

## **Balsam Woolly Adelgid**

*Adelges piceae* (Ratzeburg)

Homoptera: Adelgidae

Amman, G. D. 1969. A method of sampling the balsam woolly aphid on Fraser fir in North Carolina. *Canadian Entomologist* 101: 883-889.

**Objective:** To develop a method of sampling adelgid populations, which would provide a means of assessing mortality factors and population density.

**Abstract:** The balsam woolly adelgid, *Adelges piceae* (Ratzeburg), is an introduced species first recorded in North America in Maine in 1908. It has since spread throughout the native range of balsam, *Abies balsamea* (L.) Mill., and Fraser, *A. fraseri* (Pursh) Poir., fir and is also found in the Pacific Northwest. Mortality occurs quickly in trees suffering from extensive stem attacks, which appear as white woolly masses. A study was conducted on Mt. Mitchell, NC in a dense stand of Fraser fir with dominants and co-dominants 7.6-10.7 m tall. Populations of *A. picea* were sampled without replacement.

A sample of 2 to 16 pieces of bark (depending on the observed density), 1.27 cm in diameter from the lower bole of each of 10 trees yielded a standard error of  $\pm 10\%$  of the mean. An acceptable level of precision was obtained by taking 77 samples 1.4-1.7 m and 71 samples 0.8-1 m along the bole (n = 148 samples). During winter and from mid-July through mid-August sampling intensity could be reduced to 40 pieces of bark.

**Sampling Procedure:** Select randomly 10 trees of similar diameter. Take eight pieces of bark with a 1.27 cm diameter cork punch from at least two different cardinal directions at 0.8-1 and 1.4-1.7 m along the bole of each tree. Once the bark is cut, use a knife to remove (pry) the bark until the cambium layer is reached. This procedure will minimize pitch flow. Store samples in vials, and count and record the number of *A. picea* under a dissecting microscope in the laboratory.