Bristol Emerald Ash Borer Strategic Management Plan
DRAFT

Background

The Emerald Ash Borer beetle (*Agrilus planipennis),* commonly referred to as EAB, is a small, green, bullet-shaped beetle that is native to Asia and Eastern Russia. Since it was first discovered in southeast Michigan in 2002, this invasive species has been spreading throughout the eastern half of North America. EAB was first confirmed in Vermont in February 2018. Despite concerted efforts to slow the spread of EAB by the Vermont Department of Urban and Community Forestry as well as many municipalities, EAB was detected in Bristol in June 2019.

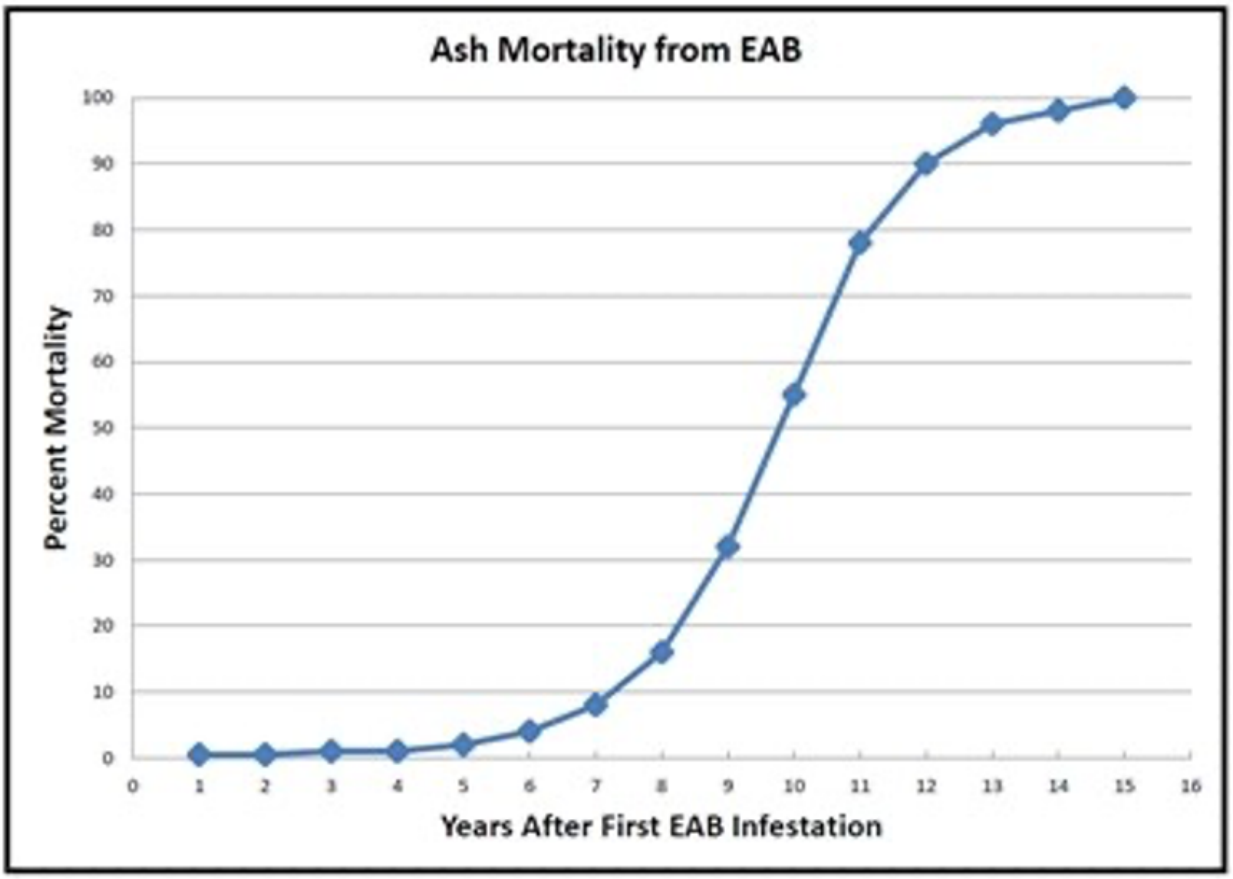
Human-assisted dispersal has aided the rapid spread of EAB across affected states, including Vermont. Transporting firewood over long distances is the primary way EAB has spread so widely and quickly. The adult insect has a range of roughly 20km. These factors, combined with the small size of the beetle, explains how EAB can spread seemingly undetected throughout a community.

Adult EABs lay eggs within the folds of an ash tree's bark, where the larvae hatch and quickly tunnel into the cambium (inner bark layer) and feed on the phloem. There they feed on this vascular tissue, which transports sugar and other nutrients throughout the tree. As the larvae feed on the phloem, the tree's ability to transport nutrients to the leaves diminishes greatly. Once the larvae mature, they emerge from the tree and begin their adult stage, feeding on the foliage of the tree.

This process can kill an ash tree in two to five years, depending on the size of the tree. The two photos below are of the same street in Toledo, OH, three years apart (same time of year).

(Photo credit: D. Herms,2006, 2009)

A conservative estimate would place Bristol roughly at year six of the graph pictured below. In less than five more years, half of the ash trees in Bristol will be dead, and in less than ten years, nearly 100% of ash trees in Bristol will be dead, unless treated.



(Source: Dan Hermes, Ohio State University)

All of this is a concern because dead and dying ash trees can become a hazard on public and private properties. The dead and dying trees become structurally brittle and begin falling apart and, depending on where the trees are located, can pose a threat to pedestrians, motorists, and property. Trees that are dead or dying are also more dangerous for arborists to work in, resulting in higher costs associated with removing them. The presence of many dead and dying trees in and around the village will be aesthetically damaging to Bristol's streetscapes, roadways, and parks.

Process Summary

The EAB Strategic Plan Committee was formed to create and execute the best possible EAB plan for Bristol. Made up of local residents and industry professionals, and with a small grant and technical support of the Community Caring for Canopies program through the State of Vermont Department of Urban and Community Forestry, the committee conducted a preliminary inventory on municipal properties and along public highways to identify and assess the quantity, location, and condition of ash trees located in Bristol.

In order to do this, all committee members participated in training sessions hosted by the State of Vermont Department of Urban and Community Forestry. Members used a data collection app created to help categorize ash trees within the State of Vermont in order to establish the number of ash trees located in the public right of way in Bristol. After several months of data collection and subsequent analysis, the committee held meetings via Zoom to determine the framework of the strategic plan. The committee used previous studies and inventories of Town Trees to help understand past planting decisions. Looking ahead, the committee will focus on facilitating the execution of their plan as well as engaging with the public on this important issue.

Options

When trying to manage an EAB infestation property owners have three options: (1) do nothing and remove ash trees as they die; (2) chemically treat ash trees to prevent infestation; and/or (3) proactively remove ash trees. It is recommended that replanting of desirable trees be included with these options.

1. <u>Do nothing until Ash trees die and remove.</u>

It is not prudent to wait for the village ash trees to die before acting. First, any standing dead tree in the village is a safety hazard as dead ash trees are brittle and drop limbs easily. Second, most ash trees in the village area cannot be "felled" due to the risk of damage to adjacent public and private property, so they must *be* taken down limb by limb, which is time consuming and costly. Where most live trees can be climbed safely and removed without the need for cranes or other

expensive equipment, trees killed by EAB cannot. To conclude, the need for cranes and specialized equipment in addition to the hazard of standing dead trees makes this option both dangerous and costly.

2. Chemically treat healthy trees.

Several pesticide injection treatments are currently available. The most common pesticide treatment is to inject the pesticide into the root flair of the tree (normally 6-12" above the ground, directly into the wood of the tree). The pesticide is then absorbed into the vascular system of the tree. When the EAB beetles feed on the tree they ingest the pesticide and die. To be clear, the injection only prevents EAB from infesting a tree; it doesn't protect against any other disease, fungus or threat to the tree. Without consistent, effective treatment, the tree will succumb to EAB. Chemical treatment requires annual or biennial treatments at a typical cost of $3-$15/diameter inch at breast height per treatment.

3. Selectively remove and replace living Ash trees.

Removing trees before they die is generally the most cost effective way to address the infestation, especially if the Town of Bristol Department of Public Works performs some of the removals. To do this, removal must begin immediately as it will take about 3 years to handle removals and replacements. Furthermore, replanting near where trees have been removed would provide a jump-start to the growth of replacement trees. Replacement trees will be of mixed species to further diversify the village canopy and make the Village canopy more resilient to future invasive species.

Ash trees would be selectively removed based on the following criteria:

1. Percent of living canopy (any ash at less than 60% living canopy)
2. Location with respect to public benefit (proximity to roads, sidewalks, residences, shade, aesthetic*s*)
3. Size of tree (ash trees larger than 10inch dbh)
4. Current condition of tree (dead, poor, fair, good)

The EAB Committee strongly suggests the immediate removal of all standing dead and EAB infested trees (prior to EAB flight season, which is June through September).

Recommendation

The committee believes the best strategy is to remove ash trees within the "Village" area of Bristol while still alive and replace them soon thereafter. This recommendation is not made lightly, as all of these trees make up an important part of the overall tree canopy in Bristol Village. Based on the expertise and experience of committee members as well as the multitude

of examples nationwide, we believe the best response is to swiftly and selectively remove trees to decrease risk to the public, reduce removal costs and allow for quicker reforestation.

The committee will continue to research the use of chemical treatment and, under limited circumstances, may also support the use of this methodology to protect certain healthy trees while dead and infested trees are removed immediately.

Ash trees located in the village right-of-way pose a greater personal safety risk and therefore should be dealt with first. Ash trees located outside of the village area but still within the right-of-way will be addressed in the future. Ash trees that are outside the right-of-way or on private land are beyond the scope of this committee. The committee recommends that the Village continue to educate homeowners as to the risk of EAB and that homeowners should seek the advice of a certified arborist to evaluate their options.

Approach

We recommend the following process:

1. Trees scheduled for removal be identified and marked at least one week before scheduled removal.
2. Door hangers will be placed on adjacent residences explaining why the tree or trees are scheduled for removal.
3. Residents will be offered the opportunity to identify a preferred species of the replacement tree from a short list of options; if no preference is stated or if the preferred species is not available the Tree Warden will choose the replacement.
4. Identified trees will be removed by DPW staff or by a Town-contracted, qualified professional.
5. Ash trees will be removed (see Disposal of Trees section below).
6. Stumps will be ground by DPW staff or by a Town-contracted, qualified professional.
7. The removal area will be restored with topsoil and seed by DPW personnel.
8. In consultation with the Town Tree Warden and the property owners, a replacement planting will be completed in a location near the site of the removal within a year. Replacement plantings are to be purchased by the Town of Bristol using budgeted funds and/or fundraising donations. Planting will be prepared by DPW staff and planted by DPW, volunteers, or a qualified professional.

As can be seen in Table 1, the ash trees in the village fit into the following size categories, with the estimated cost of removal by contractors shown:

Size Category	Number of Trees	Total Estimated Cost	Average Removal cost per Tree
0-12'' DBH	10	$2,775	$277.50
12-24'' DBH	9	$4,175	$464
24+'' DBH	1	$1,100	$1,100

Table 1: Size and cost for removing ash trees

The total estimated cost to remove these trees is approximately $8,050 not including stump grinding and replacement.

Size Category	Number of Stumps	Total Estimated Cost	Average stump grinding cost per Tree
0-12''	10	$1,800	$180
12-24''	9	$3,240	$360
24+''	1	$390	$390

Table 2: Size and cost for stump grinding

The total estimated cost to stump grind these trees is $5,430.

Replacement trees could be financed and planted by a combination of Town funding and volunteer labor.

Schedule

The following is a possible schedule for the program.

Spring 2021

Identify X of the highest risk trees in the Village

Summer 2021

Remove X of the highest risk trees in the Village (Before flight season June-October)
Plant X replacement plantings based on resident input & Tree Warden's recommendation
Evaluate remaining ash trees in the village area for canopy ratio and determine removal list for Spring 2022.
Evaluate ash trees in parks for canopy ratio and determine removal list for Spring 2022
Inoculate Y high priority* village trees (2-year inoculation). High priority would be determined by the EAB Committee.

Spring 2022

Remove X high risk trees in the Village
Remove X highest risk trees in Parks

Summer 2022

Plant X replacement trees based on resident input & Tree Warden's recommendation
Evaluate remaining ash trees in the village area for canopy ratio and determine removal list for Spring 2023

Spring 2023

Remove remaining X trees in the Village
Remove remaining X trees in Parks

Summer 2023

Plant X replacement trees based on resident input & Tree Warden's recommendation

Budget

Based upon the estimated costs and the proposed schedule the following table shows the expected budget impact through 2023.

Proposed Ash Tree Removal	2021	2022	2023
Removal and stump grinding budget	$4,500	$4,500	$4,500
Treatment budget	$10/inch	$10/inch	$10/inch
Total			

Disposal of Trees

Removal debris (limbs, logs, etc.) will be safely disposed of by DPW or the hired contractor. Property owners have the option to keep and use the ash wood from a removed tree. All ash wood must remain local (guide on moving ash wood within Vermont). Property owners should communicate their request directly to the crew working on their tree.