, lodgepole pine, occurs.

The Hope-Princeton Highway provides the main access route through the Park. From the eastern boundary of the Park the road follows the course of the Similkameen River southwest and then northwest. It leaves the Similkameen about halfway through the Park, then follows the course of the Skagit River in a northwesterly direction to the western boundary.

Insect Conditions

Douglas Fir Beetle:- Two small patches of "red top" Douglas fir were noted this year near the western boundary of the Park. Only a few trees had been destroyed at the time the survey was made in July.

Spruce Budworm:- Larvae of this tortricid were common on spruce, alpine fir and hemlock in the Park area. Damage was light, a large endemic population of budworm appeared to be located there.

Hemlock Sawfly:- While collecting from hemlock near the western boundary of Manning Park, sawfly larvae were encountered occasionally. The larval population was distributed sporatically throughout the area surveyed. No defoliation was evident.

Only one and a half days were spent in the Park this year. The following table shows the collections of insects made in this area.

Summary of Forest Insect Survey Collections

MANNING PARK Forest Ranger District - R.D. 20

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	1			2
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			13			13
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ANNUAL REPORT

WEST NELSON FOREST INSECT RANGER DISTRICT

by W. E. Bitz

- 1952 -

INTRODUCTION

Field work in the West Nelson Insect Ranger District extended from June 2 to September 30. Personnel assigned to the District were Forest Biology Rangers W. E. Bitz and C. B. Cottrell. They were accompanied by Senior Ranger S. H. Farris from June 17 to June 21. Ranger Cottrell was recalled from the field on September 1 to assist with rearing and other related duties at the Vernon insectary. Forest Ranger districts covered during the field season and time spent in each are tabulated below:

DISTRICT	DATES VISITED
Kaslo, (R.D. 6).....	June 5, July 22-25, August 25.
Lardo, (R.D. 7).....	August 26-29.
Nelson, (R.D. 8).....	June 3-9, July 21-26.
New Denver, (R.D. 9).....	July 18-19, August 22-23, September 6-9.
Nakusp, (R.D. 10).....	July 16-17, August 20-21, September 2-5.
Castlegar, (R.D. 11).....	June 10-13, July 28-31.
Grand Forks, (R.D. 12).....	June 14-19, August 1-7, September 10-12.
Kettle Valley, (R.D. 13).....	June 2, June 20-24, August 8-13.
Arrowhead, (R.D. 15).....	July 7-12, August 30, September 22-27.
Edgewood, (R.D. 16).....	July 2-6, July 14-15, August 18-19.
Beaverdell, (R.D. 20).....	June 25-28, August 14-16, September 15-20, October 9-10.

Boundary changes made in this Insect Ranger District affected the Kettle Valley and Grand Forks Forest Ranger districts. The northern part of the Kettle Valley Ranger District was reorganized into a separate district known as Beaverdell, (R.D. 20). A section of the eastern part of the Grand Forks Ranger District was added to the Kettle Valley Ranger District.

A change in drainage division boundaries was made late in the season by extending the eastern boundary of Drainage Division 27 at Bridesville further east to the Kettle River.

The random sampling method of collecting was followed generally during the field season. A total of 884 collections were made by Biology Rangers and Co-operators, and three special infestation reports were submitted. The total number of collections included 43 cone and 14 pathological collections, the latter being made for the Forest Pathology Laboratory at Victoria, B. C. A tabulation of all collections by ranger districts and by host appears in tables I and II respectively.

A special survey of the Beaverdell Ranger District from September 15 to 20 was made possible by the excellent co-operation of Forest Ranger H. V. Hopkins. A special trip for further examination was made to the same area by Ranger Bitz and Research Officer J. Walters on October 9 and 10.

On September 22, Ranger Bitz and Ranger D. H. Ruppel carried on a special survey in the Arrowhead Ranger District. Special infestation reports concerning the Beaverdell and Arrowhead districts are appended hereto.

A count of webs of the spotless fall webworm was made on the three strips established last year in the Grand Forks Ranger District.

A special trip was made on November 24 and 25 to examine the white pine stands of Edgewood, Nakusp and New Denver Ranger districts to verify the presence of pitch moths, Dioryctria zimmermani and Vespamima novaroensis. Owing to the lateness of the season and time available, only a limited investigation was made, but valuable information was obtained.

Nine permanent sampling stations were established, or re-established, this year under the new regulations, they are located as follows:

P.P.S. 200 - Watshan Lake, Edgewood Ranger District
P.P.S. 201 - Dog Creek, Nakusp Ranger District
P.P.S. 202 - Winlaw, New Denver Ranger District
P.P.S. 203 - Forty-Nine Creek, Nelson Ranger District
P.P.S. 204 - Balfour, Kaslo Ranger District
P.P.S. 205 - Riondel, Kaslo Ranger District
P.P.S. 206 - Gray Creek, Kaslo Ranger District
P.P.S. 207 - Apex, Nelson Ranger District
P.P.S. 208 - McRae Creek, Grand Forks Ranger District.

With the exception of the month of June, the weather was very favourable for collecting purposes. The roads in general were free of mud and slides for the greatest part of the field season. With the exception of the usual rough surface of gravel roads in this District, the travel conditions were good.

The Kaslo and Lardo Ranger districts were joined late this summer by a pilot road from Kaslo, thus affording an opportunity to examine the Lardo Ranger District for the first time in 3 years. The Survey was also extended to new parts of the Arrowhead Ranger District, as a result of the completion of another new pilot road between the Lardo and Arrowhead Ranger districts. Another new area examined this year was at Deer Park on Lower Arrow Lake. This area is accessible by boat only.

The co-operation of the British Columbia Forest Service was again very helpful and our thanks are extended for the many additional services and conveniences provided during the field season. Contacts made with British Columbia Forest Service personnel included the following:

Ranger District	Personnel Contacted
Nelson Headquarters	H. B. Forse, District Forester E. L. Young, Ass't. District Forester A. Waldie, Silviculturist
R.D. 6 - Kaslo	Ranger J. L. Humphreys Ass't. Ranger F. V. Webber Ass't. Ranger O. J. Anderson
R.D. 7 - Lardo	Ranger J. H. Raven Ass't. Ranger H. Lefolii
R.D. 8 - Nelson	Ranger A. J. Larsen Ass't. Ranger D. B. Crowther Ass't. Ranger S. Linton
R.D. 9 - New Denver	Ranger R. E. Robinson Ass't. Ranger C. Rohn
R.D. 10 - Nakusp	Ranger H. R. Wood Ass't. Ranger L. Larsen Ass't. Ranger C. C. Jupp
R.D. 11 - Castlegar	Ranger J. F. Killough Ass't. Ranger A. E. Hesketh Ass't. Ranger G. R. Webster
R.D. 12 - Grand Forks	Ranger E. W. Reid Ass't. Ranger S. G. Peterson Ass't. Ranger T. G. Wassholm

B. C. Forest Service Contacts (Cont.)

Ranger District	Personnel Contacted
R.D. 13 - Kettle Valley	Ranger L. E. Stilwell Ass't. Ranger W. T. Uphill Ass't. Ranger R. J. Kerr Ass't. Ranger J. E. Kennedy
R.D. 15 - Arrowhead	Ranger J. B. Gierl Ass't. Ranger S. Jamieson Ass't. Ranger S. Verigan
R.D. 16 - Edgewood	Ranger W. D. Taggart Ass't. Ranger K. H. Kast Ass't. Ranger J. Perdue Patrolman F. Cochrane
R.D. 20 - Beaverdell	Ranger H. V. Hopkins Ass't. Ranger J. Hogan

INSECT CONDITIONS

A special survey of the western white pine, Pinus monticola, stands in the Arrowhead and Nakusp Ranger districts was conducted in September to determine the extent and rate of spread of the mountain pine beetle, Dendroctonus monticolae. It was found to be in infestation proportions throughout the range of white pine in the Arrowhead Ranger District and has appeared to a lesser extent in the Lardo, Nakusp, and Grand Forks Ranger districts. The number of infested areas recorded this year indicates a considerable increase over 1951, and consequently, further mortality in white pine stands can be expected. A special infestation report is appended hereto.

A special survey of the Douglas fir, Pseudotsuga taxifolia, stands in the Beaverdell Ranger District was conducted also to determine the extent of the Douglas fir beetle, Dendroctonus pseudotsugae. This insect was found in small but active infestations throughout the District. It is estimated that 200,000 f.b.m., had been infested in 1951 and 1952. All infested areas examined are small but active, and continued tree mortality can be expected. A special infestation report is appended hereto.

An examination of the spruce budworm, Choristoneura fumiferana, (2-year-cycle), infestation in the Monashee area of the Edgewood Ranger District revealed a light population existing in the spruce-balsam stand. The infested area extends from the Monashee Summit to Inonoaklin Crossing.

Two, twenty-chain strips were established in the area of heaviest population near the Summit. These were utilized for determining population density and damage to the stand. With the exception of a few roadside trees, Choristoneura fumiferana, (1-year-cycle), were collected in very small numbers and at widely separated points in the Nelson, Kettle Valley and Beaverdell Ranger districts.

The False Hemlock Looper, Nepytia canosaria, showed a decided increase in population density and distribution. They were collected consistently in sections of the Kaslo, Nelson, New Denver, Castlegar, and Grand Forks Ranger districts, and in company with the hemlock looper, Lambdina fiscellaria lugubrosa, in the Arrowhead Ranger District. It was also found singly near Edgewood and at Beaverdell. The host was Douglas fir in all cases except in the Arrowhead Ranger District where the host was western hemlock.

Hemlock Looper, Lambdina fiscellaria lugubrosa, was collected consistently from western hemlock in the Arrowhead Ranger District. This area shows a decided population density increase over the past 2 years. An increase is also evident in sections of the Nelson and Grand Forks Ranger districts, the host being Douglas fir. Other areas where only one or two collections containing this species was made were in the Kettle Valley and Kaslo Ranger districts, the host being Douglas fir and western hemlock respectively.

The number of collections containing the European larch sawfly, Pristiphora erichsonii, increased considerably over last year, with a total of 22 collections, representing 15 per cent of all collections from western larch, containing this species. They were collected in the ranger districts of New Denver, Nelson, Castlegar, Grand Forks, and Kettle Valley. The heaviest population was found in the area east of Phoenix in the Grand Forks Ranger District.

A Larch Sawfly, Pristiphora (new) sp., was very common on western larch, it being collected throughout the range of its host in the southern portion of this insect ranger district.

Anoplonyx laricivorus and occidens were without question the most common species collected from western larch, but since neither species is considered economically important at present, no tabulation was attempted.

A light to medium infestation of Malacosoma disstria, the forest tent caterpillar, was located in the Grand Forks Ranger District. This infestation extended for over 15 miles in the Granby River Valley. The hosts were trembling aspen, birch, willow, and cottonwood. Other areas of light infestation were in the Arrowhead and New Denver Ranger districts. An endemic population of this species and Malacosoma pluviale exists across the entire southern part of this Insect Ranger District.

An increase in the spotless fall webworm population was evident in an area of previous infestation between Grand Forks and Christina Lake. Other areas of previous infestation in the Granby River Valley of Grand Forks Ranger District maintained their level or showed a slight decrease.

An unidentified Tortricoidea was collected consistently from lodgepole pine in sections of the Grand Forks and Beaverdell Ranger districts.

A pitch moth tentatively identified as Dioryctria zimmermani and Vespamima novaroensis was found in infestation proportions in several sections of the white pine stands along the shores of Upper Arrow Lake and Slocan Lake. This condition was discovered very late in the year when road travel became very difficult, consequently only a limited examination was made this year.

DETAILED REPORT ON FOREST RANGER DISTRICTS

KASLO Ranger District - R.D. 6

This is one of the ranger districts having rugged terrain and limited numbers of roads, thus limiting coverage to certain areas. However, one new section became accessible when a new pilot road connecting Kaslo and Lardo became passable.

The main timber types are cedar-hemlock and Douglas fir-larch.

Fifty-seven collections, 2 of which were pathological, were made by biology rangers.

No known infestation exists at the present time, but the following economically important insects were collected.

Insect Conditions

False Hemlock Looper, Nepytia canosaria:- This species showed a marked increase in distribution at Fletcher Creek, Balfour, Riondel, Kootenay Bay, and Gray Creek, in all areas the host being Douglas fir.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- Only one area contained this species. This was at Woodbury Creek with western hemlock being the host.

A Larch Sawfly, Pristiphora (new) sp.:- This was found throughout the range of western larch in this District. No large populations were found.

Black-headed Budworm, Acleris variana:- This species was collected in small numbers only from western hemlock at Balfour, Kaslo and Fletcher Creek.

Mottled Willow Borer, Sternochetus lapathi:- One collection of this species was made at Woodbury Creek.

Douglas Fir Beetle, Dendroctonus pseudotsugae:- One infested Douglas fir was found at Shutty's Bench.

Summary of Forest Insect Survey Collections

KASLO Forest Ranger District - R.D. 6

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently					3	3	6
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		4	32	19		55
	Pathological		2				2
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

LARDO Ranger District - R.D. 7

The completion of a pilot road between Kaslo and Lardo made possible a visit to this District for the first time in 3 years. This road with another pilot road joining Gerrard and Trout Lake, now makes the Trout Lake area accessible by road. These roads did not become passable until the end of August and only limited Survey work was carried out. This District is also of very rugged terrain and very few roads so that collecting was restricted to limited areas. Dates spent in the District were August 26-29, a total of 4 days.

The main timber types are cedar-hemlock and Douglas fir-larch.

Thirty-four collections were obtained by biology rangers.

Insect Conditions

Mountain pine beetle, Dendroctonus monticolae:- The first record of infestation by this beetle in the Lardo District was obtained this year. Three spot infestations were located, two patches being near Bosworth and one about 6 miles south of Gerrard.

Mottled Willow Borer, Sternochetus lapathi:- A new locality record was established this year when Assistant Ranger H. Lefolii of the British Columbia Forest Service collected specimens at Lardo. Several collections of the same species were subsequently obtained near Howser and Argenta.

Forest Tent Caterpillar, Malacosoma disstria:- Evidence of defoliation by this species was found at many points across the southern portion of the District, but feeding was completed before the area was visited.

Summary of Forest Insect Survey Collections

LARDO Forest Ranger District - R.D. 7

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2		4	8	2	16
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects				34		
	Pathological						
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

NELSON Ranger District - R.D. 8

This District is traversed by numerous logging and mining roads, some of which are very steep and difficult to negotiate. However, a more thorough coverage is possible than in many of the other districts which have the same type of rugged terrain. Due to repeated logging and fires, much of this District contains a peculiar mixture of timber types. The main types are Douglas fir interior type, Douglas fir-larch, Douglas fir-larch-grand fir, hemlock-cedar, and lodgepole pine.

Seventy-seven collections were obtained by biology rangers and several economically important species of insects were found.

Insect Conditions

False Hemlock Looper, Nepytia canosaria:- This species was collected consistently from Douglas fir along the West Arm of Kootenay Lake to Harrop and extending into the Kaslo Ranger District, and an increase over previous years is evident in this area. Other areas yielding this species were in the Pend d'Orielle Valley near Waneta and in the vicinity of Erie. The host was Douglas fir in both cases.

Black-headed Budworm, Acleris variana:- This species was collected from Douglas fir at several points along the Kokanee Park road.

Spruce Budworm, Choristoneura fumiferana:- Larvae of the one-year cycle were found at several points along the Kokanee Park road, at Waneta and several points in the Pend d'Orielle Valley.

European Larch Sawfly, Pristiphora erichsonii:- One collection containing this species was obtained from western larch in the vicinity of Erie.

Mottled Willow Borer, Sternochetus lapathi:- This borer continues to be active on poplar and willow in many parts of the District.

Western Tent Caterpillar, Malacosoma pluviale:- Scattered populations were found in the Nelson-Salmo area, along the Kokanee Park road and in the vicinity of Waneta.

Summary of Forest Insect Survey Collections

NELSON Forest Ranger District - R.D. 8

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2		2	5	2	11
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		42	34			76
	Pathological		1				1
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

NEW DENVER Ranger District - R.D. 9

Coverage of this District is limited due to the lack of roads and to the rugged terrain. Dates spent in the District were July 18-19, August 22-25, and September 6-9, a total of 8 days.

The main timber types are Douglas fir-larch, Douglas fir interior type, and cedar-hemlock.

Thirty-four collections were obtained by biology rangers. No serious insect conditions were found, but a number of economically important species were collected in small numbers.

Insect Conditions

European Larch Sawfly, Pristiphora erichsonii:- This insect was collected in small numbers from western larch in the vicinity of New Denver.

A Larch Sawfly, Pristiphora (new) sp.:- This species was collected in numbers ranging from 9 to 57 larvae per collection from western larch in the vicinity of New Denver. It was also found in lesser numbers throughout the range of western larch.

Spruce Budworm, Choristoneura fumiferana:- One collection containing this species was obtained from the New Denver area, the host being Douglas fir.

False Hemlock Looper, Nepytia canosaria:- One collection containing this species was obtained from Douglas fir in the vicinity of Silverton.

Forest Tent Caterpillar, Malacosoma disstria:- A light infestation of this species in the vicinity of Sandon, was reported by the British Columbia Forest Service. Unfortunately an examination of the area was impossible during the larval period.

Dioryctria zimmermani and Vespamima novaroensis:- An infestation by these pitch moths on white pine stands was examined in the vicinity of New Denver. The examination was made very late in the year and available time did not permit a thorough inspection, but some valuable information was gained.

Summary of Forest Insect Survey Collections

NEW DENVER Forest Ranger District - R.D. 9

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	1	11		1	14
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			26	7	1	34
	Pathological						
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

NAKUSP Ranger District - R.D. 10

Coverage is limited in this District also, due to the rugged terrain and lack of roads. Dates spent in the District were August 20-21, and September 2-5, a total of 8 days.

The main timber types are cedar-hemlock and Douglas fir interior type.

Forty-three collections were obtained by biology rangers.

Insect Conditions

Mountain Pine Beetle, Dendroctonus monticolae:- A survey of the District revealed this beetle to be present and active in both areas reported last year. The area near Grahams Landing occupying about 4 acres last year, has now increased to about 8 acres. The other area directly across the Arrow Lake from Nakusp is composed of three well defined patches of about 12 trees each. Both areas are active.

Pinipestis sp.:- One collection of this pitch moth was obtained from the bark of a small white pine at Wilson Lake.

Dioryctria zimmermani and Vespamima novaroensis:- These pitch moths were found in infestation proportions in white pine stands at Arrowpark and at several other points.

Summary of Forest Insect Survey Collections

NAKUSP Forest Ranger District - R.D. 10

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1		1	6	4	12
Forestry Personnel with Biology Rangers						1	1
Biology Rangers Independently	Insects			8	21	12	41
	Pathological					1	1
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources					2		2

CASTLEGAR Ranger District - R.D. 11

Coverage in this District was extended this year to Deer Park on Lower Arrow Lake. This short trip was made by B. C. Forest Service landing barge. Unfortunately, several days of rain were encountered thus restricting activities. However, some important insects were collected. Dates spent in the District were June 10-13 and July 28-31, a total of 8 days.

Ninety-seven collections, 3 of which were pathological, were obtained by biology rangers. The main timber types are Douglas fir-larch, Douglas fir-larch-grand fir, spruce-balsam and lodgepole pine.

Insect Conditions

Mottled Willow Borer, Sternochetus lapathi:- This borer continues to be active in most areas of the District and it has already caused considerable mortality on poplar and willow in the Pass Creek-Crescent Valley area, and is spreading to new areas.

European Larch Sawfly, Pristiphora erichsonii:- This species was found in small numbers on its natural host, western larch, at West Robson, Blueberry Creek and near Santa Rosa Creek in the Cascades. An increase in population density and distribution over the past 3 years is indicated.

A Larch Sawfly, Pristiphora (new) sp.:- This species was collected generally throughout the range of western larch in this District. Areas of more numerous populations were at Syringa Creek, 60 in one collection, Santa Rosa Creek in the Cascades, 83 in one collection, and at Castlegar, Shoreacres, Blueberry Creek and Big Sheep Creek.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- This insect was found in one collection only on alpine fir at the east summit of the Cascades.

False Hemlock Looper, Nepytia canosaria:- This insect was collected from Douglas fir at Deer Park, Rossland and Patterson.

Western Tent Caterpillar, Malacosoma pluviale:- This species was found consistently throughout the Cascades, near Pass Creek and Shoreacres.

Summary of Forest Insect Survey Collections

CASTLEGAR Forest Ranger District - R.D. 11

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	1	5	3		10
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		41	53			94
	Pathological		3				3
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources		1					1

GRAND FORKS Ranger District - R.D. 12

This District has an adequate road system for good coverage. The southern portion of the western boundary was moved this year eastward to the height of land between Greenwood and Grand Forks. Dates spent in the District were June 14-19, August 1-7, and September 10-12, a total of 16 days. The main timber types are Douglas fir-larch, Douglas fir interior type, ponderosa pine, and lodgepole pine.

Collections by biology rangers totaled 136, one of which was pathological.

Insect Conditions

European Larch Sawfly, Pristiphora erichsonii:- This species appears to be more numerous this year. Collections containing larvae were obtained from its natural host, western larch, at Christina Lake, May Creek, along the Phoenix road, and in the Cascades. Populations up to 35 larvae per collection were obtained at a point 2 miles west of the Phoenix cutoff.

A Larch Sawfly, Pristiphora (new) sp.:- This species was collected throughout the range of western larch in this District with populations varying from 1 to 32 per collection. The maximum of 32 was at Granby River Valley. This was, without a doubt, the most common insect on western larch.

Western Tent Caterpillar, Malacosoma disstria:- A light to medium infestation was found in the Granby River area, extending from Smelter Lake to Lynch Creek, a distance of approximately 15 miles. Points of heaviest populations were at Sand Creek, Snowball Creek, and Volcanic Creek. Defoliation ranged from 10 to 80 per cent on the favoured host, trembling aspen. Black cottonwood, birch and willow were affected to a lesser extent. An egg count made in September indicated a heavy population will likely be present next year at Snowball Creek and Sand Creek. Malacosoma pluviale, western tent caterpillar, was present in light but general populations throughout the Cascades, near Grand Forks, and in the vicinity of Eholt.

Mountain Pine Beetle, Dendroctonus monticolae:- One area of 23 "red-tops" in white pine was examined in the Granby River Valley about 40 miles north of Grand Forks. Some adult beetles were collected but no green infested trees could be located. This is the first record of Dendroctonus monticolae attack in this District.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- Larvae of this species were collected in small numbers at several points from the summit of the Cascades to Christina Lake. The area around Christina Lake yielded several collections containing this species, the host in all cases being Douglas fir.

False Hemlock Looper, Nepytia canosaria:- This insect was obtained in collections in the vicinity of Christina Lake, at Texas Point, McRae Creek, and Fife. They were found in small numbers only, but were consistent. Larvae were also found at Lynch Creek in the Granby River Valley. The host in all cases was Douglas fir.

Spruce Budworm; Choristoneura fumiferana:- One collection containing this species was made at Cascade, the host was Douglas fir.

Mottled Willow Borer, Sternochetus lapathi:- This species was found at McRae Creek on trembling aspen and willow. This is believed to be the western limit of its spread in this Forest District.

Fall Webworm, Hyphantria textor:- This species was again very active along the Grand Forks-Cascade Highway and in the Granby River area. The Grand Forks-Cascade infestation showed an increase over last year, while the Granby River area showed a slight decrease. A system of web counts was established last year when 3 strips were located for the purpose of an annual web count. The following table shows a comparison of counts made in 1951 and 1952:

		1951	1952
Strip No. 1	(East side of Granby River)	13 webs	5 webs
Strip No. 2	(West side of Granby River)	7 webs	7 webs
Strip No. 3	(Grand Forks-Cascade)	36 webs	93 webs

Tortricoidea:- A species of budworm tentatively identified only as Tortricoidea was consistently found on lodgepole pine reproduction in the May Creek area. They averaged 11 larvae per collection

Summary of Forest Insect Survey Collections

GRAND FORKS Forest Ranger District - R.D. 12

By Whom Collected		No. of Collections						
		May	June	July	Aug.	Sept.	Oct.	Totals
Forestry Personnel Independently		1	2	2		2	1	8
Forestry Personnel with Biology Rangers								
Biology Rangers Independently	Insects		63	3	59	10		135
	Pathological					1		1
Other Forest Biology Personnel								
Biology Rangers with Other Forest Biology Personnel								
Other Sources								

KETTLE VALLEY Ranger District - R.D. 13

This District is traversed by numerous roads and affords good coverage in most parts. The boundaries of the District were changed this year with the northern part becoming the Beaverdell Ranger District. The southeastern boundary was extended from a point near Midway to the height of land between Greenwood and Grand Forks. The main timber types are Douglas fir-larch-ponderosa pine, Douglas fir-larch, lodgepole pine and ponderosa pine.

Collections made by biology rangers numbered 102, of which 2 were pathological.

Insect Conditions

Larch Sawfly, Pristiphora (new) sp.:- This insect was the most common found in the District. It occurred through the range of its host, western larch, but no excessive numbers were found in any single collection.

European Larch Sawfly, Pristiphora erichsonii:- This species was found in two areas, one near Bridesville and the other about 3 miles east of Greenwood.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- One collection containing this species was obtained from birch at State Creek, a tributary of the main Kettle River. Other areas yielding this species were at Ingram Creek and Bridesville, both being from Douglas fir.

False Hemlock Looper, Nepytia canosaria:- This species was collected from Engelmann spruce at Ingram Creek and from Douglas fir at Rock Creek.

Spruce Budworm, Choristoneura fumiferana:- Only two collections containing this species were obtained in this District, one near Kettle Valley and the other near Bridesville, both from Douglas fir.

Western Tent Caterpillar, Malacosoma pluviale:- This was found in general but light populations throughout the Kettle Valley basin where found.

Forest Tent Caterpillar, Malacosoma disstria:- An area of light infestation by this species on trembling aspen, birch and willow was reported by Ranger L. E. Stilwell and Assistant Ranger T. Kerr of the British Columbia Forest Service. This area was near Greenwood. Another area containing this species to a lesser extent was near Eholt.

Pine Needle Fascile Miner, Zellaria haimbachii:- Two collections containing this species were obtained from ponderosa pine, one at Ingram Creek, and the other near Westbridge.

Summary of Forest Insect Survey Collections

KETTLE VALLEY Forest Ranger District - R.D. 13

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			3	1	1	3	8
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		50		50		100
	Pathological		2				2
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

ARROWHEAD Ranger District - R.D. 15

This Ranger District, like several others in the West Nelson area, is of rugged terrain with a limited number of roads and a very large part of the area is accessible only by boat. This condition limits general coverage to small sections of the District. The main timber type is cedar-hemlock, much of which is mature or overmature. Limited stands of Douglas fir and white pine exist within the general stands of cedar-hemlock. Spruce-balsam type is found at the higher elevations.

Dates spent in the District were July 7-12, August 30 and September 22-27, a total of 12 days.

Forty-five collections, including 1 pathological, were made by biology rangers.

Insect Conditions

Mountain Pine Beetle, Dendroctonus monticolae:- A special survey to determine the extent of this beetle was carried out in September. It was found to have spread throughout almost the entire range of white pine in the District and is still very active in nearly all sections. A special infestation report is appended hereto.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- The cedar-hemlock stand in the vicinity of Cranberry Creek was examined closely upon finding several of these larvae in successive collections from western hemlock. A definite increase in population density was observed. They appeared in numbers ranging from 4 to 9 in every one of 11 collections from western hemlock. This species was also present along the Ferguson road between Trout Lake and Ferguson.

False Hemlock Looper, Nepytia canosaria:- This insect was found in company with the hemlock looper on western hemlock at Cranberry Creek. It appeared consistently but in smaller numbers in every collection containing hemlock looper.

Black-headed Budworm, Acleris variana:- Only one collection contained this species. It was obtained from western hemlock along the Ferguson road.

Forest Tent Caterpillar, Malacosoma disstria:- A light infestation of these caterpillars was found at Sidmouth. Unfortunately at the time of discovery the larvae had already pupated almost 100 per cent, but defoliation up to 50 per cent was noted on trembling aspen, birch and willow.

Summary of Forest Insect Survey Collections

ARROWHEAD Forest Ranger District - R.D.15

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1		2		2	5
Forestry Personnel with Biology Rangers				4			4
Biology Rangers Independently	Insects		39			1	40
	Pathological					1	1
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources							

EDGEWOOD Ranger District - R.D. 16

Road travel in this Ranger District is restricted considerably, the Monashee road being the only one of any length. The District is of rugged terrain for the most part and collecting was limited to a small part of the District. The main timber types are spruce-balsam, cedar-hemlock, Douglas fir-larch, and lodgepole pine.

Dates spent in the District were July 2-6, July 14-15, and August 18-19, a total of 10 days.

Sixty-seven collections, including 2 pathological, were made by biology rangers.

Insect Conditions

Spruce Budworm, Choristoneura fumiferana:- The area between the Monashee Summit and Inonoaklin Crossing is the site of a light infestation of this species. The heaviest population is at present near the Summit in a spruce-balsam stand. Some roadside trees showed terminal bud damage up to 90 per cent, but damage in the general stand is estimated at only 15 per cent of the new growth. Two strips of 15 chains each were established near the Summit and collections made at 5-chain intervals along these strips yielded an average of 12 larvae per collection on Engelmann spruce and 11 larvae per collection on alpine fir.

A Larch Sawfly, Pristiphora (new) sp.:- This species was collected in endemic numbers throughout the range of western larch, most noteable points being at Inonoaklin Crossing, Watshan Lake and at Edgewood.

False Hemlock Looper, Nepytia canosaria:- Two collections containing this species were obtained from Douglas fir, one at Watshan Lake Channel and the other at Fauquier.

Hemlock Looper, Lambdina fiscellaria lugubrosa:- Only one collection containing this species was obtained, it was from western hemlock at Watshan Lake Channel.

Summary of Forest Insect Survey Collections

EDGEWOOD Forest Ranger District - R.D. 16

By Whom Collected		No. of Collections					Totals
		May	June	July	Aug.	Sept.	
Forestry Personnel Independently			5	7			12
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		1	50	14		65
	Pathological			2			2
Other Forest Biology Personnel							
Biology Rangers with Other Forest Biology Personnel							
Other Sources			1				1

BEAVERDELL Ranger District - R.D. 20

This area was formed into a forest ranger district in the spring of 1952. The area is traversed by only one main road following the West-Kettle River. Many of the sideroads are short and difficult to traverse with our present vehicles, consequently the coverage is not as thorough as in many other districts. The main timber type is Douglas fir-larch followed by Douglas fir-larch-ponderosa pine, lodgepole pine and spruce-balsam at the higher levels. Large sections of the District are composed of 100 per cent lodgepole pine, resulting presumably from fires.

Dates spent in the District were June 25-28, August 14-16, September 15-21, and October 9-10, a total of 15 days.

Seventy-three collections, including 1 pathological, were made by biology rangers.

Insect Conditions

Douglas Fir Beetle, Dendroctonus pseudotsugae:- A survey to determine the extent of this beetle was carried out in September. The section north of Beaverdell covering the northern half of the District was examined. A total of 22 separate patches of infested trees were inspected with over half of these being active. The majority of these infestations are within a few miles of Beaverdell. A report in further detail is appended hereto.

Spruce Budworm, Choristoneura fumiferana:- One collection containing this species was obtained from lodgepole pine near Carmi and one collection was obtained from Douglas fir near Logan Creek south of Beaverdell.

Pine Needle Fascile Miner, Zellaria haimbachii:- One collection containing this species was obtained from lodgepole pine near Bull Creek at the southern boundary of the District.

Tortricoidea:- A species tentatively identified only as Tortricoidea was found consistently on lodgepole pine north of Carmi. The maximum number obtained in one collection was 27. They were also collected in lodgepole pine stands at various points from Carmi to McCulloch.

A Larch Sawfly, Pristiphora (new) sp.:- This species was very common on western larch near Beaverdell and Beaver Creek.

Western Tent Caterpillar, Malacosoma pluviale:- An area of infestation reported last year about 12 miles south of Beaverdell was examined but no evidence of this insect was found. However, scattered populations were found near Lakevale and at Wallace Mountain near Carmi.

Summary of Forest Insect Survey Collections

BEAVERDELL Forest Ranger District - R.D. 20

By Whom Collected		No. of Collections						
		May	June	July	Aug.	Sept.	Oct.	Totals
Forestry Personnel Independently		1	1	4	6			12
Forestry Personnel with Biology Rangers			9			25		34
Biology Rangers Independently	Insects		19		18			37
	Pathological		1					1
Other Forest Biology Personnel								
Biology Rangers with Other Forest Biology Personnel							1	1
Other Sources								

ANNUAL REPORT

EAST NELSON FOREST INSECT DISTRICT

by W. G. Simms

- 1952 -

INTRODUCTION

The Forest Insect Survey in the East Nelson Forest Insect District commenced on June 2 and ended on October 5. Areas covered during this period were in the following Forest Ranger Districts: Invermere (R.D. 1), Fernie (R.D. 2), Golden (R.D. 3), East Cranbrook (R.D. 4), Creston (R.D. 5), Canal Flats (R.D. 14), Elko (R.D. 17), Spillimacheen (R.D. 18), and West Cranbrook (R.D. 19).

Personnel assigned to this District were Forest Biology Rangers W. G. Simms and L. M. Wallington. The latter was transferred to the insectary in Vernon on September 1, and was replaced by Forest Biology Ranger J. A. Redmond for the remainder of the field season. Other personnel participating in Survey work were Mr. W. G. Mathers, Officer-in-Charge of the Vernon Forest Biology Laboratory (June 19 and 20); and Senior Forest Biology Ranger S. H. Farris (August 12 to 15).

Days spent in the various ranger districts were as follows:

Golden (R.D. 3): June 2-4, July 1-5, August 11-12 and 16, and September 15-16.

Spillimacheen (R.D. 18): June 5-6, 25-26, August 8-9, 13-15, and September 17-19.

Invermere (R.D. 1): June 23-25, August 1-7, and September 20-25.

Canal Flats (R.D. 14): June 19-21, July 28-31, and September 26, 27, 29 and 30.

Cranbrook (R.D. 4 & R.D. 19): June 16-18, July 7-9, August 18-23, and September 10-11.

Creston (R.D. 5): June 10-14, July 21-26.

Elko (R.D. 17): July 10-12, 14, 17-19, and August 25-26 and 28.

Fernie (R.D. 2): July 15-16, August 27, and September 28.

Authorized trips to Vernon: June 27 and August 29.

No Survey work was done during the first week in September due to a transmission breakdown in vehicle F-99.

Two new forest ranger districts, Spillimacheen (R.D. 18) and Cranbrook (R.D. 19), were formed this year. The Spillimacheen District consists of what was formerly the southern portion of the Golden Ranger District and the northern portion of the Invermere Ranger District and the former Cranbrook Ranger District has been divided into East (R.D. 4), and West (R.D. 19).

A total of 705 insect collections were made, of which 43 were negative. Included in this total were 17 cone collections.

Random collecting ceased on September 10. The remainder of the season wasspent on mountain pine bark beetle and forest tent caterpillar surveys. The insect collections are summarized by Forest Ranger Districts in Table I, and by Semi-Monthly Periods in Table II.

Six permanent sampling stations were established this summer in the following ranger districts: Invermere, 2; Canal Flats, 2; East Cranbrook, 1; and Elko, 1.

The following personnel of the British Columbia Forest Service were contacted during the field season:

District	Personnel Contacted
H.Q. - Nelson	District Forester, H. B. Forse Ass't. District Forester, E.L. Young
R.D. 1 - Invermere	Ranger C. R. Tippie Ass't. Ranger G. M. Cartwright
R.D. 2 - Fernie	Ranger R. A. Damstrom
R.D. 3 - Golden	Ranger H. J. Coles Ass't. Ranger J. Old
R.D. 4 - East Cranbrook	Ranger E. Connelly
R.D. 5 - Creston	Ranger A. I. Ross Ass't. Ranger A. Moen

District	Personnel Contacted
R.D. 14 - Canal Flats	Ranger C. J. McGuire Ass't. Ranger T. J. Hamilton Ass't. Ranger C. Brown
R.D. 17 - Elko	Ranger F. G. Hesketh Ass't. Ranger J. F. Bailey
R.D. 18 - Spillimacheen	Ranger J. I. Snider
R.D. 19 - West Cranbrook	Ranger F. R. Hill

The writer extends his thanks and appreciation to personnel of the British Columbia Forest Service for their help and co-operation throughout the field season.

Highlights of Insect Conditions

The Mountain Pine Beetle, Dendroctonus monticolae:- Infestations in lodgepole pine stands remained much the same this year as in 1951. One new outbreak of this insect was found this year in a stand of white pine, Pinus monticola, along the Big Bend Highway, 9½ miles north of the Blackwater Lakes campsite, (R.D. 3). Approximate area attacked is 6 acres.

Evidence of the presence of spruce budworm, Choristoneura fumiferana, was found in a small area along Bugaboo Creek, 3 miles east of Bugaboo Glacier, (R.D. 18). Empty spruce budworm pupal cases were found on balsam fir, Abies lasiocarpa, during August where this tree species (altitude 4,750') has suffered light to medium defoliation.

The Forest Tent Caterpillar, Malacosoma disstria:- Infestations in stands of trembling aspen in the Golden and Spillimacheen ranger districts, (R.D. 3 and 18), continued this year, spreading both north and south in these districts.

TABLE I

Summary of Forest Insect Survey Collections - 1952

EAST NELSON Forest Insect District

By Whom Collected		NO. OF COLLECTIONS									
		R.D. 1	RD.2	RD.3	RD.4	RD.5	RD.14	RD.17	RD.18	RD.19	Totals
Forestry Personnel Independently	No. of Collections	5	8	10		4	8	14	4	7	60
	No. of Personnel Involved	7	5	6		5	6	9	3	5	46
Forestry Personnel with Biology Rangers						12		13	6		31
Biology Rangers Independently	Insects	86	37	91	74	96	76	97	58	59	674
	Pathological										
Other Forest Biology Personnel											
Biology Rangers and Other Forest Biology Personnel											
Other Sources		3	5								8

TABLE II

Number of Forest Biology Ranger Collections from Host Species and Semi-Monthly Periods.

EAST NELSON Forest Insect Ranger District - 1952

Dates Collected	Cedar	Douglas fir	Alpine fir	Grand fir	Western hemlock	Western larch	Lodgepole pine	White pine	Ponderosa pine	Engelmann spruce	Rocky mountain juniper	Birch	Aspen and Poplar	Others	TOTALS
June 3 - 15	1	26		3	2	5	6		4	5		2	9	6	69
June 16 - 30		44			1	9	12	1	7	13	2		6	7	102
July 1 - 15	1	39	6		4	14	17		11	32	5	4	2	10	145
July 16 - 31	8	40	1	5	14	15	25	4	16	25	3	3		5	164
August 1 - 15	1	45	1			2	16			27	5	4		8	109
August 16 - 31	1	29	2		1	9	15		16	14	3	2	4	6	102
September 1 - 15		2					1						2		5
September 16 - 30								1		1			7		9
TOTALS	12	225	10	8	22	54	92	6	54	117	18	15	30	42	705

Detailed Reports on Forest Ranger Districts

INVERMERE Ranger District - R.D. 1

The Invermere Ranger District is situated in the Windermere Valley. The main timber types in which insect collections were made in this District were Douglas fir on the lower levels, and Engelmann spruce-alpine fir on the higher levels.

Fourteen days were spent in this District during which time 86 insect collections were made. Five of the 14 days were spent on bark beetle surveys.

Insect Conditions

Mountain Pine Beetle, Dendroctonus monticolae:- The mountain pine beetle infestations in lodgepole pine stands on Steamboat Mountain, along Frances Creek and Windermere Creek have remained much the same as last year. The infestations have not increased in size, but beetles are still active within the boundaries of each. Activity of this beetle in lodgepole pine along Toby Creek has ceased. This is the second successive year that no green-infested trees were found in this area.

Semiothisa granitata, Eupithecia spp., Melanolophia imitata, Achytonix praecauta, Griselda radicana, and Neodiprion sp., were all common on Douglas fir throughout the Invermere District. Nepytia canosaria, Caripeta sp., Nematocampa filamentaria, and Choristoneura fumiferana were found in small numbers.

Pikonema dimmockii, Pikonema alaskensis, Neodiprion sp., and Feralia sp., were found in small numbers on Engelmann spruce.

Collections from lodgepole pine contained very few larvae. Neodiprion sp., and Zale duplicata were found in some collections.

Anoplonyx occidens, Anoplonyx laricivorus, Pristiphora sp., and Semiothisa sexmaculata were found on western larch in endemic numbers.

Malacosoma disstria was again present on trembling aspen near Radium Junction, (Sinclair Creek), but caused only light defoliation.

Nymphalis antiopa larvae were fairly common on willow throughout the Invermere District.

Summary of Forest Insect Survey Collections

INVERMERE Forest Ranger District - R.D.1

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			1	3	1		5
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		30	2	52	2	86
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources				3			3

FERNIE Ranger District - R.D. 2

The Fernie Ranger District, situated in the Rocky Mountains and running parallel with them, is the most easterly district in British Columbia. Timber types are mainly Douglas fir-larch on the lower levels, and Engelmann spruce-alpine fir on the higher levels.

Four days were spent in the Fernie District this year. Insect collections made during this time totaled 37.

Insect Conditions

Pristiphora new sp., Anoplonyx laricivorus, Anoplonyx occidens, and Semiothisa sexmaculata were present in small numbers on western larch throughout the District.

Pikonema dimmockii, Pikonema alaskensis, Neodiprion sp., Acleris variana, Feralia sp., and Griselda radicana were found in small numbers on Engelmann spruce.

Spruce gall aphid, Adelges cooleyi, was prevalent on Engelmann spruce in most areas in the District.

The Engelmann Spruce Weevil, Pissodes engelmanni, is still causing damage to reproduction Engelmann spruce along the Elk River north of Natal, and east of Michel near Crowsnest.

The insect population on Douglas fir and lodgepole pine was very low. Neodiprion sp., Acleris variana, and Semiothisa granitata were scattered throughout the District on Douglas fir.

For the second successive year, the mountain pine beetle in lodgepole pine, 20 miles north of Natal along the Elk River, has shown no sign of activity.

Summary of Forest Insect Survey Collections

FERNIE Forest Ranger District - R.D. 2

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently				6	2		8
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects			26	11		37
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

GOLDEN Ranger District - R.D. 3

The Golden Ranger District, situated in the interior wet belt, is the most northerly district in the East Nelson Forest Insect District. A hemlock-cedar type exists along most of the Big Bend Highway, while a Douglas fir type occurs in the southern portion of the District.

Thirteen days were spent in this district in 1952. During this period a total of 91 insect collections were made.

Insect Conditions

Forest Tent Caterpillar, Malacosoma disstria:- The large infestation of this insect which existed in stands of trembling aspen, Populus tremuloides, in the Golden Ranger District in 1951, continued this year but the area infested is now larger and extends all the way from Moberly Bench south to McMurdo. Egg mass collections were made again this year in areas where stands of trembling aspen were heavily defoliated by this insect. Collections consisted on both new and old egg masses taken

from 3 trees with an average d.b.h., of 7 inches and with a crown of approximately 20 feet. Collections made on Moberly Bench and at Nicholson averaged 19 new egg masses. Next year's tent caterpillar population, based on the results of these collections, is expected to be high in most areas.

Mountain Pine Beetle, Dendroctonus monticolae:- White pine on an area covering approximately 6 acres on a steep mountainside, one-half mile southwest of the Big Bend Highway and 9 1/2 miles north of Blackwater Lake campsite, has been heavily attacked by this insect during the past two or three years. Stand composition in this area is as follows: white pine, 15 per cent; western hemlock, 65 per cent; Engelmass spruce, Douglas fir and alpine fir, 20 per cent. The stand is mature with most trees averaging 18 inches to 24 inches d.b.h.

Insect collections from Engelmann spruce contained mostly Neodiprion sp., Griselda radicana, Pikonema dimmockii, Pikonema alaskensis, Acleris variana, Semiothisa granitata, and Nyctobia limitaria.

Semiothisa granitata, Neodiprion sp., Eupithecia spp., Melanolophia imitata, Caripeta sp., and Feralia sp., were found on Douglas fir in endemic numbers. Choristoneura fumiferana and Lambdina fiscellaria lugubrosa were scattered throughout the District in small numbers.

Collections from lodgepole pine contained Eupithecia sp., Caripeta sp., Neodiprion sp., and Anthelia sp.

Birch Sawfly, Arge pectoralis:- A light infestation occurred again this year on birch between Golden and Nicholson. Defoliation of Betula papyrifera ranged from 20 to 30 per cent in the vicinity of Nicholson. Very light populations of this insect were found on Moberly Bench, 6 miles north of Golden.

Meroptera pravella larvae were numerous on trembling aspen during September. They occurred in most aspen stands throughout the Golden Forest Ranger District.

Summary of Forest Insect Survey Collections

GOLDEN Forest Ranger District - R.D. 3

By Whom Collected		No. of Collections						
		April	May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1			8	1		10
Forestry Personnel with Biology Rangers								
Biology Rangers Independently	Insects			25	48	12	6	91
	Pathological							
Other Forest Biology Personnel								
Biology Rangers and Other Forest Biology Personnel								
Other Sources			4				1	5

EAST CRANBROOK Ranger District - R.D. 4

Main timber types in which collecting was done in the East Cranbrook Ranger District were a ponderosa pine type and a Douglas fir-larch-ponderosa pine type.

Eight working days were spent in this District during which time 74 insect collections were made.

Insect Conditions

The insect population on western larch was unusually low again this year. Pristiphora sp., Anoplonyx laricivorus, Anoplonyx occidens and Semiothisa sexmaculata were found in small numbers throughout the District.

Collections from Douglas fir produced mostly Semiothisa granitata, Melanolophia imitata, Eupithecia spp., Feralia spp., Neodiprion sp., Caripeta divisata, and Pero behrensarius. Xylomyges hiemalis, Griselda radicana, Panthea sp., and Stenoporpia sp., appeared occasionally.

Collections from Engelmann spruce contained endemic numbers of Pikonema dimmockii, Pikonema alaskensis, Neodiprion sp., Caripeta sp., Feralia sp., Metolophus antiqua and Nyctobia limitaria.

Glena nigricaria, Semiothisa granitata, Caripeta sp., and Panthea virginaria were scattered throughout the District on ponderosa pine.

Lodgepole pine collections contained Semiothisa granitata, Semiothisa adonis, Caripeta sp., Zale duplicata, and larvae of the family Tortricidae.

Semiothisa setonona and Eupithecia placidata were found in endemic numbers on Rocky Mountain juniper.

Ugly Nest caterpillar, Archips cerasivorana:- Larvae of this species were common during the first week in July on chokecherry bushes along the main highway between Fort Steele turnoff and Cranbrook.

The larch woolly aphid was again active this year causing light to medium redness on the needles of western larch between Fort Steele and Wardner.

Summary of Forest Insect Survey Collections

EAST CRANBROOK Forest Ranger District - R.D. 4

By Whom Collected		No. of Collections					
		June	July	Aug.	Sept.	Oct.	Totals
Forestry Personnel Independently						1	1
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects	12	19	42	1		74
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

CRESTON Ranger District - R.D. 5

The Creston Ranger District is situated in the southwestern portion of the East Nelson Forest Insect District. Timber types most commonly collected from were Douglas fir-larch-ponderosa pine, hemlock-cedar, and Engelmann spruce-alpine fir.

Eleven working days were spent in this District. During this time, a total of 108 random collections were made. Twelve of these collections were made with personnel of the British Columbia Forest Service.

Insect Conditions

The False Hemlock Looper, Nepytia canosaria:- This insect showed an increase in population in the Creston District this year. Collections from Douglas fir and grand fir in the vicinities of Wynndel, Sanca and West Creston generally contained 3 to 4 larvae in each, with a high of 21. The latter was recorded from the West Creston area.

Other insects found on Douglas fir throughout the District were Semiothisa granitata, Anomogyna sp., Feralia sp., Neodiprion sp., Achytonix praecuta, Griselda radicana, Xylomyges sp., Acleris variana, Caripeta divisata, Pero behrensarius, Melanolophia imitata, Choristoneura fumiferana, and Lambdina fiscellaria lugubrosa.

Collections from western hemlock along Mission Creek, (elevation 3,700' - 4,300'), at the south end of the Creston District, produced numerous Neodiprion ? tsugae and Acleris variana. Other insects found on hemlock throughout the District were Feralia sp., Eupithecia sp., Melanolophia imitata, Acleris variana, and Neodiprion sp. These were found in endemic numbers.

Engelmann spruce collections contained mostly Pikonema dimmockii Pikonema alaskensis, Feralia sp., and Acleris variana. Choristoneura fumiferana and Lambdina fiscellaria lugubrosa were found in some collections.

Eucordylea atruplictella, Zale duplicata, Pero sp., Semiothisa granitata, Panthea sp., and Choristoneura fumiferana were present on lodgepole pine, but the population of these insects was low.

European Larch Sawfly, Pristiphora erichsonii;- Three larvae were found in a collection from western larch in the West Creston area this year. This is the first time that larvae of this species has been found in this District since 1949, the year in which the East Nelson Forest Insect District was formed.

Larvae found in endemic numbers on western larch were Pristiphora sp., Anoplonyx occidens, Anoplonyx laricivorus and Semiothisa sexmaculata.

Collections from western red cedar contained the occasional Lambdina fiscellaria lugubrosa, Melanolophia imitata, and Eupithecia sp.

Summary of Forest Insect Survey Collections

CRESTON Forest Ranger District - R.D. 5

By Whom Collected		No. of Collections					Totals
		May	June	July	Aug.	Sept.	
Forestry Personnel Independently			1	2		1	4
Forestry Personnel with Biology Rangers				12			12
Biology Rangers Independently	Insects		37	59			96
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

CANAL FLATS Ranger District - R.D. 14

This District is situated south of the Invermere District and north of the Cranbrook District. Timber types in which most insect collecting was done in the Canal Flats Ranger District were Douglas fir-larch, Douglas fir-larch-ponderosa pine, and ponderosa pine.

Eleven days were spent in this District. During this time 76 insect collections were made. Three days were spent on bark beetle surveys.

Insect Conditions

The Mountain Pine Beetle, Dendroctonus monticolae:- Infestation of this insect in lodgepole pine on the mountain slope west of Whitetail Lake, is still active and is spreading south. The infested area now covers approximately 40 acres. Strips were run through the infestation this fall. Approximately 40 per cent of the remaining lodgepole pine trees were heavily attacked during 1952.

Insect collections throughout the Canal Flats Ranger District generally contained few larvae this year. Dichelonyx backii adults were very numerous in late June on Douglas fir along the Kootenay River road east of Canal Flats. They caused light defoliation to many trees in this area. They were also numerous on western larch, ponderosa pine and Douglas fir south of Canal Flats. Other insects found on Douglas fir throughout the District were Nepytia canosaria, Neodiprion sp., Semiothisa granitata, Melanolophia imitata, Rupithecia sp., Caripeta sp., Nematocampa filamentaria, Feralia sp., and Panthea sp.

Lodgepole pine collections contained low numbers of Zale duplicata, Neodiprion sp., Rupithecia sp., and Caripeta sp. Handpicked collections from lodgepole pine, 12 miles south of Canal Flats, produced numerous needle mining (Tortricoidea) larvae during the last week in July.

Collections from Engelmann spruce contained Pikonema alaskensis, Pikonema dimmockii, Feralia sp., and Neodiprion sp., in small numbers.

Larvae of Monoctenus sp., were again numerous on Rocky Mountain juniper, Juniperus scopulorum, near Dutch Creek during the early part of July. Semiothisa setonona larvae were also found in endemic numbers.

Collections from western larch contained mostly Pristiphora new sp., Anoplonyx laricivorus, Anoplonyx occidens, and Semiothisa sexmaculata.

Engelmann spruce weevil, Pissodes engelmanni:- This insect is still causing damage to the leaders of reproduction Engelmann spruce along Findlay Creek, 9 miles west of Canal Flats.

Western Tent Caterpillar, Malacosoma pluviale:- Larvae were found in late June on wild rose bushes, Rosa sp., along the roadside between Canal Flats and Fairmont Post Office. The population was low.

Ugly Nest Caterpillar, Archips cerasivorana:- Larvae were numerous during late June and early July on chokecherry bushes along the roadside near Fairmont Post Office.

Summary of Forest Insect Survey Collections

CANAL FLATS Forest Ranger District - R.D. 14

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently			2	6			8
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		20	49	7		76
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

ELKO Ranger District - R.D. 17

The Elko Ranger District is situated south and east of the Cranbrook Ranger District. Main timber types in which insect collections were made were Douglas fir-larch-ponderosa pine, ponderosa pine, and hemlock-cedar.

Ten days were spent in this District. During this time 110 insect collections were made, of which, 13 were with personnel of the British Columbia Forest Service.

Insect Conditions

Collections from Douglas fir contained mostly Semiothisa granitata, Eupithecia spp., Feralia sp., Pero behrensarius, Caripeta sp., Melanolophia imitata, Neodiprion sp., Nepytia canosaria, Nematocampa filamentaria, Xylonyges sp., and Panthea sp.

A very small unidentified dipterous needle miner is causing damage to Douglas fir trees in the southern portion of the Elko District.

Anoplonyx laricivorus, Anoplonyx occidens, Pristiphora new sp., and Semiothisa sexmaculata were found in endemic numbers on western larch throughout the District.

Relatively few insects were found on ponderosa pine this year. Among the more common larvae were Caripeta sp., Eupithecia sp., Glena nigricaria, Neodiprion sp., and Semiothisa granitata.

Pikonema alaskensis, Pikonema dimmockii, Feralia sp., Neodiprion sp., Pero behrensarius, Eupithecia sp., and Acleris variana were common on Engelmann spruce.

Collections from lodgepole pine produced Caripeta divisata, Eupithecia sp., Pero behrensarius, Zale duplicata, and Neodiprion sp., in endemic numbers.

Neodiprion ? tsugae larvae were numerous in collections in July from western hemlock along Big Sand Creek, east of Galloway.

Fall Webworm, Hyphantria textor, is becoming more common in the Elko Ranger District. During the past 4 or 5 years, very little sign of this insect has been evident. This year, however, "tents" on chokecherry bushes were fairly numerous in the vicinities of Waldo, Dorr and Wardner.

Ugly Nest Caterpillar, Archips cerasivorana, is still common on chokecherry bushes in the vicinity of Elko.

Summary of Forest Insect Survey Collections

ELKO Forest Ranger District - R.D. 17

By Whom Collected	No. of Collections					
	May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		2	7	5		14
Forestry Personnel with Biology Rangers			2	11		13
Biology Rangers Insects Independently Pathological			70	27		97
Other Forest Biology Personnel						
Biology Rangers and Other Forest Biology Personnel						
Other Sources						

SPILLIMACHEEN Ranger District - R.D. 18

The newly formed Spillimacheen Ranger District is situated between the Golden and Invermere ranger districts. Main timber types in which insect collecting was done were Douglas fir and Engelmann spruce-alpine fir.

Twelve days were spent in the District this year. During this period, 64 insect collections were made, of which, 6 were with personnel of the British Columbia Forest Service.

Insect Conditions

The Forest Tent Caterpillar, Malacosoma disstria, infestation, which ranges from Moberly Bench in the Golden Ranger District and to Brisco in the Spillimacheen Ranger District has increased considerably in size since 1951. Larvae were again very numerous in stands of trembling aspen all along the Columbia River between these two points. Defoliation was very heavy, particularly in the Spillimacheen and Brisco areas where trees were entirely stripped of their foliage. Egg mass counts were made again this fall on the same basis and the same time as they were in the Golden Ranger District. The number of new egg masses found near Brisco was much higher than in other areas where collections were made. The average in this particular area was 84 new egg masses per collection. The present indication is that the population of this insect will be high again in 1953.

Evidence of spruce budworm, Choristoneura fumiferana, feeding on balsam fir, Abies lasiocarpa, was found in August when Biology Rangers, along with Forest Ranger J. I. Snider of Spillimacheen, made a trip up Bugaboo Creek. A small area in which balsam fir has suffered light to medium defoliation, is about 3 miles east of Bugaboo Glacier, and the elevation is 4,750'. An Engelmann spruce-alpine fir type occurs in this area. Larvae were not present, but numerous empty spruce budworm pupal cases were found. An attempt was made to get back into this area in September, but the poor condition of the road prevented it.

Insect collections from Douglas fir throughout the District produced Semiothisa granitata, Eupithecia sp., Feralia sp., Neodiprion sp., Melanolophia imitata, Pero behrensarius and Griselda radicana in endemic numbers.

Engelmann spruce collections contained mostly Pikonema dimmockii, Pikonema alaskensis, Eupithecia sp., Nyctobia limitaria, Caripeta divisata, Neodiprion sp., and Feralia sp.

Very few larvae were collected from lodgepole pine until August when Caripeta divisata, Neodiprion sp., and Eupithecia sp., became common, but not numerous.

Engelmann spruce reproduction along Bugaboo Creek, about 14 miles west of Spillimacheen, has been quite heavily attacked by the Engelmann spruce weevil, Pissodes engelmanni.

Summary of Forest Insect Survey Collections

SPILLIMACHEEN Forest Ranger District - R.D. 18

By Whom Collected		No. of Collections					
		May	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	1		2		4
Forestry Personnel with Biology Rangers					6	2	8
Biology Rangers Independently	Insects		22	1	30	5	58
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

WEST CRANBROOK Ranger District - R.D. 19

Main timber types in which insect collections were made in the West Cranbrook Ranger District were Douglas fir-larch-ponderosa pine, Engelmann spruce-alpine fir, and Douglas fir-larch.

Six working days were spent in this District and 59 insect collections were made.

Insect Conditions

Insect collections made during June produced very few larvae, but adult beetles were fairly common. Most numerous were Dichelonyx sp., and Ctenicera sp. They were found on Douglas fir, lodgepole pine, larch, and ponderosa pine. Larvae became much more common during July and August.

Collections from lodgepole pine produced Caripeta sp., Semiothisa adonis, Stenoporpia sp., Zale duplicata, and Neodiprion sp.

Anoplonyx laricivorus, Anoplonyx occidens, Pristiphora new sp., and Semiothisa sexmaculata were all common on western larch.

Insects collected from Douglas fir included Semiothisa granitata, Caripeta sp., Feralia sp., Melanolophia imitata, Neodiprion sp., Eupithecia sp., and Pero behrensarius in endemic numbers.

Endemic populations of Pikonema dimmockii, Pikonema alaskensis, Neodiprion sp., Feralia sp., Pero behrensarius, Notolophus sp., Nyctobia limitaria, and Caripeta divisata were found on Engelmann spruce throughout the District.

Relatively few larvae were found on ponderosa pine. Glena nigricaria, Semiothisa sp., Panthea sp., and Neodiprion sp., were scattered throughout the District in very small numbers.

Summary of Forest Insect Survey Collections

WEST CRANBROOK Forest Ranger District - R.D. 19

By Whom Collected		No. of Collections					
		April	June	July	Aug.	Sept.	Totals
Forestry Personnel Independently		1	1	3	1		6
Forestry Personnel with Biology Rangers							
Biology Rangers Independently	Insects		25	22	12		59
	Pathological						
Other Forest Biology Personnel							
Biology Rangers and Other Forest Biology Personnel							
Other Sources							

APPENDIX

(Special Reports)

I PRINCE GEORGE FOREST INSECT DISTRICT:

(1) Report on Examination of Damaged Lodgepole Pine Stands in Vicinity of Bennett Lake, B. C.:- J. Grant.

On August 7 and 8, 1952, Forest Biology Rangers J. Grant and D. H. Ruppel visited the south end of Lake Bennett, B. C. following a report from the Yukon Forestry Division that bark beetles had killed most of the lodgepole pine surrounding the settlement.

The affected stand, situated immediately south of the Lake Bennett station of the White Pass and Yukon railway, consisted almost entirely of lodgepole pine with a few scattered alpine fir; one or two white spruce grew in the moister sites. It was an open forest growing for the most part on sandy barrens and rock outcroppings forming a series of knolls in the floor of the valley. The ground cover was scanty except in the more sheltered locations where a scrubby growth of Sitka alder, Alnus sitchensis, occurred; much of the forest floor was of loose sand with scattered patches of bearberry, Arctostaphylos uva-ursi, and crowberry, Empetrum nigrum. At the time of our visit approximately three hundred acres of this forest was either killed outright or badly damaged, with the bright red foliage giving the impression that a ground fire had swept the area. Lake Bennett having been the head of the water route to the gold fields of the Klondyke in 1898, the entire forest had been denuded at that time to supply boat lumber for the thousands of fortune-seekers passing through the valley from the coast; consequently the stand was of pole size with no large trees. Its aesthetic value, however, was much greater than might be imagined, for Lake Bennett is the daily feeding place for hundreds of tourists on the White Pass and Yukon Railway en route from Skagway to Whitehorse; being an historic and much photographed spot, its disfigurement was causing the railroad company much concern.

It was definitely determined that the injury was due, not to insects or disease, but to climatic conditions in winter or spring; the reasons for this conclusion follow:

(1) No primary bark beetles were found in a close scrutiny of the damaged trees, in fact, Scolytidae of all kinds were exceedingly scarce. Only two adults of the lodgepole pine beetle, Dendroctonus murrayanae Hopk., were found; this is a species which confines its attack almost invariably to the bases of dying or weakened trees.

(2) The injury was uniform throughout the stand; only seedlings and the lowest branches of the open-grown trees were green and healthy, apparently having been protected by the snow cover. That the damage had been due to a phenomenon in the spring after most of the snow had melted was indicated by the fact that the maximum height of healthy foliage was about two feet from the ground, while residents stated that six feet was the minimum depth during the winter.

(3) The injury was not confined to one tree species but affected all three conifers in the region. The reason that lodgepole pine was most often affected was probably its ability to grow on the most exposed and rocky sites which were apparently the most susceptible.

(4) The damage at the south end of Lake Bennett, although more intense, was very similar to numerous other patches occurring northward along the lake and over a very wide area in the southern part of Yukon Territory. In none of the areas examined were any primary bark beetles found, with the exception of a few adults of the northern spruce beetle, Dendroctonus borealis Hopk., which had recently entered dying spruce. Almost invariably damage was heaviest in open stands, along rocky ridges, and on the fringes bordering on open slopes where desiccation would be expected to be heaviest. In contrast to the Lake Bennett area, however, the damaged stands in the southern Yukon supported a high population of the smaller Scolytidae and in several instances it was obvious that at least two species of Ips were finishing off trees which might have been expected to recover.

(5) No evidence of pathological damage was found. Where foliage had been protected by snow or the shelter of other trees it was perfectly healthy. Although local residents said that an employee of the railroad had sent a sample of the dead pine foliage to the University of Washington and had received a diagnosis of "black rust" with instructions to send no more across the line, this report was discounted in view of the evidence of climatic injury.

II WEST KAMLOOPS FOREST INSECT DISTRICT:

(1) Report on Mountain Pine Beetle, Dendroctonus monticolae Hopk., Attacking Ponderosa Pine in the Vicinity of Alleyne Lake, Aspen Grove, B. C.:- S. H. Farris.

During October 1951, a general reconnaissance was made of the ponderosa pine stands in the vicinity of Aspen Grove. At that time a fairly heavy concentration of infested pine was found in the vicinity of Alleyne Lake. Counts of green-infested and red-topped pine indicated that the beetle population was increasing with definite possibilities of its reaching infestation proportions.

This year, from October 21 to 23 inclusive, Forest Biology Rangers Farris, Grant and Redmond made a more detailed investigation of the Alleyne Lake area to determine the present status of the beetle in this locality.

All infested trees were recorded as "green-infested" (1952 attack), "red-tops" (1950 and 1951 attack), or "grey-tops" (1949 attack). Each tree was blazed and marked as to the year of attack and a tally of d.b.h. was made to enable a figure of annual loss to be computed. The height and d.b.h. of three dominant trees in each group of infested trees were taken in order to classify the sites for use in compiling the volume loss. Volume tables used were issued in May 1951 from the Kamloops District office of the British Columbia Forest Service.

An attempt was also made to "Risk Rate" the green-infested trees. The ratings were based on ponderosa pine risk ratings as used by the United States Department of Agriculture in sanitation cutting of their ponderosa pine stands.

A total of 18 groups were investigated this way. Additional trees were found in the groups reported last year, but the investigators still by no means believe that all infested trees in the locality have been spotted.

Although some of the infested pine occurs on Timber Sale X51537, the bulk of it lies immediately to the south and southeast of the sale.

In computing volume loss, only trees of 8" d.b.h. and over were taken into account. Tables I, II, and III show by individual groups the number of infested trees, the maximum, minimum and weighted average d.b.h. of infested trees and the volume F.B.M. loss.

Table IV is a summary table of tables I, II, and III. Table V shows the number of green-infested trees in each of the four "Risk Rating" classifications and the percentage of the total in each.

The area over which this reconnaissance was made is approximately 4,500 acres. However, much of this area is not forested and this should be taken into consideration if loss per acre is computed.

The beetles are still very active and are evidently on the increase. Both the number of trees infested and volume loss have increased very appreciably over the past four years. The combined volume loss for 1950 and 1951 was 192,160 F.B.M. while the loss for 1952 alone was 156,150 F.B.M.

It is interesting to note that the average maximum and average minimum d.b.h. of attacked trees are larger for 1952 than 1950-51.

Although the writer may have been biased to some extent in Risk Rating the green-infested trees by the mere fact that they were attacked, Table V does give an indication that the majority of trees attacked occur in the High Risk and Very High Risk classifications.

TABLE IV

SUMMARY

Year	No. of infested trees	D. B. H.			Volume F.B.M.
		Ave. max.	Ave. min.	Wt'd Ave.	
1949	9	26.8	22	24	8250
1950-51	242	34	11.5	22.5	192160
1952	185	36.2	15.5	22.6	156150
TOTAL	456	32.5	16.5		356540

TABLE I

GREY - 1949

Group	No. of Infested Trees	D. B. H.			Volume
		Max.	Min.	Wt'd Ave.	F.B.M.
1	1	18	18	18	320
2	-	?	-	-	-
3	3	40	28	32.6	5420
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	1	18	18	18	300
9	-	-	-	-	-
10	-	-	-	-	-
11	-	-	-	-	-
12	3	20	18	18.6	1100
13	1	28	28	28	1090
14	-	-	-	-	-
15	-	-	-	-	-
16	-	-	-	-	-
17	-	-	-	-	-
18	-	-	-	-	-
Total	9	26.8	22	24	8230

TABLE II

RED - 1950 & 1951

Group	No. of Infested Trees	D. B. H.			Volume F.B.M.
		Max.	Min.	Wt'd Ave.	
1	25	28	10	18.8	10730
2	15	40	14	26.6	14960
3	47	42	10	27.1	57990
4	15	34	6	18.2	10670
5	7	38	16	34	9040
6	16	40	6	22.7	10530
7	10	40	18	25	8850
8	12	38	8	17.6	5080
9	5	36	14	23.6	3790
10	8	26	8	16.2	2340
11	-	-	-	-	-
12	15	34	10	23	12360
13	37	42	8	21.5	26710
14	10	30	8	18;4	4540
15	3	28	20	23.3	2080
16	1	16	16	16	210
17	9	30	8	17.1	4800
18	9	36	16	25.7	7480
Total	242	34	11.5	22.5	192,160

TABLE XII

GREEN - 1952

Group	No. of Infested Trees	D. B. H.			Volume F.B.M.
		Max.	Min.	Wt'd Ave.	
1	21	28	8	20.5	13950
2	8	40	4	20.4	7590
3	41	44	6	19.9	32750
4	-	-	-	-	-
5	4	40	16	27	5040
6	4	38	24	30.5	6220
7	24	36	4	21.3	17140
8	4	24	16	21	2080
9	5	42	30	34.4	8200
10	-	-	-	-	-
11	3	44	14	26	3270
12	6	38	8	24	6310
13	44	46	8	22.8	33640
14	5	34	26	29.6	5360
15	6	30	20	25	5000
16	3	22	16	19.3	1900
17	5	38	24	21.6	6970
18	2	26	24	25	1450
Total	185	36.2	15.3	22.6	156,150

TABLE V

Group	Ponderosa Pine Risk Rate*			
	I Low Risk	II Moderate Risk	III High Risk	V Very High Risk
1		5	9	6
2		1	4	3
3	1	11	15	13
4	-	-	-	-
5	1	-	1	3
6	-	1	2	1
7	-	6	9	9
8	-	-	3	1
9	-	-	-	5
10	-	-	-	-
11	-	1	1	1
12	-	2	2	2
13	4	7	24	10
14	-	-	3	2
15	-	1	3	2
16	-	-	2	1
17	-	-	3	2
18	-	-	-	1
Totals	7	35	81	62
Per Cent	4%	19%	43%	34%

III WEST NELSON FOREST INSECT DISTRICT:

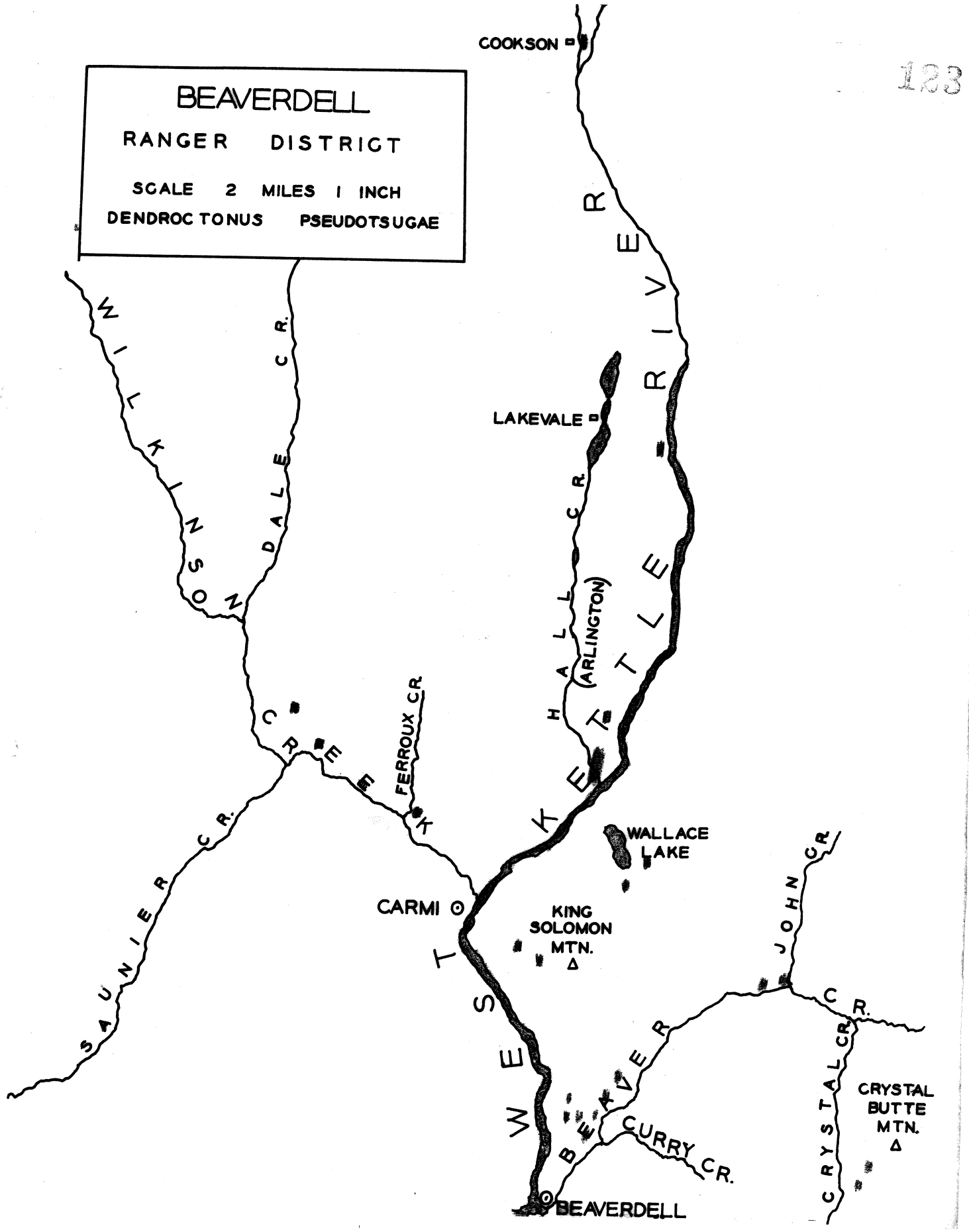
(1) Dendroctonus pseudotsugae in the Beaverdell Ranger District - 1952:- W. E. Bitz.

A survey to determine the extent of damage by Douglas-fir beetle, Dendroctonus pseudotsugae in Douglas fir stands in the Beaverdell Ranger District was carried out by Biology Ranger W. E. Bitz and Forest Ranger H. V. Hopkins. A total of 22 individual infestations were examined between the townsite of Beaverdell and Cookson Flats, a distance of about 25 miles. Twelve of these infestations contained green infested trees. The majority of these patches were concentrated at King Solomon Mountain, Beaver Creek, Wilkinson Creek, and Hall Creek. The most extensive of these infestations is at the confluence of Wilkinson and Saunier creeks and contains about 20 trees attacked during 1951 and 1952. Other areas contained from 1 to 12 red-tops and from 1 to 10 green infested. Other points of infestation are along the main Kettle Valley toward Cookson Flats. All infestations are in Douglas fir-larch type stands and are of mature or overmature form.

A conservative estimate of infested volume of areas examined would be about 100,000 board feet; this includes only the trees affected during 1951 and 1952.

The cause of these infestations appears to be varied, nearly all conditions condusive to the development of beetle broods are present in this area. The largest infestation at Wilkinson Creek appears to be due to the overmature decadent condition of the stand; several patches at King Solomon Mountain toward Wallace Lake seem to be due to fire scar and abundant slash, windfall, and logging debris. Since all infestations examined were in stands of mature or overmature timber it is reasonable to expect the spread of this beetle to continue. In view of the fact that in 1949 only about 4 or 5 patches of red-tops had been noted in the vicinity of Beaverdell it seems probable the ensuing infestations northward had their origin here.

Due to the absence of a previous record as to the extent of this pest this year's survey was limited to the area north of Beaverdell, however, from observations made during the field season in the remainder of the ranger district, it would appear that the number of infestations in the southern portion are at least equal in number to those in the northern half. An estimate of timber infested during 1951 and 1952 would, therefore, be about 200,000 board feet. The survey will be extended next year, to include the southern half of this ranger district.


BEAVERDELL
RANGER DISTRICT
SCALE 2 MILES 1 INCH
DENDROCTONUS PSEUDOTSUGAE
COOKSON
KETTLE RIVER
LAKEVALE
HALL CR.
(ARLINGTON)
WILKINSON DALE CR.
CREEK
FERROUX CR.
SAUNIER CR.
CARMI
WALLACE LAKE
KING SOLOMON MTN.
WEST KETTLE
JOHN CR.
BEAVER CR.
CURRY CR.
CRYSTAL CR.
CRYSTAL BUTTE MTN.
BEAVERDELL

(2) Mountain Pine Beetle, Dendroctonus monticolae, in the Arrowhead Ranger District - 1952:- W. E. Bitz.

An examination of the stands of western white pine, Pinus monticola, in the Arrowhead Ranger District was carried out by Forest Biology Rangers W. E. Bitz and D. H. Ruppel in September 1952. The primary objects were to determine the extent of damage and the spread of the mountain pine beetle, Dendroctonus monticolae, in the district. The co-operation of Forest Ranger J. B. Gierl was very helpful and our thanks are extended to him.

Due to the large number of groups of infested trees throughout the range of white pine in the district, and due to the inaccessibility of a large portion of the district, it was not considered feasible to cruise each infested group. Instead, strip cruises were carried out in the areas considered most representative of the existing conditions. This report deals with the district in three sections.

1. - Pingston Ridge Area

The eastern slope of Pingston Ridge is believed to be the original site of attack; this was located at Little Fish (Dry) Creek, on Lot 7919, and occupied 10 acres in 1949. This infestation has now spread south of Shelter Bay and north to Sidmouth, a total distance of over 5 miles. It has accounted for 100% of the white pine over 6" d.b.h. in many parts of this area and appears as an almost continuous belt of red-tops. Green infested groups are scattered throughout the area. A strip cruise of one acre was carried out at Shelter Bay near the base of Sugar Loaf Mountain, an area of recent attack. The white pine of 8" d.b.h. and over classified as "grey" (killed before 1951), "red-top" (killed in 1951), "green infested" (attacked in 1952) and "healthy" were as follows:

Shelter Bay:

D.B.H.	Grey	Red-top	Green infested	Healthy	Total
8"	20	-	9	15	44
10"	12	1	7	3	23
12"	4	-	5	1	10
14"	3	-	7	5	15
16"	2	1	1	7	11
18"	-	-	2	3	5
20"	-	-	-	1	1
Total	42	2	31	35	109

At its present rate of spread this area will also be 100% killed within two years.

On the eastern side of the Columbia River, directly above Sidmouth, there are two patches of red-tops, one on a western slope and the other on a northwest slope. Since a cruise may tend to give an inaccurate picture, a total count of attacked trees was made of the area on the western slope. It revealed the following: 41 red-tops and 93 green infested. The area on the northwest slope is smaller and its composition is approximately of the same proportion of red-tops and green infested.

2. - Northeast Arm and Nucillweat Creek:

The most severe area of attack along the east shore of the main lake is near Nucillweat Creek. A cruise of one acre here showed the following:

Nucillweat Creek

D.B.H.	Grey	Red-top	Green infested	Healthy	Total
8"	4	4	-	4	12
10"	-	3	1	-	4
12"	4	4	2	1	11
14"	4	5	1	1	11
16"	3	4	1	2	10
18"	2	6	-	-	8
20"	6	2	2	-	10
22"	-	2	-	-	2
24"	1	1	1	-	3
26"	-	1	-	-	1
Total	24	32	8	8	72

Along the northeast Arm the most extensive area is on the south slope of Mt. Sproat. It is in the form of two sections separated by a gully and an old burn. It covers about 30 acres. Owing to the patchwork nature of the infestation, no cruise was attempted but a count of infested trees was made. Other areas along the north side of the lake where this system was followed are at Whiskey Point, Big Creek, Comaplix Creek and Town Creek. All areas east of Sproat Mountain are previously unreported. Following is a tabulation of the beetle attacked trees in these areas.

Area	Grey	Red-tops	Green infested
Mt. Sproat	100	57	53
Whiskey Point	Scattered	18	16
Big Creek	Scattered	17	13
Comaplix Creek	Undetermined	46	100
Town Creek	Undetermined	21	17

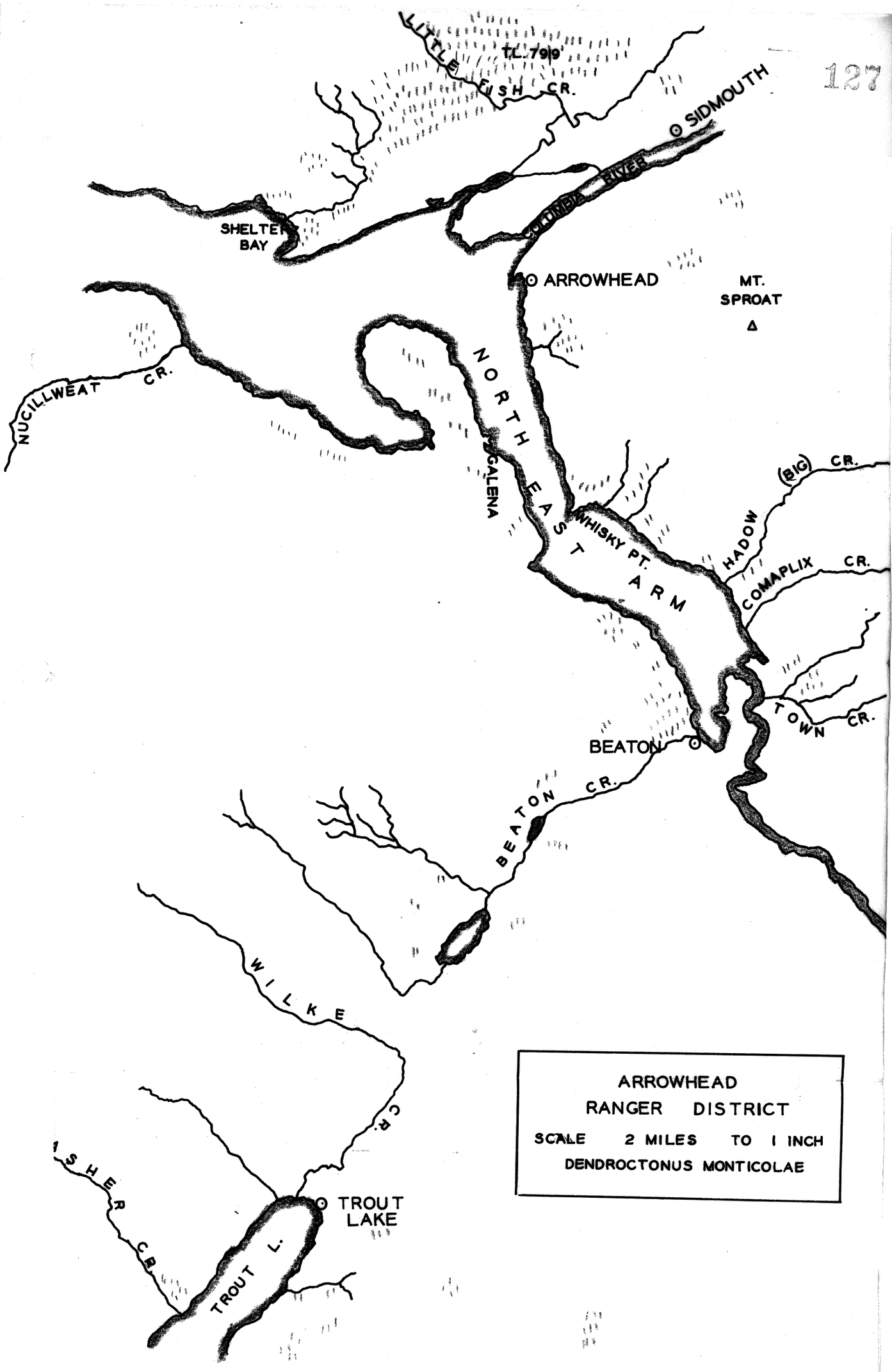
As can be seen, all these areas are active and further damage to white pine can be expected.

The south side of the Northeast Arm is much more lightly infested at present, but small groups of attacked trees are general from Galena to Beaton.

3. - Beaton-Trout Lake:

The north and east slopes of the mountain to the immediate west of Beaton have suffered heavy beetle attacks and nearly 100% of the white pine has been killed since 1949. No cruise or tree count was attempted here. This infestation has spread in small patches along the valley between Beaton and Trout Lake and along both sides of Trout Lake. The most active patch examined is at Asher Creek on the West shore of Trout Lake. At present it occupies less than two acres but is extremely active and may be expected to spread rapidly. The east shore of the lake contains small scattered patches of from 3- to 9 infested trees each for a distance of three miles from Trout Lake townsite southward. All areas are active at present and further damage to the white pine stands can be expected.

From observations made of earlier infestations in other districts, it was found that this beetle, once established, spreads very rapidly. Since the attack in the Arrowhead Ranger District is of a similar pattern, further damage can be expected over the entire district.


T.L. 799
LITTLE FISH CR.
SIDMOUTH
COLUMBIA RIVER
SHELTER BAY
ARROWHEAD
MT. SPROAT
NUCILLWEAT CR.
NORTH EAST ARM
GALENA
WHISKY PT.
HADOW (BIG) CR.
COMAPLIX CR.
TOWN CR.
BEATON
BEATON CR.
WILKE CR.
FISHER CR.
TROUT LAKE
TROUT L.
ARROWHEAD
RANGER DISTRICT
SCALE 2 MILES TO 1 INCH
DENDROCTONUS MONTICOLAE

Pacific 1952 Interior Insect and Disease Species Index

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