

Parks, Natural Resources and Cultural Affairs Urban Forestry Ash Tree Plan



This plan provides information and guidance and promotes proactive planning before the **emerald ash borer** (EAB) beetle (*Agrilus planipennis*) arrives in Fayetteville, Arkansas. This plan will help reduce potential public health, safety and property hazards associated with EAB. Additionally, it will serve as guidance to mitigate the damage associated with controlling EAB. This guide allows us to align our plan with the most recent research, recommendations and techniques for managing the impact of EAB.

What is the emerald ash borer? The EAB is an invasive insect that produces a larva that feeds on phloem – plant tissue that transports nutrients and sugars from the leaves to other parts of the tree. The disruption of flowing nutrients eventually causes the death of the tree. Adult beetles feed on ash foliage but don't cause significant damage (USDA, Animal and Plant Health Inspection Services, 2025).



Emerald ash borer



Larva of emerald ash borer

Where did it originate? EAB was first reported in North America in 2002. It was found in southeastern Michigan and adjacent to areas in Windsor, Ontario, Canada. It was thought to have escaped on solid wood packing materials from Asia.

EAB aggressively kills healthy ash trees, which die within 2-5 years. The destruction of the ash trees has been compared to chestnut blight and Dutch elm disease. Typically, EAB decimates the entire ash tree population; however, we can keep our significant and healthiest ash trees with treatment.

EAB has recently been detected in Benton County, Arkansas, including the city of Rogers. Additionally, EAB has been reported in adjacent Delaware County, Oklahoma. The invasive pest has also been identified in several counties in northeastern and northcentral Arkansas and counties near Springfield, Missouri. EAB infestations surround Fayetteville, and it is likely only a matter of time before the pest is detected within the City. [Map for EAB](#)

Ash Tree Identification

Before learning to detect EAB, ensuring the ash tree is positively identified is crucial. Ash trees can grow up to 100 feet tall and have a wide canopy spread. In Fayetteville, we have three native types of ash trees: blue, green and white. All three have very similar leaf patterns, as shown below, and the trunks of the white and green ash trees are very similar. The trunk of the blue ash does not exhibit the diamond pattern as the green and white ash trees do; the bark is scaly and long.

Ash trees have compound leaves and opposite branches. The compound leaves have 5-11 leaflets.



Opposite leaves and compound leaflets

The bark for green and white ash has a distinct diamond shape pattern. Blue ash bark is very indistinct and similar to several species of trees. The leaves are the best way to identify blue ash.



Green and white ash bark typical diamond pattern



Blue ash bark

The overall shape for mature ash trees is oval.



If the positive identification is not clear, there are many phone apps that identify trees, and there are several resources on the internet that can help identify an ash tree:

[U of A Research and Extension, Ash ID](#)

[Ash Tree ID from Purdue](#)

[Video from Clemson, Ash Id](#)

[Colorado State Forest Service Ash ID](#)

Detection

Once a tree is positively identified as ash, those infested with the EAB will initially exhibit crown dieback, characterized by leaf loss at the treetops and branch tips. This crown dieback attracts woodpeckers, as insects tend to infest trees showing signs of distress, and woodpeckers feed on these insects. The symptoms of EAB infestation begin at the top of the tree and gradually progress downward, making them difficult to recognize in the early stages.



Trees showing crown dieback



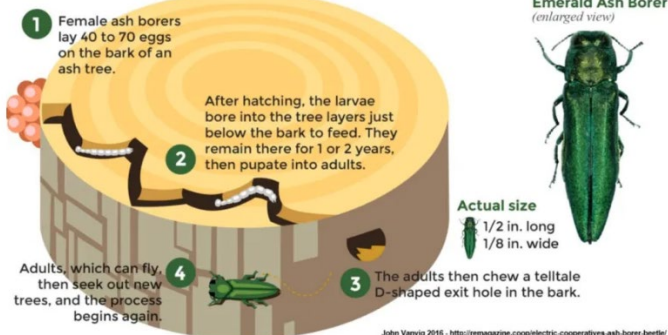
At this point in the EAB cycle, small holes start to appear in the trees' trunks. These small holes are the exit holes that adults have created.



Emerald Ash Borer exit holes



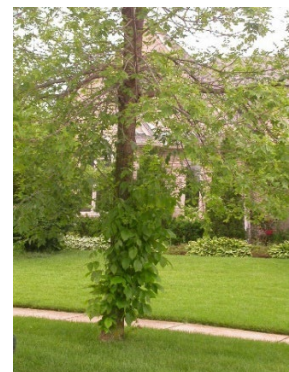
LIFE CYCLE OF THE EMERALD ASH BORER



As the infestation progresses, the upper branches of the tree become brittle and more prone to breaking. Once the tree reaches this critical stage, it will also send up sucker branches from the base of the trunk. These sucker branches are small, upright growths that emerge from the base rather than the main trunk, indicating that the tree is under significant stress.



Advanced tree crown dieback and suckers



Over time, the dieback may cause the tree's limbs to die and potentially fall, posing a hazard if the tree is not located in a remote, wooded area away from human activity. If the tree is not in a secluded location, it will require removal for safety reasons.



Dead upper tree limbs

The bark will peel away, and the trunk will show signs of the trails that larva leave on the trunk.



Larva in a tree feeding on phloem



The trails larva leave on ash trees

Management Options

Homeowners and land managers have two primary options for managing emerald ash borer infestations: removal of infested ash trees or treatment with insecticides. Depending on the severity of the infestation, insecticide treatment is often the most effective approach. Scientific understanding and treatment methods have advanced significantly since the initial detection of EAB. While the insecticide products available are highly effective, they require reapplication every 2 years. The treatment can be costly, especially for managing entire ash forests. However, a targeted approach focusing on significant individual ash trees can be a cost-effective mitigation strategy.

Insecticides

There are three types of insecticide treatment: soil drenches/injections, bark spray and trunk injections (Ball, 2020).

During the period from the first leaf emergence until June, soil treatment involves applying insecticides to the base of the tree. This process begins by removing any mulch or sod, then applying the insecticide directly to the ground within 1 foot of the tree trunk. A similar approach is soil injection, where the insecticide is injected 2-4 inches deep using commercial applicators. This soil-based treatment is most effective for trees less than 10 inches in diameter, as the insecticide is absorbed through the roots and

transported via the phloem to kill any larvae present. The two active ingredients in soil treatment are dinotefuran and imidacloprid.

To measure the diameter of a tree, use a tape measure to find the circumference of the trunk at 4.5 feet above the ground. Then, divide the circumference by π (approximately 3.14). The result will give you the diameter of the tree. This method is a standard practice known as Diameter at Breast Height (DBH).

Commercial applicators can apply bark spray between late May and late June. The insecticide is absorbed through the bark and into the trunk, targeting larvae beneath the bark and adult beetles feeding on the leaves. This application method is most effective on trees less than 15 inches in diameter. The primary active ingredient in the bark spray is dinotefuran.

It's important to note that these insecticides can also be taken up by other nearby plants, so it's not recommended to use the soil spray/injections or bark spray next to flower beds that may attract pollinators.

Trunk injections at the base of the trunk of the trees is another option. These injections create small holes around the base of the trunk where it flares out. This method allows the tree to uptake the insecticide fast. Small plugs can be placed at the site of injections to help heal the tree and prevent other insects from entering the small holes. This treatment will have to be reapplied in 2 years to remain effective. The insecticides used in this treatment include emamectin benzoate and imidacloprid. The common brand name is Tree-äge.

Tree Removal

Trees exhibiting more than 30% canopy loss should be removed. If the tree has been treated for an infestation, continue the treatment. For large trees, hiring a professional arborist to handle the removal is recommended. Compared to non-infested trees, trees infested with EAB are more prone to structural failure and unpredictable during felling. Removing large, EAB-infested trees can be extremely dangerous for untrained individuals without proper training.

Disposal

Homeowners have options for disposing of tree debris from infested trees. The first is to mulch trees less than 10 inches in diameter using the City's waste and recycling services. Alternatively, trees can be burned on site, though it is strongly advised not to transport the wood to another location, as firewood is a common way the EAB pest is spread. The third option is to simply fell the tree and allow it to decompose naturally at the original site.

The City will mulch smaller trees and branches collected from city properties. Large trees on city properties that do not require removal will be left to decompose naturally at their original locations. Any large tree debris from city properties that cannot be mulched will be placed in an isolated, City-owned location to decompose.

What is the City's plan?

Since the initial discovery of EAB, Urban Forestry has closely monitored its spread across the country from the north and east. As a result, we have actively discouraged the planting of ash trees and have not included them in any new projects since the initial EAB detection. Consequently, the ash tree population in Fayetteville is now estimated to be less than 2% of the overall tree canopy (Fayetteville, 2024).

Given the current ineffectiveness of eradication efforts, our organization will proactively prepare for the inevitable ash tree infestations. In 2025, we intend to prioritize mapping the distribution of ash trees across Fayetteville and on City property. This comprehensive data will inform our strategy for managing the health of these trees, enabling us to selectively treat, remove or allow the natural lifecycle to unfold as appropriate. This will also help us decide how many trees we can treat within our budget.

With the potentially dying trees around the city, safety and preventing hazards from trees is a major concern. If the trees are showing signs of infestation, then removal may be the best option. EAB causes the trees to die from the top down to the base of the trees. Dead limbs at the tops of these large trees are a hazard. The City will be actively removing and cutting ash trees to prevent them from becoming hazardous.

City Plan:

1. Map locations of ash trees
2. Assess the health and potential for treating ash trees
3. Report any confirmed EAB infestations
4. Treat the significant healthy ash trees
5. Place the trees on a treatment cycle of every 2 years
6. Removal of ash trees that could pose potential safety issues to the public.
7. Replant with native hardwoods

Residents

The first step is to identify the tree species positively, then assess their health and decide whether you want to keep the tree. If unsure, hire a certified arborist to evaluate your tree and review the options. If the tree is positively identified and infested, report the issue first to Urban Forestry by emailing urbanforestry@fayetteville-ar.gov, including as much information or pictures as possible. Staff may contact and request a site visit to confirm that it is EAB. This information will be reported to the state and U.S. Department of Agriculture (USDA). The following is also recommended:

- Call the USDA emerald ash borer hotline at 1-866-322-4512
- Take pictures of the insect and any damage to the tree
- If possible, put an adult EAB in a container and freeze it
- Put any larvae in a container with rubbing alcohol
- Record the location where you found the EAB

The City has created an application for citizens to report ash trees on public property. To report an ash tree on public property: [Ash Tree Report](#)

Future of ash trees

Ash trees will continue to decline in the foreseeable future, and EAB will kill nearly all ash trees. Research is being done to create a resistant species. The rare ash trees that survive without treatment and have not been impacted by EAB are being studied for resistance. Other biological controls are being explored, such as natural predators and parasites that may help manage the population. The future of ash trees is very uncertain, and the City of Fayetteville's Urban Forestry Division will stay informed on the latest available information.

More information on EAB

[U of A Division of Agriculture Research & Extension](#)

[USDA Forest Service](#)

[EAB Network](#)

[Arkansas Urban Forestry Council- Emerald Ash Borer in Arkansas](#)

Sources

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