



Meet the Emerald Ash Borer

Alabama's Newest Invader

Unfortunately, Alabama is now the latest state to host another unwelcome exotic tree-killing insect. Emerald ash borer, a federally-regulated insect pest, was recently confirmed in Calhoun County. Already existing in neighboring states with counties that border Alabama, the news is not too surprising. Natural spread and long-distance movement of this non-native pest would inevitably cause its discovery here.

Originally from Asia, the emerald ash borer was first detected in Michigan in 2002. This wood-boring insect most likely came into the United States on untreated wood packing material from China. Since then, it has spread into several states and Canada. The emerald ash borer attacks all species of ash (*Fraxinus* genus) in North America, preferring green ash (*F. pennsylvanica* Marsh.) and black ash (*F. nigra* Marsh.).

Aware of the possible threat, Alabama's agricultural and forestry agencies have continuously monitored the presence and spread of the emerald ash borer since 2008. Each year in the spring, over 400 surveying traps are deployed statewide in areas with a significant population of ash trees. The traps are routinely checked and insects caught are sent to the laboratory for identification.

The importance of monitoring for the presence of the emerald ash borer is to protect the existence of native ash trees across our state. Even though ash species make up a small percentage of Alabama's total forest cover (approximately 1.4 percent), it is still a vital part of the state's forest ecosystem and timber industry. Several million board feet of ash wood is utilized annually. Of the 119 active primary mills in the state, 13 still currently use ash timber. During the previous year, approximately 7,275,000 board feet of ash was processed. In addition to knowing the exact volume of ash trees in our cities and towns, their ecological, scenic, and cultural significance in our urban forests is immeasurable.

The adult insect is metallic green and approximately 1/2 inch long. The bullet-shaped body is narrow and elongated. The head

is somewhat flat with two large, black eyes and two short antennae. The adult borers emerge from pupation near the surface of the tree from April to early July, with peak emergence occurring in June. When they emerge, they create D-shaped exit holes approximately 3/16 inch in diameter in the infested tree trunk and branches. For the next two weeks, the adults feed on ash foliage to complete maturation. Once the adults reach this developmental stage, they mate and soon die. Some may continue to be active until October.

Each female adult borer lays approximately 70 eggs in bark crevices or between bark layers generally from May to August. In some cases, an adult female can lay as many as 300 eggs. In seven to ten days, the eggs hatch and the larvae appear, creamy white in color. Although adult wood borers cause minor damage to host trees, the larvae are the most destructive. The newly hatched larvae bore into the tree until they reach the phloem and cambium layers. They feed and create winding galleries underneath the bark, preventing the transportation of water and nutrients. Once the larvae reach a mature size (1 to 1.5 inches long), they tunnel into the outer sapwood (xylem layer) to pupate. As winter approaches, the emerald ash borer larvae or pupae becomes inactive. By the following spring, usually by late March, they become active again and resume their developmental process. In the US, the entire life cycle of the emerald ash borer is generally one year.

Healthy or stressed, all native ash trees greater than 1 inch in diameter are susceptible to attack. The



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emerald ash borer will first infest the larger branches in the crown, making the initial stage of attack unrecognizable. Eventually, affected areas will have yellowing of the foliage, then dying and dead branches appear in the upper crown. As a response to the infestation, the tree will often produce epicormic shoots at the lower areas of the trunk where wood tissue is still healthy. As the pest moves down, attacking lower areas of the tree, the bark will sometimes split on the infested trunk and branches in the later stages of attack, exposing areas of the wood borer's galleries. Girdling of the tree is quite evident due to the feeding activity in the phloem and cambium layers. With water flow and nutrients disrupted, the entire ash tree will ultimately succumb within two to five years.

Controlling the emerald ash borer is difficult, and there is currently no known method to completely halt its spread. Some landscapers and arborists are using systemic insecticides for high-valued or ornamental trees. Research is also being done to test native wasps and beetles that might prey on this exotic pest. The primary recommendation, however, is to prevent the introduction of the emerald ash borer through early detection and destruction of infested trees. Cut down the infested tree, chip the wood into 1 square inch or smaller pieces, and burn the debris at the original location. If burning is not possible, cut down the

tree, chip the wood into 1 square inch or smaller pieces, and leave the debris on site. Tarpaulin or other types of plastic covering can be placed over the chipped debris for an extended period of time to reduce the emergence and survival of the pest. Since the borer can live in cut wood, do not move infested wood debris or firewood long distances into other areas.

According to Dana Stone, Forest Health Coordinator with the Alabama Forestry Commission, "This is the time of the year that the emerald ash borer will become active again. Calhoun County and neighboring county residents should be cognizant of symptomatic ash trees." She continued, "Specific guidelines and a systematic process must be followed when analyzing any form of infested ash material. Samples should only be collected and transported by trained personnel. If there are plausible infested ash trees, please report the condition to the Alabama Forestry Commission. Our employees will conduct a site visit to evaluate the situation and identify the problem."

The Alabama Department of Agriculture & Industries (AGI) working with the USDA Animal and Plant Health Inspection Service (APHIS), the USDA Forest Service, and the Alabama Forestry Commission recently established a quarantine for the affected area to limit the insect's human-assisted spread within the state. The regulated area consists of Cherokee, Cleburne, and Calhoun counties. Regulated articles include any product that may harbor the emerald ash borer (at any developmental stage: egg, larva, pupa, or adult) including hardwood firewood, ash nursery stock, non-heat-treated ash lumber, and other unprocessed ash wood material (stems, roots, stumps, etc.).

The quarantine will allow the movement of a regulated article outside of the regulated area once the hauler has entered into a compliance agreement and obtained a permit from the AGI, only during the emerald ash borer's 'no fly' period from November 1 to March 1. Any wood-processing facility outside of the regulated area receiving regulated articles from the regulated area must also enter into a compliance agreement with the AGI.

For information about the emerald ash borer, contact Dana Stone, Forest Health Coordinator with the Alabama Forestry Commission, by email Dana.Stone@forestry.alabama.gov or telephone (334) 240-9363. To learn more, visit the AFC's website at www.forestry.alabama.gov or The Southern Regional Extension Forestry's website at www.southernforesthealth.net/.

For questions regarding the quarantine, contact Christel Harden, Plant Pest Administrator/State Plant Regulatory Official with the Alabama Department of Agriculture & Industries, by email Christel.Harden@agi.alabama.gov or telephone (334) 240-7226. ♣



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