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# PEST REPORT

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

October 1990

## GRAY SPRUCE LOOPER IN THE NELSON FOREST REGION

J. Vallentgoed
Forest Insect and Disease Survey

Defoliation of western hemlock by the gray spruce looper, Caripera divisata, occurred over 1370 ha in 24 infestations in the Arrow TSA of the Nelson Forest Region. This is the first major outbreak in B.C. by this pest (also known as the spruce looper or the gray forest looper), since a minor infestation in 1961 near Terrace.

Overall levels of attack varied from 230 ha of light and 1065 of moderate to 75 ha of severe defoliation. Infestations were on predominantly east facing slopes. Defoliation occurred primarily along the east side of the Arrow Lakes from the Nakusp area to just south of Arrow Park, with two small areas of damage just north of Nakusp. Feeding was evident from the shoreline to approximately 900 m elevation. Two infestations were noted above Box Lake at approximately 700 to 950 m elevation. Along Slocan Lake infestations occurred from Wragge Creek to Nemo Creek, including approximately 400 ha of moderate to severe defoliation in Valhalla Park between Nemo Creek and Wee Sandy Creek at elevations from shoreline to 1000 m.

Larvae of the gray spruce looper are solitary feeders and have been recorded on 23 hosts. Current populations were found primarily on western hemlock with some light feeding on Douglas-fir and trace on western red cedar. Feeding was predominantly on the main crowns with some complete stripping of upper crowns and partial feeding in lower crown levels. Regeneration was rarely completely defoliated even in the most severely infested areas; the most current foliage was generally retained. There was also little evidence of webbing in infested stands. The lack of feeding in regeneration and lateness of the feeding period indicates a tenacious looper not easily knocked into the regeneration whether by wind or rain. The looper overwinters as a pupa, eggs are laid singly or in small groups on needles in June and the six larval instars feed into mid-October.

During ground assessments larval mortality appeared substantial at all sites. Between 9 and 21% mortality has already occurred in two larval mass collections being reared for parasite determination and geometrid pheromone studies at Simon Fraser University; further mortality is expected prior to completion to pupal development. Mortality has been caused primarily by a fungal pathogen tentatively identified as Entomophthora sp. Nuclear polyhedrosis virus (NPV) is known to also occur in the gray spruce looper.

The only previously recorded outbreak of this looper occurred in 1961, east of Terrace in the Zymoetz River valley. In that infestation, however, only light feeding on the lower crowns of larger trees was reported with overall averages of 18 and 15% defoliation based on two 50-tree plots assessed. Understory feeding was estimated at 25 to 80%. Larval numbers continued for several years, averaging 6.8 from 29 collections in 1962 and 62 larvae at Lava Lake in 1964, but down to a maximum of 6 larvae in 1965 throughout the district. Defoliation was negligible in 1962, the year following the outbreak, and no evidence of permanent damage was mentioned.

Two trees were felled in a severely defoliated area to assess bud damage throughout and the potential for top-kill. Based on this assessment, historical information and the presence of high levels of fungal disease, it is projected that no permanent damage should result from this outbreak and that defoliation levels will be much reduced in 1991.

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