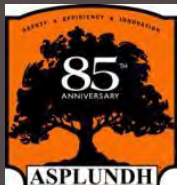


# EMERALD ASH BORER

## WHAT EVERY MUNICIPALITY SHOULD KNOW



**ASPLUNDH TREE EXPERT CO.**

# WHAT'S BEING SAID ABOUT EAB

“EAB is always worse than it appears to be...always.”

“EAB is an ecological and economic tornado.”

“It's nature out of balance, out of whack.”

“It's an ecological catastrophe.”

# HEADLINES

- “Syracuse will lose half its ash tree population to emerald ash borer”
- “3,000<sup>th</sup> ash borer infested tree about to be felled in St. Charles”
- “Frankfort to spend \$150,000 to combat Emerald Ash Borer”
- “Schaumburg trying to treat infected trees, as costs keep rising.”
- “Wheaton to remove all (5,500) parkway ash trees”

# EAB BASIC FACTS

- EAB is an insect pest native to Asia that feeds on ash trees.
- It is a small green beetle about 1 cm in length.
- EAB was first discovered in 2002 in Detroit, MI & Windsor, ON
- EAB kills most native ash species and cultivars. Blue ash is somewhat resistant.
- Adult EAB emerge through a small hole shaped like the letter “D.”



# EAB LIFE CYCLE

## Spring

- Adults emerge from D-shaped exit holes. Adults feed for at least two weeks.

## Summer

- Adults mate, female lays upwards of 100 eggs, eggs hatch, larvae tunnel into tree

## Fall

- Larvae feed under bark

## Winter

- Larvae pupate under bark



# EAB DAMAGE

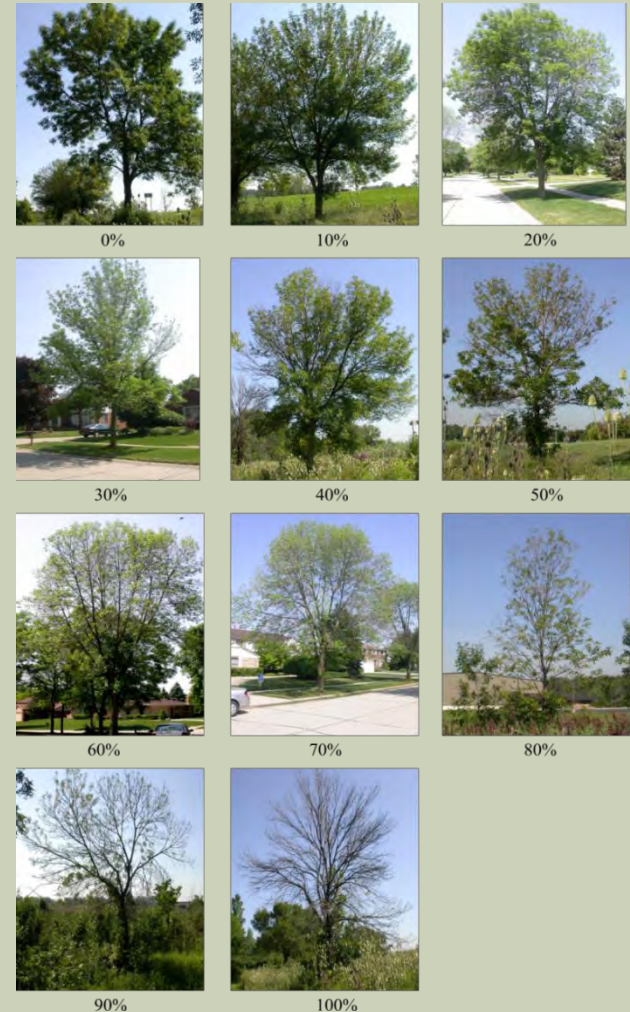
Damage to the tree is done by the larval stage as it eats the living tissue under the bark (phloem).





# EAB INFESTATION FACTS

- It takes 3-5 years, sometimes longer, for an infested tree to decline and die.
- Newly infested trees may show no outward sign of decline for one or more years.
- Early signs of infestation include thinning crowns, branch dieback and woodpecker activity.
- There is no practical way to prevent EAB from spreading to un-infested areas.



# HOW BAD IS THE INFESTATION?

- Approximately 50 million ash trees in eastern North America have been killed.
- Hundreds of millions more are probably currently infested.
- Most of the estimated **7.5 billion** ash trees in the U.S. are likely to become infested and die as EAB spreads.
  - Dutch Elm Disease killed an estimated 75-100 million American elms.
  - Chestnut Blight killed an estimated 4 billion American chestnut trees.





# POPULATION BUILD-UP



# ASH NATIVE RANGES

The four main species of  
ash are native to:  
  
42 US states  
&  
6 Canadian provinces



# ASH NATIVE RANGES

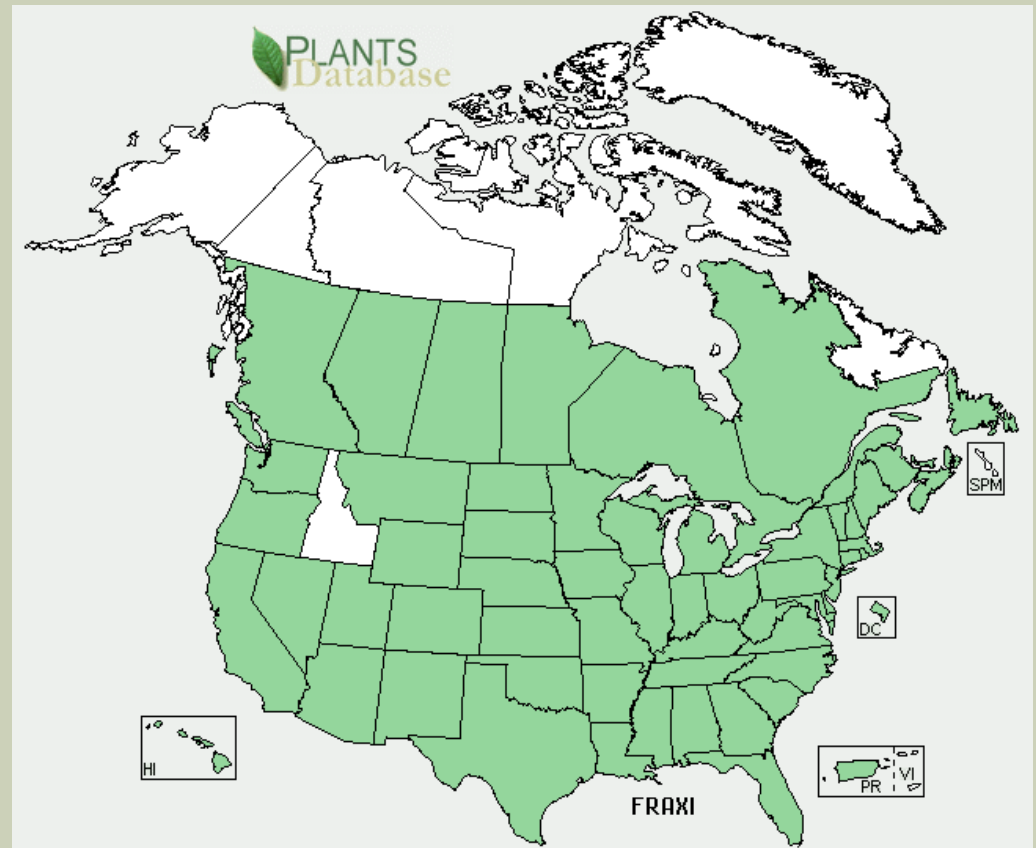
Lesser ash species are native to 6 additional states and 2 additional provinces.



# COMPOSITE NATIVE ASH RANGE

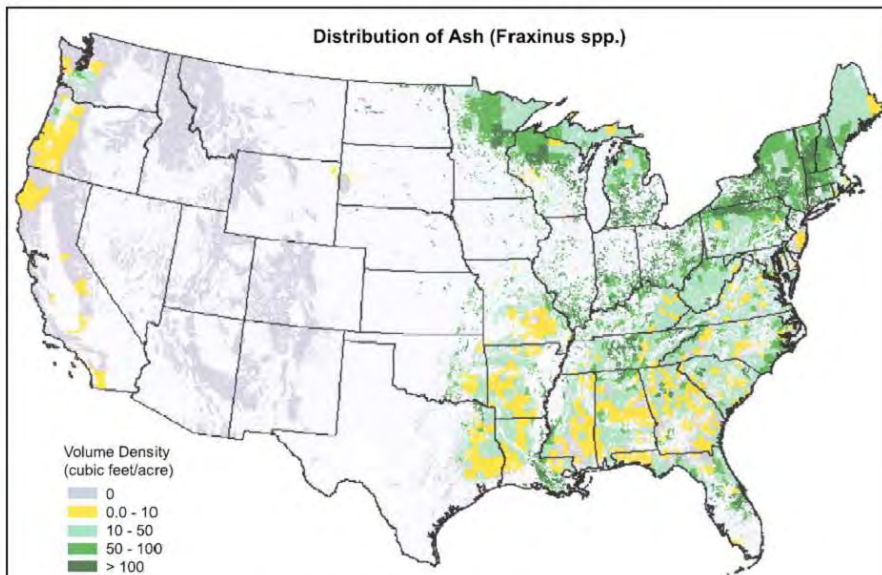
Making 49 US states and 8 Canadian provinces and territories susceptible to ash mortality from this insect\*

\*Idaho has no native ash species but has planted ash as an ornamental and street tree!



# DISTRIBUTION OF ASH SPECIES

- The New England states, New York, Pennsylvania, Michigan, Wisconsin and Minnesota have the highest volume density of native trees.

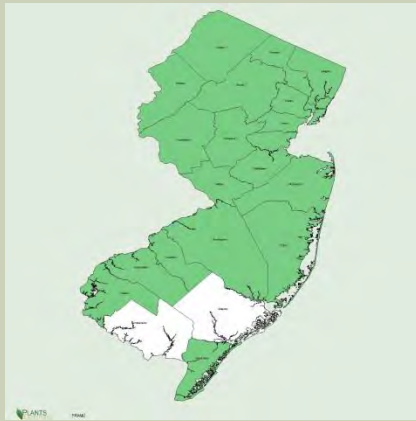


USDA Forest Service data sources:  
County-level estimates of ash densities derived from Forest Inventory and Analysis (FIA) data.  
Forest/non-forest overlay derived from AVHRR satellite imagery.

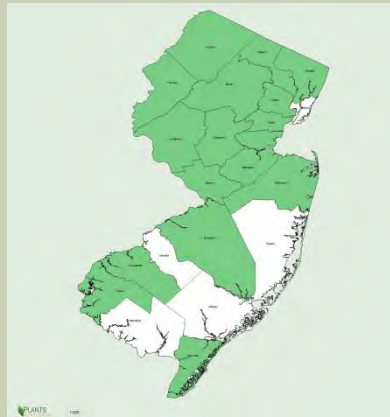
However, ash trees have been widely planted in cities and towns throughout the U.S. These trees have a greater potential for damage or injury when they fail.



# DISTRIBUTION OF ASH IN NJ



White Ash



Green Ash



Black Ash

The Emerald Ash Borer has arrived

# OAKVILLE, ONTARIO

- Population: 182,000
- 177,300 total ash trees, **44,000 of which are on private property.**
- Canopy coverage potential loss: 9.6%
- Estimated cost for EAB mitigation: **\$60 million?**
- Number of ash trees treated annually: 5,800
- Residents have 30 days to remove a dead ash tree if notified by the town.

# MILWAUKEE, WISCONSIN

- Population; 599,000
- 33,000 total **public?** ash trees
- Potential **street tree canopy loss?**: 17%
  - 28,000 ash trees 8" dbh or larger were injected (\$58/16" dBH tree done by staff)
  - 5,000 ash trees smaller than 8" are scheduled to be removed and replaced
- All 33,000 will be removed over time.

# SYRACUSE, NY

- Population: 144,200
- Public ash tree population: 2,000
- Potential canopy loss: Unknown
- Removal and replacement costs are \$900,000
- Injection costs are \$90,000 initially with re-injections costing the same every three years.
- Private tree removal costs will be the responsibility of the land owner.

# CHICAGO

- Population: 2,071,000
- Public ash tree population: 85,000
- Potential public canopy loss: 17%
- Estimated 300,000 private ash trees
- Removal and replacement costs: Unknown
- City forestry crews will inject 35,000 ash trees this year and another 35,000 next year, then assess every 3 years for removals or retreatments



# TREATMENTS

- Individual trees can be treated by injecting an insecticide.
- Treatments are annual or biannual, depending on product
- Trees should be evaluated and prioritized for treatments. Treating all trees, or even the majority of trees in an area, is not practical.



Emamectin benzoate (TREE-age) has been proven to be effective against EAB for 2 years

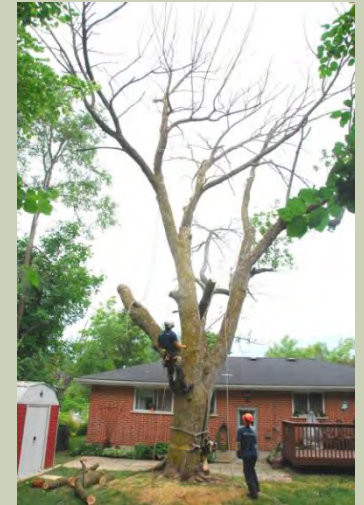
# ECONOMIC IMPACTS TO COMMUNITIES

- Cost of plan development, inventory and field work
- Cost of administration of program
- Cost of treatment or removal
- Cost of replacement trees
- Cost of wood waste disposal
- Loss of benefits from removed trees



# OTHER ECONOMIC IMPACTS

- Cost to the nursery industry
- Cost to the wood products industry
- Increased air conditioning costs
- Decrease in home values





# ECOLOGICAL IMPACTS

- Loss of animal habitat
- Change of forest composition
- Devastation of major tree genus
- Possible increase of invasive plant proliferation
- Soil erosion, effects on riparian buffers, etc



# WHAT TO DO---LEARN

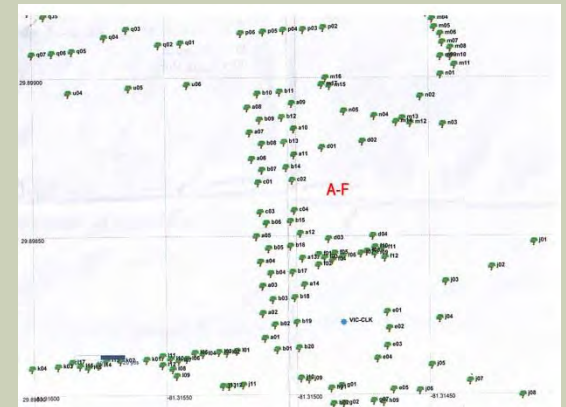


- Learn as much as you can about EAB and how to prevent it's spread.
- Become familiar with treatment options and how much they cost.
- Investigate how other towns have dealt with EAB.
- Explore regulations & options of using or disposing of wood waste.
- Become familiar with SLAM (SLOw Ash Mortality)



# WHAT TO DO---INVENTORY

- You can't effectively manage unless you know what you have!
- Engage a reputable arborist or tree care company to perform the inventory or provide technical help.
- Inventory your ash trees to determine
  - how many you have
  - where they are
  - their size
  - what kind of condition they are in
- Identify high value trees for possible treatment.



# WHAT TO DO---PLAN

- Determine how vulnerable your community is.
- Develop a public awareness program to explain what you are doing and why.
- Review/modify your ordinances to make sure you have authority to deal with ash on private property.
- Determine what you can do to help property owners with their trees.
- Develop a replanting plan

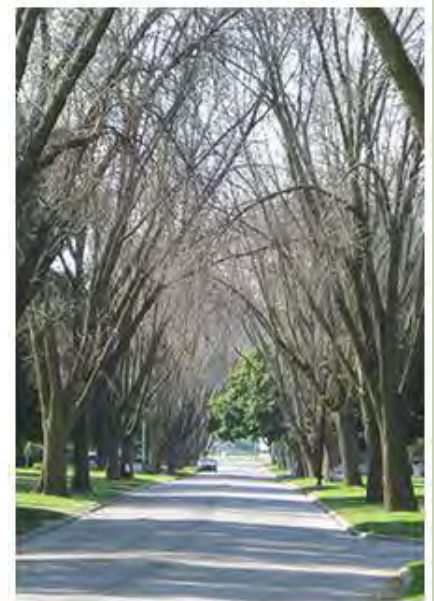


Photo Credit: Dan Herms, OSU

# WHAT TO DO---PLAN



- **Prioritize your ash population**
  - Injections
  - Removals
- **Get input from departments and personnel that will be part of the mitigation process.**
- **Develop budgets and work plans.**
- **Meet with contractors to see what their capabilities are.**
- **Contact other municipalities and counties to discuss shared equipment and services.**



# WHAT TO DO---BE PROACTIVE



- Start removing low value ash trees as soon as you can. The earlier you start;
  - the less available food for EAB,
  - the less impact to your budget,
  - the lower the overall cost,
  - the greater the availability of contractors and equipment, and
- Start treating high value ash trees.
- Start replanting as soon as feasible.



# WHAT TO DO---MANAGE THE PROCESS

- Implement SLAM procedures to slow mortality and spread.
- Remove trees on a schedule that doesn't significantly disrupt other important urban forestry operations.
- Plant new tree species while preserving some ash street tree canopy.
- Manage public safety risk by following your plan.





# SLOW ASH MORTALITY (SLAM)

- SLAM is a management strategy designed to slow EAB invasion locally and give land managers additional time to proactively manage.
- SLAM is an integrated approach that's designed to suppress population growth of EAB using four main components:
  1. Systemic insecticides to kill EAB adults and larvae
  2. Prompt removal of infested trees prior to adult emergence
  3. Attracting beetles to trap trees that are removed before adults can emerge
  4. Harvesting and utilizing ash wood



# RESOURCES

## ■ EAB Information

- <http://www.emeraldashborer.info/index.cfm#sthash.04FvD3Mw.dpbs>

## ■ EAB Information

- <http://datcpservices.wisconsin.gov/eab/articleassets/EAB-ReadinessChecklist.pdf>

## ■ EAB Workshop Webcast

- <http://www.urban-forestry.com/>

## ■ EAB Cost Calculator

- <http://extension.entm.purdue.edu/EAB/>

## ■ SLAM

- [http://www.slameab.info/wp-content/uploads/2010/05/SLAM\\_general.pdf](http://www.slameab.info/wp-content/uploads/2010/05/SLAM_general.pdf)