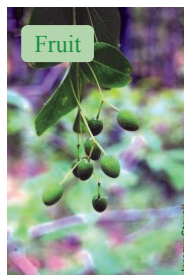


Step 1 Recognize Your Ash Trees and White Fringetrees

- Branches, leaves, leaflets, and buds are paired opposite one another (Fig. 1 and 2), not alternate.
- Ash leaves have 5-11 leaflets (Fig. 2).
- On most ash, the bark has a distinct diamond-shaped pattern (Fig. 3), although on smaller ash trees the bark is often smooth.
- Ash trees produce single, oar-shaped samara or one-seeded fruit or seed. (Fig. 4)



Native to the southeastern United States, white fringetree (see below) is planted as an ornamental in Massachusetts.



Massachusetts Forest Pest Taskforce Organizations

Massachusetts Department of Conservation and Recreation
 Massachusetts Department of Agricultural Resources
 USDA Animal and Plant Health Inspection Service
 USDA Forest Service
 Massachusetts Tree Wardens' and Foresters' Association
 University of Massachusetts
 New England Forestry Foundation
 The Nature Conservancy
 Massachusetts Forest Alliance
 Massachusetts Audubon Society
 Massachusetts Association of Conservation Commissions
 Project Native
 NSTAR
 Western Massachusetts Electric
 City of Cambridge
 Town of Brookline
 National Grid

Massachusetts Forest Pest Taskforce Mission

The Forest Pest Taskforce is a volunteer organization of forestry professionals, scientists, natural resource managers, local officials and private citizens organized to facilitate a science-based response to the economic, ecological and public safety impacts of forest pests within the forests and communities of Massachusetts.

For more information on the Taskforce contact
Eric Seaborn at: 781-907-3749 or
Eric.Seaborn@nationalgrid.com

Emerald Ash Borer: How You Can Help



Informed citizens and tree care professionals can play an important part in helping to minimize costs and mitigate potential damage associated with Emerald Ash Borer (EAB), an invasive beetle that threatens trees in our communities.

Brochure adapted and reprinted with permission of:

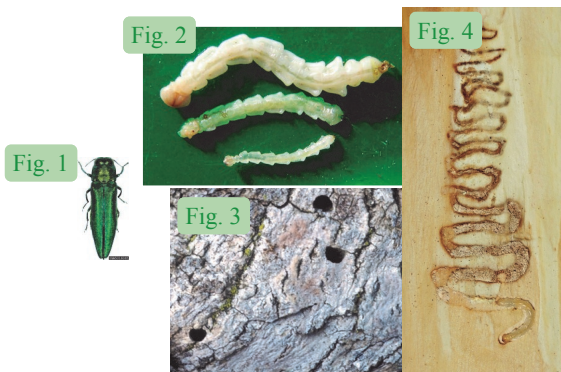
Sharon Bachman

Cornell Cooperative Extension New York Invasive Species Outreach Program

Western New York Emerald Ash Borer Taskforce

Step 2 Learn to Identify Signs of EAB Infestation

- EAB adults are present during the summer months (Fig. 1 shown to scale), but it's the larvae (Fig. 2) that create distinctive feeding galleries under the bark which girdle and kill infested trees.
- Larvae range in size from 1-3 cm and can be distinguished by 'bell shaped' rear segments (Fig. 2).
- Adults emerge mid-May to August through approximately 1/8" D-shaped exit holes (Fig. 3), feed briefly on ash leaves, then mate and lay eggs in bark cracks and fissures on nearby host trees.
- Larvae feed under the bark from July through October forming serpentine or S-shaped galleries (Fig. 4).



- An EAB infestation causes branches to die from the top down - visible as crown thinning (Fig. 5).
- Infested trees become stressed and may develop epicormic sprouts on the trunk or main branches (Fig. 6).
- Woodpeckers often forage for EAB larvae in ash trees during the winter. Fresh woodpeckers in the bark are highly visible by spring and may indicate an EAB infestation is present (Fig. 7).



Step 3 Take Action

- ⇒ Do you have ash or fringetrees in your yard? Find a certified tree-care professional and ask about your treatment or removal options: www.treesaregood.com
- ⇒ Check to see if your local community has an EAB Preparedness Plan. Offer your assistance in preparing for EAB. There may be opportunities for citizens to aid with ash tree inventories and other local efforts.
- ⇒ **Don't Move Firewood.** Invasive species can be excellent hitchhikers! Buy firewood where you burn it.
- ⇒ Monitor the trees near high-risk locations for EAB infestations—large log piles, campgrounds, and property to which firewood has been moved.

- ⇒ Educate others about EAB and its impact to your trees, communities and forests.

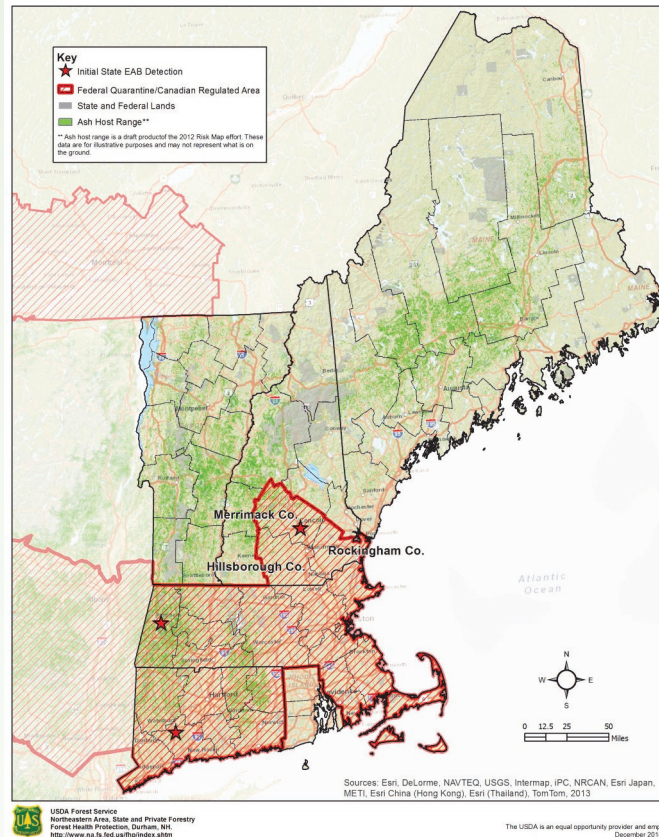
⇒ Websites for more information:

- emeraldashborer.info
- stopthebeetle.info
- massnrc.org/pests/blog/tag/emerald-ash-borer
- nyis.info/eab
- NHbugs.org



STOP THE BEETLE

Emerald Ash Borer Detection in New England



EAB has been detected in Massachusetts in the Berkshires, in Essex County and in Boston and will continue to spread across the state.

Report signs of EAB and any suspected infestations:

USDA EAB Hot Line 1-866-322-4512

Massachusetts: Department of Conservation & Recreation
(413) 253-1798, ext. 204
<http://massnrc.org/pests/eabreport.htm>

Connecticut: Connecticut Agricultural Experiment Station
(203) 974-8474

Maine: Maine Forest Service
(207) 287-3200

New Hampshire: Division of Forests & Lands
(603) 271-2214

New York: Department of Environmental Conservation
1-866-640-0652

Rhode Island: Division of Forest Environment
(401) 222-2445

Vermont: Department of Forests, Parks & Recreation
(802) 828-1531

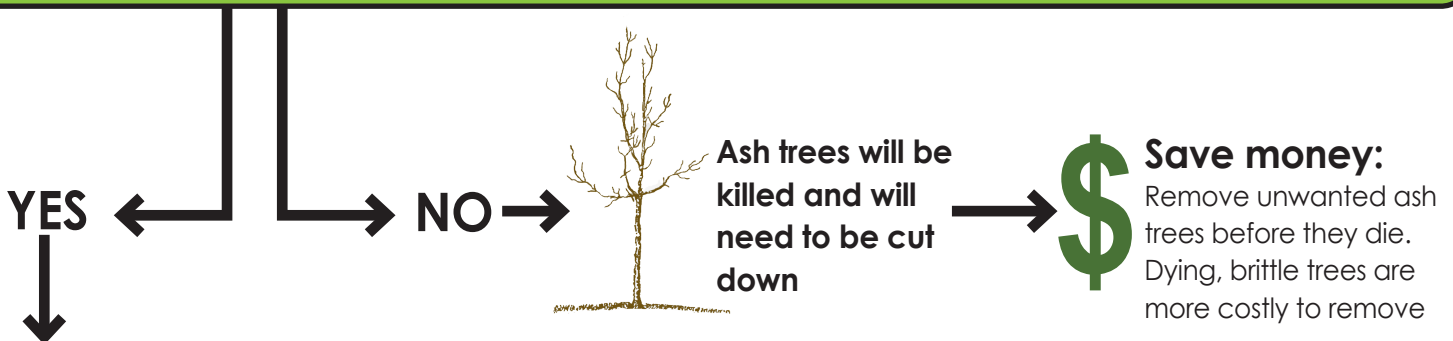


EAB:

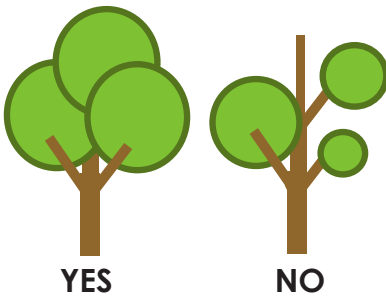
Dealing with Emerald Ash Borer A Decision-Making Guide

1) Inventory your ash trees. How many are there? Where are they?

2) Decide if you want to save your ash trees from EAB



3) Assess which trees are worth saving



Questions to ask:

- Is the tree valuable to landscape or owner?
- Is the tree healthy, showing few or no signs of EAB?
- Is the tree located in a good location for healthy ash growth?

4) Determine treatment options for trees worth saving



Measure your trees:

- Hold a tape measure at chest height
- Measure the distance around the trunk
- Divide this number by 3 to get Diameter at Breast Height (DBH)

DBH < 20 inches:



Homeowners can opt to treat trees themselves

Use a soil drench containing a pesticide labeled for use with EAB. Ensure drench is applied to bare soil within 1 foot of the trunk. Treat trees in spring, typically from April 1st - May 15th.

DBH > 20 inches:



Consult a Tree Care Professional



To find one in your area visit:
<http://massarbor.org/directory.php>

Frequently Asked Questions about Emerald Ash Borer in Massachusetts

What does EAB/EAB damage look like? Where has EAB been found? Is (tree species X) a host?

Refer to our display, fact sheets, ID cards, or refer questioner to www.emeraldashborer.info or <http://massnrc.org/pests/pestFAQsheets/emeraldashborer.html>.

Where did EAB come from? How did it get here? How does it spread?

EAB is native to Asia (eastern Russia, Japan, Korea, northern China). No one is sure exactly how this beetle got to the United States, but wood-boring pests like EAB can be accidentally transported in solid wood packing material (crates, pallets) that are used to ship goods around the world. While EAB may fly at least ½ a mile (800 m) in search of a host tree, the real danger is the accidental spread of EAB via long-distance transport of infested wood, such as logs or firewood.

EAB was first detected in the USA in 2002, in Southeastern Michigan, where it has been responsible for the death of tens of millions of ash trees. It has been steadily spreading ever since, and is currently known to be in 24 states and several Canadian provinces.

When am I most likely to see EAB?

Adult EABs emerge from infested ash trees in May/June and are active outside until a hard frost occurs (typically September). They are generally found in the tree canopy on leaves, making them difficult to spot. The larvae and pupae can be found just underneath the bark of ash trees, in the cambium layer, and are active between August and April.

What are the most likely EAB host trees?

Emerald Ash Borer is known to infest all species of ash (*Fraxinus* spp.). Blue Ash (*Fraxinus quadrangulata*) is the least susceptible of all ash species, but is not commonly found in Massachusetts. EAB was recently discovered to have expanded its host range to include White Fringetree (*Chionanthus virginicus*). Note that “Mountain Ash” (*Sorbus* spp.) is not a true ash and is not a host for EAB.

What is the history and current status of EAB in Massachusetts?

EAB was first discovered in Massachusetts in August 2012, in the town of Dalton (Berkshire County). It has since been found in North Andover (Essex County, November 2013) and, most recently, in the Arnold Arboretum, Boston (Suffolk County, July 2014). It is unknown whether these infestations are related. The Dalton infestation has spread to the surrounding towns of Hancock, Hinsdale, Pittsfield, and Washington. The North Andover infestation has spread to the surrounding towns of Methuen and Haverhill. The extent of the Boston infestation has yet to be determined.

On November 17, 2014, the Massachusetts Department of Conservation and Recreation (DCR) announced a statewide quarantine for EAB. This means that the movement of ash nursery stock, ash lumber and other ash products within the state is no longer restricted. These ash products can also now be moved throughout the multi-state contiguous quarantine that encompasses certain counties in NH down through MA and CT, and out west through parts of NY, all the way to Colorado (see map for details). The ban on the movement of all hardwood firewood (wood smaller than 48 inches) is also lifted within the state, except for areas still under quarantine for the Asian Longhorned Beetle.

Frequently Asked Questions about Emerald Ash Borer in Massachusetts

What is the current status of EAB in surrounding states?

As of January 2015:

- **CT:** As of December 5, 2014, a statewide EAB quarantine is in effect.
- **NH:** EAB has been found in the towns of Bow, Canterbury, Concord, Hopkinton, and Loudon (Merrimack County), Salem (Rockingham County), and Weare (Hillsborough County). The Salem NH infestation, which borders Methuen and Haverhill, is closest to Massachusetts. The infestations in Merrimack and Hillsborough Counties, located near Interstate 93 (I-93 N), are about 40 miles from the Massachusetts border.
- **NY:** As of January 2015, EAB has been found in 22 counties. The following counties are under quarantine: Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Columbia, Cortland, Delaware, Dutchess, Erie, Genesee, Greene, Livingston, Madison, Monroe, Montgomery, Niagara, parts of Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Putnam, Rensselaer, Schenectady, Schoharie, Schuyler, Seneca, Steuben, Sullivan, Tioga, Tompkins, Ulster, Wayne, Wyoming, and Yates. Columbia and Rensselaer counties border MA.
- **ME, RI, VT:** As of January 2015, EAB has not been found in these states.

What is the expected impact of EAB in Massachusetts?

While Ash is not a major component of Massachusetts forests, there are significant stands of white ash in Berkshire County as well as eastern Hampshire and Hampden County, where this species may make up 10% or more of the forest canopy. There are also many communities and private landowners that have valued plantings of green ash or other ash species. Ash is used as lumber and firewood and is noted for its strength and elasticity, making it a popular choice for use in tools, baseball bats, musical instruments, woodworking, and various other manufacturing and crafts. The loss of this species from mixed hardwood forests could also impact the ecosystem in ways we do not fully understand. With ash trees already under threat from a number of diseases and other pests, there will likely be some negative impacts felt to both the ecology and economy of our state.

How is EAB being dealt with in Massachusetts?

Unfortunately, federal agencies have determined that it is not possible to eradicate EAB once it has infested an area. Federal and state agencies do not have the resources that would be required to manage an EAB infestation on private property. Except in very specific circumstances, there is currently no federal or state agency taking trees down, or asking or requiring that property owners take trees down. Instead, property owners will be responsible for the costs of taking down or treating an EAB-infested tree.

DCR, the Massachusetts Department of Agricultural Resources (DAR), the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), and the US Forest Service (USFS) are all working together to develop new strategies for dealing with EAB. An initiative called the EAB Task Force, a collaborative effort involving National Grid, DCR, MDAR, USDA-APHIS, USFS, the Massachusetts Tree Wardens & Foresters Association, the Massachusetts Association of Conservation Commissions, The Nature Conservancy and other organizations, will be providing municipalities with resources on how to prepare for and manage EAB infestations.

What are the options for dealing with EAB on private land?

- Valuable ash trees, such as those that provide ecosystem services (i.e. shade) or are ornamental plantings, can be treated to protect them from infestation. A general guideline for homeowners is to start considering treatment options when an infestation is within 15 miles. Consult a certified arborist to help with these decisions. For further questions, refer the questioner to the "EAB Decision Guide."
- Be aware of your land's proximity to an EAB infestation, and learn how to identify EAB tree damage.
- Keep in mind that it is more expensive to take down a dead tree than a living one (due to safety hazards).

Frequently Asked Questions about Emerald Ash Borer in Massachusetts

What do I do if I think I see EAB or EAB tree damage?

Report it! Call 1-866-322-4512 or visit <http://massnrc.org/pests> . Take photos if possible. Place any specimens in a jar and store in the freezer or submerge the insects in rubbing alcohol.

Can you set up traps to catch EAB?

Yes. You may have seen purple triangle-shaped traps hanging from trees in parts of the state (“Barney” traps, so named for the giant purple dinosaur popular with young children). Research has shown that EAB are particularly attracted to the color purple. Manuka Oil and hexanol lures are used in these traps to attract EAB. However, the traps are only a primary detection tool used to determine the extent of an EAB infestation, they cannot be used to effectively manage this pest.

Foresters also sometimes employ “trap trees” that are intentionally wounded in early spring in order to attract EAB using chemicals the tree released when it is damaged. Those trees are then cut down and removed at the end of the growing season. This can be an effective way of reducing the levels of an EAB infestation, but cannot eradicate EAB.

Is there any treatment available for EAB?

Several pesticides have been approved for use in Massachusetts to protect ash trees from EAB, including products containing emamectin benzoate, imidacloprid, or dinotefuran. These pesticides are systemic, meaning they are transported from the roots and trunk of the tree to the branches and leaves via the tree’s vascular system. Some of these products are required to be applied by a licensed pesticide applicator – please read labels carefully or consult a certified arborist or pest control specialist. While it is most effective to treat ash trees before they become infested, even infested ash trees may be treatable, depending on the level of infestation. Pesticide application may have to occur annually or bi-annually, depending on the product used.

Regarding the use of imidacloprid, this pesticide is also used in many over-the-counter lawn and garden products, to kill grubs in turf, and in some flea treatments for pets. To treat wood-boring pests, it is applied through soil or trunk injection (**spraying is not effective**). If visitors have more questions about the impact of these insecticides on wildlife, plants, and insects, direct them to this FAQ:

http://www.emeraldashborer.info/files/Potential_Side_Effects_of_EAB_Insecticides_FAQ.pdf.

What can people do to keep EAB from spreading?

- **Keep wood from moving out of infested areas.** The movement of ash logs or other regulated materials outside of Massachusetts is prohibited unless the materials are moving within the multi-state contiguous quarantine zone (see map or “What is the history and current status of EAB in Massachusetts?”).
- **Use compliance agreements if necessary.** Companies that work with EAB host material in the state must sign an agreement with federal and state agencies that permits the movement of regulated articles outside of Massachusetts.
- **Remove and destroy infested trees.** Chipping infested trees will kill EAB in all life stages.
- **Report any sightings.** Report beetle sightings or damaged wood and trees. Early detection will allow us to notify communities and give them time to prepare for the arrival of EAB.
- **Consider treating valued ash trees.** Refer to the “EAB Decision Guide” for more information.

Frequently Asked Questions about Emerald Ash Borer in Massachusetts

Does anything here in Massachusetts attack EAB? Can we bring something here from Asia?

There are several options available here in Massachusetts to help control EAB:

- DAR oversees a citizen science project called Wasp Watchers. A native wasp, the Smoky-Winged Beetle Bandit (*Cerceris fumipennis*), preys on beetles in the same family as EAB (the Buprestids or “Jewel Beetles”). Volunteers monitor the nests of these wasps to observe and record what buprestids *C. fumipennis* captures. This project helps with the early detection of EAB, a critical component to EAB control programs. If any attendees express interest in participating in the Wasp Watchers Program, get their contact information.
- Woodpeckers will often find and eat EAB larvae, resulting in “blonding” – the exposure of the blondish layer of wood under the bark of ash trees due to removal of bark by woodpeckers.
- Ongoing research is looking at two parasitoid wasps from China to determine their suitability for release as biological controls here in the U.S. They are *Tetrastichus planipennisi* and *Oobius agrili*. Test releases of *T. planipennisi* have occurred in North Andover and Dalton.

By slowing the spread of EAB, we provide time for populations of these parasitic wasps to become established, which will ultimately help mitigate the impact of EAB.

Are there any potential uses for wood infested by EAB?

Wood that has been infested by EAB can still be used for a variety of purposes. Examples include lumber, furniture, firewood, and biomass (chips, residues).