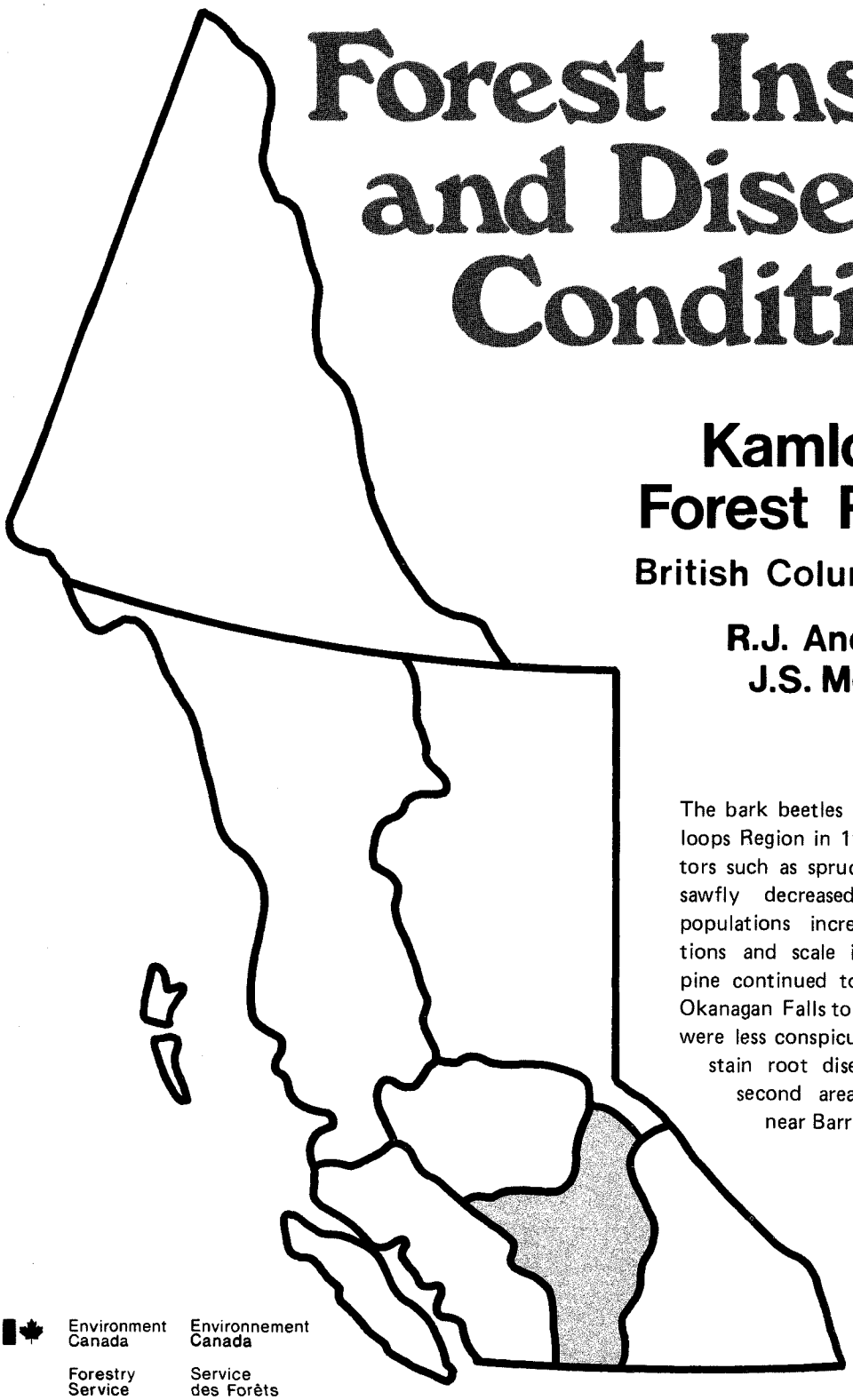
Forest Insect and Disease Conditions



Kamloops Forest Region

British Columbia, 1978

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The bark beetles increased in the Kamloops Region in 1978 while the defoliators such as spruce budworm and pine sawfly decreased. Larch casebearer populations increased at three locations and scale insects on ponderosa pine continued to cause damage from Okanagan Falls to Oliver. Foliar diseases were less conspicuous in 1978. A black stain root disease was found in a second area within the Region near Barriere.

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DAMAGE CAUSED BY MOUNTAIN PINE BEETLE, Dendroctonus ponderosae, increased greatly in 1978. Milder temperatures through the winter favored survival and large broods were evident in the spring. Locations of extensive tree mortality were: Trout Creek, 4 800 ha; Goldbridge, 4 400 ha; Stein River, 1 600 ha; Ashnola River, 450 ha. Infestations have been continuous in these areas since 1973, 1972, 1975 and 1976 respectively.

In July and August areas with recently killed pine trees were mapped from aircraft, and in the larger infestations oblique and vertical colored photographs aided in delineating infestation boundaries. Infested areas are listed in Table 1.

In September, cruising of 249 prism plots located at 50 meter intervals along 16 cruise lines determined the percentage of trees attacked by mountain pine beetle (Table 2).

Table 1. Location and area within which pine trees were killed by mountain pine beetle in Kamloops Forest Region, 1978.

Ranger District	Pine species	Area of damage in hectares
Lumby	western white	303
Clearwater	lodgepole	30
Barriere	ponderosa	4
	western white	43
Kamloops	ponderosa	2
Chase	western white	78
Salmon Arm	western white	2
Sicamous	western white	12
Lillooet	mixed lodgepole and ponderosa	4 645
Vernon	lodgepole	220
Penticton	mixed lodgepole and ponderosa	5 436
Princeton	mixed lodgepole and ponderosa	518
Kelowna	lodgepole	2 177
Ashcroft	ponderosa	1 954
Merritt	ponderosa	14
Blue River	western white	545
Enderby	lodgepole	36
	TOTAL	17 770 ha

Table 2. Status of lodgepole pine trees on cruise strips, Kamloops Forest Region, 1978

Location	Percentage of stems				
	Healthy	1978 attack	1977 attack	1978 Partial attack	attacked prior to 1977
Isintok Cr	40	23	12	5	20
Bull Cr	37	11	39	3	10
Trout Cr	38	20	27	6	9
Trout Cr	63	23	2	3	9
Thirsk L	52	35	5	8	–
Osprey L	68	23	7	2	–
Ashnola R	45	40	9	4	2
Gun L	5	9	38	9	39
La Joie Dam	20	10	18	12	40
Brexton	23	21	37	12	7
Mowson Pond	50	33	10	4	3
Pearson Ridge	28	42	10	8	12
Mi 2 La Joie Dam	17	81	–	1	1
Mi 3 La Joie Dam	78	15		7	
McDonald Cr	39	25	20	9	7

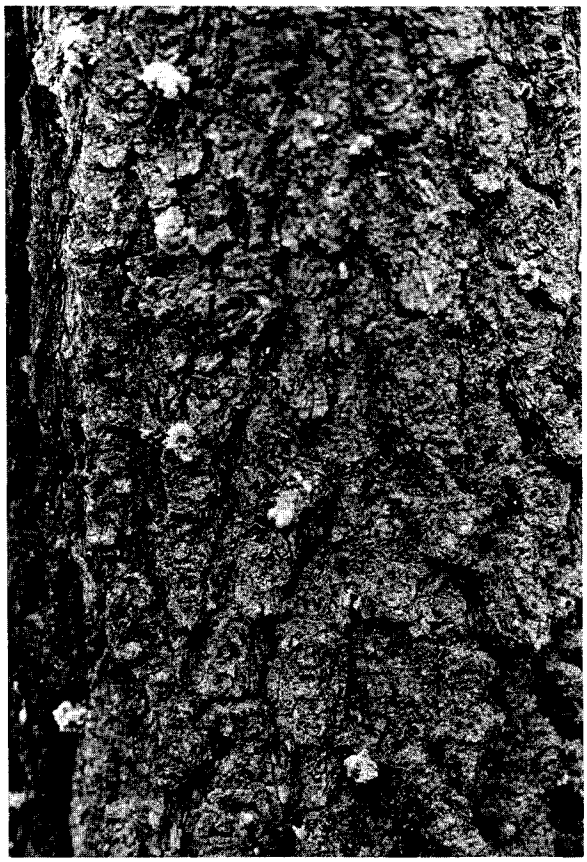
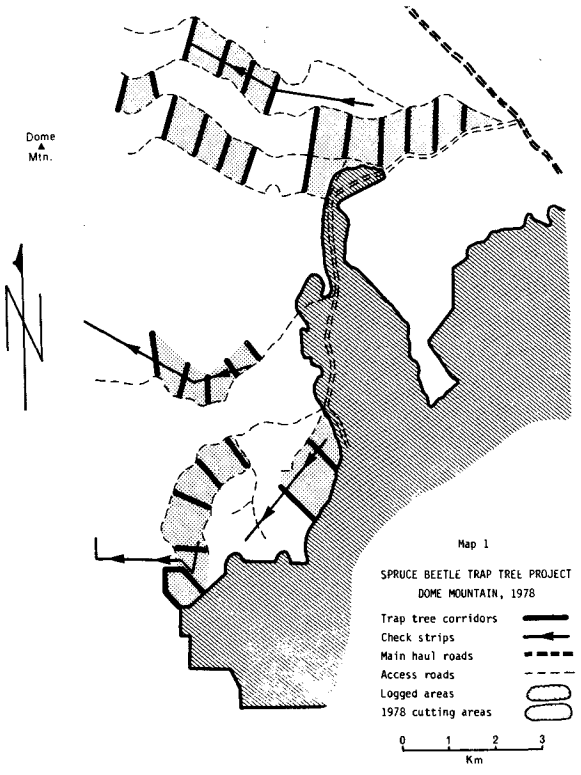


Figure 1. Mountain pine beetle attack on lodgepole pine.



A MODERATE TO HIGH SPRUCE BEETLE, Dendroctonus rufipennis, hazard persisted in scattered Engelmann spruce stands throughout the Kamloops Region. Infestations at Van Horlick Creek and Dome Mountain continued, although the use of trap trees for the past two years near Van Horlick Creek limited attack to scattered small groups of trees. A large trap tree program was initiated by Crown Zellerbach near Dome Mountain (Map 2). In four strips cruised before and after beetle flight in May, a total of 67 trees had been attacked before trapping began but only 10 trees were attacked in 1978 after trap trees were felled. In July, 71% of the trap trees had an average of 3.7 attacks per square foot so an estimated 7,176,000 beetles had been absorbed into 5,800 trap trees.

In addition, 225 trap trees were felled by Crown Zellerbach at 28 locations in nearby lightly infested stands. Similar heavy attacks occurred in these trap trees and only occasional standing tree attacks occurred. Logging commenced in August and the trap trees with beetles and broods should be removed before beetle flight in May 1979. In surrounding stands, the 1978 attack was light (1-9% of stems examined).

Elsewhere in the Region, spruce beetle attacked 31% of the stems over a 0.2 ha area near Lawless Creek. In addition 20 ha of windthrown spruce were heavily infested. Near the headwaters of Olivine Creek, 40% of the stems in one leave block have been killed by beetles in the past two years. Along upper Placer Creek a few 1977 attacked trees were observed but few new attacks were found. More than half the spruce on 80 ha near Chu Chua Creek were infested and are to be logged before beetle flight in 1979.

DOUGLAS-FIR KILLED BY DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae, were more numerous near Tranquille, Jamieson, Heffley and Dairy creeks. Significant increases were also noted near Mission Pass, Fountain Valley, Kwoiek Creek and along Carpenter and Anderson lakes. Numbers of beetle-killed Douglas-fir in the south-eastern portion of the Region (Table 3) were less than in 1977.

Table 3. Summary of recently dead Douglas-fir trees, observed during aerial surveys, Kamloops Forest Region, 1978.

Map reference	Douglas-fir bark beetle killed trees
Kamloops	1 125
Ashcroft	525
Lytton	700
Bridge R	270
Bonaparte L	100
Clinton	20
Merritt	40
Vernon	65
Penticton	20
Tulameen	50
TOTAL	2915

DEFOLIATION OF DOUGLAS-FIR STANDS BY SPRUCE BUDWORM, Choristoneura occidentalis, was greatly reduced in the Kamloops Region in 1978. Defoliation occurred on 5 200 ha; 420 ha near Walhachin was moderate while the remainder near Lytton, Lillooet and Ashcroft was light (Map 2).

The number of larvae in collections decreased, although more than 100 larvae per sample were collected near Merritt, Walhachin, Princeton and along Anarchist Mountain.

No diseases were evident in nine collections of larvae submitted to the Forest Pest Management Institute.

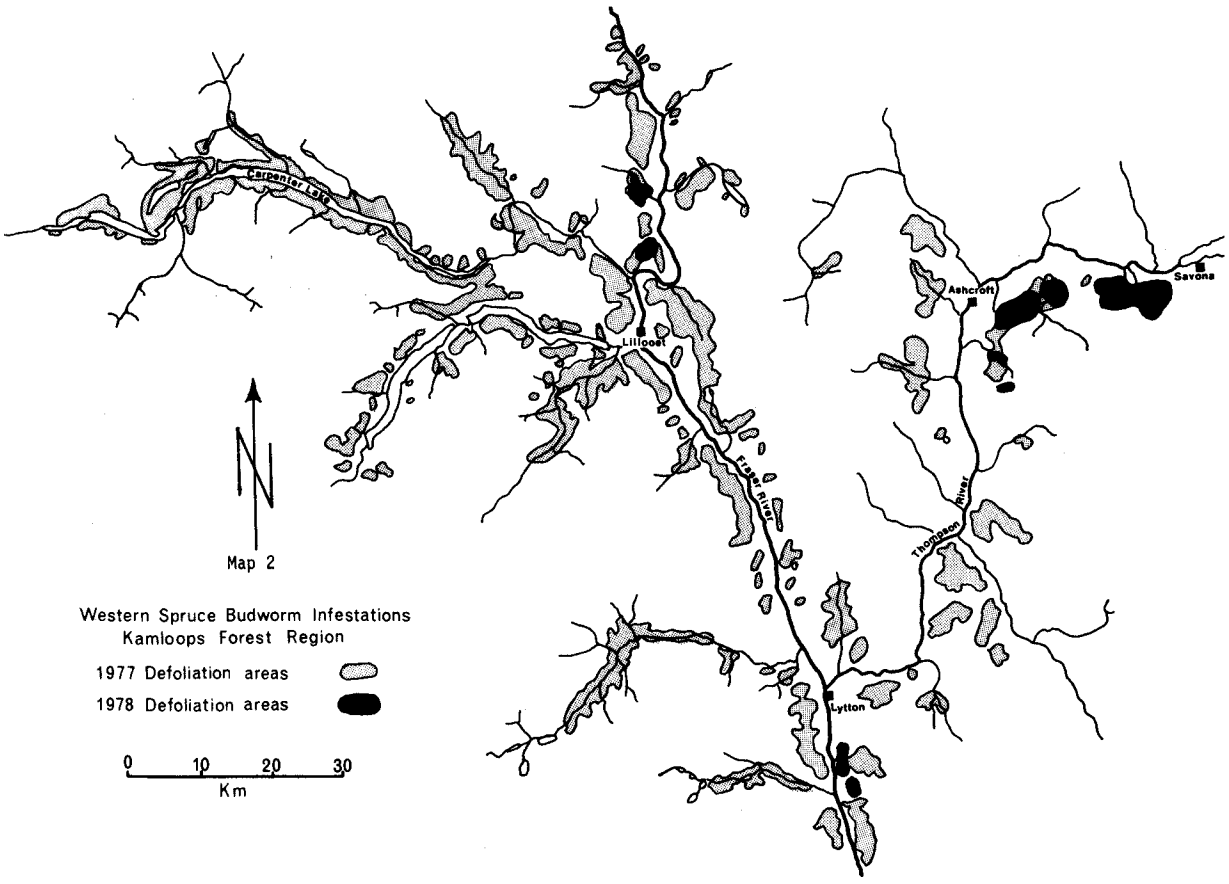
Egg sampling at 41 locations indicated that, in 1979, moderate to heavy defoliation could occur from Savona west to Ashcroft, with light defoliation from Cache Creek south to Lytton, near Merritt and Anarchist Mountain.

THE INFESTATION OF LARCH CASE-BEARER, Coleophora laricella, along Anarchist Mountain continued in 1978 and increased near Shuttleworth Creek and Cherryville.

A very small population of larvae found near Heckman Creek in 1976, increased and caused moderate browning of western larch over 40 ha in 1978.

Counts of overwintering larvae indicate a continuing heavy population in these areas in 1979.

Forty pairs of Agathis pumila, an introduced parasite of the casebearer, were released near Cherryville in July.



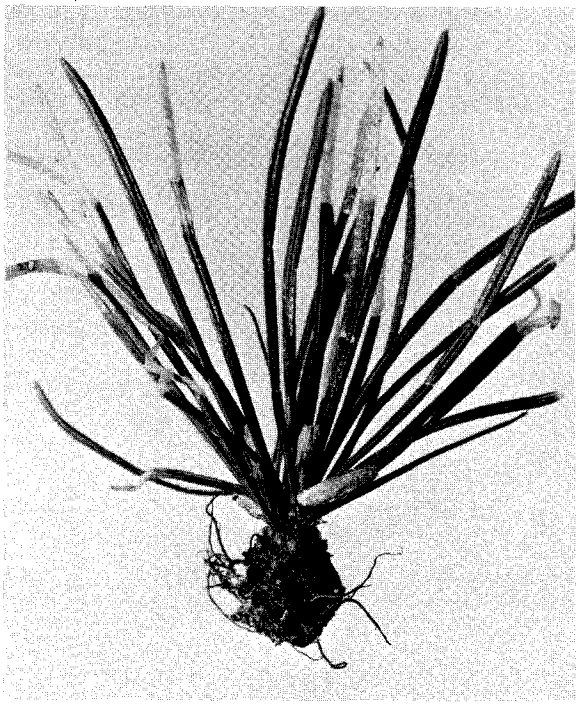


Figure 2. Larch casebearer and damage on western larch.

IN A COOPERATIVE SURVEY FOR EUROPEAN PINE SHOOT MOTH, Rhyacionia buoliana, involving the Federal and Provincial forestry services and the Federal and Provincial ministries of Agriculture, 49 infested locations were found in Kelowna and Kamloops.

DURING JUNE, A REDUCED POPULATION IN PINE SAWFLY, Neodiprion sp., continued to cause defoliation of lodgepole pine along the North Thompson River from Vavenby to Avola. Maximum numbers of larvae per collection decreased from 700 per sample in 1977 to 250 in 1978. During July, populations decreased further and by the end of the larval feeding period light to moderate defoliation was evident on 2 200 ha, a decrease of more than 4 000 ha from 1977.

No diseases were evident in two mass collections of sawfly larvae sent to Forest Pest Management Institute.

Pupae were not found in duff and soil samples in August nor were eggs found on branch samples in September indicating a population collapse.

Infestations of hemlock sawfly, Neodiprion spp., in Wells Gray Park and Blue River collapsed in 1978.

THE BLACK PINELEAF SCALE, Nuculaspis californica, caused heavy defoliation of ponderosa pine from Okanagan Falls to Oliver, particularly along east-facing slopes and on benches above the valley floor. On most trees only tufts of current years needles were left. Some mortality of smaller trees occurred, and attacks by the western pine beetle, Dendroctonus brevicomis, killed some trees. Additional pests on the ponderosa pine in the area were white pine leaf scale, Phenacaspis pinifoliae, in relatively small patches, and a midge, Cecidomyidae, that caused branch tip discoloration and mortality.

DAMAGE BY DOUGLAS-FIR TUSSOCK MOTH, Orgyia pseudotsugata, was found on a single tree in an urban area of Kamloops. Defoliation was moderate and a control recommendation was made. Populations were very low elsewhere in the Region, for only a few male moths were captured in 225 pheromone baited traps distributed throughout the Douglas-fir zone.

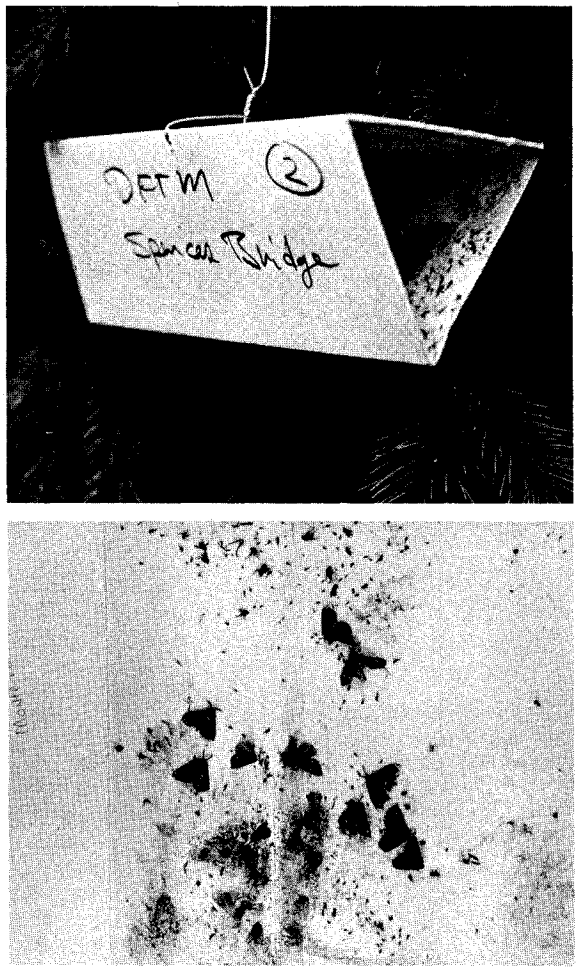


Figure 3. Pheromone baited traps used for tussock moth population determination.

SALT DAMAGE to roadside conifers was more extensive in the Kamloops Region in 1978. Roadside trees along hills and in shaded areas were the most affected. Damage ranged from a few trees to all roadside trees along a mile of roadway.

Salt is transferred from roadways to trees by: a) vehicles travelling at high speeds spray the trees with salt laden mist causing dehydration of the needles and; b) salt saturated water running off the lower side of the roads and being absorbed by the tree roots.

BLACK STAIN ROOT DISEASE OF CONIFERS, Verticicladiella wagnerii has been confirmed at two localities in the Region. In 1977, near Nashwhito Creek, 600 ha were infected; and in 1978 a 40 ha area near Thuya Lake where logging was underway and with confirmation of the disease, the cutting permit was extended to clear cut the infected stems.

INK SPOT OF ASPEN, Ciborinia whetzelli, caused severe browning of trembling aspen on 2 000 ha near Clearwater River, 100 ha near Avola and 110 ha near Monashee Creek.

STATUS OF FOREST PESTS IN PACIFIC REGION 1978

PEST	FOREST REGIONS						
	PRINCE RUPERT	PRINCE GEORGE	VANCOUVER	CARIBOO	KAMLOOPS	NELSON	YUKON
SPRUCE BEETLE	17 000 ha infestations mainly in the Babine Lake and Morice R. areas	Extensive areas of tree mortality	Localized attacks Mowhokam Cr.	Low population in northeastern corner of Region	Localized infestations, upper Lambly Cr., Lawless Cr., Olivine Cr. Increasing populations in blow down areas	New, spot infestations	Low populations Haines Jct area
MOUNTAIN PINE BEETLE	Widespread infestation, Cedarvale to Smithers	Active in widely separated areas	Infestation declined Klinaklini R. Localized infestations Haylmore and Mowhokam Creeks	Heavy infestation in scattered areas throughout Region	Heavy infestations Trout Cr., Gun Lake area. Increased populations, Below Mission Cr., Stein R. Ashnola R.	Increasing in West Kootenay exploding in East Kootenay	Not found
DOUGLAS-FIR BEETLE	Not found	Low frequency of tree mortality near McBride	Light attacks Fraser Canyon, Silver Skagit, Pemberton	Low population	Increased populations Tranquille Cr. Heffley Cr., Dairy Cr. and along Carpenter L.	Small pockets	No host
WESTERN SPRUCE BUDWORM (1-YEAR-CYCLE)	Low populations	Low populations	Populations declined sharply in many areas of the infestation.	Medium population, lighter than 1977	Significant decrease in most infested areas. Light to moderate populations near Ashcroft	Small populations holding steady	Low population
SPRUCE BUDWORM (2-YEAR-CYCLE)	Low populations	Increasing populations some current defoliation	Not found	Medium to high population, eastern part of Region	Medium population near Lempriere Cr.	Increasing populations	Not found
WESTERN BLACKHEADED BUDWORM	Minor defoliation Bell-Irving R.	Very low populations	Population increase, west coast Vancouver Island	Low population	Very low populations	Low populations	Low population
CONIFER SAWFLIES *Neodiprion* spp.	Moderate defoliation 1300 ha wH, alF at at Carrigan and Ironside creeks	Infestations subsided	High populations on northern Vancouver Isl.	Low populations	Infestation collapse near Vavenby and Clearwater R.	Low populations	Low population
FOREST TENT CATERPILLAR	Not found	General collapse of infestation	Not found	Not found	Low populations	Low populations	Not found
ASPEN LEAF AND SHOOT BLIGHT	Heavy infection Houston area	Extensive widespread damage	Not found	Light to moderate incidence Big Lake to Canim L.	Severe browning of foliage at Clearwater R. Avola and Monashee Cr.	Widespread light infection of aspen	Low incidence

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BC-X-192 FEBRUARY, 1979