

Emerald Ash Borer

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Other borers of ash



Banded Ash Clearwing borer:
note the sawdust (frass) at the
base of the tree

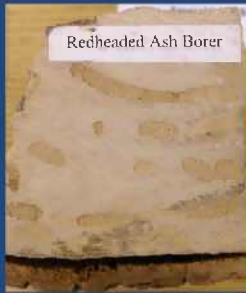


Shed pupal skin from the Banded Ash
Clearwing borer and round exit hole



Redheaded Ash borer





This borer penetrates into the heartwood of the tree. Also note the straight galleries

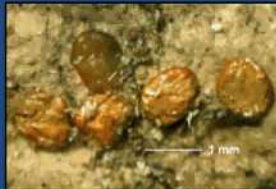


EAB damage is confined to the cambium. Galleries are much more serpentine like.



Life Cycle

Eggs: hatch in 1-2 wks



Larvae: feed July-Oct then overwinter



1 or 2 years

Pupae: spring



Adults: May



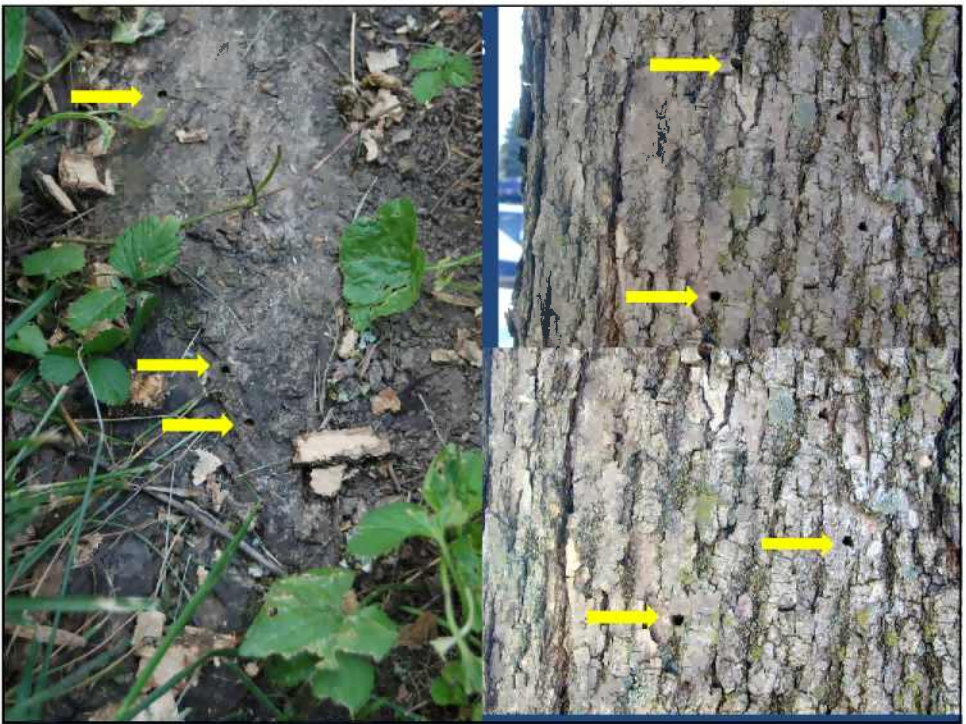
Symptoms

Crown Dieback



Epicormic Shoots







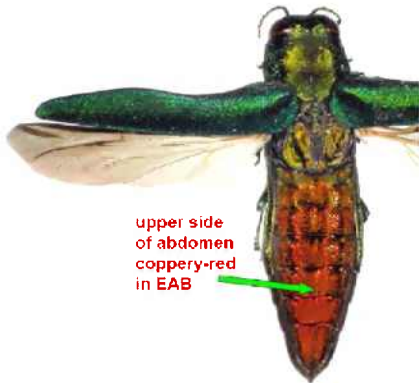
Hosts

- EAB feed and develop in ALL ash species
- No evidence of larval survival or development on any non-ash species
- EAB prefer Green>Black>White>Blue ash
- Prefer N. American ash to Asian ash

Adult on leaf



Leaf notching caused by adult feeding



upper side of abdomen coppery-red in EAB

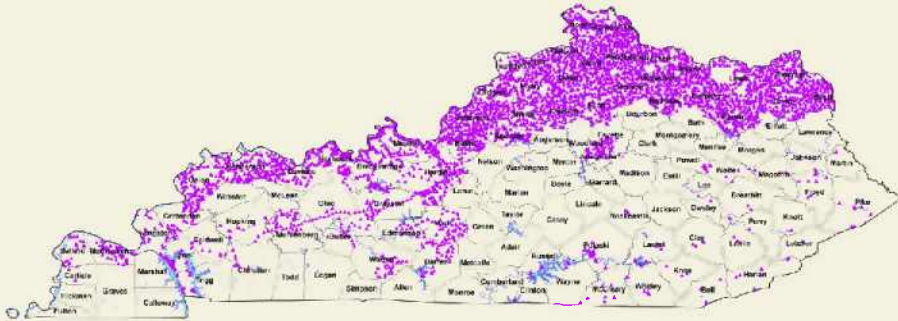




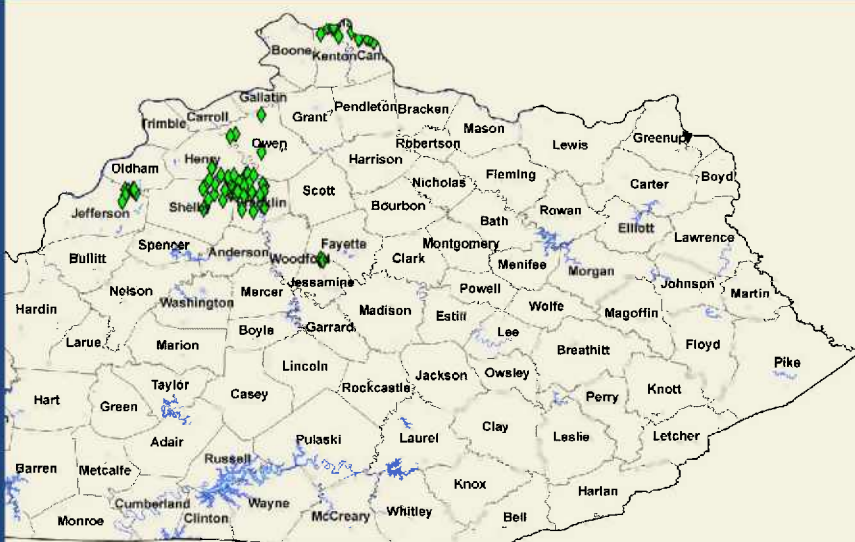
Purple Traps 2011

- 6,800 traps
- 96 counties
- April – August
- Screen Sept – Oct
- Overview of trapping program since 2009

2009 traps set



2009 positive traps

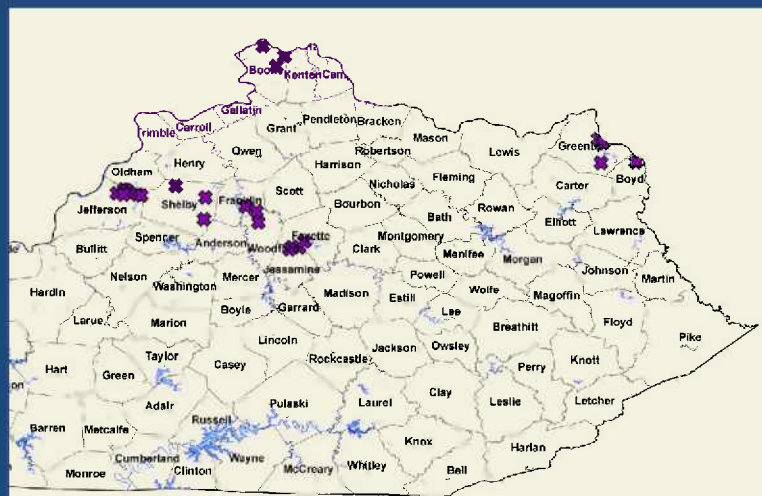


2010 traps set



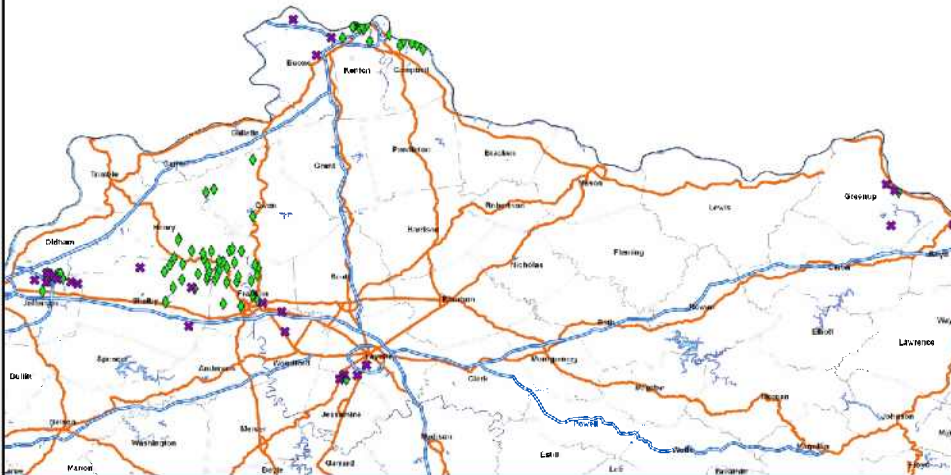
Trapping efforts move South

2010 positive traps

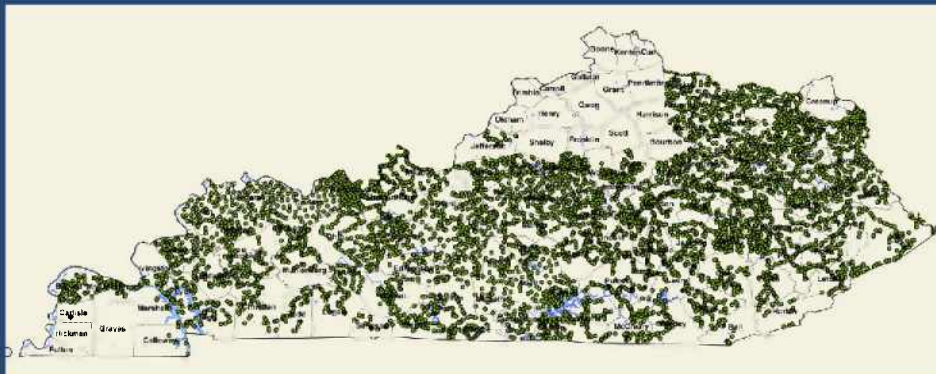


Same general area for positive traps

2009=green, 2010=purple



2011 traps set



What to expect:

- When EAB is found 5-8 miles from your location
- 5-7 years to build to peak population
 - Treat with imidacloprid during low populations (annual treatment)
 - Switch to emamectin benzoate in high populations
- Stays at peak for ~4 years
 - High rate of emamectin benzoate
- After peak, monitor tree.
 - Adjust treatments to meet population levels

Effects on timber

- EAB does NOT destroy heartwood
- Insect damage localized under bark
- Wood is still usable



Quarantined areas



What is Regulated?

Quarantined areas are regulated for:

- Emerald Ash Borer in any life stage
- Ash nursery stock
- Green non treated ash lumber





- Logs, stumps, roots, branches, composted and uncomposted wood chips ash limbs, or other ash products
- All hardwood firewood
- Ash logs
- Ash pallet stock
- Anything else determined to be a risk of spreading EAB.



Regulatory Agencies

- Federal –inter state movement
 - Contact USDA APHIS
 - (859) 586-2700
- State- intra state movement
 - www.KyStateEnt.org
 - (859) 257-5838

Found Parasitoid Wasps attacking EAB in China

- *Spathius* wasp: attacks EAB larvae
 - Found to parasitize up to 90% of EAB larvae in some ash stands in China
 - ectoparasitoid



Oobius agrili: attacks EAB eggs



Tetrastichus: attacks EAB larvae-
endoparasitoid

60% reduction of EAB in a Chinese forest

Larval Parasitoid – *Spathius agrili*



Leech-Like

Larval Parasitoids – *T. planipennisi*



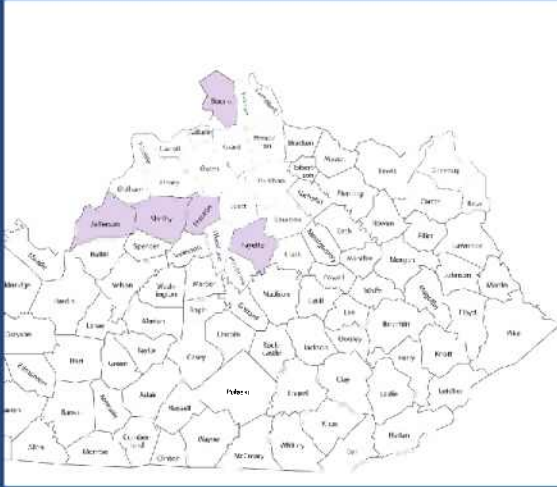
Alien-
Like



- May be long-term, sustainable solution
- Takes a while to know if it's working



Release sites in Kentucky



- *Tom Sawyer State Park – Louisville*
- *Cedarmore – Shelby County (northeast corner)*
- *Private woodland north of Frankfort*
- *Shillito Park – Lexington*
- *Devou Park – Covington (Boone Co)*

Outreach



Going camping?



Firewood spreads the emerald ash borer and other tree-killing invasive insects.

**LEAVE YOUR FIREWOOD
AT HOME!**

EmeraldAshBorer.info

