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PEST REPORT

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STATUS OF AMABILIS FIRS AND ASSOCIATED BARK BEETLES IN SAWFLY DEFOLIATED STANDS NEAR KELSEY BAY AND BIG TREE CREEK

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Stands of amabalis fir and western hemlock near Kelsey Bay had been severely defoliated by a sawfly, Neodiprion sp. in 1978 and 1979. (See Pest Report October, 1979). The sawfly infestation subsided in 1980, but bark beetles, Pseudohylesinus granulatus attacked many of the amabilis fir trees near the base. Stands were examined September 23-25 to determine the extent, intensity and the hazard of the beetle infestation. Two cruise lines were run near Keta Lake and one near Big Tree Creek. A total of 135 amabilis fir, 105 western hemlock and 30 western red cedar were tallied on 25 prism plots at Keta Lake and 52, 30 and 2 in 7 prism plots at Big Tree Creek. The cedars had not been defoliated and defoliation of hemlock varied from 10 to 50% with most trees in the 20 to 30% range. Amabilis firs were the most seriously defoliated (Table 1).

Table 1. Tally of amabilis fir by defoliation level, diameter and evidence of bark beetle attack for two locations following sawfly feeding.

Location	diameter in cm.	No. of trees by defolition category[1] 25-50%	51-80%	81-90%	91-100%	Total	Total attacked by beetles
Keta Lake	15-20	1	4	1		6	
	21-30	3	3		2	8	
	31-40	2	10-4[3]	7-1	13-5	32 (3)[2]	10
	41-50	4	10-5	6-2	18-13	38 (2)	20
	51-60	4	20-14	1-1	10-5	35 (5)	20
	61-70		7-4		3-2	10	6
	71-80			1-1	2-2	3	3
	81-90	1-1			1-1	2	2
	91-100				1-1	1	1
		15-1	54-27	16-5	50-29	135	62/46%
Big Tree Cr	15-90	3-0	22-10	9-4	18-15	52	29/56%

1 A visual estimate of foliage missing from the tree. On many of the trees more than 90% defoliated the only foliage resulted from the 1980 growth and often this was sparse.

2 The number of trees dead from defoliation is shown in brackets.

3 The number of trees in each category attacked by beetles.

Bark beetles had attacked 62 or 46% of the Abies on the plots; in several instances trees defoliated as lightly as 60% had been attacked.

Ten trees averaging 45 cm dbh and 33 meters in height and ranging from 75 to 100% defoliation were felled within the Keta Lake infestation. To assess the beetle population four circular samples (81 cm^2) were taken from the bole within 0.3 m of the ground and two were taken at 1.5 m intervals along the bole to a 20 cm diameter.

Two species of Pseudohylesinus were found, one (P. granulatus) in the lower bole and the other (an unidentified species of Pseudohylesinus) in the upper bole. Neither species occurred together on an individual tree but

P. granulatus occurred from the base to as high as 10.5 m on the bole while P. sp. occurred from 7.5 m upwards.

Successful beetle broods were present primarily only in the most severe defoliation class (Table 2). These trees essentially had no 1980 foliage. The intermediate defoliation class contained a few successful galleries with a few progeny, and many of the attacks were unsuccessful.

Table 2. Number of Pseudohylesinus progeny per 0.1 m^2 of bark in defoliated Amabilis fir, Kelsey Bay, September, 1980.

Percent defoliation	No. trees	No. samples	Number of progeny	
			P. granulatus	P. sp.
75-80	4	94	0	0
85-90	2	46	1.3	0.5
95-100	4	86	11.9	18.8

In the lowest defoliation class the few egg galleries found showed no evidence of larval mines. Those living parents found had just constructed an entrance that barely reached the cambium, quite likely were not going to make a successful brood gallery, and possibly were simply finding an overwintering niche.

Bark beetles are successful only in those trees which are already dead or nearly so, and should present little or no additional hazard to amabilis firs recovering from defoliation or undefoliated trees in the surrounding stand. Defoliated trees in which beetle broods are established have little chance of recovery.