

## Combatting the Emerald Ash Borer (EAB)

### Trees Matter V

The Emerald Ash Borer (EAB) attack is decimating the ash trees in West Newbury. The EAB is an insidious pest with a virtually undetectable presence in the first 2-3 years after its arrival. The EAB is lethal with ash trees dying within 4-5 years following the initial infestation.

*Thus, an urgency exists for combatting the EAB that we have not experienced with other insect infestations, such as the gypsy moth.*



*Pipestave Hill green ash trees dying in summer of 2020*

### ***What should be done right now?***

The EAB is hard to detect before your ash trees are seriously damaged. Prompt action is needed to save your ash trees.

- Identify ash trees on your property that you want to save.
- Contact a local arborist about various options to save the tree, including injection of a pesticide into the base of the trunk.
- ***Don't Wait ... for reasons detailed below.***

### ***What is the life cycle of Emerald Ash Borer?***

The EAB is an invasive insect from Asia that has no natural predators in North America and that is hard to detect in its initial attack on ash trees.

After emerging from eggs laid in cracks in the ash tree bark, the EAB larvae tunnel into the thin, inner bark layer of the tree trunk known as the cambium layer. The cambium layer is fundamental tree survival because it: (a) moves nutrients and water up from the roots into the rest of the tree and (b) moves energy compounds (i.e., carbohydrates) from the leaves down into the rest of the tree.

While hidden away in the cambium layer, the larval EAB feeds on the cambium tissue for the next 1-2 years, essentially destroying the ability of the tree to receive needed nutrients and water from the soil and starving the rest of the tree by intercepting the energy-rich carbohydrate compounds made by photosynthesis in the leaves. This would be roughly the equivalent of cutting off the main arteries in a human body.

The EAB habit of remaining hidden in the cambium layer makes it very hard to detect as the initial infestation is taking place and as the amount of insect damage to internal tree layers is increasing. Only after 3-4 years, most likely when the tree canopy is showing substantial thinning, is the impending lethal damage evident to most casual observers. At that point, it may be too late to save the tree. As one arborist said: "If you have an ash tree in West Newbury, it is either infected now or soon will be."

The EAB life cycle also makes treatment difficult. The feeding larvae remain isolated from any exterior tree spraying until they emerge as egg-laying adults. The adult EAB are only present in the leaf canopy for a few weeks and spread rapidly to nearby trees up to ½ mile away. The difficulty of synchronizing any exterior spraying with the short period of adult EAB emergence substantially limits the effectiveness of any exterior spraying.

### ***What trees does the EAB attack and will any survive?***

The EAB attacks only ash trees, such as the Green Ash (aka Red Ash) and White Ash trees that are very common in West Newbury. The EAB will also attack the Black Ash, which is present in the wettest areas of West Newbury but far less common than the Green or White Ash.



Left: White Ash leaves and bark. Right: Green Ash leaves



The survival rate of infected ash trees is being studied extensively at this time in Massachusetts and other states. Preliminary and informal estimates suggest that no more than 10% of the ash trees in an infected forest will survive and the loss of ash trees takes place over a 10 to 15-year period. It is also unknown how fast and extensively the ash trees will repopulate an area that has been previously attacked by the EAB.

***What are the signs of EAB infestation?***

The most common sign is crown thinning, which consists of losing leaves in the tops of the trees (the canopy). An observer can readily see leafless, dead branches in the top of the trees. Once 40% of the crown is dead, the tree is approaching the point at which it cannot be saved.



*Left: Healthy ash tree crown. Right: Thinned ash tree crown*

Other signs of infestation are:

- light-colored patches on the trunk where woodpeckers have chipped off the outer bark to feed on the EAB larvae in the inner bark layer;



*Light-colored bark patch due to woodpecker search for EAB under bark*

- larval “tunnels” in the cambium layer under the outer bark and D-shaped exit holes in the outer bark from emergent adults (both of these signs are hard to spot)



*Left: Larval “tunnels” damage to cambium layer under bark. Right: D-shaped exit holes in bark.*

- excessive growth of branches on lower portions of tree trunk (epicormic growth), which is evidence of tree stress due to significant death in the tree crown.



*Excessive lower trunk branching*



### ***What steps should I take and when?***

***Don't wait – take action now.*** Basically, the first step is to identify the ash trees on your property and to select which ash trees you wish to protect. The second step is to assess if the selected trees are still reasonably healthy and worth saving, i.e., the crown thinning is less than 40%. At that point, expert help from a certified arborist is needed to determine what options are available for protecting and saving the tree.

Here is a link to a schematic for decision-making, which was created by the Massachusetts experts to help the homeowner determine what steps to take:

<https://massnrc.org/pests/linkedddocuments/EABDecisionGuide.pdf>

### ***Can a homeowner protect or save an ash tree by him or herself?***

A homeowner can apply a suitable insecticide to the soil around an infected ash tree (soil drenching), but this is not recommended for several reasons. In general, the effectiveness of this approach is much less than direct injection into the trunk, which is done by licensed and certified arborists and not by homeowners. The direct injection method is generally the preferred approach for controlling an EAB infestation.

Problems associated with homeowner use of soil drenching to control EAB infestations include:

- knowing what insecticides are safe to use but effective against the EAB;
- knowing how much insecticide to apply;
- knowing when to apply the insecticide drench in terms of tree development and weather events; and
- controlling the amount of water in the soil before and after the drench.

At this point, no organic pesticides or natural control methods (e.g., release of predatory wasps) are available on the market.

For more information on pesticides to control the EAB, here is the link to a good reference:

[https://massnrc.org/pests/linkedddocuments/2018ManagingEABinYourCommunity\\_Lewis.pdf](https://massnrc.org/pests/linkedddocuments/2018ManagingEABinYourCommunity_Lewis.pdf)

### ***For More Information:***

Emerald Ash Borer life history and control options:

<https://www.bartlett.com/resources/emerald-ash-borer-technical-report.pdf>

Free educational materials on EAB: <http://bit.ly/FPOMOrder>

(the EAB ID cards are good pocket guides people can take with them when assessing ash trees).

Expert contacts for EAB Information:

- Joshua Bruckner, MA Dep't of Agricultural Resources: [joshua.bruckner@mass.gov](mailto:joshua.bruckner@mass.gov)
- Kevin Chase, Bartlett's Tree Experts: [kchase@bartlett.com](mailto:kchase@bartlett.com)



*Let's Protect and Enhance Our West Newbury Forests*