

# **Emerald Ash Borer Preparedness Plan**

**Stowe Conservation Commission  
Town of Stowe**

*Adopted by the Stowe Selectboard  
March 11, 2019*



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## I. Summary

The Emerald Ash Borer (EAB) is a highly invasive insect that kills ash trees of any species, size, or vigor once it has established itself in an area. It spreads through flight and by transportation in firewood, logs, and nursery stock. In 2018 the EAB has been found for the first time in several areas of Vermont, the closest location being Montpelier, with the High Risk Area extending into Waterbury. It has been reported to have been observed in Quebec, Massachusetts, and southern portions of New York and New Hampshire. The EAB, first identified in Michigan in 2002, has since devastated entire ash tree populations in upper Mid-West, Mid-Atlantic and New England states.

The impact of EAB on affected communities is profound and comparable to the loss of American elm or American chestnut. The purpose of an EAB preparedness plan is to manage the potential for impacts on health, safety, aesthetics, economics and other values that have occurred in other communities affected by EAB.

This preparedness plan is structured as follows.

- Section II provides a brief overview of the problem and potential remedies.
- Section III provides an EAB Action Plan, based on the fact that EAB has been identified in an adjoining Vermont county.
- Section IV contains a list of further EAB resources.



## II. Overview of the EAB Problem

### A. What is EAB?

EAB is an invasive insect that kills all species of ash (*Fraxinus*) trees. Originating from Asia, the small metallic wood-boring beetle (family Buprestidae) is named for the brilliant emerald/green color of the adult.

The first North American populations were confirmed in the summer of 2002 in southeast Michigan and in Windsor, Ontario. Experts believe the beetle was introduced to the area in the early to mid 1990's, judging by the size of the infestations and the stage of damage to the infested trees. It is likely that the beetle was introduced into North

America in ash wood used for shipping pallets and packing materials in cargo ships or shipping containers.

As of 2015, EAB had spread into the following states: Arkansas, Colorado, Connecticut, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin and two Canadian provinces; Ontario and Quebec. EAB was first discovered in Vermont in Orange County in the spring of 2018 and has since been found in Washington, Bennington and Grand Isle counties. Refer to propagation maps on page 6.

An interactive map detailing current EAB propagation at the state and county level is available at: <http://www.emeraldashborer.info>

In Asia, EAB populations are kept in check by predators and pathogens and by the fact that Asian ash trees have developed co-evolutionary resistance to EAB attacks. In North America, on the other hand, the EAB has few predators and ash trees have no natural resistance. While North American woodpeckers and other insectivores have been observed eating EAB larvae, this predation has not had a significant impact on EAB populations. Left to its own devices, the emerald ash borer can expand its range up to several miles per year during the adult beetles' June to August flight period. Human activities, however, have led to the spread of the EAB over much greater distances. Shipments of nursery stock and firewood have been inadvertently responsible for the majority of new EAB introductions.

## B. Life Cycle



David Cappaert, Michigan State University, Bugwood.org



S-shaped Galleries  
Michigan Department of Agriculture,  
Bugwood.org

Adults emerge around late-May to feed on leaves and mate. Females begin laying eggs on cracks in the bark about 1 to 2 weeks after emergence thru August. Eggs hatch in 7 to 10 days as larvae, which have a distinguishing, nested bell shape. Larvae tunnel through the bark into the cambium where they feed on the phloem. Phloem is the tissue that transports food and water from the leaves to the rest of the tree. The larvae feed throughout the growing season creating characteristic S-shaped galleries in which immature larvae over-winter. Mature larvae will overwinter as in pupil cells, pupate in spring and emerge as adults. A tiny D-shaped exit hole is created as the adult chews through the bark ready to repeat the cycle and infect more trees.

### C. Signs and Symptoms

EAB infestations are very difficult to detect in the early stages and at low densities. The upper parts of the tree are infested first; making the entrance cracks and exit holes in the bark nearly impossible to see early on. The best indicator of EAB is evidence of woodpecker foraging, which can be visible from long distances. When the tree begins to decline rapidly signs may include bark splitting, canopy thinning and epicormic sprouting (water sprouts). Although these symptoms can also be caused by other problems, including the common disease ash yellows.

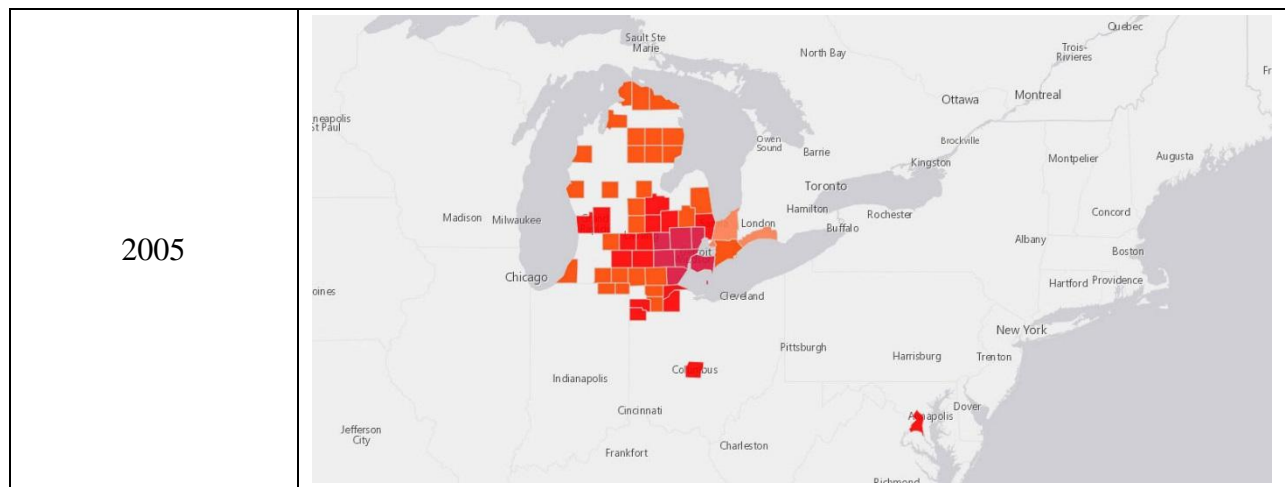
Most of the distinguishing indicators are also the least visible. The upper parts of the tree are infested first; making the entrance cracks and exit holes in the bark early on. When the larva feeds on the cambium (the nutrient transport tissue below the bark), it kills the bark over top. The next year, as the new bark is formed under the old, the old is pushed out, and where it is dead, it cracks.

### D. Propagation

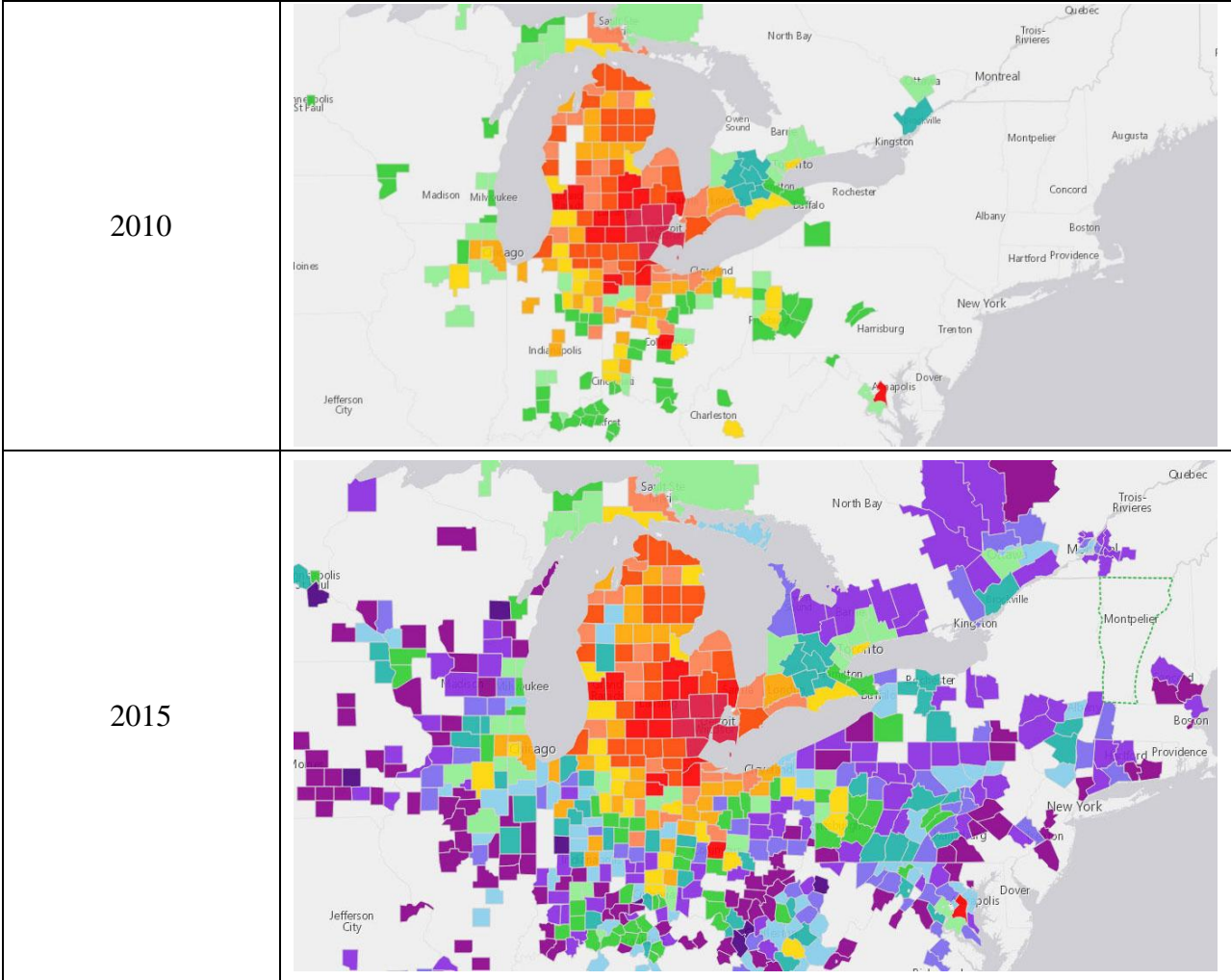
Emerald ash borer has propagated out from Michigan during the past 10 years. It has invaded adjoining states and provinces areas on all side of the state.



*Blonding, Woodpeckering,  
Water sprouts  
Steven Katovich, USDA Forest  
Service,  
Bugwood.org*







The map on the following page shows the extent of EAB infestation in Vermont as of October 5, 2018.

## Emerald Ash Borer (EAB) Infested Area in Vermont




The green line on this map delineates the EAB Infested Area in Vermont. This is the area to which the Slow the Spread Recommendations refer. It should not be confused with the federal quarantine.

This map will be updated as new locations of EAB are detected in and near Vermont. The map was last modified on 10/5/2018.

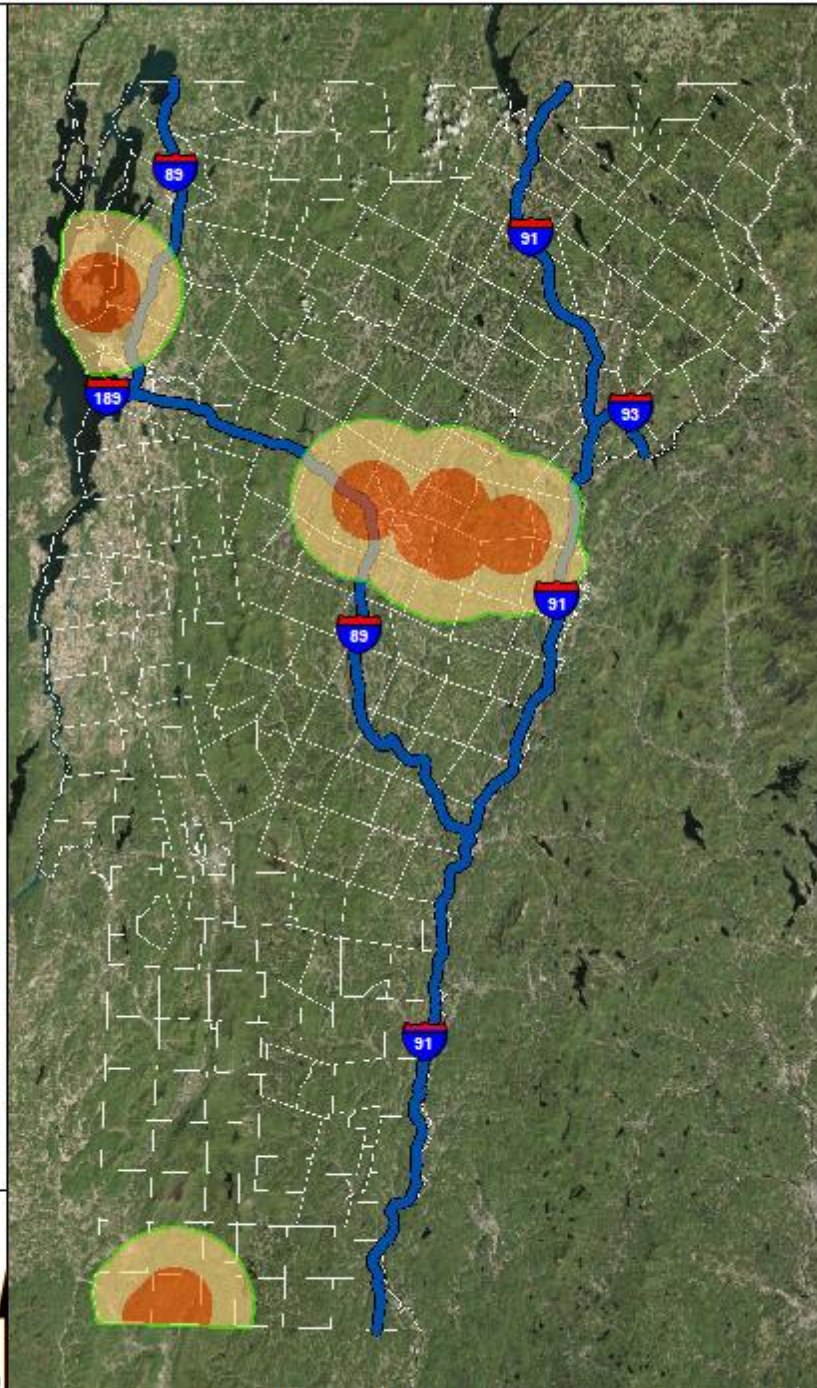
The EAB Infested Area includes both the Confirmed Infested Areas and the High Risk Areas. Confirmed Infested Areas (shaded in red) are within 5 miles of a known infestation. While symptoms may not be obvious, it is likely that EAB is present in much of this area. High Risk Areas (shaded in yellow) extend 5 miles from the outer edge of a Confirmed Infested Area. EAB is likely expanding into, and present in some of this area.

The Infested Area location is also available on the ANR Atlas. The "EAB Infested Area" layer is under the Forests, Parks and Recreation tab in the Atlas Layers. This mapping function allows you to look at the Infested Area in conjunction with other layers like parcels or roads.

All ash in Vermont is within the federal EAB quarantine boundary. It is your responsibility to know where the current boundaries of the federal EAB quarantine are located. Moving material outside of the federal EAB quarantine without a compliance agreement can result in penalties. For more information on moving wood outside of the federal quarantine contact Tony Slowik - Plant Health Safeguarding Specialist USDAAPHIS (802) 224-1405.

 EAB Infested Area  
 Confirmed Infested Area  
 High Risk Area

Miles  
0 12.5 25 50 N



This map of the EAB Infested Area was accurate as of 10/5/2018. The Infested Area will expand. Prior to basing action on the location of the Infested Area, visit [vtinvasives.org/eab](http://vtinvasives.org/eab) to confirm the current status of the EAB Infested Area.



## E. Consequences

Emerald ash borers can have devastating consequences on developed landscapes. Below are before and after EAB pictures of streetscapes.



Please note the two photographs above were taken at approximately the same location and time of the year.



After the trees along a street have become infected and die, tree removal is the only option.

## F. Remedies

There are three primary management options to respond to EAB:

1. Response - remove trees as they die or become safety hazards
2. Treatment – Insecticide Injection or Basal Trunk Applications

3. Pre-emptive Removal - Planned tree removal on predetermined time frames and replacement with a suitable alternative species.

### **III. Action Plan**

This section discusses what Stowe can do now and in the future to attempt to deal with the EAB threat.

#### **Education**

- Submit articles to the Stowe Reporter.
- Hold one or more community forums along with neighboring conservation commissions to educate property owners.
- Add an EAB component to the spring addition of the Shutesville Hill Wildlife Corridor lecture series.
- Post ash tree/EAB educational signs on ash trees in various visible public locations around town.
- Post links to EAB resources on Town's website and Front Porch Forum.

#### **Monitoring**

- Conservation Commission members and other interested members of the community will adopt areas of town for ongoing inspection of ash trees for signs of infestation.

#### **Stowe Village**

- Replace all the trees on Main St. as part of the village sidewalk project.
- Contact village property owners who have ash trees that add to the village streetscape to let them know about their options.
- Contact Stowe Elementary School to alert them about the issue.
- Parks Department will replace Memorial Park ash trees as necessary. The Conservation Commission, in consultation with the Tree Warden, has determined that there are no ash trees worth chemically treating in order to save.

#### **Town Highway ROWs**

- Complete Rural Roadside Vegetation Assessment to determine concentrations of ash trees in the ROWs.
- Share this information with the Public Works Department.
- Plan to remove ash trees as they become potentially hazardous. This will include adding funding to future budgets to accomplish this.
- Coordinate efforts with the Stowe Electric Department where the town highway ROW overlaps with the utility line ROW.

#### **Stowe Recreation Path**

- Complete an inventory of ash trees along the Rec Path that pose a potential hazard to users of the Rec Path.
- Notify property owners with potentially hazardous ash trees outside the Rec Path easement area.



- Plan to remove ash trees as they become potentially hazardous. This will include adding funding to future budgets to accomplish this.

#### **Thompson Park & Chase Park**

- Consider a planned timber harvest to remove ash trees in conjunction with abutting property owners.
- Plan to remove ash trees as they become potentially hazardous. This will include adding funding to future budgets to accomplish this.

#### **Sterling Forest**

- Consider conducting a property-wide tree inventory to determine the densities and size class of ash trees to be used in any future forest management planning.
- Do nothing and let nature take its course.

#### **Other Town Properties**

- Conduct a survey of ash trees on other town properties to determine if any future action is warranted and coordinate with appropriate town departments.

#### **IV. Resources and References**

Various guides and fact sheets produced by the VT Urban & Community Forest Program available on their website: [www.vtinvasives.org/eab](http://www.vtinvasives.org/eab)

Cornell Cooperative Extension Emerald Ash Borer Website- New York State Invasive Species Clearinghouse: <http://www.nyis.info>

EAB Website: <http://www.emeraldashborer.info/>

EAB and Firewood hotline at 1-866-640-0652

Don't Move Firewood Campaign: <http://www.dontmovefirewood.org/>