

Cooley Spruce Gall Adelgid

Adelges cooleyi (Gillette)

Homoptera: Adelgidae

Lasota, J. A.; Shetlar, D. J. 1986. Assessing seasonal and spatial abundance of *Adelges cooleyi* (Gillette) (Homoptera: Adelgidae) by various sampling techniques. *Environmental Entomology* 15: 254-257.

Objective: To evaluate four sampling methods for assessing seasonal and spatial distributions of *A. cooleyi* on Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco.

Abstract: The Cooley spruce gall adelgid, *Adelges cooleyi* (Gillette), is serious pest in nurseries, Christmas tree plantations, and forests throughout northern North America. The primary host is spruce, *Picea* spp., although winged adults fly to Douglas-fir which is the alternate host. Feeding causes distortion, spotting, and premature needle abscission. Four sampling methods (1-min, 3-min, 5-branch, and 15-branch) were evaluated for accuracy in estimating *A. cooleyi* populations on Douglas-fir in Pennsylvania.

The 3-min counts produced the greatest number of *A. cooleyi* while the 5-branch counts produced the least. Comparisons between the 1-min and 15-branch counts differed significantly on only one sample date. Early in the season, *A. cooleyi* populations were high and thus all four sampling techniques produced similar accuracy. However, as populations declined, the larger sample units (3-min and 15-branch counts) were generally more accurate at estimating *A. cooleyi* densities than the smaller ones. The most representative area to sample was in the upper half of the crown regardless of the time of year. The 1-min count was most useful to commercial growers or others that have little time to sample.

Sampling Procedure: Sample 1 to 2 shoots from the upper half of the live crown from each of 10-20 Douglas-fir 1.5-1.8 m tall. Northern and eastern aspects should give the most representative sample regardless of the time of year. Count all *A. cooleyi* found on the current year's growth for 1-min (time constrained sampler) or 3-min (detailed sampler). Conduct sampling procedures three times annually to assess changes in population density.

Note: This method also applies to forested and urban areas.