BUG BIZ
Pest Management and Insect Identification Series
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Cnestus mutilatus, Camphor Shot Borer (Coleoptera: Curculionidae)

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Adult female camphor shot borer (Rachel Osborn, Ambrosia Beetle ID, USDA APHIS PPQ, Bugwood.org).

Description

The camphor shot borer is a member of the group referred to as ambrosia beetles within the family Curculionidae (weevils). Adult female camphor shot borers are small beetles, one-tenth to one-fifth of an inch in body length (2.5 to 4 mm), dark brown to black in color and broadly oval when viewed from above. A distinctive feature is the nearly circular foreparts of the body (thorax and head) and short, circular hind parts (elytra and abdomen). The shape of the body has been described as looking like two BBs stuck together. Their heads are not visible from above because of the hoodlike thorax. Much of the top surface of the elytra is occupied by a large circular depression. The entire dorsal surface of the body is covered by small granular teeth or tubercles that are larger around the front of the thorax. The antennae are short, typically not visible from above, and brown and clubbed. The legs are brown in color, also short, wide and flattened. Adult males are similar in shape to females but are smaller in size. Larvae are white and grublike and confined to galleries of host trees surrounded by fungus.

Life Cycle

Like all beetles, the camphor shot borer is holometabolous, having egg, larval, pupal and adult stages. Ambrosia beetle females bore holes into trees to prepare a chamber in which eggs are deposited. She inoculates the chamber with fungus spores that are carried on a specialized part of the thorax called a mycangium. The resulting fungus infects the wood of the chamber and serves as food for the young. The developing larvae feed on the fungus as it attacks the woody tissue. As they mature and grow, larvae create galleries that extend throughout the cambium layer beneath the bark. Mature larvae pupate within these galleries, and the females emerge and begin searching for mates and suitable host trees. Males remain in the galleries and die soon after mating. Mature females overwinter in the galleries in which they developed the previous year.

The host range of the camphor shot borer is broad, comprising a wide range of deciduous trees, shrubs and vines. In the eastern U.S., the sweetgum is a favorite host tree. The species prefers small diameter branches and will not utilize any larger than 2 inches in diameter.

Ecological Significance and Pest Status

The camphor shot borer was introduced from its native range in Asia, where it is reported to be a pest of forest trees. It was first documented in North America based on specimens captured in Mississippi. The species was first documented in Louisiana during 2009. They can

now be found throughout the eastern half of the United States as far north as Pennsylvania. They do not appear to pose a direct threat to native trees, mainly because of their preference for smaller branches. However, they have an unfortunate and unique way of creating problems. They are strongly attracted to vapors given off by gasoline, possibly because of the high ethanol content of modern formulations. Ethanol is commonly released by stressed and dying trees and serves as a powerful attractant for insects, such as the camphor shot borer, that attack stressed tress. This has resulted in an alternative common name for the species, gasoline beetles, for their habit of boring into gasoline tanks and hoses by mistake. Mysterious, BB-sized holes began appearing in plastic gasoline containers and fuel lines of small engines shortly after the discovery of camphor shot borers in Louisiana. Close inspection revealed that many of these holes were plugged by the dead bodies of the female beetles. Such incidents create fire and environmental hazards because of leakage of fuel, often only discovered during fuel transfers. At least one case of near stranding in the Gulf of Mexico was reported from Florida after beetles bored holes through marine fuel lines.

Climatic modeling suggests that the distribution of the species will continue to expand in North America because of climate change and wide availability of hosts, so they and other Asian species of ambrosia beetles are likely to pose a continuing threat into the future.

Damage to a gasoline container caused by female camphor shot borers (from Carlton and Bayless 2011, used with permission).

Camphor shot borer larva and fungus (Doug Stone, Mississippi State University, Bugwood.org)

Monitoring and Damage Prevention

Beetles can be detected by searching for entrance and exit holes on branches of infested trees. Larval galleries are obvious once the branches have been split. Surveys for female beetles utilizing light and ethanol traps allow early detection. Pesticide treatments have not been thoroughly investigated for this species and probably are not practical given the wide host range and low incidence of economic damage to trees. However, knowledge of the presence and habits of the beetles may help prevent damage to fuel systems of equipment and storage containers. Gasoline containers and machines powered by gasoline engines should be stored in an appropriately sealed enclosure to prevent access by female beetles, and plastic fuel lines, tanks and storage containers should be inspected prior to use, especially following long periods of storage

References

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Contact Us

For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage:

https://bit.ly/36c4awm

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