

Village of Prairie du Sac Emerald Ash Borer Readiness Plan



Source: www.na.fs.fed.us

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Introduction

Purpose of Readiness Plan

The purpose of this Emerald Ash Borer readiness plan is to identify the essential personnel, resources, procedures and fiscal resources to combat emerald ash borer in Baraboo. The city of Baraboo anticipates utilizing proactive measures before an infestation occurs to amortize costs and minimize the impacts of EAB.

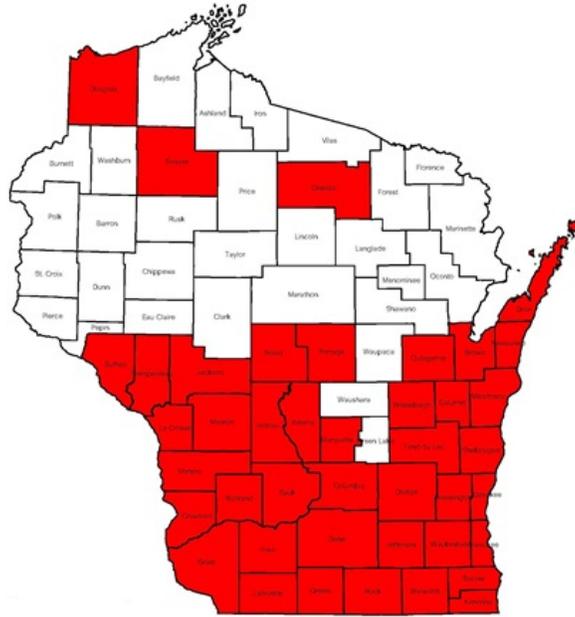
History of the Emerald Ash Borer

The Emerald Ash Borer (*Agrilus planipennis*) is an exotic pest native to Asia that was identified in southeastern Michigan near Detroit in the summer of 2002. The adult beetles munch on ash foliage but cause little damage. The real damage is caused by the EAB larvae that feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. It is suspected that the insect was initially introduced to the United States via solid wood packing material carried in cargo ships or airplanes originating in its native Asia.

The natural range of the emerald ash borer is eastern Russia, northern China, Japan, and Korea. Before June of 2002, it had never been identified in North America. In its native environment EAB feeds on a variety of plant species, but in the United States thus far, it feeds exclusively on the ash tree (*Fraxinus*). In its native range it is considered a minor pest and is controlled through natural measures. In the United States, it is known to attack green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus Americana*), black ash (*Fraxinus nigra*) and blue ash (*Fraxinus quadrangulata*). It attacks both healthy and declining ash trees and has been known to attack and colonize branches as small as one inch in diameter.

Since its identification in Michigan, EAB has been found in Missouri, Illinois, Indiana, Ohio, Pennsylvania, West Virginia, Maryland, Virginia, Minnesota, Kentucky, New York and Wisconsin.

Emerald ash borer was found in Wisconsin for the first time in August 2008. It was located near the community of Newburg. Later, EAB was found in the town of Victory which is located in Vernon County, and this report came in during April of 2009. Since these first reports, EAB has been confirmed in 38 counties in Southern and Central Wisconsin.



Map of quarantined counties in Wisconsin as of August 31, 2016.

Description and Lifecycle of EAB

The Emerald Ash Borer adults are dark metallic green in color and belong to a group of wood boring beetles known as Buprestidae. Adults are approximately ½” long and 1/8” wide with very short antennae. The larvae are white in color with flattened segmented bodies and may grow to a length of one inch.

When the adult beetle emerges through the bark of ash trees in early summer, it creates a D-shaped exit hole. Adult emergence is believed to be staggered throughout the months of May and June. Adults live approximately 3 weeks and have been observed into August. Adult EAB prefer warm sunny conditions and are most active during the daytime. Mating occurs soon after emergence and females will begin to lay eggs about 2 weeks after emergence. A single female EAB will lay between 60 and 90 eggs in her lifetime.

The eggs will usually hatch in 1-2 weeks. Once hatched, the tiny larvae bore through the bark and into the cambium, which is the area between the bark and wood where nutrient levels are high. During the feeding process the larvae tend to wind back and forth which creates the characteristic s-shaped galleries in the phloem or outer sapwood. These s-shaped galleries are one of the major ways that EAB can be identified in ash trees.

Unaided, the beetle is thought to move slowly through the landscape, approximately one mile annually, though the rate of spread varies by insect and host tree abundance. However, humans greatly accelerate the spread of the insect by moving infested nursery stock, firewood and logs to un-infested areas. Emerald ash borer movement into parts of Michigan and Indiana has been the direct result of moving these ash products.

How to Identify Ash Trees

The emerald ash borer feeds exclusively on ash trees in North America. Green ash (*Fraxinus pennsylvanica*) and white ash (*Fraxinus Americana*) are all found within the Village of Prairie du Sac. There are numerous wood boring insects in Wisconsin, but EAB will only attack ash trees. The simplest way to identify ash trees is by their opposite branching pattern (the leaves will grow opposite of one another at the same spot on the branch/twig). The leaves of ash are compound with 5-11 leaflets each, and leaflets will have minor serration along their margins (edges).



Green ash bark

Source: www.treedoctor.msu.edu



White ash leaves

Source: www.nyis.info

Signs and Symptoms

The symptoms associated with EAB infestations are very similar to those of other common ash pests or diseases including other wood boring insects that attack ash trees. Before identifying an infestation as EAB, it is important to know how to identify all of the symptoms and to be able to identify a combination of at least two symptoms. It can be difficult to identify EAB infestations when there are low populations in the tree. It can take up to 4 to 5 years for a tree to die after it has been infested.

Local governments and residents are not expected to be able to diagnose EAB. Municipalities should call a trained professional or the Department of Agriculture and Consumer Trade Protection (DATCP) in order to properly identify EAB.

Crown dieback: Trees begin to show dead branches throughout the canopy beginning at the top. Foliage at top of the tree is thin and sickly. This photo shows a tree that has been infested for a few years and shows multiple symptoms of EAB.



Epidormic sprouting: Sprouting at the base or along the trunk of the tree. This is often referred to as suckering.



D-shaped exit holes: As adults emerge from within the tree they create an exit hole approximately 1/8" in diameter that looks distinctly like a capital 'D.'



Increased woodpecker damage: some older infestations have increased woodpecker activity as the birds try to feed on the EAB larvae. This usually occurs in the upper portions of the tree and may be accompanied by bark dieback.

Serpentine and larval galleries: The larvae feed just underneath the bark of the ash tree. As the insect larvae feed they wind back and forth creating serpentine or s-shaped larval galleries.



Bark splitting: Vertical splits in the bark appear and are caused by callus tissue that forms around larval galleries. Larval galleries can often be seen beneath the splits.

Presence of larvae or adults: The actual presence of the adult insect or of EAB larvae is confirmation of an infestation.

Conduct Detection Surveys

With this tree inventory, Prairie du Sac has completed the first step of the survey process. Village staff should conduct EAB/ash tree inspections to note potential indicators of EAB activity within the village. Several survey methods can be used in urban situations, but one method in particular seems well suited for Prairie du Sac.

Visual Survey techniques include looking for outwardly visible signs/symptoms of EAB on ash trees by foot. While conducting other necessary maintenance duties, village staff should visually inspect $\frac{1}{4}$ to $\frac{1}{2}$ of the ash trees for EAB symptoms which include: D-shaped exit holes, crown dieback, bark splitting, s-shaped galleries, increased woodpecker damage, and epidormic sprouting. While the Southwest Badger RC&D Stewardship Forester was conducting the ash tree inventory, a visual survey was conducted as well and no signs/symptoms of EAB were detected. The main disadvantage of this survey method is that by the time visual symptoms of EAB are present, it usually means the infestation has been in the area for several years. However, it is the easiest and most economical means of survey and can be completed by Village staff. This survey should begin in the summer of 2017 and continue annually thereafter.

Decision to Remove or Chemically Treat Trees

The first essential question that arises when a community is making decisions regarding EAB is whether to maintain an ash component within their urban forest. Simply put, the options that exist are:

- Remove all ash from the public urban forest
- Save all ash through the use of chemical treatments
- Treat a portion of trees deemed significant and remove the remaining ash trees

There are pros and cons to both removing all ash trees from the public forest and saving all ash through the use of chemical treatments. When removing all of the ash trees, the community has a definitive cost and there aren't any long term costs associated with removal. A con to removal is that the initial cost can be very high and the removal will greatly impact the tree canopy in the community. Also, the public usually has a strong sentiment against the removal of trees.

When ash trees are saved through chemical treatments, the community will still have ash as a component of the urban forest. In urban settings diversity is the key to a healthy forest. The public is generally supportive to chemical treatments because large trees can continue to contribute to the forest.

The best approach to take is to remove a portion of trees and chemically treat another portion of trees. This approach allows for ash to remain as a component of the forest, and poor quality trees that could pose as hazards are removed.

Identify Quality Ash Trees Suitable for Chemical Treatment

It is unrealistic to expect a community to chemically treat large numbers of ash trees indefinitely.

Reduction of Ash Tree Volume

Once infested with EAB, ash trees typically decline and die over a period of 4-5 years depending upon insect volume. The burden of dealing with volumes of dead and dying trees within a short period of time can place an enormous strain on community budgets, personnel and resources. The Village of Prairie du Sac can take small steps now to prepare for and manage for the arrival of this pest.

It is recommended that Prairie du Sac take the pro-active approach of removing some of its presumably non-infested ash over the next 5+ years as a way to minimize the impacts when EAB arrives.

Remove trees in poor or very poor condition. The best method to reduce ash volume initially is to remove ash trees identified through the inventory as being in poor or very poor condition. Trees that are identified as being in poor or very poor condition are considered a risk tree regardless of whether or not they are infested with EAB. Any tree, dead or alive, which has the potential to entirely or partially fail and impact a target, can be considered a higher risk. A target can be a vehicle, building or a place where people gather. (Source: Urban Tree Risk Management Guide, USDA Forest Service: www.na.fs.fed/us/spfo/pubs/uf/utrm).

Chemically treat ash in excellent condition. As discussed earlier, it is recommended that the 36 ash in excellent condition receive chemical treatment to preserve their condition. Current guidelines are to chemically treat using emamectin benzoate once every three years. This activity should begin as soon as possible.

Remove ash trees growing under utility lines. Ash is a poor species for growing when overhead utility lines are present. They are much too tall, growing into the lines and interfering with transmission. These trees pose a threat to utility lines, since many have dead or damaged branches that could fall on utility lines.

Checklist of Activities to Complete Before Detection of EAB

1. _____ Begin visual survey for EAB
2. _____ Remove ash in dead, poor or very poor condition and replant
3. _____ Treat ash in excellent condition
4. _____ Remove ash that effect overhead utility lines
5. _____ Prepare and distribute EAB education items
6. _____ Review ordinances and create ordinances that address EAB
7. _____ Investigate wood utilization options
8. _____ Contact regional DNR urban forester for updates and new information

Checklist of Activities to Complete Upon Detection of EAB

1. _____ Mobilize plans and agreements for wood utilization

2. _____ Prepare to plant a diversity of replacement trees
3. _____ Inform and educate the public
4. _____ Contact regional DNR urban forester for updates and new information
5. _____ Continue chemical treatment of ash in excellent condition
6. _____ Begin removal of infested ash trees

Community Education

It would be beneficial to distribute the findings of this report and general EAB information to residents. Some good ways to reach out to residents is through press releases, direct mailings and posting on the city website. Information to be discussed includes:

- Number of public ash trees found in Prairie du Sac
- Ash identification tips
- Reasons for removal of ash trees
- Chemical treatment options and the Village treatment plan
- Replanting efforts
- EAB identification

Replanting Strategies

1. **Diversity.** The urban forest needs to be composed of a variety of tree species that have varied growth habits and longevities. Generally, tree planting recommendations need to have no more than 5% of any one species and no more than 10% of any one genus/family. For example, it is appropriate to plant 5% red oak, but not more than 10% of the oak family. This is the single best method to lessen the impact of disease or insect infestations.
2. **Right Tree, Right Place.** One of the most important aspects of tree planting is selecting the proper tree species for the planting location. If there are overhead utilities, make certain the species you are selecting is appropriately sized to avoid interfering with power lines. Other factors to consider include light requirements, mature height and root growth habits. Selecting and planting the right tree for the right location will ensure its survival and success for years to come.
3. **Proper Planting and Mulching.** Many trees do not survive due to improper planting techniques such as planting too deeply, digging the hole too small and not backfilling correctly. Incorrect mulching, most often seen as volcano mulching (piling the mulch too high around the tree), can cause many growth problems from inadequate water uptake to trunk rot. Be sure to follow established WI DNR planting guidelines. The goal is 100% survival of newly planted trees and planting correctly is the path to get there.

Summary

This plan has one primary goal and that is to prepare your community for the imminent threat of emerald ash borer. Experience has shown that communities who develop a readiness plan and begin to prepare before EAB is detected have a much easier time managing their infestation. This plan gives Prairie du Sac a head start on EAB activities. Prairie du Sac is now armed with the knowledge of:

- The location of their ash trees
- Equipment and staffing needs
- Resources available for information and assistance
- How to detect EAB

By beginning activities immediately and using the most current information, the impacts of EAB can be lessened and the costs can be distributed over a more manageable period of time.