

Balsam Woolly Adelgid

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Balsam woolly adelgid (BWA), *Adelges piceae*, is a small but significant pest of “true” firs (*Abies*). This insect is native to Europe and was first reported on the East Coast (Maine) around 1908 and on the West Coast (California) around 1928. Today, BWA is predominantly found in the northwestern and northeastern parts of the United States, but smaller populations are also present in pockets further south along both coasts. While various subsequent introductions have occurred along both coasts, dispersal throughout the central U.S. and Canada has been limited. Fir species respond to BWA infestation with varying degrees of sensitivity. Species such as silver fir may tolerate an infestation without much impact while Fraser fir can be severely and irreversibly damaged in as short as 2–3 years.

Description and Life Cycle

Adult BWA are all female and are quite small at about 1 mm in length. Maturing adelgids begin secreting wool-like, waxy strands that accumulate and provide protection for themselves and their eggs (Figure 1).

Immature BWA overwinter on their host and resume activity in the early spring. Once mature, females begin laying eggs within their woolly covering. Eggs hatch within a month and newly emerged adelgids (crawlers) disperse around the tree to find suitable feeding sites. Large populations often develop rapidly on infested plants. Some immature adelgids (crawlers) will drift with the wind across vast distances to new hosts.

Once they are ready to feed, the crawlers molt to the next immature form (nymphs) and will remain in place for the remainder of their life. Up to four generations may occur per year depending on the geographic location.

Figure 1: Overwintering settled nymphs (black with white fringe) and woolly adult females



Damage

Once settled, nymphs insert a tube-like mouthpart below the bark around lenticels, internodes, and buds to feed on sap. Feeding damage results in abnormal growth, branch dieback, needle drop, loss of vigor, and tree death.

Saliva released into a stem during BWA feeding causes a hypersensitive response in many North American fir species, triggering an abnormal growth of reaction wood, called gouting, as a defense (Figure 2). Gouting can impede the movement of water and nutrients and lead to dieback.

Figure 2: Gouting and deformed terminal growth



These swellings are diagnostic for this pest, but even when they are not present, previously infested trees have a tendency to form weaker needle attachments and stiff branches. These defects compromise tree survivability as well as their commercial use and aesthetic value.

If heavy infestations occur along the main stem, significant internal damage and external symptoms may not be detected until the tree is near death.

Management

Early detection and management are imperative to maintain uniform growth and avoid disfiguration. Once heavily infested, a susceptible tree may never fully recover a proper form. Effective therapeutic treatments are available to manage BWA.

In areas with heavy pest pressure, it is recommended to plant tolerant or resistant fir species. Some naturally occurring predators will feed on BWA, but biological control will not consistently suppress populations below damaging levels.

Fertilization should be avoided until the population is managed. Please contact your Bartlett Arborist Representative to learn about management strategies.



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