Preparing Your Community for Emerald Ash Borer

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Bethel, VT
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Two Rivers – Ottauquechee Regional Commission:
Transportation Advisory Committee

Important Websites

www.vtinvasives.org

www.vtcommunityforestry.org
Agenda

Presentation

• The Story of EAB
• Vermont’s Response: Slow the Spread
• Management Strategies

Case Studies

Questions
The Story of EAB
LIFE CYCLE OF THE EMERALD ASH BORER

1. Female ash borers lay 40 to 70 eggs on the bark of an ash tree.

2. After hatching, the larvae bore into the tree layers just below the bark to feed. They remain there for 1 or 2 years, then pupate into adults.

3. The adults then chew a telltale D-shaped exit hole in the bark.

4. Adults, which can fly, then seek out new trees, and the process begins again.

Emerald Ash Borer (enlarged view)

Actual size

1/2 in. long
1/8 in. wide
Look For: Canopy Thinning
Look For: Epicormic Branching
Look For: **Woodpecker Flecking**
Look For: **S-Shaped Galleries**
Look For: *Bark Splitting*
Look For: *D-Shaped Exit Holes*
Ash Trees in Vermont

Forests
- 5 – 7%
- 160 million trees

Urban Forests – Public Trees
- Barre – 15, 3%
- Essex Junction – 141, 17%
- Burlington – 1,275 , 9%
- Randolph – 6,000
Trees Commonly Confused with Ash: Boxelder (*Acer negundo*)

Ash (*Fraxinus*)
Impact on Ash Trees: Timeline

- Healthy Tree
- Infested Year 1
- Infested Year 2
- Infested Year 3
- Infested Year 4
- Infested Year 5+
"Lingering Ash"

<table>
<thead>
<tr>
<th>Susceptible</th>
<th>Tolerant</th>
<th>Resistant</th>
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<tbody>
<tr>
<td>(common)</td>
<td>(infrequent)</td>
<td>(rare)</td>
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- .1 – 1% across plots in the Midwest
- Cross-breeding program already established
- A case for leaving trees in wooded areas *where there is no risk to public safety*
The Spread of EAB
From 2002 to Today

• First detected in Detroit in 2002

• Now, established in 35 states & 5 Provinces

EAB naturally moves 1-2 miles per year. So, what’s going on?
Detection Efforts in Vermont
EAB in Vermont

First Confirmed Infestation: February 2018

As of March 2019

Known Infestations
Barre Town, Groton, Montpelier, Orange, Plainfield, South Hero, and Stamford

Confirmed Infested Area
Barre City, Berlin, Colchester, East Montpelier, Grand Isle, Marshfield, Middlesex, Milton, Moretown, Newbury, Pownal, Readsboro, Ryegate, Topsham, Washington, and Woodford

High Risk Areas
Barnet, Bennington, Burlington, Cabot, Calais, Corinth, Duxbury, Georgia, Northfield, North Hero, Peacham, Searsburg, Waitsfield, Waterbury, Whitingham, Williamstown, Wilmington, Woodbury, and Worcester
Stay Up to Date on Infestations

Signup for EAB Listserv at www.vtinvasives.org

Emerald Ash Borer in Vermont

EMERALD ASH BORER IN VERMONT
Emerald ash borer (EAB) has been confirmed in Vermont. This page provides resources to support Vermonters in understanding the threat, slowing the spread, and managing the impacts of EAB. To learn more about EAB, watch this short video on EAB basics.

Infested Area Map
View a larger map, or download a PDF of the infested area.

The Infested Area location is also available on ANR’s Natural Resources Atlas. To download maps from ANR Atlas, check out this How-to Guide.

EAB Update Listserv
To receive updates about the expansion of the infested area map or when other important information relating to EAB in Vermont becomes available, sign up for our EAB Update Listserv.

LISTSERV SIGN UP
Vermont’s Approach

**Who’s Involved**
- VT Agency of Agriculture, Food & Markets
- VT Dept. of Forests, Parks & Recreation
- US Forest Service
- USDA APHIS Plant Protection & Quarantine
- UVM Extension

**Federal Quarantine**
- Statewide quarantine
- Federal quarantine is up for deregulation

**Slow the Spread**
- From infested areas to uninfested areas in VT
- Focus on outreach & education
Slow the Spread

Movement of Wood
• Applies to the **Infested Area**
• **Recommended** practices by product and time
  • Flight vs. Non-flight season
• **Visibly infested trees** must follow guidance

Takeaways
• Keep wood local
• Consider the timing if moving wood
• Chipping or grinding is considered treated
Planning for EAB
Municipal Planning & Management

• Ash trees play an important role as street and park trees, along rural roads, and in public forestland
• Municipalities need to ensure public safety and to manage the impacts of EAB on public trees
• Municipalities will bear the responsibility and costs
Where will your municipality fall on the EAB management spectrum?
Management Approaches

**Preemptive Management (Immediate)**
- Pre-emptive removals and replacements
- Insecticide treatment of high value trees
- High cost up-front

**Selective Management (Over Time)**
- Monitoring
- Removals over time and replacements
- Insecticide treatment of high value trees
- Strategic zones/place
- Spread cost out over time

**Delayed Management (Reactive)**
- Dealing with trees as they die
- No control
- May ultimately be the most expensive management approach
What’s your vulnerability? You can’t manage what you don’t know you have.

You have options: Tree by tree, sampling, paper, mobile app

Reach out: We can help get you started
Monitoring & Citizen Involvement

- Reduce the rate at which EAB populations build and expand (slow the spread!)
- Establish trap or “sentinel” trees
  - Girdle to attract EAB, trap and harvest trees, peel to monitor
- Selective harvesting and utilization of large diameter trees (reduction in total amount of phloem)
- Branch sampling, install traps to monitor population
Budgeting for EAB

- **Determine** goals for your town’s ash trees and urban forest

- **Identify** historical/culturally important ash trees that may be candidates for treatment

- **Rough estimates**
  - **Removals:** $18.33/inch DBH or $155-$3500/tree
  - **Stump grinding:** $6.50/inch DBH or $125-250/tree
  - **Replacement plantings:** $50-600/tree
  - **Insecticide treatment:** $3-$13/inch DBH (*every other year*)

- **Try** the EAB cost calculator

- **Recognize** there are multiple variables in determining costs

- Consider **creative ways** to ease the economic burden

- **Consider** when it’s a good time to request funding
Treatment is appropriate for healthy, high value ash trees.

Treatment should begin once community is in, or near, the Infested Area (appr. 10-12 mi from infested site)

The State of Vermont recommends two chemicals, both systemic and non-neonicotinoid insecticides:

- emamectin benzoate
- azadirachtin (neem byproduct)

Application via systemic trunk injection by a Certified Vermont Pesticide Applicator (CORE + Category 3A).

Treatment is long-term – likely over the life of the tree – and needs to be applied every 2-3 years.

If hiring an arborist, we recommend working with an ISA Certified Arborist: find one at www.treesaregood.com

Treatment can be used as a temporary strategy to lessen impact on the urban forest over time.
Establishment of Bio-controls

- Natural enemies of EAB from its native range in Asia are being released in North America
- Parasitoid wasps are highly specific to EAB
- Will be valuable in aftermath forests with a smaller proportion of ash trees and low EAB populations
Wood Disposal & Utilization

- Identify and communicate disposal sites for ash wood and/or chips
- A “second life” for the ash trees? Artists, furniture makers, public projects
- Firewood – keep it local!
Examples of EAB Management Plans

Rutland City
- Removing 200, treating 100

Middlebury
- No pre-emptive removals
- Putting $5,000/yr for multiple yrs
- Plant 2 for every 1 removed

Williston
- 2015: 51% trees in ROW = ash
- 2019: 25% trees in ROW = ash

Montpelier
- $230,000 over 10 years
- Dedicated staff, Depot & Portable sawmill

Inter-Town Coordination:
- Johnson, Morrisville, Hyde Park, Stowe
- Islands
Ash Fail Differently:

*Risk of Working in Trees Killed by EAB*

They are not the trees you think they are

- Very brittle due to larvae activity and moisture reduction
- Small to **NO** loads or stresses causes limb failure
- Limb fractures occur **very close to stem**
- Stem failures can be **catastrophic**, typically <24” above grade
Resources

VTcommunityforestry.org
and
VTinvasives.org

- **Municipal planning**: worksheets, FAQs, sample plans, ash inventories, case studies
- **Landowners**: shade trees and forests
- **EAB**: identification, biology, treatment
- **Slow the Spread**: wood movement, tree care
- **Outreach and Education**: PowerPoints, lesson plans
Sign up for our EAB Update Listserv on VTinvasives.org
Sign up for TREEmail newsletter at VTcommunityforestry.org
Five Takeaways

1. **EAB is here** and will kill 99% of untreated ash trees
2. **Municipalities will need** to manage ash trees on public property
3. **Plan for EAB** to ensure public safety, slow the spread, and spread costs out over time
4. **Inventory** your ash trees to assess your town’s vulnerability to EAB: The planning starts here.
5. **Learn more** at VTinvasives.org and VTcommunityforestry.org
Questions?
Case Studies: EAB Management Planning in VT
Rutland City

- Original plan involved pre-emptive removal of ~300-400 urban ash trees
- Preemptive removals necessary due to small operating budget for city forestry program
- ~195 trees removed as of March 2019
- Revised plan is to retain and treat 100 best trees with insecticide
- Trees will be processed for local firewood or lumber depending on tree quality
- Replanting has already begun and will continue in 2019
- Preemptive strategy has allowed for in-house management and resulted in huge cost savings
Bennington

Total Number of Ash Trees/Road Mile

Bennington Ash Tree Survey Results 2014

- All Ash Trees
- 0 - 11
- 12 - 30
- 37 - 75
- 70 - 120

Bennington Ash Tree Survey 2014

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<tr>
<th>Road</th>
<th>Rural Roads</th>
<th>Urban Streets</th>
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<tbody>
<tr>
<td># trees &gt;4 in</td>
<td># trees 6-12 in</td>
<td># trees &gt;12 in</td>
</tr>
<tr>
<td>N or E</td>
<td>S or W</td>
<td>N or E</td>
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<tr>
<td>Austin Hill</td>
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<td>10</td>
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<tr>
<td>Burgess Rd.</td>
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<td>3</td>
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<tr>
<td>East Rd.</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Harrington Rd.</td>
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<td>4</td>
</tr>
<tr>
<td>Matteson Rd.</td>
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<td>2</td>
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<tr>
<td>Morgan St.</td>
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<tr>
<td>Murphy Rd.</td>
<td>7</td>
<td>0</td>
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<tr>
<td>Orched Rd.</td>
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<td>Park St. (N Bennington)</td>
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<td>5</td>
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<tr>
<td>Rice Lane</td>
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<tr>
<td>River Road</td>
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<td>Bank St.</td>
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<td>Beech St.</td>
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<tr>
<td>Dewey St.</td>
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<tr>
<td>Elm St.</td>
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<tr>
<td>Monument Avenue</td>
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</tr>
<tr>
<td>Union Street</td>
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