

White Fringe Tree and Emerald Ash Borer



Emerald ash borer (*Agrilus planipennis*), or EAB, is an imported Asian pest that has devastated ash trees (*Fraxinus* spp.) across North America. However, new evidence suggests EAB does not limit itself to ash trees. This publication addresses fringe trees as hosts for EAB. We identify the fringe tree, discuss EAB detection, and conclude by addressing treatment options.

Fringe Tree Identification

White fringe tree (*Chionanthus virginicus* and *Chionanthus henryae*) is a native tree found in the southeastern United States (Figure 1). The tree is found throughout Mississippi, but it is mostly located in the southeastern one-third of the state, as well as in Tishomingo, Lafayette, and Union Counties in the northeast. The fringe tree is in the family Oleaceae, the same family as all ash species. Fringe trees are common yard trees, distinguished by a shrub-like appearance, growing to 35 feet when mature. Leaves are simple, opposite, and deciduous. They have smooth edges and can be waxy, with an emerald green color above and pale green on the underside. The leaves are pointed (acuminate) at the tip and wedge-shaped at the base, with an overall oblong shape. The fringe tree is sometimes called Grancy

graybeard because of its beard-shaped, white flowers that have a sweet fragrance. These flowers have made the fringe tree an alternative to white-flowering trees like the Bradford pear (*Pyrus calleryana*). The bark is not very distinguishable—it is gray, thin, and tight and has superficial scales.

Emerald Ash Borer Detection

Because EAB is indigenous to northeastern Asia, most Chinese ash species are resistant to the pest, thereby limiting mortality to stressed trees. EAB prevents circulation of the tree's food and water when feeding larvae cut off nutrient pathways in the outer layer of wood (the cambium). In the 1980s, China extensively planted North American ash species in reforestation efforts. This increase in a susceptible food source allowed EAB populations to increase substantially. Scientists believe EAB was transported to North America through shipping pallets via the St. Lawrence Seaway and arrived in Michigan in the mid-1990s, killing 5–7 million ash trees over the next decades. EAB is spread through ash firewood transport, the green lumber trade, residual wood transport (branches, logs, and chips), and both white fringe and ash nursery stock.



Figure 1. White fringe tree (*Chionanthus virginicus*).



Figure 2. Emerald ash borer (*Agrilus planipennis*) exit hole.
Photo: Don Cipollini



Figure 3. Emerald ash borer galleries on white fringe tree.
Photo: Don Cipollini

EAB marks trees with D-shaped exit holes and S-shaped, sawdust-filled galleries under the bark; these are the primary marks of identification for the EAB (**Figures 2 and 3**). The pest starts attacking upper portions of the tree and works its way down the main stem over time. Thus, exit holes are visible on the bottom portion only after the tree is past recovery. On ash trees, callous tissues will form vertical fissures on the bark. Woodpeckers will increase their activity on the trees as they forage for larvae/pupae. In response to the stress of infestation, the top one-third of the canopy will begin to die back, and sprouts will grow from the roots and trunk of the tree.

In 2014, EAB was discovered attacking white fringe trees, the first non-ash host. The Chinese fringe tree, a native plant to China and another common garden plant, is resistant to EAB. According to researchers with the U.S. Forest Service (McCullough et al. 2015), the fringe tree's role as a susceptible host is still not fully understood. However, it is important to continue monitoring and reporting any possible detection, not only in fringe trees, but in all members of the olive family of trees.

Treatment Options

There are several options for homeowners wanting to protect their ash and fringe trees from EAB. Imidacloprid stem injections (**Figure 4**) have been shown to be the most effective method for preventing EAB damage (Herms et al. 2009). Injections are often preferred over other methods

because there is less waste, exposure, and liability. However, benefits of treatment should be weighed against costs, and sometimes tree removal may be the best option. Treatments last around 3 years, at which point the tree must be treated again. The price of treatment depends on location and decreases as the number of professionals purchasing products increases. In deciding whether to apply insecticide, tree owners should assess the importance of the tree, the tree's size and health, the number of trees to protect, and the location of the tree. If the benefits of treating a tree outweigh the costs, timing is critically important for treatment effectiveness. Most homeowners do not recognize EAB damage until the crown begins to fade, which typically occurs 2 years after the initial attack. Consequently, it is important to begin treating when EAB damage has been reported within 25 miles of your home. If your tree is beginning to show signs of crown fade, the tree can still be treated if less than 40 percent of the crown has begun to fade. Beyond this point, the tree will not have enough circulative ability to transport the injected insecticide to remaining healthy tissues. It is always important to remember that insecticides can prevent new damage, but they cannot repair damage that has already been done. Homeowners should hire a tree care professional who has the appropriate products and techniques to address EAB. To find a tree care professional in your area, visit www.treesaregood.com.



Figure 4. Plugs for stem injection (in ash tree).

Conclusion

Preparation is key to successfully managing EAB. We encourage all homeowners to create a management plan for ash and white fringe trees prior to EAB's arrival in their immediate area. While attacks on other tree or plant species have yet to be reported, it may be a good idea to include a management plan for all species in the olive family, as these species may become future hosts. Stem injections of imidacloprid are the most effective way to protect established vegetation from EAB. However, if stem injections are not a realistic treatment option, planting species outside of the olive family that are well adapted for surviving on the intended site is an alternative management strategy. For more information on treatment options and alternative species options, please contact your local MSU Extension office or the Mississippi Forestry Commission.

References

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By **Jason S. Gordon**, PhD, Associate Extension Professor, Forestry, and **John Willis**, PhD, Assistant Professor, Forestry.



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