CLEMSON COOPERATIVE EXTENSION

Entomology
Insect Information Series

Providing Leadership in Environmental Entomology
Department of Entomology, Soils, and Plant Sciences • 114 Long Hall • Clemson, SC 29634-0315 • Phone: 864-656-3111
email:dpento@clemson.edu

AMBROSIA BEETLES

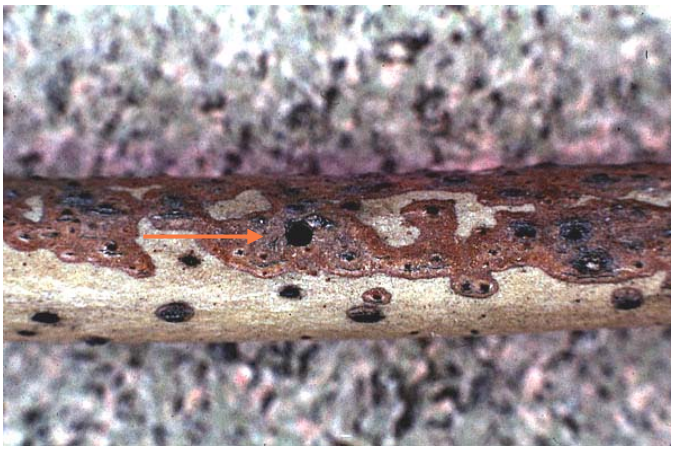
Ambrosia beetles are a specialized group belonging to the family Scolytidae. They differ from the bark beetles in this family in several ways. While bark beetles burrow in the phloem layer or at the juncture of the bark and sapwood, ambrosia beetles bore through the bark and into the sapwood. The ambrosia beetles are highly specialized and feed on fungi that they cultivate on the walls of the tunnels. Both the adults and larvae feed on the fungus. In many cases, the fungi are specific to a given beetle and the spores are carried from site to site in specialized pouches (mycetangia) in the body of the female. As the female excavates a new tunnel, the spores are deposited on the walls.

Most ambrosia beetles attack weakened, injured or dying trees and shrubs. Some attack fresh-cut wood as well. A few species attack apparently healthy trees and shrubs. Some of the more common ambrosia beetles will be described.

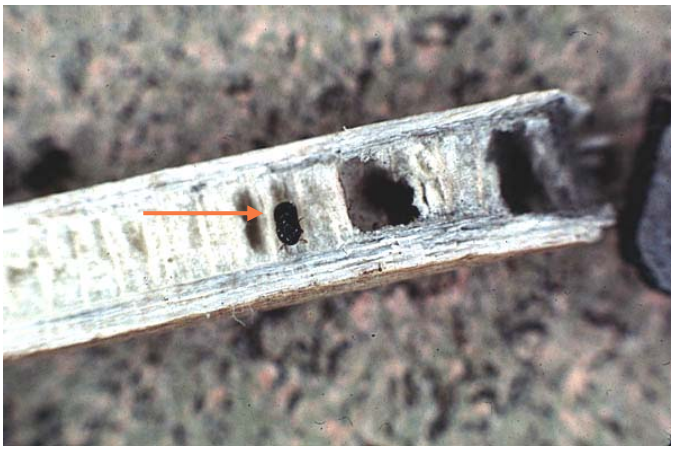
The black twig borer, *Xylosandrus compactus*, and the Asian ambrosia beetle, *Xylosandrus crassiusculus*, are two species that attack apparently healthy trees and shrubs.

The black twig borer is an introduced species native to Southeast Asia. The first report in this country was from Florida in 1941. It is widely distributed throughout the world in tropical and subtropical regions. This beetle attacks twigs and small branches of host trees and shrubs. Dogwood, magnolia, and redbud are some of the common ornamental shrubs and trees attacked by this beetle. It is known to attack over 200 different host species. Adult females begin to emerge about the time dogwood blooms. The females bore into the twigs and small branches and form brood chambers in the stem pith. As many as six generations per year are produced.

The first signs of damage by this beetle are fading or wilting of the foliage on the terminals of infested twigs and branches. Close inspection will reveal the presence of a tiny entry hole on the underside of the affected branch.



Black Twig Borer entry hole in a magnolia twig. Photo: C. S. Gorsuch



The arrow points to a black twig borer adult. Photo: C. S. Gorsuch

All stages of the beetle may be found in infested branches. Dark stains from the ambrosia fungus will be found in the central pith as well.

Small infestations can be controlled by pruning out the infested twigs and branches. Because of the many overlapping generations, spraying is of limited value.

The Asian ambrosia beetle is also a native of southern Asia and is now found world-wide. It was first detected

in the U.S. in Charleston, SC, in 1974. This beetle attacks over 200 broadleaf trees, shrubs, and vines.

Sawdust plugs pushed from the tunnel of an Asian ambrosia beetle. Photo: C. S. Gorsuch

The initial attack by this beetle occurs in the spring. As the female bores into the wood, a thin, toothpick-like strand of sawdust is pushed from the tunnel. This may extend an inch or more from the surface of the bark. While the females prefer to attack stems under three inches in diameter they will attack stems up to eight inches in diameter. The entry hole is about 2 mm in diameter. The tunnel goes straight into the heartwood and then opens into a cave-like brood gallery with one or two side galleries.

An Asian ambrosia beetle gallery and brood chamber with white ambrosia fungus on the walls. Photo: C. S. Gorsuch

A major emergence of females occurs in early spring. This is often around March 1 in South Carolina. Host plants may be heavily attacked at this time. If the host is vigorous enough, the beetles may be drowned or forced out by heavy sap flow. If the host is weak or not producing large amounts of sap, the attack will be successful.

Control of the Asian ambrosia beetle is difficult. Heavily infested plants should be removed and destroyed. Insecticide sprays are of limited value. They must be applied prior to adult emergence and attack on new hosts. Using proper horticultural practices to ensure healthy plants will help prevent attack.

An ambrosia beetle gallery showing the larvae and the mother beetle tending them. Photo: Clemson CE Series

There are several other ambrosia beetles that attack weak or dying host plants. The most common of these is *Xyleborinus saxeseni*, sometimes referred to as the lesser shothole borer. Almost any broadleafed tree or shrub may be attacked by this beetle. The first major adult flight is in mid- to late-February when temperatures exceed 65°F. As many as five generations per year are produced.

Maintaining healthy trees and shrubs is the first line of defence against the ambrosia beetles attacking weak hosts. This includes proper fertility, maintaining proper soil pH, and adequate soil moisture. Chemical control is not an option for these beetles since the host is already very weak or dying.

For other publications in our Entomology Insect Information Series visit our web site at http://www.clemson.edu/esps.

Prepared by Clyde S. Gorsuch, Extension Entomologist/ Professor, Department of Entomology, Soils, and Plant Sciences, Clemson University.

EIIS/TO-22 (New 09/2003).