Cherry Bark Tortrix *(Enarmonia formosana)*

Host/Site

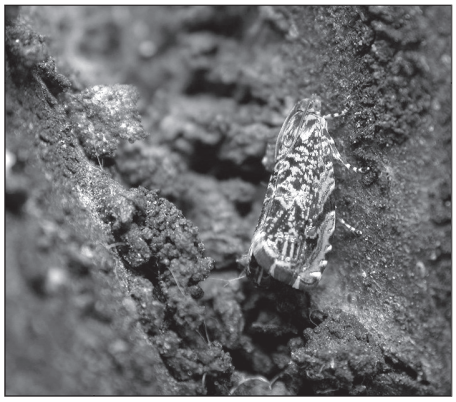
Cherry bark tortrix (CBT) is a relatively new pest in the Pacific Northwest. An introduced European problem, it was first detected in British Columbia in 1989 and is now present in much of western Washington. All woody shrubs or trees in the rose family are susceptible. Although *Prunus* (especially cherry) are the preferred host, CBT has spread to *Malus*, *Cratagegus*, *Pyrus*, *Pyracantha*, *Cydonia*, *Sorbus*, and *Photinia* species. CBT feeding can cause damage to trees but in many cases does not kill trees. Infestations leave the host susceptible to secondary organisms and environmental stress.

Identification/Appearance

The first indication of CBT attack is the reddish-orange colored frass tubes (made of fecal pellets and silk) protruding from the bark. This frass is often mixed with exuding gum-like resin from the bark (middle photo at right). Bark can appear swollen or curled (as in lower photo). Infestation is often first seen at previously damaged areas, pruning wounds, or graft sites.

The adult moth has a wingspan of .6 to .7 inches (15 to 18 mm). The forewings are colorful and intricately mottled with light orange and metallic gray, with three parallel black bars near the end of the wings. The hindwings and abdomen are dark grayish-brown with a light-colored fringe. Adults fly from May to September. Eggs are round, flattened, and slightly domed, about 0.7 mm across, and milky white, becoming clear pink or red in 2 to 3 days.

Larvae, which are found under the bark, pass through five separate growth stages and when fully grown are .3 to .4 inches (8 to 11 mm) long, pale gray or flesh-colored, with very sparse hair and a yellowish-brown head.



Top: Adult moth; Middle: Closeup of frass tube
Bottom: Frass in bark of cherry tree.
Photos by Todd Murray

Life Cycle

CBT overwinters as larvae of various ages, tunneling under the bark of host trees and feeding as long as temperatures remain above freezing. Mature larvae pupate in spring by spinning a silky cocoon, usually within the frass tubes. They emerge as adults about two weeks later, beginning in late April to early May, producing a peak in flight activity in June. The overwintered less-mature larvae emerge later, producing a second burst of adult flight in August. Females lay eggs on the bark, in crevices, and especially at wounds or previous infestations. The first larval stage grazes just under the outer bark, then moves into the bark tissue. Larvae only feed on the living tissue and never penetrate into the hard wood.

Natural Enemies

Because CBT is an imported pest, natural controls have not yet appeared to a significant degree in the Pacific Northwest. WSU research found parasitism levels of only 1.7% in 1997 and 2.1% in 1998. However, they were able to recover and identify a number of parasitic species from collected larvae. Recent observations indicate that CBT levels may be stabilizing somewhat, perhaps due to *Trichogramma* parasitic wasps. In Europe, parasites have co-evolved with CBT and seem to keep the pest below economically damaging levels. Research on European CBT specimens has identified additional parasitoids that may be candidates for importation to provide natural control. Candidates include various species of *Trichogramma*, *Braconid*, and *Ichneumonid* wasps, among others.

(continued/over)

GREEN GARDENING PROGRAM

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Monitoring

Inspect the trunk of susceptible species, searching for reddish-orange frass, silky cocoon material, or exuded sap. Pay special attention to pruning wounds, other damaged bark areas, and graft sites.

Action Threshold

The action threshold depends on the number of trees at the site, the value of the trees, and other considerations. CBT can eventually kill a tree, but it takes a large infestation and many years. Natural controls may keep populations below a lethal level. Control may not be needed in most home landscapes, where one can wait to see if natural predators will keep CBT in check, but could be important to preserve valuable, historic trees.

If the pest has been detected, utilize pheromone traps and continued observation of tree trunks for further monitoring. If infestation is severe and tree is threatened, consider replacing the tree or shrub with a nonhost variety. If a tree is too valuable to lose, chemical control may be appropriate.

Cultural/Physical Controls

CBT can be prevented by selection of non-susceptible trees (i.e. not those mentioned as hosts) in new plantings or when replacing trees. In susceptible varieties, good maintenance practices to maximize tree health are helpful. CBT preferentially attacks damaged or otherwise stressed host trees. Pay special attention to timing and technique of pruning and avoid damage to bark (from string trimmers, for example) that provides easy access to CBT.

When infestation is first noticed, remove any loose bark and cocoons in the spring, and remove and destroy heavily infested branches or trees. Once a tree begins to decline from CBT infestation — dieback in canopy in blocks, premature wilting — removal is the only available treatment.

Pheromone traps are available for monitoring CBT and may also provide some control if deployed in sufficient numbers.

Biological Controls

No biological controls are currently available, but research continues to identify natural enemies both in Washington and in Europe. Effective parasitoids may eventually be imported to control CBT. Currently, a small native wasp is being studied for its potential control of CBT. Endemic *Trichogramma* wasps can be recognized by observing parasitized CBT eggs. These eggs are deep, dark blue to black in color caused by the pupating parasitoid and stand out next to healthy pink and red eggs. If *Trichogramma* are present, they can contribute to the mortality of CBT and reduce the potential of CBT infestations.

Chemical Controls

In Europe, chemical controls have included dormant oil sprays and insecticide applications to the bark to control the overwintering larvae. Although ongoing insecticide sprays during the growing season have been used to control the adults, the prolonged flight period makes this approach impractical.

WSU research has documented excellent control with well-timed applications of pyrethroid insecticides such as lamda-cyhalothrin, cyfluthrin, and bifenthrin. Horticultural oils were not effective. Fall application (early October) is preferred because the entire population is in the larval stage at that time. A single treatment to infested bark areas is effective and may provide control for years. Little mixed product is needed to treat the infested areas of a mature tree. Apply the mixed product to frass tubes until the solution starts to drip. CBT will come into contact with the poison when they frequent the frass tube. Only infested areas of the trunk and scaffold branches should be treated; there is no need to treat the foliage or small branches of the canopy. Pyrethroids are extremely toxic to fish, and runoff should be avoided. To determine if reinfestation has occurred, monitor for new, orange-colored frass; old frass turns dark purple or black within a season. Alternatively, knock off frass and look for new accumulations.

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