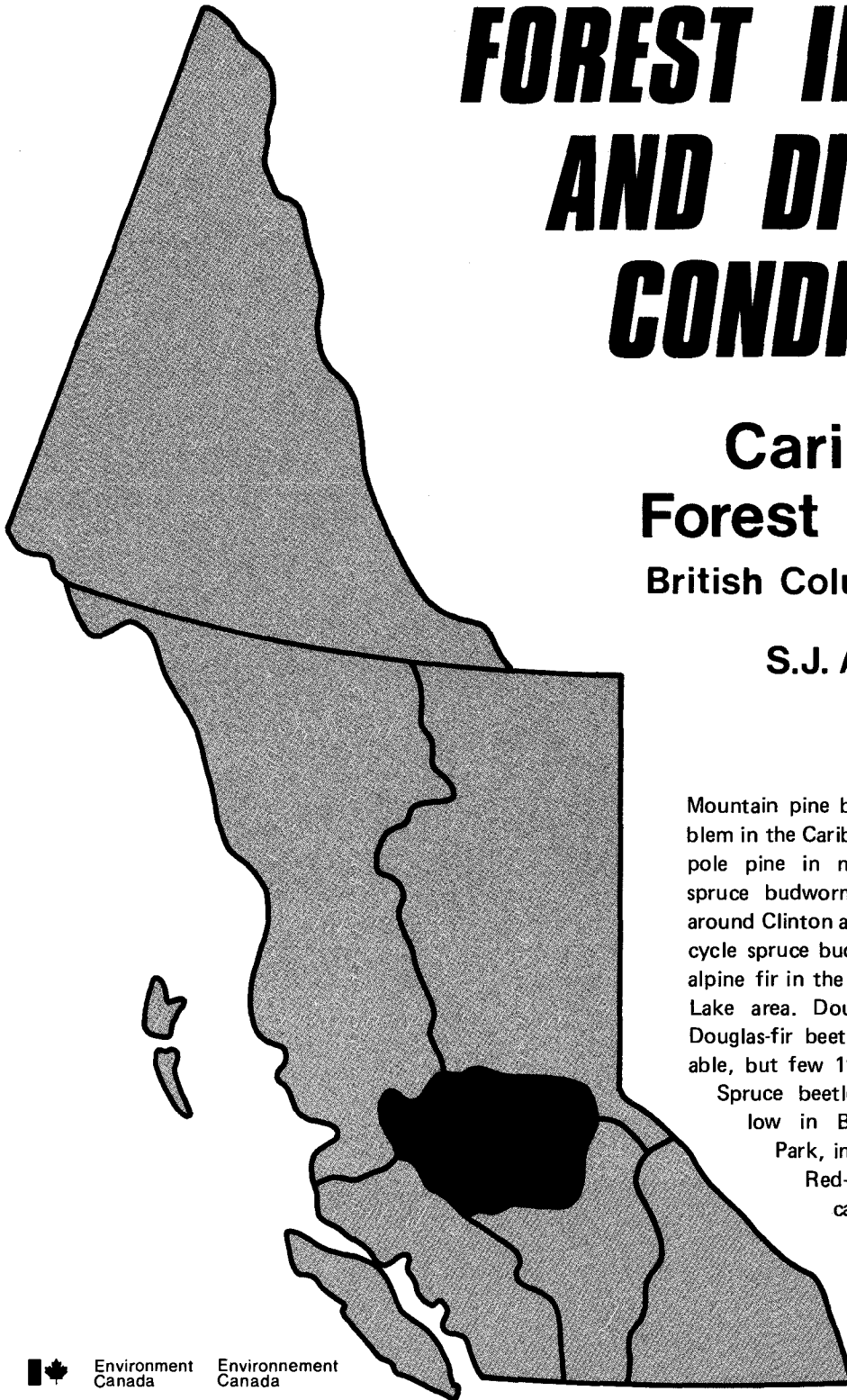


FOREST INSECT AND DISEASE CONDITIONS

Cariboo Forest District British Columbia, 1977

S.J. Allen



Mountain pine beetle was the main problem in the Cariboo District, killing lodgepole pine in numerous areas. Western spruce budworm defoliated Douglas-fir around Clinton and Big Bar Creek; 2-year-cycle spruce budworm lightly defoliated alpine fir in the MacKay River - Hendrix Lake area. Douglas-fir trees killed by Douglas-fir beetle in 1976 were noticeable, but few 1977 attacks were found.

Spruce beetle populations remained low in Bowron Lake Provincial Park, in white spruce blowdown.

Red-band needle disease caused lodgepole pine discoloration, and leaf blights discolored trembling aspen and black cottonwood foliage.



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MOUNTAIN PINE BEETLE, *Dendroctonus ponderosae*, continued to cause tree mortality throughout 18 000 ha of lodgepole pine stands within the same confines as 1975 and 1976, although several small infestations expanded. Generally, the number of 1977 attacked trees increased fourfold over 1976, but a sixfold increase occurred at Tye Lake. Areas within which infestations occurred were: Klinaklini River Valley from Klinaklini Lake to One Eye Lake and Calwell Creek; Tatla Lake to Mosley Creek; junction of Dean River and Takia River (Tweedsmuir Provincial Park); Hanceville - Riske Creek - Meldrum Lake - Gaspard Creek; Dog Creek - Jesmond; Hawks Lake - Granite Mountain; Cariboo Lake and River, and near Tzenzaicut Lake (Table 1).

At One Eye Lake, 85% of the lodgepole pine trees were attacked over 1 200 ha. Of these, 11% were attacked in 1977 and 64% prior to 1977. In the Klinaklini River infestation, 60% of the mature lodgepole pine trees have been killed and 1976 attacks expanded into the remaining pockets of adjacent stands.

The Cariboo River and Lake infestation increased slightly in 1977, but remained on the slopes rather than spreading to the upper benches of the hillside.

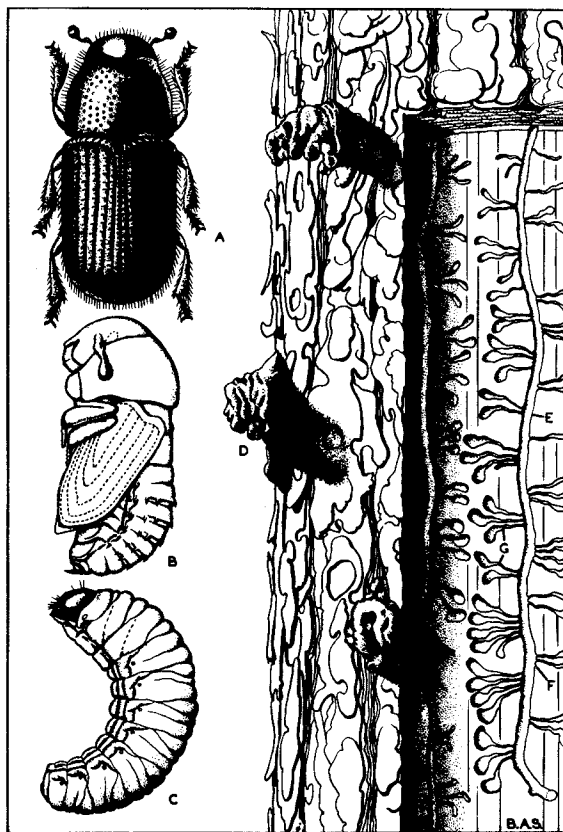
Substantial increases in 1977 attacks occurred at Tye Lake and Skelton Valley east of McLeese Lake (Table 2).

Sanitary logging in several of the infested areas containing 1976 broods reduced the beetle hazard.

Infestations in the east Chilcotin area in the vicinity of Riske Creek killed widely scattered small groups of trees and some larger groups, as in the Mackin Creek and Thaddeus Lake infestations. Cruise strips at Mackin Creek, Gaspard Creek, Thaddeus Lake and Strouse Lake all showed increased numbers of trees attacked in 1977 (Table 2).

West of Clinton, the infestation remained active in the Dog Creek - Jesmond area and, in spite of sanitation logging, there was an increase in the number of 1977 attacks. This increase also occurred in the Clinton - Bonaparte River area, where the number of ponderosa pine red-tops increased.

Unless overwintering mortality reduces beetle broods, increased attacks will occur in 1978 because of the high numbers of overwintering beetles.



Mountain pine beetle, A, adult; B, pupa; C, larva; D, pitch tube on trunk. Under the bark: E, egg gallery; F, egg niche; G, larval galleries.



Mountain pine beetle, pitch tubes on lodgepole pine tree.

Table 1. Lodgepole pine trees killed by mountain pine beetle in PSYUs in the Cariboo Forest District, as indicated by red-tops in 1977.

PSYU and Location	Hectares	No. of red-tops
Chilko		
Klinaklini R	5 600	10,000
Calwell Cr	2 180	4,600
Tatla L	1 280	1,700
Clearwater L	640	3,900
One Eye L	2 100	12,000
Konni L	360	870
Stum		
Big Cr - Gaspard Cr	400	1,200
Riske Cr	800	1,205
Meldrum Cr	192	1,870
Narcosli		
Castle Rock	10	10
Special Sale Area		
Cuisson Cr & L	30	100
Quesnel L		
Cariboo L & R	100	800
Little R	440	200
Williams Lake		
Springhouse	320	150
Williams L	80	50
Hawks Cr	320	180
Tyee L	320	520
Skelton L	240	200
Big Bar		
Clinton	60	160
Jesmond - Canoe Cr	960	2,800
Dog Cr	840	2,950
Tweedsmuir Park		
Dean R	250	500
Totals	17 522	45,960

Table 2. Status of lodgepole pine trees on cruise strips, Cariboo Forest District, 1977.

Location	Total no. IP trees examined	% healthy	% attack by mountain pine beetle		
			Green (1977 attack)	Red (1976 attack)	Gray (attack prior to 1976)
Mackin Cr	404	56	24	10	10
Gaspard Cr	461	85	10	2	3
Thaddeus L	225	55	11	8	26
Strouse L	127	72	7	5	16
Alkali L	102	93	3	0	4
Springhouse	319	85	5	6	4
One Eye L No. 1	148	8	22	42	28
One Eye L No. 2	164	11	30	19	39
Jesmond	243	48	19	14	19
Cariboo L	242	62	15	3	20
1/ Tyee L	6,000+	63	30	5	2
2/ Skelton Valley	1,000+	71	23	6	0

1/ Within CFS research area.

2/ BCFS beetle probe cruise data.

DOUGLAS-FIR BEETLE,

Dendroctonus pseudotsugae

Beetle-killed Douglas-fir trees were scarce; only 600 trees were recorded compared to 400 in 1976 and 4,700 in 1975.

Approximately 350 Douglas-fir trees on 40 ha were killed over a 5-year period on the north side of Williams Lake, adjacent to the P. & T. lumber mill log storage area. The infestation was probably caused by beetles from infested logs attacking adjacent trees.

A number of Douglas-fir trees, felled south-east of Alkali Lake, were lightly attacked in 1977.

WESTERN BALSAM BARK BEETLE, Dryocoetes confusus, in association with the fungus

Ceratocystis dryocoetidis, killed a total of 750 alpine fir trees at Big Timothy Mountain, Matthew River, Ghost Lake, Cariboo River, Swift River and Dean River in the Iltasyuko River and Bottleneck Creek areas.

SPRUCE BEETLE,

Dendroctonus rufipennis

Spruce beetle populations were low in the 1975 white spruce windthrows between Bowron and Kibbee lakes. Spruce beetles usually take 2 years to mature. The 1976 broods developed to the young adult stage in 1977 and unless exceptionally cold temperatures kill the beetles, they will probably attack the 1975 windthrow again in 1978 as some of the partially rooted spruce will remain attractive.

WESTERN SPRUCE BUDWORM,
Choristoneura occidentalis

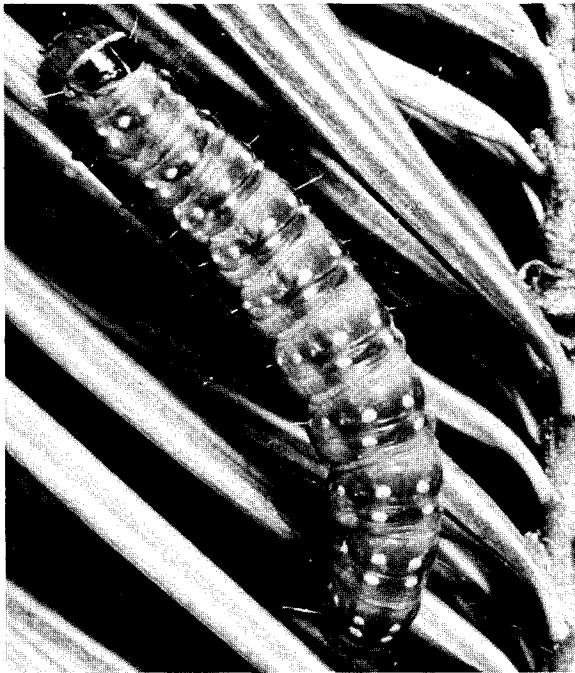
Larvae defoliated Douglas-fir trees in the Clinton area. Infestations occurred in the southeastern corner of the District at Maiden Creek, Hart Ridge, Scottie Creek, Loon Lake, Bonaparte River, north side of Clinton and on the west side of the Fraser

River opposite Big Bar Creek. Defoliation was confined to the 1977 foliage, except at Maiden Creek where 20% of the understory Douglas-fir trees had top-stripping of 0.5 to 1.5 m. One small group of trees showed signs of having been defoliated in 1976.

Egg samples at five of the areas are predictive of heavy defoliation in 1978 (Table 3).

Table 3. Locations of western spruce budworm egg sampling points, numbers of egg masses, and predicted defoliation, Cariboo Forest District, 1977.

Location	No. egg masses		Predicted 1978 population
	per 100 ft ² foliage	per 10 m ²	
Maiden Cr pt 1	217	231	severe
Maiden Cr pt 2	245	264	severe
Hart Ridge	280	302	severe
Big Bar Cr	140	151	severe
Scottie Cr	50	54	moderate



Spruce budworm larva.

TWO-YEAR-CYCLE SPRUCE BUDWORM,
Choristoneura biennis

First-year larvae of a predicted moderate to heavy 1977-78 population of spruce budworm caused light defoliation of alpine fir in the MacKay River - Hendrix Lake area. Larvae fed until early July and then hibernated. The 1978 larvae are expected to cause moderate defoliation in the same area.

MORTALITY OF OVERMATURE WESTERN HEMLOCK trees from Shoal Bay to the North Arm entrance of Quesnel Lake has occurred for the past few years. Along with the decadent condition of older trees, defoliation by the blackheaded budworm from 1971 to 1974; the western hemlock looper in 1975-76 and conifer sawflies from 1974 to 1976 have all contributed to the deterioration of stands.

In 1977, very few blackheaded budworm and hemlock looper larvae were found, but sawfly larvae had caused light defoliation on understory western hemlock trees.

RED BAND NEEDLE DISEASE,
Scirrhia pinj ON LODGEPOLE PINE

Severe infections caused conspicuous reddening and premature loss of foliage on large groups of lodgepole pine trees in the District in 1977. The damage, as seen from the air, included the Dean River Valley opposite Anahim Peak, 3 200 ha; north side of Spanish Lake, 1 200 ha, and Moffat Lakes west of Big Timothy Mountain, 100 ha.

This needle blight probably developed because of the cool, wet summers in the Interior during the past few years.

LEAF AND TWIG BLIGHTS OF POPLARS,
Venturia spp.

This disease caused severe discoloration of the leaves and dieback of the shoots of approximately 40% of all-age black cottonwood trees throughout

the Beaver Creek - McLeese Lake, and east and west Quesnel areas.

Venturia macularis caused severe leaf discoloration of immature and mature trembling aspen trees along Highway 97 from Williams Lake to Quesnel, along the Horsefly and Likely roads, Beaver Valley road, and in the areas northeast of Quesnel near the Cottonwood River. The damage was most severe in the Big Lake - Beaver Valley area, where 80% defoliation occurred on 30 to 40% of the trees.

DOUGLAS-FIR DISCOLORATION AND NEEDLE DROP

Mature Douglas-fir trees on the Fraser and Chilcotin plateaus lost up to 30% of their foliage during September, 1977. No causal agents were found on foliage samples. This condition may have resulted from the sudden change to hot, dry weather in August, after three consecutive cool, wet summers.

STATUS OF FOREST PESTS IN PACIFIC REGION 1977

PEST	DISTRICTS						
	PRINCE RUPERT	PRINCE GEORGE	VANCOUVER	CARIBOO	KAMLOOPS	NELSON	YUKON
MOUNTAIN PINE BEETLE	Epidemic declining excepting Kitwanga to Dorreen	Infestations around McNaughton L	Widespread infestation Klinaklini R	Widespread infestation throughout District	Widespread infestation throughout District	Infestations throughout District	Not found
SPRUCE BEETLE	Epidemic - Smithers Landing area	Outbreaks at Carp and Inzana lakes	Localized attacks Mowhokam Cr	Light, localized attacks Bowron L	Epidemic in Lambly Cr, Bouleau L. area. Increasing elsewhere	Low populations	Low populations Haines Jct.
DOUGLAS-FIR BEETLE	Not found	Populations very low	Light attacks Fraser Canyon, Pemberton, Vancouver I	Light population in trap trees Joes L Road	Infestations near Kamloops and Cache Cr. Increasing elsewhere	Low populations	No host
WESTERN SPRUCE BUDWORM (1-YEAR-CYCLE)	Low populations	Low populations	Extensive infestations Fraser Canyon - Pemberton areas	Moderate population south of Clinton	Heavy defoliation Fraser R - Carpenter L. Decreasing in Shuswap L	Small outbreak near Revelstoke	Low population
SPRUCE BUDWORM (2-YEAR-CYCLE)	Low populations	Moderate population along Holmes R	Not found	Bowron Lakes, MacKay R - Hendrix L moderate	No defoliation noted in off-year-	Populations increasing, some defoliation	Not found
WESTERN BLACKHEADED BUDWORM	Minor defoliation Owegee Cr and Babine L	Low populations	Low populations	Low populations	Blue R infestation near collapse	Generally low. One light outbreak near Kimberley	Low populations
FOREST TENT CATERPILLAR	Not found	Severe defoliation near McBride	Not found	Not found	Infestation near Vavenby and Gosnell	Decrease from 1976	Not found
CONIFER SAWFLIES <u>Neodiprion</u> spp.	Shore pine defoliation Porcher I. Tree mortality Pitt I	High populations east of Prince George	Low populations	Moderate populations	Heavy defoliation Vavenby and near Clearwater L	Generally low	Low population
CONE RUSTS	Poor cone crop - spruces	Not found	Not found	Not found	Not found	Not found	Low incidence southwestern Yukon

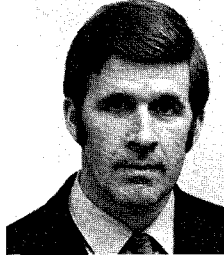
Forest District Ranger Assignments - 1978

CARIBOO

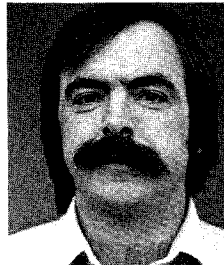


Stan Allen

VANCOUVER



Ernie Morris



Colin Wood

KAMLOOPS



Dick Andrews

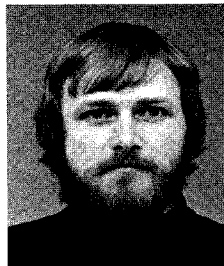


Jack Monts

PRINCE GEORGE & YUKON TERRITORY

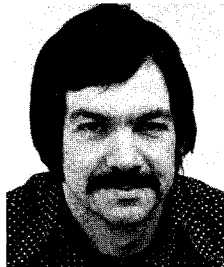


Roly Wood



Leo Unger

PRINCE RUPERT



Don Doidge



Peter Koot

NELSON



Cliff Cottrell



Bob Erickson