

# Forest Pest Alert:

## Emerald Ash

### Borer



Figure 1. Adult emerald ash borer; photo credit: Leah Bauer, USDA Forest Service, N.R.S., Bugwood.org

The emerald ash borer (scientific name *Agrilus planipennis*) is an Asian metallic wood boring beetle that was first discovered in North America in Michigan in 2002, though it was probably established much earlier. Adult emerald ash borers are about **8.5 mm (0.33 inches) long** and chew on the foliage of ash trees. Females lay their eggs (between 40 and 200, depending on her longevity) in crevices and cracks in the bark. The larvae hatch approximately two weeks later and chew through the bark to the inner phloem, cambium, and outer xylem where they feed. As they feed they form long

galleries that damage the tree's vascular system, disrupting the tree's ability to transport water and nutrients. In cooler climates, like Michigan, it takes two years for a larva to become an adult, but in **South Carolina they can complete their lifecycle in one year.** Characteristic of most metallic wood-boring beetles, adults emerge from infested trees, **leaving D-shaped holes.**



Figure 2. Larvae of emerald ash borer and damage to cambium; photo credits: Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org and Pennsylvania Dept. of Conservation and Natural Resources, Forestry Archive, Bugwood.org



Figure 3. D-shaped emergence hole of emerald ash borer; photo credit: Pennsylvania Dept. of Conservation and Natural Resources, Forestry Archives, Bugwood.org

Early attacks by this beetle are **focused in the higher portions of the tree** and may be difficult to detect. As the population grows the beetles begin to lay eggs on lower portions of the tree. By the time infestations are detected in the lower trunk of the tree, the upper part may have been infested for two years.

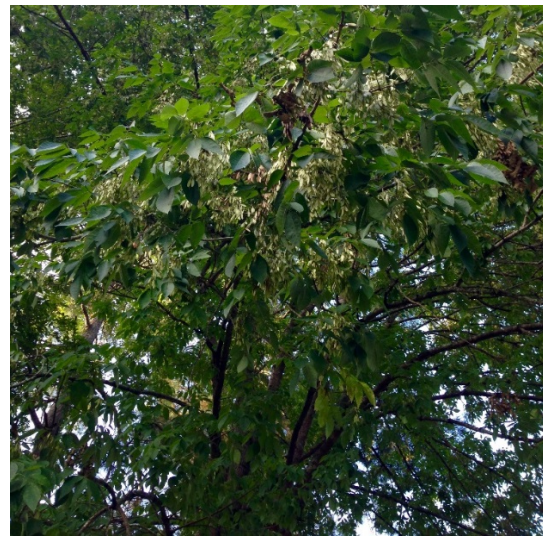
The damage to the vascular system causes the tree to decline, **losing foliage**. Infested trees **may produce shoots at the base**, a common response to pests and diseases. Since the larvae are tasty treats for woodpeckers it is **common to see woodpecker damage on heavily infested trees**.



*Figure 4. Epicormic growth, or shoots coming from the base of an infested ash tree; photo credit: Daniel Herms, The Ohio State University, Bugwood.org*

So far, emerald ash borers have only been found to **attack species of ash, preferring green ash**.

Although they can attack healthy trees, they are **most attracted to stressed and unhealthy trees**. Ash trees may be recognized by their oppositely arranged compound leaves. Female trees may have samaras, or winged seeds on them. The bark has distinctive diamond-shaped ridges.



*Figure 5. An ash tree branch with winged samaras, or seeds; photo credit: David Jenkins, South Carolina Forestry Commission*



*Figure 6. Diamond-shaped ridges on ash bark; photo credit: David Jenkins, South Carolina Forestry Commission*

Research is being conducted on the use of biological control agents, including wasps that attack the larval and egg stages, and fungi that infect the larvae; however, these are not widespread yet. The use of systemic insecticides may be useful for some trees, for

instance trees of cultural significance. However, systemic insecticides depend on transportation in the vascular system; transportation may be reduced in larger trees or trees with reduced foliage. Currently the recommended management method is to destroy infested trees before adults emerge and spread.

As of this year, the Clemson University Division of Plant Industry, in concert with USDA-APHIS, have been surveying South Carolina for emerald ash borer infestations. Large purple panels coated with sticky glue are baited with chemicals odors from ash trees and hung in the crowns of ash trees. Traps are checked weekly during the summer when adult beetles are flying.



*Figure 7. Baited sticky traps used to monitor emerald ash borer; photo credit: Kelly Oten, North Carolina Forest Service, Bugwood.org*

So far, **no infestations by emerald ash borer have been found in South Carolina**, but both North Carolina and Georgia have detected infestations, so we need to be alert!

Detections of emerald ash borer as of August 2015 can be found at:

<http://www.savatree.com/eab/eab-2014.png>.

The adult beetles do not fly very far, but larvae and adults can be transmitted from infested areas through movement of nursery stock, unprocessed ash products and firewood.

If you suspect an infestation of emerald ash borer, please contact the South Carolina Forestry Commission Insect and Disease Staff (**David Jenkins (803) 896-8838 office; (803) 667-1002 cell; or at [djenkins@scfc.gov](mailto:djenkins@scfc.gov)**), or your local Forestry Commission office.

For more information you can contact us or visit the following sites:

<http://www.emeraldashborer.info/#sthash.9u0YZrul.dpbs>

[http://www.clemson.edu/public/regulatory/plant\\_industry/pest\\_nursery\\_programs/invasive\\_exotic\\_programs/survey\\_programs/eab\\_survey.html](http://www.clemson.edu/public/regulatory/plant_industry/pest_nursery_programs/invasive_exotic_programs/survey_programs/eab_survey.html)