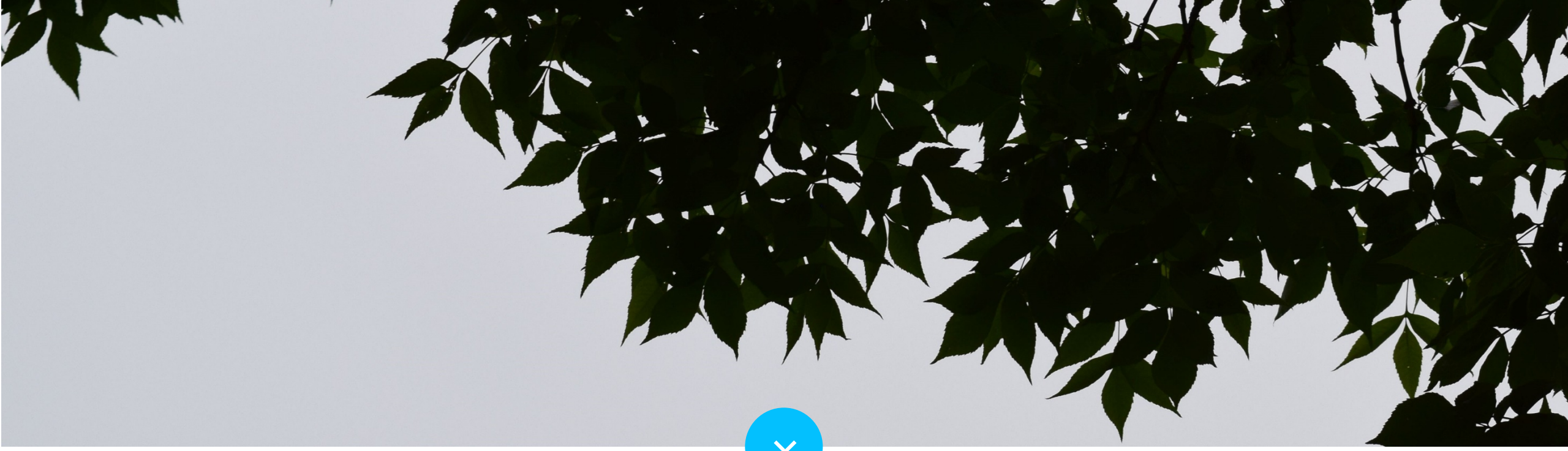


Preparing Your Community for Emerald Ash Borer

Mike Parisio, Forest Health Specialist – Department of Forests, Parks & Recreation

Bethel, VT
May 9, 2019

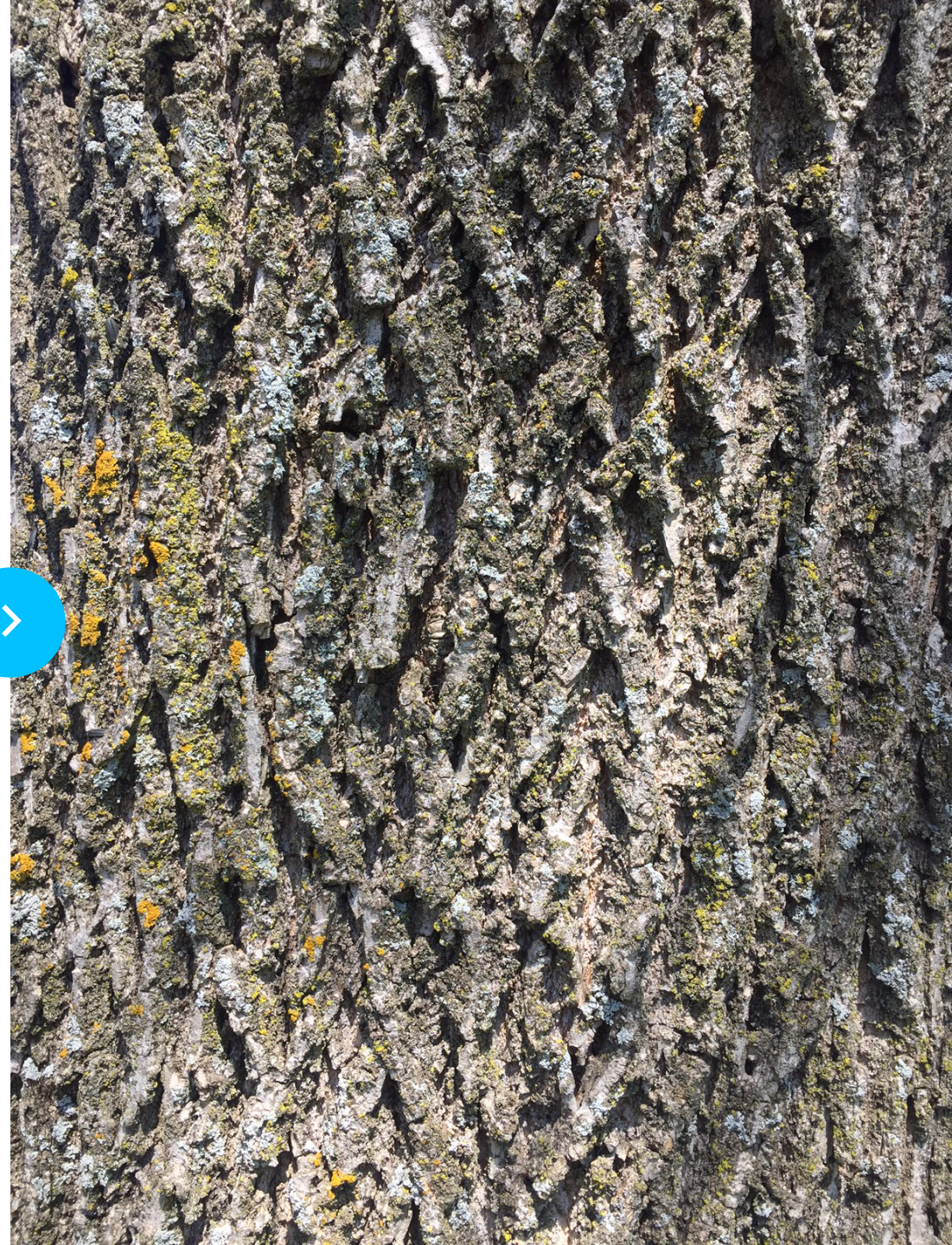
Two Rivers – Ottauquechee Regional Commission:

Transportation Advisory Committee

Important Websites

www.vtinvasives.org

www.vtcommunityforestry.org



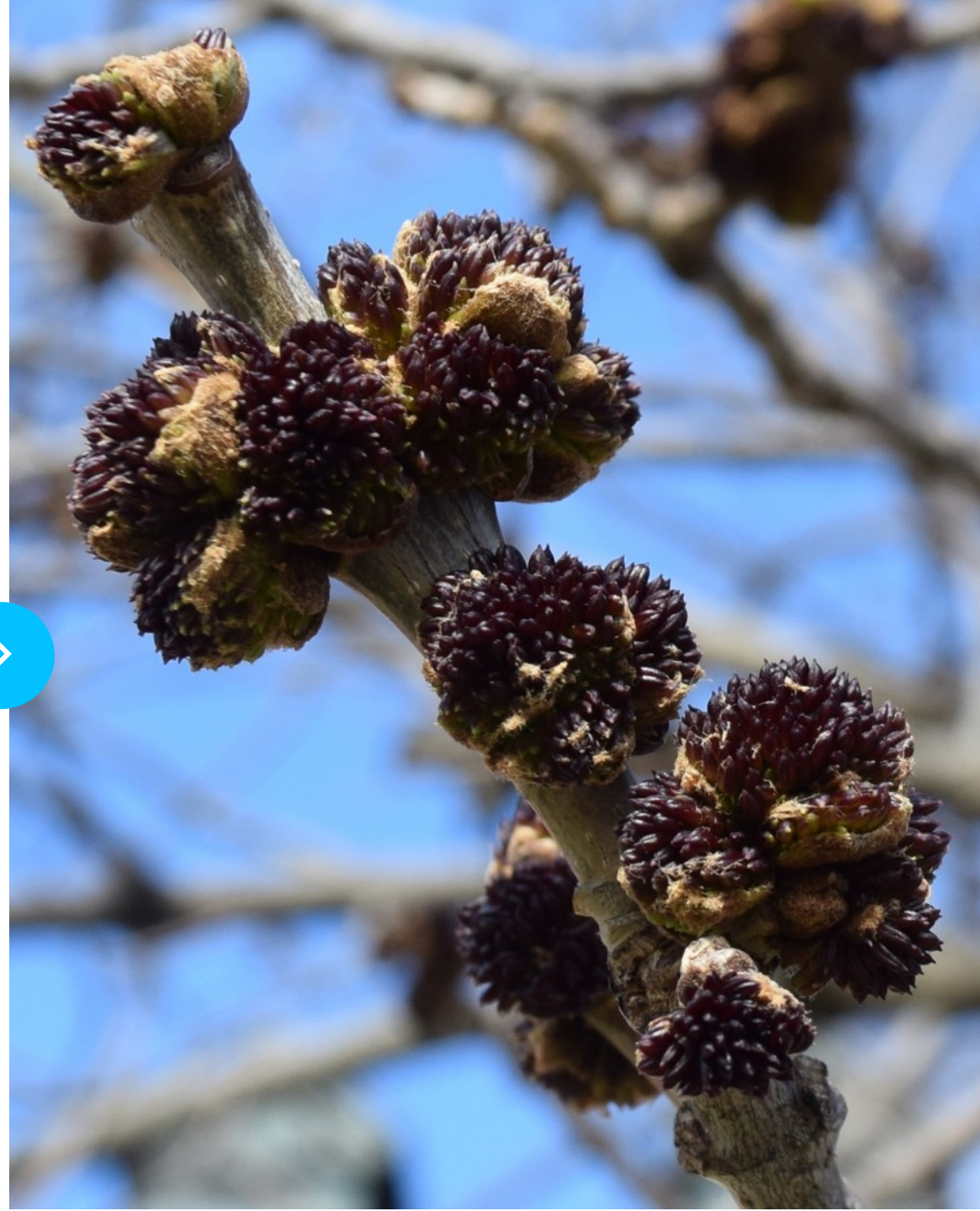
Agenda

Presentation

- The Story of EAB
- Vermont's Response: Slow the Spread
- Management Strategies

Case Studies

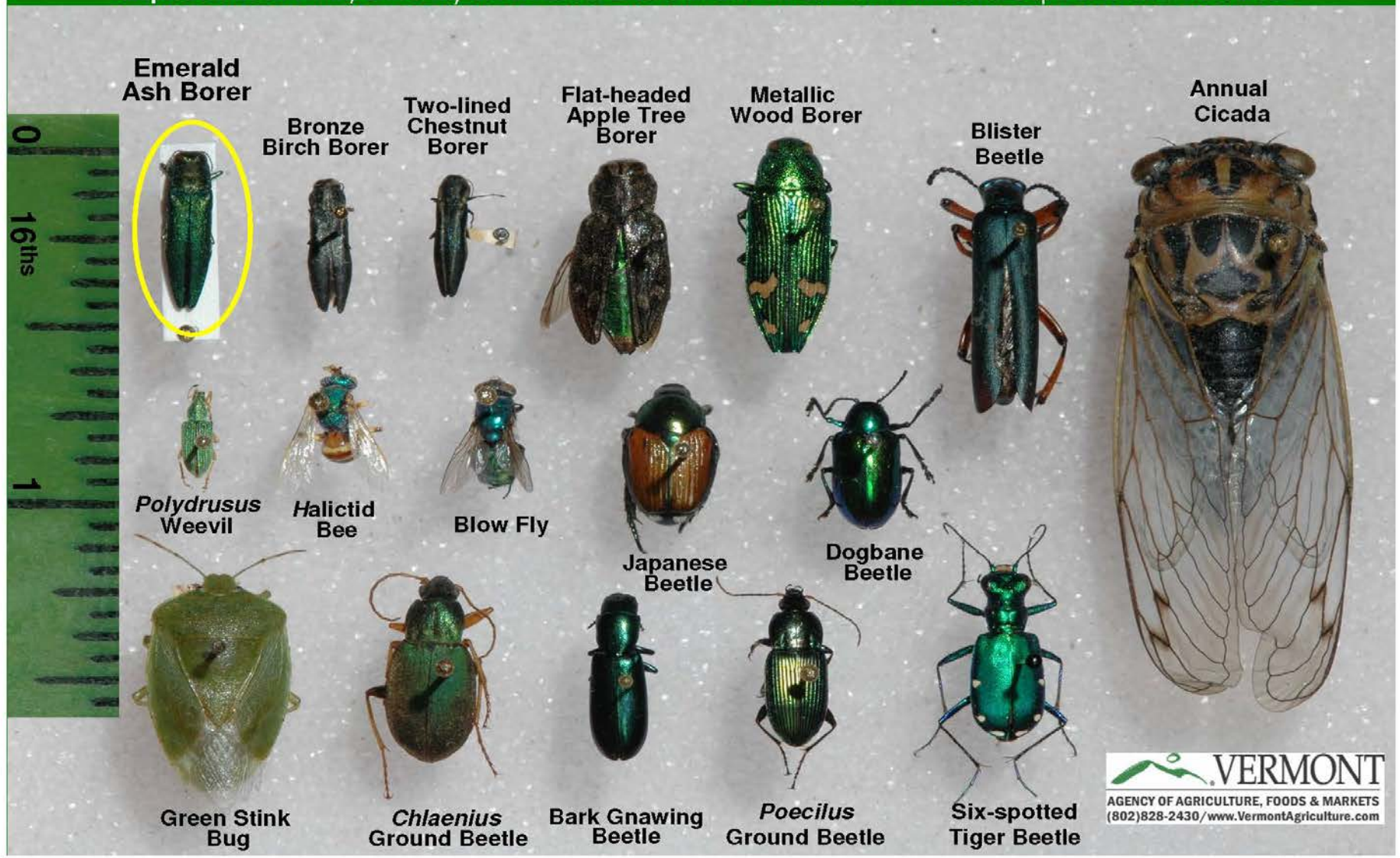
Questions



The Story of EAB

Insects in Vermont that may be confused with Emerald Ash Borer

Adapted from Jeff Hahn, University of Minnesota Extension and Val Cervenka Minnesota Dept. of Natural Resources



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*

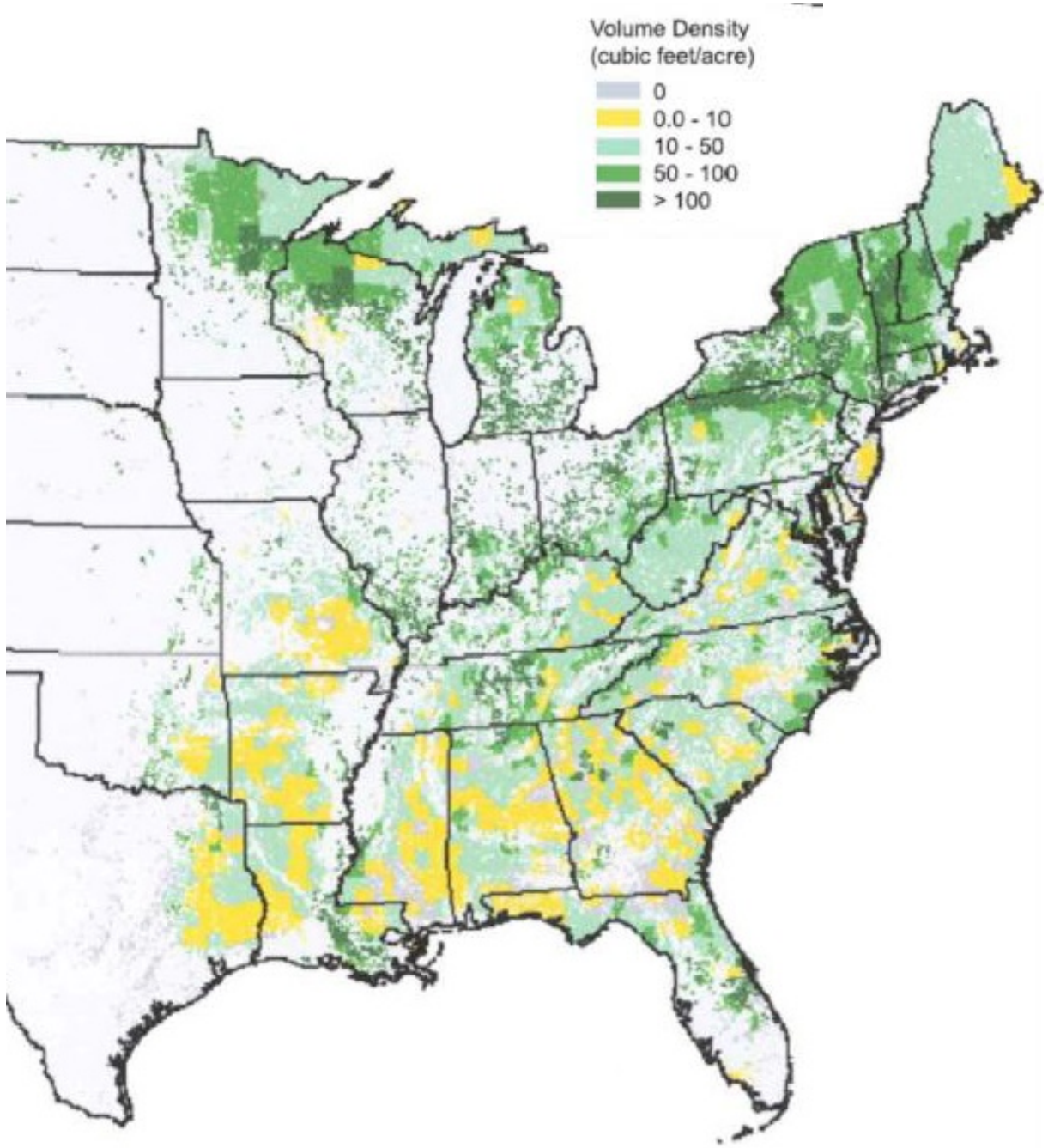
Ash Trees in Vermont

Forests

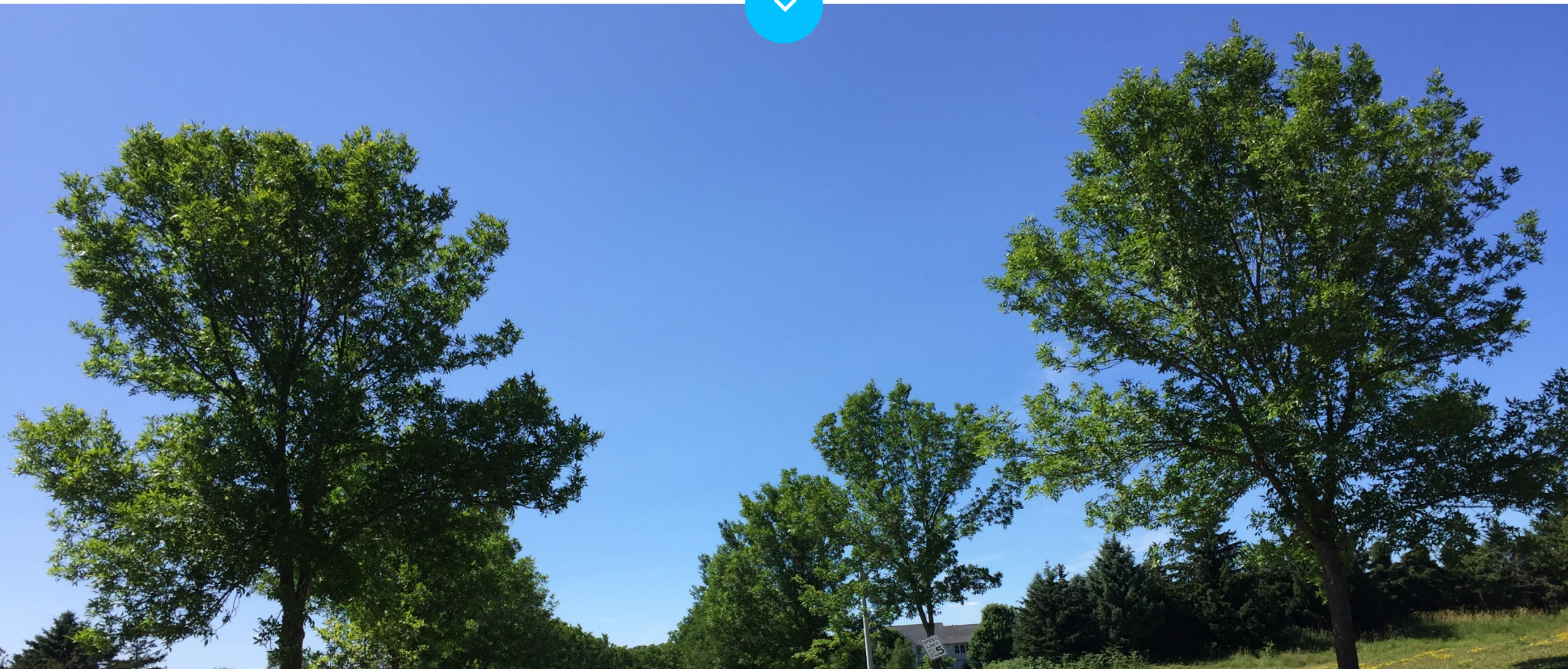
- 5 – 7 %
- 160 million trees

Urban Forests – Public Trees

- Barre – 15, 3%
- Essex Junction – 141, 17%
- Burlington – 1,275 , 9%
- Randolph – 6,000



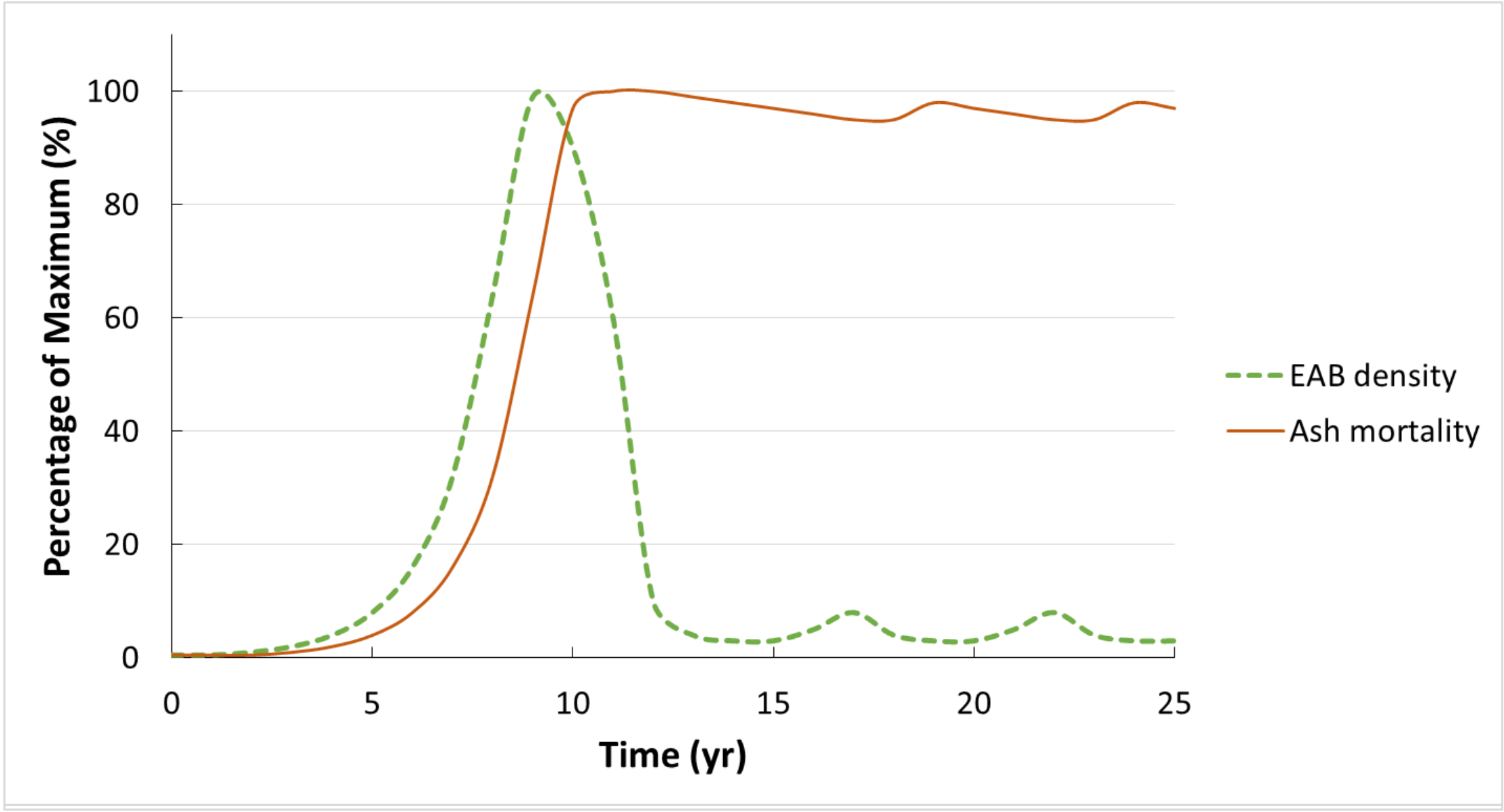
Ash Tree Identification



Trees Commonly Confused with Ash: Boxelder (*Acer negundo*)

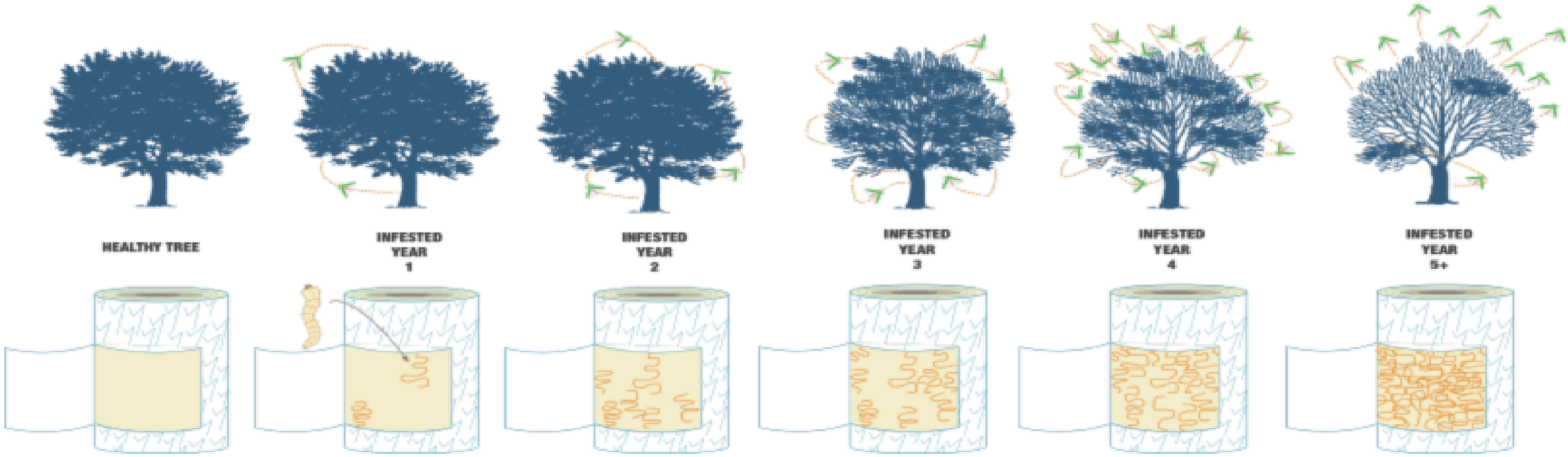
Ash (*Fraxinus*)

EAB Invasion Wave



Cusp	Crest	Post Crest

Impact on Ash Trees: Timeline



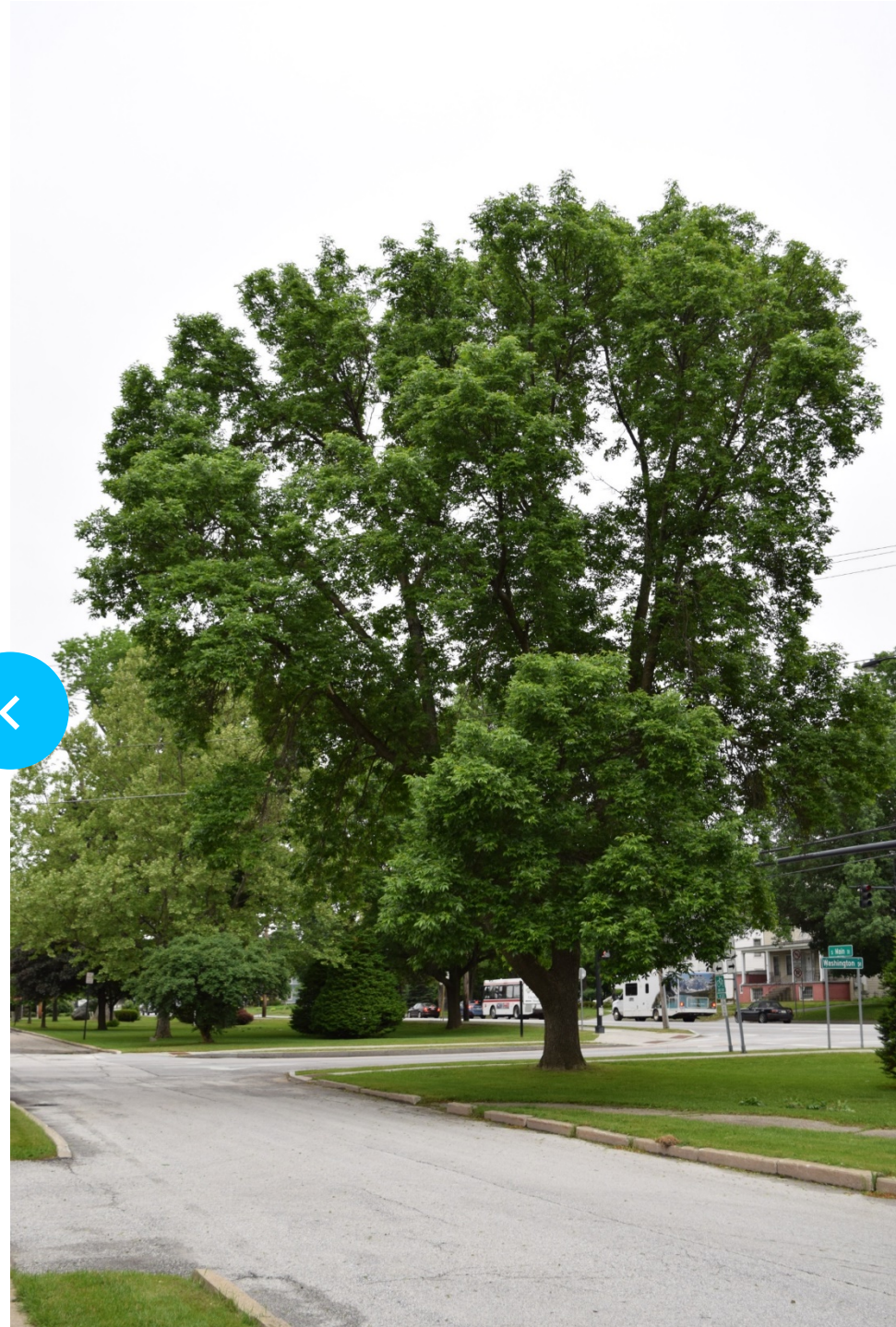
“Lingering Ash”

Susceptible
(common)

Tolerant
(infrequent)

Resistant
(rare)

- .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*



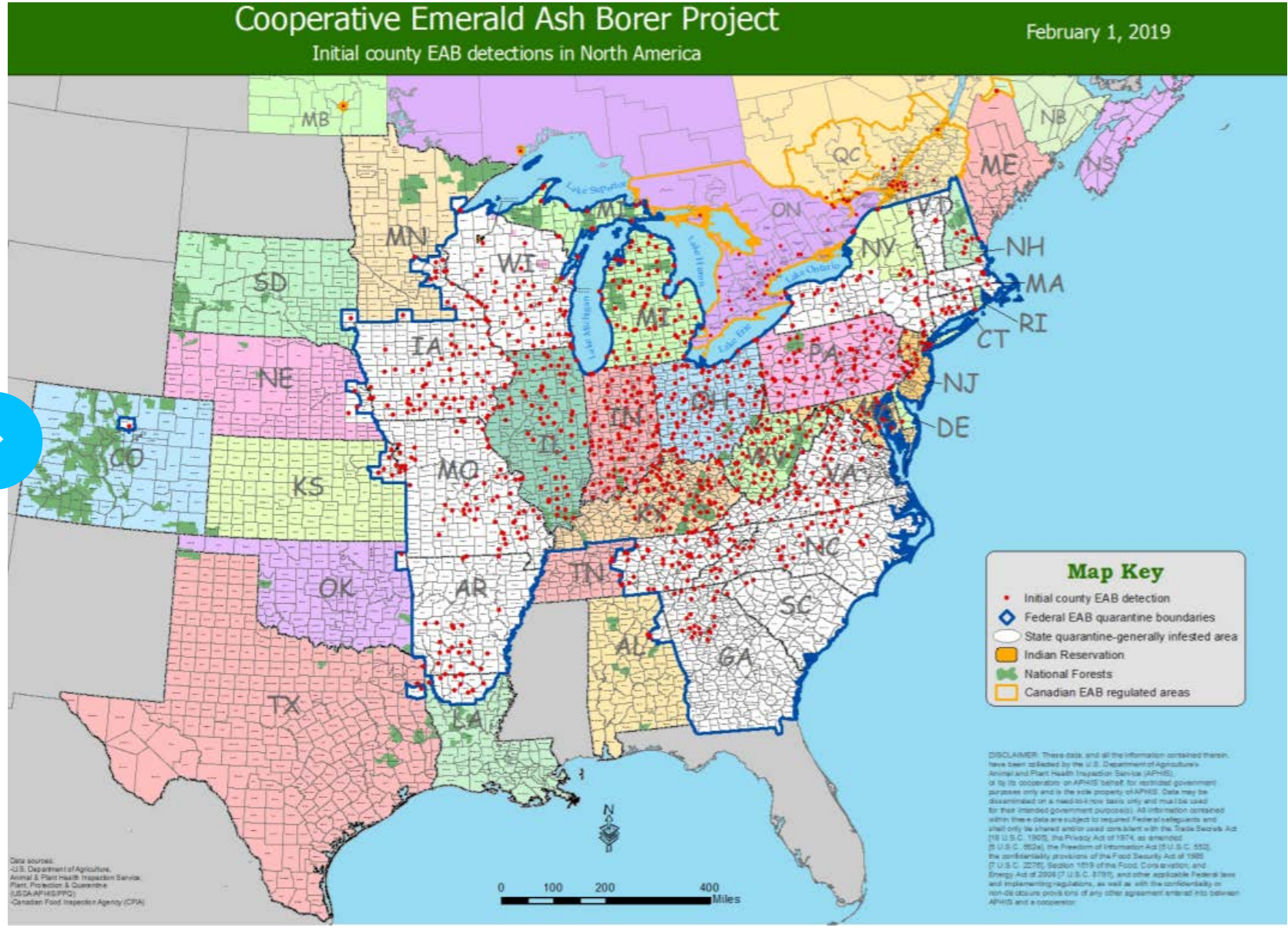
The Spread of EAB

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?




Bambolina

Detection Efforts in Vermont

EAB in Vermont

First Confirmed Infestation: February 2018

As of March 2019

Known Infestations

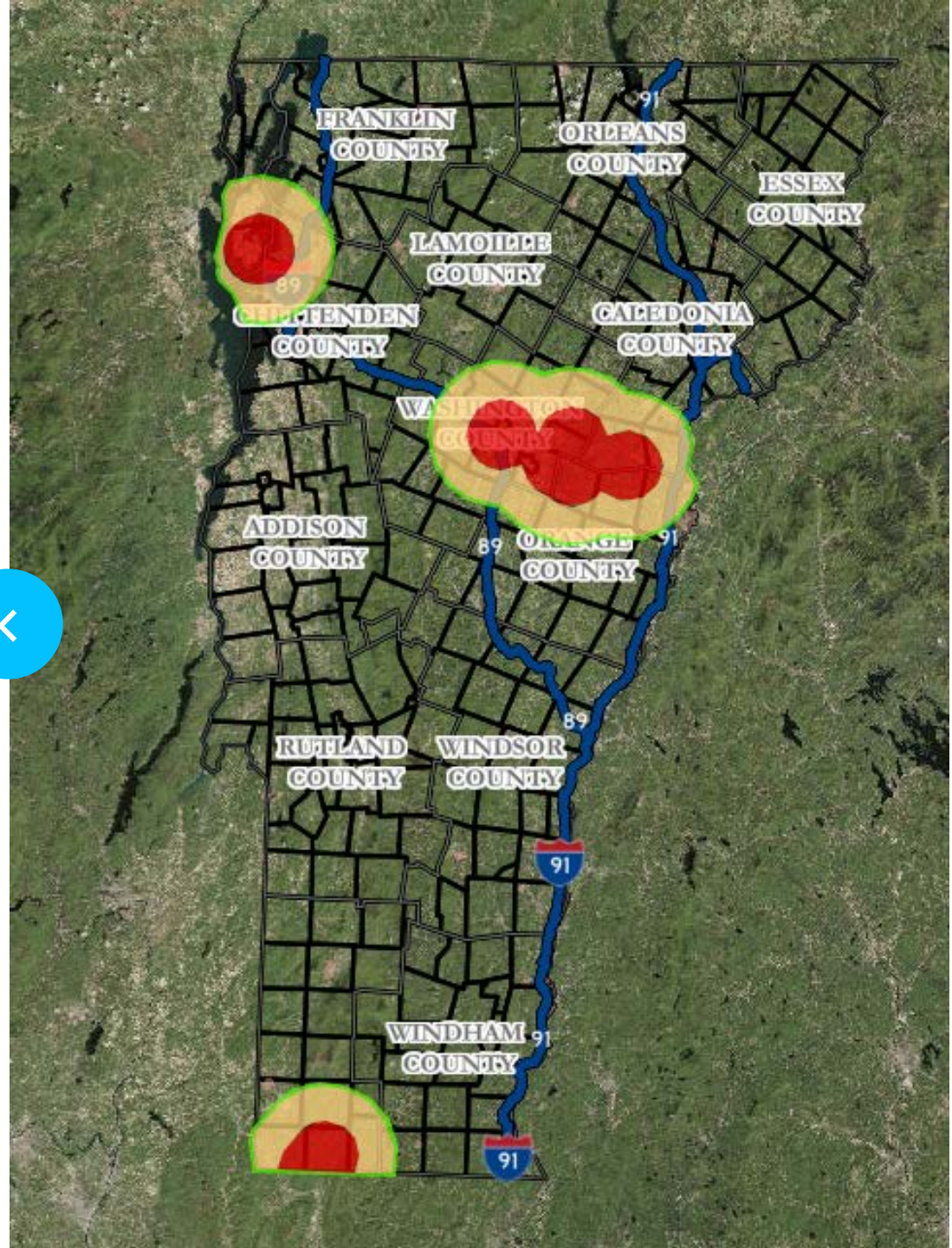
Barre Town, Groton, Montpelier, Orange, Plainfield, South Hero, and Stamford

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

INVASIVES | HOME | EMERALD ASH BORER IN VERMONT

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- NTIFY EAB
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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 Resouces 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

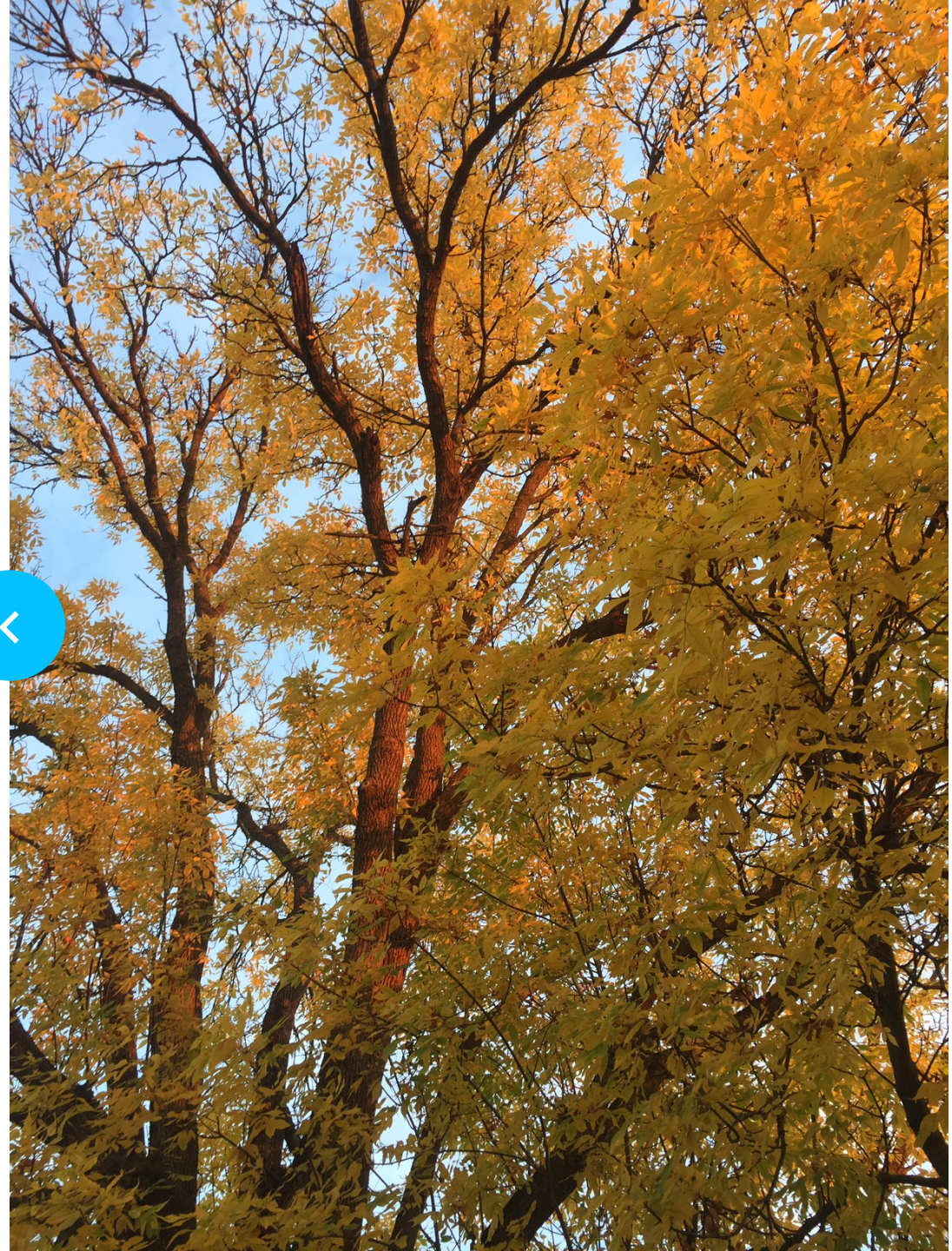
- VT Agency of Agriculture, Food & Markets
- VT Dept. of Forests, Parks & Recreation
- US Forest Service
- USDA APHIS Plant Protection & Quarantine
- UVM Extension

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



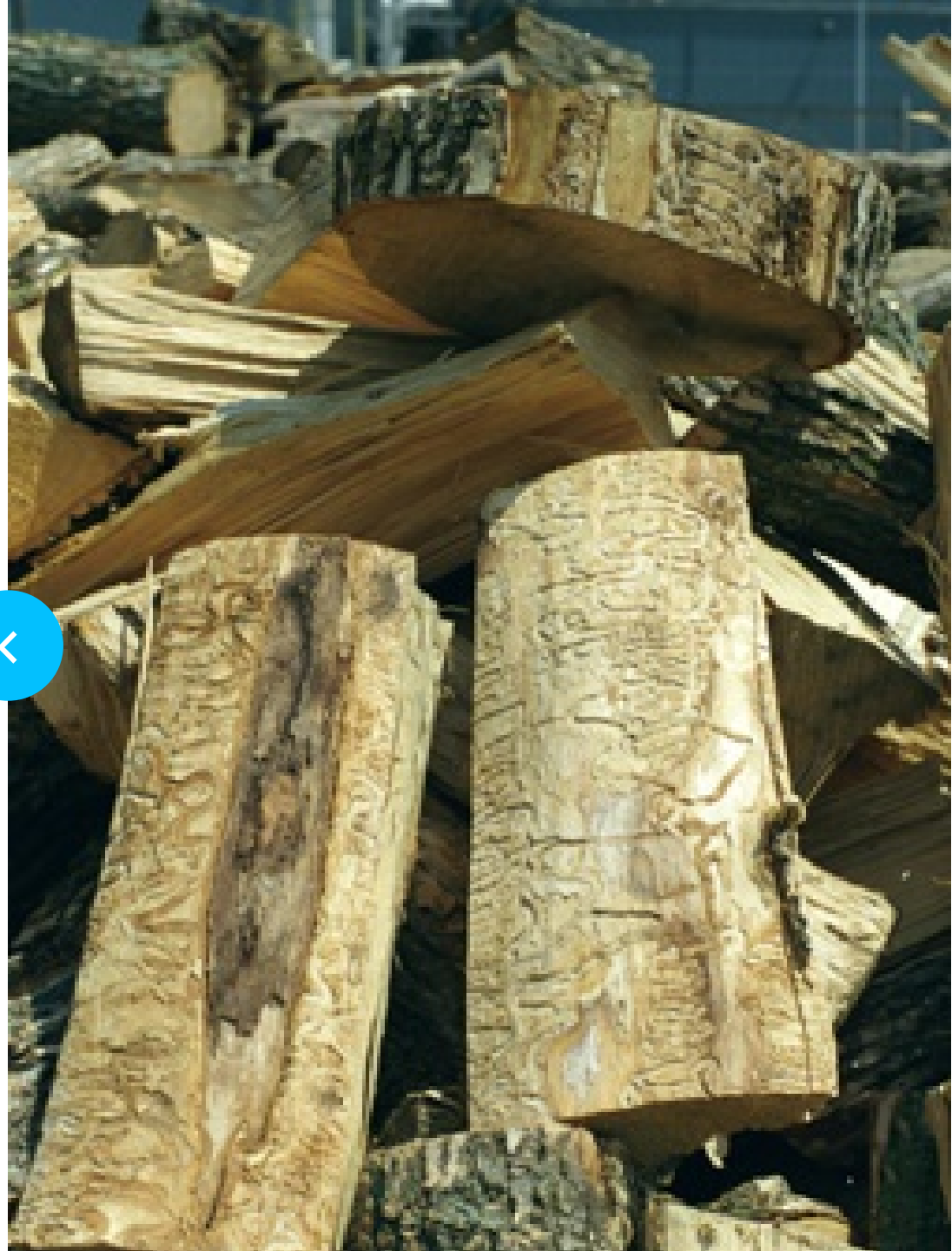
Slow the Spread

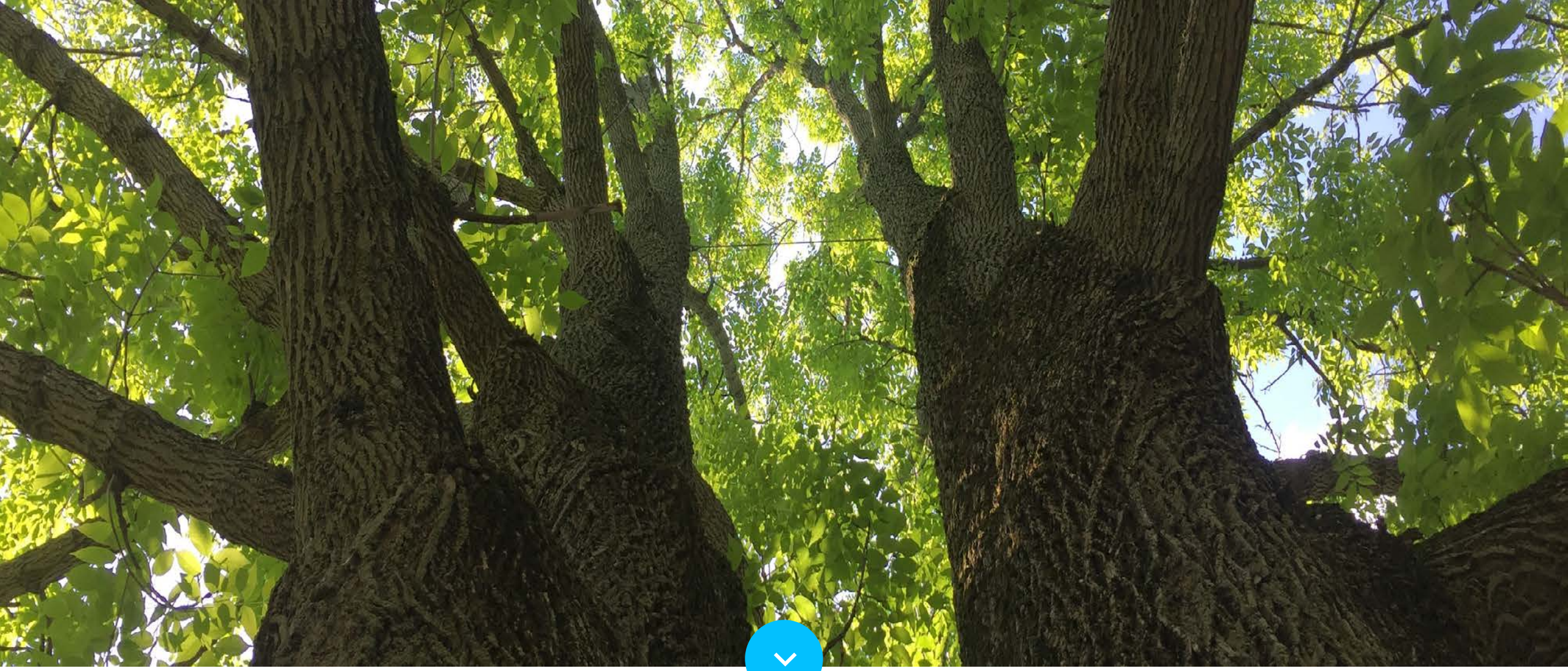
Movement of Wood

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

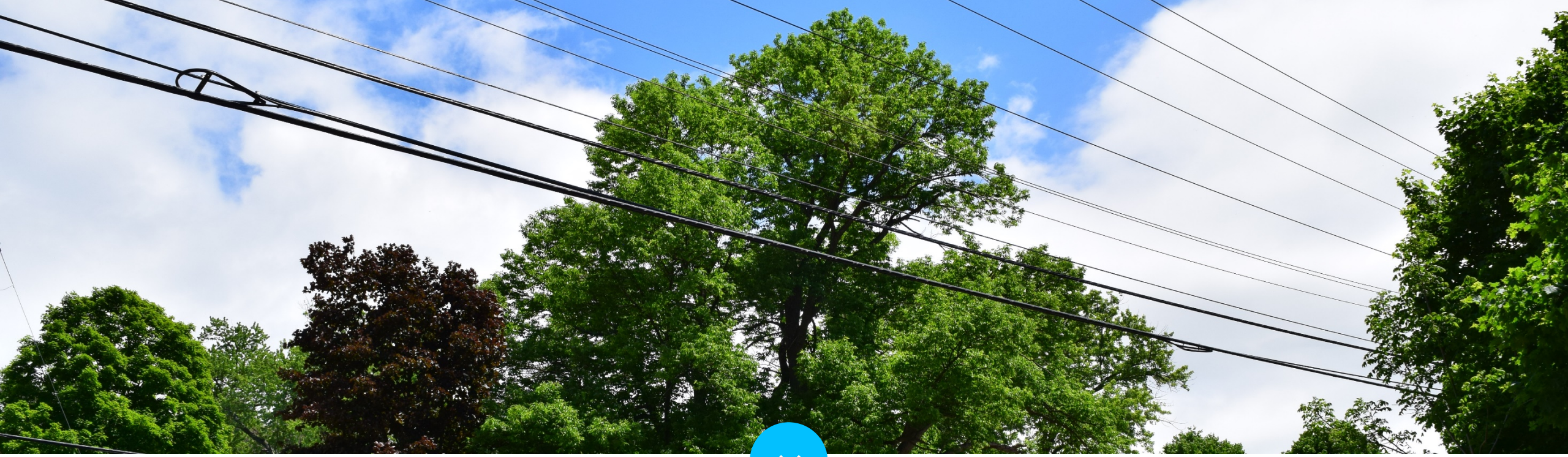
Takeaways

- 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)

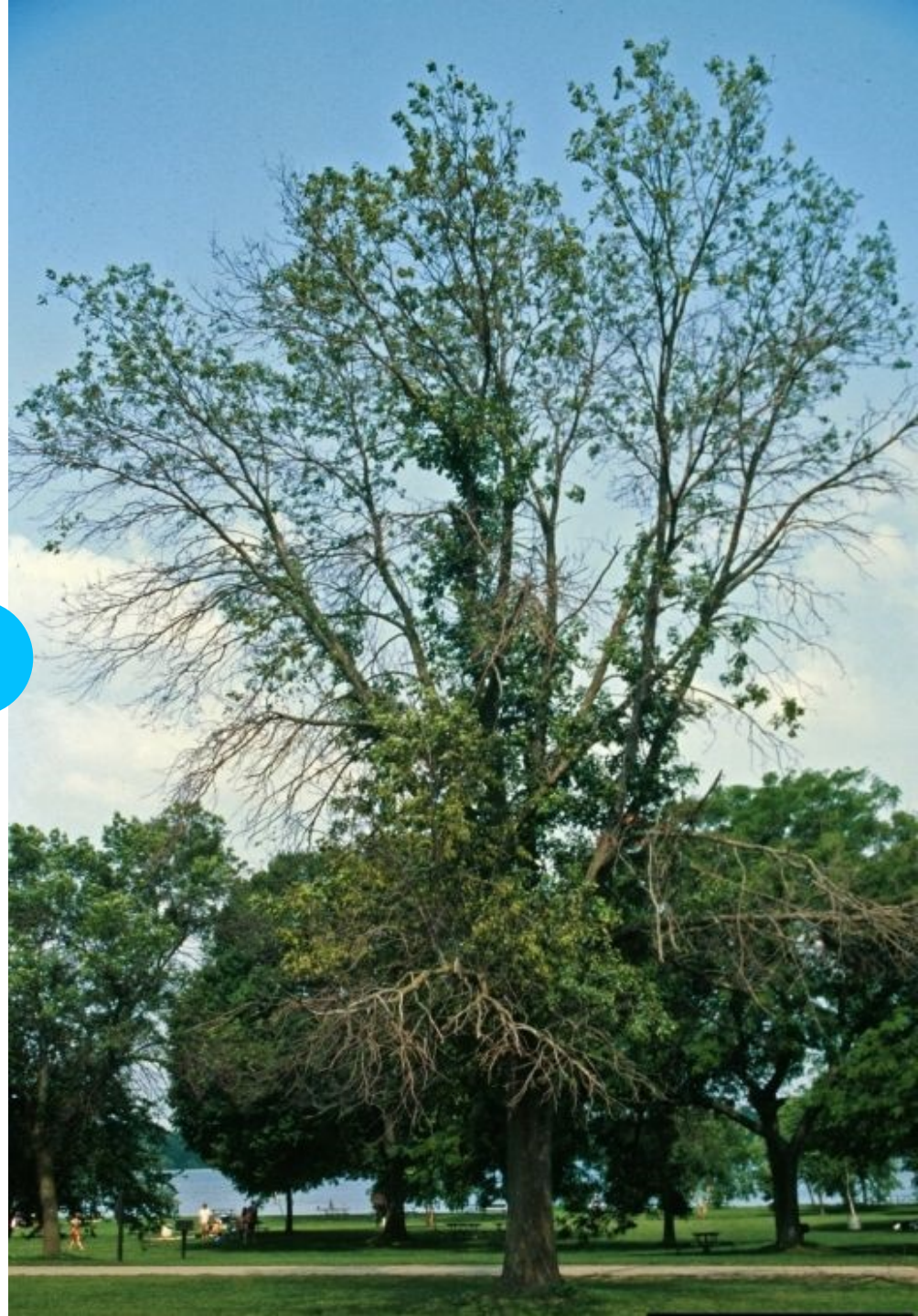
- Pre-emptive removals and replacements
- Insecticide treatment of high value trees
- High cost up-front

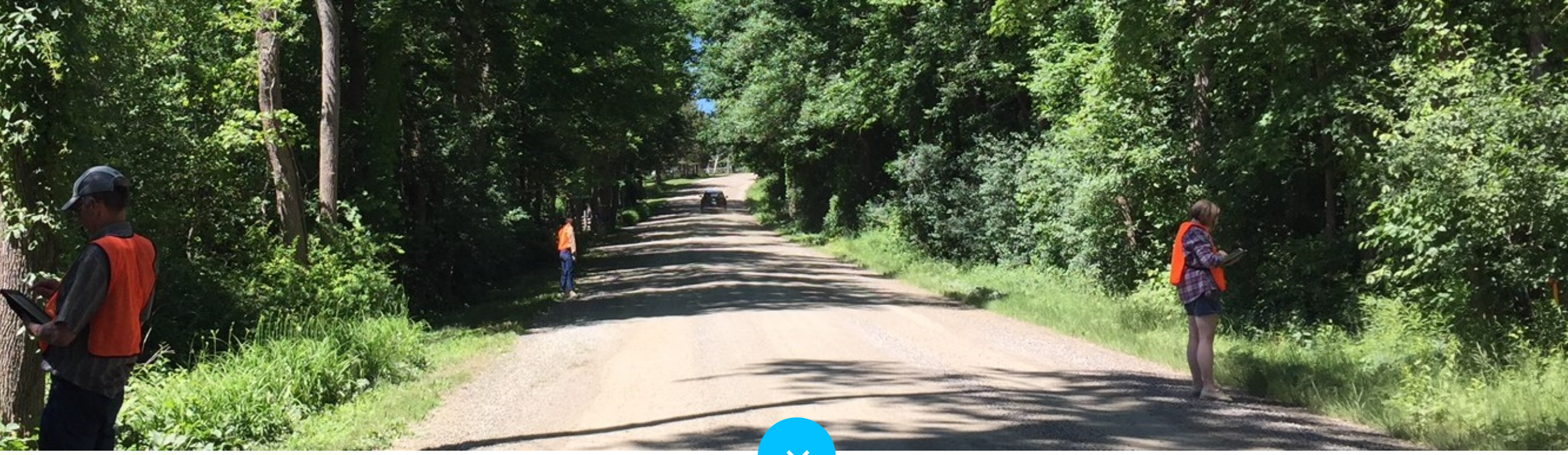
Selective Management (Over Time)

- 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





Ash Tree Inventory

- **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

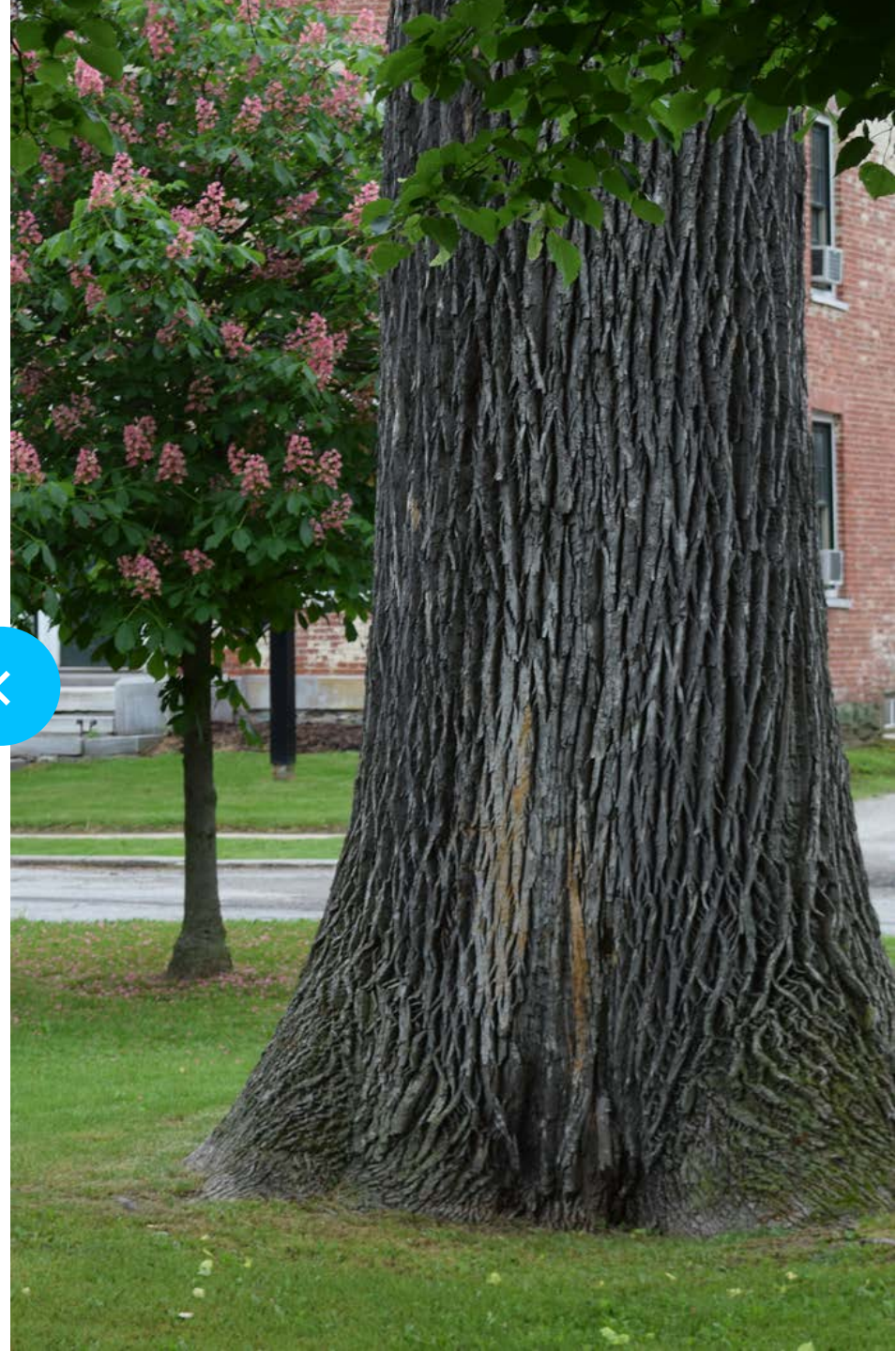

Meadow Brook
Meadow Brook
USDA FSA, DigitalGlobe, GeoEye, CNES/Airbus DS | Esri, HERE, Garmin
POWERED BY esri

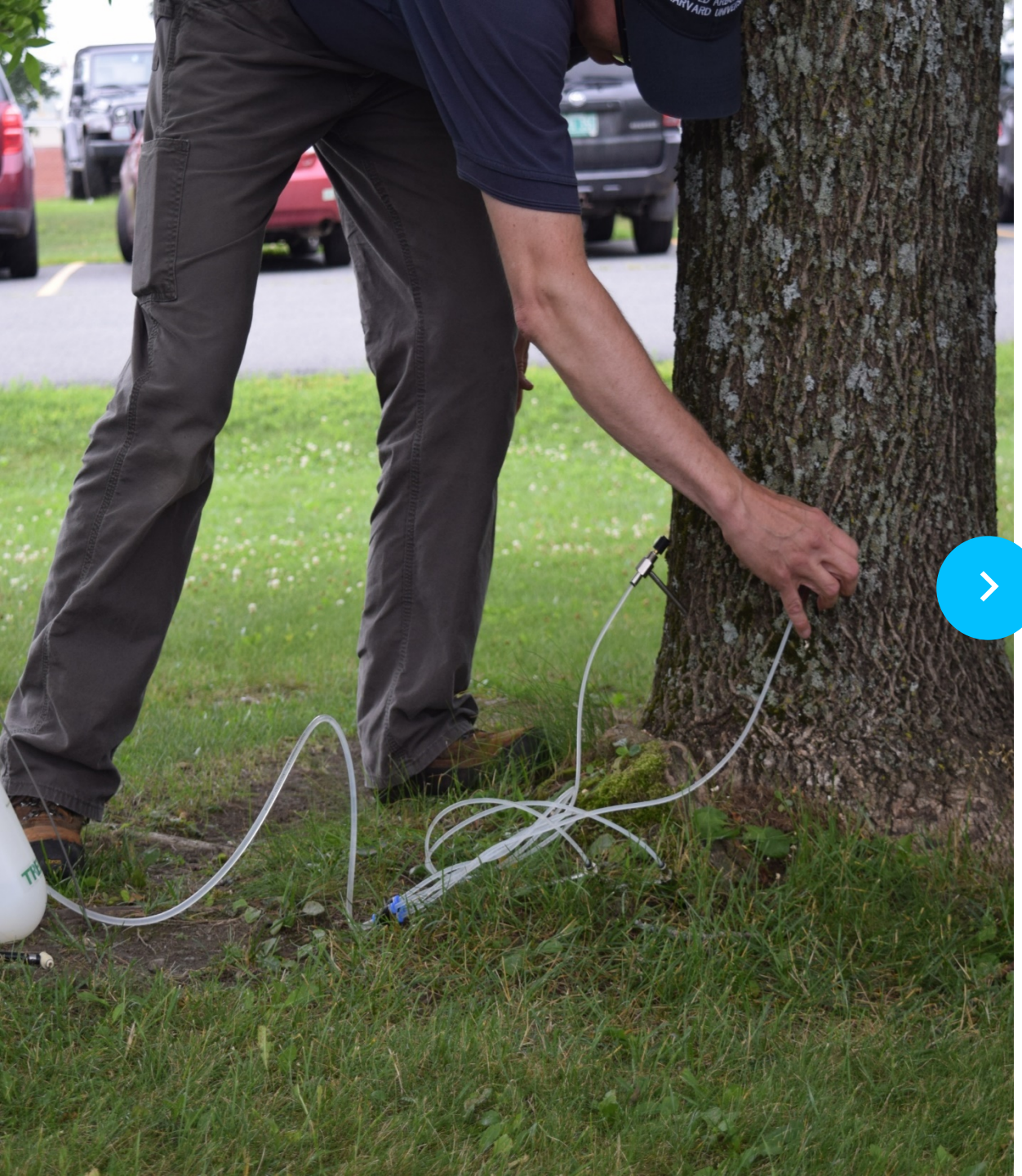
Monitoring & Citizen Involvement

- 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





Insecticide Treatment

- Treatment is appropriate for healthy, high value ash trees.
- Treatment should begin once community is in, or near, the Infested Area (apprx. 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

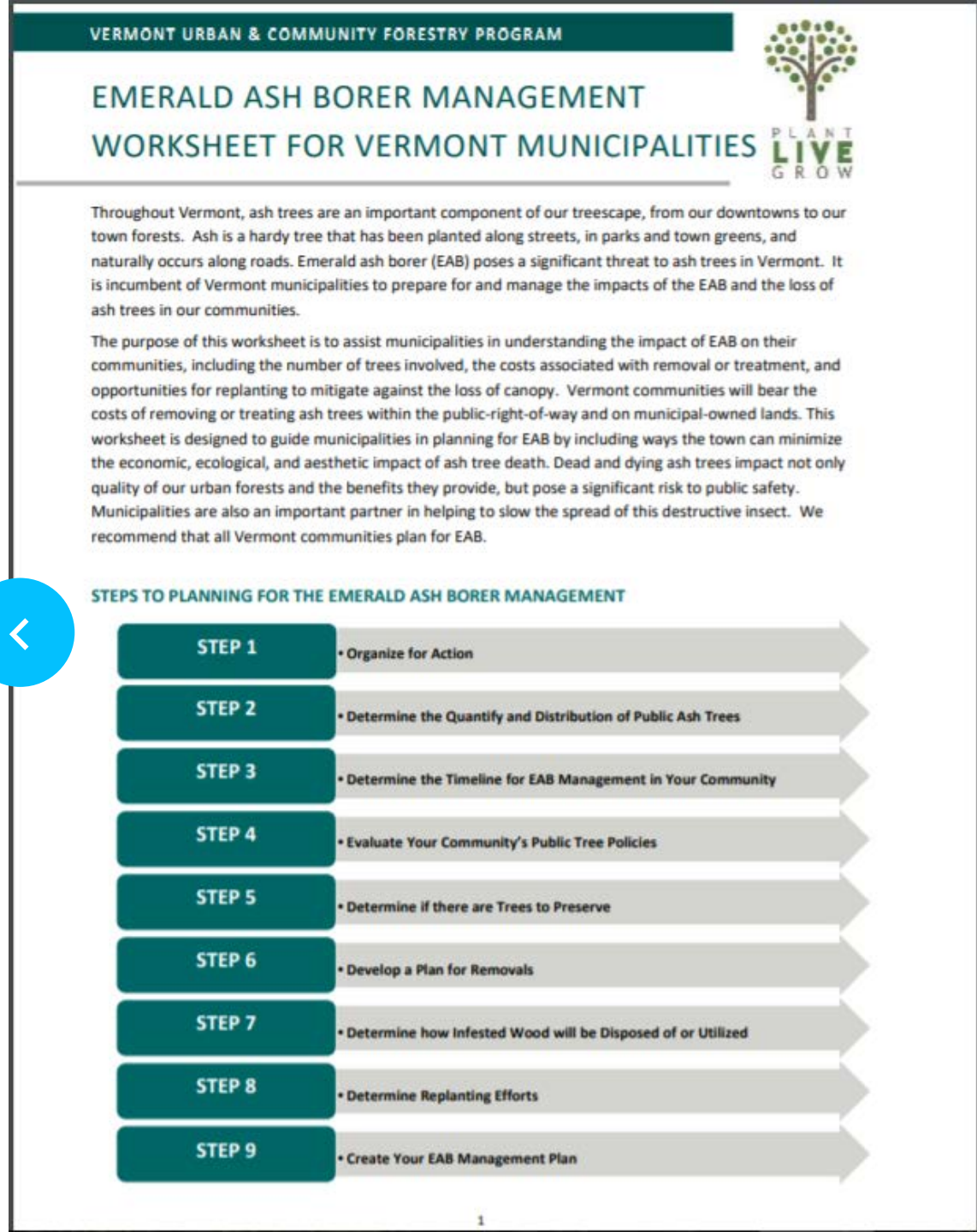
Resources

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



VERMONT URBAN & COMMUNITY FORESTRY PROGRAM

EMERALD ASH BORER MANAGEMENT WORKSHEET FOR VERMONT MUNICIPALITIES

PLANT LIVE GROW

Throughout Vermont, ash trees are an important component of our treescape, from our downtowns to our town forests. Ash is a hardy tree that has been planted along streets, in parks and town greens, and naturally occurs along roads. Emerald ash borer (EAB) poses a significant threat to ash trees in Vermont. It is incumbent of Vermont municipalities to prepare for and manage the impacts of the EAB and the loss of ash trees in our communities.

The purpose of this worksheet is to assist municipalities in understanding the impact of EAB on their communities, including the number of trees involved, the costs associated with removal or treatment, and opportunities for replanting to mitigate against the loss of canopy. Vermont communities will bear the costs of removing or treating ash trees within the public-right-of-way and on municipal-owned lands. This worksheet is designed to guide municipalities in planning for EAB by including ways the town can minimize the economic, ecological, and aesthetic impact of ash tree death. Dead and dying ash trees impact not only quality of our urban forests and the benefits they provide, but pose a significant risk to public safety. Municipalities are also an important partner in helping to slow the spread of this destructive insect. We recommend that all Vermont communities plan for EAB.

STEPS TO PLANNING FOR THE EMERALD ASH BORER MANAGEMENT

STEP 1	• Organize for Action
STEP 2	• Determine the Quantify and Distribution of Public Ash Trees
STEP 3	• Determine the Timeline for EAB Management in Your Community
STEP 4	• Evaluate Your Community's Public Tree Policies
STEP 5	• Determine if there are Trees to Preserve
STEP 6	• Develop a Plan for Removals
STEP 7	• Determine how Infested Wood will be Disposed of or Utilized
STEP 8	• Determine Replanting Efforts
STEP 9	• Create Your EAB Management Plan

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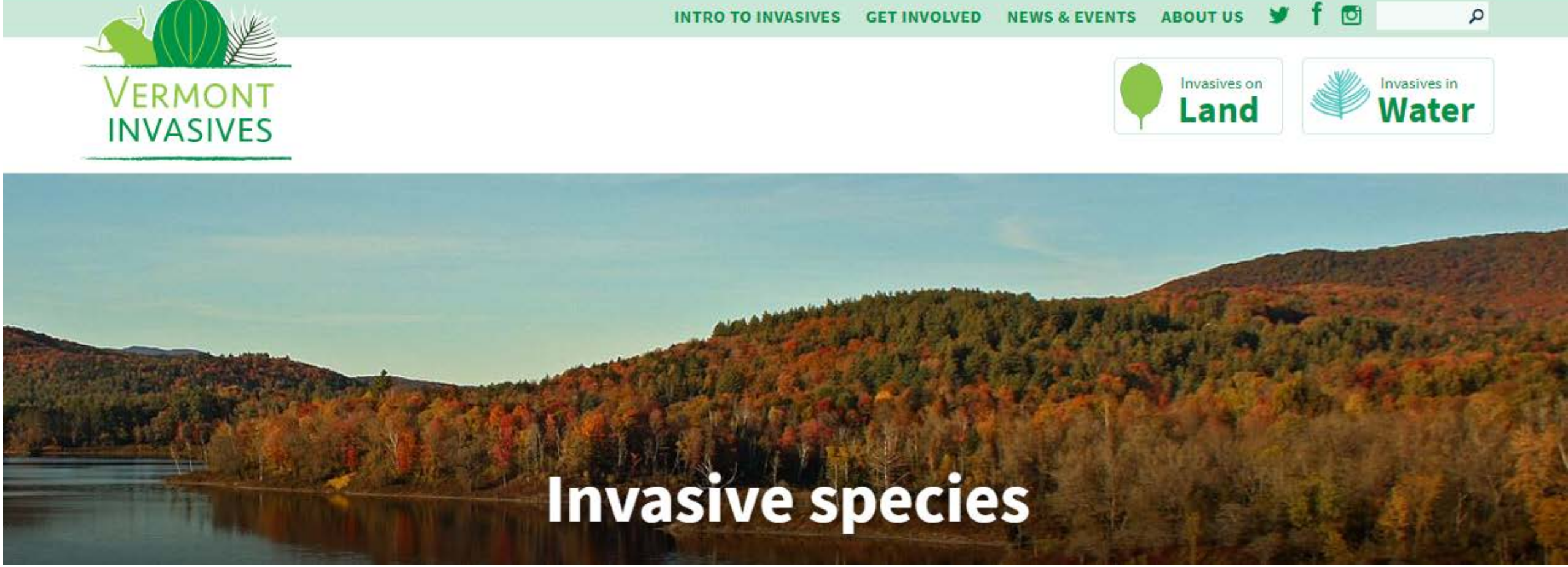
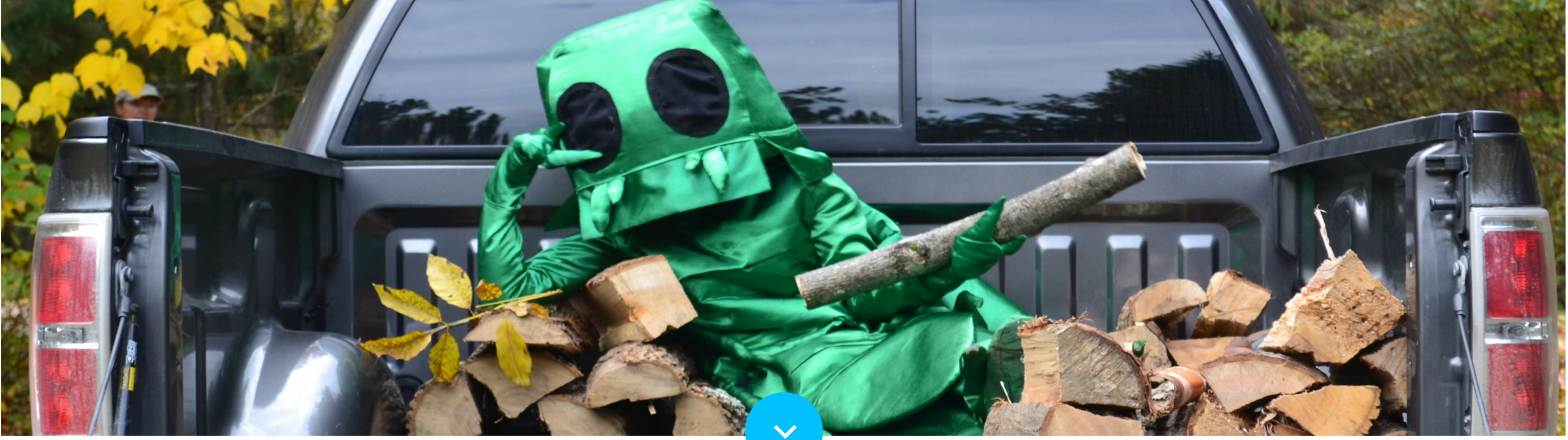


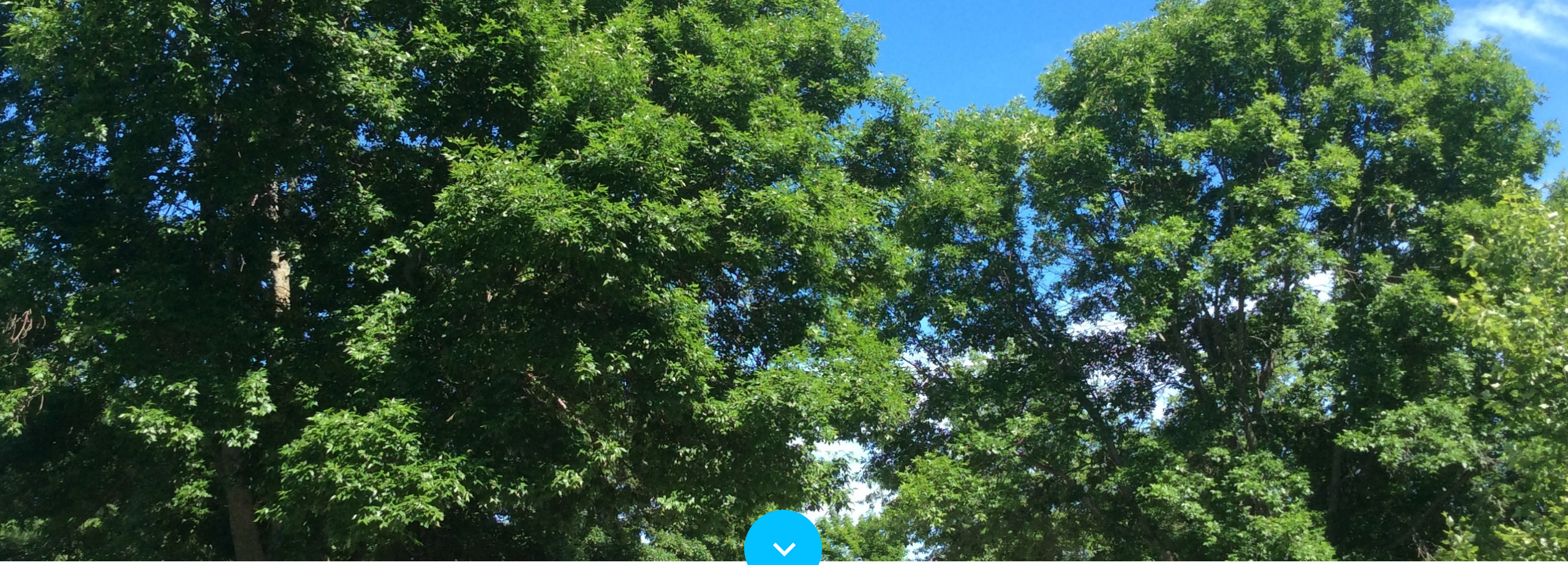
Stay Informed

- **Sign up** for our **EAB Update Listserv** on VTinvasives.org
- **Sign up** for **TREEmail newsletter** at VTcommunityforestry.org

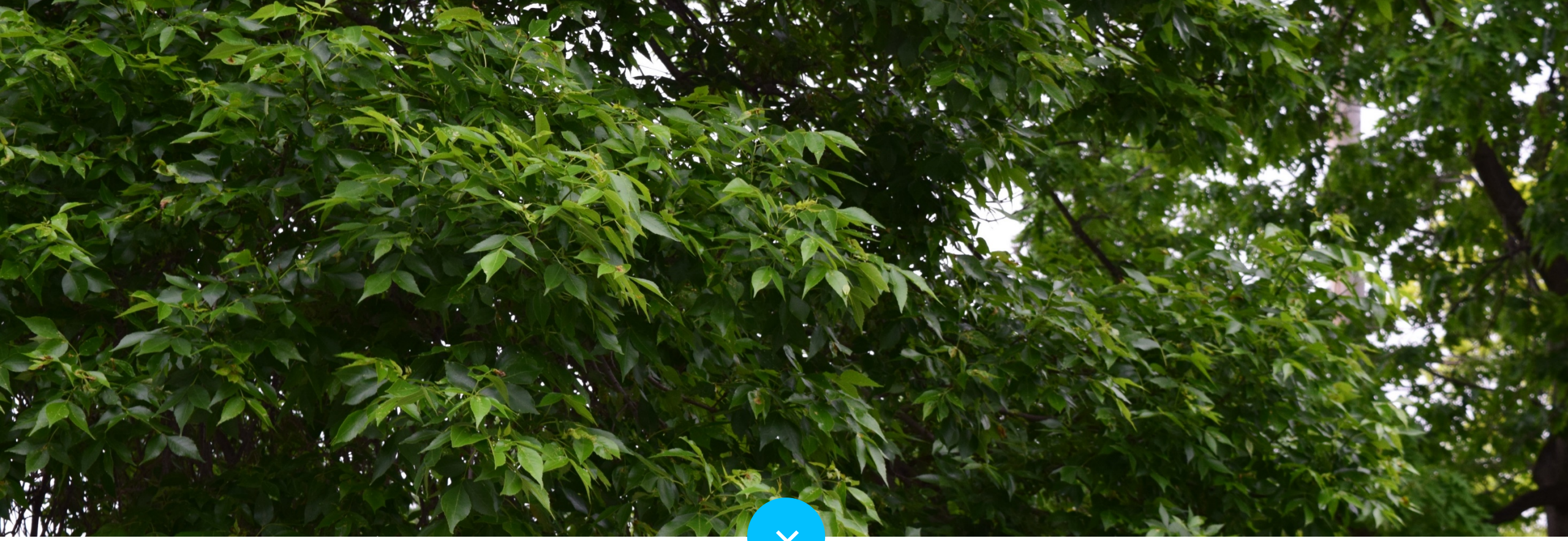


Five Takeaways

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?



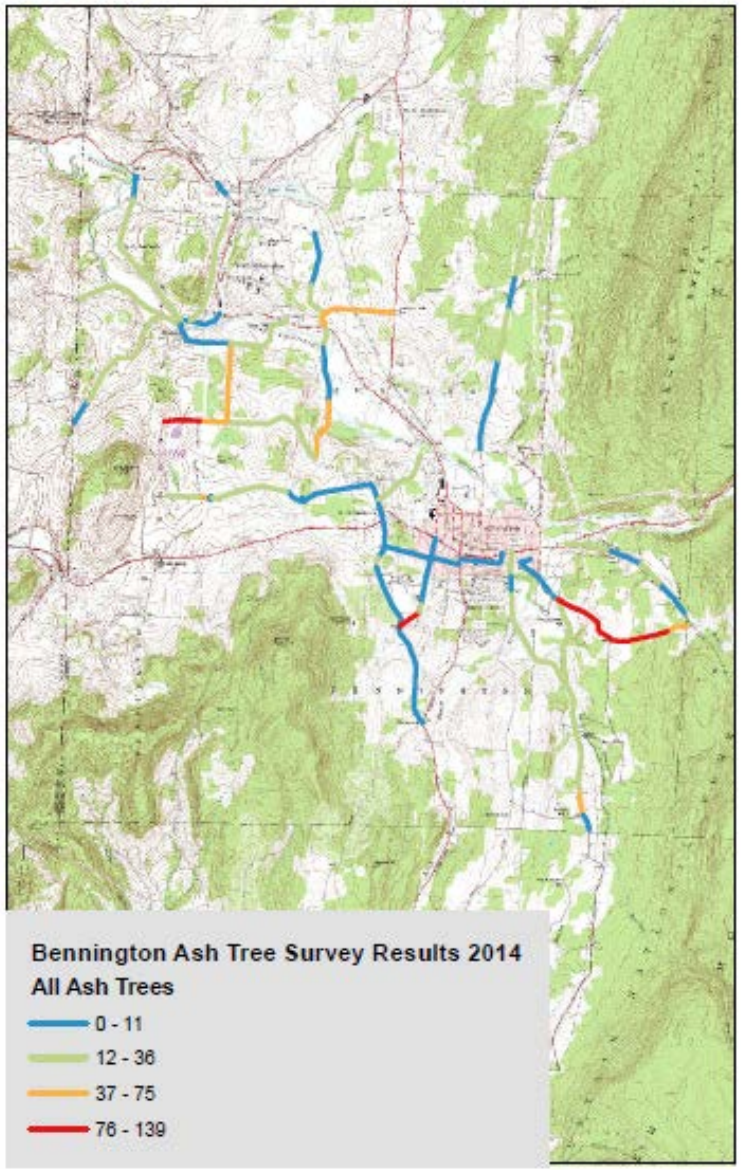
Case Studies:
EAB Management Planning in VT

Rutland City

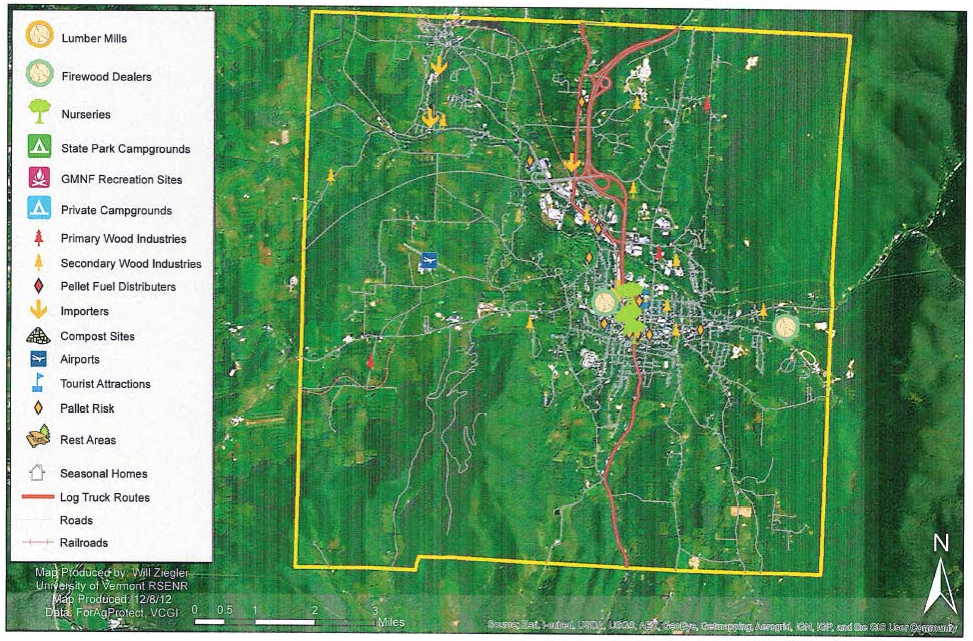
- Original plan involved pre-emptive removal of ~300-400 urban ash trees
- Preemptive removals necessary due to small operating budget for city forestry program
- ~195 trees removed as of March 2019
- Revised plan is to retain and treat 100 best trees with insecticide
- Trees will be processed for local 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



Potential EAB Introduction Points: Bennington, VT



Bennington Ash Tree Survey 2014

Rural Roads

Road	# trees >4-<6" DBH		# trees 6-12" DBH		# trees >12" DBH		Trees per mile
	N or E	S or W	N or E	S or W	N or E	S or W	
Austin Hill	16	10	3	5	4	10	60
Burgess Rd.	2	3	5	6	3	4	14
East Rd.	14	6	17	3	4	5	18
Harrington Rd.	12	4	18	3	4	8	29
Matteson Rd.	1	2	1	2	3	0	9
Morgan St.	1	12	6	3	1	9	20
Murphy Rd.	7	0	5	1	3	3	14
Orebed Rd.	0	1	3	2	5	6	11
Park St. (N Bennington)	4	5	4	3	6	5	23
Rice Lane	11	5	7	7	4	2	40
River Road	13	6	2	6	0	2	17
South Stream Rd.	8	13	14	20	3	10	27
Silk Rd.	18	12	6	6	1	1	31
Vail Rd.	22	21	20	11	19	9	54
Walloomsac Rd.	15	2	4	4	1	2	13

Urban Streets

Road	# trees >4-<6" DBH		# trees 6-12" DBH		# trees >12" DBH		Trees per mile
	N or E	S or W	N or E	S or W	N or E	S or W	
Bank St.	0	3	2	2	4	0	16
Beech St.	0	0	0	1	0	0	1
Dewey St.	2	4	2	4	6	10	27
Elm St.	0	0	0	0	0	0	0
Monument Avenue	0	5	0	4	3	6	7
Union Street	0	0	0	0	0	0	0