

BIOLOGY AND HOST ASSOCIATIONS OF REDBAY AMBROSIA BEETLE, EXOTIC VECTOR OF LAUREL WILT KILLING REDBAY TREES IN THE SOUTHEASTERN UNITED STATES

James Hanula¹, Albert Mayfield III², Stephen Fraedrich¹,
and Robert Rabaglia³

¹U.S. Forest Service, Southern Research Station
320 Green St., Athens, GA 30602-2044

²Florida Department of Agriculture and Consumer Services,
Division of Forestry, 1911 SW 34th St., Gainesville, FL 32608

³U.S. Forest Service, Forest Health Protection
1601 North Kent St., RPC7, Arlington, VA 22209

ABSTRACT

The redbay ambrosia beetle (*Xyleborus glabratus* Eichhoff (Coleoptera: Curculionidae: Scolytinae)) and its fungal symbiont (*Raffaelea* sp.), new introductions to the Southeastern United States, are responsible for the wilt of mature redbay (*Persea borbonia* (L.) Spreng.) trees. In 2006 and 2007, we investigated the seasonal flight activity of *X. glabratus*, its host associations, and population levels at eight locations in South Carolina and Georgia where infestations ranged from very recent to at least several years old. Traps on artificially wounded trees showed that redbay ambrosia beetles were active throughout the year, but very few beetles were caught from March to late May 2006 and from mid-November 2006 through March 2007. Peak adult activity occurred in early September. Males are flightless, but a few were found at every sample date from 3 June 2006 to 30 January 2007. Based on these male emergence data, brood development appears to take 50 to 60 days. Uninfested redbay wood remained attractive to *X. glabratus* females for up to 70 days after being cut from live trees. Wood infested with beetles and infected with the *Raffaelea* sp. was similar in attraction to uninfested redbay wood, but uninfested and infested redbay wood were more attractive than a non-host species. Sassafras (*Sassafras albidum* (Nutt.) Nees), another species of the Lauraceae, was

not attractive to *X. glabratus*, and very few beetle entrance holes were found in sassafras wood compared to redbay. Conversely, avocado (*Persea americana* Mill.) was as attractive to *X. glabratus* as swampbay (*P. palustris* (Raf.) Sarg.), and both were more attractive than the non-host red maple (*Acer rubrum* L.). However, avocado had relatively few entrance holes in the wood so it is unclear whether it is a good host for brood development. In 2007, we compared *X. glabratus* populations in areas where all mature redbay were dead to areas where infestations were very active and more recent, as well as an area outside the known infestation. Trap catches of *X. glabratus* and numbers of entrance holes in trap bolts of redbay were correlated with the number of dead trees with leaves attached. Areas where mature host trees had been eliminated by the wilt had very low beetle population levels that ranged from 0.04 to 0.12 beetles/trap/day compared to areas with active infestations where catches ranged from 4 to 7 beetles/trap/day. Our results indicate that populations of the beetle drop dramatically after suitable host material is gone, providing hope that management strategies can be developed to restore redbay trees. The lack of attraction of *X. glabratus* to sassafras suggests that spread of *X. glabratus* should slow once it is outside the range of redbay.