



Update on Redbay Ambrosia Beetle and Laurel Wilt Disease in Mississippi and Alabama

Since its discovery in Jackson County Mississippi in 2009, efforts to monitor the spread and impact of Redbay Ambrosia Beetles and the associated laurel wilt disease in the surrounding area have continued. Laurel wilt is a vascular disease of trees in the family Lauraceae, including redbay, sassafras, camphor, and avocado. The pathogen that causes the disease is called *Raffaelea lauricola*, and was undescribed by science until its discovery in Georgia, South Carolina, and Florida in 2004. The fungus is carried by the Redbay Ambrosia Beetle (*Xyleborus glabratus*). Since the pathogen and insect are native to Asia, there are few natural enemies or methods of host plant resistance to combat them.

The beetle and pathogen have several traits that make them ideal invaders. The female beetles are capable of reproducing in the absence of male beetles. Additionally, the females carry spores of *R. lauricola* in special pouches near the base of their mouthparts. Like all ambrosia beetles, the fungus is introduced into trees when the adult beetle bores into the trees. The larvae of all ambrosia beetles rely upon ambrosia fungus as a food source. Redbay Ambrosia

Beetles attack holes are quite small (about the diameter of a mechanical pencil lead), but a single beetle penetrating the outer bark is enough to inoculate and eventually kill the tree. Once inoculated, the fungus grows throughout the vascular tissue of the tree, clogging it and halting water movement. Female beetles eventually bore into the heartwood of the tree and lay eggs which hatch into larvae and feed on the fungus growing alongside them. After pupation (metamorphosis), newly emerged adults acquire fungal spores and then exit the tree to disperse and select new hosts. The beetles are active throughout the year in Mississippi, but peak adult emergence occurs in September and October. During dispersal, beetles rely on host scents to attract them to susceptible host trees. They are highly attracted to redbay and sassafras trees, another trait that contributed to the successful invasion of our coastal forests. Further background and pictures relating to this disease are available in a previous installment of this bulletin, which can be found at www.mfc.ms.gov.

During 2010, the Forest Entomology Laboratory and Mississippi State University

installed and monitored 16 beetle traps baited with lures that are attractive to Redbay Ambrosia Beetles in Hancock, Harrison, and Jackson Counties in Mississippi, as well as Mobile County Alabama. These traps were monitored every two weeks from July-October. Once identified, the specimens from these traps indicate that the Redbay Ambrosia Beetle population is still thriving in Mississippi. The area of original detection in and around the lower Pascagoula River Basin continues to be dramatically impacted by Laurel Wilt Disease, with an estimated 90% of mature redbay trees having been killed in infested areas along the river. Beetle captures during 2010 were most numerous along the banks of the Pascagoula River from Interstate 10 northward approximately 8-10 miles, but beetles were intercepted as far north as the Wade-Vancleave Road.

New findings for Redbay Ambrosia Beetle and Laurel Wilt Disease in Mississippi also occurred during 2010. The first record of the beetle was confirmed in Harrison County, MS and Mobile County Alabama. The Mobile County record represents the first detection of Redbay Ambrosia Beetle in Alabama. Additionally, *R. lauricola* was

confirmed from a symptomatic sassafras tree for the first time in Mississippi (the pathogen has already been confirmed in sassafras in field and lab studies in other States) in Northern Jackson County. We expect the disease to continue to spread throughout the southern portion of Mississippi, and could lead to the near extinction of redbay trees in coastal Mississippi Counties.

Although redbay only occurs in a few south Mississippi counties and is not a commercial species, it is very important ecologically. Redbays produce small fruits, called drupes, which are important food sources for songbirds, turkeys, and other wildlife. Redbay is also an important host plant for the larvae of the Palamedes swallowtail butterfly (*Papilio palamedes*), whose populations could diminish if redbays become less common. Additionally, at least two of the susceptible native hosts (pondspice and pondberry) are endangered plant species that could be pushed closer to the brink of extinction with the advent of the redbay ambrosia beetle and laurel wilt fungus. Sassafras is a widely distributed species throughout much of the eastern U.S., and could serve as a conduit for the redbay ambrosia beetle to become widespread. The ecological implications of this forest health threat are likely enormous, but it may take years for researchers to fully understand implications

radiating through coastal forest ecosystems.

Redbay and sassafras trees also hold important societal values. Redbay wood is prized for its attractive grain and color, and is sometimes used for woodturning and cabinetry. Sassafras has been used medicinally since Native American times, and is famous for teas and other beverages brewed from the roots and twigs. Both redbay leaves (seasoning) and sassafras leaves (file' powder) have special importance to traditional creole cuisine, as both are used extensively in dishes such as gumbo.

Because invasive forest insect problems are often worsened by the activities of humans, the public is urged to not transport firewood, green lumber, debris, or living nursery stock that could contain redbay or sassafras from areas in or surrounding known infested counties. For more information on this or other forest health issues, or to report suspected activity in counties other than Jackson, Harrison, or Mobile Counties where it is already established, contact:

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