Emerald Ash Borer
FREQUENTLY ASKED QUESTIONS

What is Emerald Ash Borer?

Emerald ash borer (EAB) is a highly invasive, non-native insect that attacks and kills all species of North American ash trees, including white, green and black ash. EAB is native to Asia and was first detected in the U.S. in the summer of 2002 feeding on ash trees in the Detroit, MI area. EAB was first confirmed in South Dakota in May of 2018 in northern of Sioux Falls.

What does EAB look like?

Adult EABs are emerald green beetles that are approximately ½ inch long with slender, elongate bodies (Fig 1).


Figure 1

EAB larvae can grow up to 1 ¼ inch long and are white or cream colored. They have brown heads and a 10-segmented body with a pair of brown, pincer-like appendages on the last segment (Fig 2).

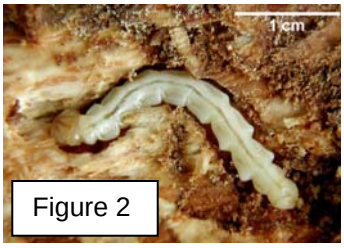

Figure 2

What does EAB do?

EAB larvae feed on the tissues just below the bark. As they feed, larvae create serpentine tunnels, also called galleries, that disrupt the tree's ability to transport water and nutrients and eventually kill the tree.

EAB adults typically emerge during June and July, leaving D-shaped exit holes in the bark. After emerging, the adults feed on ash foliage and can live for approximately three weeks.

What are symptoms of trees attacked by EAB?

Symptoms of trees attacked by EAB include canopy dieback, beginning in the top one-third of the canopy (Fig 3), sprouting from the base of the tree and trunk (Fig 4), bark splitting, serpentine galleries below the bark (Fig 4), D-shaped exit holes (Fig 5) and increased woodpecker activity.


Figure 3

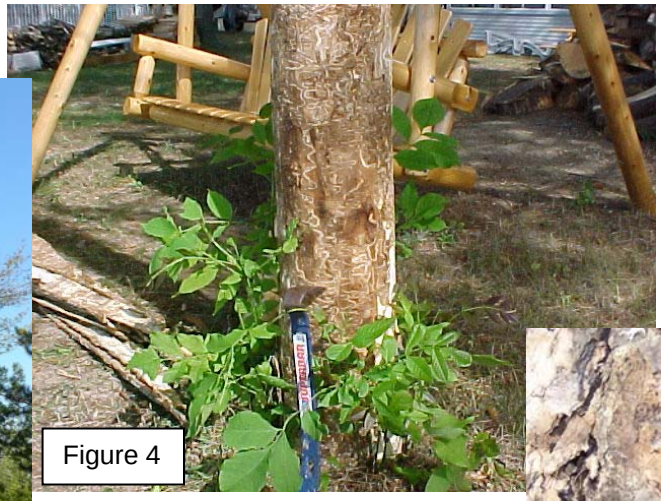
Figure 4

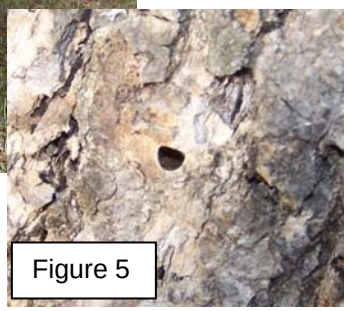
Figure 5

What species of trees does EAB attack?

EAB attacks and kills all species of North American ash, including white, green, and black ash. Mountain-ash is not a true ash, so it is not threatened by EAB.

Figure 6
Green Ash

How do I identify an ash tree?

Ash trees exhibit an opposite leaf pattern, meaning that leaves and buds are located directly across from each other. Ash leaves are compound and typically consist of 5-11 leaflets (Fig 6). The edges of the leaflets may be smooth or toothed. On mature ash trees, the bark has a distinct pattern of diamond-shaped ridges. Younger trees have smoother bark. When seeds are present, they appear in paddle-shaped clusters that stay on the tree until late fall or early winter (Fig 7).

Figure 7
Green Ash

Where is EAB from originally?

EAB is native to Asia.

When did EAB get to the U.S.?

EAB was first detected in the U.S. in the summer of 2002, feeding on ash trees in the Detroit, MI area.

How is EAB spread?

EAB is spread primarily through the transport of infested firewood, ash wood products, and nursery stock. Moving firewood and other ash wood products within areas infested by EAB and out of infested areas is regulated by state and federal agencies. To help prevent the spread of EAB, and other wood-dwelling invasive pests, collect or purchase local firewood at your destination. For more information, visit www.dontmovefirewood.org.

What can I do to prevent spreading EAB?

EAB is most commonly transported into new areas on infested firewood. To help prevent spreading EAB, as well as other wood-dwelling invasive pests, collect or purchase local firewood at your destination. To learn more, visit www.dontmovefirewood.org.

Where has EAB been detected?

Go to http://www.emeraldashborer.info for the current national map of confirmed EAB infestation.

Can anything be done to prevent EAB from killing ash trees?

Unfortunately, nothing can be done to stop EAB from spreading into new areas and killing ash trees. In the next several years we may have new methods for slowing EAB's spread, but these will only **slow** its spread, not **stop** it. In areas where EAB is present, insecticide treatments can be used to protect high-value trees, such as large shade trees, historic trees, and trees highly valued by homeowners. Researchers are currently working to develop new treatments for EAB.

Is there a treatment for EAB?[1]

Insecticide treatments can be effective in protecting trees from EAB. The treatment available for homeowner use is a soil application of imidacloprid (such as Bayer Advanced Garden™ Tree and Shrub Insect Control). The application should be made in May and is most effective on small trees. Tree care professionals are able to use additional products such as trunk injections and trunk and foliage sprays. More information about available treatment methods can be found on the Internet at http://www.emeraldashborer.info/files/E2955.pdf and http://igrow.org/gardens/trees-and-forests/emerald-ash-borer-insecticide-management-options/# .

Should I treat my ash tree before it gets EAB?

No treatment is needed until EAB has been found within 15 miles of your tree. If your tree has symptoms like those of an EAB infestation, such as canopy dieback or borer exit holes, you may want to have a tree care professional examine the tree. Locate a certified arborist in your area at http://www.state.sd.us/doa/forestry/programs-Services/forestry/SDArA.htm.

Should I remove my ash tree before it gets EAB?

If your tree is healthy, there is no reason to cut it down. If it is dying or diseased, it may be best to hire a certified arborist to look at your tree and determine whether it has EAB or another insect or disease problem. There are a number of native insects that attack ash trees, so just because your tree is displaying symptoms, doesn't mean it has EAB. However, with highly destructive invasive insects, such as EAB, it is best to err on the side of caution by seeking professional guidance if you suspect your tree is infested.

If EAB becomes established in your area, management steps may need to be taken.

Should I continue planting ash trees?

Given the threat of EAB and the over-abundance of ash, the further planting of ash is not recommended. Ash has been popular in landscape, agroforestry, and conservation plantings for decades. However, this popularity has resulted in a tremendous number of ash trees in communities throughout South Dakota and the northern Plains. Because species diversity is an important measure of a community forest's overall health, it is important to plant a variety of tree species. There are a number of trees that grow well in South Dakota, but are frequently under-planted. For recommendations about what trees you can plant in your landscape, contact your local state forestry representative. They can be reached through the Rapid City office at 1-605-394-2395.

Are there any ash varieties or cultivars that are resistant to EAB?

Preliminary research does not indicate varieties or cultivars native to the U.S., but research is ongoing.

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[1] Due to numerous pesticide labels and/or label changes, be sure the product label includes the intended use prior to purchase or use. Please read and follow all pesticide label instructions and wear the protective equipment required. Spraying pesticides overhead increases the risk of exposure to the applicator and increases the likelihood of drift to non-target areas. Consider the use of a commercial applicator when spraying large trees due to the added risk of exposure and equipment needs. The mention of a specific product name does not constitute endorsement of that product by the South Dakota Department of Agriculture.

What are alternatives to ash?

Please contact your local state forestry representative. They can be reached through the Rapid City office at 1-605-394-2395. Your city forestry office might also have recommendations.

What other insects attack ash trees?

There are several species of native ash borers that attack ash trees. The banded ash clearwing, carpenterworm and ash/lilac borer (Fig 8) both attack healthy ash trees. The redheaded ash borer (Fig 9), banded ash borer (Fig 10), and eastern ash bark beetle all attack stressed or dying ash trees. For more information about these insects, see Michigan State University Extension Bulletin E-2939, *Native Borers and Emerald Ash Borer Look-alikes* at http://www.emeraldashborer.info/files/e-2939.pdf.

Figure 8

Figure 9

Figure 10

What other insects look like EAB?

There are multiple species of insects that are frequently mistaken for EAB. The bronze birch borer (Fig 11) looks very similar to EAB and even presents similar symptoms. However, this borer attacks stressed birch trees. The golden buprestid (Fig 12), two-lined chestnut borer (Fig 13), and caterpillar hunter are all similar in color to EAB. The Japanese beetle (Fig 14) is also frequently mistaken for EAB. For more information about these insects, see Michigan State University Extension Bulletin E-2944, *Don't be Fooled By Look-Alikes at http://www.emeraldashborer.info/files/E2944.pdf*.

Figure 11

Figure 12

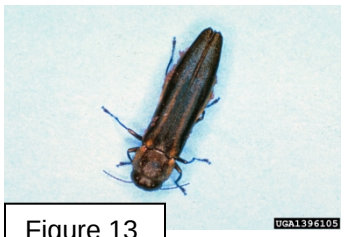

Figure 13

Figure 14

Where can I learn more about EAB?

More information is available from your state forestry agency or state department of agriculture and on the Web at www.emeraldashborer.info.

Who should I call if I think I have EAB on my tree?

Call your local state forestry representative. They can be reached through the Rapid City office at 1-605-394-2395.

What can be done with wood from trees killed by EAB?

This will vary based on your location. Call your local state forestry representative. They can be reached through the Rapid City office at 1-605-394-2395.

What is being done in South Dakota to prepare for EAB?

South Dakota is involved with the Great Plains Tree and Forest Invasives Initiative (GPI), a collaborative initiative of state forestry agencies in Kansas, Nebraska, North Dakota, South Dakota, and the US Forest Service. The goal of GPI is to prepare for the arrival of invasive insects, such as EAB, in the northern Plains. With an initial focus on EAB, states are inventorying regional tree and forest resources to determine which areas may be most impacted by EAB and other invasive species, developing public education programs, establishing citizen-based monitoring and detecting networks, and exploring opportunities for utilizing wood generated by EAB. Please contact the SD Division of Resource Conservation and Forestry for a copy of South Dakota's state readiness plan.

Fig. 1 Adult EAB: Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org
Fig 2 and 4 EAB larvae, epicormic shoots and serpentine galleries: APHIS
Fig 3 Declining Ash: RCF
Fig 5-7 D-shaped EAB exit hole, green ash leaves, green ash seeds: RCF
Fig 8 Ash lilac borer: Eugene E. Nelson, Bugwood.org
Fig 9 Red-headed ash borer: Howard Ensign Evans, Colorado State University, Bugwood.org
Fig 10 Banded ash borer: David Cappaert, Michigan State University, Bugwood.org
Fig 11 Bronze birch borer: Steven Katovich, USDA Forest Service, Bugwood.org
Fig 12 Golden Buprestid: RCF
Fig 13 Two-lined chestnut borer: USDA Forest Service - Northeastern Area Archive, USDA Forest Service, Bugwood.org
Fig 14 Japanese beetle: David Cappaert, Michigan State University, Bugwood.org

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