

City of Lawrence KS, Parks and Recreation

EAB Strategic Impact Plan (Updated 8.1.2017)

Summary or Introduction/ Background:

- Emerald Ash Borer (*Agrilus planipennis*) (EAB) is an invasive, small, Asian wood boring beetle that feeds on and kills native North American Ash trees. The beetle is metallic green in color, a half-inch long and covers a huge multi-state geographic range. This pest was accidentally introduced into the United States and then discovered in Michigan in 2002. It is believed to have been transported from Asia on wooden shipping crates approximately 5 years prior to its discovery. EAB has continued to spread by leaps and bounds from state to state, mostly through human activities like transporting infested Ash fire wood or Ash logs. Just like the Dutch Elm disease that continues to kill Elm trees, Emerald Ash Borer (EAB) is a serious environmental threat, capable of eliminating all Ash trees in our community.
- The adult beetle can fly half a mile from the host tree, however moving firewood is considered the primary culprit for the abrupt spread the pest from state to state. The insect lives under the bark of the host and will remain in the wood even after the tree has been cut down. Restricting the movement of ash wood can significantly reduce the spread of EAB but will not eliminate the threat.
- Regionally, EAB has been discovered in Missouri, Nebraska, and the following Kansas counties: Douglas, Doniphan, Atchison, Wyandotte, Jefferson, Johnson, Leavenworth and Shawnee.
- Current management guidelines recommend consideration for treatment or removal options and other planning processes. Pesticide treatments are only recommended once EAB is found within a 30 mile radius of the insect discovery. What happens next will be of concern to homeowners, policy makers, and wood recyclers. Loss of environmental, cultural and aesthetic benefits of the Ash and the associated cost of treatment, removal and replacement in the City of Lawrence area could tally in the hundreds of thousands of dollars.



EAB Readiness Plan Highlights:

- The City of Lawrence is committed to preserving its municipal and neighborhood trees. The city has maintained its "Tree City USA" status for 39 years and has created Master Street Tree Plans for new housing and business developments since 1994.
- The Emerald Ash Borer Readiness Plan is designed to manage the City's publicly-owned Ash trees at a reasonable cost, and determine how the city will assist with property owner education to manage their own private Ash trees to assure public safety. This strategy will address the ongoing, long-term nature of this issue. The goal of this plan is to take a proactive, methodical, and measured approach to slow the spread of the Emerald Ash Borer, while attempting to minimize the impact of tree loss within Lawrence's neighborhoods. This plan does not address the needs, subsidies, or abatement for ash removal on private land or removal and disposal by utility line clearance companies.
- This management plan recognizes the following important facts:

- ❖ Infested and other distressed Ash trees are a haven for EAB and can promote the spread of the insect to nearby healthy trees, regardless of location. Therefore Ash trees on both private and public property must be considered for removal or treatment.
- ❖ Healthy Ash trees that are not showing signs of distress or infestation, or those trees considered valuable by location, are a contributing part of the urban forest and landscape enhancement. These will also have to be evaluated and systematically reduced. Considerations for saving the trees will include treatment of desirable and healthy trees to prolong their lives and minimize the immediate municipal budget impact. This will help slow the loss of tree canopy in Lawrence.

❖ **The symptoms or outward sign of the Emerald Ash Borer include**



- EAB affects primarily trees in the Ash (*Fraxinus*) genus and have also been confirmed parasitizing White Fringetree (*Chionanthus virginicus*).
 - Adult emerge in April and are active fliers through the end of July, larvae hatch and start to feed in the late summer into fall. The larva overwinters and emerges as adults.
 - Increased woodpecker activity including multiple jagged holes (birds searching for larvae).
 - Distinctive D-shaped exit holes left by emerging adult beetles - 3mm in diameter.
 - Canopy dieback or crown decline starting from top of the tree.
 - Multiple dying branches with wilted leaves, especially when accompanied by shoots or sprouts at the base of the tree.
 - Bark splits, with meandering S-shaped serpentine larval galleries, visible immediately under the bark, full of larvae frass on dying trees.
 - Any of these symptoms should be reported to regulating authority: Kansas Department of Agriculture (KDA) at 785-564-6698 or the local county extension service designee.
- ❖ October 2015 –EAB Confirmation and county wide quarantine regulations were implemented on all Ash tree disposal activities.



Urban Ash Tree Findings and Locations:

- Overview: The City of Lawrence is surrounded by two waterways with native forest, the Wakarusa River and the Kaw River; as well as several major highways' including US I-70, K-10, and US 59. Ash trees are a part of the native riparian forest ecosystem found in eastern Kansas. The city owns ash trees in its parks, greenways, public building lawns and right of way areas.
- To help slow the spread of EAB, the City of Lawrence is taking a systematic approach to reduce the devastating impact, these methods include but are not limited to; a city wide Ash tree survey and assessment, considerations for insecticide treatment of selected trees, removal of dead or declining trees and the replanting of sites where trees have been removed. The recent drought of 2011 & 2012 has caused further complications with a continued overall decline of local ash trees, and a noticeable increase in populations of native borer insects as a reactive factor.
 - ❖ The city conducted an Ash tree inventory on public properties to assess tree size, condition and general health (parks, greenways, ROW and public buildings). In March 2016, the city wide Ash tree survey identified over 3000 Ash trees in city ROWs, parks and other municipal grounds. It is estimated Lawrence has a much larger, total Ash tree population of over 10,000 trees both public and private properties.

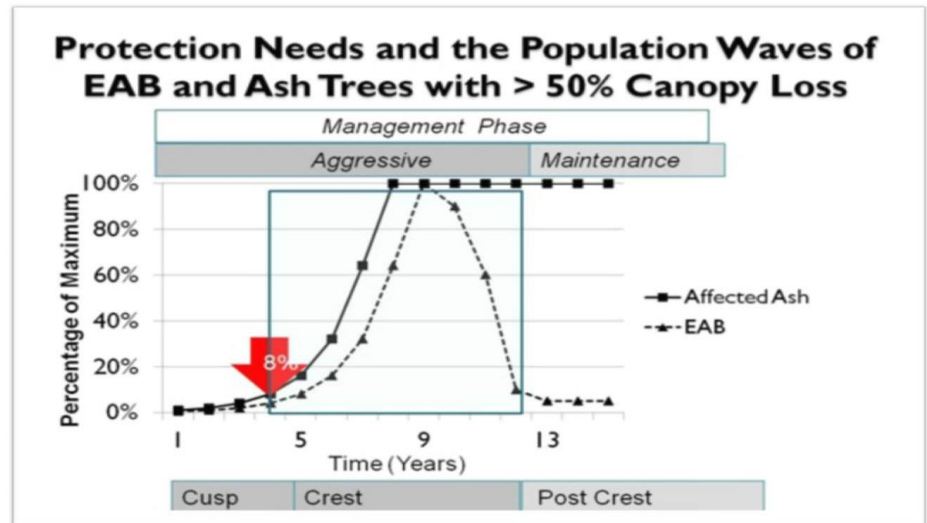
EAB Response and Management Plan for City Owned Trees:

- Criteria for decision making:
 - ❖ Monitoring efforts and detection is critical and on-going among state agencies. Early detection is vital in the management of EAB and will allow removals and treatment to begin quickly after an outbreak is detected. An approved IPM Process will help guide all decisions concerning treatment and evaluation of an EAB infestation. (A-300 part 10-ANSI standards).
 - ❖ Develop a tree removal/disposal action plan using a selection criteria:
 - Remove any/all Ash deemed in poor, very poor or dead condition to minimize nutrient and reproductive sources for the EAB. Removals could be staged over a decade, to lessen the immediate impact on the municipal budget.



Spring 2016. City forestry contractor removing 5 declining Ash tree on the Right of Way.

- Remove the bottom tier (trees less than 8" in diameter) with small carbon footprint.
- Remove the top tier (over 20") with reduced carbon footprint. Special valuable trees could be considered for treatment, but would require specialized equipment and/or hiring a licensed professional pesticide applicator.
- Disposal and wood utilization of stem wood and logs as per state and local guidelines, and creative nature of park system.
- Consideration of bell curve chart in relation to infestation, tree health decline, and subsequent canopy loss.



Cliff Sadof, Purdue University; Deb McCullough, Michigan State University. 2012.

The charts shows a typical explosion of EAB populations over a span of time, including the number of years since infestation began and the time log management that would be needed to address tree removal, as the tree death rate balloons.

❖ Preservation and Treatment Plan

- Reporting through Treeworks™ tree inventory system, has identified over 700 Ash trees of acceptable health condition, treatable size, and most valuable to consider for treatment. Spring 2016. City forestry contractor removing 5 declining Ash tree on the Right of Way.
<http://www2.ljworld.com/photos/2016/mar/07/304216/>
- Treat all city-owned Ash trees larger than 8" DBH and smaller than 20" DBH, classified as excellent, good or fair condition. Treatment requires application of a selected pesticide, applied during a routine interval for the life of the tree, using the trunk injection method during the growing season (May1- September 1). The Integrated pest management policy allows use of pesticides to treat EAB, and Treeage G4® (emamectin benzoate) [TREE-äge G4 Label] was selected the EAB infestation treatment product, used on a two year rotation.

Application of the pesticide requires a pesticide applicators certification and is being facilitated by city staff.

- ❖ Plant new trees to reforest as appropriate in open planting spaces at a rate of 1:1.



2016 City Horticulture staff replanting 4 new Maples and Elms.

- ❖ Inform city leaders of the management plan and budgetary impact, as well as the citywide preparedness for this ongoing event.
 - A Staffing, Operations and Equipment Assessment related to preparedness was conducted.
 - 2014 upgrades to equipment included an Aerial lift truck, grapple truck, and stump grinder which have greatly improved removal efficiency and range. Other older model equipment will need to be replaced in the near future.
 - In 2016 .. Two additional Foresters and one Horticulturist were hired to facilitate the additional work load completion, due to extreme deficiency challenge of limited staff. Existing staff include two full time certified Arborists (highly trained) and a Field Supervisor. The drought of 2011-2013 has left ash trees and others with dead limbs, which has also increased the general day to day work load. Due to industry standards, safety concerns, aerial tree work is always scheduled with a rescue safety plan, which requires two full time staff on site at any time the aerial equipment is in use. Two or more additional tree workers would allow for more flexibility with crew scheduling and better response to service calls for the field supervisor. Due to the impact of EAB and the potential for standing dead trees becoming a high risk, an Arborist will need to be dedicated to inspections and assessment, enhancement for increased costs for contracted tree treatment and/or removals.

Ash Tree Inventory, Valuation and Condition Summary

- To date (June 15, 2016) 3000 public right of way & municipal properties trees are identified with over 500 others remaining in wooded areas or along trails. Forestry personal will continue an ongoing inspection and inventory of all city right of way ash trees.
- The Ash tree inventory and assessment shows that at least over 700 trees are potential candidates for treatment. 10% are deemed in good or excellent condition and 40% in fair condition. **The remaining 50% of the ash trees are in poor, very poor or dead condition and should be removed as funds allow.** The inventory and assessment demonstrates the ash species already suffer from native borer attacks, diseases, recent droughts and are in a general state of decline.
- **Ash Tree Identification:**
Ash trees have a compound leaf that consists of 5-11 smaller leaves or leaflets. The leaves are smooth and have a glossy-like appearance. Seeds on a mature Ash tree will appear in clusters that will stay on the tree until late fall or early winter. The Ash tree bark is distinctive, with a diamond like ridged pattern.



- A management decisions matrix can be found at; http://extension.entm.purdue.edu/EAB/pdf/NABB_DecisionGuide.pdf
- Other considerations exist for private trees and other governmental properties located geographically in our area, however these have not been assessed in this plan. In 2017 EAB has now spread to the county west of Lawrence and is generally wide spread in NE Kansas with surrounding counties also quarantined.
- The environmental effect of chemical treatments for both private and public trees is currently unknown.

All Management Recommendations will Closely Follow the Kansas State Guidelines (Investigations, Formal Quarantine, Mitigation, Abatement, Utilization, and Restoration).

Funding, Cost and Budget Implementation;

- Budget impact would include: City staff man hours, contract tree removal, equipment costs, fuel costs, wood lot, pesticide and other professional services costs.

- City staff references the University of Purdue EAB cost calculator and others for municipal trends in EAB management. Removal, replacement and treatment of Ash trees over a 25 year period.
- 5 Year Plan- includes 10-20% removals per year, ongoing inspections and chemical treatments for ensuring high value Ash trees remain uninfected.
- Approximate Costs: [factors that add to overall cost, disposal of wood, site cleanup & stump grinding]

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| Contract Removal of tree | \$750 to \$2400 a tree- depending on size & location with stump grinding. |
| Contract Replacement of tree | \$400 for a 2" caliper tree, planted via contract with maintenance cost of \$155 per tree, mainly comprised of water & pruning. |
| Contract pesticide treatment of tree, every two years. | \$30 to \$60 per tree, based on size, in house or contractor. |

Table 1: Estimated Cost per Tree per Treatment option

Table 2: Budget impact See city commission agenda 3.1.2016

http://lawrenceks.org/assets/agendas/cc/2016/03-01-16/pr_eab_memo_02_09_16.html

Education and outreach:

- Parks and Recreation Horticulture & Forestry (785) 832-7970

City of Lawrence Webpage- www.lprd.org [Ash Tree Identification](#) Please visit the websites below for more information on the Emerald Ash Borer:

Insecticide Options for Protecting Ash Trees from Emerald Ash Borer
http://www.emeraldashborer.info/documents/Multistate_EAB_Insecticide_Fact_Sheet.pdf

Signs and Symptoms of the Emerald Ash Borer <http://www.emeraldashborer.info/documents/E-2938.pdf>

Native Borers and Emerald Ash Borer Look-alikes <http://www.emeraldashborer.info/documents/E-2939.pdf>

Emerald Ash Borer Management http://www.emeraldashborer.info/documents/conserv_eash.pdf

- Parks and Recreation Program Guide – Spring 2017.
- Information services & other printed materials – Door hanger bulletins for affected property owners. Utility bill mailers, water department fliers, email announcements, newsletters or onsite neighborhood meetings for Home Owner Associations - LHBA
- Public speaking and teaching opportunities to neighborhood or HOA groups.
- Community Development for Code Enforcement for blighted tree ordinance. 832-7700. Requires dead trees to be removed in 30 days.
- Possible partner with extension service and University of Kansas for sustainability, educational training and publications.

Definitions of Terms-

Condition values: Excellent- 90%, Good- 80%, Fair- 70%, Poor- 50%, Very Poor- 30%, Dead- 0% alive.

DBH or Diameter at Breast Height: the diameter of a tree, on the uphill side and 4.5' from the ground.

This tells the approximate size which values can be extrapolated from this number.

Reforestation – What to plant? www.kansasforests.org/documents/community/Pref%20Trees%20NE.pdf
<http://www.hfrr.ksu.edu/p.aspx?tabid=731>

USDA Animal and Plant Health Inspection Service

- The U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) has had significant responsibilities and worked with state cooperators to develop and implement strategies to detect, control, and eradicate EAB. It has participated in research with other government agencies and university partners to better understand the biology of EAB. APHIS has developed regulatory programs that include federal quarantines and inspections of firewood and other wood products to limit the travel of EAB. Additionally it has developed outreach programs, such as the “Don’t Move Firewood” campaign aimed at the general public. All of these activities were conducted in partnership with state and federal agencies. APHIS has a comprehensive list of EAB information, quarantine maps, program manuals, biological control plans, survey guidelines, and regulatory information available on its web portal:

<http://www.emeraldashborer.info/index.php> For further information, visit Kansas

Department of Agriculture: <http://agriculture.ks.gov/docs/pp-emerald-ash-borer/ks-emerald-ash-borer-response-plan-revision-2-12-10.pdf?sfvrsn=0>

EAB Response and Management Plan for private owned ash trees:

Homeowner guidelines and educational outreach.

- ❖ As per state statutes, homeowners are responsible for the maintenance of any tree on their own private property. City code would also require them to remove any dead or diseased tree. <http://lawrenceks.org/assets/city-code/chapter18.pdf> .
- ❖ Chapter 18, Tree Code:
 - Requires Tree trimmers to be licensed to work in Lawrence KS, provide proof of liability insurance and competent proof being professionally certified with Kansas Arborist Association or International Society of Arboriculture. All new applications require written exam.
 - Other safety certifications are required to work with in 10' of any power line. *For Westar Energy Reliabiltree™ questions: call 855-937-8275.*
 - Be an Informed consumer! Before hiring a company be sure to obtain:
 - Proof necessary permits, certifications and licenses.
 - Written estimates of cost and a written agreement on disposal/site cleanup. What is the work plan? Equipment route?
 - Check references for services the arborists can safely provide and where they have done works similar to your request. Safety is important!
 - Get more than one estimate from multiple tree care professionals.
 - Be wary of individuals who go door to door and offer bargains. Most reputable companies are too busy to solicit work in this manner. Do not pay in advance of service being completed.

- Keep in mind that good arborists will perform only industry accepted practices. Lawrence city code does NOT allow topping trees.
 - Get it in writing. Most reputable arborist have their clients sign a contract/ read it carefully and ask questions: when will services start / be completed; who is responsible for cleanup; Is this the total price / what are terms of payment/ what is hourly rate if more work is needed.
- ❖ The City of Lawrence supports residents by providing property owner education whenever possible. This policy would recommend that the city provides a yearly presentation (or more) or report to the Parks and Recreation Advisory Board or city commission to address EAB, the progress of the invasive insect in our municipality and the city's progress facilitating the Strategic Impact Plan.
 - ❖ Earth Day public education and outreach
 - ❖ What to do if you think you have EAB.
 - If you suspect emerald ash borer on your property please call the Kansas Department of Agriculture (KDA) at 785-862-2180 or e-mail your name, address, phone number and pictures of the suspect tree to ppwc@kda.ks.gov . Kansas Department of Agriculture (KDA) is the official agency that monitors EAB in Kansas. They will respond promptly to help identify the insects and also guide you to web sites or resources that will help answer your questions. [Current tree trimming licenses are listed online](#). The city does not endorse any company and their service. These companies have applied for a license, and been approved, per the city's regulations for tree trimming companies.
 - ❖ [Insecticide Options for Homeowners](#)- Published by the EAB info site