



Timber Talks



Prepared by V. H. Phelps, Forest Research Laboratory, 506 W. Burnside Road, Victoria, B.C.

WILL BALSAM WOOLLY APHID INFESTATIONS SPREAD IN B. C.?

No. 30

Infestations of balsam woolly aphid pose a threat to the forest economy of British Columbia. Attacks by this small purplish-black aphid retard tree growth, deteriorate wood quality, and cause extensive tree mortality. Symptoms are difficult to detect until an attack is well advanced. A whitish appearance of the bole, often accompanied by exudations of resin, is evidence of stem attack; swellings around nodules, deformed crowns, and dead and broken tops indicate crown or twig attack.

Winter and summer climate affect the prevalence of this pest. Heavy mortality in the dormant stages occurs when temperatures are between -25 to -32°F and at other stages of development between 3 to -4°F . Heat accumulation of at least 600 degree-days above 42°F is necessary for the insect to complete its development from the dormant stage to the production of progeny. In warm localities, the aphid may pass through 4 to 5 generations in one year.

Based on the estimated ease of spread and establishment of this insect and the suitability of the climate for its survival, the province is divided into three zones.

The high hazard zone is the southeast coast of Vancouver Island and the southwestern part of the mainland. This area, which is the locale of the current infestation, seldom has temperatures lethal to the aphid and supports all of the susceptible native species of fir. Spread of the infestation to the interior will probably be restricted by mountains and snow fields; on Vancouver Island frequent summer northeasterly winds would impede its eastward advance. Dispersal within the zone may be high, due to the proximity of the infestation to heavily populated areas through which there is much traffic.

The moderate zone is along the outer coast, the Queen Charlotte Islands, and areas adjacent to the high hazard zone. Severe winters are infrequent and lethal temperatures are seldom encountered. The accumulation of heat, however, is not high as in the high hazard zone, which should tend to reduce the number of generations, and decrease the rate of population build-up. Grand fir is replaced by amabilis and alpine fir and damage may be more spectacular and mortality occur within a few years of infestation.

In the remainder of the province a serious infestation is less likely to occur. Lethal winter temperatures are common and in most areas there is only sufficient summer heat for one generation.

Within the high hazard zone, dispersal of the aphid will be great and control by natural agents is unlikely. Outside this zone, amabilis fir forests in central Vancouver Island are in greatest danger and management changes may be required. The likelihood of spread in the northern parts of the province is minimal.