

Emerald Ash Borer
Wood County - 2005

Dan Balsler

ODNR, Division of Forestry

Emerald Ash Borer: *Agrilus planipennis*



David Cappaert, Michigan State University,
www.invasive.org



Ken Chamberlain, The Ohio State University / OARDC, Photo Lab

10 million dead ash trees (and counting)



History of EAB:

- Native to East Asia: NE China, E Siberia, Korea, Japan
- Discovered in SE Michigan in June 2002, but probably established 5-10 years...maybe longer?
- Probably arrived via infested pallets, crating, and / or dunnage.



Chronicle of Detections:

- SE Michigan, June 2002
- Windsor, Ontario, July 2002

Ohio Infestations:

- | | |
|---------------------------|----------|
| • Whitehouse (Lucas) | Feb 2003 |
| • Hicksville (Defiance) | Aug 2003 |
| • Payne (Paulding) | Aug 2003 |
| • Rossford (Wood) | Sep 2003 |
| • Columbus (Franklin) | Nov 2003 |
| • Swanton (Lucas) | Apr 2004 |
| • North Baltimore (Wood) | Jun 2004 |
| • Toledo / Oregon (Lucas) | Dec 2004 |

Other Infestations:

- Maryland, Virginia, August 2003
- NE Indiana, May 2004



Host Impact:

Larvae feed under bark; disrupt transport of water, nutrients, carbohydrates.

All major ash species are susceptible (white, green, black, blue).

Healthy trees killed within 1-3 years of infestation.

Trees of all size are colonized: 1 inch caliper to largest mature trees.



Potential Impact on Ohio

Total economic impact - \$3 Billion over 10 years

Natural Forests: 3.8 billion white ash trees. Ash used for flooring, cabinets, tool handles. Ash accounts for about 7.5% of annual sawmill receipts. Loss in economic activity from losing ash from Ohio forests would be about \$200 million per year.

Urban Forests: Ash is a very common street/yard tree. It would cost an estimated \$1.4 billion to remove urban ash trees in Ohio (3.4 million trees @ \$400 each).

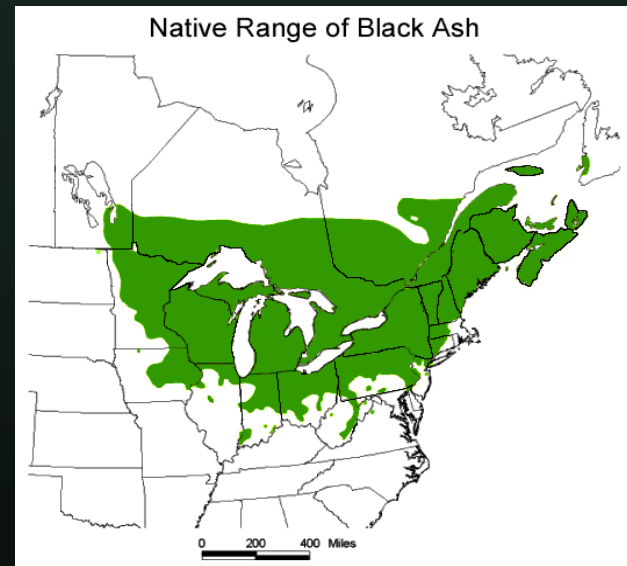
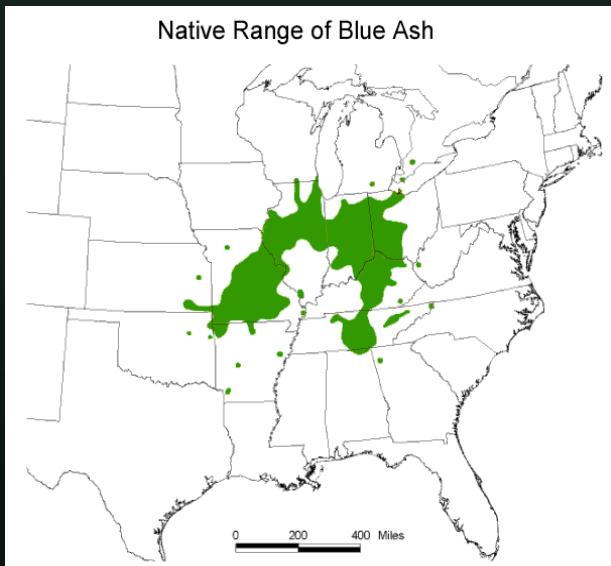
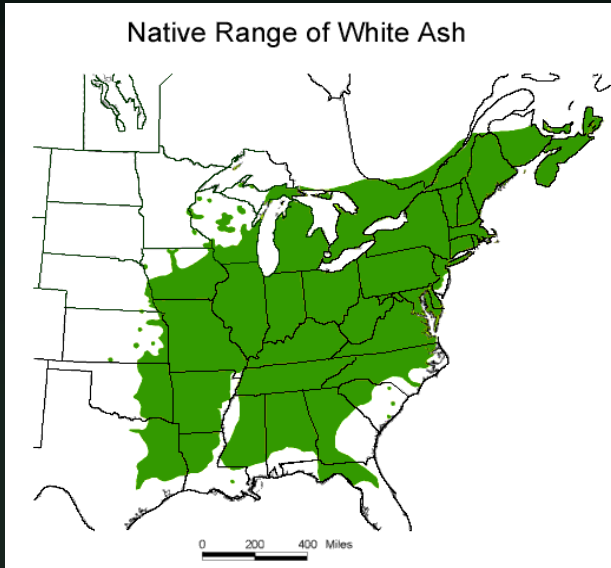
Nursery Industry: 27,000 ash trees sold in Ohio in 1998 worth \$2.3 million; standing crop exceeds \$20 million.

The most common trees in Ohio:

<u>Species</u>	<u>all size classes</u>	<u>> 5" DBH</u>
Black cherry	4.30 billion	108 million
Sugar maple	4.25 billion	76 million
White ash	3.86 billion	70 million
Red Oak	1.07 billion	65 million
Hickory	1.06 billion	75 million
White Oak	0.82 billion	76 million

Source: USDA Forest Service, Forest Statistics for Ohio, 1991.

Distribution of Ash



Buprestidae: Metallic Wood-Boring Beetles; Flatheaded Borers



EAB adult

Ken Chamberlain, The Ohio State University /
OARDC, Photo Lab

EAB Larva



Ken Chamberlain, The Ohio State University / OARDC, Photo Lab

Native Flatheaded Borers (Buprestidae)

Bronze birch borer



David G. Nielsen, The Ohio State University / OARDC

Twolined chestnut borer



Robert A. Haack, USDA Forest Service,
www.forestryimages.org

EAB life history similar to native relatives:

- One generation / year.
- Adults emerge late May – early August.
- Larvae develop mid- to late summer.
- Over-winter mostly as mature larvae
- Pupate in spring.

Adult Behavior



Feeding on foliage causes leaf notching.



Mate and oviposit on bark (50 – 100 eggs / female, laid singly).

Signs of EAB: larval galleries just under the bark



Serpentine, frass-filled galleries.



Symptoms of EAB: dieback and decline



Thinning canopy

Epicormic branching



Suckering from roots

Symptoms of EAB: thin bark splits caused by callus formation



Symptoms of EAB: unusual woodpecker activity in winter



Diagnosing emerald ash borer: the three key indicators



1. Small (1/8") D-shaped exit holes

2. Flat, tapeworm-like larvae with bell-shaped segments



3. Serpentine, frass-filled galleries just under the bark

Native borers are extremely common.

Clearwing borers (stressed trees):

- Banded ash clearwing borer
- Ash / lilac borer

Roundheaded borers (dieing / dead trees):

- Redheaded ash borer
- Banded ash borer
- Ash and privet borer

Bark beetles (dieing / dead trees):

- Eastern ash bark beetle

Management Plan:

1. Surveys for rapid detection of outlier infestations.
2. Eradicate outlier infestations.
3. Quarantines to prevent artificial spread.
4. Voluntary harvest of ash trees before infested

Cooperative Emerald Ash Borer Project

Ash Reduction Scenario

Michigan, Indiana, Ohio and Ontario, Canada

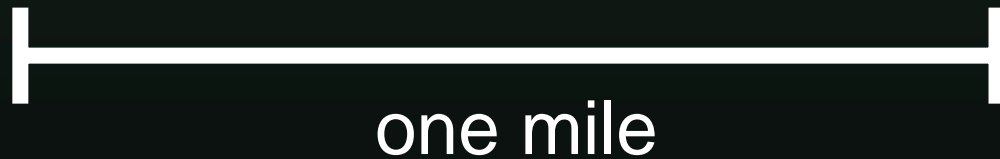
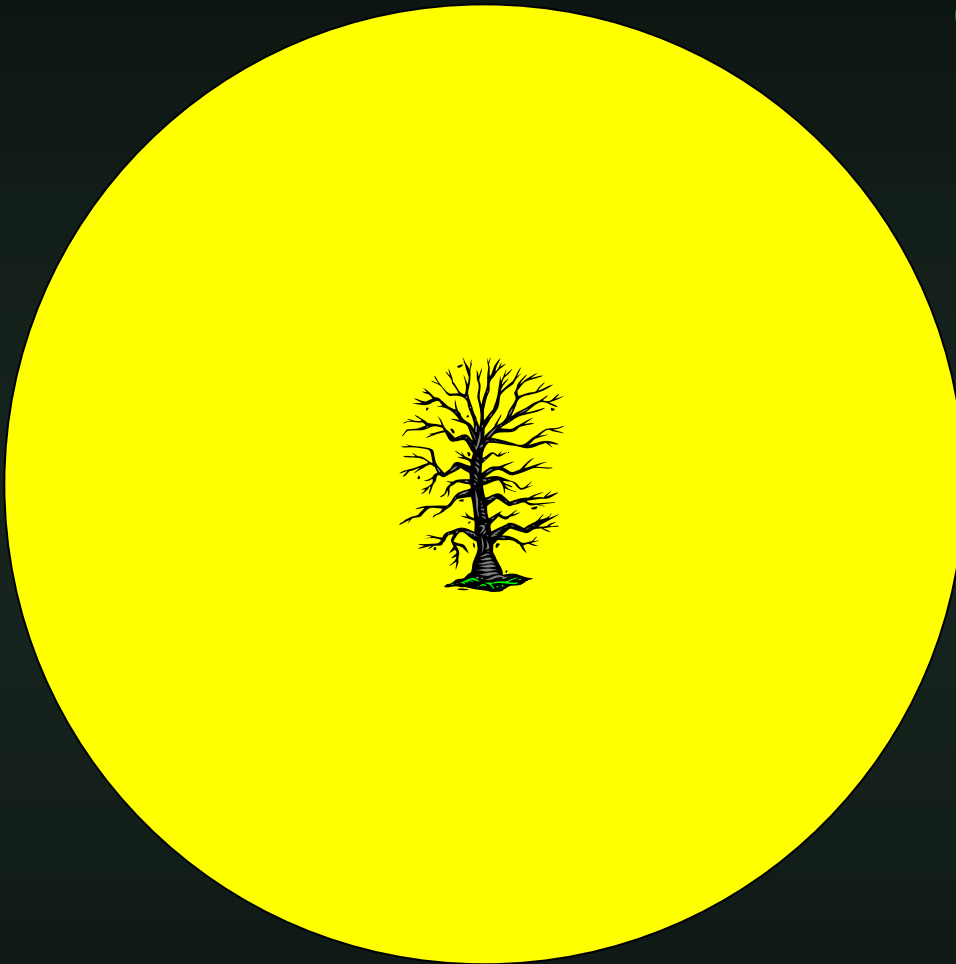
January 10, 2005



DRAFT - TROPY
Internal use only!

Current Plan for Outlier Infestations:

Cut every ash tree
within $\frac{1}{2}$ mile of
nearest visibly infested
tree.



Cooperative Emerald Ash Borer Program Positive Find Locations (As of 11/04/04)



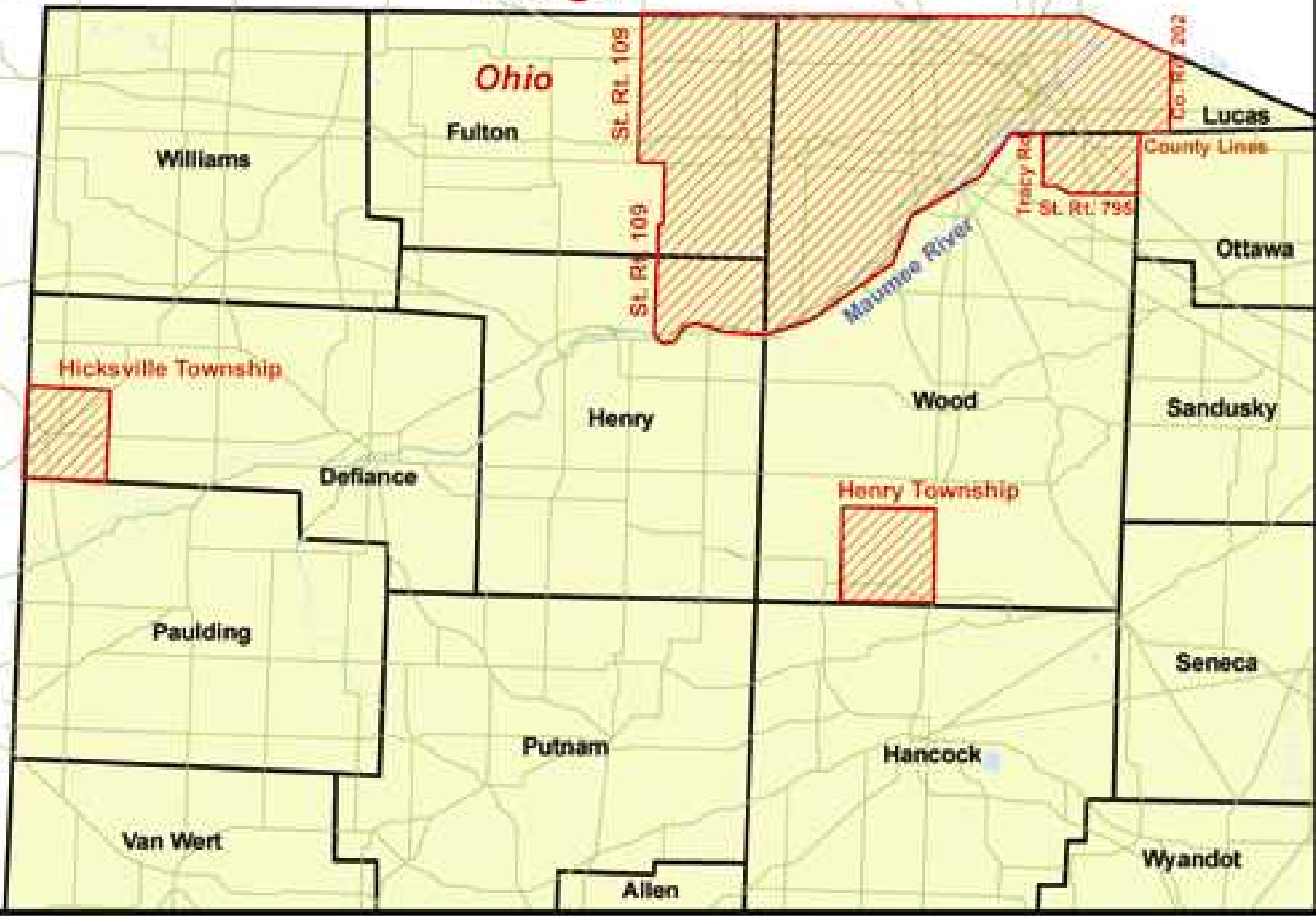
Quarantines: Federal, Michigan, Ohio

No movement of ash trees, logs, untreated lumber, or firewood from infested areas.



Michigan

Ohio



Williams

Fulton

St. Rt. 109

St. Rt. 109

Co. Rd. 202

Lucas

County Lines

Tracy Rd

St. Rt. 799

Ottawa

Maumee River

Henry

Wood

Sandusky

Defiance

Henry Township

Paulding

Seneca

Putnam

Hancock

Van Wert

Allen

Wyandot

Hicksville Township

Current Recommendations for Ohio:

- Maintain perspective! Eradication plan can work. Even if it doesn't, colonization of Ohio will be gradual, providing ample time to anticipate and plan.
- Foresters, homeowners and Green Industry Professionals should be aware of the problem, stay current, and monitor their trees.
- Suspected infestations should be reported to the ODA EAB hotline: 1-888-Ohio-EAB (1-888-644-6322).
- Pesticide treatments are not currently recommended outside core area (MI).