

**MACOMB, ILLINOIS
EMERALD ASH BORER (EAB)
MANAGEMENT PLAN**

March 2014

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Definitions

EAB refers to the Emerald Ash Borer (*Agrilus planipennis* Fairmaire), a small, metallic green invasive beetle about 1/2" long and 1/16" wide, and to all life stages of this insect. By extension, EAB also refers to the infestation of the insect in Ash trees (all *Fraxinus* species of any condition or life stage) and its effects upon its host, leading to eventual tree death.

Purpose

The purpose of this 2014 Macomb EAB Management Plan is:

- 1) To replace the 2008 Macomb EAB Readiness Plan with updated information
- 2) To provide details about City ash tree inventory
- 3) To outline City actions and management strategies before and after EAB
- 4) To indicate anticipated costs to the City for EAB control
- 5) To serve as a resource for the City and for private tree owners

Background and History

Introduced from Asia, and discovered in the Detroit, MI / Windsor, Ontario area in 2002, the borer has killed millions of ash trees in at least twenty-two US states and bordering provinces of Canada. Detections are reported nationally by county, the first in Illinois being Kane County in June, 2006. In 2014 the entire northern portion of Illinois as well as parts of both Missouri (since 2008) and Iowa (since 2010) are known to be infested; the entire state of Iowa is now under EAB quarantine, as is Missouri, and the nearest confirmed infestations are now within about 50 miles of Macomb in Knox County (Galesburg), Illinois and Des Moines County (Burlington), Iowa. In Macomb the presence of EAB has undoubtedly been delayed because of the application of coordinated state and federal quarantine regulations and other restrictions. The cooperative Emerald Ash Borer project website contains links to current quarantine and regulatory information and shows the current geographic range of EAB nationally by means of continually updated maps. See: <http://www.emeraldashborer.info>

In its typical one-year life cycle, the adult beetle chews on ash leaves during summer, and the female lays eggs in the bark of ash trees. Significant damage to the tree begins with the larvae which feed in the cambium layer of the tree, disrupting the circulation of water and nutrients. The insect overwinters, pupates, and emerges in adult form during late spring and summer. The USDA Forest Service publishes an EAB Pest Alert with an excellent description of the biology of the borer.

See: <http://www.emeraldashborer.info/files/eab.pdf>

In its early stages, EAB is difficult to detect partly because of the very gradual process, and partly because most insect activity occurs high above eye level and hidden under the bark. Typically an ash tree may be infested for two or three years before EAB becomes apparent. Besides the adult beetle and the larva/pupa form, there are various symptoms and signs of EAB that can lead to positive identification: crown dieback, epicormic growth, split bark, woodpecker activity, D-shaped exit holes in the bark, and S-shaped galleries in the cambium. The Michigan State University Extension EAB brochure E-2938 Signs and Symptoms illustrates various identifying characteristics of the emerald ash borer. See: <http://www.emeraldashborer.info/files/e-2938.pdf>

What is at Risk

The value of trees to Macomb residents greatly exceeds their costs. Trees provide shade and lower summer temperatures. Leaves transpire water which provides additional cooling. Trees intercept storm water, prevent erosion, sequester carbon, remove air pollutants, and release oxygen. Trees both on City ROWs and on private property add monetary value to property owners. These are qualities that can be quantified.

Trees are the lone component of a community's infrastructure that increases in value after installation, while providing benefits that decrease depreciation rates of other infrastructure components. This makes trees a positive investment, while simultaneously protecting other investments. For instance, a blacktop road will last longer, compared to constant sun exposure, and require less maintenance when it is shaded by trees. Additionally, trees sequester rain water which decreases taxation on storm water management systems and assists in flooding issues.

Trees also have a positive psychological and sentimental value that is more difficult to quantify. Ash trees comprise a significant component of the urban forest, which includes both City trees and trees owned by private landholders. Private owners may wish to consult the Morton Arboretum checklist brochure "Your Ash Tree & EAB" in order to understand how to decide about managing one's own ash tree stand. Residents may wish to consult the National Tree Benefits Calculator to find out the objective and monetary benefits or values of the trees on their property, especially when considering treatment options and costs (see:

<http://www.treebenefits.com/calculator>). Iowa State University also has a useful brochure PM2084 "Emerald Ash Borer Management Options" available for downloading.

See: <https://store.extension.iastate.edu/Product/Emerald-Ash-Borer-Management-Options>

Communities must find ways to prevent an overwhelming burden of risk-tree removals at the culmination of the infestation cycle. After initial infestation, mortality occurs slowly throughout the target population. EAB in a general ash tree population follows a curve of exponential mortality where, after a slow start, the infestation suddenly becomes massively destructive. In the first few years of an EAB outbreak in a community, ash trees will begin generally to show signs of stress and decline. An individually infested tree will develop symptoms and signs only gradually, its decline will typically continue over perhaps six or seven years, and the dead tree will likely present a risk of failure in year eight. Green Ash trees, even when healthy, are among the first trees to fail in weather events, and EAB accelerates the brittleness of ash trees as infestation and mortality progress. Unlike trees such as oak, which may stand for five to ten years once dead, ash will stand for maybe a year or two, making for hazardous and high-risk situations relatively quickly.

Macomb's Ash Tree Populations

Macomb has not planted any new City ash trees since 2002, nor will in the foreseeable future. Additionally, the City Forester has worked strategically over the past several years proactively to remove all ash trees that were unsuitable for their site, in decline, or in poor or worse condition. In recent years Macomb has successfully implemented its Spring Lake Firewood policy and secured the cooperation of commercial vendors which has reduced the possibility of EAB-infested ash firewood being brought into the community from outside area. These practices have helped Macomb move toward the goal of a manageable burden to the City after EAB infestation occurs.

The recently updated inventory of trees for the City of Macomb lists fewer than 240 ash trees on City property including both street trees and trees in other public spaces such as cemeteries and parks. Of street trees, ash comprises less than 9% of the total tree population, and in other public spaces ash makes up less than 2% of the population. Considered as a whole, ash amounts to a favorably low 7% of the City's tree inventory. This figure includes the two species of Green Ash (*F. pennsylvanica*) and White Ash (*F. americana*); Green Ash is predominant over White Ash on Macomb City property in a ratio of approximately 2.5 to 1. Current City inventory figures are well within "good" to "ideal" percentages of US Forest Service and Morton Arboretum population diversity recommendations.

The bulk of existing ash trees in Macomb are in the range of 7 to 20 inches in diameter (DBH) and may be 20 to 40 years old. A few of these are in excellent condition, and many are in good to fair condition. These trees are of a size class that affords large economic and cultural benefits, and they would be felt as a particular loss if they all succumbed to EAB. Younger trees, regardless of their condition class, are not yet producing significant benefits and are less expensive to remove and replace with diverse tree species. Older trees tend to enter lower condition classes as they age, are exponentially more expensive to treat, and have a lower success rate. Macomb's EAB management strategies take factors such as these into account.

Management Strategies—Removals

The City of Macomb will continue the proactive removal of ash trees on City property each year with the goal of reducing the ash tree population to a manageable level that will allow for the in-house removals of the majority of EAB infested trees in a timely manner.

Green Ash and White Ash trees in poor or worse conditions will be targeted for removals first. A limited number of Green Ash trees and a higher number of White Ash trees in good or better condition will be allowed to remain in the population and continue to provide benefits as long as they remain healthy.

The City of Macomb comprises certain streets or neighborhoods having unique street tree populations. Several blocks in three of the neighborhoods were planted with a single ash species (monoculture) around 1980 before the City had an established forestry program and the importance of tree diversity was understood. In such extended stands of Green Ash in City parkway spaces, selected individual trees will be removed to allow for replanting with different species that lead toward overall species diversity goals for Macomb. The remaining ash trees in these extended stands will be left in place to continue to provide benefits as long as they stay healthy.

Management Strategies—Insecticidal Treatments

The City of Macomb will treat with insecticides selected ash trees which are located on City property. The goal of the treatment program is to preserve a reasonable portion of our ash tree resources and to maintain ash as a continuing part of our urban forest. Preference will be given to the treatment of the White Ash trees. Formal research and experience has shown that Green Ash is affected first in an EAB infestation, and White Ash later. White Ash is considered a more valuable species because of its more attractive fall color and better branching structure which lowers long-term maintenance costs.

Though there can be no guarantee of saving all ash trees from EAB, treated trees can be expected to have a survival rate of nearly 90%. The relatively small mortality expected within treated tree populations can be successfully managed. In the event a tree is treated but the infestation degree was underestimated, the treatment will likely slow the death rate of the tree, thus providing more time to remove it before it becomes a high-risk tree. Some communities are using this strategy to slow the death rate of their ash population, allowing them to spread out their removal operations and costs over a longer period of time. This strategy has come to be known as “staging removals.”

Starting in Spring 2015, Macomb will begin to treat approximately 44 White Ash trees in the 8” to 20” DBH size class that are in the good and excellent condition classes. On the basis of current research, the City will treat individual trees within the targeted populations once every three years with Tree-äge®, a trunk-injectable insecticide, so that each year 1/3 of the approximately 44 trees would receive the injection. Current recommendations call for treatments to be continued for a cycle of approximately twenty years by which time the epidemic quality of EAB in a region is expected to have changed.

Cost Factors

Chemical treatments will be contracted out to an ISA Certified Arborist who possesses a valid Illinois Commercial Pesticide Applicator’s License, has demonstrated experience with injections, and who is registered with the City. Expected costs for insecticidal injections are approximately \$8.00 per DBH. As an example, application to a 15” DBH tree would cost \$120 at that rate, effectively a \$40 annual cost; smaller trees could cost less per DBH. Larger trees cost more to treat, and as trees grow larger, they can become prohibitively expensive. As trees grow beyond 20” DBH, they also tend to respond less well to treatment. The total inventoried DBH of all 44 City White Ash trees to be treated is calculated at approximately 550 inches. If one-third of the total population under consideration is to be treated each year, the annual cost for a contracted treatment cycle would be approximately \$1,500.

Because of cost variations depending on such factors as dosage rating, the product to be used, the method of application, and others, the process of securing the contractor shall be based on treatment specifications, and not on a cost-per-tree basis.

Contractual costs for removals of large ash trees, exceeding the capacity of Public Works Department equipment and crews, and contractual costs for grinding stumps will accrue annually and shall be budgeted annually as needed. These annual EAB-related costs will likely be spread over at least a decade at a minimum, and could occur over a period of many years.

Regular replacement plantings with approved species of trees will also be budgeted annually to enable Macomb to replace trees lost through EAB on a ratio goal of 1:1, in addition to implementing other planting goals.

Relationship to the Public

The City will continue its practice of informing adjacent property owners when major changes are planned for street trees. Residents whose property is adjacent to City trees scheduled for treatment will receive a notification letter informing them about a planned insecticide application; the letter will be sent to the person to whom was sent the tax bill for the general taxes for the last preceding year.

-Residents who wish to treat ash trees not scheduled for treatment that are in good or better condition on City property adjacent to their own shall secure permission in advance from the City Forester to treat at their own cost with an approved insecticidal treatment. Residents who use a private contractor shall use a qualified professional applicator who possesses a valid Illinois Commercial Pesticide Applicator's License, has demonstrated experience with injections, and who is registered with the City. The City may explore options for individuals wishing to treat trees in order to help residents with cost. For example, the City may ask their contractor to extend the municipal cost rate to residents wishing to treat a City-owned tree. The City may also ask their contractor to extend the municipal cost rate to residents wishing to treat trees on their own property.

Residents who own ash trees on private property in Macomb shall follow applicable portions of the City Tree Ordinance and are encouraged to consult certified arborists and licensed professional tree care companies in order to obtain optimum quality of service for EAB-related issues. As protection and service for City residents, the City of Macomb maintains lists of qualified tree care providers registered for tree work in Macomb.

Detection and Reporting

The Macomb City Forester is designated as the person to report City findings of invasive pests to the Illinois Department of Agriculture (IDOA). The IDOA in turn is responsible for regulatory aspects of the management of EAB in Illinois and will coordinate with other authorities nationally in the establishment of quarantines and in dissemination of information. The City of Macomb maintains a valid Illinois Department of Agriculture Emerald Ash Borer compliance agreement and continues to keep an open line of communication with State officials.

Wood Utilization and Disposal

In accordance with existing policies and regulations, the City will remain open to appropriate uses for ash wood that accumulates as trees are being removed.

The City will continue to maintain its Yard Waste Site as the designated disposal area for residents. It is anticipated that capacity is sufficient to accommodate a course of EAB in the city.

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Approved, Macomb Tree Board, meeting of March 27, 2014