

# Emerald Ash Borer

A Reference for Protecting Trees and Communities



**Rainbow**<sup>™</sup>  
ECOSCIENCE



The loss of trees from emerald ash borer can have a significant impact on the neighborhoods it infests

PHOTO: Rainbow Ecoscience

## EMERALD ASH BORER Little Insect, Big Problem

Upon initial discovery of the emerald ash borer (EAB) in the United States, nobody was quite sure how to handle it. Most municipalities' initial reactions were to remove the food source for the EAB by cutting down all ash trees. Given the large percentage ash tree comprised of many urban forests, it was quickly realized that removing all the ash trees had significant costs beyond just the dollars allocated for cutting and chipping.

Trees are one of the few assets that increase in value over time. Mature trees are worth significantly more to a community than newly planted, small trees in terms of air quality, storm water retention, shade, and other benefits. Preserving healthy, mature ash trees has become the primary focus for today's EAB management strategies.

Economic models have been developed that help predict the costs associated with different management strategies. Proper municipal EAB management is about minimizing financial burden while maximizing preservation of secondary tree benefits. In most cases, a tree can be protected for at least 20 years for the same cost of removal! Additionally, by preserving the tree, you are preserving all of those secondary benefits that would be lost with a smaller, newly planted tree.



Although EAB is wide spread throughout the USA, it is not common to see a live adult in a tree.

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### OVERVIEW

#### An Invasive Pest

Emerald ash borer (EAB) is an invasive pest from Asia and threatens the ash tree population in the United States. Across the country, it has killed millions of trees since its discovery in 2002.

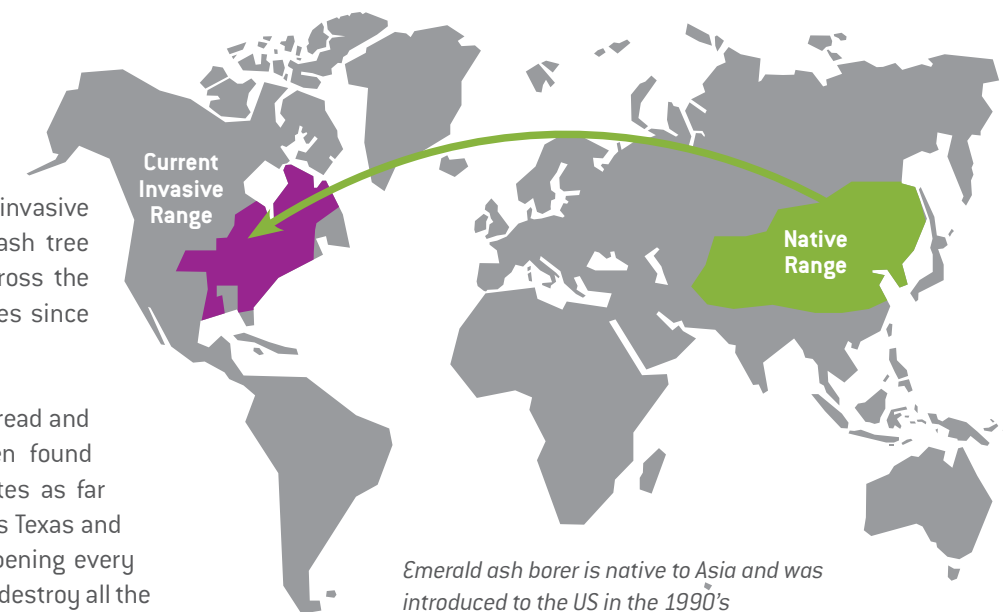
Through a combination of natural spread and human activity, EAB has now been found in 35 states across the United States as far west as Colorado, and as far south as Texas and Louisiana with new detections happening every month. It will continue to spread and destroy all the native ash trees in the U.S. that are not protected.

Emerald ash borer is deadly to ash trees because the larvae feed right under the bark. This is where a tree conducts water and nutrients from its root system up to the leaves. As the number of larvae increase, more of the tissue becomes damaged which blocks the flow of water and nutrients, thus resulting in tree death. Visual symptoms of an EAB infestation often take a few years to manifest themselves, thus adding to the challenge of effective management.



EAB kills ash trees as its larvae consume the water-conducting tissue beneath the bark

PHOTO: Rainbow Ecoscience



Emerald ash borer is native to Asia and was introduced to the US in the 1990's

#### EAB QUICK FACTS:

- EAB is an invasive insect imported from Asia
- First discovered in Michigan in the late 1990's
- EAB is now widespread, found throughout the range of native ash trees
- All native ash species are susceptible to the insect
- Treatments are available and have been proven effective

#### A Community-Wide Issue

The impact of emerald ash borer is not just felt by a forestry or natural resources department. Emerald ash borer is an unprecedented ecological event and has been called a natural disaster in slow motion.

Beyond just the loss of trees, EAB creates public safety hazards, reaps havoc on budget plans, and has widespread impacts wherever it is found. Ash trees are so numerous in many communities that the cost of their loss will be much greater than just the price of cutting them down. Mature trees help mitigate urban heat effects while making neighborhoods safer, and more desirable to live in relative to neighborhoods that lack mature trees. On average, an entire generation is necessary in order to replace the loss of mature canopy with new plantings, thus preservation of existing canopy generally makes more ecological and economical sense than removals alone.

## A Community-Eye View

# Protecting the Herd

Managing emerald ash borer at the community-level is not about saving every tree. Trees in natural areas and difficult-to-access areas would be challenging to treat, but many would be even more challenging to remove. A boulevard may have a dozen mature ash while a few acres of community forest may have hundreds of mature trees that would present a more costly and involved management process. However, experience from EAB-infested communities has shown that protecting the high value and easy-access trees has a positive effect on the entire local ash population by reducing the number of insects likely to spread to additional trees.

### Private-Owned Trees

Private trees can represent a significant portion of the ash trees found in a community. Programs promoted by municipalities can encourage homeowners to take action and help protect the entire community's canopy.

- Encourage homeowners to take action on their ash trees, removal or protection
- Provide homeowners with resources for finding local certified arborists
- Partner with treatment contractors to offer discounted treatment rate

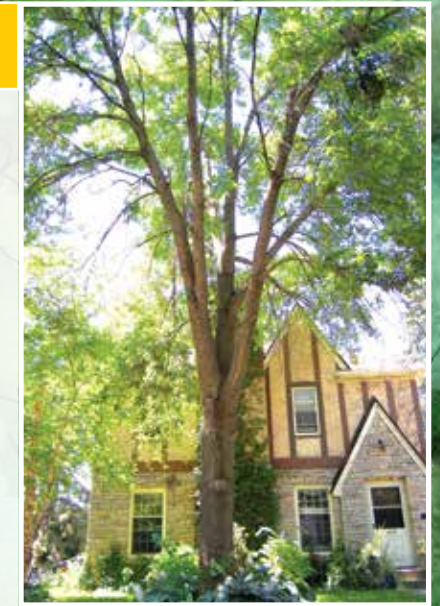


PHOTO: Rainbow Ecoscience

### Easy-to-Access Public Trees

High value trees that are publicly-owned along boulevards, parks, schools, and government buildings are amongst the easiest for municipalities to take action on and can be used to inform the public.

- Protecting easy-to-access trees helps protect more difficult-to-access trees
- Ribboning programs on public trees raise awareness for citizens to take action
- Utilize public trees for events and demonstrations for education



PHOTO: Rainbow Ecoscience

### Difficult-to-Access Public Trees

Wooded natural areas can contain hundreds to thousands of difficult-to-access trees that can provide challenges to communities. Focusing mitigation efforts on the rest of the population outside of this area can have a positive impact on these trees and reduce the need for removal.

- Focus protection or removals on trees near trails, campsites, and pavilions
- Partner with local mills or wood use programs for re-purposing timber
- Have a plan for disposal and removals



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## Preserving What is Here Saving Mature Trees

The bad news is that all native ash trees are susceptible to emerald ash borer. The good news is that there are scientifically-backed treatments available to protect mature trees for this deadly insect.

Focusing treatments on the protection of mature trees is vital to a successful program as these large trees are the most difficult to replace as they provide the most benefits to the community. Mature trees provide shade that contributes to everything from lower street maintenance costs to improved mental health for the citizens. Large trees provide habitat for wildlife, reduce stormwater runoff, raise property values, and decrease the carbon footprint of a community. In short, mature trees are contributing to municipalities in numerous economic and social ways.

The larger the tree, the greater the benefits. Conversely, larger trees also require more resources for removal and disposal. This is the reason that preservation and protection should be focused on saving the larger, more mature trees in the urban forest.



ILLUSTRATION: Rainbow Ecoscience Scientific

## Science-Backed Treatments

Not all emerald ash borer treatments are created equally. Research and field experience has shown that **MECTINITE** (4% emamectin benzoate) provides the fastest uptake available, allowing crews to protect more trees in the same amount of time as other products. When applied through the **IQ TREE INJECTION** suite of tools, these treatments provide at least 2 years of ash tree protection without the use of damaging and unsightly plastic plugs left in the trunks trees from other application devices.

Research has also shown the formulation utilized in MECTINITE provides better distribution of the treatment within the tree than other products, resulting in more complete protection of the tree. When creating RFP specs for contractors, it is important to specify treatments that provide the most protection against EAB while creating the minimal amount of damage. Rainbow can be a resource to assist your community when creating these RFP specifications.

**MECTINITE**<sup>®</sup>  
emamectin benzoate 4%



A healthy ash tree will transport water through the current year's growth ring.

The larvae of the beetles eat the growth rings under the bark of the tree. Symptoms can take several years to appear.

A heavily infested tree can no longer transport water and the top dies. The beetles will move on to the next ash tree.



Mectinite treatments are dosed based upon the diameter of the tree at breast height. Each tree is individually measured.



Small holes are drilled at the root flare of the tree. Tees are inserted and the system is pressurized to move the treatment into the tree.



Each tree takes about 5-10 minutes to set up, and just a few minutes to move into the tree. Mectinite treatments protect the tree for at least 2 seasons.

PHOTO: Rainbow Ecoscience



**Rainbow Ecoscience** (formerly Rainbow Treecare Scientific Advancements) is an employee-owned company founded in science. Our mission is to bring proven products with predictable results to the plant healthcare market. Partnering with our sister companies, **Rainbow Treecare, Rainbow Lawncare, and Rainbow Pest Experts**, gives us a unique position of combining over 45 years of practical operational experience with cutting edge research and development.



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