Forestry Canada Forets Canada

PEST REPORT

Pacific and Yukon Region • Pacific Forestry Centre • 506 West Burnside Road • Victoria, B.C. • V8Z 1M5

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STATUS OF WESTERN HEMLOCK LOOPER OUTBREAK IN THE NELSON FOREST REGION, 1990

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The western hemlock looper, Lambdina fiscellaria lugubrosa, defoliated 915 ha of primarily western hemlock in mature to overmature western hemlock-western red cedar stands in seven infestations north of Revelstoke. This is the first outbreak in the region since 1983, when defoliation covered more than 30 000 ha. Light defoliation occurred in the Albert Creek area, in three infestations along Downie Creek and at Script Creek along Columbia River, with trace to very light defoliation along Bigmouth Creek.

Defoliation was forecast to occur at Bigmouth Creek, based on larval sampling in 1989 which was positive in eight locations in traditional outbreak areas. Standard FIDS larval sampling for hemlock looper in 1990 resulted in positive collections in 19 locations, including single larval findings as far south as King George VI Park near the international border and Arlington Lakes and Kettle Valley Recreation Area in the west. Larval numbers exceeded threshold levels for potential defoliation (eight larvae) at Bigmouth Creek (115 larvae), Goldstream River (59 larvae), Downie Creek (27 larvae), Martha Creek (10 larvae), Tangier River (19 Larvae), Woolsey Creek (26 larvae) and Copper Queen Creek (8 larvae). At Cusson and Akolkolex creeks seven and six larvae were found, respectively, just below the threshold. A comparison at six sites sampled in both 1989 and 1990 shows an approximate sevenfold overall increase in numbers of larvae. Larval sampling suggests a serious potential for major expansion of the infestations into areas mentioned above in 1991. Other areas of old growth hemlock not sampled, but within the traditional outbreak areas from Redrock Harbour in the north to near Whatshan Lake in the south, might also be considered at risk (Map).

Old man's beard lichen was collected this fall from hemlock at Bigmouth Creek, Downie Creek and Tangier River (Map), to determine the number and viability of overwintering eggs and assist in forecasting the 1991 damage trends. The results of extractions from lichen from five trees from each of the three locations were as follows:

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Location	Avg. # eggs/ 100 g			
	Healthy	Parasitized	Infertile	Old
Bigmouth Cr.	89	34	5	10
Downie Cr.	300	34	10	34
Tangier R.	14	4	0	4

Based on the standard that 5-26 eggs indicate light defoliation and 60+ eggs severe defoliation, severe defoliation for Bigmouth and Downie creeks and light defoliation at Tangier River is forecast. This confirms the larval sampling results and indicates an increase in both extent and severity for the hemlock looper infestations in the Revelstoke TSA.

The high levels of parasitism found at two sites was unusual in this first year of infestation; parasite populations commonly lag somewhat in an infestation buildup. It is not clear how this will affect populations in 1991. In previous outbreaks, when an average of 30% parasitized eggs (parasitized/healthy) were found in a population, a collapse has sometimes followed the next year. A collapse occurred in 1984, after two years of severe defoliation and 29% parasitism in 1983.

Infestations have generally lasted 2-3 years and then collapsed. High egg parasitism, adverse weather conditions, starvation and a nuclear polyhedrosis virus (NPV) are all factors in collapse. Operational chemical or biological control efforts have not been used in British Columbia in recent history. As mortality and top-kill can be expected, especially in areas of repeated severe defoliation, management of harvesting schedules in favor of infested stands could help minimize losses.

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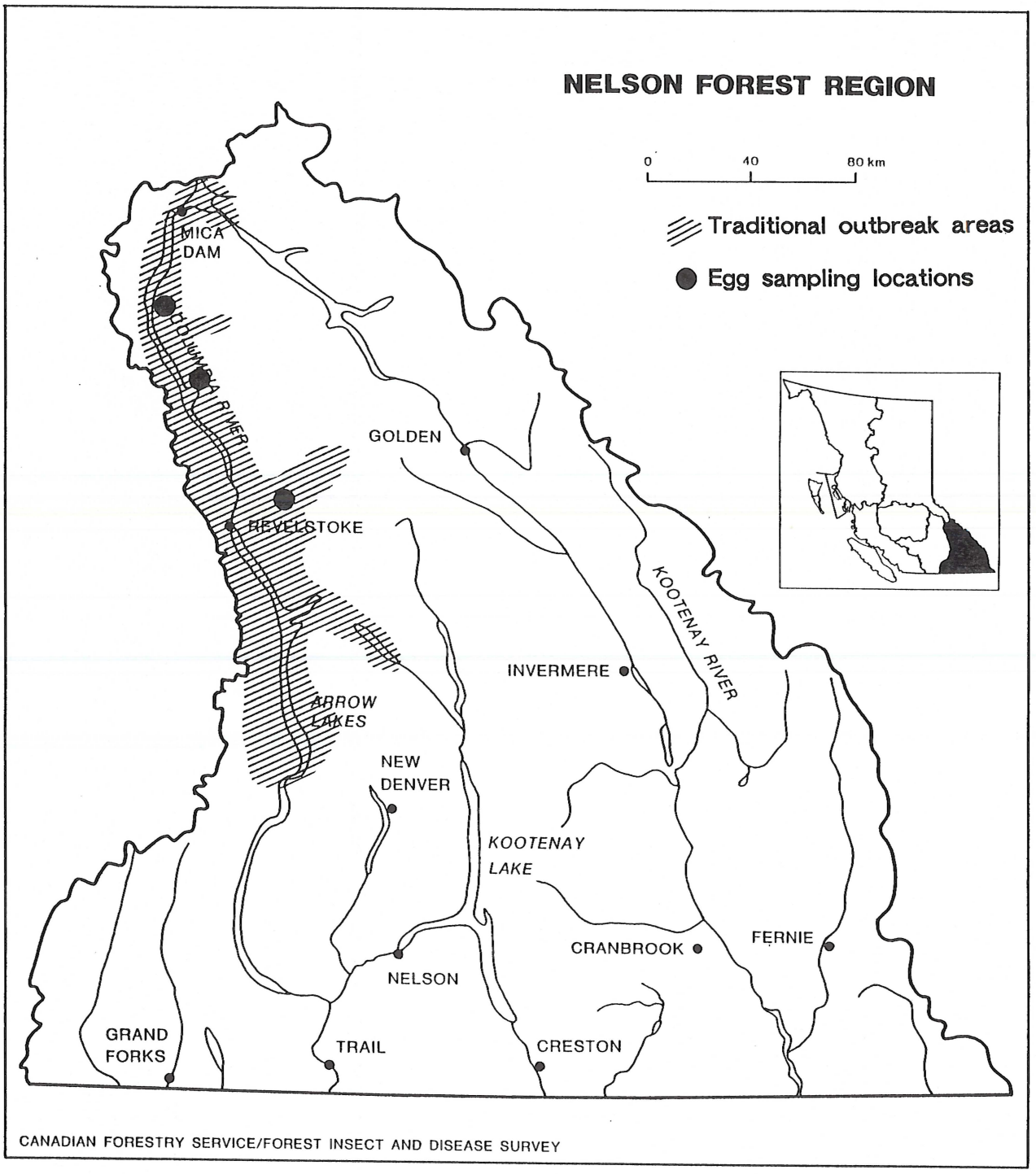
NELSON FOREST REGION
0
40
80 km
Traditional outbreak areas
Egg sampling locations
MICA DAM
COLUMBIA RIVER
GOLDEN
REVELSTOKE
KOOTENAY RIVER
INVERMERE
ARROW LAKES
NEW DENVER
KOOTENAY LAKE
CRANBROOK
FERNIE
NELSON
GRAND FORKS
TRAIL
CRESTON
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