



City of Manitowoc
2018 Emerald Ash Borer
Urban Forestry Management Update Plan

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Funding Statement

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The City of Manitowoc is located in Manitowoc County, Wisconsin.

How to Use This Plan

Management of the Emerald Ash Borer (EAB) within a community can vary year to year, month to month, by location, tree size, neighborhoods, safety factors and budgets, along with a host of other components. This management plan update poses questions and the associated options in managing EAB. Management decisions will change based on circumstances. Knowing what options are available will allow for the most cost-effective management while providing the greatest urban forestry benefits to the community.

The questions in this plan are addressed with several choices or options which are listed following each question. The City of Manitowoc will need to decide what options, or combinations of options, are best suited for their situation.

General questions to address for this EAB update management plan:

- What applies to the City of Manitowoc?
- What resources exist?
- What is already in place?
- Where is the infestation zone?
- What is the Ash tree inventory?
- Where will Ash wood be stored?
- What are the estimated costs?

Many of these questions are effectively being managed, and should continually be revisited. EAB will have an impact on a community. If it is addressed through proper planning the negative impact can be reduced.

Emerald Ash Borer

The Emerald Ash Borer, *Agrilus planipennis* Fairmaire, is an exotic beetle discovered near Detroit, Michigan in the summer of 2002. The adult beetle causes little damage aside from minor leaf feeding. It is the immature stage (larva) that does the real damage. Larvae feed on the inner bark of the Ash trees preventing water and nutrients to move through the tree resulting in its death. It is believed that the insect arrived on solid wood packing material originating in its native Asia.

It was discovered with an established population in Detroit, MI and Windsor, Ontario in 2002 and Wisconsin in 2008.

EAB is very active in the City of Manitowoc. The most recent city tree inventory indicates approximately 850 Ash trees remain on Manitowoc streets, with an additional 1,300 in City parks. Manitowoc's private Ash tree population is estimated at 3000-3,500 trees excluding woodlots.

The state EAB quarantine has been lifted as EAB is now found state wide.

Question: What has happened in other states?

What we have learned from other states is that EAB kills trees quickly. Streets are suddenly lined with dozens to thousands of dead and dying trees at risk of causing personal injury and property damage.

- Communities and their residents have spent millions of dollars to remove and replace their trees or treat them. It has overwhelmed local governments and private property owner's budgets. The public and commercial capacity has been inundated in tree removal, handling the wood, and planting new trees
- An increase in fraud, substandard work, non-ash tree removal, damage and injuries from unqualified or incapable fly-by-night operators is occurring.
- An increase in storm water runoff is taking place
- An increase in energy use and cost in heating and cooling is resulting from the loss shade.
- Water use has increased on landscapes from the loss of shade
- An increase in power outages from dead ash trees falling on power lines is occurring
- Air quality is being reduced from the loss of a trees ability to filter pollution and cool the air.

(Cited from: The Wisconsin Emerald Ash Borer Program is a cooperative effort between the Wisconsin Department of Agriculture, Trade and Consumer Protection, the Wisconsin Department of Natural Resources, the University of Wisconsin-Madison, the University of Wisconsin-Extension, the United States Department of Agriculture-Forest Service and the United States Department of Agriculture –Animal and Plant Health Inspection Service – Plant Pest Quarantine v. 8/03/2010)

Emerald Ash Borer infestations in other states are eliminating communities Ash tree populations within 5-8 years of discovering an infestation.

Additional Technical information regarding EAB can be found at:

EAB Federal Web Site: <http://emeraldashborer.info/>

EAB Wisconsin web site: <https://datcpservices.wisconsin.gov/eab/>

EAB Mission Statement

It is the mission of this plan update to provide Emerald Ash Borer management to maintain and enhance the maximum long-term urban forestry benefits to the community. The goal is to minimize the impact of the Emerald Ash Borer and potential loss of Ash trees in the City of Manitowoc using the best scientific advice and lowest cost to the community.

The City of Manitowoc's Park & Forestry Division Mission Statement

The Manitowoc Parks and Recreation Divisions are committed to improving the quality of life for all Manitowoc's residents and visitors. This is accomplished by providing and promoting well maintained parks, facilities, and public open spaces as well as offering a variety of lifelong recreational opportunities and special events for people of all ages.

Executive Summary

Evident by the current city forestry operations, the City of Manitowoc recognizes the significant economic, functional, and structural benefits of properly maintained urban trees. A maintained city tree population reduces air pollution, increases energy conservation, increases property values, and provides a better quality of life for its citizens. The City of Manitowoc's existing street and park tree inventory data were used as a basis for this update.

- The Emerald Ash Borer is an exotic beetle discovered near Detroit, Michigan in the summer of 2002. Larvae feed on the inner bark of the Ash trees preventing water and nutrients to move through the tree resulting in its death.
- Over 200 million Ash trees have been lost to EAB throughout the U.S. and Canada.
- It has been found throughout Wisconsin and is present in parts of Manitowoc. The Washington Park neighborhood and to the west is the initial and heaviest infestation zone.
- The insect is typically established in an area for at a minimum of 4-5 years before detection.
- EAB kills trees quickly. Streets are suddenly lined with dozens to thousands of dead and dying trees at risk of causing personal injury and property damage
- When an Ash tree is killed from EAB the tree quickly becomes brittle and dangerous necessitating its immediate removal when it is in a risk location. All street trees are in risk locations. Manitowoc has risk street and park trees that are dying or dead from EAB infestation.
- As of the last tree inventory approximately 9,300 publicly managed street and park trees exist in the City of Manitowoc, approximately 2,000 of these are Ash species comprising approximately 21% of the public tree population. Approximately 850 Ash still remain as street trees in Manitowoc. Ash trees in wooded areas are not included in these numbers.
- It is estimated that 3000-3,500 Ash trees are on private property within Manitowoc. This does not include wooded areas.

- The area from S. 11th St. to S. 22nd St. and Franklin Ave to Columbia Ave is the infestation zone in Manitowoc. Sixty-two (62) Ash trees with an average diameter of 14-15” are in this area. An additional 12 trees are in decline just outside this area
- 16 Ash trees are dead or dying in Washington Park.
- Removal Estimates:
 - 62 Ash Street trees: between Columbus Ave, Franklin Ave, 11th Street, and 22nd Street within the next 2 years: \$25,000
 - 16 Washington Park Ash trees within the next 2 years: \$10,000
 - 12 Ash trees just outside of the infestation zone over the next 2-3 years: \$4,700
 - New infestations 3 years projected at 30-40 trees per year: \$12,000- \$15,000
- Approximately 40-50 trees (DBH 16”-18”) in high visibility areas area being proactively treated with trunk injections to protect against Emerald Ash Borer.
- Success rates in saving individual Ash trees with insecticide applications from EAB infestations are running 95 -98% effective. Effectiveness rates decline when Ash are already infected or are located in a heavy infestation area.
- It costs 2-3 times more to remove an Ash tree that has died from EAB than to remove other trees.
- Emerald Ash Borer infestations in other states have been eliminating communities Ash tree populations within 5-8 years of discovering an infestation.
- Options in Management Strategies
 - **First Priority:** Remove EAB infested Street and Park trees.
 - Remove Ash now as part of regular utility line maintenance
 - Remove Ash associated with street construction projects
 - Remove weaker or stressed Ash trees. These are often the larger sized trees
 - Limit maintenance pruning on existing Ash other than safety and clearance reasons.
 - Remove Ash when they can be incorporated into regular pruning cycles. This is particularly more cost efficient when they are smaller trees.
 - Treat Ash that are in priority/high profile locations to ensure continued health
 - Treat additional Ash that are still in good to fair health. This short-term treatment plan will extend the life of the tree to accommodate a more staggered plan for removals.
 - Commit to increasing planting budgets even if it is not right away

- Contact logging operations for assistance with removals on undeveloped land
 - Involve the community, neighborhood associations, civic groups, foundations etc.
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- Replanting costs of replacing 3% of the Ash tree population annually is \$8,000-\$10,000 (using bare root stock).
 - No one management strategy is more effective than another. A combination of strategies will be necessary to most efficiently manage EAB
 - Involve the community with public education, workshops, etc. in the management of EAB

Ash Inventory

At last recording, approximately two thousand (2,000) Ash (*Fraxinus spp.*) street and park trees were counted in the public tree inventory.

- Estimated 3000-3,500 Ash trees are on private property within the City limits. This does not include woodlot trees.
- The majority of public Ash trees (+80%) are over 15 inches DBH (diameter breast height: a universal measurement for tree diameter taken at 4.5 feet). All Ash trees in the initial infestation zone are showing signs of decline/ death – some significant – and should be considered risk trees. Some Ash trees outside the zone are showing early to mid-stage decline.
- Approximately 40-50 trees (DBH 16”-18”) in high visibility areas area being proactively treated with trunk injections to protect against Emerald Ash Borer.

Ash Tree Pruning and Removals

Infested trees need to be the first to be removed, preferably before they become high risk trees. Twenty one percent (21%) of the public trees are a species of Ash. Natural attrition with street trees is typically 1-2% per year. An EAB infestation could increase that number to 8-10%. This percentage will escalate quickly if the present infestation continues its spread. This is expected to happen. It is recommended that removal of Ash trees increase. It costs two to three times as much to remove an Ash that has died from EAB than one that has not.

Question: What can be done prior to EAB infesting the entire city that lessens costs and reduces the impact of EAB? This is mainly outside the infestation zone which is the first priority site for removal.

As Ash trees are encountered during regular forestry operations, pruning cycles, street projects, service requests, and utility line clearance a number of management options exist. These options will lessen the impact of EAB and reduce costs in the long run when they can be implemented as part of regular forestry operations.

- Begin removing all Ash trees in poor health. Stressed trees attract EAB to a greater degree. The vast majority of Ash Street trees in poor to fair condition are in the larger size classes (over 14” DBH). These trees are more labor intensive to remove and also cause the biggest safety risk when infected with EAB. Preemptive removal on poor conditioned trees will lessen costs now rather than waiting for an outbreak. These trees are already in poor to fair condition and very unlikely to improve over time.
- Ash tree pruning should be limited to only safety pruning on trees greater than 6” inch diameter. Create a working partnership with the local utility company and the utility line

clearance contractors. Ash trees, particularly over 10 inches in diameter located beneath power lines can be removed as they are encountered in either the City pruning cycle or the utility line clearance pruning cycle. Clean up of the removals may be able to be coordinated with the utility contractors. This allows the utility line clearance contractor to be more productive doing tree removal.

- Removing smaller Ash trees as they are encountered in daily operations is a lesser cost. This makes management of the Ash population easier. Smaller trees take less time and cost to remove. Their cost of removal will increase as they become larger. Up to 75% of removal costs can be in wood hauling and disposal; smaller tree = smaller wood= smaller costs.
- Street re-construction projects should remove all Ash street trees. Street re-construction can be damaging to trees in the first place. Allowing Ash to remain increases their risk to decline and stressed trees attract EAB to a greater degree. This allows for new species to also be planted as part of the project.
- Coordination with the property owner prior to an Ash removal is recommended. Offering a replacement tree can help in accepting the removal.

Question: What happens if a property owner does not want their Ash tree removed?

- The city can decide if this option will exist for the resident.
- A replacement tree can be offered
- Adopt a Tree Program can begin where the property owner contributes, has or pays each year to have the tree treated against EAB. As long as the tree is treated against EAB it can remain.
- When the tree becomes infested with EAB the property owner financially contributes for the cost of removal.

Question: How much does it cost to remove Ash trees?

Estimated cost for removal of all declining trees varies by size and location of tree.

Initial infestation zone is in the area between Columbus Ave, Franklin Ave, 11th Street, and 22nd Street. EAB has infested 62 Street trees in that area with an additional 12 trees in noticeable decline just outside the infestation zone to the south, east and west. Washington Park has 14 dying Ash trees. Average DBH of street trees is 14"-15", and Park trees are 18".

Estimated Removal Costs

- 62 Ash Street trees: between Columbus Ave, Franklin Ave, 11th Street, and 22nd Street within the next 2 years: \$25,000
- 16 Washington Park Ash trees within the next 2 years: \$10,000
- 12 Ash trees just outside of the infestation zone over the next 2-3 years: \$4,700

- New infestations 3 years projected at 30- 40 trees per year: : \$12,000-\$15,000

Question: What happens if I wait to treat or remove the Ash trees?

- Continued deterioration of tree appearance and structure
- Dry, brittle limbs create safety hazards on streets and in parks
- Costly removal
- Unusable wood
- Public safety hazards

Treatment of Ash Trees

Question: Can Ash trees be treated to prevent or stop an EAB attack?

Manitowoc is currently treating some select high value Ash trees.

Success rates in saving individual Ash trees before an EAB infestation are running at 95 -98% effective. Effectiveness rates decline when Ash are already infected or are located in a heavy infestation area. Often the symptoms of EAB do not appear until the insect has been in the tree for 2 years delaying an initial treatment. Communities that are treating some or all of their Ash trees to prevent EAB are having success when they start treatments prior to a major outbreak. Depending upon the type of treatment they need to be applied on a 1-2-year cycle to remain effective. Some communities in states that have been treating for several years are beginning to believe that after an initial EAB infestation has passed and Ash trees are far less common treatments may be able to be done less frequently than the 1-2 year cycle. Effective treatment of this insect is still too new to this prove this method.

There are several types of treatments available. All insecticides applications applied by the City or contractor need to be performed by a Wisconsin Certified Pesticide Applicator.

A few smaller communities are treating all of their Ash trees. This is an annual cost that is far lower than removing and replacing Ash trees. It is however a higher cost over time and after 14-15 years of treating all the public Ash trees in Manitowoc, the cost of removing all the trees will approximately equal the cost of treatment. These numbers are provided for comparison reasons. Treatment of all of the City Ash trees should not ever be considered. There are some trees that frankly should be removed sooner than later just based on their general condition or location regardless of EAB management.

Some communities are treating their Ash trees just to postpone their inevitable removal by extending the time that the trees die from the EAB. This allows a greater time frame to do the removals before the trees become public risks.

Note: To date, EAB infestations found in Wisconsin were detected at a minimum of 4-5 years after the infestation began.

Planting

Replacement trees are an important part of Ash tree removal to maintain the benefits and value of the urban forest. A variety of planting plans can be implemented to help offset the loss of Ash trees. The key is to not ignore re-planting but timing may have to be adjusted if an infestation is found in the City. A tree for a tree replacement is not recommended. Many Ash trees that will be removed may no longer be located in prime planting sites due to street changes, terrace width etc. Each removal site should be evaluated if it can be re-planted.

Question: What are some of the planting options and programs?

- Continue existing City planting programs. Instigate planting rebates.
- Install smaller trees than previously used to reduce planting costs
- Increase City planting programs. Possibly an Ash replacement can receive a double rebate.
- Make planting a required component of every street project. This also applies to Ash removals
- Collect subdivision development impact fees and use the funds for replanting. Produce a developer's planting requirement for all new developments. This can be applied as an ordinance, requiring all new developments to include tree planting.
- Utility company small tree program
- Recruit civic groups, community foundations, neighborhood associations and garden clubs to sponsor, promote and implement planting campaigns. Use catchy titles to the campaigns: May the Forest be with You, Rising From the Ashes, Plant a Tree for Every Baby Born etc.
- Community donations, ceremonial trees, arbor day celebrations
- Be creative, people like tree planting and want to participate.

Question: What are the estimated planting costs?

There are many variables that can reduce costs; tree size, root stock, species, nursery contracts etc. Costs will also vary by specific species

All removed Ash trees do not need replacement. These cost estimates are prepared to assist in management decisions.

- Replanting costs of replacing 3% of the Ash tree population annually is \$8,000- \$10,000 (using bare root stock).

Funding

Question: What other ways can be used to help offset EAB management costs?

New ways to increase funding for Urban Forestry will need to be creative.

- Proceeds from tipping fees, lease agreements from other communities
- Proceeds from woodchip sales or logging operations
- Homeowner
- Bio-fuel companies
- City logging sales, debarked firewood, or wood products
- Portable saw mill sales
- Community development block grants, neighborhood associations.
- DNR Urban Forestry grants
- Local utility company funding or support
- Trust funds and community foundations, donations.
- Subdivision development impact fees
- Reallocations of existing budgets
- Sharing costs with other communities with equipment, disposal, and dump sites.
- Promote donations to “help the trees”.
- Contact portable saw mill operators or de-barkers. If the bark is removed from the Ash tree it can be used for firewood. Portable sawmill operators can produce useable wood from the waste.

Public Education and Awareness

It is very important to effectively and continually provide information to the citizens of Manitowoc and the City staff. An educated community about the EAB will be a strong ally for the forestry program, be more effective at combating an infestation, and overall be more supportive and understanding of the entire operation.

Question: What type of public information is good to provide and what are the sources?

- General information on EAB (some is already available through state sources , newsletter, brochure)

- Identification of EAB
- Signs and symptoms of EAB
- Who to contact if EAB is suspected?
- Treatment options for individual resident's trees
- Hold public workshops on EAB. This can be done community wide or for garden clubs, neighborhood associates, civic groups etc.
- Mailers, door hanger, and flyers
- Websites
- Local cable access
- Use the Communication/ Information/ Public Relation Officer to manage this.

Emerald Ash Borer Public Information Materials

1) Report Emerald Ash Borer Identification Card; Wis. DNR publication PUB-FR-290 2005.

2) Frequently asked Questions about the Emerald Ash Borer (geared for campers); Wis. DNR and DATCP publication PUB-FR-344a 2006.

3) Frequently Asked Questions about the Emerald Ash Borer (geared for landowners); Wis. DNR and DATCP publication PUB-FR-344b 2006.

4) EAB identification material, variable sizes; Wis. DNR publication; order online at:
<https://dnr.wi.gov/topic/ForestManagement/publications.asp?searchItem1=Forest%20Health>

or contact:

Forestry.Webmail@wisconsin.gov

5) Emerald Ash Borer Pest Alert, 8.5" X 11". USDA Forest Service S&PF publication NA-PR-02-04; http://na.fs.fed.us/spfo/pubs/pest_al/eab/eab.pdf

6) <http://www.emeraldashborer.info>; excellent site for a variety of information and publications on EAB. Also links to many other helpful sites.

7) Native borers and EAB look a likes; MSU Extension Bulletin E-2939; order from MSU 517-353-6740; <http://www.emeraldashborer.info/files/E2944.pdf>

8) Ash tree identification; MSU Extension Bulletin E-2942; order from MSU 517-353-6740; <http://www.emeraldashborer.info/files/E2942.pdf>

9) Distinguishing ash from other common trees; MSU Extension Bulletin E-2892; order from MSU 517-353-6740; <http://www.ipm.msu.edu/pdf/E2892Ash.pdf>

10) Emerald Ash Borer; MSU Extension Master Gardener Publication; order from MSU 517-353-6740, ext. 1409.

11) The Green Menace - DVD. Order toll free: 1-866-EAB-4512.

12) The Green Menace – Color pamphlet. Signs and symptoms, color photos. Order toll Free: 1-866-EAB-4512.

Note: For a current list of publications:

<https://dnr.wi.gov/topic/ForestManagement/publications.asp?searchItem1=Forest%20Health>

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