

Twig Beetle Biology and Control

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Figure 1. Twig beetles often damage only part of a pinyon in urban settings. Damage can be severe enough to justify tree removal.

Twig beetles (*Pityophthorus* spp. and *Pityogenes* spp.) are poorly known native insects that attack conifers. They have damaged many trees in the past few years. They target many forest grown and ornamental conifers, including pines, true firs, Douglas-fir, and spruce. Pine trees are infested more often than other species, and pinyon and Mugo are especially vulnerable. As the name implies, twig beetles attack small branches and twigs, Twig beetle damage often appears as a flagging, or curling of branch tips. Tips will turn brown and die. Often, only a portion of a tree will be attacked by twig beetles. Young trees and trees that are stressed are vulnerable. Shaded and storm-damaged twigs are especially susceptible. Twig beetle populations can be elevated in areas where activities like logging, pruning, or root damage from construction are occurring.

Trees affected by twig beetles are often stressed by conditions like drought, disease, or physical damage. Under extreme situations, healthy trees can be attacked. Twig beetle outbreaks in a forest setting can be an indication that conditions are favorable for damage from bark beetles. Tree mortality from twig beetles alone is rare, but has been documented in pinyon pines. Damage to landscape trees can be severe enough to justify tree removal.

LIFE HISTORY

Several species of twig beetles are present in western forests. Adults are small, 1.5-3.5 mm long, depending on the species. *Pityophthorus* tend to be smaller than *Pityogenes*. Their color ranges from light



Figure 2. Adult twig beetles are tiny (major measurement units are 1 mm), and seldom seen.



Figure 3. Small circular exit holes on the twigs indicates twig beetle damage.

brown to black. The adults overwinter, then emerge during the early spring and begin searching for a host. This can occur as early as mid-March in some areas following a mild winter. Adult emergence tends to be synchronized, with many beetles emerging at once.

Once the adult twig beetle has located a host it will bore under the bark of the twig. This is indicated by the presence of orange-colored boring dust around the entrance hole or at the base of the tree in the case of a large infestation. Very little pitch is produced. After boring under the bark, egg galleries are formed by the female. These galleries resemble a star-shaped pattern radiating from a central chamber. Twig



Figure 4. Twig beetle infestations can be diagnosed from the pitch tubes hanging from infested twigs.

beetle grubs are “C”-shaped and legless with caramel-colored heads and fat white bodies. Two to four generations are produced by most twig beetle species each year.

MANAGEMENT

Twig beetle damage is often associated with drought, root or other damage or other tree stresses. Protecting newly transplanted trees, and avoiding stress to established conifers by providing good cultural practices to landscape trees is essential to preventing damage. The only chemical control option is to spray high risk trees prior to attack. There is no treatment for trees once they are infested. Insecticides such as permethrin (Astro), or carbaryl (Sevin) can be used to spray the larger branches and twigs. Many formulations and trade products are registered for use. Be sure to read and follow all label directions. In general, permethrin or carbaryl will provide 90 days residual control when applied at the highest labeled rate. Formulations with high percentage of active ingredient (> 20%) are far superior to, and cheaper than lower percentage (<5%) active ingredient products. Two or three applications may be required to protect trees continuously between April and October. These insecticides kill the adult beetles as they chew through the bark of the tree.

Protective sprays aimed at pinyon Ips are effective against twig beetles if coverage of the twigs is complete. Twig beetles are often found in association with these bark beetles. Preventative sprays should be limited to high value ornamental or landscape trees in high risk areas. These are areas with established populations of the beetles, and widespread stress on trees from drought or other factors. Control of twig beetles in forest situations is nearly impossible.