

# Jeepers Creepers . . . The Bugs are Coming!

From All Directions, Alabama's Forests are Threatened  
by Non-Native Invasive Pests

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**D**uring the summer of 2010, separate news articles were released to the southeastern states proclaiming the rapid spread of three specific destructive pests. On July 27, a pest alert announced the discovery of thousand cankers disease in East Tennessee. On that same day, a second media release reported the presence of emerald ash borer in Knox County, also in Tennessee. The following day, July 28, a professor of entomology from Mississippi State University sent a warning to Alabama declaring that laurel wilt disease was rapidly approaching our state line.

Although this was alarming news for Alabama forest landowners, there are specific actions that can be taken to prepare for these possible threats to our native trees. We have the opportunity to begin monitoring targeted forest areas for detection of these three new pests. The Early Detection and Rapid Response protocol is established precisely for this particular purpose, a proactive approach for identifying, locating, and controlling invasive pests.

## Thousand Cankers Disease

The thousand cankers disease causes dieback and mortality of eastern black walnut trees. An insect-disease complex that normally only occurs in the western states, it had been documented for the first time in the Southeast. In a residential area near Knoxville, Tennessee, five symptomatic eastern black walnut (*Juglans nigra*) trees were tested positive for the walnut twig beetle (*Pityophthorus juglandis*) and its associated fungus (*Geosmithia morbida*). Later in August, a second round of sampling was done at different sites near Knoxville for further confirmation of this pest. Based on the results, the thousand cankers disease has been in Tennessee, in more than one area, for longer than previously suspected.

Since early symptoms resemble that of drought stress, landowners may believe that their declining walnut trees are suffering from drought-related problems. Specific symptoms include yellowing of foliage, cankers on branches, exit/entrance insect holes on branches, and eventually, the mortality of the tree. The first apparent symptoms are the yellowing of the foliage. Later, the foliage becomes brown and wilted. The bark surface appears to have no symptoms, but under closer analysis, numerous entrance and exit holes are present on dying branches. The wal-

nut twig beetle creates galleries in the phloem while vectoring the deadly fungus. The fungus causes cankers on infected branches, resulting in some cracking of the bark. Finally, dieback of the branch occurs from the attack. The walnut tree eventually succumbs from the attack within two or three years.

No one is exactly sure how this pest spread from the western U.S. (Washington, Oregon, California, Idaho, Utah, Arizona, Colorado, and New Mexico) into Tennessee, by-passing all of the other states. However, transportation of firewood is the main hypothesis of this pest introduction. The Tennessee Department of Agriculture issued a quarantine in Knox and surrounding counties prohibiting the movement of firewood, black walnut nursery stock, and other materials that can spread the thousand cankers disease. Rapid detection and removal of infected trees currently remains the primary means of managing the disease.

## Emerald Ash Borer

Also in Tennessee, an emerald ash borer (*Agrilus planipennis*) infestation was detected at a truck stop in Knox County. After receiving report of a possible find, state and federal officials collected specimens of infected ash logs and sent them to the U.S. Department of Agriculture for positive identification. The samples confirmed that emerald ash borer was present in east Tennessee.

Imported from Asia in wood packing material, this insect was positively identified in 2002. Since its initial introduction into the U.S. around the Detroit, Michigan area, the emerald ash borer has spread rapidly, attacking and killing ash trees (*Fraxinus spp.*) in Illinois, Indiana, Iowa, Kentucky, Maryland, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, West Virginia, and Wisconsin.

Initial attack is difficult to detect, since injury to infested trees may not be immediately apparent. Damage is caused by the larvae of this exotic insect, creating galleries and feeding in the phloem underneath the bark. This girdling activity disrupts water and nutrient flow. Infested trees will exhibit branch dieback in the upper crown, excessive epicormic branching on the tree trunk, and vertical bark split. By the time these symptoms are recognized, the infestation is spreading to other ash trees. Infested trees succumb from the attack within two or three years.

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In response to this breaking report, the Tennessee Department of Agriculture issued a quarantine in Knox and Loudoun counties prohibiting the movement of firewood, ash nursery stock, and other materials that can spread the emerald ash borer. The agency also conducted a thorough survey of ash trees in the area to assess the extent of the infestation.

## Laurel Wilt Disease

The final warning concerned an insect-disease complex threatening Alabama's southern border. From survey traps and observation conducted in Jackson County, Mississippi, several symptomatic camphor and redbay trees were found to be infected by laurel wilt disease. Also recently documented in Mississippi was the first symptomatic sassafras tree succumbing to this same insect-disease complex.

Because of this information, plus reports of declining redbay trees in Alabama, two survey traps were placed in Mobile County. Fortunately, the symptomatic redbays were negative of laurel wilt disease, but our state was not completely "out of the woods." In October, two beetles were collected from one of the traps located just north of Grand Bay. Positive identification of the specimens made the first confirmation of the presence of redbay ambrosia beetle in Alabama.

Another import from Asia, the redbay ambrosia beetle (*Xyleborus glabratus*) was originally found in 2002 in a survey trap in Port Wentworth, Georgia. This was the first record of this non-native beetle to be detected in North

America. Since its initial introduction from infested solid wood packing materials, it spread to redbay trees in eastern Georgia and South Carolina. By 2005, this insect-disease complex was discovered in Florida. In 2009, the first declining redbay trees were documented in Mississippi due to this invasive pest.

Unlike most pests, the ambrosia beetle attacks healthy trees. However, it is not the attack from the beetle that necessarily kills the tree; it is the associated fungus (*Raffaelea lauricola*) the bee-

tle carries that causes the destructive disease called "laurel wilt." Difficult to detect at first, infected trees soon display wilting leaves that appear reddish or purple in color. Part of the crown will show these symptoms, and eventually the entire crown wilts and reddens. The insect vectors this fungus, inoculating the gallery walls as it creates tunnels in the sapwood. The fungus clogs the vascular system of the tree, preventing the flow of water, and also causes brown-to-black streaks in the sapwood. In the final stages of decline, ambrosia beetles will attack in large numbers, creating compacted sawdust that protrudes from the boring holes. Infested trees succumb to attack within one or two weeks.

Trees of the laurel family (*Lauraceae*) are very susceptible to this insect-disease complex. Not only are redbay (*Persea borbonia*), camphor (*Cinnamomum camphora*), and sassafras (*Sassafras albidum*) trees vulnerable, but also swampbay (*Perseapalustris*), spicebush (*Lindera melissifolia*), pondspice (*Litsea aestivalis*), and avocado (*Persea americana*) can become potential hosts.

The public can help prevent the spread of redbay ambrosia beetle and laurel wilt disease by following these simple suggestions:

- **Become familiar with the signs of laurel wilt disease and redbay ambrosia beetle** and be on the lookout for evidence of the pest or disease on your trees.
- **Use local firewood only** – Redbay firewood should not be transported. Do not transport firewood of any kind from other states because destructive pests and diseases can hitchhike into Alabama on infested firewood.
- **Do not transport host trees** (redbay, swamp bay, avocado, sassafras, pond spice, pondberry, and others in the *Lauraceae* family) unless purchased from a registered nursery.
- **Avoid spreading the beetle and pathogen to new areas** – Wood or chips from infested trees should not be transported out of the local area where the trees were found. Dead redbay or other Lauraceous tree species cut in residential areas should be chipped and left onsite as mulch, or disposed of as locally as possible. ♻️

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