

# Exotic Ambrosia Beetles a Constant Threat to North Carolina Trees

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Every year I run ambrosia beetle traps at nurseries throughout the state. The primary purpose of this activity is to determine when granulate ambrosia beetles become active so I can send growers alerts via email and Twitter. In reviewing the beetles captured this year we can across an unusual specimen: the banded elm bark beetle, *Scolytus schevyrewi*. This beetle is native to China and surrounding areas. Since 2003, when it was first detected in the US, it has spread throughout the west. However, this was the first report of the beetle in North Carolina. In Asia banded elm bark beetles attack *Ulmus* species but also trees in the legume and rose families. The impact of this species on US nursery and landscape industries is not fully understood but large numbers of elm street trees have been killed in western states. In addition, it has been found to vector Dutch Elm disease.

Another first this year was detection of the redbay ambrosia beetle in coastal areas of the state. Although not likely a threat to nurseries this beetle has decimated redbay trees in Georgia and South Carolina where redbays are the dominate tree species in some coastal ecosystems. Significant concern exists for avocado orchards in Florida since avocado is closely related to redbay and has been shown to be a suitable host.

Another ambrosia beetle recently detected in North Carolina and other Southeast States is the Camphor Shot Borer, *Xylosandrus mutilatus*. This beast is many times larger than the granulate ambrosia beetle that has caused so much trouble in recent decades. It attacks live and recently dead trees including *Acer* sp., *Cornus* sp, and other nursery and landscape trees. Again, this is an emerging exotic threat and the true potential for economic damage will not be known for some time.

Finally, *Xylosandrus germanus*, which is very similar to granulate ambrosia beetle, *X. crassiusculus*, seems to be shifting its range. It has typically been a northern pest whereas *X. crassiusculus* has been a comparable southern pest. Now *X. germanus* is turning up in our traps in NC and *X. crassiusculus* is becoming more common in the Northeast and Midwest. Since this species is so similar to our beloved granulate ambrosia beetle it may have minimal additional impact. However, differences in seasonal activity or preferred species could increase the duration trees need protection or the number of species that need to be sprayed. Either one would have an economic impact on NC nursery growers.



Banded Elm Bark Beetle, *Scolytus schevyrewi*. Photo: Pest and Diseases Image Library, Australia



Camphor Shot Borer, *Xylosandrus mutilatus*. Photo: Doug Stone, Mississippi State University.

Many odd things happen when a species invades a new range. They often switch hosts or switch from attacking dead trees to live trees for reasons we do not fully understand. Nursery stock is particularly susceptible because it is live but to beetles it can

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*Dieback in a black walnut tree caused by Thousand Cankers Disease.*

smell like it is on the brink of death. This is because nursery stock is often under stress and releases stress related chemicals that beetles use to find hosts.

This brings me to the last example. I reported in *Nursery Notes* last year that a devastating new species had been found in Tennessee. The walnut twig beetle vectors fungus that causes thousand cankers disease in black walnut

trees. In its native range, Arizona and Mexico, this beetle attacks Arizona walnut. It bores into small twigs, lays its eggs, a twig tip dies, and the circle of life continues. When it invaded Colorado and other western states it attacked black walnut. Strangely, the



*A small canker around the hole of a walnut twig beetle (left) and large interconnected cankers on a heavily infested tree caused by Thousand Cankers Disease to black walnut trees in Knoxville, TN. Photos: S.D. Frank, North Carolina State University.*



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beetles attacked by the thousands and not just the branch tips but the main trunk and branches. Black walnut, which exists only as street trees in the west, has almost been extirpated west of the Mississippi. Here, black walnut is an important part of native ecosystems and an important tree for nut production, landscapes, lumber, and nurseries. A year ago, the walnut twig beetle and trees infected with thousand cankers disease were found in Tennessee not far from the NC border. I recently visited a colleague in Knoxville to visit affected sites and learn about the symptoms and diagnosis of this disease. If it spreads, black walnut could go the way of American Chestnut.

Bark and ambrosia beetles are frequent invaders of the US arriving on plants, packing material, and wood products. This group has had a drastic effect on the nursery and landscape industry over the last century by vectoring diseases and through direct plant damage. With many exotic species already present in the US just waiting to spread around, and many more arriving on our shores each year, the struggle to detect, understand, and manage ambrosia beetles will be an on-going but essential task.