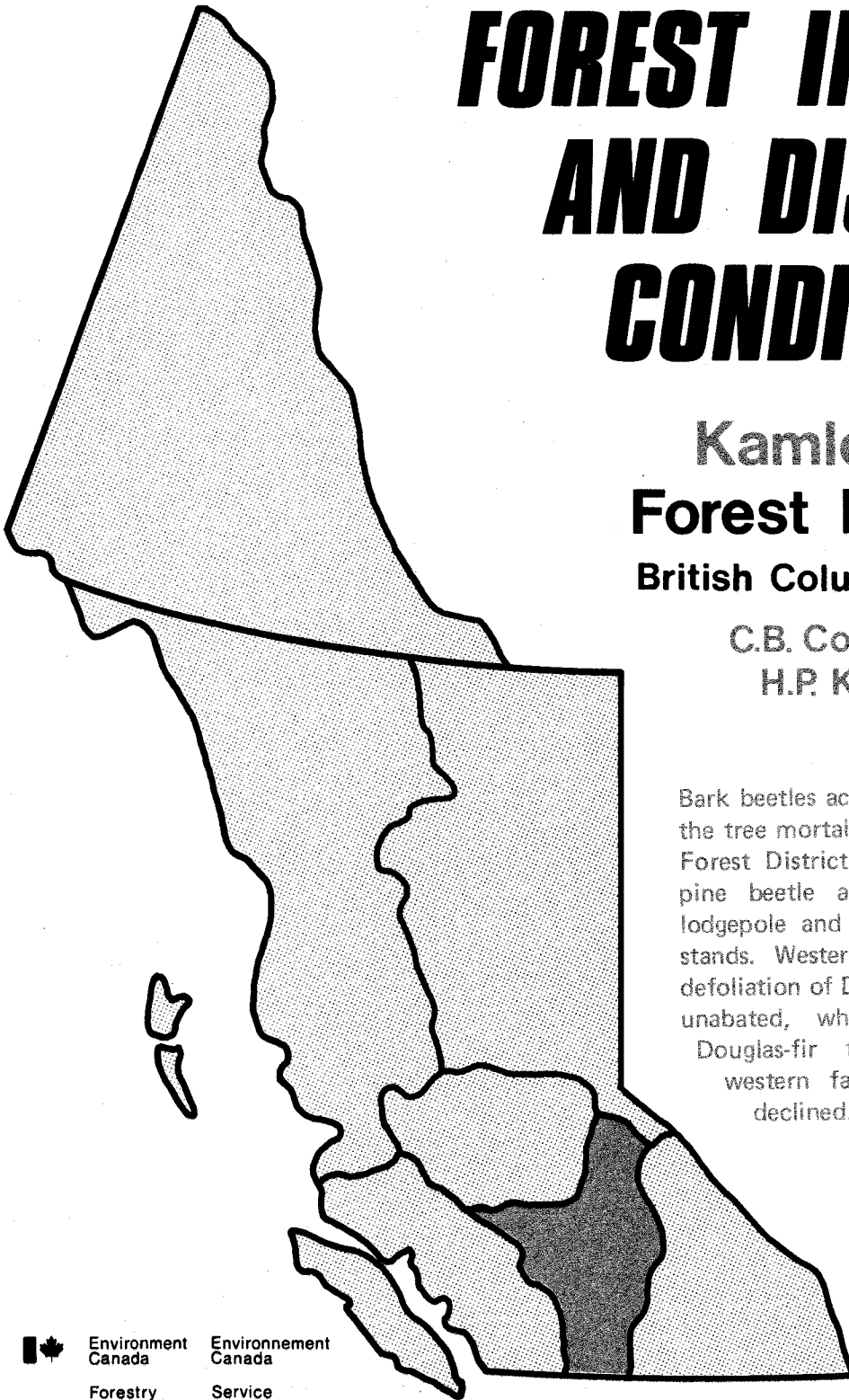


FOREST INSECT AND DISEASE CONDITIONS

**Kamloops
Forest District
British Columbia, 1975**

C.B. Cottrell
H.P. Koot

Bark beetles accounted for most of the tree mortality in the Kamloops Forest District in 1975. Mountain pine beetle attacks increased in lodgepole and western white pine stands. Western spruce budworm defoliation of Douglas-fir continued unabated, while infestations of Douglas-fir tussock moth and western false hemlock looper declined.

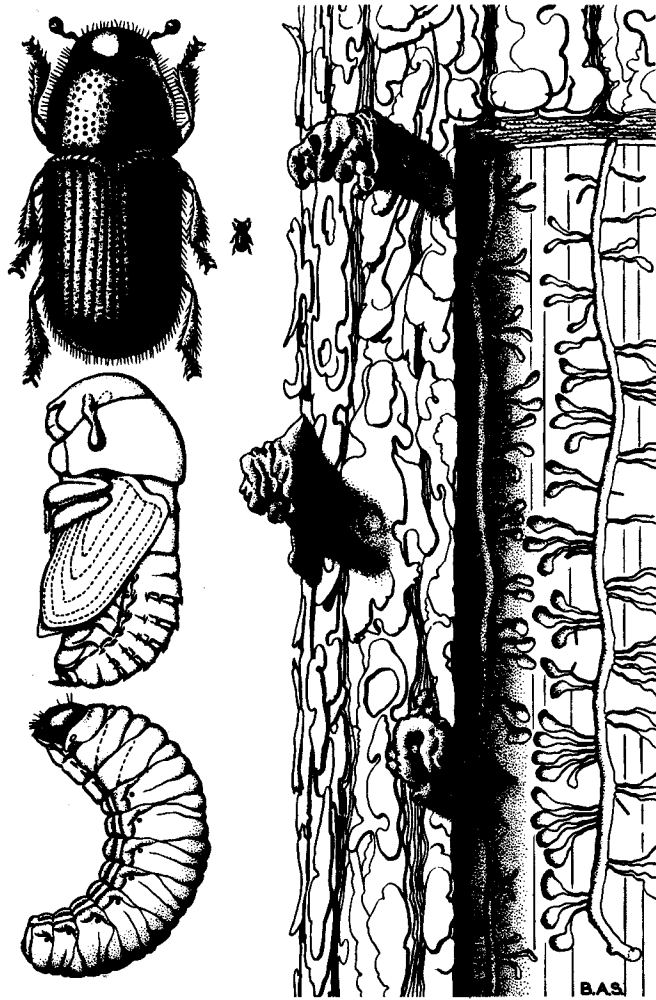


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MOUNTAIN PINE BEETLE, *Dendroctonus ponderosae*, infestations continued to expand in 1975 and now cover more than 18,000 acres (7,200 ha) of lodgepole, western white and ponderosa pine stands. Estimated acreages of pine trees killed in the period 1973 to 1975 are as follows.

Pine species	Acres		
	1973	1974	1975
lodgepole	1,900	5,000	10,750
western white	3,100	5,000	7,150
ponderosa	30	50	300
Totals	5,030 (2,012 ha)	10,050 (4,020 ha)	18,200 (7,280 ha)

In the Okanagan Valley, beetle attacks in lodgepole pine stands developed in six major areas. Infested areas were estimated as follows: Whiteman Creek, 1,000 acres (400 ha); east of Ellison, 1,200 acres (480 ha); Mission Creek, 1,550 acres (620 ha); Lambly (Bear) Creek, 3,300 acres (1,320 ha); Trout Creek, 1,900 acres (760 ha), and Riddle Creek, 1,000 acres (400 ha). In addition, newer, smaller infestations occurred near Oyama Lake, along Power, Jack and Camp creeks, southwest of Keremeos in the Ashnola River Valley and near Murray Lake, southwest of Merritt.

Increased attacks occurred in western white pine stands in four major drainages; acreages involved are as follows: from Avola to Lempriere, 1,200 (480 ha); east of Gannett Lake, 600 (240 ha); North Barriere Lake, 500 (200 ha); Cayoosh Creek Valley, 2,000 (800 ha) and along the Yalakom River, 600 (240 ha).

The first major infestation in ponderosa pine since 1969 became apparent at Murray Lake in 1975. More than 100 acres of mature ponderosa pine were killed by the 1974-75 attack; and surrounding lodgepole pine trees were attacked in 1975. Infestations of 50 acres (20 ha) each occurred in ponderosa pine stands near Carpenter Lake and Hat Creek.

The successful 1975 attack produced a large population of beetles. Therefore in 1976, infestations are expected to expand, particularly in mature or overmature stands.

ONE KNOWN INFESTATION OF SPRUCE beetle, *Dendroctonus rufipennis*, occurred in Engelmann spruce at 5,000 feet (1,500 metres) elevation in the headwaters of Chu Chua and Birk creeks, west of North Barriere Lake. Most of the trees on 250 acres (100 ha) in the valley bottoms were attacked in 1974, and some trees were attacked in 1975 on the surrounding hillsides. However, since the majority of the beetle population has a 2-year life cycle at this elevation, additional attacks are expected in 1976 from the beetles overwintering at the base of the 1974-attacked trees. The infestation is believed to have built up in windthrown spruce in the fall of 1971 and spring of 1972 on the fringe of logged areas.

DOUGLAS-FIR BEETLE, *Dendroctonus pseudotsugae*, populations increased slightly in the Fraser and South Thompson River drainages and in the Okanagan Valley. The largest numbers of beetle-attacked trees were as follows: 300 in Fountain Valley, 170 southwest of Walhachin, 125 along Tranquille Creek, 100 near Botanie Creek, and 100 at Turnbull Creek northeast of Penticton. Since more beetle-infested logging slash was noted in 1975, attacks on standing trees are expected to increase in the next year or two. The last serious outbreak of Douglas-fir beetle in the Kamloops Forest District occurred in 1965.

INFESTATIONS OF WESTERN SPRUCE budworm, *Choristoneura occidentalis*, continued in western portions of the Kamloops Forest District, and expanded in Manning Park and in the Adams Lake area. Feeding was mostly confined to Douglas-fir trees, but Engelmann spruce, alpine fir and some western hemlock were also defoliated at Adams Lake.

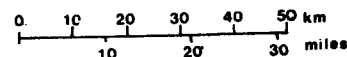
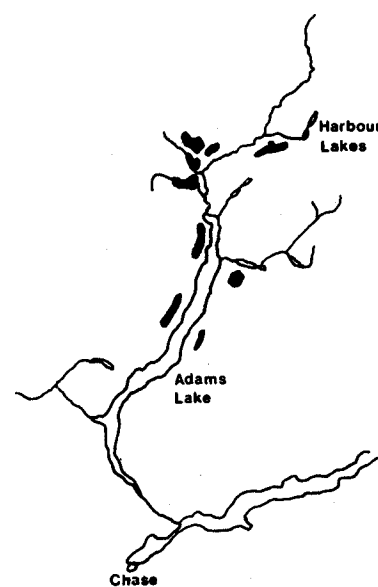
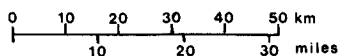
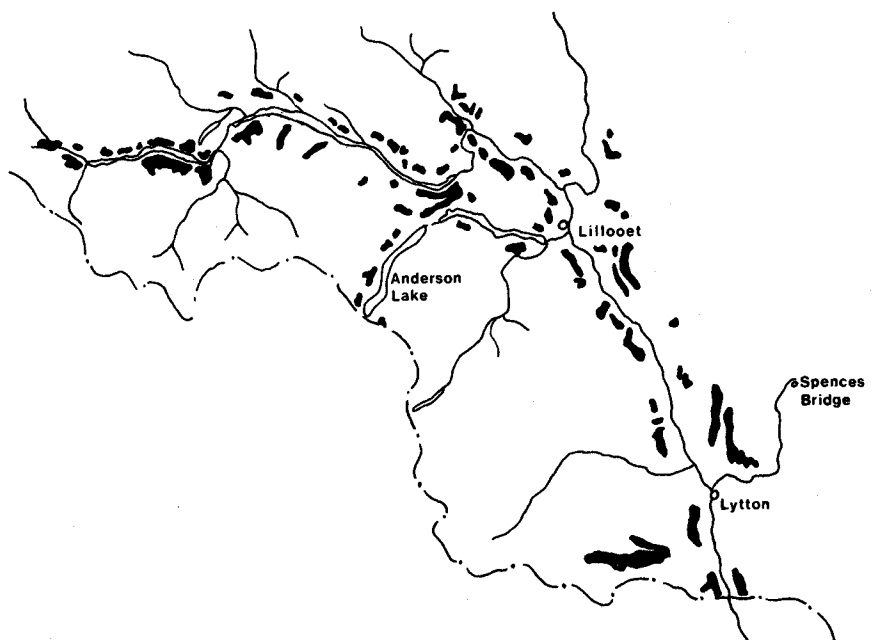
Aerial surveys in August revealed 85,000 acres (34,000 ha) of Douglas-fir defoliation in the Anderson, Seton, Carpenter, Gun and Downton lakes areas, Cayoosh Creek and in tributary valleys of the

Fraser River from Fountain south to Kwoiek Creek in the Fraser Canyon. Defoliation was heavy on 8,000 acres (3,200 ha), moderate on 14,000 (5,600 ha) and light on 63,000 acres (25,200 ha) (see map). This is the eighth consecutive year of defoliation in the Bridge River Valley. Heaviest feeding occurred near Kwoiek Lake, Jackass Mountain, Shalalth, Marshall Creek and Downton Lake.

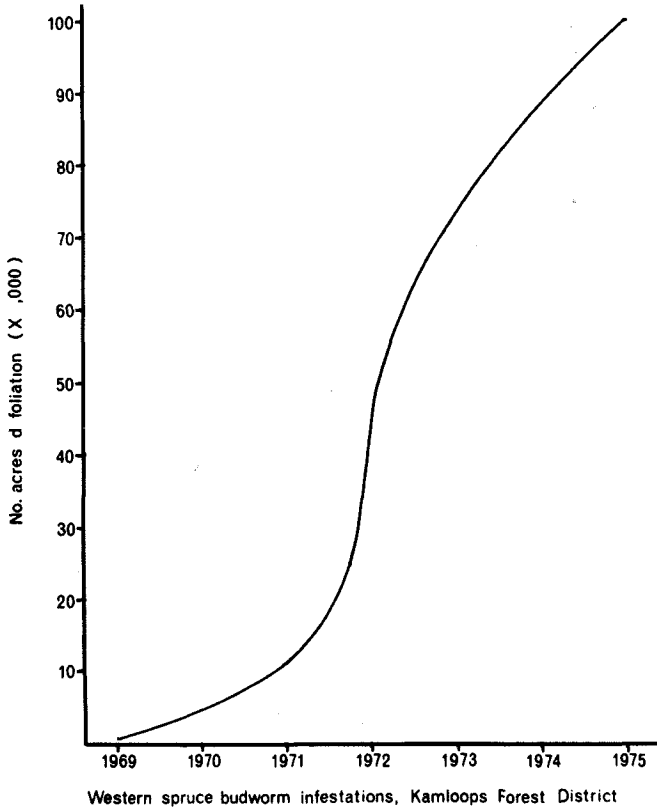
Along Adams Lake and Adams River, infestations increased from 1,600 acres (640 ha) of light defoliation in 1974 to 9,500 acres (3,800 ha) of light to moderate defoliation in 1975. New infestations in Douglas-fir stands were found along both sides of Adams Lake north of Spapilem Creek, and near Momich Lake, Gollen Creek and Harbour Lakes. Moderate defoliation occurred at Robert and Burton creeks, where feeding first became evident in 1974.

In Manning Park the infestation expanded from 1,000 acres (400 ha) of light defoliation in 1974 to 7,000 acres (2,800 ha) in 1975. Defoliation of Douglas-fir and some amabilis fir was confined to the western boundary of the Park along Skaist River, where defoliation was moderate, and along the Skagit River where there was only light feeding.

WESTERN SPRUCE BUDWORM DEFOLIATION OF DOUGLAS-FIR 1975



Larval populations within infestations were comparable to those found in previous years, although there was a slight increase in other Douglas-fir zones in the District.



are conducive to larval development and no unforeseen virus or disease appears. The graph illustrates the expansion of spruce budworm infestations since 1969.

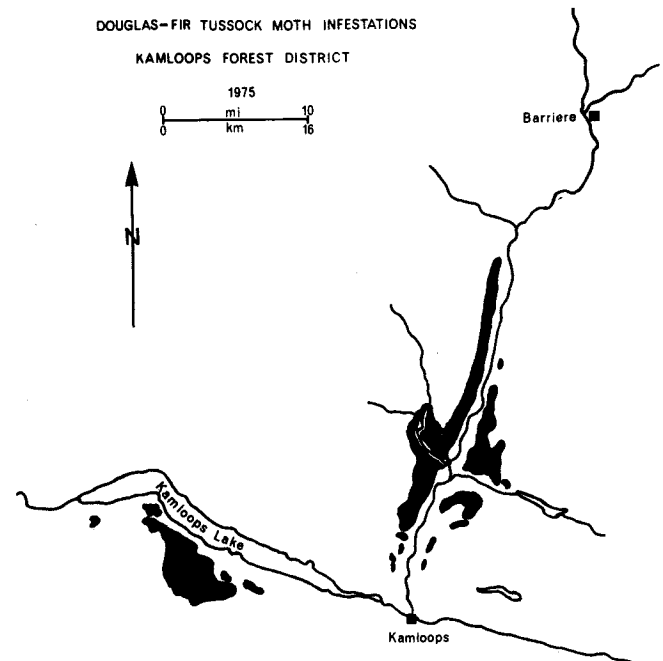
The most severe defoliation in the District in 1976 can be expected at Mission Pass, Fountain Valley, Botanie Creek, Kwoiek Creek and along the western boundary of Manning Park. Although tree mortality to date is restricted to a few understory trees in several areas, another year of moderate to heavy defoliation in Kwoiek Creek and at Mission Pass will probably result in some tree mortality and increased top-kill.

DOUGLAS-FIR TUSSOCK MOTH, *Orgyia pseudotsugata*, larvae severely defoliated immature Douglas-fir and ponderosa pine trees in the Kamloops area for the third consecutive year. Heavy defoliation resulting in considerable tree mortality was recorded on 6,300 acres (2,500 ha) south of Kamloops Lake between Cherry Creek and Savona, and on 14,300 acres (5,700 ha) along both sides of the North Thompson Valley from Westsyde to McLure.

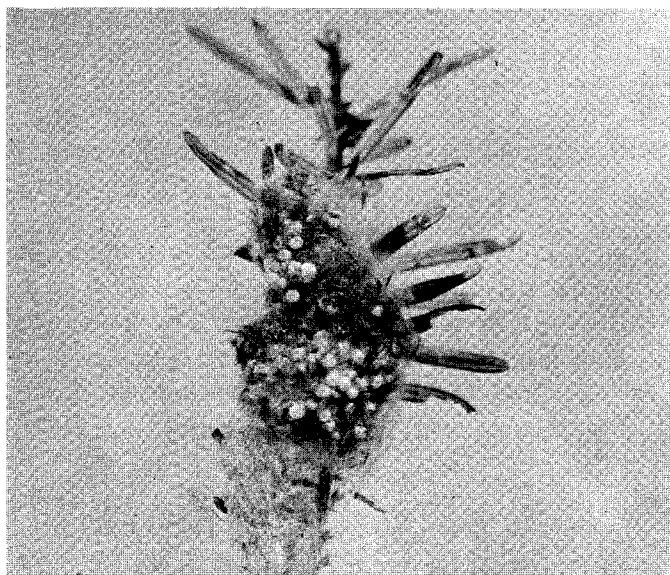
Larval parasitism was low, ranging from 2 to 6%, and no evidence of virus or disease was found in mass collections of larvae submitted to the Insect Pathology Research Institute.

At Mission Pass, where trees have sustained foliage loss for eight consecutive years, 20% of 100 Douglas-fir trees examined had from 1 to 15 feet (.3 to 4.5 m) of the tops completely defoliated, and a few had top-kill. Damage was much more severe at Kwoiek Creek where, after four successive years of severe defoliation, 60% of 100 trees had from 2 to 20 feet (.6 to 6 m) of top-kill; the remainder having from 5 to 25 feet (1.5 to 7.6 m) of the tops completely defoliated. Several large mature trees in this area were also killed by Douglas-fir beetles.

Assessment of egg populations, and flight trap information gathered from six locations in the District, indicate that populations in all areas now infested will continue at, or near the same intensity as in 1975, providing weather conditions



The British Columbia Forest Service sprayed approximately 31,000 acres (12,400 ha) with a bacteria, *Bacillus thuringiensis*, as a control measure against the tussock moth. The spray operation provided little foliage protection although it reduced the larval population.



A nuclear polyhedral virus infecting some late instar larvae near Kamloops in 1974, appeared more widespread in 1975. This, together with direct control measures and larval parasitism, significantly reduced populations, resulting in fewer overwintering egg masses than in 1974.

Moderate to heavy defoliation may be expected in 1976 in fringe areas near Durand and Cherry creeks, Rayleigh, Palmer - Forsythe Road and on the south side of Jamieson Creek where egg masses were numerous.

Infestations in the Okanagan Valley collapsed in 1975, although trees continued to die as a result of previous recent defoliation.

THE SPRUCE SPIDER MITE, *Tetranychus ununguis*, severely affected the new foliage on about 2,000 acres (800 ha) of immature Douglas-fir trees from Winfield to Kelowna, which had recently been defoliated by the Douglas-fir tussock moth. The additional damage by the mites presumably has further weakened many of these trees.

FALSE HEMLOCK LOOPER, *Nepytia freemani*, infestations in Douglas-fir stands declined to 1,800 acres (720 ha) in 1975, from over 14,000 acres (5,600 ha) in 1974. Light to moderate defoliation occurred on 750 acres (300 ha) at Monte Lake and 800 acres (320 ha) between Louis Creek and Barriere. In the latter area, defoliation was caused by the combined feeding of false hemlock looper

and western hemlock looper. Elsewhere, smaller areas of light defoliation were noted at Larkin, 100 acres (40 ha), Lavington, 100 acres (40 ha), and Pritchard, 50 acres (20 ha). High parasitism in overwintering eggs appeared to be the main cause for the population decline.

Medium larval populations, that existed in tussock moth infestations south of Kamloops Lake and north of Kamloops between Westsyde and McLure, were probably responsible for up to 20% of the defoliation which occurred in these areas.

Control operations in the Kamloops area against the looper (and the Douglas-fir tussock moth), appeared to have had little effect in preventing defoliation.

To predict 1976 larval populations, egg samples were taken in early October at 27 locations in and around infested areas. Results of the survey indicate that the infestation has collapsed, as the numbers of healthy eggs were low and parasitism high. With the exception of possibly two areas, namely Pritchard and Larkin, where some light feeding may occur, no other defoliation is expected.

THE WESTERN HEMLOCK LOOPER, *Lambdina fiscellaria lugubrosa*, in association with the western false hemlock looper, caused light defoliation of semi-mature Douglas-fir trees near Barriere. Elsewhere, larvae of the western hemlock looper were common on Douglas-fir in the District but did little damage.

Populations of western hemlock looper, which were near outbreak levels in cedar-hemlock stands in the North Thompson Valley north of Blue River and in the Shuswap River drainage in 1974, collapsed in 1975.

BLACK ARMY CUTWORMS, *Actebia fennica*, were numerous in coniferous plantations in the "Eden fire" (burned mid-September, 1973) west of Salmon Arm. More than 25 larvae per square foot were found in ½-acre (.2-ha) or 1-acre (.4-ha) areas scattered over a 600-acre (240 ha) area planted with Engelmann spruce and lodgepole pine seedlings in the spring of 1975. Fortunately, there was sufficient preferred broadleaved ground cover for the larvae to feed upon, so little damage was done to the seedlings.



Small numbers of black army cutworms were reported from Mount St. Anne, Finn, Hellroar and Lempriere creeks in the North Thompson Valley, and from Scotch Creek north of Shuswap Lake.

Numerous moths caught in pheromone baited traps on the "Eden fire" is indicative that an infestation could occur in the same region in 1976. It would most likely be within a 50 mile radius of the Eden fire on a one- or two-year-old "burn".

THE BLACK PINELEAF SCALE, *Nuculaspis californica*, severely attacked all ages of ponderosa pine in the vicinity of Summerland, Trout Creek and Penticton. Numerous mature pine trees near Penticton, weakened by drought and scale attack, died in 1974 and 1975. In 1976, tree mortality is expected at Summerland. Light scale attacks were noted near Gallagher Lake, north of Oliver.

PINE NEEDLE SCALES (WHITE), *Phenacaspis pinifoliae*, were abundant on ponderosa pine in and around Kamloops but populations declined in the Okanagan Valley.

SATIN MOTH, *Stilpnotia salicis*, larvae caused more foliage damage in 1975 than since the last major outbreak in 1964. Several dozen large groves of trembling aspen trees were heavily defoliated near Merritt, Courtney Lake and Aspen Grove. Small groups of black cottonwood and aspen trees were defoliated at Carpenter, Nicola, Allison and Dry lakes. Several infested silver poplar trees at Avola may constitute a northern distribution record for this insect.

DOUGLAS-FIR NEEDLE MIDGES, *Contarinia* spp., extensively damaged immature and semi-mature Douglas-fir trees for about 10 miles (16 km) along the Similkameen River east of Princeton. Elsewhere in the District, infestations were lighter than in previous years.

NO GYPSY MOTHS, *Porthetria dispar*, have been collected in British Columbia. In 1975 a survey was started throughout the Province to detect the possible spread of this insect. In the Kamloops Forest District, pheromone traps were placed in several tourist accommodation sites at Summerland, Oliver and Osoyoos.

IN MAY, 1975 NO EUROPEAN PINE shoot moth, *Rhyacionia buoliana* larvae or pupae were found in 812 Scots pine trees planted in forested sites. Naturally-seeded lodgepole and ponderosa pines were examined when they occurred near Scots pine plantations.

In June, 1975 pheromone traps were placed in six locations in an attempt to attract shoot moth adults. At the Okanagan Regional College at Kelowna, one adult was caught. Trees on the College grounds had been heavily infested but most of the infested shoots had been removed.

FROST DAMAGE CAUSED FOLIAGE discoloration of coniferous trees at Dufferin Heights, Kamloops and Knutsford during the spring of 1975. Several mature ponderosa pine trees at Dufferin Heights died during the summer as a result of combined frost damage, soil disturbance and bark beetle attacks. Douglas-fir trees suffered moderate frost injury at Knutsford.

WHITE PINE BLISTER RUST, *Cronartium ribicola*, a perennial problem of western white pine, continued in the wet-belt areas of the District. The highest incidence of infection occurred in stands in the North Thompson Valley, around North Barriere and Adams lakes, Scotch Creek, the headwaters of tributaries of the Coldwater River and in Manning Park. The most concentrated damage was on 2,000 acres (800 ha) near Scotch Creek.

A CANKER DISEASE, *Cytospora kunzei*, affected scattered young growth Douglas-fir trees in several thousand acres of selectively-cut stands northeast of Penticton. Branch and top-killing was common on individual and small groups of trees.

STATUS OF FOREST PESTS IN PACIFIC REGION 1975

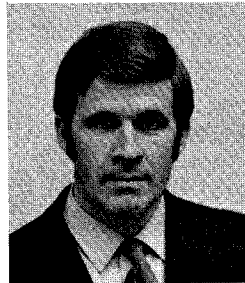
PEST	DISTRICTS						
	PRINCE RUPERT	PRINCE GEORGE	VANCOUVER	CARIBOO	KAMLOOPS	NELSON	YUKON
MOUNTAIN PINE BEETLE	epidemic Kitwanga to Burns Lake	light attacks Stuart-Takla Lakes	severe tree mortality along Klinaklini R	epidemic, Cariboo L Tyee L, Bull Mtn Bald Mtn Klinaklini R	epidemic in Okanagan Va	epidemic, Elk Cr-White R, Blackwater Ridge,	not found
SPRUCE BEETLE	low populations	low populations	not common	low populations in wind-throw	localized infestation at Birk Cr	low populations	not found
DOUGLAS-FIR BEETLE	not found	low populations	scattered light attacks	patches red-tops Williams Lake to Dog Creek along Fraser R	increase scattered light attacks	increased attacks Columbia and Kettle R Valleys	no host
SPRUCE BUDWORM ONE-YEAR-CYCLE	low populations near Bell-Irving R Trace at Kitimat	epidemic Liard R area	epidemic in Lillooet, Fraser and Sumallo R Valleys	light defoliation Becher's Prairie	epidemic Lillooet, Adams L Manning Pk	low populations	trace
SPRUCE BUDWORM TWO-YEAR-CYCLE	low populations	low populations	not found	high populations MacKay River, Bowron circle	not found	epidemic at McMurdo and Bobbie Burns Cr., Spillimacheen R	not found
DOUGLAS-FIR TUSSOCK MOTH	not found	not found	not found	adults in traps only, no larvae collected in beatings	infestations N and W of Kamloops	low populations near Cascade	no host
FALSE HEMLOCK LOOPER	not found	not found	not found	not found	decrease, due to parasitism and pesticide	infestations at Columbia and Windermere Lakes	not found
BLACK ARMY CUTWORM	low populations	not found	not found	not found	localized infestation, little seedling damage	epidemic at Beaverfoot R and Symond Cr	not found
WESTERN BLACK-HEADED BUDWORM	decreased population, O.C.I. and mainland	decreased population	low populations	low populations	low populations	low populations Upper Arrow Lake	low populations

FOREST DISTRICT RANGER ASSIGNMENTS 1976

Canadian Forestry Service
Pacific Forest Research Centre
506 West Burnside Road
Victoria, B.C.

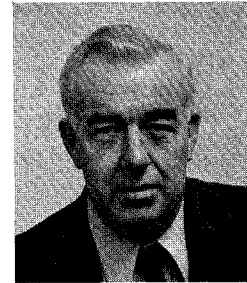
BC-X-134 January 1976

VANCOUVER



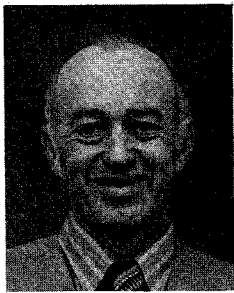
Ernie Morris

KAMLOOPS

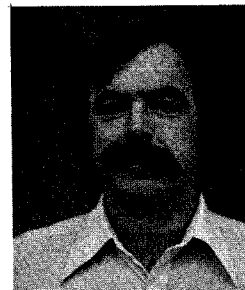


Dick Andrews

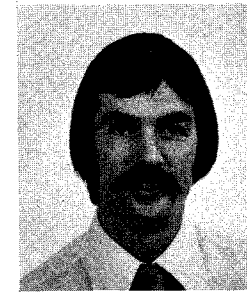
CARIBOO



Stan Allen

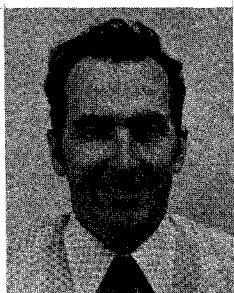


Colin Wood

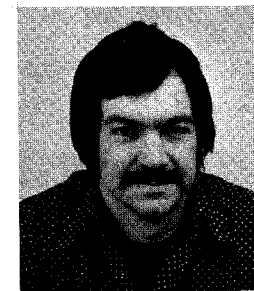


Jack Monts

PRINCE GEORGE & YUKON TERRITORY



Roly Wood

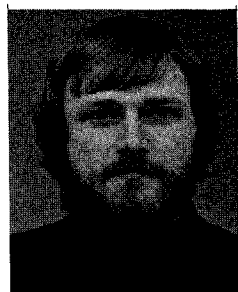


Don Doidge

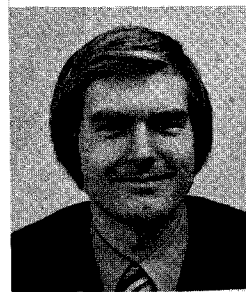
NELSON



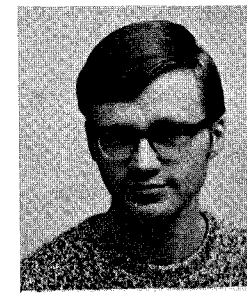
Cliff Cottrell



Leo Unger



Peter Koot



Bob Erickson