Forest Insect and Disease Conditions

Nelson Forest Region

British Columbia, 1978

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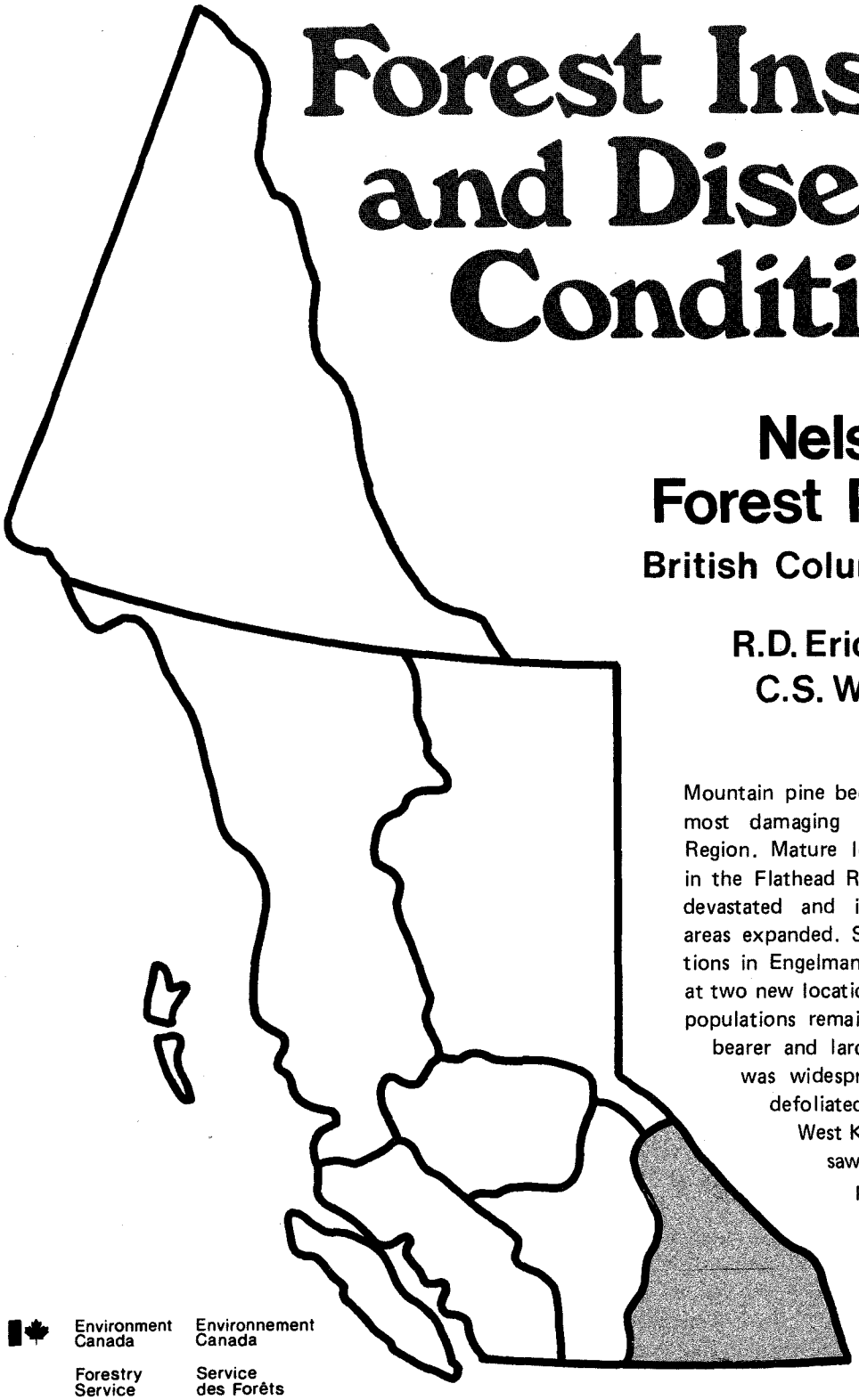
C.S. Wood



Mountain pine beetle continued as the most damaging pest in the Nelson Region. Mature lodgepole pine stands in the Flathead River Valley have been devastated and infestations in other areas expanded. Spruce beetle infestations in Engelmann spruce were found at two new locations. Douglas-fir beetle populations remained low. Larch casebearer and larch needle cast injury was widespread. Larch budmoth defoliated western larch in the West Kootenay and the larch sawfly infestation expanded in the Elk River Valley.

Environment Canada
Forestry Service

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Pacific Forest Research Centre

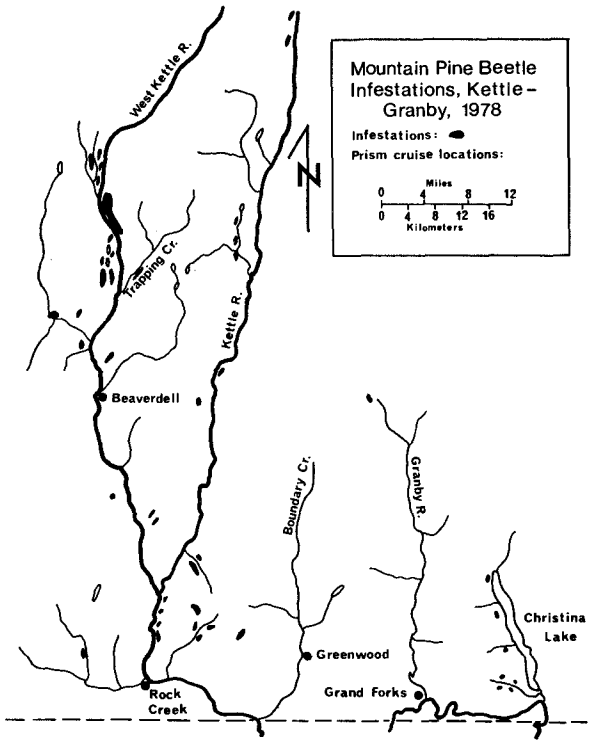
Ponderosa pine killed by mountain pine beetle. (light trees are dead.)

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae, killed increased numbers of lodgepole, ponderosa and western white pine throughout the Region (Table 1). The largest infestations were in the lower Flathead River Valley; the White and Upper Kootenay river valleys; Golden-McNaughton Lake and the West Kettle and Kettle river valleys (maps 1,2,3,4,5,6). In the West Kootenay the number of lodgepole pine trees attacked in 1977 and displaying red foliage in 1978 increased 50% in and near existing infestations. The number of dead western white pine increased five fold (Table 1). In the East Kootenay, the total number of dead lodgepole and western white pine trees increased to 417,000 from 135,000 in 1977. Pine trees were killed in the White and Upper Kootenay rivers including Elk Creek, the lower Flathead River Valley, from Blackwater Ridge to Bush Arm, between Golden and Parsons, in the Steamboat Mountain-Horsethief Creek area, at Toby and Goldie creeks, and at Findlay and Lavington creeks west of Columbia Lake. Pockets of 2 to 10 dead lodgepole pine were recorded for the first time in the Hawkin-Freeman-Gilnocki creeks area near the International Boundary.

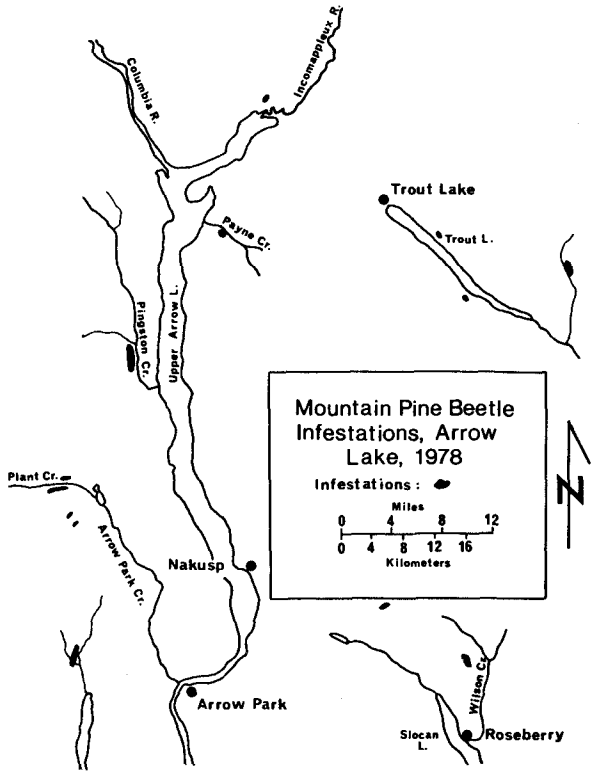
Table 1. Lodgepole, Western White and Ponderosa Pine mortality caused by mountain pine beetle, as determined by aerial and ground surveys, 1978.

Location	No. of dead trees	Area (ha)
Slocan-Arrow lakes	2,700	475
West Kettle and Kettle river valleys	5,300	1 175
McNaughton Lake	15,000	800
White and Upper Kootenay river valleys	210,000	8 000
Elk Creek	55,000	1 880
Lower Flathead River Valley	100,000	4 000
Blackwater Ridge - Waitabit Creek	15,000	1 200
Golden - Parsons	2,000	200
Findlay - Lavington creeks	7,500	600
Toby - Goldie creeks	3,000	240
Palliser - Kootenay - Cross river valleys	6,500	440
Horsethief Creek - Steamboat Mountain	3,000	140
Totals	425,000	19 150

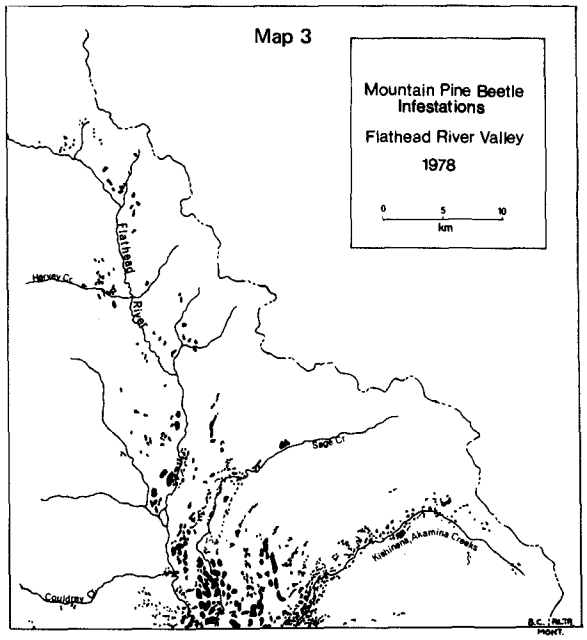
Map 1



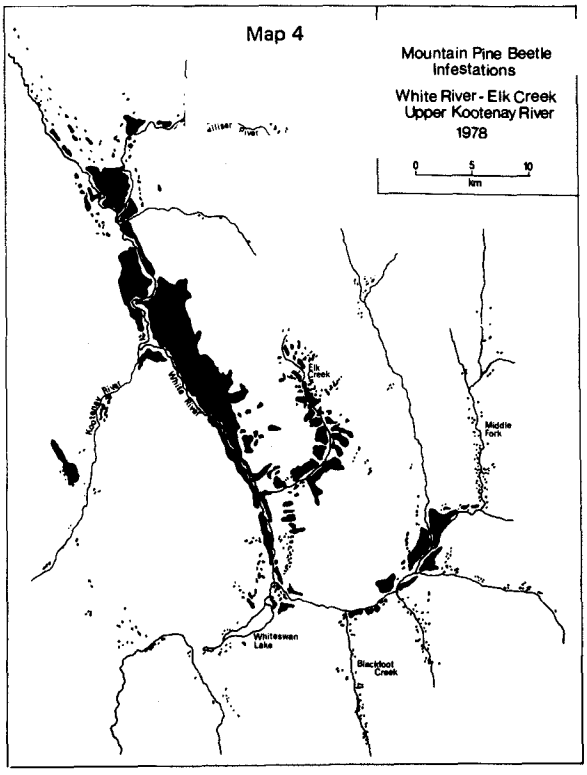
Map 2



Map 3



Map 4



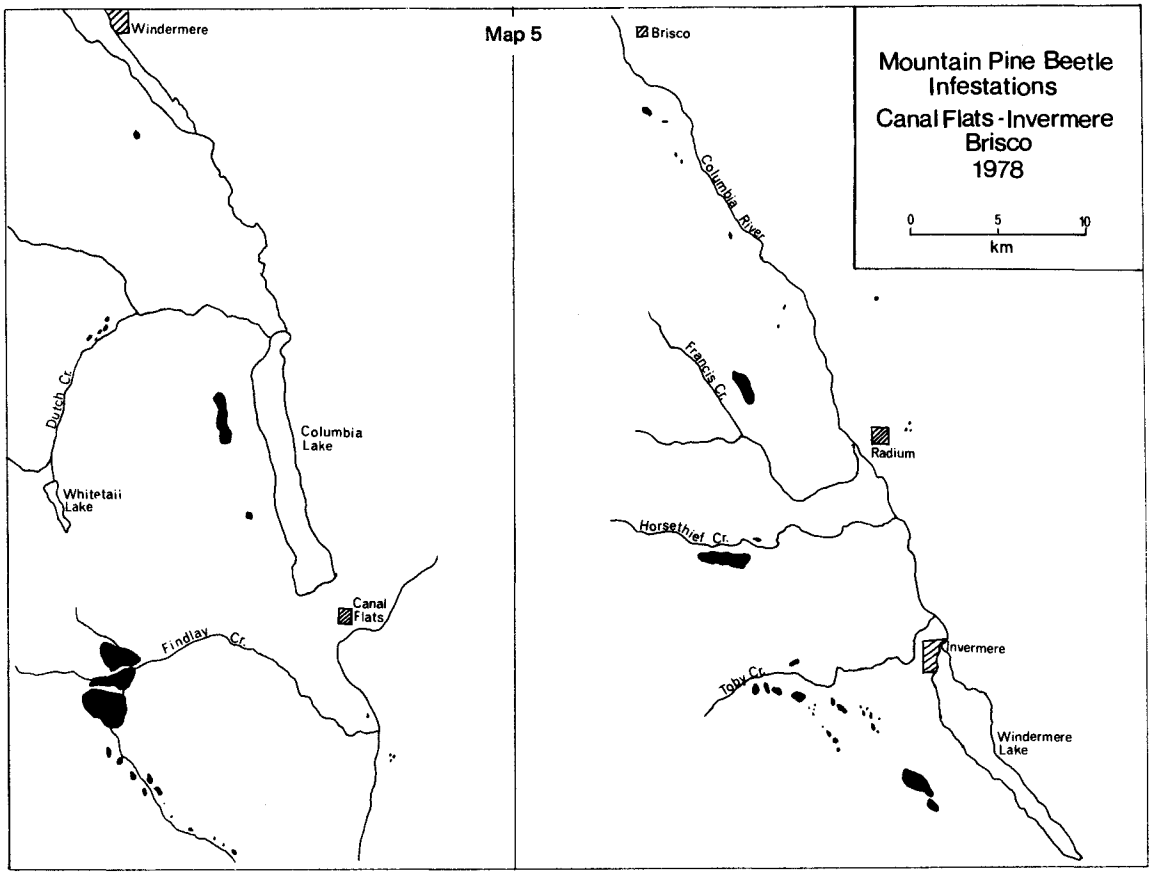
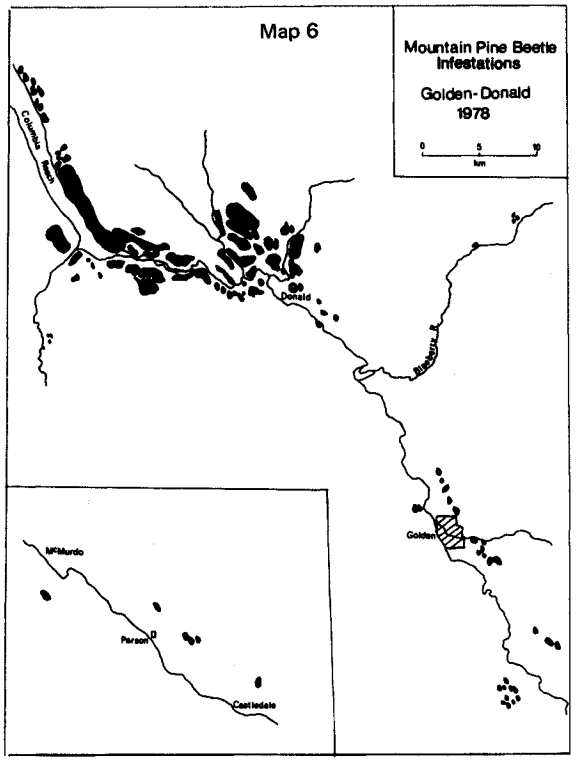


Table 2. Status of Mountain Pine Beetle attacked Lodgepole Pine Trees, September, 1978.

Location	No. of Prism points sampled	Number of stems/ha ≥ 10 cm d.b.h.*				
		Current	Red	Partial	Grey	Healthy
Goathide Creek	26	77	62	35	35	620
Arlington Lakes	23	80	39	34	126	480
White River	30	165	35	39	38	350
Sage Creek	13	230	27	25	0	561
Nettie - Elder creeks	38	406	71	96	4	464

* Current - attacked in 1978
Red - attacked and killed in 1977
Partial - only a portion of the bole currently attacked
Grey - killed prior to 1977, needles fallen.

Based on ground surveys at five locations (Table 2), an increase in numbers of trees affected is expected in 1979.

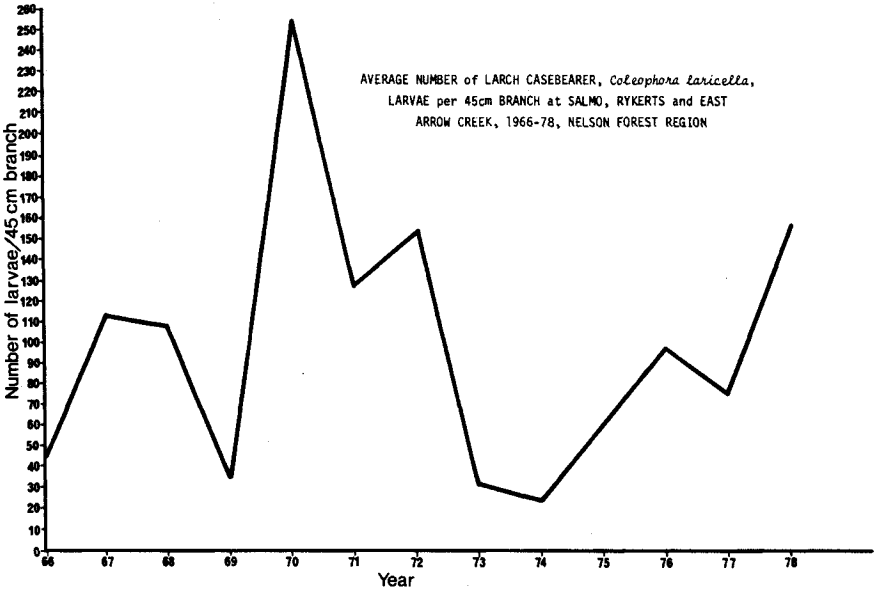


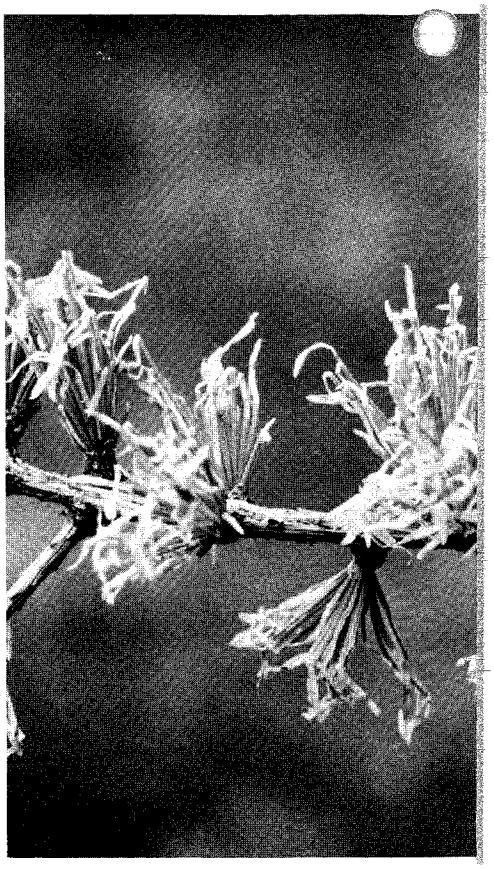
SPRUCE BEETLE, Dendroctonus rufipennis, populations were low throughout the Region except for two new, small infestations in the Kettle River Valley at Trap Creek, and at Campbell Creek west of Beaverdell where 50 standing Engelmann spruce were infested, one quarter of which were attacked in 1978.

Populations of **DOUGLAS-FIR BEETLE,** Dendroctonus pseudotsugae, remained low. Groups of 1 to 5 trees were killed at widely scattered locations in the southern part of the East Kootenay; between Elko and Roosville, from Canal Flats to Radium near Wycliffe and at Kid Creek.

The number of groups of 2 to 50 yellow pine and lodgepole pine trees killed by the **PINE ENGRAVER BEETLE,** Ips pini, increased when additional pockets of trees killed in 1977, were observed in 1978 at Teepee Creek, 50 dead trees; Wasa to Canal Flats, 300 trees; and Lussier River Valley, 500.

Defoliation of western larch by **LARCH CASEBEARER,** Coleophora laricella, was more widespread throughout the host range and occurred for the first time in the Flathead River Valley at Sage Creek. The most severe defoliation occurred from Nelson to Castlegar, at Fruitvale, in the Pend d'Oreille River Valley and in a 25 mile radius of





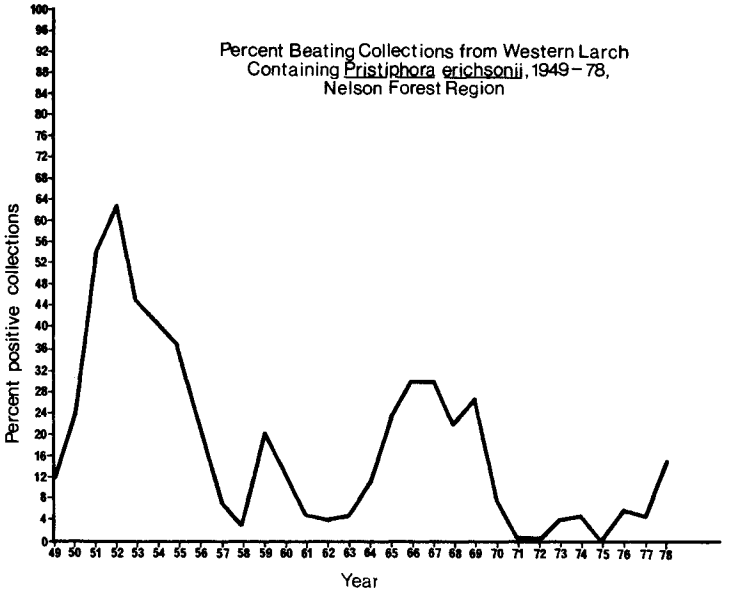
Larch casebearer eggs.

Creston. One hundred adults of the **PARASITE,** Agathis pumila, from East Arrow Creek near Creston were released at Cherryville in the Kamloops Forest Region. Overwintering larch casebearer populations indicate more extensive and severe defoliation will occur in 1979.

RED TURPENTINE BEETLE, Dendroctonus valens, killed groups of 1 to 5 ponderosa pine trees from Elko to Grasmere, at Wasa Lake, Ta Ta Creek and from Wasa Lake to Canal Flats.

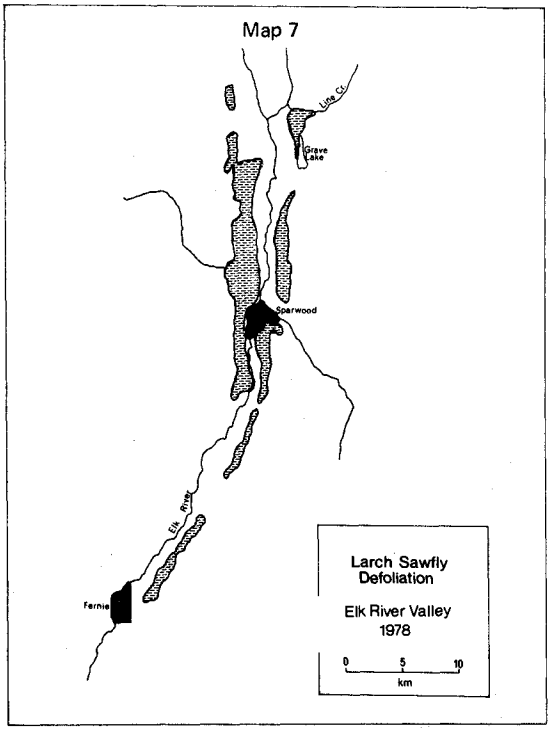
The **WESTERN BALSAM BARK BEETLE,** Dryocoetes confusus, in association with the blue stain fungus, continued to kill alpine fir trees in the Region. Recently dead trees observed in the Spillimacheen River Valley number 2,000; St. Mary River Valley, 1,000; Goat River Valley, 500; Silverton Creek Valley, 1,500; Galloping Mountain, 1,000; and Mt. Moore, 750.

Larch casebearer damage.

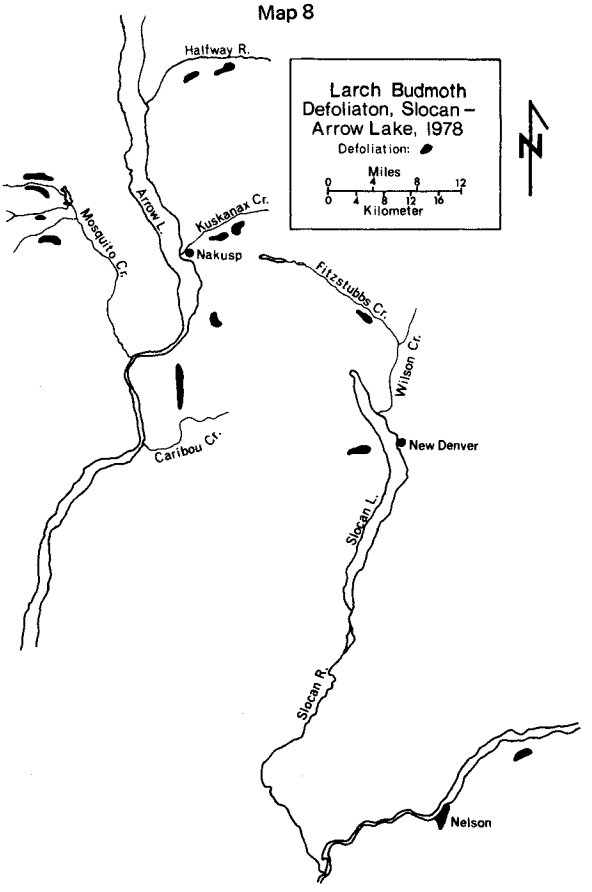


LARCH SAWFLY, Pristiphora erichsonii, infestations continued for the third consecutive year, expanding from 800 ha in 1977 to 4 600 ha in western larch stands from Grave Lake to Sparwood and Fernie (Map 7). Based on assessments of the overwintering population, the infestation is expected to expand in 1979. A **SAWFLY PARASITE,** Olesicampe benefactor, was released for the first time in B.C. at Sparwood in 1978; additional releases are planned for 1979.

The infestations of **LARCH LOOPER,** Semiothisa sexmaculata, in the Arrow - Slocan - Kootenay lakes area collapsed. Large numbers of larvae were collected in the Fauquier area but no defoliation was visible.



Map 8



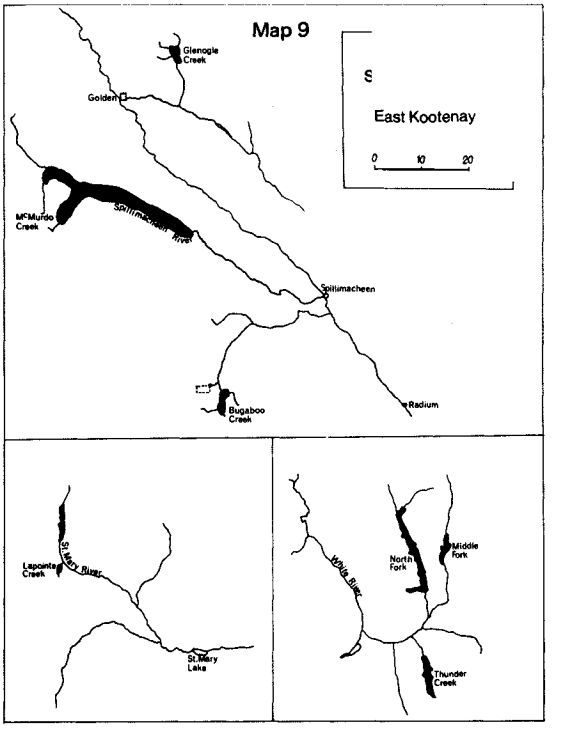
Infestations of **LARCH BUDMOTH,** Zeiraphera improbana, in the Granby and Kelly river valleys, St. Anne Creek and Thone Creek collapsed. New areas of defoliation between 1 100 and 1 500 meters elevation were recorded in several valleys in the Slocan-Arrow lakes area (map 8), over 1 840 ha.

LARCH NEEDLE CAST, Hypodermella laricis, was widespread for the second year and affected up to 95% of the foliage of trees near Slocan and Arrow lakes, Grand Forks and in the Kettle River Valley. In the Flathead River Valley and from Fernie to Canal Flats discoloration of larch in small pockets up to 2 ha was common.

WESTERN SPRUCE BUDWORM, Choristoneura occidentalis, caused 30% defoliation of Douglas-fir trees on 80 ha along Johnstone Creek. Samples contained an average of 150 larvae compared to 30 in 1977. Egg counts indicate a slight increase in extent and intensity of defoliation in 1979.

The **"TWO-YEAR-CYCLE" SPRUCE BUDWORM,** Choristoneura biennis, defoliated the branch tips of Engelmann spruce and alpine fir on 2 700 ha in the North, Middle and East forks of the White River and one of its tributaries, Thunder Creek (map 9). Infestations persisted in Spillimacheen River Valley and McMurdo Creek causing light defoliation over 1 700 ha. Light defoliation was recorded in four other areas of the East Kootenay and is expected to increase in 1979. Entomophthora pox virus was again isolated from budworm larvae in North White River where it was first collected in 1972.

Map 9



WESTERN BLACKHEADED BUDWORM, Acleris gloverana, was common in small numbers throughout the East Kootenay. In the Blaeberry River Valley immature Engelmann spruce over 2 ha were lightly defoliated. The infestation in Mathew Creek near St. Mary's Lake collapsed.

White birch was severely discolored by the **BIRCH SKELETONIZER,** Bucculatrix canadensis, in the West Kootenay from 8 km west of Kaslo to Kootenay Lake and north to Trout Lake, where damage occurred in 1977. In the East Kootenay

the birch skeletonizer and a **LEAF MINER,** Lyonetia spp., caused conspicuous discoloration of birch stands from Crawford Bay to Riondel on Kootenay Lake, in the Horsethief Creek Valley, from Fairmont to Golden, along Bugaboo Creek and in Kicking Horse Pass.

DOUGLAS-FIR NEEDLE MIDGE, Contarinia spp., and **COOLEY SPRUCE GALL APHID,** Adelges cooleyi, caused up to 75% discoloration and premature needle loss of immature Douglas-fir trees from Elko to Golden. The most severe damage was scattered between Canal Flats and Brisco.

A PINE NEEDLE BLIGHT, Leptomelanconium cinereum, infected ponderosa pine stands in the Elko - Grasmere - Kikomun - Bull River - Norbury Lakes region for the second year. Premature needle loss of up to 90% of the total foliage occurred in localized, 5 ha areas.

PINE NEEDLE CAST, Lophodermella concolor, was widespread on the 1977 needles in lodgepole pine stands in the Elk, Flathead, Bull and White river valleys, in the Goat River area, and adjacent to the International Boundary from Yahk to Koocanusa Lake. Young dense stands were the most severely infected with up to 30% of the needles affected at Summit Lake and Hills, from Nakusp to Galena Bay along Arrow Lake, along the Monashee Highway and at Little Sheep Creek.

LEAF AND SHOOT BLIGHT OF ASPEN, Venturia macularis, and of **BLACK COTTONWOOD,** V. populina, discolored foliage in stands of up to 40 ha from New Denver to Kaslo, and up to 12 ha from Rossland to Big Sheep Creek. In the East Kootenay foliar discoloration was common in stands throughout the region.

Tree mortality caused by **ARMILLARIA ROOT ROT** Armillaria mellea, occurs in coniferous stands annually throughout the Region. In the drier portion of the Columbia River Valley between Skookumchuck and Edgewater mortality of all age classes of Douglas-fir occurred in widely scattered groups of 1 to 10 trees. Approximately 5% of young open-growing alpine fir were killed on 1 200 ha in the Lodgepole-Harvey creeks summit area.

LODGEPOLE PINE DWARF MISTLETOE, Arceuthobium americanum, causes significant annual volume loss in immature and mature stands in many areas of the Region. Stands with up to 90% of the trees infected were common along the White and Kootenay rivers, in the McMurdo Bench area and the Spillimacheen River Valley where stand management is in progress.

WHITE PINE BLISTER RUST, Cronartium ribicola, is prevalent throughout the host range in the Region,. Tree mortality and top kill is widespread in the West Kootenay with the largest number of dead and dying trees along the Kaslo and Lardeau Rivers and along Trout Lake. Tree mortality was less prevalent in the East Kootenay but branch mortality and top-kill are common. In the St. Mary River drainage all mature white pine exhibited infection and along McLatchie Creek between Flathead and Harvey pass, much of the immature second growth on over 200 ha was infected.

ATROPELLIS CANKER OF PINE, Atropellis piniphila, infected most of the lodgepole pine stems over 10 ha near McGregor and Horsethief creeks, causing poor form and staining of sapwood and heartwood. Up to 50% of the stems were also infected with lodgepole pine dwarf mistletoe.

CONIFER NEEDLE RUSTS caused discoloration and premature needle loss on conifers in several locations. Near New Denver young Douglas-fir were infected by the **CONIFER-COTTONWOOD RUST,** Melampora occidentalis, which was also common in 1977. A **FIR NEEDLE RUST,** Pucciniastrum epilobii, infected alpine fir over 100 ha on Mt. Kirkup, North of Rossland and infected up to 90% of the current growth on 80 ha at Glacier Creek near Lardeau. Engelmann spruce trees near the Fernie watershed were infected by a **SPRUCE NEEDLE RUST,** Chrysomyxa weirii, which was common elsewhere in the East Kootenay.

LOWER THAN NORMAL PRECIPITATION during the previous two years, associated with poor site conditions, resulted in mortality; top-kill and branch dieback of Douglas-fir trees along Highways 3/93 and 93/95 from Yahk north to Brisco, and along secondary roads in the Windemere - Invermere areas.

Douglas-fir deformed by a bud flight, Dichomera gemmicola.

A BUD BLIGHT, Dichomera gemmicola, infected up to 30% of the buds on young Douglas-fir at Davis Creek and Argenta on Kootenay Lake. In the East Kootenay up to 50% of the buds were killed on individual trees at Elko and Invermere. Repeated infection can produce "bushy" branching and growth reduction.

TOP-KILL OF YOUNG WESTERN LARCH BY RODENTS was again common in many areas including Paulson, Blueberry, Stewart, McKinney and Lodgepole creeks, Conkle Lake, in the Yahk - Cranbrook - Roosville area and in the Lussier River - Ram Creek area. Number of trees top-girdled by rodents is in the thousands annually; affecting up to 50% of the trees in localised 5 ha areas.

Some Pests of Current Minor Significance

Pest	Host(s)	Locality	Remarks
Stilpnotia salicis Satin moth	Poplar, aspen and black cottonwood	Red Mountain	Total defoliation over 150 ha.
Rhyacionia buoliana European pine shoot moth	Ornamental pines, Muhgo and Austrian	Trail, Castlegar Creston	light damage to imported stock.
Pyrrhalta carbo Pacific willow leaf beetle	Willow	Fauquier to Revelstoke, Glacier National Park	60-100% of willow 80% defoliated.
Dichelonyx sp. Leaf beetle	Douglas-fir	Canal Flats - Columbia Lake Findlay Creek Kikomun-Elko-Jaffray	25-50% of current growth defoliated
Echinodontium tinctorium Indian paint fungus	Hemlock, western	Kid Creek (near Kitchener) Quartz Creek	50-100% of trees infected.
Fomes pini Red ring rot	Spruce, Engelmann Pine, lodgepole	Albert River White River, North and Middle forks	2-50% of trees infected on areas up to 10 ha
Endocronartium harknessii Globose gall rust	Pine, lodgepole	Harvey, Hawkins creeks	Most trees infected, 1% mortality of young understory.
Verticicladiella wagenerii Black stain root disease	Pine, lodgepole	Kettle and West Kettle rivers	1-5 trees killed in some areas.

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., Otivine 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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