



EAB Preparedness Plan

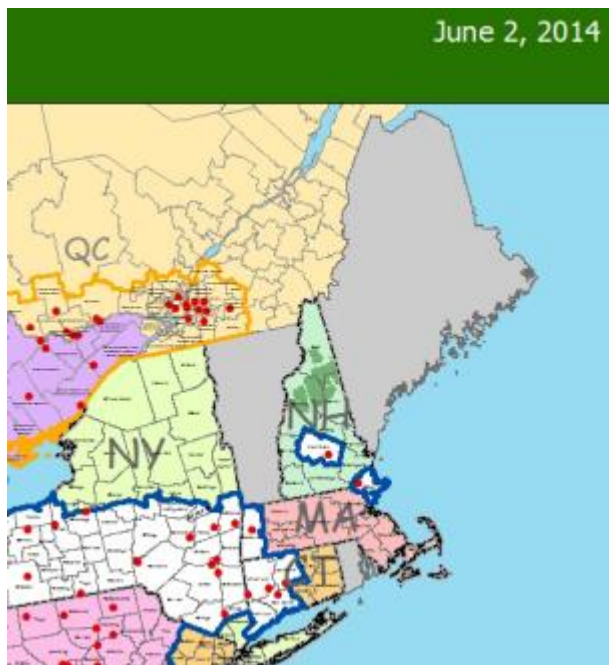
Brattleboro Vermont

June, 2014

Introduction

Brattleboro is facing the imminent arrival of an invasive insect, the emerald ash borer, which has destroyed hundreds of millions of ash trees since it was introduced to the Midwest in 2002. Although it hasn't been detected in Vermont yet, it has been discovered in surrounding states and provinces. Ash trees are an important tree species in our woodlands, and also along our streets and back roads. The arrival of the emerald ash borer will have significant economic, aesthetic, and environmental impacts on Brattleboro and surrounding communities. It is the purpose of this document to brief the select board and residents of the town on the options available to mitigate the damage of the emerald ash borer.

Red dots signify EAB infestations.



There are roughly 4000 ash trees within Brattleboro town right-of-ways. If no actions are taken, after its introduction to the area EAB will increase in number for some years without many outward visible symptoms, then will suddenly cause complete ash mortality within a few years. The large number of dead and dying ash along the roadsides could cause a significant financial burden to the town of Brattleboro for removal of hazardous trees, and would cause a public safety hazard.

While there is progress being made on introducing widespread biocontrols for EAB, it's estimated that these are decades away from having an impact. There are several effective treatments that will keep individual trees healthy even in the face of heavy pest pressures. Management options include treating high priority ash trees and planning for removal of ashes. Because the movement of firewood is a primary vector for the spread of emerald ash borer, mitigation efforts should include educational outreach to dissuade people from moving firewood over large distances. Residents of Brattleboro will also need to be informed of issues related to ash trees on private property. Citizens should become familiar with some of the signs of this forest pest, and help detect its arrival as early as possible.

Summary of Tree Assets

To understand the extent of the impact EAB will have in Brattleboro, we wanted to know how many ashes are in town. Specifically, we wanted to know roughly how many ashes are along the right-of-ways, and also the specific location and condition of trees that merit special attention because of their prominent location and value to downtown. A group of dedicated volunteers had conducted an extensive tree survey of Brattleboro in 1996, but much of that data was outdated. Because of its designation as an EAB high risk community, Brattleboro was able to receive a \$500 mini-grant to help implement an EAB preparedness plan. Using these funds John Ogorzalek, Bob Everingham, and Kelsey Hamilton conducted two surveys: a sample survey of 6% of the right-of-ways in Brattleboro to extrapolate a total ash tree count including size distribution, and also a location survey of important landmark ashes in the downtown area.

The sample survey was conducted based on protocols found in a federally funded software tool called iTree Streets. Brian Bannon and an intern in the Brattleboro planning department provided a randomly generated list of 46 street segments. These road segments were surveyed for ash trees in the summer of 2013. The results, once extrapolated to reflect town wide numbers, are below.

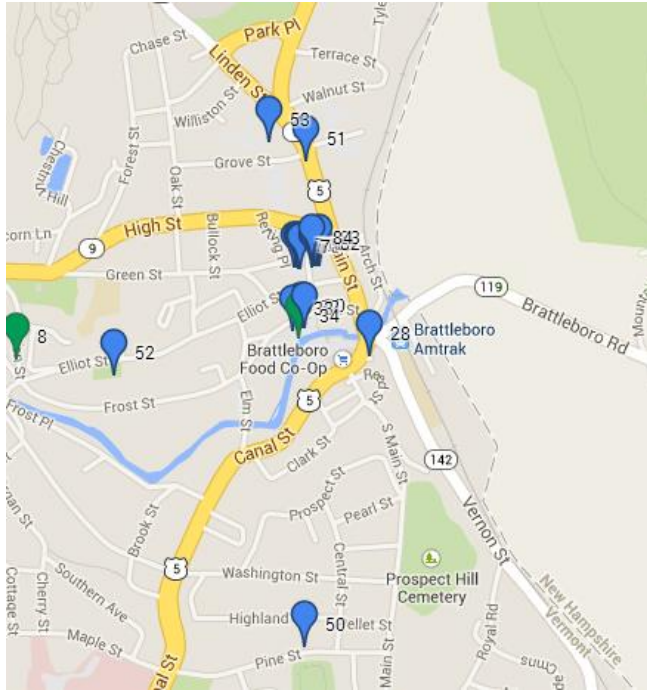
Ash trees in Brattleboro Right-of-Ways

DBH (diameter at breast height)	Residential	Rural
0-3"	66	0
3-6"	17	166
6-12"	133	1494
12-18"	116	1212
18-24"	17	448
24-30"	0	199
30-36"	0	50
36-42"	0	0
>42"	0	0
Totals	349	3569

Additionally, tree health, size, and location information was collected for priority ash trees downtown using a Nexus tablet purchased with \$200 of the matching grant. Using an open source data collection app called ODK Collect, users answered questions regarding the tree and used the unit's GPS to record its location. That data was then transferred to a spreadsheet when the tablet was in a wireless zone.

The results, plotted to a map, are below and at:

https://mapsengine.google.com/map/edit?mid=zRqSHvnNx_JE.kOyhdkRM2dPA

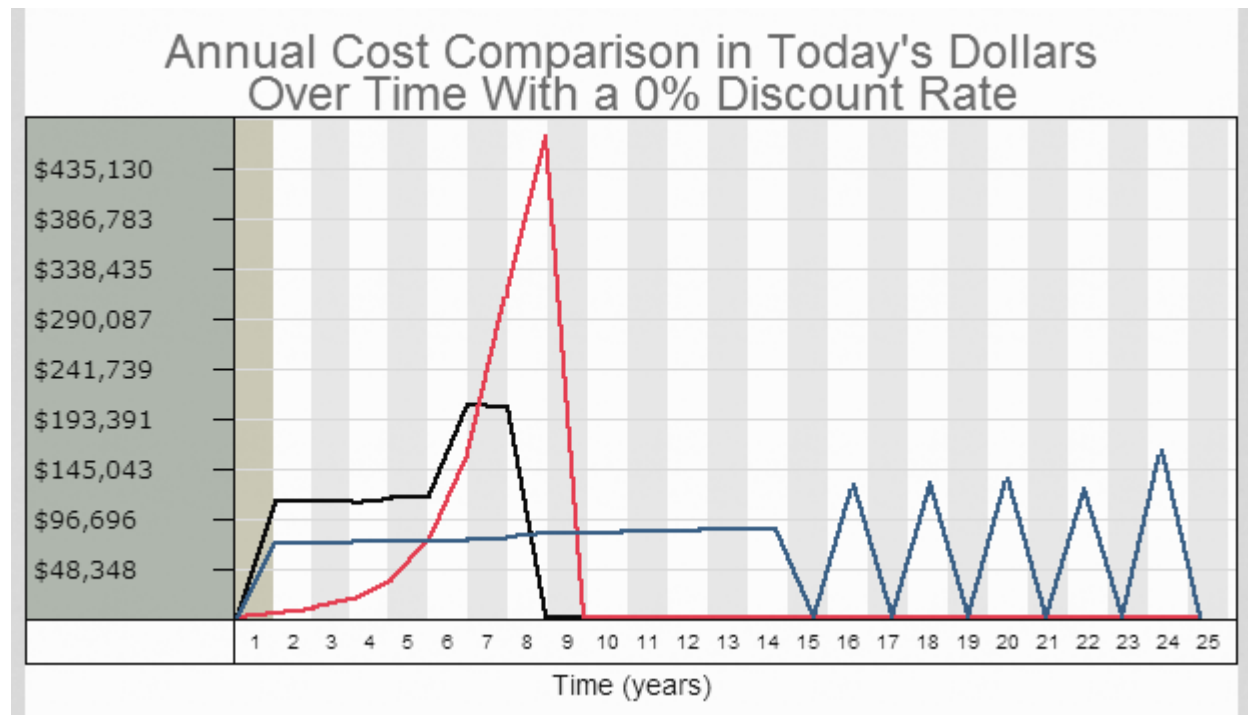


There are 16 trees in downtown Brattleboro that warrant particular attention because of their prominence and value. The 10 ash trees in Harmony Parking Lot, the 4 ash trees in the Preston Parking Lot, the memorial ash in front of the Post Office on Main St., and the white ash in the park in front of the Holstein Association Building. Additionally, there are a handful of ash trees in public parks that warrant attention, if not treatment, when EAB arrives.

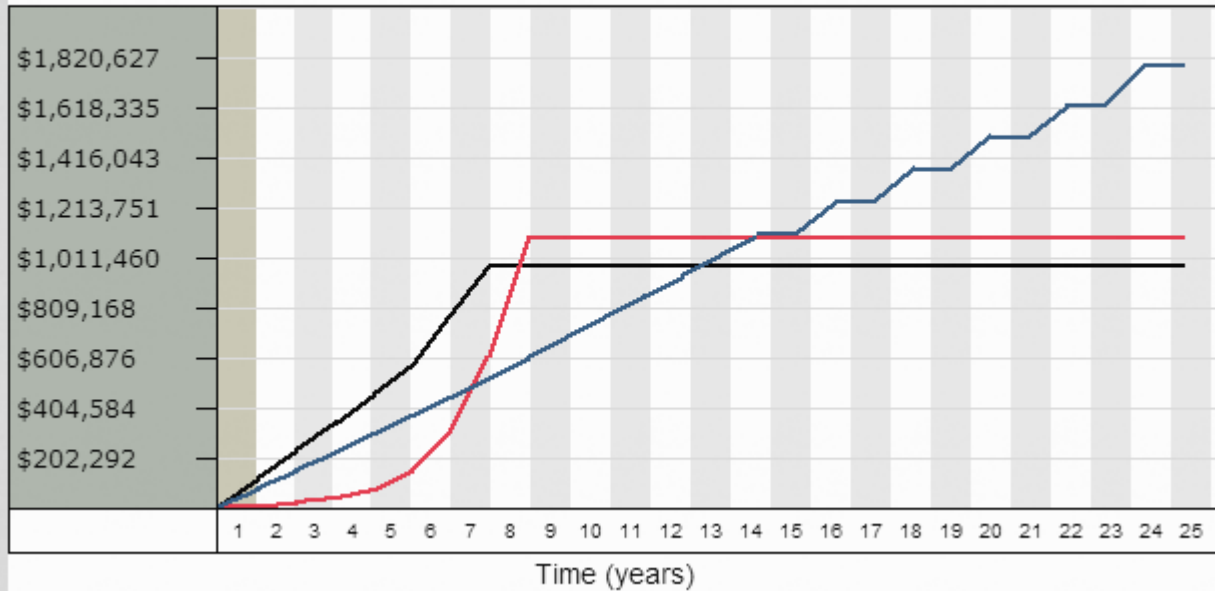
Management Options

There are a number of systemic treatments for ash trees that are applied to the bark at the base of the tree, introduced to the soil around the trunk, or injected into the cambium of the tree. The tree then takes up the insecticide (or insect growth regulator, in the case of one organic treatment) and protects the tree for one or two years. The State of Vermont recommends timing treatment to protect trees when EAB is within 15 miles; Dan Adams, the tree warden of Brattleboro, would be responsible for alerting the town when that threshold has been crossed. Treatments cost \$5-\$15 per inch dbh per year. It is expected that after 12 years, the EAB pressure will crash because all of the untreated ash will be gone. Treatments will be required less frequently after that point. To protect the trees in Harmony and Preston Lots, the ash in front of the post office, and the one at the Holstein Building would cost between \$1320 and \$3960 annually. Treating the trees in the residential zone (as opposed to the urban or rural town zones) would probably fall on the lower end of the cost range. A more detailed survey would be necessary, but based on the extrapolations, treating all of those trees would cost \$17,000 annually, and roughly \$5,000 to treat only a third of them.

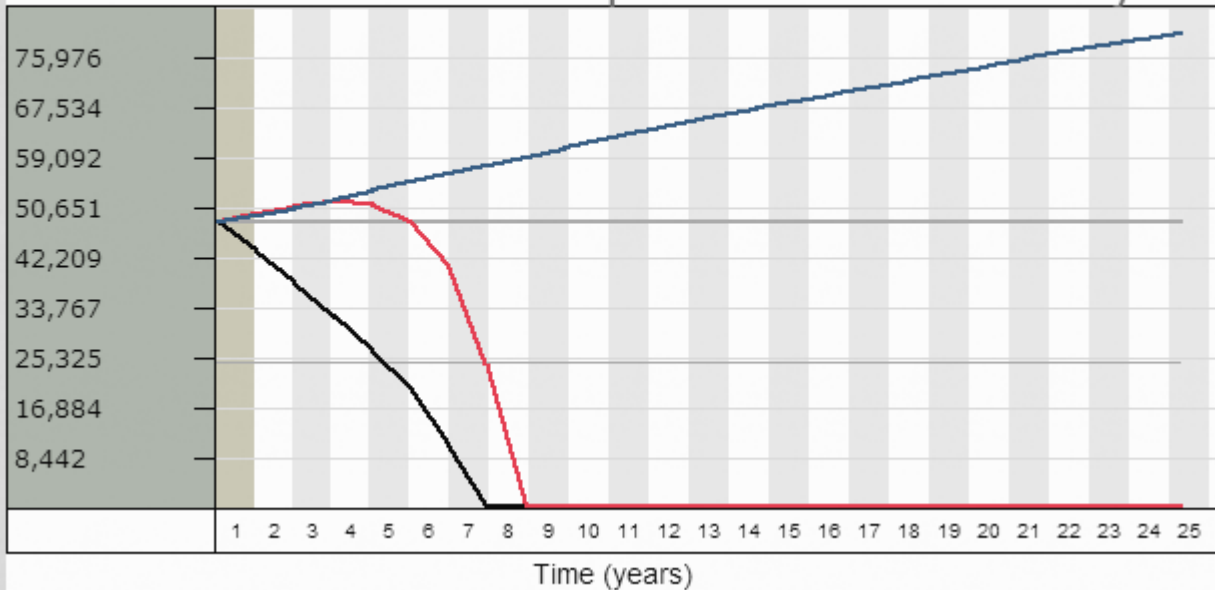
The bulk of the roadside trees in Brattleboro pose a large complicated problem with many moving parts. Management strategies generally involve some combination of either treating trees or removing them. Given the current budget climate, this document isn't considering replanting trees lost to EAB. At this writing, it's unclear what role the power utilities will play in dealing with trees that threaten both our roads and their power lines. The combined costs will be staggering. Using a model published by Purdue University, tree data from our survey was entered along with cost estimates that were verified in approximate terms by local tree companies. The results, plotted in time from one year before EAB is first discovered in an area, are below. The black line is proactive removal, the red line is reactive removal, and the blue line represents treating 30% of ashes in town ROWs.



Cumulative Cost Comparison in Today's Dollars Over Time With a 0% Discount Rate



Total DBH Over Time with 2% Ash and 2% Replacement Tree Mortality



The towns of Richford and Bakersfield VT, and Concord NH have undertaken programs to proactively remove ash trees. Some pros and cons of this approach are listed below:

	Pros	Cons
Proactive Removal (remove ash trees not infested with EAB)	<p>Opportunity to spread removal costs over longer time frame.</p> <p>Reduces problem of dealing with many dead and hazardous trees at one time.</p> <p>Opportunity to start the replanting/recovery process right away.</p> <p>Greater flexibility in organizing removals and routine work schedules.</p> <p>Ability to utilize ash wood for products or firewood without quarantine restrictions</p>	<p>Immediate impacts to tree canopy and aesthetics.</p> <p>To remove healthy, non-hazard ash trees requires a public hearing. The removal of healthy ash trees may not be publically acceptable.</p> <p>Does not take into account that research may find an effective control for EAB.</p>
Reactive Removal (remove infested or dead ash trees)	<p>Delayed impacts to tree canopy and aesthetics.</p> <p>No negative public perception of removing healthy trees.</p> <p>Delayed budgetary impacts until EAB arrives.</p> <p>Further EAB research may offer effective control, minimizing need for removals.</p>	<p>Budget impacts can be severe once EAB is in the community.</p> <p>Scheduling to remove many hazard trees within a short time period can be difficult.</p> <p>Quarantine restrictions limit movement of ash wood products.</p> <p>Replanting funds may not be available due to extreme removal costs.</p>

Proactive removal in Brattleboro would require public hearings. Whichever plan is enacted, the time is now for us, as citizens of Brattleboro, to come to terms with the challenges EAB will pose, and the range of possible solutions.

EAB Regulations for Quarantined Areas

In order to prevent further spread of EAB through artificial (human assisted) means, the following materials are regulated in quarantined areas:

- Ash trees, limbs, branches, and roots
- Ash logs, slabs, or untreated ash lumber with bark attached
- Cut firewood of all non-coniferous species
- Ash chips and ash bark fragments larger than one inch in two dimensions
- Mixed wood residue that may contain ash

- Any wood items which could harbor living EAB eggs, larvae, or adults and thus transmit an infestation.

For practical purposes, the minimum level of quarantine will be at the county level. However, additional surrounding counties may be quarantined because of the possibility of natural EAB spread, and in order to allow for the processing of regulated articles. USDA APHIS will primarily regulate interstate movement of regulated materials.

While movement of regulated material anywhere within a quarantine area is legal, caution should be placed on the movement of material across large expanses of the quarantine to limit any further spread of EAB. Quarantines will primarily affect nurseries, firewood dealers and users, and mills. Compliance agreements are the most common tool used to allow industries to conduct business and move affected material while protecting areas of the state not yet affected by EAB. Compliance agreements allow for the movement of regulated material from quarantined areas to non-quarantined areas from October 1 to March 31 and require all material to be processed according to legal specifications by April 30. Under this treatment schedule, all life stages would be destroyed prior to adult emergence. The dates are determined based on the life cycle of EAB. EAB is in its larval stage under the bark of the trees from approximately October 1 to May 1, thus when transporting material during this time spread is minimized.

However, due to EAB typically emerging from the trees in its adult “flight” stage between May 1 and September 30, no untreated material can be moved outside quarantine areas during this summer period. Listed below is a summary of EAB regulations by industry.

Ash nursery stock is prohibited from being distributed outside of the EAB quarantine area. Ash logs cannot be moved out of the quarantine area during the adult flight period (roughly April 1 through September 30) unless fumigated or debarked. From October 1 through March 31, untreated ash logs may be allowed to be moved to an approved mill outside of the quarantine area for processing by April 30. Bark and wood waste must be processed by April 30. These processes must be approved by state or federal agriculture agencies.

All hardwood firewood is prohibited from distribution outside the EAB quarantine area unless it has been heat treated, fumigated or debarked (plus removal of ½ inch of wood). These processes must be approved by state or federal agriculture agencies. Firewood not for commercial sale (homeowner use) may be moved within the quarantine area but users should avoid moving firewood any distance from the area the wood originated from to reduce further spread of EAB.

Ash lumber will need to be processed in an approved manner, such as complete removal of bark (plus ½ inch of wood), kiln drying by approved standards, or fumigation prior to distribution out of the quarantine area. All processes will need approval by state or federal agencies.

Ash lumber (generated from ash from the quarantine area) used to make pallets will need to be processed in a manner approved by state or federal agencies.

Outreach

It will be important to continue to raise public awareness of EAB through multiple outlets and venues. Every year that EAB doesn't arrive in Brattleboro is a huge economic benefit, so messages and strategies that dissuade the movement of firewood will be important. The more people are familiar with EAB and its impacts, the better decisions can be made in preparing for it, and the better the chance that it will be detected as early as possible. To date, Forest Pest First Detector volunteers have tabled booths at the Strolling of the Heifers and other local festivals, organized a lively campaign that marched in the parade, participated in Ash Awareness events that included labeling local ash trees and hanging purple traps in prominent trees. Local businesses have displayed posters and materials, and awareness of this pest is growing. Further efforts should include a presence at town meeting day, outreach at area campgrounds, and perhaps a link on the town website.

Resources, credit, and thanks:

Submitted by Bob Everingham on behalf of the Brattleboro Tree Advisory Committee.

Credit to Dan Herms for the opening before and after photos, and Marianne Prue, Ohio Department of Natural Resources - Division of Forestry, for the EAB photo. Thanks to the Bakersfield VT Conservation commission for their section on EAB regulations from their preparedness plan.

Hannah O'Connell, John Ogorzalek, and Kelsey Hamilton all contributed ideas and expertise.

Thanks to Caitlin Cusack and Jim Esden

More information:

www.vtinvasives.org

www.emeraldashborer.info

<http://www.treebenefits.com/calculator/>