

FOCUS ON FOREST HEALTH

INVASIVE SPECIES: EMERALD ASH BORER

Background

Emerald Ash Borer (EAB, *Agrilus planipennis*) is an invasive, metallic wood-boring beetle that kills ash trees (*Fraxinus spp.*). This metallic green beetle is native to East Asia. It was brought to the United States accidentally, in the wood of shipping crates from China.

EAB kills all species of native ash trees. Adult EAB feed on ash leaves but do not cause significant damage to ash trees. The larva is the damaging stage. The larva spends its life inside ash trees, feeding on the inner bark where we cannot see it. This feeding disrupts the trees' ability to move water and nutrients back and forth from the roots to the rest of the tree. The tree starves and eventually dies. A tree that has been attacked by EAB can die within 2-4 years.

Description

Adult - EAB adults are very small, metallic green beetles. They are small enough to fit easily on a penny: only 3/8 - 1/2 inch long and 1/16 inch wide.

Larva - EAB larvae are white and slightly flattened, with a pair of brown pincher-like appendages on the last segment. Their size varies as they feed and grow under an ash tree's bark. Full grown larvae average 1.5 inches in length.

Signs and Symptoms

- EAB adults or larvae
 - S-shaped larval galleries: As larvae feed under the bark they wind back and forth which creates s-shaped galleries (tunnels) that are packed with frass (waste and sawdust).
 - D-shaped emergence holes: As adults emerge from under the bark they create an emergence hole ~ 1/8 inch in diameter and D-shaped.
 - Crown dieback: As larvae tunnel under the bark they cause branches to die. A few dead branches in the canopy may be a sign of EAB infestation.
 - Woodpecker feeding: Woodpeckers feed on emerald ash borer larvae located under the bark. Feeding is typically evident higher in the tree where the emerald ash borer prefers to attack first. Large numbers of larvae under the bark can lead to woodpecker damage that looks like strips of bark have been pulled off of the tree. This is called "flecking."
- ❖ Other insects attack ash trees that cause similar symptoms so it is important to look for a combination of at least two or more symptoms or signs.



Photos from left to right: An adult EAB beetle; an EAB larva; s-shaped larval gallery; D-shaped exit hole, and woodpecker feeding damage

Habitat and Current Distribution

Wisconsin forests contain more than 770 million ash trees, nearly 7 percent of the tree population. In urban areas, we estimate that, on average, 20 percent of trees are ash. See the photo below of a compound ash leaf. Four species of ash grow in Wisconsin: black, green, white and blue. Black ash is the most abundant species in Wisconsin forests. White and green ash trees are the most common ash species planted in urban settings. Blue ash is rare in Wisconsin. Mountain ash is not a true ash species; therefore it is not susceptible to emerald ash borer infestation.

EAB is already well established in parts of Wisconsin and will continue to move across the state. For a current map of the distribution of EAB do an internet search for “emerald ash borer wi”, go to Wisconsin’s EAB Information Source website and select the “where has EAB been found” tab on the right side of the page.



Impact and Management

EAB has killed more than 99% of ash trees where it was first found in Michigan and will likely cause similar damage in Wisconsin. The loss of ash trees will affect all of us.

- Ecological - Ash trees provide many ecological benefits: their seeds provide food for birds and small mammals; black ash twigs and leaves provide food for deer and moose; and trunk cavities provide nesting areas for birds such as the wood duck.
- Economic – Ash wood is used for making flooring, baseball bats, tool handles, and cabinets.
- Social/recreational - Ash is valuable to Native Americans for its excellent basket-making quality and cultural importance. Ash trees in parks and our yards provide shade and help cool our homes in summer, slow rain water to prevent flooding and absorb air pollution.

Finding EAB early and keeping it from spreading are the best things we can do to save ash trees in Wisconsin. Adult beetles can only fly a few miles but people can accidentally move EAB long distances when moving infested ash trees or firewood. It is crucial that we reduce our risk of emerald ash borer. To do this we can:

- Get firewood within 10 miles of where you will use it. Many parks offer aged or certified firewood for sale to campers at reasonable prices. Firewood is also often available from private sellers just outside the parks.
- Use all your firewood during your camping trip. Don't leave any unused wood behind and don't take it with you to another destination.
- Follow emerald ash borer quarantine laws and best management practices. Never take a chance of letting emerald ash borer out of a quarantined area (see the first link below for more info about quarantines).
- Woodland owners can use the ash management guidelines for Wisconsin available on the DNR webpage. These guidelines aim to minimize the impact of emerald ash borer on our forests.
- Use approved insecticides to save healthy ash trees.
- Be on the lookout for this pest! Be familiar with the signs and symptoms ash trees have when infested by EAB. Also, know how to identify emerald ash borer.
- Report any suspected emerald ash borer infestations to the Department of Agriculture, Trade and Consumer Protection by calling the Emerald Ash Borer Hotline at 1-800-462-2803 or emailing DATCPEmeraldAshBorer@wisconsin.gov.

For more information

- <http://datcpservices.wisconsin.gov/eab/article.jsp?topicid=18>
- <http://dnr.wi.gov/topic/ForestHealth/>
- <http://www.emeraldashborer.info/#sthash.NFoJ0aXb.dpbs>