



Black Twig Borer

Introduction

The black twig borer (*Xylosandrus compactus*) is a non-native ambrosia beetle that was first detected in Florida in 1941. Now widely distributed throughout the Southeast and elsewhere, it can infest healthy plants, instead of relying on dead or dying plants like many other ambrosia beetles. The black twig borer is a serious pest of some agriculturally important plants such as orchids and avocado in Florida and coffee in Hawaii, Africa, India, and Asia. In Mississippi, the black twig borer is usually a pest of ornamental and shade trees. Although ornamental shrubs and shade trees seldom die from beetle infestations, the loss of growth and aesthetics can be substantial. Severe infestations reduce growth rate of hosts and alter ornamental and shade tree growth form. Attack sites provide infection courts for pathogens and decay fungi that can add to damage caused by this beetle. Cumulative stress from black twig borer attacks and other stressors such as drought can sometimes result in tree mortality.

Identification

The adult female is approximately 1.4 to 1.9 mm long with a stout, cylindrical, brown/black body. The adult

male is much smaller than the female (0.8 to 1.1 mm long) and is flightless and rarely seen. The eggs are small, white, and ovoid. The pupa is similar in length to the adult beetle and creamy white in color.

Biology

The female creates entrance holes into the underside (usually) of host twig or branch. She enters into the pith or wood at the center of the twig. Males are flightless and usually do not leave the gallery in which they hatch. During attack, the females inoculate the host with ambrosia fungus spores. The female excavates brood chambers where a loose cluster of eggs is deposited. The ambrosia fungus (named after the food of the gods from Greek mythology) feeds the females and their brood. More than one female can occupy a single twig or branch. After the eggs hatch, the larvae feed on ambrosial fungus growing on the tunnel walls. The adults emerge through the original entrance holes. About 28 days are required for full development from egg to adult. Adults overwinter in the host and emerge during late February, depending on local climate conditions. They attack twigs and branches in March and begin brood production in

April. Highest populations occur from June to September.

Distribution and Hosts

The black twig borer infects over 224 plant species belonging to 62 families. Some of the known hosts are: avocado, magnolia, dogwood, live oak, laurel oak, red maple, florida maple, pecan, hickory, redbud, sweetgum, sugarberry, mango, eastern hop-hornbeam, redbay, sycamore, southern elder, sweetleaf, and eucalyptus.

The black twig borer is native to Southeast Asia, tropical and subtropical regions from West Africa to Hawaii. They can also be found in southern Japan and Brazil. Since first discovered in Florida in 1941, the black twig borer has spread to Georgia, Alabama, Mississippi, Louisiana, and east Texas.

Damage Signs and Symptoms

First signs are wilting and yellowing foliage, which is visible within weeks of infestation. The dead foliage often occurs at the terminal ends of branches, twigs, or leaders of trees. This type of tip dieback is commonly referred to as flagging. Inspection of the flagging often reveals a small pin sized hole on the underside of stem, somewhere near the stem-side of the flagging

symptoms. During heavy infestations (often linked to drought or other plant stress), the black twig borer can cause mortality among shrubs and trees. Flagging or dead branches, twigs, or terminal shoots killed by black twig borer are hollowed out in the center by the adults and larvae, and provide an easy way to diagnose black twig borer damage. Damage from a closely related species, *X. crassiusculus* can be distinguished from black twig borer attacks based on the size of materials they infest. Twigs less than 2 cm diameter are usually only infested by black twig borer, whereas *X. crassiusculus* infests larger twigs, branches, and stems 2 to 8 cm in diameter due to its larger body size.

Management/Control

The simplest way to control black twig borers is to prune and destroy beetle-infested plant material. Flagging branches should be pruned at least a few inches before symptoms begin on a branch. If the remaining portion of the branch is hollow, prune again closer to the trunk until the center is no longer hollow. Pruned material should be burned. Practices to promoting tree vigor, such as watering, mulching, fertilizing etc...can aid the plant during recovery from beetle damage. Chemical control strategies do exist. Consult a registered pesticide applicator for insecticides that are labeled for your specific

circumstances. Follow label instructions regarding application.

For more information Contact your Mississippi Forestry Commission Local Office or Dr. John J. Riggins (johnjriggins@gmail.com)

Sources:

http://www.entnemdept.ufl.edu/creatures/trees/Black_twig_borer.htm

http://www.fl-dof.com/publications/insects_and_diseases/insects_hbs_black_twig_borer.html

Ngoan ND, Wilkinson RC, Short DE, Moses CS, Mangold JR. 1976. Biology of an introduced ambrosia beetle, *Xylosandrus compactus*, in Florida. Annals of the Entomological Society of America 69: 872-876.

Wood SL. 1982. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoirs No. 6. Brigham Young University. 1359 p.



Figure 1: Adult black twig borer. Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org.



Figure 2: Black twig borer damage to Leyland cypress. This type of twig dieback is often called flagging. Andrew J. Boone, South Carolina Forestry Commission, Bugwood.org.



Figure 3: Black twig borer galleries in Magnolia. Forrest L. Oliveria, USDA Forest Service, Bugwood.org.



Figure 4: Adult black twig borer. Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org.



Figure 5: Black twig borer damage inside twig. (www.ctahr.hawaii.edu/nelsons/koa/koa.html)