

Solving Mysterious Tree Demise

By Susan Camp

One of the most rewarding aspects of serving as an Extension Master Gardener and Tree Steward is the opportunity to provide information and education to community members about plant problems and how to alleviate them, if possible. Trees, shrubs, and other plants are expensive, so most homeowners want to care for them appropriately and keep them healthy. Unfortunately, despite everyone's best efforts, trees and other plants sometimes fail. If the dying plant is a \$15.00 perennial, most of us just toss it and purchase a new one or another cultivar that has a better chance of performing well. An expensive tree is not so lightly discarded. Most people want to make an attempt to salvage a damaged or diseased tree.

Several recent calls to the Gloucester Extension Office concerned young deciduous trees that were showing signs of distress, including damaged bark, dry, brittle branches, and lack of new leaves. Gloucester Forester Lisa Deaton joined Tree Stewards Jim Newton and Chris Conley to examine the trees, diagnose the problems, and offer education and a plan to improve the situation.

Lisa, Jim, and Chris made careful examinations of several trees, which were Siberian elms, and the culprit was found most likely to be the granulate or Asian ambrosia beetle (*Xylosandrus crassiusculus*).

Approximately 3000 species of ambrosia beetles exist worldwide, and most attack only stressed or dying trees, attracted by the odor of ethanol emitted by the trees. The 1/8-inch-long adult female will bore into a stem and create a "gallery" inside the tree where she will plant a "garden" of fungal spores that she carries in pockets where her shoulders would be. (I find this hilarious.) The female lays up to 60 eggs, which hatch into tiny white grubs that consume the fungal food, or ambrosia. Multiple generations are produced each year, and many ambrosia beetle species overwinter in the galleries. In warm climates, the beetles may remain active year-round.

In the process of carving her way into the tree, the female leaves characteristic frass tubes, composed of excretions and sawdust, sometimes called "toothpicks" or "noodles," which protrude from the carving holes and crumble easily. Small holes in the tree trunk that may leak sap and sawdust around the base of the tree are other tell-tale signs of ambrosia beetle damage. Dark fungal stains may develop on the bark and around the holes. Other signs and symptoms of ambrosia beetle infestation include stunted tree growth, delayed leaf emergence, and early leaf drop.

Unfortunately, chemical insecticides are effective only against adult females, and since females can produce several generations each year, their use is impractical. Once ambrosia beetles attack a tree, you should consider removing and destroying it.

There are some preventative actions you can take when you decide to install a new tree. Always purchase trees and other plants from a reputable grower. Inspect the new tree for damaged bark, brittle or dying limbs, wilting leaves, and indications of insect or rodent damage.

See NC State Publication “Granulate (Asian) Beetle—Entomology Insect Notes” and Clemson Extension Factsheet HGIC 2018 “Ambrosia Beetles” for detailed information on these pests.

Avoid “volcano” mulching. Do not pile mulch thickly around the base of the tree, a common practice that leads to decay and overheating. Lisa Deaton recommends pulling the mulch away from the tree until you can see fine root hairs. Cover the root collar with about ½ inch of mulch and soil. Lisa also recommended the PennState Extension publication “Mulching Landscape Trees” for in-depth information on the use of mulch.

Noting that many of the trees in the area are elms, Jim Newton suggests following the 10-20-30 rule of tree diversity. The rule recommends planting no more than 30% of trees in the same family; no more than 20% in the same genus; and no more than 10% of one species in an area to maintain diversity. See the online chart “10-20-30 Rule—California Urban Forests Council (CaUFC)” for a clear explanation of the rule.