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PEST REPORT

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Western Spruce budworm in British Columbia -

A Forecast for 1989

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Forest Insect and Disease Survey

After three successive years of expansion, defoliation of Douglas-fir by the budworm declined in intensity and area to 364 000 ha from 834 000 ha in 1987. More than 1200 areas were aerially sketchmapped and of these, 96% were in the Kamloops Region, 2% in the Cariboo Region and 1% in each of Vancouver and Nelson regions (Pest Report, October 5, 1988).

Predicted defoliation from egg sample assessments at 52 locations in four regions indicates light to moderate defoliation in 1989 in the majority of areas (Table 1, Map). Egg masses were, on average, 70% less numerous than in 1987 at 28 of 36 locations sampled both years, and more numerous at only 8 locations. Increases were only noted in the south Okanagan at Equesis Creek, Glenrosa and Mt. Kobau, in the Nelson Region at Anarchist Mtn., McKinney Creek and Conkle Lake Road, in the Cariboo Region at Viewland Mtn., and in the Vancouver Region at Devine.

Parasitism of late instar larvae and pupae averaged 16% overall (range 1-54%), similar to 1987 levels. This level of parasitism is not sufficient to explain the general decline of budworm populations in many areas. However, in several chronically infested locations such as Sabiston Creek, Indian Gardens, and near Separating Lakes in Kamloops District, larval starvation may have occurred as a result of foliage depletion from up to six successive years of defoliation. Additionally, prolonged warm dry weather during Autumn 1987 may have resulted in larvae remaining active longer before locating places to overwinter. Under these conditions, active larvae deplete their nutrient reserves from the egg and starve or are less vigorous during winter and early spring.

Table 1. Summary of predicted defoliation of Douglas-fir stands by western spruce budworm by Forest Region in British Columbia in 1989.

Forest Region	No. of Samples	Predicted Defoliation ¹			
		Nil	Light	Moderate	Severe
Cariboo	2	-	1	-	1
Kamloops	34	5	15	11	3
Nelson	9	-	1	2	6
Vancouver	7	-	4	3	-
Total	52	5	21	16	10

¹Defoliation

- Light - discolored foliage barely visible from the air, some branch tip and upper crown defoliation
- Moderate - pronounced discoloration, noticeably thin foliage, top third of many trees severely defoliated, some completely stripped
- Severe - bare branch tips and completely defoliated tops, most trees sustained more than 50% total defoliation

Table 2. Average number of western spruce budworm egg masses per 10 m² of foliage in 1987 and 1988 and predicted defoliation in British Columbia in 1989 by forest region and TSA.

Region, TSA Location	Predicted defoliation in 1989 ²	No. of egg masses per 10 m foliage		
		1988	1987	percent change (+ or -)
<u>Kamloops Region</u>				
<u>Kamloops TSA</u>				
Scottie Creek	nil	0	8	-100
Cache Creek	light	26	212	- 88
Highland Valley	light	10	232	- 96
Oregon Jack Creek	light	29	427	- 93
Sabiston Creek	moderate	85	178	- 52
Indian Gardens	moderate	52	300	- 83
Cherry Creek	light	43	247	- 83
Paul Lake	moderate	78	389	- 80
Heffley Creek	light	21	113	- 81
Orchard Lake	nil	0	-	-
Louis Creek	nil	0	190	-100
Fadear Creek	light	19	-	-
Barriere	light	27	102	- 74
Duck Meadow	nil	0	-	-
Niskonlith Lake	nil	0	294	-100
Adams River	light	9	121	- 93

Region, TSA Location	Predicted defoliation in 1989 ²	No. of egg masses per 10 m foliage		
		1988	1987	percent change (+ or -)
<u>Okanagan TSA</u>				
Falkland	light	37	295	- 87
Skimikin	light	36	-	-
Sicamous	light	16	-	-
Blind Creek	light	10	264	- 96
Postill Lake	light	20	-	-
Peachland Main	light	31	98	- 68
Equesis Creek	light	43	35	+ 23
Joyce Lake	moderate	91	-	-
Duke Lake	moderate	76	-	-
Anarchist Mtn.	moderate	140	649	- 78
Twin Lakes	moderate	114	-	-
Blue Lake	moderate	98	264	- 63
Apex Mtn. Rd.	moderate	99	315	- 69
Glenrosa	severe	231	220	+ 5
Mt. Kobau #1	severe	661	275	+140
Mt. Kobau #2	severe	310	-	-
<u>Lillooet TSA</u>				
Fountain Valley	moderate	70	84	- 17
Botanie Creek	moderate	53	-	-
<u>Vancouver Region</u>				
<u>Soo TSA</u>				
S. Blackwater Creek	light	35	156	- 78
N. Blackwater Creek	moderate	99	140	- 29
Devine	light	32	18	+ 78
S. Haylmore Creek	light	19	55	- 65
N. Haylmore Creek	light	12	49	- 76
Felix Creek	moderate	148	-	-
Sockeye Creek	moderate	56	-	-
<u>Cariboo Region</u>				
<u>Quesnel TSA</u>				
Viewland Mtn.	severe	271	219	+ 19
Likely	light	29	-	-

Region, TSA Location	Predicted defoliation in 1989 ²	No. of egg masses per 10 m foliage		
		1988	1987	percent change (+ or -)

Nelson Region

Boundary TSA

Anarchist Mtn.	moderate	72	48	+ 33
Bridesville	severe	326	536	- 39
McKinney Creek	severe	311	159	+ 49
Johnstone Creek	severe	359	558	- 36
Conkle Lake Rd.	moderate	65	32	+ 51
Rock Creek	severe	270	295	- 8
Nicholson Creek	severe	424	-	-
Ingram Creek	severe	208	-	-
Phoenix Mtn.	light	10	19	- 47

² 1- 50 egg masses/10 m² foliage - light defoliation
 51-150 " " " " - moderate "
 151+ " " " " - severe "

WESTERN SPRUCE BUDWORM

1989
PREDICTED DEFOLIATION

- ⊗ NIL
- LIGHT
- ◐ MODERATE
- SEVERE

