

[Tree-killing beetle has spread to Dallas County](#)

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The emerald ash borer has now been spotted in Dallas, Tarrant and Parker counties. Photo by Sam Kieschnick.

Some Texas trees are being felled by a tiny critter, no bigger than a cooked grain of rice.

The [emerald ash borer](#) may not look capable of bringing about the worst tree die-off event in U.S. history. But for arborists, forestry experts, and homeowners across the nation and here in Texas, the invasive species from northwestern Asia may be public enemy number one.

"EABs" are the hot topic among North Texas tree experts, who first spotted them in Tarrant County in 2018. The beetles have since spread to Dallas County, where they were discovered earlier this year.

The emerald ash borer is only about half an inch long with a bright-green cylindrical body. It feeds on all species of ash tree, creating S-shaped burrows in the phloem and sapwood — the living tissue that lies just beneath the bark in the outer circumference of a tree. This tissue transports water and nutrients to the branches of the tree, much like the arteries of the human body.

If the phloem is compromised, the tree will lose its leaf canopy and die within three to five years. All ash trees that become infested with the emerald ash borer die without intervention.

Not to be mistaken for [other metallic green beetles](#) such as the beneficial fiery caterpillar searcher or the diverse array of green jewel beetles that live in the state and throughout the country, the emerald ash borer may be distinguished by the reddish abdominal area beneath its wings and the fact that adults are small enough to fit on the head of a penny.

“It's really pretty,” says Allen Smith, regional forest health coordinator for the Texas A&M Forest Service. “It's part of a family called the jewel beetles because they're iridescent and they're green – it's a really pretty insect. And in their native range, they're a secondary pest, which means they don't actually kill trees; they just kind of show up and make their homes in diseased, dying, stressed trees.”

BEETLE INVASION



Damage by emerald ash borer in an ash tree. Photo courtesy of Texas A&M Forest Service.

In North America, where they have no predators and enjoy a hospitable climate, the emerald ash borer has gone unimpeded in its attack on ash trees since it arrived in Michigan sometime in the mid-1990s. The interloper is thought to have arrived in the U.S. on a palette of auto parts imported from an Asian country.

Since then, the tree-boring beetle has decimated millions of ash trees both in the wild and in neighborhoods in [36 states](#). It's been spotted from Minnesota to Maine and all along the eastern half of the continent, reaching up into Canada and spanning down into Kentucky, Tennessee and Georgia, and all the states in between, while simultaneously expanding into Missouri and Arkansas and finally arriving in Texas 14 years later.

“We found our first beetle in a trap in far eastern Texas in the Marshall area, Harrison County,” Smith says. “And for a while, we thought we were basically limited to an East Texas problem. We saw it spread throughout Harrison County. It was detected in counties north of that: Marion County, Cass County, and then Bowie County, which is where Texarkana is on the Arkansas-Oklahoma state line up there. So we've been dealing with it in East Texas as a component of our landscape and our forests since 2016. In 2018, we confirmed that it was present in Tarrant County in the Fort Worth area. And we've watched it expand throughout that county. And just this year, we've detected it in Parker County, where Weatherford is.”

In the spring of 2022, the first emerald ash borer was confirmed in Dallas County. A specimen was recently confirmed in [Wise County](#) as well. Now experts believe that ash trees throughout the state are susceptible to infestation and predict a possible collapse of ash tree populations in Texas.

ASH TREES IN THE U.S.

Part of the flowering genus of trees known as *Fraxinus* in the lilac and olive family, [ash trees](#) comprise as little as one to two percent of wild forests in Texas but as much as an estimated five percent to 10 percent of urban tree canopies in the state. In the Great Trinity Forest, where logging in the early 20th Century created a vacuum for the fast-spreading ash to take over empty spaces, estimates put ash around 20 percent of the tree population.



A dead ash tree located in an identified emerald ash borer site in Tarrant County. Photo by Sam Kieschnick.

A rapidly-growing replacement for elm trees lost to Dutch elm disease back in the mid-to-late-1900s, ash has been popular among developers and homeowners from the 1970s onward because of its ability to create shade in years rather than the decades needed by other hardwood trees. On some home sites and in many neighborhoods, ash may be the primary tree species growing.

Therefore, the arrival of the emerald ash borer into a county is a predictor of landscapes doomed to total tree blight for some neighborhoods. In forested areas where ash proliferates such as the Great Trinity Forest, the loss of ash trees will lead to fire risks and soil erosion. Along hiking trails in parks or along streets in neighborhoods, stressed ash creates a risk of injury from falling branches. Infested ash can damage buildings when weak trees fall over, blown by the wind.

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HABITAT LOSS

The disappearance of ash trees also amounts to habitat loss for almost 100 species of insects, some of which are specialist herbivore insects that rely on ash to live. Among these specialists, eight species of nighttime pollinators known as hummingbird moths have a questionable future. Add in birds and mammals that feed on ash seed and the threat posed by the borer is compounded.

“Across the U.S., there are right around 300 species that are known to utilize ash trees,” says Brett Johnson, an urban biologist with the Park and Recreation Department of the city of Dallas. “Birds will utilize ash trees and so will mammals, but most of them have a diversified enough diet that they will find something else that they can forage on. But that is not the case with a lot of our insects.

“Across the U.S., there are right around 300 species that are known to utilize ash trees,” says Johnson.

“A lot of them are very species dependent. And in that case, there are right around 100 species that are dependent on ash at some point in their lifecycle. And typically, what they're looking at is that there are 32 species of butterflies or moths that are known to be dependent on ash trees. There are about 24 species of what they call true bugs, which are gonna be your leafhoppers, your grasshoppers, and insects like that. And then 24 species of beetles. And the reason that is important to us is, keep in mind that when we start talking about pollination, everybody gets really excited about bees and butterflies. But they tend to forget that over 80 percent of your overall pollination is actually done by beetles.”

INSECTICIDE ISSUES

Smith says that the SLAM approach can protect ash trees in an urban setting but has not been proved effective in larger, wild forests where the cost of such a strategy would be enormous. Johnson adds that insecticides are also indiscriminate, killing both borers and beneficial insects, and are therefore mostly untenable.

“That is a major reason why we are being very judicious on how we are looking at approaching any kind of treatments. Because we have to keep in mind: we do not want to treat all the ash trees at one time, although I know there's been a push for that in some corners. Because keep in mind, you have such a high number of insect species that will feed on ash, and the treatment

for the emerald ash borer is a systemic treatment, meaning that any insect that eats it will likely be killed,” Johnson says.



Mike Merchant, formerly of TAMU Agrilife, and Allen Smith of Texas A&M Forest Service examine damage from an emerald ash borer in Tarrant County. Photo courtesy of Sam Kieschnick.

Dallas-based arborist Steve Houser says that some species of ash trees are very short-lived, which means that some ash trees that seem prominent enough to warrant the cost of insecticidal treatments may also be getting along in years. Typical Texas droughts and the last two years of plunging arctic temperatures in the state have only compounded many ash trees' vulnerability to threats, so homeowners looking to preserve shade on their property may want to forgo the \$15 to \$20 per diameter inch cost of treating a tree with insecticides that will only protect for a few years.

“Let's say you've got a 20-inch ash, that's \$400 every two to three years. You start looking at the economics of it and you realize over a 10- or 15-year period, you could have cut it down and replaced it with something else,” Houser says.

Houser is not opposed to treating trees with significance or as a strategy to preserve shade on a property while other species grow large enough to take an ash's place.

“If it's an Arizona ash and it's near its life expectancy, we're probably not going to recommend that you inject it and try to keep it,” he says. “If it's a young, strong ash – if it's one that's important to you, especially if grandpa planted it, or you planted it to honor somebody important in your family or somebody in the community – those are the kinds of trees that we really want to save. Some of the largest ash around, for instance, are ones we want to save.

“Some people may say I'm going to inject [an ash tree], and then I'm going to plant new trees around it, so in two or three years, I may just let the little trees take over and let the bigger [ash] tree go, which is a responsible way to do it – if you've got some other trees established, growing and ready to take its place when you ultimately take it down – and that's really the best answer for most of these property owners.”

REMOVAL AND REPLACEMENT

On public lands and areas that are heavily forested, Houser says removal and replacement of ash is the best approach. In counties not yet facing a state quarantine, harvesting the wood for lawn furniture and other uses is a viable option. He fears, however, that the ash in the Great Trinity Forest has had too little attention given to its management, which makes any forest strategy now that the emerald ash borer has been found in Dallas County all the more difficult. The ash population in the forest is spread out in a vast area.

“If you look at the Trinity River, for instance, it's anywhere from 5,000 or 6,000 acres of trees, which represent the very lungs of the Dallas area when you're talking about air quality alone,” he says. “There is no sense in treating [ash] trees in the Great Trinity Forest as there are too many of them.”

Now that the infestation has arrived in Dallas County, any approach that Dallas takes will be costly, so Houser and Smith agree that feasibility is the goal in any forest decisions in view of the ash tree's inevitable die-off.

“The problem that we have is, how do you put insecticides into, and that's the key is, not ‘on,’ but ‘into’ all the ash trees in the forest, or in a city? You can't, it's too labor intensive; it's too expensive,” Smith says. “You can't do healthy forest management – you can't manage your way out of it. You can throw the world's healthiest ash tree into an arboretum and love it every day and water it and give it every advantage in life, and then the emerald ash borer shows up and that tree is a goner.”

SLOWING THE SPREAD

Smith says the solution now at hand is to try to slow the borers' spread as much as possible, not because there's the hope of stopping it but to give unaffected communities time to put practices in place to mitigate the costs of dealing with the emerald ash borer once it shows up.



Photo shows the relative size of the emerald ash borer. Courtesy of Texas A&M Forest Service.



Emerald ash borer. Photo by Debbie Miller, USDA Forest Service, Bugwood.org.

“There is a solution. It's just a kind of a slow-the-spread type of solution,” Smith says. “And the idea then is this is a state-regulated pest. So when an emerald ash borer shows up in a county and is positively confirmed to be in a county, that county goes under quarantine from the Texas

Department of Agriculture. The idea is to slow the movement of wood and wood products and firewood that could have the emerald ash borer in it – to slow the spread to other places, to give these other communities time to manage what they can do.”

Smith says municipalities need to take an inventory of their trees and identify what species of trees they have, where they are, and what condition they’re in. Then, they need to prioritize what trees they’ll remove, such as those under power lines or on vacant lots, and decide what areas should be repopulated with other species of trees. Some ash deemed worthy of protection in parks or other public spaces may be treated with insecticides when the ash borer is determined to be within about a 15-mile range.

“And so it allows for budgetary flexibility rather than a city being hit with \$70, \$100 million in tree removal costs in one year. They can start planning and start getting their ducks in a row to prioritize how they’re going to manage it when it does show up,” Smith says. “And, frankly, some cities are actively doing that, and some cities are going with the opposite strategy, and they just bury their head in the sand and either don’t care or [decide to] deal with it when it shows up and by that time, it’s kind of too late to start.”

PUBLIC PARTICIPATION

Part of the slow-the-spread strategy calls on people in quarantined counties to be responsible for how they move wood and wood products.

“When you go camping someplace, buy your firewood locally from that camp or nearby the camp and burn it there, and then don’t take it home with you,” he says. “If you have leftover firewood, leave it there. The emerald ash borer is a pretty decent flier; they’ll fly 12 miles a year on their own. But when you load it up on your RV and you drive 200 miles back home, it gets a free ride for 200 miles, and a new infestation could start.”

That personal responsibility is important for mitigating the spread of the emerald ash borer in Texas is evident in view of how forestry officials think the infestation has spread in the state so far. Although several East Texas counties have been infested for years from a gradual movement of the borer from populations in Louisiana, Fort Worth was an all-new point of infestation, and Smith met the property owners of ground zero.

“On the property, we discovered some firewood that had some signs of emerald ash borer in it. And the folks that were living there had moved from [an infested state] and they were familiar with emerald ash borer and said, ‘In fact, all of our trees back home were killed by this insect.’”

In the near future, both Houser and Smith say ash may be nearly wiped out all across the state. The loss of an entire genus of trees will be a huge setback for cities such as Dallas that have adopted plans to increase their overall tree canopy in an effort to make urban areas more

liveable as temperatures and the number of extreme weather events are predicted to rise as a result of global warming.

“In response to the confirmed presence of the emerald ash borer, city staff have launched the EAB Action Plan in coordination with the Texas A&M Forest Service, Texas Department of Agriculture, Federal agencies, local non-profits, and trained professionals,” says Carl P. Simpson, assistant city manager for the City of Dallas. “With our partner agencies, city staff is committed to preserving, maintaining, and enhancing Dallas’s tree canopy on both public and private property.”

Dallas’ EAB Action Plan includes increased outreach to the public, assessing ash trees on city-owned public lands to determine their condition, implementing preservation strategies for significant ash trees that are in good condition and have a trunk diameter of 24 inches or larger, or are in areas where there is an ash grove in good condition. The city will also remove ash trees that become a public safety issue. The city has worked with the Texas A&M Forest Service to install more than 20 emerald ash borer traps throughout Dallas to monitor the progress of infestation.

As the state authority regarding emerald ash borer infestation, the Texas Department of Agriculture has added Dallas County to the growing list of quarantined counties, which so far includes Parker, Tarrant, Denton, Harrison, Cass, Bowie, Morris, and Marion Counties. In mid-June, Wise County was added.

In these counties, no untreated ash wood, wood debris, mulched wood products, firewood, or ash nursery stock may be moved outside of the quarantined area. Treatments for firewood and other tree products include kiln sterilization, heat treatment, and fumigation. All wood mulch must be chipped in at least two dimensions to less than an inch in size.

The City of Dallas urges the public to learn how to identify an [emerald ash borer](#) and [ash trees](#) so that an infestation may be immediately addressed. The Texas A&M Trees of Texas website shows how to identify ash trees, and the U.S. Department of Agriculture's Animal and Plant Health Inspection Service has an emerald ash borer identification page. Anyone who makes a tentative identification may report it by visiting the [USDA APHIS emerald ash borer and ash tree damage report page](#), or by calling the [national emerald ash borer hotline](#) at 866-322-4512.

Dallas refers property owners who need help with ash trees to the [International Society of Arboriculture](#) to find a local, certified arborist that can offer advice.

LONG TERM EFFECTS

Overall, the loss of native ash trees from Texas will have a huge ecological effect on the state. And if the old saying that every cloud has a silver lining is true, Houser, Smith, and Johnson agree that the problem posed by the emerald ash borer may be the exception to the sentiment.

Nevertheless, the loss of ash trees will make the creation of greater tree diversity in urban and rural areas a necessity rather than just a good idea. By mixing up the species of trees in the state's total tree canopy, the next tree pest that invades Texas will find a much less friendly welcome.

"A forest's best asset is species diversity because there are going to be other pests and pathogens that come along in the future," Houser says. "To lose all the ash in the state as well as 100 other species of wildlife that depend on them is very depressing to me. It will have a detrimental effect on our environment and the sustainability of our state's natural ecology, in many different ways."

RESOURCES

[Texas A&M Emerald Ash Borer Info](#)

[Texas Invasives Emerald Ash Borer Info](#)

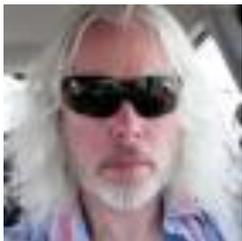
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