

# INVASIVE SPECIES AND MANAGING TREES A WOODWORKER AND FORESTER TALK ABOUT THE EMERALD ASH BORER

*An Essay for Pen & Chisel  
By Kathryn Sullivan & Alex Ashby*

My family business is a cemetery in Detroit. We employ many scandalous stories at family holidays. A classic is the one about Dad and Dutch Elm disease.

In the 1960's Dutch Elm disease had devastated the area and killed the elm trees. My father, away at college, was employed to help remove the problematic stumps on weekends. One tree stump stood unapologetically in the middle of the way where my grandmother wanted to lay a new road. Dad drilled a giant hole and grabbed some dynamite. When one, then two sticks of dynamite failed to work, he left to return the next weekend. The grounds keeper had little faith and filled the dynamite hole in with concrete and gravel.

Returning for another try, my father surmised that it only needed more dynamite. He dug further underneath the stump to place an entire case underneath. My father maintained some distance as the ignition traveled. On ignition, the stump successfully flew up and fell down only to be followed by a delayed rainstorm of gravel.

Exit stage left: pursued by showering rocks.

Enter stage right: the Emerald Ash borer.

Diseases and plights of natural flora and fauna are not just old tales of history. The Emerald Ash borer (EAB) is a nasty little bug that makes waves across North America today. It prompts many a local

tree foundation to discuss the conservation and protection of ash species. This small flying insect drills into a tree and feeds on the phloem, disrupting a tree's ability to transport water and nutrients. It can kill a tree in as few as five years.

Talking about Ash tree species includes more than a few: White Ash, European, Black, Green, Narrow-leaf, all trees of the *Fraxinus* species. There are around sixty species of Ash trees that cover the globe. They are related to the Olive species, both included in the *Oleaceae* family. For woodworkers, Ash timber can resemble Elm, sometimes even Oak. One giveaway for wood identification lovers is a shimmery iridescence in the grain and a lack of medullary rays.

Because of its durability, Ash species are frequently relied on for utility: handles, floors, chairs. Ash trees are an important part of Indigenous culture to native peoples of New York and Canada. Black Ash trees have been used for canoes, bark baskets and split weaving for thousands of years.

As a woodworker, I am aware my relationship with trees evolved somewhat backwards, starting post-mortem in rough-cut lumber form. But from a deep affection for woodworking grew a respect for its origin: the tree. The CITES index exists as a convention that aims to guard tree species and biodiversity. But CITES is not the only existing directive. The EAB is currently in my North Texas county and those surrounding. These local counties are within a federal quarantine. This limits the regulation of any items that might contain potentially infected

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boards. Simple firewood, for example, is illegal to transport out of county and out of state. Regulated firewood transport is common in many of the United States: Ohio, Florida, Pennsylvania, Maine, to name only a few.

My affection for trees introduced me to Alex Ashby, a forester that cares deeply about trees and the conservation of their species. In the following portion, I ask Alex: how bad is the Emerald Ash borer and what the heck do we do?

While there are many successful efforts to lower the density of Emerald Ash Borer populations in an area, we cannot eradicate it entirely. EAB (*Agrilus planipennis*) is now a permanent fixture in the North American landscape, much like Spongy moth (*Lymantria dispar*), Beech bark disease, and the Chytrid fungus. Wood-boring insect larvae of all sorts attack tree cambium. Beetles are attracted to the stress pheromones from damaged or diseased trees. Larvae tunnel inside to create galleries, producing distinctive S-shapes as they feed under the ash bark. EAB will feed through the fall, rest over winter, and pupate the following spring. In summer, adult beetles emerge, drilling their way back out leaving a distinctive D-shaped exit hole in the bark. In high numbers, they can girdle a tree within one season.

Much like the Dutch Elm Disease that removed millions of trees from the North American landscape, the EAB is a newcomer to the American continent. While it proves to be devastating to North American Ash trees (*Fraxinus* spp.), EAB is only a minor pest in its native range throughout Asia. We assume that the first EAB were brought over as larvae in wood pallets. Larvae hiding in trees and

transported for human consumption is not unique to EAB. This is also true for another invasive insect, the Asian Longhorn beetle.

Tracking the spread of EAB remains difficult. It was first identified in North America in southern Michigan in 2002. Within twenty years, its range expanded to include 35 US states and 5 Canadian provinces. Estimates say 99% of Ash was lost in those areas following only 10 years of infestation. The beetle can maintain low populations in an area for years before detection; it is estimated that the earliest beetles were in Michigan by the early 1990s.

Ecologically, Ash are extremely important to wetland ecosystems. They are a food source for Tadpoles. Their rich leaf litter is essential to forest soil development. They coexist with many different forest types and can handle extreme stressors such as flooding and late frost. Such hardiness, and especially that of green ash (*F. pennsylvanica*), allows it to become a widely-planted and much-loved street tree. Both urban and forestland Ash are vital to water cycling. Like all trees, Ash transpire: cleaning used water from the soil, released as vapor and stabilizes soil moisture levels. Ash, like Elm, transpires rapidly. Therefore, they are extremely helpful in moderating extreme weather events.

Various conservation efforts exist to slow the spread and protect remaining healthy Ash. These include both individual and collective efforts, such as systemic pesticides or specialized breeding. Breeding can create hybrids that may be less vulnerable to EAB. While these projects are complex and incredibly important to retain Ash on the landscape, the most important piece of EAB control is within our ability: limit movement of infected species.

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Human movement, the primary cause of invasive species issues, can be mitigated with some simple practices. Bans on moving firewood and requirements for kiln-treating wood are common nationwide. PlayCleanGo has some useful guidelines for activities outdoors. The most important one for EAB is “Buy local, burn local.”

For standing Ash trees, I recommend calling a licensed arborist. Systemic insecticides are the most certain way to protect the vulnerable. Treatment generally involves injection of a pesticide into the base of a healthy tree by a licensed professional. Though sometimes costly, injection is a relatively safe and selective option.

Though EAB infestation can kill 99% of ash in an area, some trees will survive without intervention. These are known as Lingering Ash. They are the primary hope for restoration work. Lingering Ash may have some innate resistance to EAB, maybe were healthier than others to begin with, or may have been spared the worst of an attack. Whatever the reason, these trees continue to provide critical ecological functions and act as a genetic source for future generations of Ash. Protecting these, especially females that carry seed in midsummer, is imperative to retaining Ash as a species.

Creating “trap trees” can help to reduce the EAB population locally. This requires a lot of labor, planning, and the loss of some Ash as an expense for others. Trap trees are created by girdling a single or small patch of Ash stems during the early growing season, which stresses these trees and attracts the beetles looking to lay eggs. Later the same year usually in late autumn, these trap trees are cut down and

chipped or bucked to short logs, which can kill many of the larvae over the following winter.

Though EAB infestations do endanger the species, hope is not gone and management has not ended. Biocontrol efforts using specific predatory wasps are currently being studied in several states. And they show promise. Breeding efforts are being made to increase the innate resistance of native Ash to EAB. Various species of Ash prove to be more resilient against EAB when attacked, which provides hope for assisted migration or reserve populations. Personally as a forester, I am tempted to harvest all healthy Ash before the borer kills them. But our individual and collective efforts can help preserve Ash populations for their own sake.

*Kathryn Sullivan is a woodworker, apprentice cabinetmaker and antique restorer based out of the Dallas/Fort Worth, TX area. They are also an educator utilizing social media and a woodworking book club to share the impactful histories of craft, materials and cultural influences.*

*Watch our previous conversation with Kathryn from the August 2021 issue [here](#).*

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