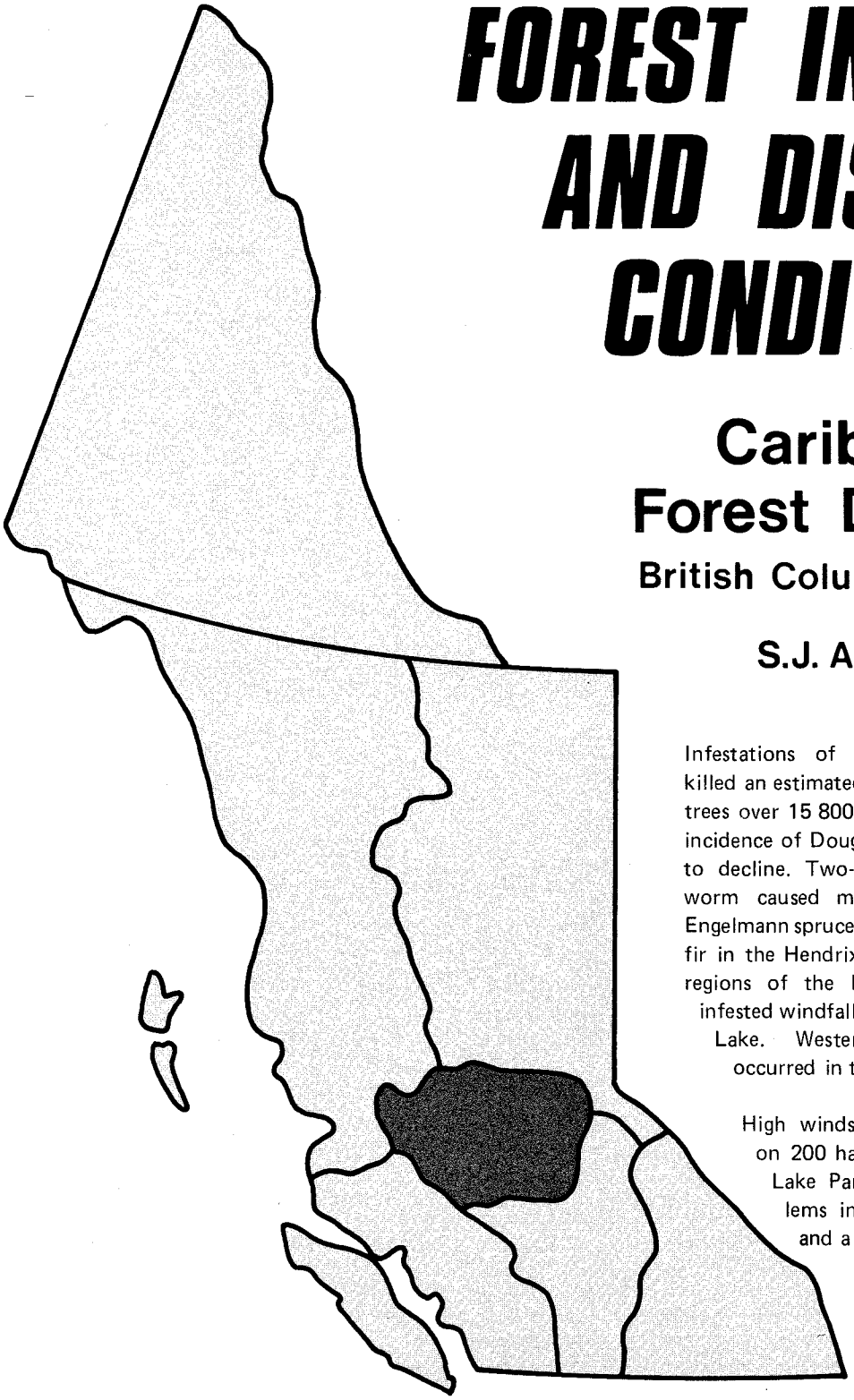


FOREST INSECT AND DISEASE CONDITIONS

Cariboo Forest District

British Columbia, 1976

S.J. Allen

Infestations of mountain pine beetle killed an estimated 85,000 lodgepole pine trees over 15 800 ha (39,500 acres). The incidence of Douglas-fir beetle continued to decline. Two-year-cycle spruce budworm caused moderate defoliation of Engelmann spruce, white spruce and alpine fir in the Hendrix Lake to Bowron Lake regions of the District. Spruce beetle infested windfall white spruce at Bowron Lake. Western spruce budworm occurred in two areas in the District.

High winds caused sheet windfall on 200 ha (500 acres) at Bowron Lake Park. Other disease problems included dwarf mistletoe and a Douglas-fir needle rust.

Fisheries and Environment Canada Pêches et Environnement Canada

Canadian Forestry Service

Table 1. Lodgepole pine trees killed by mountain pine beetle in PSYUs in the Cariboo Forest District, as indicated by red-tops in 1976.

PSYU & Location	Acres	No. of red-tops
Chilko		
Klinaklini R	14,080	46,500
Calwell Cr	480	470
Tatla L	320	825
Clearwater L	2,080	4,425
Konni L	480	700
	17,440	52,920
Stum		
Big Cr - Gaspard Cr	1,600	2,790
Fletcher L	160	430
Riske Cr	2,400	4,200
Meldrum Cr	480	930
	4,640	8,350
Narcosli		
Castle Rock	160	350
SSA		
Cuisson Cr & L	150	225
W./Diamond I	10	25
Quesnel Lake		
Cariboo L	2,560	300
Cariboo R	1,120	1,425
Little R	640	750
	4,320	2,475
Williams Lake		
Springhouse	800	720
Williams Lake	800	1,125
Hawks Cr	800	1,220
Tyee L - Big L	1,440	5,560
	3,840	8,625
Big Bar		
Clinton	160	55
Jesmond - Canoe Cr	5,280	8,460
Dog Cr	2,720	1,560
Lone Cabin Cr	320	240
	8,480	10,315
Tweedsmuir Park		
Dean River	640	1,500
Totals	39,680 (15 872 ha)	84,785

Mountain pine beetle teneral adults

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae, continued to kill lodgepole pine trees throughout the Cariboo Forest District in 1976. The majority of infestations occurred within or adjacent to the 1975 outbreak areas. The most heavily affected PSYUs within the District were Chilko, Big Bar, Stum and Williams Lake. The largest infestation was in the Klinaklini River Valley, with some 46,500 red-tops in the Cariboo Forest District, plus 18,000 in the Vancouver Forest District immediately west of the District boundary at Klinaklini Lake.

By early summer, the number of larvae in broods was much reduced, some to less than 10, especially in the dry belt areas west of the Fraser River. This seemed to be the result of overcrowding.

The areas and approximate numbers of trees affected by the 1975 attacks were delineated during aerial surveys in August (Table 1, Map 1). There were about 85,000 red-tops in 1976 compared to about 140,000 in 1975; in both years, infestations covered about 15 600 ha (39,000 acres).

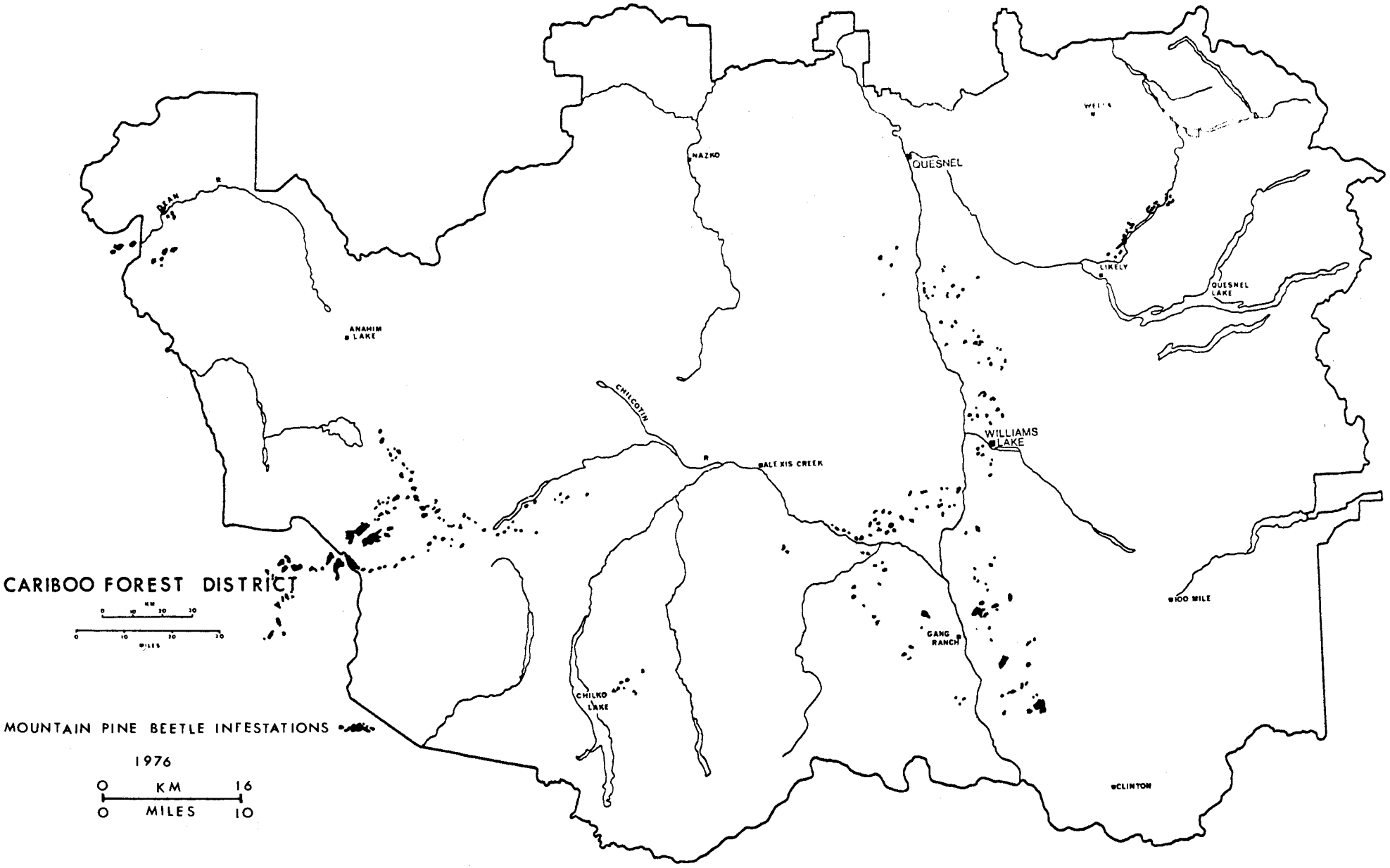
Ground surveys during September, using both prism and fixed radius plots, determined the intensity of 1976 attacks. Fewer trees were attacked in 1976 than in 1975 (Table 2), indicating a decline in beetle populations.

SPRUCE BEETLE THREAT FROM WINDFALL

Windfall, which occurred in the Bowron Lakes region northwest of Bowron Lake Park during November 1975, involved a total of some 1 400 ha (3,500 acres) of merchantable timber between the Prince George and Cariboo Forest districts. Of this total, one area of an estimated 200 ha (500 acres) is in the Park itself, between Bowron and Kibbee

Table 2. Status of lodgepole pine trees on cruise strips, Cariboo Forest District, 1976.

Location	Total no. IP trees examined	% healthy	% attack by mountain pine beetle		
			Green (1976 attack)	Red (1975 attack)	Gray (attack prior to 1975)
Riske Cr	55	86	1	8	5
Drummond L	55	50	3	20	27
Thaddeas L	134	78	6	16	0
Becher's Prairie	114	57	8	11	24
Springhouse	251	83	0.7	8	8
Jesmond	348	40	4	44	12
Cariboo R	177	63	10	8	19
Tyee L	108	42	11	22	25
Bonaparte R	780	92	1	6	1
Totals	2,022	73	6	11	10


CARIBOO FOREST DISTRICT
MOUNTAIN PINE BEETLE INFESTATIONS
1976
0 KM 16
0 MILES 10
NAZKO
QUESNEL
WELLS
LIKELY
QUESNEL LAKE
ANAHIM LAKE
CHILCOTIN R.
BALE XIS CREEK
WILLIAMS LAKE
100 MILE
GANG RANCH
CHILKO LAKE
CLINTON

Windthrown white spruce

lakes and on the north side of Devils Club Mountain. All of the stand was windthrown except for a few groups of understory trees. Tree species composition by stem was: lodgepole pine, 80%; white spruce, 17%; alpine fir and other species, 3%.

Detection surveys for spruce beetle, Dendroctonus rufipennis, were carried out in this area. Beetle attacks became apparent about mid-August. While 53% of the downed spruce was attacked, only 36% held established broods. The majority of this progeny are expected to mature and emerge in 1978. The area will be monitored in 1977 and 1978 to ascertain if the population poses a threat to white spruce in the surrounding stands.

THE NUMBERS OF DOUGLAS-FIR TREES KILLED BY DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae, declined from 4,700 in 1975 to 250 in 1976. Most of the red-tops were located at: Soda Creek and southward, 150; McLeese Lake, 30; Williams Lake to Dog Creek, 60; Gang Ranch - Alexis Creek, 10.

One cause for the decline in population was probably the cool, moist summer weather in 1975 and 1976. Populations will probably remain at a similar level in 1977.

MORTALITY OF ALPINE FIR caused by the western balsam bark beetle, Dryocoetes confusus, in association with the lesion-causing fungus, Ceratocystis dryocoetidis, decreased in 1976. Although 50% of the mature alpine forest was covered during aerial surveys, only 160 red-topped alpine fir trees were observed in 1976 compared to 1,250 in 1975. Records included: Matthew River near Ghost Lake, 60 recently dead amid many groups of previously killed; Sovereign Creek, 50 recent; Swift River, 30 recent; Antler Creek, 20 recent.

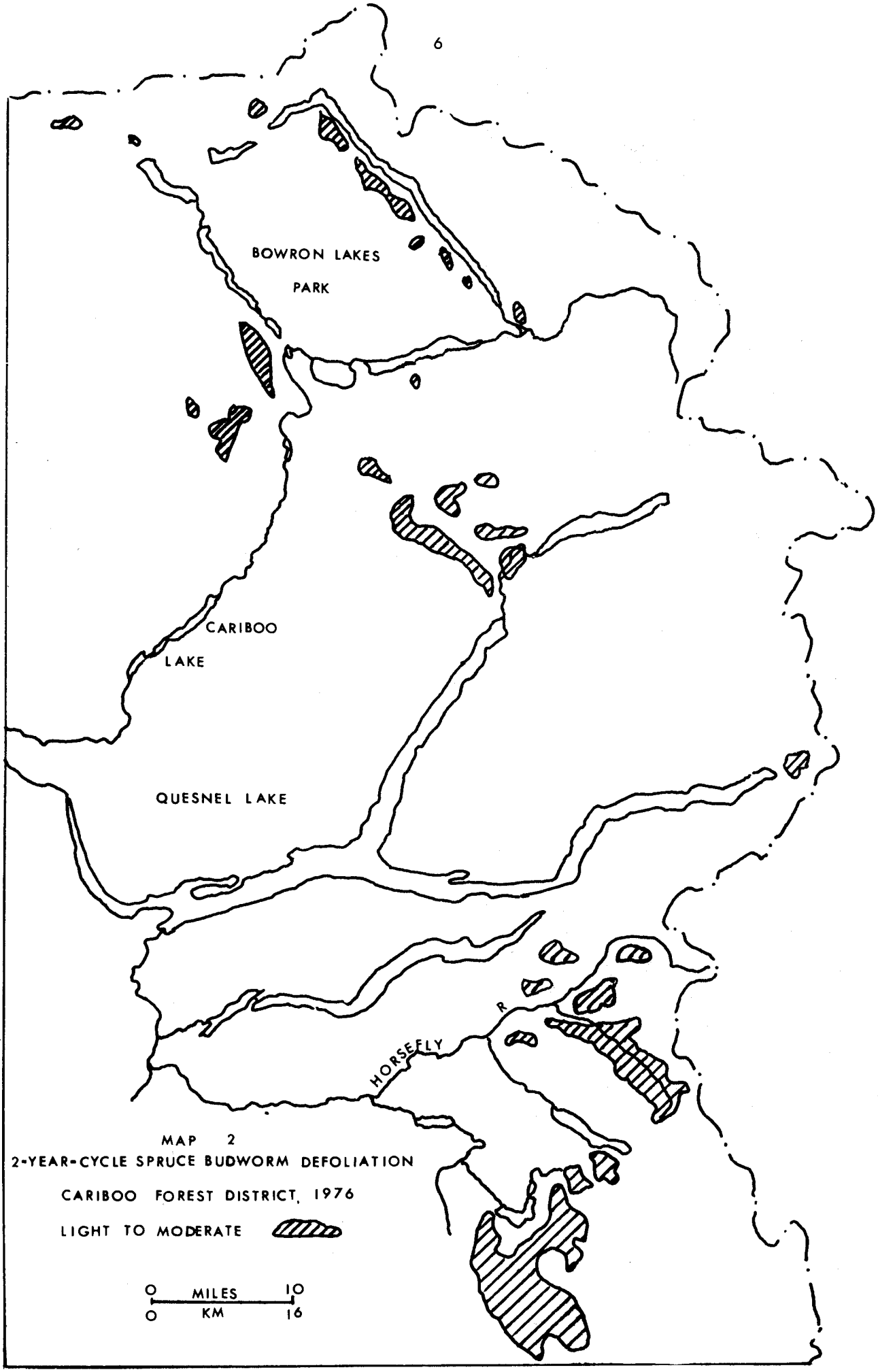
TWO-YEAR-CYCLE SPRUCE BUDWORM, Choristoneura biennis, defoliated alpine fir and Engelmann spruce from Hendrix Creek to Bowron Lake over an area of 27 200 ha (68,000 acres). Light to moderate defoliation was observed from Hendrix Creek northward past Hendrix, Bosk and Crooked lakes along the headwaters of the MacKay and Horsefly rivers, the Matthew River - Cameron Creek valleys, as well as around the eastern border of Bowron Lake Park along Isaac Lake and on the west side of Babcock Lake (Map 2). Even though 1976 was the second year of feeding by the current generation of budworms, damage was light on intermediate and dominant trees. However, suppressed understory alpine fir trees were severely defoliated and a few were top-killed due to the combined 1974 and 1976 defoliation.

During August, high numbers of male budworm moths were caught in traps baited with a sex attractant near Umiti Creek, Wells, Barkerville and Hendrix Lake. Egg mass samples at four locations indicated high populations for 1977 at Little River (Maeford Lake), Horsefly River, Hendrix Lake, and a low population at Barkerville (Table 3). Significant damage from this generation will not occur until 1978.

Table 3. Average numbers of spruce budworm egg masses found on 10-tree sample plots, Cariboo Forest District, 1976

Location	Avg no. of egg masses* per 100 ft^2 of foliage
Hendrix Lake	188
Horsefly River	252
Barkerville	25
Little River	404

* Population predictions - low, 0 - 50 masses; medium, 51 - 150 masses; high, 151+ masses


BOWRON LAKES
PARK
CARIBOO
LAKE
QUESNEL LAKE
HORSEFLY
R
MAP 2
2-YEAR-CYCLE SPRUCE BUDWORM DEFOLIATION
CARIBOO FOREST DISTRICT, 1976
LIGHT TO MODERATE
0 MILES 10
0 KM 16

WESTERN SPRUCE BUDWORM, Choristoneura occidentalis, occurred on Douglas-fir in small patches throughout the southern part of the District but in lower numbers than in 1975. Some light defoliation occurred south of Kelly Lake. The budworm outbreak appears to be gradually moving northward in the Kamloops Forest District and heavier defoliation may occur in the more northerly Kelly Lake, Jesmond and Clinton areas in 1977.

DOUGLAS-FIR TUSSOCK MOTH, Orgyia pseudotsugata, larvae were not found in the District in 1976. However, traps baited with sex attractants and set at 20 Mile House, in August, caught an average of 2.3 male moths, compared with 6.1 per trap in 1975. The area will be examined closely for larvae in 1977.

CONIFER - ASPEN RUST ON DOUGLAS-FIR

A rust disease, Melampsora medusae, infected Douglas-fir foliage throughout the south-central area of the Cariboo Forest District from Hanceville to Young Lake. The infection was confined to new foliage and was generally very light except near Hanceville, where 60% of the new foliage was infected on the occasional tree. At two of the five areas examined, Alkali Lake and Young Lake, about 3% of the Douglas-fir cones were infected.

RED BELT

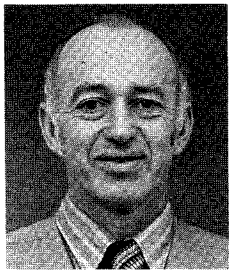
During aerial surveys for mountain pine beetle, light red-belt, resulting from weather damage to lodgepole pine, was observed: northeast of Ghost Lake, 240 ha (600 acres); the west side of Bald Mountain, 40 ha (100 acres); Far Mountain, on the north side of the Ilgachuz Range, 760 ha (1,900 acres). The drying appeared to have affected part of the 1975 foliage on the exposed fringes of each stand.

STATUS OF FOREST PESTS IN PACIFIC REGION 1976

PEST	DISTRICTS						
	PRINCE RUPERT	PRINCE GEORGE	VANCOUVER	CARIBOO	KAMLOOPS	NELSON	YUKON
MOUNTAIN PINE BEETLE	infestations, Cedarvale to Babine L	small infestations, Stuart L area	extensive infestation, Klinaklini R	infestations in central and western regions	widespread infestations on lodgepole and white pine	scattered infestations	not found
SPRUCE BEETLE	small infestations, Smithers Landing, Otter L	low populations	not found	low populations	infestations, Yalakom PSYU	small infestation, Kootenay L	low population, Haines Jct to Watson Lake
DOUGLAS-FIR BEETLE	not found	low populations	light attacks, Fraser Canyon - Pemberton - Vancouver Island	low populations	attacks on tussock moth-defoliated trees	low populations	no host
WESTERN SPRUCE BUDWORM (1-YEAR-CYCLE)	trace	low populations	extensive infestations, Fraser Canyon - Pemberton areas	low populations	extensive infestations, Lillooet - Adams and Shuswap lakes	moderate populations, Revelstoke	trace
SPRUCE BUDWORM (2-YEAR-CYCLE)	low populations, Bell-Irving R	defoliation, Holmes R	not found	infestations, Horsefly to Bowron L	infestation, Lempriere Cr	low populations	not found
WESTERN BLACKHEADED BUDWORM	light infestation, Bell-Irving R	low populations	low populations	low populations	infestation, Blue R	low populations	trace
FOREST TENT CATERPILLAR	low populations	severe defoliation, McBride area	not found	not found	infestation north of Barriere	infestations, Golden and Fort Steele	not found
CONIFER SAWFLIES *Neodiprion* spp.	infestations, islands south of Prince Rupert	infestations east of Prince George	low populations	low to moderate populations	infestations, Vavenby to Avola	moderate populations, Beaton	trace
CONE RUSTS	common on white and Sitka spruce	common on white spruce	not found	light infection	not found	not found	not found

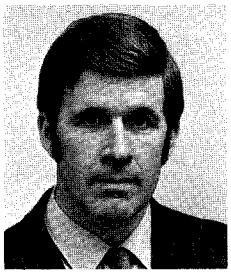
Forest District Ranger Assignments - 1977

CARIBOO



Stan Allen

VANCOUVER



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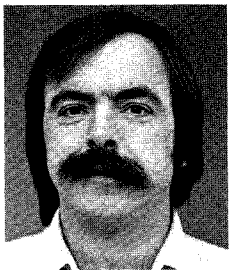
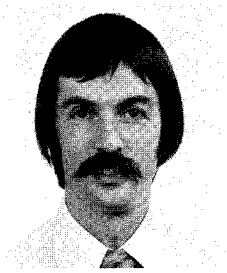


Colin Wood

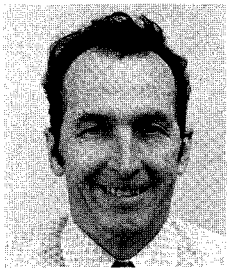
KAMLOOPS

Dick Andrews



Jack Monts

PRINCE GEORGE & YUKON TERRITORY



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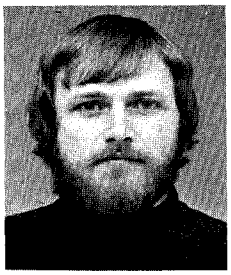
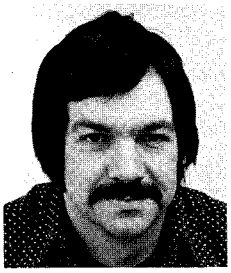


Leo Unger

PRINCE RUPERT



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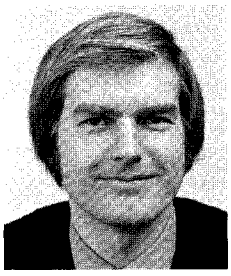

Peter Koot

NELSON

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