Implications of the Emerald Ash Borer
Minnesota Black Ash Wetlands

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Outline

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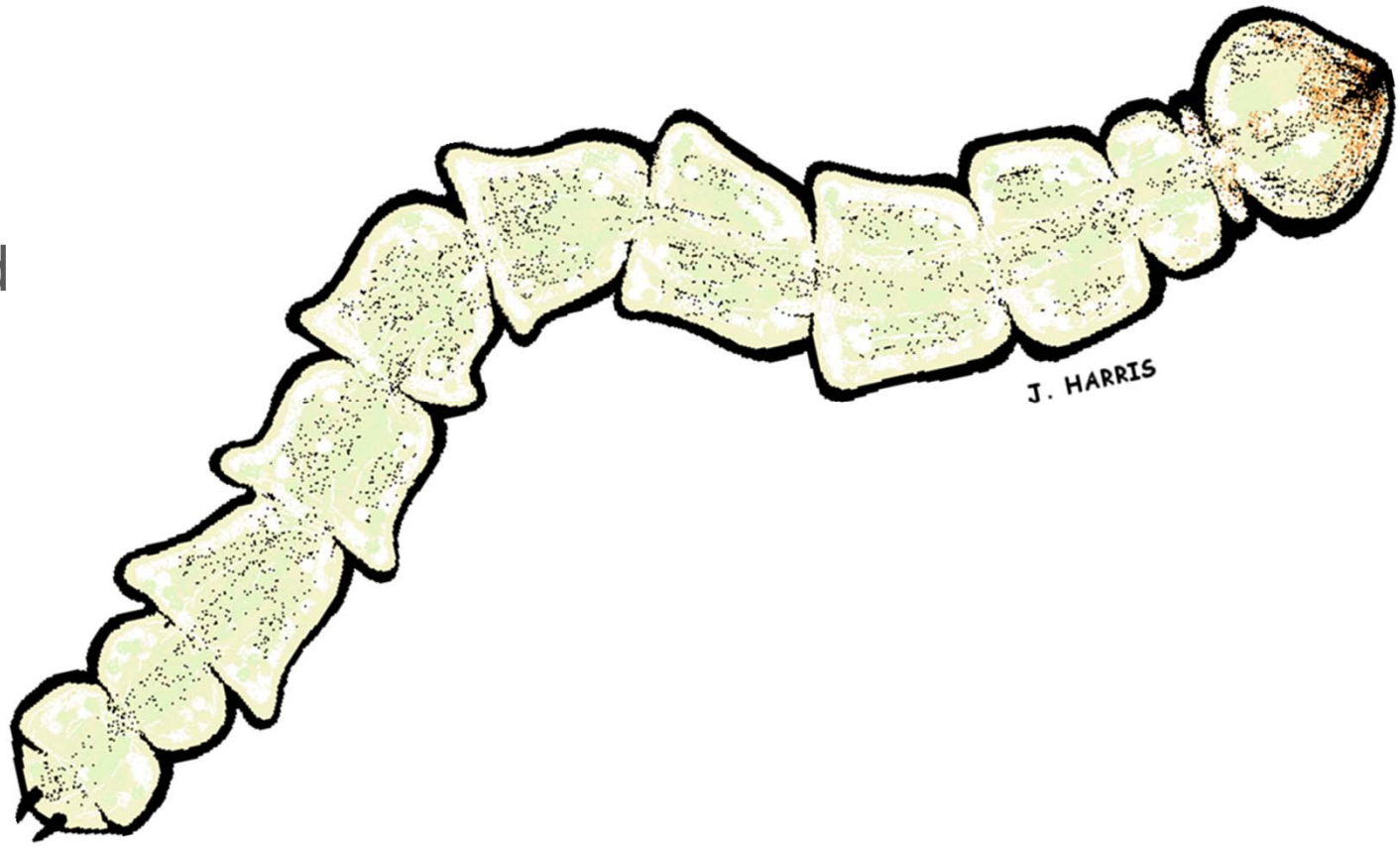
Cost

Conclusion



Introduction

- A woodboring beetle that originated from Asia
- First identified in Michigan during the summer of 2003
- Kills ash trees within 2-5 years

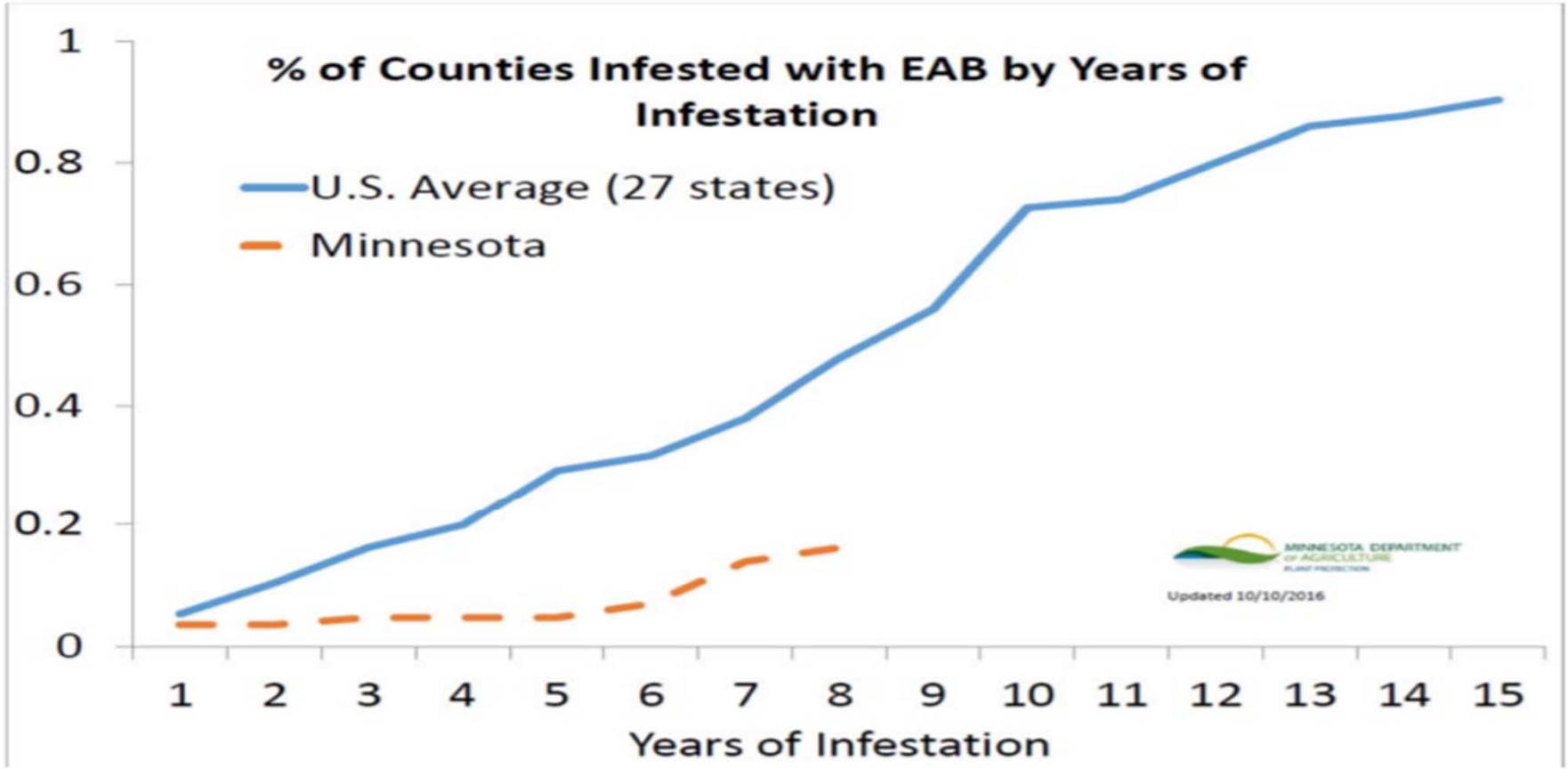
Background

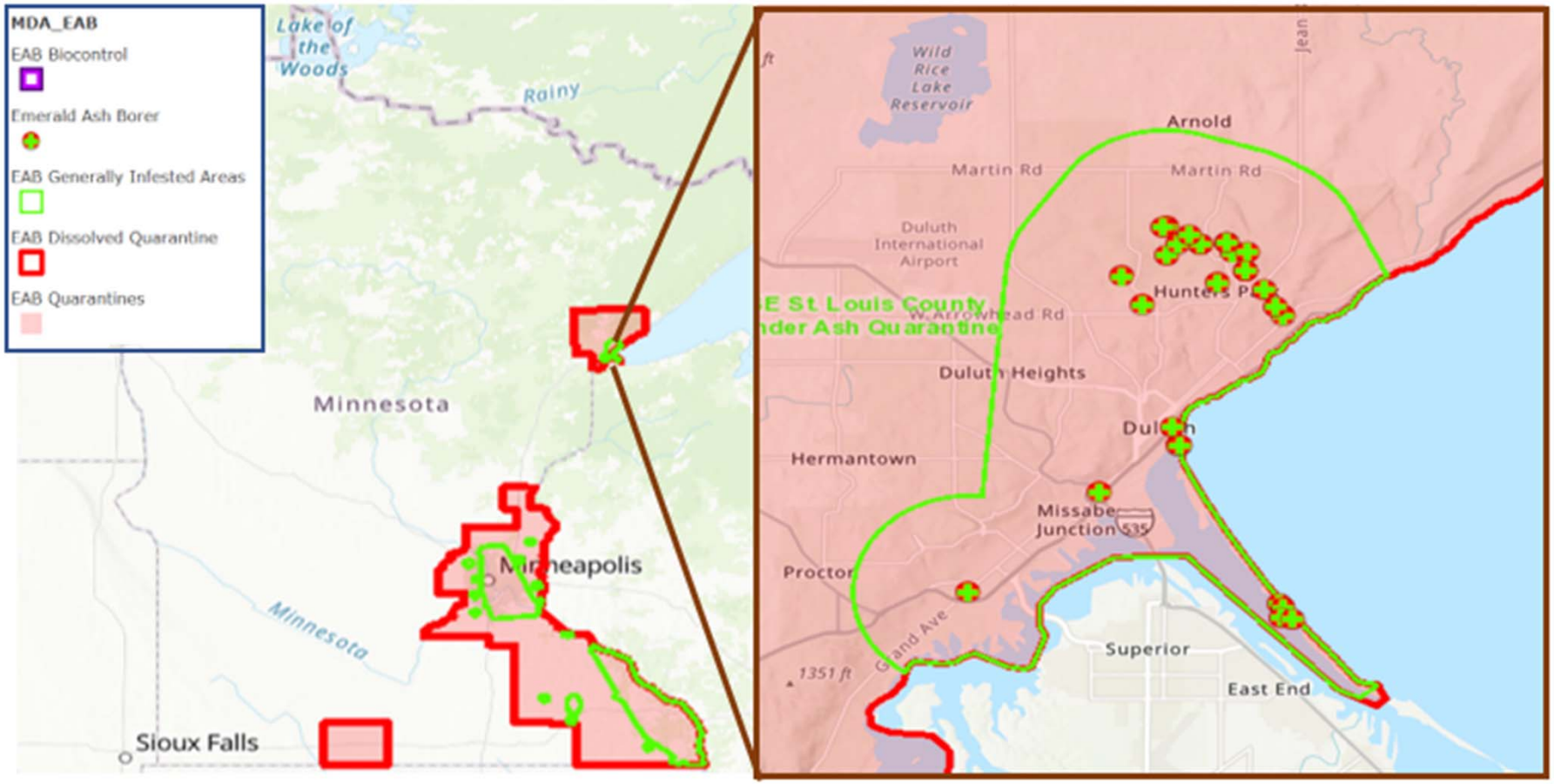
- Emerald Ash Borer (EAB) targets Ash trees of varying species
- Black Ash wetlands cover aprox. 1 million acres of MN
- Critical in water table regulation for flora/fauna diversity
- No efficient method of biological/silvicultural control has been discovered

How is the Emerald Ash Borer Spread

- Most commonly spread by people moving infested materials
  - Firewood
  - Logging material
  - Nursery stock
- Spreads naturally through flight
  - Adults can travel up to 10 km
  - Generally stay within a few kilometers of where they emerged
- Naturally a very slow moving insect

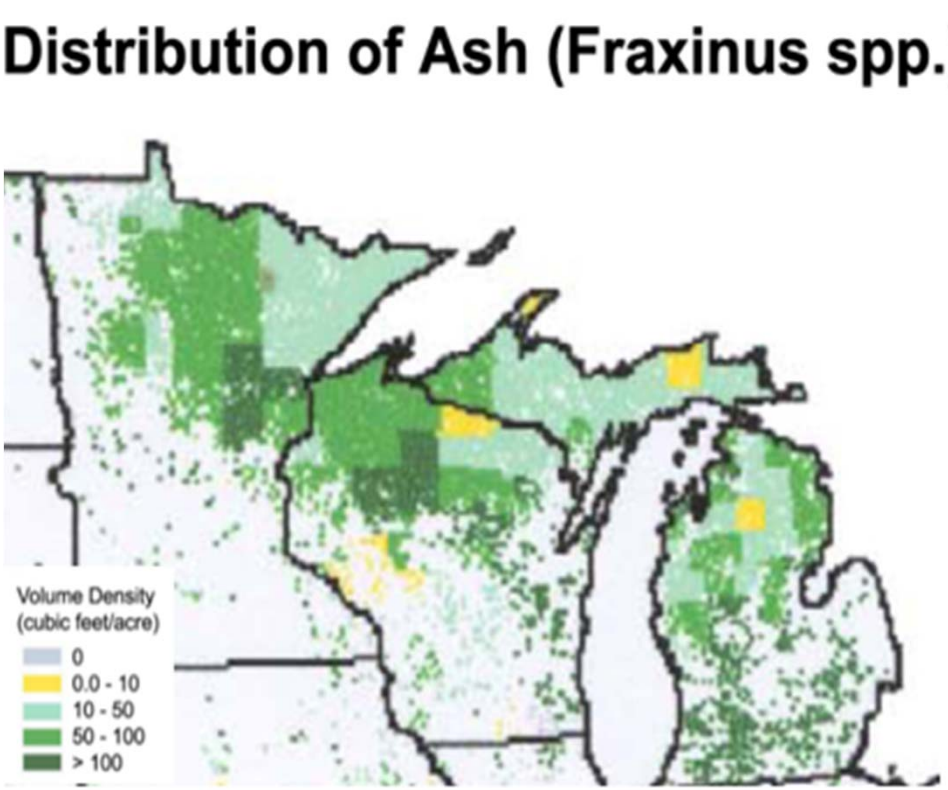
Rate of Spreading in Minnesota




MDA_EAB
EAB Biocontrol
Emerald Ash Borer
EAB Generally Infested Areas
EAB Dissolved Quarantine
EAB Quarantines
Lake of the Woods
Rainy
Minnesota
Minneapolis
Minnesota
Sioux Falls
Wild Rice Lake Reservoir
Arnold
Martin Rd
Martin Rd
Duluth International Airport
E St Louis County
nder Ash Quarantine
W Arrowhead Rd
Duluth Heights
Hermantown
Missabe Junction
535
Proctor
Grand Ave
1351 ft
Superior
East End

What is at Stake

- Estimated 1.1 billion ash trees in Minnesota
  - Most of any state (8.8 billion in the country)
  - Value of $35 billion dollars



Treatments

- Insecticides
  - Imidacloprid
  - Acephate
- Predatory Species
  - Asian Wasp
  - Woodpeckers
- Replacement Species

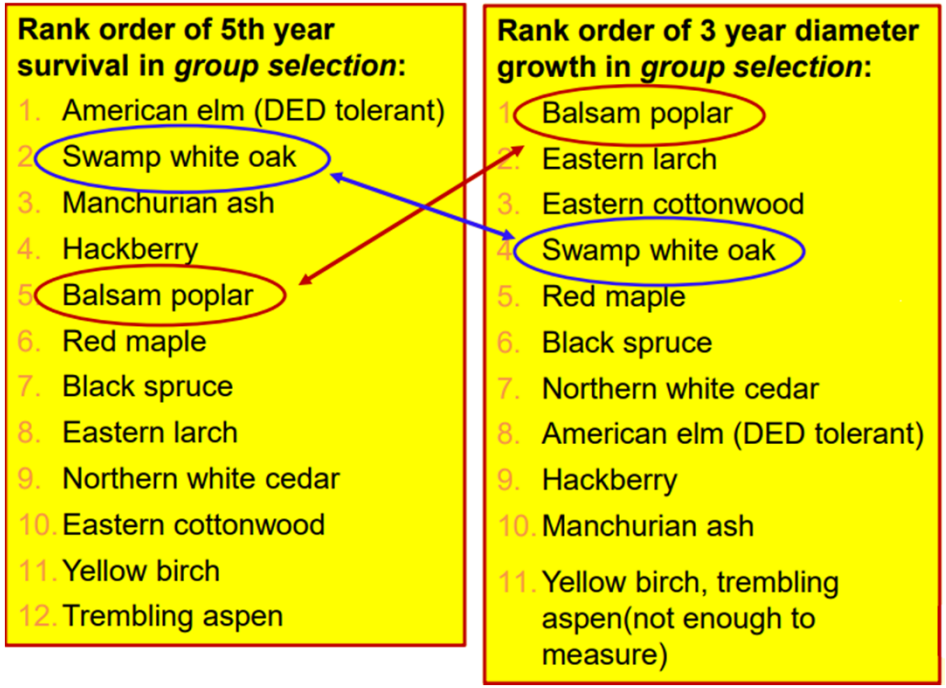
Insecticide Products Available to Professionals and Homeowners for EAB Control

Insecticide Active Ingredient	Examples of Products Available to Professionals	Examples of Products Available to Homeowners	Treatment Frequency and Optimal Timing[1]	Application Methods Available to Professionals	Application Methods Available to Homeowners
Emamectin benzoate (Avermectin)	• TREE-äge Restricted Use Pesticide. Any person using this product is required to be a licensed or certified pesticide applicator.	• Arbormectin	Every 2 years Early May to mid-June	Trunk injection	Trunk injection (requires specialized equipment)
Dinotefuran (Neonicotinoid)	• Safari • Transtect	• Ortho Tree & Insect Control Granules	Once per year (bark spray) 1-2 times per year (other methods) Early May to early June	Bark spray; soil injection; soil-applied drench	Soil-applied drench
Imidacloprid (Neonicotinoid)	• Merit products • Xytect/Optrol products • Ima-jet	• Xytect/Optrol products • Bayer Advanced Tree and Shrub Insect Control • Bonide Tree and Shrub Insect Control • Ferti-lome Systemic Insect Drench • Ortho Max Tree and Shrub Insect Control	1-2 times per year[2] Late April to late May and/or mid-fall (before ground freezes)	Trunk injection; soil injection; soil-applied drench	Soil-applied drench
Imidacloprid + Clothianidin (Neonicotinoids)	• Bayer Advanced 12 Month Tree & Shrub Protect & Feed Concentrate II	Bayer Advanced 12 Month Tree & Shrub Protect & Feed Concentrate II	1-2 times per year Late April to late May and/or mid-fall (before ground freezes)	Soil-applied drench	Soil-applied drench
Azadirachtin (neem tree seed oil)	• TreeAzin	None	Once per year Early May to mid-June	Trunk injection	None

[1] Application timing will vary in Minnesota, depending on location and seasonal temperature fluctuations.
[2] Recommended only for trees less than 48 inches in circumference (as measured 4½ feet above ground level); for exceptions, check specific pesticide product labels.

Replacement Species

Tamarack	Yellow birch
White cedar	Balsam fir
American elm	Red maple
Black spruce	Quaking aspen
Balsam poplar	Silver Maple



Cost

- Estimated to be ~1.1 billion rural ash trees in MN
- According to the USFS it cost about ~$300 dollars to treat one tree
- Money is the main limiting factor in fighting these invaders

Randy Kolka- US Forest Service

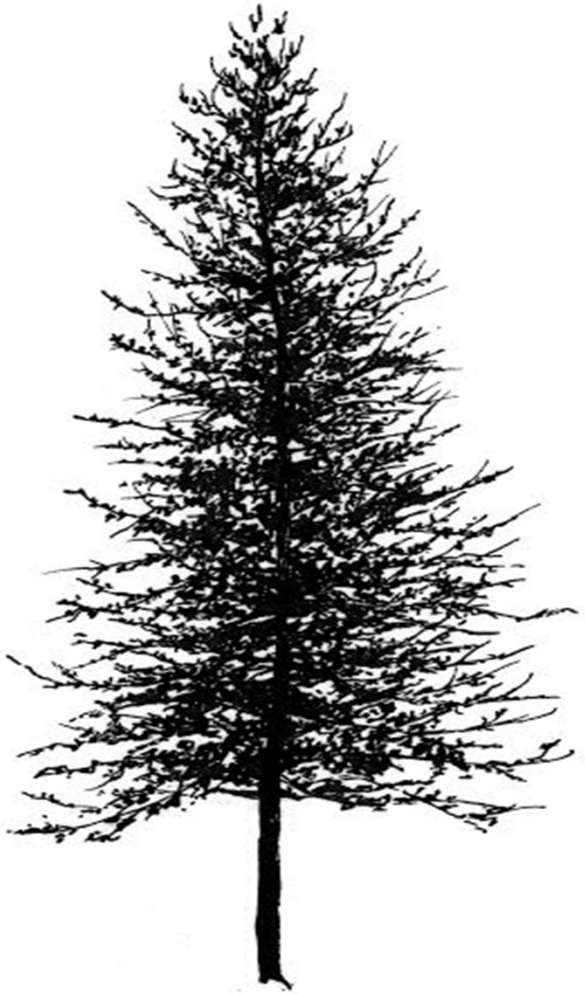
(Center for Research on Ecosystem Change)

- Too late to treat once infestation is noticed
- Treatment cost is unfeasible on a state budget
- We should be leery of introducing more invasives

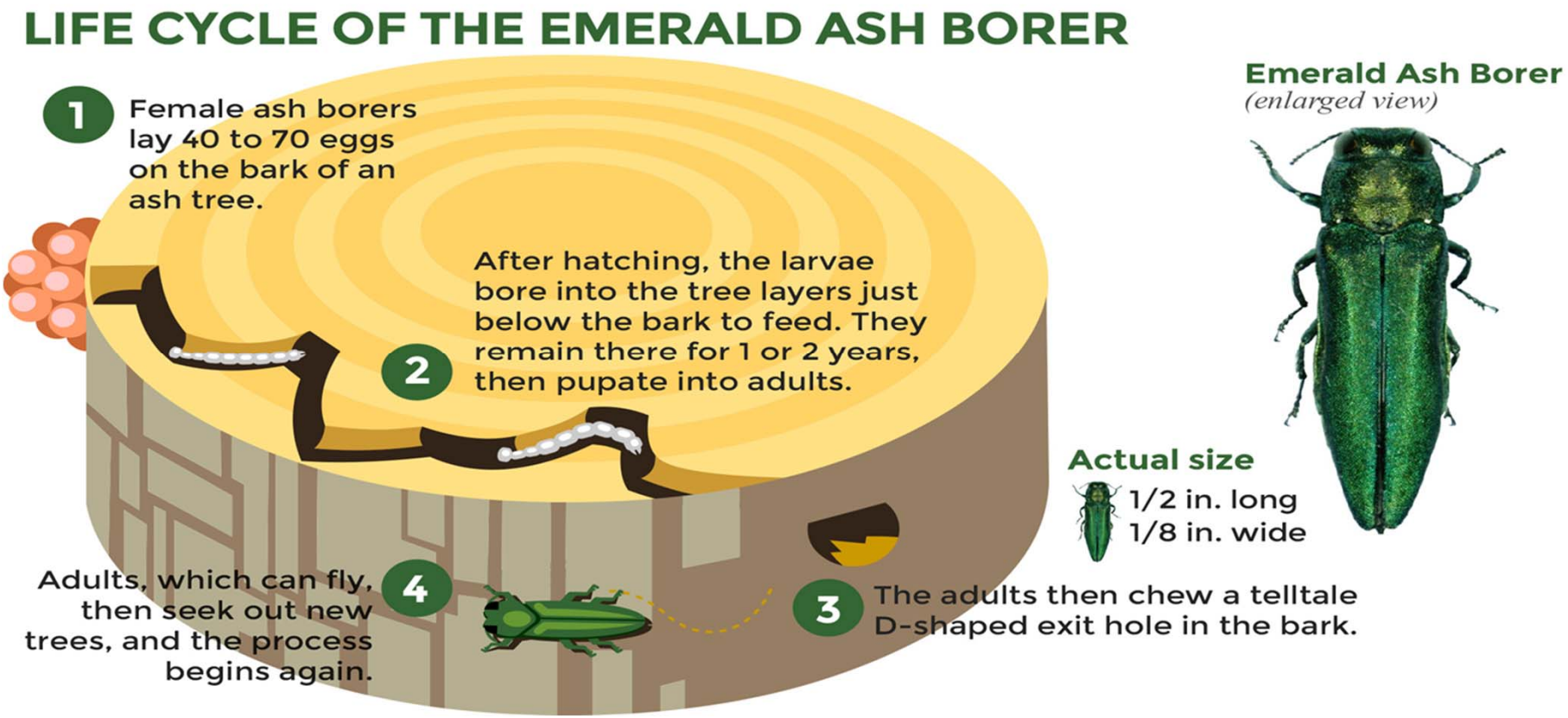
Gene jockeys are working to isolate genes in EAB resistant ash trees

Conclusion

- No proper cure is currently available
- Slowing the spread is vital
  - Decreases cost/time ratio
  - Let's science catch up
- Replacement species are only current option



Identification



Signs & Symptoms

- Physical damage
- “Zig-zag” feeding lines under bark
- D-shaped exit holes
- Damage from birds/other species

Tree Symptoms

- Epicormic shoots

- Bark deformities

- Yellow/dead/thinning foliage

What To Do If You Suspect EAB Infestation

National Emerald Ash Borer Hotline: (866) 322-4512

Questions?