

Pests of Pines

Bark Beetles and Borers

By The Bartlett Lab Staff

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All species of pines are attacked by insects known as bark- and wood-boring beetles. As a group, these insects are highly damaging because they feed under tree bark. Bark beetles also bore under the bark of pines, but do not tunnel into the wood. Additionally, some bark beetle species can introduce vascular-clogging fungi. Both insect groups interrupt vascular tissue and damage phloem where feeding occurs. Pines that become stressed by drought, root damage, or are struck by lightning can be rapidly attacked and killed by pine-infesting beetles.

Types of Bark Beetles and Borers Attacking Pines

Dendroctonus Bark Beetles

Several genera and species of bark beetles (Scolytids) attack pines. Globally, the most devastating genus is *Dendroctonus*, which translates to “tree killer.” In North America, three *Dendroctonus* beetles—mountain pine beetle (*D. ponderosae*), southern pine beetle (*D. frontalis*) and great spruce beetle (*D. rufipennis*)—are known for killing trees, often in conjunction with the blue-stain fungus they vector. Red and black turpentine beetles (*D. valens* and *D. terebrans*) (Figure 1) attack the lower trunk and large lateral roots of pine trees. *Dendroctonus* spp. bark beetles utilize sex pheromones to congregate on pine trees which allow large populations to build up on individual trees.

Pine Engraver Beetles

There are many species of *Ips* bark beetles in North America. Arguably, the two most common tree-infesting species are the pine engraver (*I. pini*) and the eastern fivespined engraver (*I. grandicollis*). Attacks are initiated by male beetles that bore through the outer bark into phloem (Figure 2).

Pheromone attractants released by the male attract many more beetles to the area. Outbreaks usually occur during droughts with beetles killing groups of

Figure 1: Adult black turpentine beetle

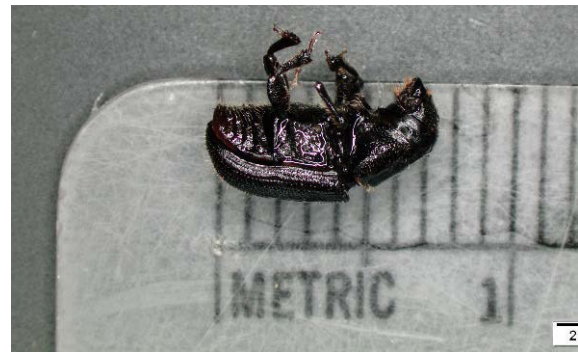


Figure 2: Holes made by male pine engraver beetles boring through the outer bark



pines. Unless dying trees are quickly removed, outbreaks may continue for 2 to 3 years.

Moths

Pine tip moths, pitch mass borer, and pine shoot borers all damage landscape pines. The tunnels they excavate can girdle the trunk and weaken branches, making them more susceptible to breakage during storms. Heavily infested trees are often deformed and killed.

Zimmerman Pine Moth

Caterpillars of the Zimmerman pine moth tunnel into pine bark, damaging the phloem and cambium regions of the trunk, especially at whorls. Austrian and Scotch pines are preferred hosts, though mugo, white, jack and red pine are also attacked. Dead and dying branches, most often in the upper half of the tree, commonly indicate infestations. Adult moths are active primarily in late July and August. The moths lay eggs on terminal buds, on the bark and around wounds with pitch residues. The first external symptoms of injury are popcorn-like pitch masses at wound sites.

Symptoms of Bark Beetle and Borer Injury

Pines at highest risk of bark beetle and borer damage are those with root damage or bark injuries. Newly transplanted pines are frequently attacked. Although pines are generally able to withstand drought, moisture-stressed trees are at high risk of borer attack. Vigorous, well-watered pines are at risk only if borer populations are high in the area. Bark beetle and borer infestations may not be discovered until advanced symptoms appear and it may be too late to save the first trees attacked. Symptoms include yellowing of the needles, holes in the bark that exude sap or sawdust (Figure 3), and emergence holes of the beetles through the bark.

Integrated Pest Management

A program that routinely monitors pines for borer attacks and injury is recommended to reduce tree losses. Examination of all woody plants by a trained plant health care specialist is the most effective method of timing control measures. Integrated pest management programs are particularly important for recently transplanted trees and pines on construction sites. Bark treatments are applied if plant inspections identify plant stress or borer populations are above

Figure 3: Exuding sap and sawdust is a symptom of borer injury



action thresholds. Several preventative treatments each year are recommended for plants at risk of borer attack. If an infestation of bark- or wood-boring insects are present, timely micro-injection treatments on high-value landscape pines may prevent tree mortality.

Keep pines in good condition with cultural practices including pruning, root collar excavation, and fertilization. Minimize tree stress by deep watering in times of drought. Borer problems may be aggravated by root damage, foliage diseases, transplanting, root collar injury, nutrient deficiency, or stem cankers.

On construction sites, the roots of pines that are to be preserved should be protected. Damage to the soil under trees will weaken pines and render them susceptible to beetle attack. Weakened or badly damaged trees should be removed prior to completion of construction.

A key to borer management is sanitation, the rapid removal of dying trees and infested branches. Pine slash should not be left near high-value landscape pines. Avoid stacking fresh firewood near landscape trees. Many insect parasites and predators feed on pine borers. Woodpeckers feed on the larvae and pupae. However, these natural means cannot be relied upon to control the borers. Please contact your Bartlett Arborist Representative to learn how to effectively manage these pests.

