Emerald Ash Borer Response

Texas Trees Foundation

Briefing Note

February 5, 2020

Topic: Emerald Ash Borer

Background

The Emerald Ash Borer (EAB), an invasive pest from Asia first discovered in the United States in 2002, poses a serious threat to Dallas's urban forest. EAB is a wood boring beetle that targets ash trees, killing unprotected ash trees within 2-5 years of infestation, and eliminating untreated ash populations within 10 years. More information about EAB can be found at http://www.emeraldashborer.info/

Ash trees make up a substantial amount of the total number of trees in Dallas. The Texas Trees Foundation's 2015 "State of the Dallas Urban Forest" Report found that 13.1% of all trees in the city are green ash. The report identifies an estimated population of nearly 2 million ash trees across Dallas, 1.5 million of which are found in the Great Trinity Forest (23% of all Trinity Forest Trees). Ash is the most prevalent species found in the Trinity, making proper management of EAB critically important. The "State of the Dallas Urban Forest Report" valued the City's ash population at $890.3 Million in 2015, based on its structural value and ecosystem benefits provided.

Discussion

Several treatment options exist for EAB management, and examples from across the United States can serve as key case studies as the City of Dallas creates its management protocol. Early efforts to combat EAB infestations in other parts of the United States involved wholesale tree removal, however this response failed to slow the spread and, in some cases, accelerated it. Additionally, analysis of these jurisdictions shows that the cost/benefit of tree removal as a revenue source by selling the lumber before it was destroyed failed to generate enough revenue to cover removal costs.

While the scientific response continues to develop, jurisdictions, such as the City of Rochester, MN, have had an effective EAB program by deploying a multi-layered response, using tree injections, very limited tree removal (during prescribed times with companies trained to handle EAB infested trees) and allowing some trees to simply die in areas where they pose no safety risk to the public. This program was viewed as cost effective, environmentally friendly, and scientifically sound.

Jurisdictions with an EAB infestation have learned that a strong public communication plan ameliorates public concern, while giving them concrete steps to address EAB issues on their private property. Given that 70% of Dallas's tree canopy falls on private property, making landowners a crucial partner in slowing the spread of EAB is vital to programmatic success.

Options

Option 1: Status quo - No action

City of Dallas takes no action to slow EAB movement or mitigate its affects. The city allows trees to become infested and die standing.

Pros

- No additional up-front cost is incurred.
- Trees produce benefits for the community until their eventual death.

Cons

- The city loses up to 13% of its trees.

- The Great Trinity forest loses up to 23% of its trees.
- The city must remove dead trees on city property, incurring cost commensurate with the size and number of trees.
- Standing dead ash trees may eventually pose a serious risk to public safety as their structural integrity declines after death.

Option 2: Removal of all ash without tree replacement

City of Dallas may preemptively remove all ash on its property before EAB infests trees. In the years soon after EAB was discovered in North American, most communities attempted to eliminate EAB through a single strategy—eliminating the food supply. It did not work, and subsequent research determined that the strategy was counterproductive. The removal of trees that are not infested is not a valid management strategy. Every public tree will die someday, and removal of all ash trees to mitigate EAB only limits the benefits those trees can provide before their eventual death without treatment.

Pros

- Risk to public safety from standing dead ash trees killed by EAB is reduced.

Cons

- Total loss of environmental benefits of trees removed.
- The Great Trinity forest loses up to 23% of its trees.
- The city must remove ash trees on city property, incurring cost commensurate with the size and number of trees.
- When considering ecosystem benefits provided by trees, cost/benefit of removing trees for financial value of timber is likely not viable due to low quality of urban wood, and lack of processing facilities in the North Texas (i.e., lumber mills).

Option 3: Removal of all ash with replacement of different trees

Another strategy was to replace ash trees with different species as fast as possible. However, a 2005 study of the urban forest in Minneapolis by the US Forest Service stated, “There is a delay of 30 years until the annual benefit of a replacement tree equals that of the ash tree removed because of EAB. This option is marginally better than option 1, but also financially ineffective.

Pros

- Risk to public safety from standing dead ash trees killed by EAB is reduced.
- New trees are planted to replace those trees removed as treatment.

Cons

- New trees produce substantially fewer benefits than more mature trees that were removed.
- The city must remove ash trees on city property, incurring cost commensurate with the size and number of trees.
- Cost of new trees for replacement (depends on replacement protocol, e.g., one tree planted for one tree removed vs replacing on a diameter inch basis). 30-gallon (approximately 2-inch caliper) size replacement trees cost the City approximately $200 per tree.

Option 4: Treatment of all ash

The City could choose to treat every ash tree on city-controlled property and encourage and/or support private property owners to do the same. Treatment of ash trees using chemical applications can completely mitigate the risk of EAB infestation.

Pros

- Risk to public safety from trees killed by EAB is reduced.
- Tree preservation is less expensive than removal and replacement.

Cons

- Not all trees are in good condition, and treatment may not be financially viable.
- Treatment of every tree is not needed to achieve population saving results.
- Treatment of privately owned trees is outside the purview of city operations without implementation of a new ordinance or policy.

Option 5: Strategic EAB management (Recommended)

The city could produce a strategic plan to deal with ash based on the most up-to-date science and relevant case studies from across the US. The SLAM (SL.ow A.sh M.ortality) approach, based on a study that identified the most effective strategy for preserving ash trees at the lowest cost, recommends random treatment of 20% the population of ash trees annually. This treatment should protect 99% of the City's ash trees after 10 years. The SLAM study argues for an integrated pest management strategy that includes efforts to reduce pest populations by means of pesticide treatments and other strategies to preserve valuable ash tree resources. Treatment is recommended for high quality ash trees, and the preemptive removal of *only low-quality* trees with replacement. The SLAM study emphasizes the importance of early detection and actions to confine the infestation and requires an assessment of the condition of the ash trees in the Trinity Forest and City of Dallas public property.

Pros

- Helps protect untreated private ash trees that are nearby.
- This Model EAB Management Plan is based on this research.
- Proven financial viability.
- Studies continue to suggest that EAB management strategies which include treatment yield higher returns at lower costs than other management options.
- Risk to public safety from trees killed by EAB is reduced.

Cons

- Requires cohesive, strategic management across city departments.
- Will require up-front investment for tree inventory and strategic planning.

Recommendation - Option 5

The Texas Trees Foundation recommends the City of Dallas develop a strategic approach to EAB management, using lessons learned from communities already combating this pest. This strategy should have the following goals:
1) Accurate Tree Assessment (i.e., inventory) and Record Keeping,
2) Early Infestation Detection and Suppression,
3) Postpone and Decrease Peak Ash Mortality,
4) Preserve the Most Valuable Ash Trees,
5) Expand Tree Canopy and Improve Tree Diversity,
6) Minimize Public Costs, and
7) Enlist Private Tree Owners.

The best choice is a holistic, landscape-based response that is centrally managed and that will minimize costs and maximize the value of the remaining urban forest. This strategy will not only save money, but it will also reduce liabilities. Cities that delay action or rely on a removals-only approach will be overwhelmed with public hazard trees and

probably the lawsuits that will follow. The time to act is now—before the infestation exponentially increases in population, and tree deaths escalate as seen in other cities. Swift, strategic action is needed to combat EAB. As the pest population increases and a greater number of trees die, the number of management options available to the City goes down.

Appendix A: Costs and Considerations for EAB Management

Costs Associated with EAB

- Professional Inventory cost –approximately $4.50 per tree*
  *this cost may be offset by local NGO's, City staff, and volunteer efforts.
- Removal cost – Varies by size of tree and in-house vs. contracted removal.
- Replanting cost – Approximately $200 per tree if replaced on a per stem (one tree planted for every tree removed, regardless of size) basis.
- Tree injection Cost – "The cost of tree injection treatment to cities is approximately $53 per 17- inch diameter tree for two years of protection. The cost of removing and replacing that same tree is about 18 times that or $750 - $1000. That means that one could treat a tree for 40 years before the cost of treatment equals the cost of removing a tree. The treatment or removal cost of residential trees is considerably higher." – Arborjet

Special Note – The Need for a Landscape-Based Management Strategy:

- "Trees are an integral part of the region's urban infrastructure and they should be viewed similarly to other components of our regional systems (land use, transportation, aviation, parks, and water resources). The best approach to an EAB infestation is to fight it like a human health epidemic. Just as epidemiologists cannot fight a flu epidemic city by city, EAB cannot be efficiently fought city by city. While it is not necessary for 100% of the host population to be inoculated to control an epidemic, better results are achieved by inoculating a critical percentage of all hosts susceptible to the epidemic. That critical percentage is likely to be in the range of 20% of all ash trees in an area. Since the beetle will kill virtually all untreated ash trees by the tenth year of an infestation, the percentage of treated trees relative to the total surviving ash population will eventually climb to 100%. A scientific study, called the Kovacs Study, predicted that a regional or landscape-based management and funding strategy will more effectively control an infestation than an inconsistent, city-by-city response, or no response. The report states that, "enabling municipalities to aggregate their budgets greatly improves total net benefits.... In addition, aggregate budget increases the percentage of healthy trees remaining in the final period by 18%, and the total net benefits more than double." The Kovacs report states that there is little active coordination among jurisdictions. We recommend that regional or state level public authorities formulate such a strategy as soon as possible." – Model Emerald Ash Borer Management Plan (Hafner and Orange, 2020)

Attached:
Appendix B: Unwanted Emerald Ash Borer – United States Department of Agriculture
Appendix C: State of the Dallas Urban Forest – Texas Trees Foundation (2015)