



Protecting Your Trees

What You Need to Know About
the Emerald Ash Borer

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Should You Be Concerned About The Emerald Ash Borer?

The ash borer threat is real. Typically the size of a penny and bullet shaped, the emerald ash borer (EAB) is an invasive species of beetle boring in ash trees across the United States. There are an estimated 8 billion ash trees in the United States; EAB has already destroyed between 150 million and 200 million. It is estimated that in about eleven years, EAB can effectively wipe out an entire population of ash trees in a small- to medium-sized town. This ebook will tell you what you need to know about EAB, as well as how to prevent and manage an EAB infestation.



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The Emerald Ash Borer The Basics

What does the emerald ash borer do?

EAB destroys ash trees. This process is rapid. Each year, the population of EAB increases by a factor of 50. After approximately 9 years, the population originating from one female EAB will reach nearly a trillion. The first signs of damage will typically show up between one and two years after infestation. This first indication of damage most often manifests itself as a general thinning of the tree canopy. Two to three years after infestation, the rate of damage will increase drastically. By the fourth year, the tree will be dead.

How does damage progress?

The dieback of leaves begins in the upper third of the tree and progresses downward over time. You will also notice evidence of EAB on the tree's bark, including vertical splits in the bark, as well as D-shaped exit holes 1/2-inch wide on the tree's bark created as newly formed adults emerge from underneath the bark. S-shaped channels caused by larval feeding can be found underneath the tree's bark. If you peel back the bark, you may even find immature larvae, which are typically worm-like with flat, segmented bodies, and creamy white in coloring.

Where is the emerald ash borer found?

EAB is a species of green beetle native to Asia and Eastern Russia. Outside of its native region, however, EAB is considered to be an invasive species and is highly destructive, as it has no natural predators in North America and its growth and reproduction goes uninhibited. EAB was first discovered in the United States in Michigan in 2002. It is believed to have arrived to North America via shipping crates composed of ash wood, in which the beetles bore. Since its arrival,

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EAB has spread throughout Canada and twenty-two US states. These states include Colorado, Iowa, Michigan, Minnesota, Wisconsin, Illinois, Indiana, Ohio, Kentucky, West Virginia, Virginia, North Carolina, Tennessee, Georgia, Pennsylvania, New York, New Jersey, Maryland, Massachusetts, Connecticut, and New Hampshire, as well as parts of the Canadian provinces of Quebec and Ontario. Recently, EAB has been found in the greater Kansas City metropolitan area, including Kansas City and surrounding suburbs, as well as St. Charles County, Missouri.

How does the emerald ash borer spread?

It is believed that EAB spreads via movement of firewood, hardwoods, and nursery stock. Furthermore, once it has reached maturity, the beetle can fly up to distances of a half a mile on



its own. Subsequently, quarantines on all hardwood, including firewood and pallets, have been put in place in Missouri, and in Johnson county and Leavenworth county in Kansas, in order to prevent future spread of the beetle and to contain the damage.

What are the ramifications of this emerald ash borer infestation?

The ash tree is commonly used for various residential and commercial purposes, including flooring, baseball bats, electric guitars, and bowling alleys. The infestation has substantially affected the commerce of ash tree products in North America and it could end up costing billions of dollars. The infestation could also prove to be incredibly damaging to the ecosystem, as ash trees support a wide variety of plant and animal species across a vast swath of the country stretching from east Texas across the East Coast and extending into Maine. The reduction in ash trees due to EAB will negatively affect these species. Furthermore, as ash trees die, it opens the understory of a forest to sunlight. The sunlight disturbs the previous equilibrium of the forest, adversely affecting the insects, plants and animals that inhabit the area.



Lifecycle of The Emerald Ash Borer

The life cycle of an EAB will vary depending on a variety of factors, including 1) the timing of egg deposition, 2) the health and stress level of the tree, and 3) local temperatures. The life cycle will typically take between one year and two years to complete. The one-year EAB life cycle can be broken down as follows:

1. Adult

Adults emerge from the bark and leave behind D-shaped holes. Once they emerge from the bark, adults fly into the ash canopy, where they feed on leaves throughout their lives. EAB will begin mating approximately one week after emergence.

2. Egg

Upon reaching maturity and mating, a female EAB will begin to lay eggs. A female can typically lay well over one hundred eggs in her lifetime, depositing them individually



or in groups on the bark along the trunk and portions of major branches. Eggs are typically laid in zones where the bark is rough, such as between bark layers or in bark crevices. Eggs are approximately 1.0 mm long x 0.6 mm wide and creamy white when laid. Fertile eggs gradually turn amber after a few days and the eggs hatch after an incubation period of about two weeks.

3. Larvae

Newly hatched larvae bore through to the outer layer of the bark, called the phloem. They feed here until the weather gets too cold in the fall. This stage of development causes the most damage to the tree. As they feed, the larvae create long serpentine galleries filled with frass (excrement). These serpent-like patterns impede the flow of nutrients through the tree, eventually cutting off the flow of nutrients altogether, which causes tree death. The larvae pass through four stages of development and bore through the bark once they complete the fourth stage and reach maturity.



Saving Your Ash Trees

How Ryan Lawn & Tree Can Help

Saving your ash trees from this highly invasive species requires a two-pronged plan of action: prevention and maintenance. Protecting your trees from EAB is an incredibly worthwhile investment. The cost of removing a dead ash tree from your property far exceeds the cost of preventive maintenance.

Prevention

Ryan Lawn & Tree makes use of three different plant protection products in order to protect your ash trees from EAB. Because each of these products is effective at different times of year, Ryan Lawn & Tree creates a customized schedule to coordinate application time with the corresponding appropriate season in order to maximize effectiveness. If a tree is properly protected or receives treatment early, the success rate is incredibly high. The idea is to treat the tree before larvae has had a chance to bore throughout the tree in order to mitigate potential damage.

Control & Management

In the case that your tree does become infested with EAB, it is important to note that (the condition can be effectively controlled and managed) EAB doesn't set out to kill a tree; it just wants to inhabit and feed on it. While EAB was just recently discovered in the greater Kansas City Metropolitan area, experts speculate that it has likely already been in the area for five to six years. Control is crucial to prevent the spread of EAB to other trees.

