



# Pest e-alerts



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## First Detection of Emerald Ash Borer in Oklahoma

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Emerald ash borer (EAB), *Agrilus planipennis*, an invasive wood-boring beetle that has killed hundreds of millions of North American ash trees in the United States and Canada, has been recovered from a monitoring trap in Delaware County. This catch represents the first official record of this devastating insect in Oklahoma. The Oklahoma Department of Agriculture, Food and Forestry (ODAFF) notified me of the find on October 13, and the identity of the specimen was subsequently verified as EAB. Information for sharing with the general public was made available by ODAFF and can be found at <http://www.forestry.ok.gov/eab>.

Emerald ash borer belongs to a group of woodborers known as flatheaded borers. The adult beetles are often shiny and brilliantly colored, and thus are called metallic wood-boring beetles. Emerald ash borer was initially discovered infesting ash trees near Detroit, Michigan in 2002, but it was accidentally introduced from its native Asia in solid wood packing material sometime during the 1990's. This exotic, invasive insect has been spreading throughout North America ever since and is now found in 29 states including Oklahoma and Ontario, Canada.



Figure 1. Emerald ash borer adult (top) and larva (bottom). Photo credits: Debbie Miller, USDA Forest Service, Bugwood.org; Pennsylvania Department of Conservation and Natural Resources – Forestry, Bugwood.org, respectively.

**Description.** Emerald ash borer adults are metallic green, somewhat bullet shaped, and measure approximately ½ inch long (Fig. 1). Females begin to lay eggs 2 weeks after emergence in the spring. Eggs are yellowish white when laid, but eventually turn brownish yellow prior to hatching. Upon hatching, larvae immediately bore through the outer bark and begin excavating feeding galleries in the cambium and phloem tissues. The creamy white larvae measure 1 to 1 ¼ inch long when fully grown and are flat with segmented bodies (Fig. 1). Larvae overwinter within the tree and pupate in late winter. Adult beetles emerge in the spring, leaving distinctly D-shaped exit holes in the bark of the trunk and limbs (Fig. 2).

**Hosts and Damage.** The only known hosts that are susceptible to EAB in North America are ash (*Fraxinus* spp.) trees and the white fringetree (*Chionanthus virginicus*). As larvae feed and

tunnel through the phloem, they scar the xylem and girdle the tree, cutting off the flow of nutrients and water. Initial symptoms include a thinning canopy with dieback starting in the upper one-third of the tree. Adventitious shoots begin sprouting from the trunk, limbs, and roots (Fig. 3). Without



Figure 2. D-shaped exit hole left by adult EAB upon emergence from infested ash trees. Photo credit: Kenneth R. Law, USDA APHIS PPQ, Bugwood.org.

treatment, infested trees will ultimately die. Unlike our native woodborers, EAB will attack healthy as well as stressed trees. This serious pest will attack young and old trees, showing no preference for host size or age. Common signs and symptoms of EAB are covered in Oklahoma Cooperative Extension Service publication, [L-443](#).



Figure 3. Adventitious shoots on trunk and limbs of an ash infested with EAB. Photo credit: Edward Czerwinski, Ontario Ministry of Natural Resources, Bugwood.org.

**EAB Action Plan.** Now that we have confirmed the presence of EAB in our state, we need to know how to deal with this invasive species. Although the ash-elm-cottonwood species complex represents only 7% of Oklahoma’s natural forests, 10% of the urban forests in Tulsa and Oklahoma City are comprised of ash. Thus, these municipalities and other urban areas stand to lose the most from the EAB invasion. The [Oklahoma Emerald Ash Borer Action Plan](#) was established in 2015 to address the threat EAB poses to the urban forest. The EAB Action Plan provides direction as to how to handle this threat and establishes a clear chain of command for technical aspects of the invasion as well as outreach/communication of management efforts to the general public. In addition, the [EAB Guide for Oklahoma Communities](#) provides guidance to municipalities under threat from EAB.

As of Friday, Oct. 28, a quarantine was enacted for all of Delaware County, prohibiting the movement of potentially infested articles such as firewood of any hardwood species, ash nursery stock, and ash lumber containing bark out of the county. Larvae remain viable and can complete their development in ash products including infested firewood, which is the most common vehicle for movement of EAB to new areas. Unfortunately, new detections aren't discovered until several years after EAB has been introduced, resulting in a lag time between EAB establishment, discovery, and eventual management. This is why it is so important to spread the word about the dangers of moving firewood, which can also harbor other pests such as gypsy moth eggs and thousand cankers disease.

At this time, those living in Delaware County and surrounding counties should remain vigilant and take a wait-and-see approach to the invasion. The USDA and ODAFF are working to delineate the extent of the infestation in Oklahoma. Once initial survey work is complete, we will have further information available for communities affected by EAB, including insecticide recommendations for protecting individual ash trees. In the meantime, please help us get the message out to the public to not move firewood. For general questions about EAB, please visit [www.emeraldashborer.info](http://www.emeraldashborer.info) for current information about its biology, life cycle, distribution, and control efforts. I will provide further updates via future e-Pest Alerts and extension publications and workshops, so stay tuned!

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