

The Emerald Ash Borer: A Threat to Ash in North America



Pic. 1

The Emerald Ash Borer (*Agilus planipennis*), a lethal insect to ash (*Fraxinus* sp.), was discovered in Michigan in May, 2002, but was probably introduced into the state at least five years previously from Asia, its native origin. The insect kills ash trees by destroying the tree's water and nutrient conducting vessels. The EAB is so aggressive that ash trees may die within two-three years after they become infested with the beetle. All species of ash seem to be susceptible, but certain varieties may decline more slowly. Mountainash, not a true ash, is not susceptible to the EAB. If not contained the potential epidemic resulting from the EAB could rival Dutch Elm Disease, as the insect advances across North America. States which become infested could lose billions of dollars in forest products, and quarantines imposed by state and federal agencies may have dire consequences for plant and wood products industries. Because of their tolerance of adverse sites, ash trees have been planted extensively in urban/suburban landscape areas; their removal and replanting costs can be staggering.

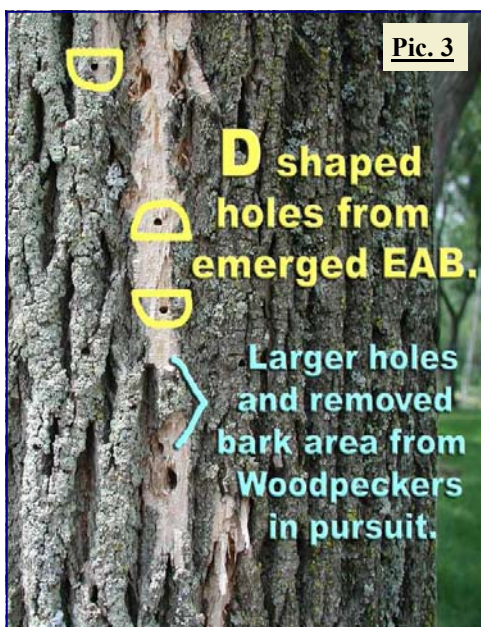


Pic. 2

Diagnosis/Detection of the EAB:

Initial symptoms of the EAB on ash trees begin with a general yellowing and thinning of the foliage (Pic.1). Then, branches begin to die from the top of the tree downward (Pic.2). Dieback of the branches continues until the tree dies. On some trees with moderate EAB infestations, epicormic shoots (sprouts, suckers) may emerge from the trunk or larger branches (Pic.1,2). Absolute confirmation of the EAB depends on at least one of the following: D-shaped emergence holes about 1/8 inch diameter (Pic.3), serpentine tunneling (Pic.4), or the presence of the adult (Pic.5) or larvae (Pic.6) in infested trees.

Another unique characteristic is the presence of woodpecker activity on many EAB-infested trees. In fact, woodpecker activity may be the first signs of EAB and should be heeded, particularly if you want to save ash trees from death by the EAB. **Early detection is crucial if trees are to be saved!** Woodpeckers make about 1/4-1/2 inch jagged round holes in the bark as they extract EAB larvae for food (Pic.3).



Life Cycle of the EAB:



In Michigan, the adult EAB typically begins to emerge from ash trees in late May or early June and feed on ash foliage (leaves) for sustenance. Adults are slender, elongate, green metallic beetles measuring 3/8 to 1/2 inches (7.5-13.5mm) long (Pic.5). After mating, the adult female may lay as many as 60-90 eggs over her 2-3 week life. Larvae hatch in 7-10 days, burrow through the bark and begin the back and forth (serpentine) tunneling, which is distinctive for this insect. The tunneling directly beneath the bark in the water and nutrient conducting vessels by the larvae is the destructive portion of the insect's life cycle. Larvae continue to feed through the summer and into the fall. Larvae are distinctly segmented and by late summer and early fall may measure 1-1/4 inches (26-32mm). EAB overwinters as larvae and undergo metamorphoses and change into adults in late April through May, thus repeating the cycle.

EAB Management:

One of the first decisions that a tree owner must make is whether to save ash trees from the EAB or allow the EAB to kill their tree(s). Saving an ash tree from EAB destruction may be a long-term and expensive investment for which there is no guarantee of success. The decision to save an ash must be made promptly when the EAB is detected in a locality because ash may decline from healthy to beyond salvage in just a few months.

Cultural Management: If trees are to be saved, maintain trees in good vigor with sufficient water and fertilizer. Trees in good health will be better able to fight off the insect as well as more efficiently take up the insecticides which are necessary to save trees from destruction by the EAB.

Sanitation/Wood Management: The overall goal is to reduce the build-up of populations of the EAB, which can continue to attack healthy trees or spread to new geographical locations. Infested trees not treated with insecticides, should be removed and destroyed so they do not serve as breeding reservoirs for the insect. Infested ash wood should be buried, burned or chipped, preferably before May every year-adults will still emerge in the spring and summer from ash wood which was cut the previous winter. Ash wood can be used for firewood, but, if saved, it should be covered and sealed with a tarp from May through August to prevent escape of emerging adults. Any kind of firewood, whether ash or not, ash nursery trees and any kind of ash wood products **CAN-NOT be transported out of the quarantine area** - visit: www.michigan.gov/mda for quarantine information.

Chemical Management: Because the EAB is so aggressive on ash trees, chemical treatments will be needed to save specific trees. Because little is known about the efficacy of specific chemicals and their delivery methods, individuals may want to try one or more of the treatments options, reviewed on the web site below. It is presumed that preventative (before infestation) treatments will be more effective than curative (after infestation) treatments. The web site will be updated as new information is gathered.

For more information visit web: http://www.msue.msu.edu/reg_se/roberts or contact your local Michigan State University Extension Service office.

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David L. Roberts, Ph.D., Michigan State University Extension

SE Region Office: 28115 Meadowbrook Rd., Novi, MI 48377-3128

Campus: Michigan State University, B17 Plant & Soil Sciences, E. Lansing, MI 48824-1359

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