



WHAT'S BUGGING NC TREES?

Emerging Plant Pathogens & Insects

North Carolina Exotic Pest Plant Council Annual Meeting

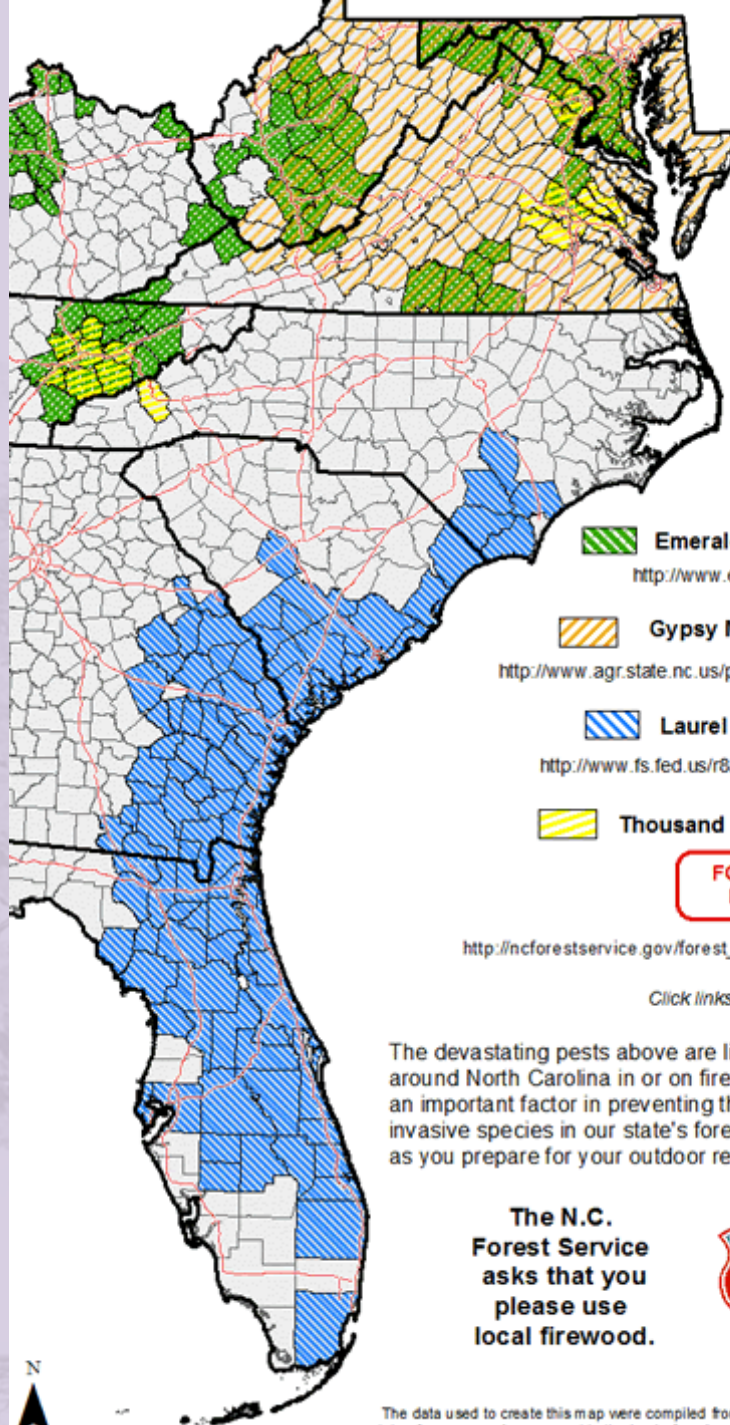
February 19, 2013

Carolina Beach, NC

Kelly Oten, PhD

Forest Health Specialist


North Carolina Forest Service





Where are they now?

Monitoring Firewood-Vectored Invasive Forest Pests in North Carolina

 **Emerald Ash Borer (12/7/2012)**
<http://www.emeraldashborer.info/>

 **Gypsy Moth Quarantine (1/3/2013)**
<http://www.agr.state.nc.us/plantindustry/plant/entomology/GM.htm>

 **Laurel Wilt Disease (8/7/2012)**
<http://www.fs.fed.us/r8/foresthealth/laurelwilt/index.shtml>

 **Thousand Cankers Disease (1/3/2013)**

**FOUND IN NC
FALL 2012**

http://ncforestservice.gov/forest_health/forest_health_thousandcankers.htm

Click links for more information

The devastating pests above are likely to be brought into or moved around North Carolina in or on firewood. The use of local firewood is an important factor in preventing the spread of potentially devastating invasive species in our state's forests. Please keep this in mind as you prepare for your outdoor recreation activities.

The N.C. Forest Service asks that you please use local firewood.



The data used to create this map were compiled from a variety of sources and are correct to the best of our knowledge.

Map Created 2/14/2013
By Jason Moan - FHM Coordinator

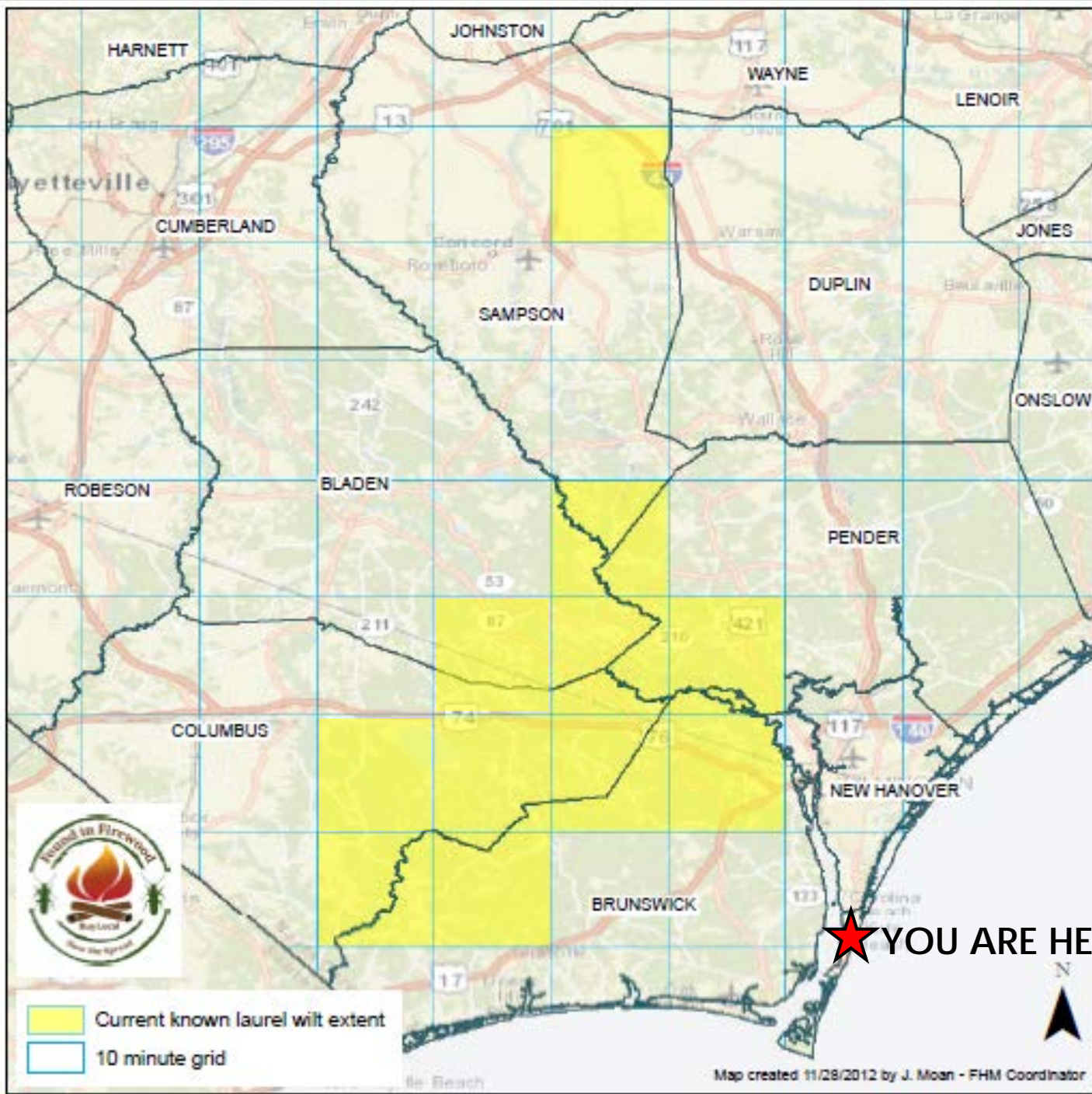
LAUREL WILT

- Vascular wilt spread by the redbay ambrosia beetle
- First detection in US: 2002 near Savannah, GS
- Human-assisted dispersal
- Hosts:
 - Plants in the family Lauraceae



UGA1413003

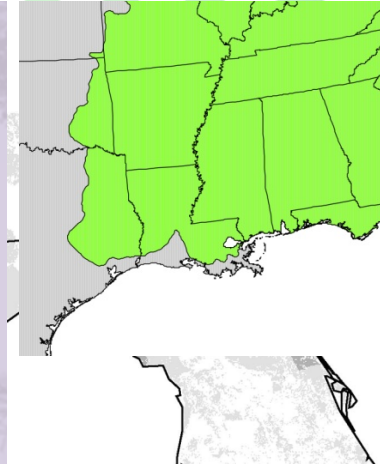




HOSTS



- Avocado



SIGNS & SYMPTOMS

- Wilting foliage
- Partial, then full crown death
- Frass "toothpicks"
- Vascular streaking
- Entrance holes (1/32")



WHY DO WE CARE?

- Landscape tree
- Cost of hazard tree removal
- Fire Hazard
- Public concern
- Ecosystem importance



MANAGEMENT OPTIONS

- No real options at this time
- Best thing right now: prevent further spread
 - Leave dead redbays where they are
- NCFS: Monitoring
- If suspected: Contact Forest Health Branch



BUTTERNUT CANKER

- Fungal disease causes many cankers
- First detected in 1967 in WI
 - Likely been in the SE much longer
 - Most likely exotic
- Spread by rainsplashed spores, possibly by insects and birds, and maybe seeds
- Host:
 - Butternut (white walnut)





Alien Forest Pest Explorer

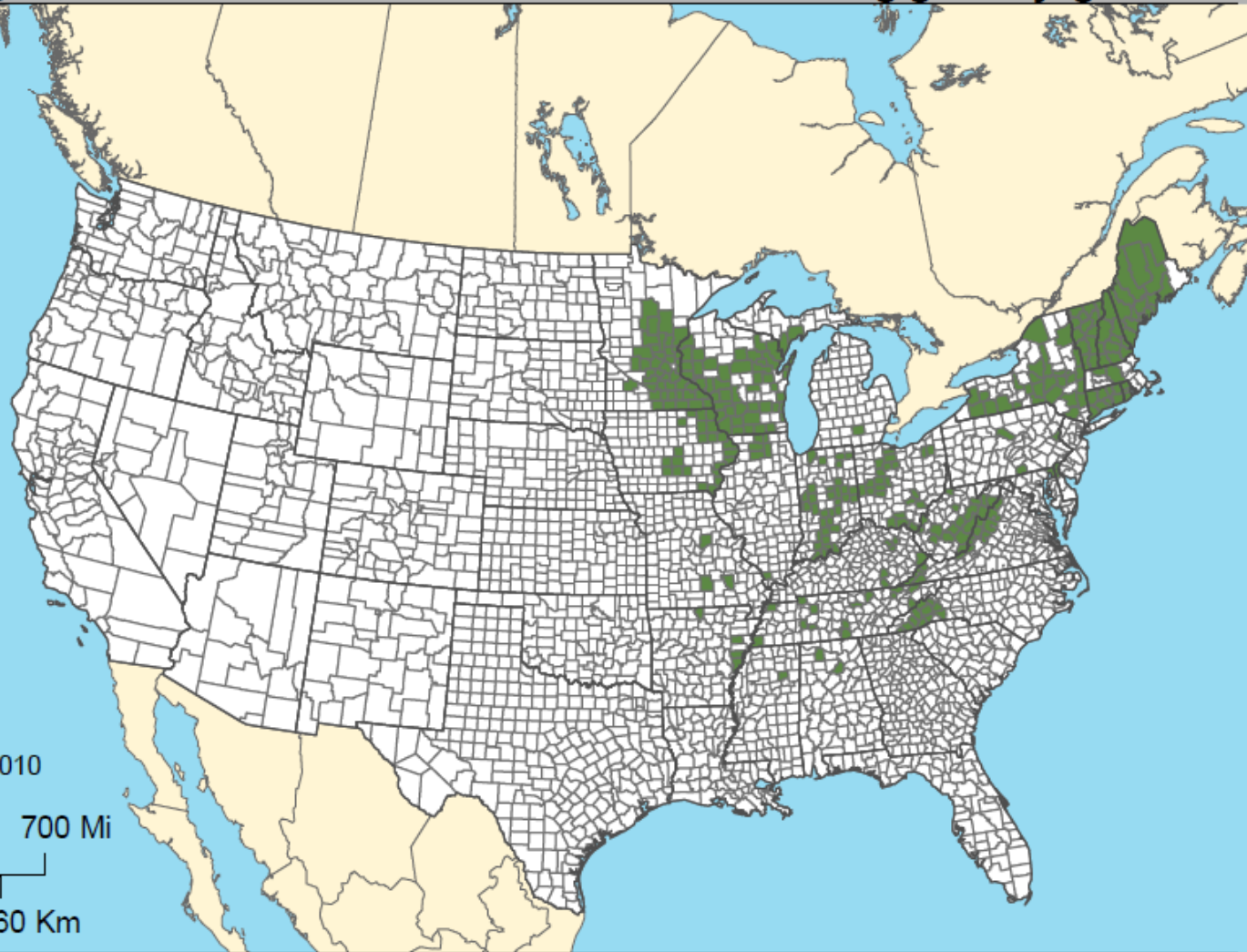
Pest Distribution Map


Butternut Canker

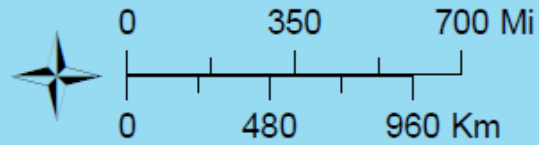
Sirococcus clavignenti-juglandace

www.fs.fed.us/ne/morgantown/4557/AFPE/

Alaska



 Distribution as of 10/25/2010



USDA
Forest
Service



Northern
Research
Station



Eastern Forest
Environmental Threat
Assessment Center



Forest Health
Technology
Enterprise Team



RSAC Remote Sensing
Applications
Center

SIGNS & SYMPTOMS

- Elongate, sunken canker
 - Often with black center & white margin
 - Near leaf scars/buds, wounds in bark
- Cracks in bark
- Dieback, death



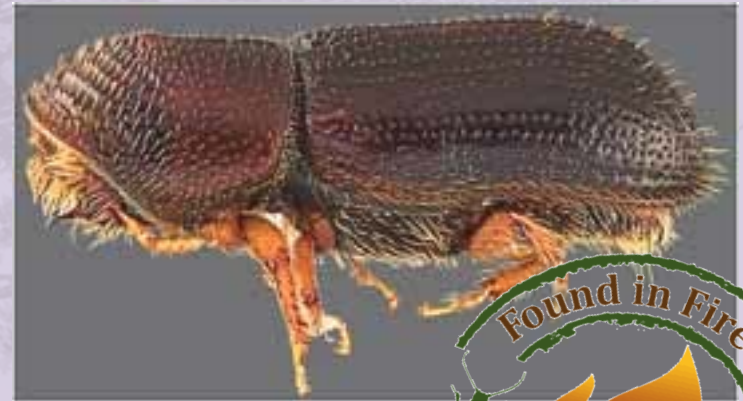
MANAGEMENT OPTIONS

- No real options at this time
- Ongoing research: putatively resistant varieties
- Do not destroy infected trees
 - Can live on dead host for 2 yrs.
 - Has already spread
 - Tree could be partially resistant
- Don't spread seed

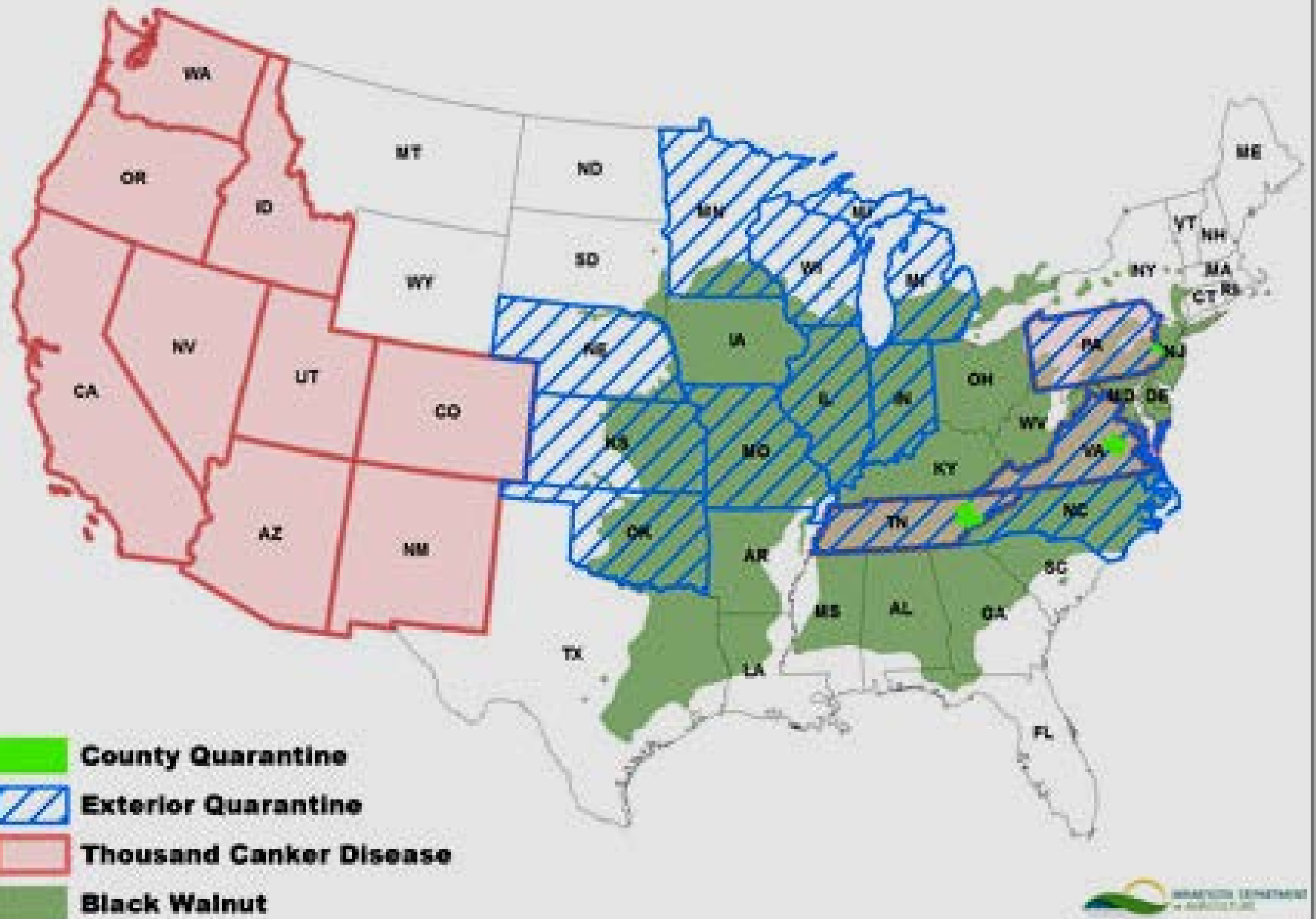


THOUSAND CANKERS DISEASE

- Fungal disease causes many cankers
- Spread by the walnut twig beetle
- First detection in eastern US: 2011 in Knoxville, TN
- Human-assisted dispersal
- Hosts:
 - Black walnut
 - Butternut



NATIVE TO SW U.S. & MEXICO



NOW IN NORTH CAROLINA



Categories

- Ag Voices
- Agriculture and Social Media
- China Trade Mission
- Faces in the Field
- Field Notes
- Farmers Markets
- Field Trip
- Food Business Almanac
- Forestry Files
- From the Commissioner
- In the Kitchen
- Kitchen Sink
- Local Dish
- In the Market
- Mailbag
- News
- News Roundup
- Photos from the Field
- Today's Topic on Southern Farm Network

Popular Tags

- Agriculture Commissioner
- Steve Troxler
- agritourism
- Asheville Citizen Times
- Best Dish in NC

« Today's Topic: 2012 was a good year for field crops in North Carolina

In the Kitchen with Brian and Lisa: Choplin's Pork Tenderloin »

Deadly disease affecting walnut trees found for first time in NC

On January 3, the department announced a quarantine that limits the movement of walnut trees and wood products in Haywood County due to the presence of thousand cankers disease within the Great Smoky Mountains National Park.

Thousand cankers disease is a fungal disease spread by the walnut twig beetle, which bores into the tree, causing a canker to form at the point of entry. An already infested tree is very attractive to incoming beetles. When multitudes of beetles attack a single tree, cankers merge together, effectively cutting off the transportation tissues of the tree.

Symptoms, seen in the summer months, may look like individual branches dying, overall crown thinning or the tree may look like it has stunted leaves. Tree death typically occurs two to three years after symptoms develop. In North Carolina, black walnut and butternut are susceptible.

Native to the Southwestern U.S. and Mexico, thousand cankers disease was first detected in the Eastern U.S. near Knoxville, Tenn. It has since been found in areas of Tennessee, Virginia and Pennsylvania.

If you suspect a tree on your property is infected with thousand cankers disease, contact the **N.C. Forest Service**. *Do not take samples!* Long-distance dispersal of pests like these is greatly facilitated by human movement, whether intentional or not. Therefore, it is recommended that walnut trees, walnut wood products and potential samples of the disease not be transported.

More information, including ways to report the disease, can be found on our [FAQ page](#).



Walnut twig beetle, larva, Stone Valley, Oregon Department of Agriculture



A walnut tree with thousand cankers disease; Image: Karen Snover-Clift, Cornell University, Bugwood.org

SIGNS/SYMPTOMS:

- Thinning, stunted/discolored foliage, flagging, dieback
- Cankers
 - <1" , visible under outer bark
 - Inner bark, phloem, cambium
 - Near beetle galleries
- Pinhole-sized entry holes
- **Death within 3 years of symptoms**



EMERALD ASH BORER

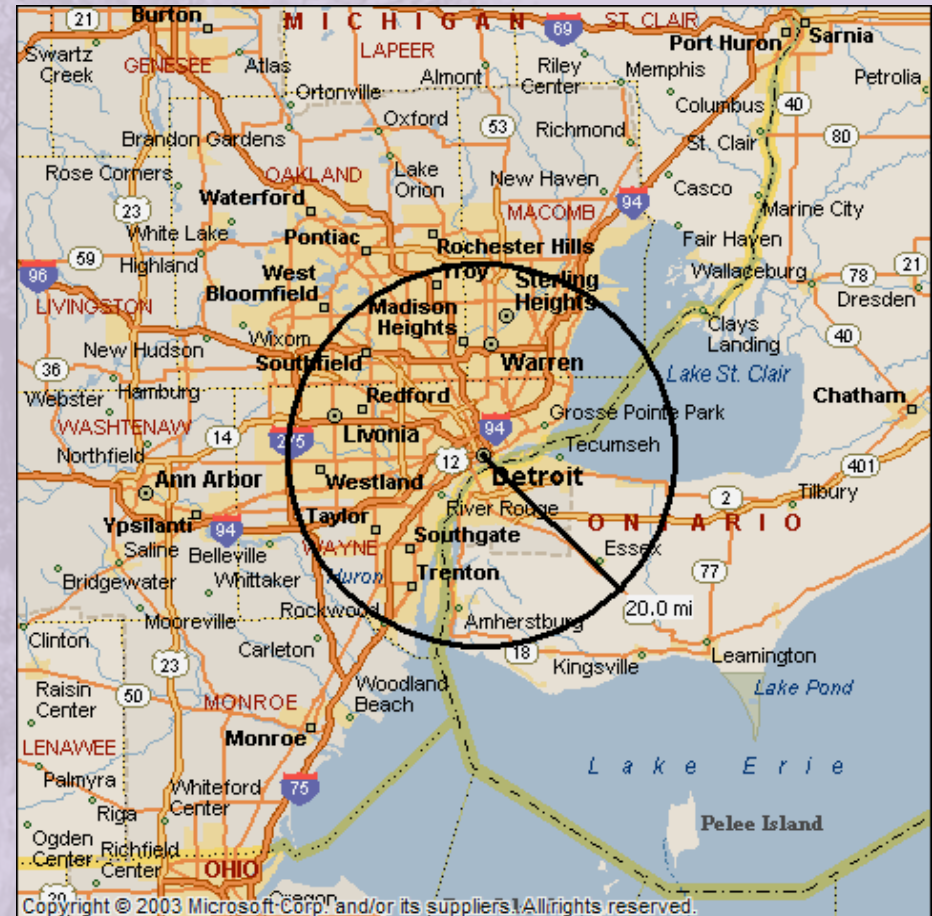


David Cappaert, Michigan State University



EAB MOVES TO THE US

- Wood-boring beetle
- First detection in US: 2002 in Detroit, MI
- Likely arrived in wood-packing material from Asia
- Hosts:
 - All species of ash



Spread:

Natural

- Up to 5 mi./yr.

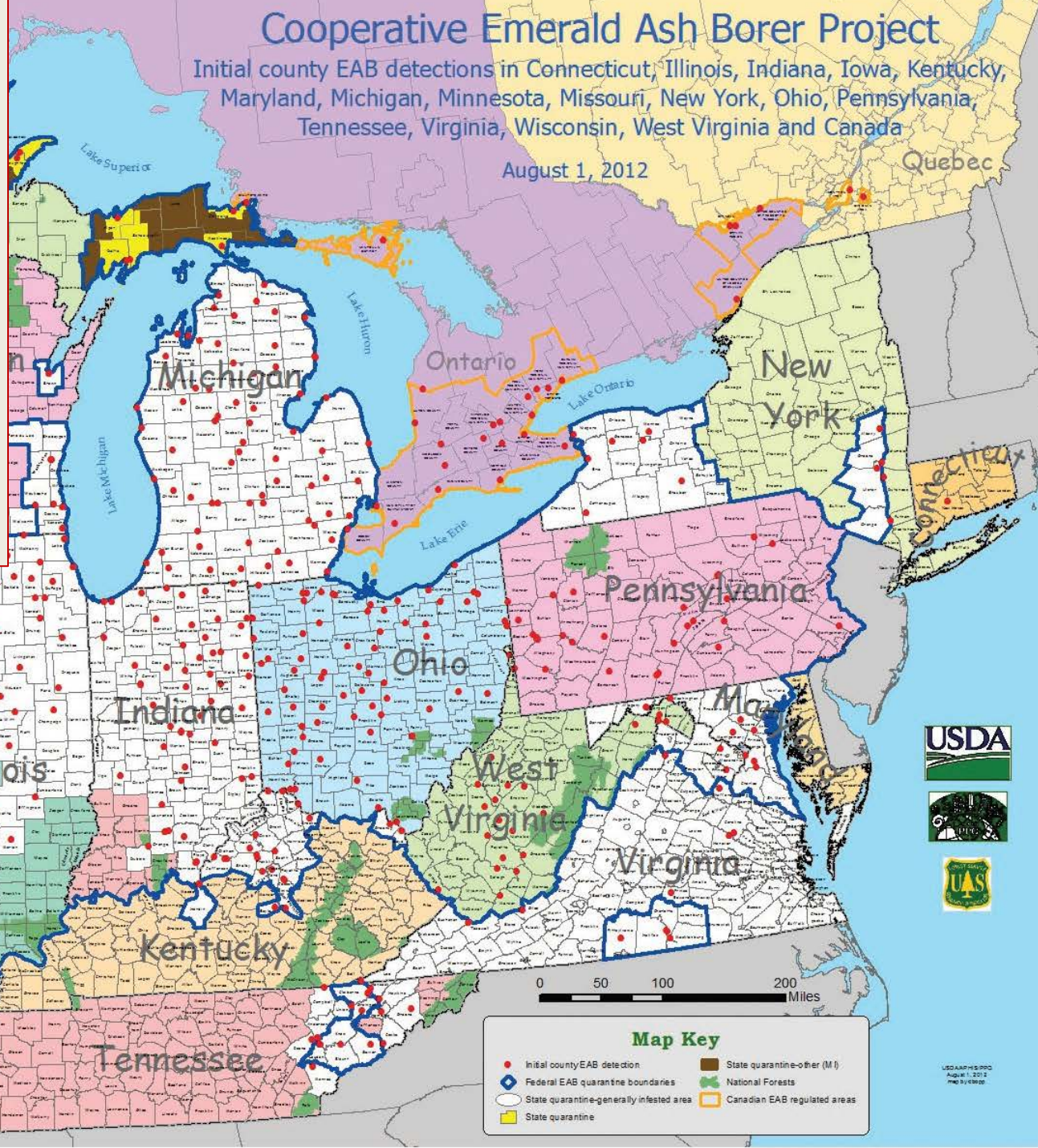
Human-assisted

- Firewood
- Logs to and from mills
- Nursery stock
- Tree waste transport

Cooperative Emerald Ash Borer Project

Initial county EAB detections in Connecticut, Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin, West Virginia and Canada

August 1, 2012



Data sources:
-U.S. Department of Agriculture, Animal & Plant Health Inspection Service, Plant, Protection & Quarantine (USDA/APHIS/PPQ)
-Canadian Food Inspection Agency (CFIA)

Map Key

- Initial county EAB detection
- Federal EAB quarantine boundaries
- State quarantine-generally infested area
- State quarantine
- State quarantine-other (MI)
- National Forests
- Canadian EAB regulated areas

USDA/APHIS/PPQ
August 1, 2012
Map by USFS

IDENTIFICATION

LARVAE (year-round)



IDENTIFICATION

ADULT
(June-Aug)

Metallic purple-red under
wings





SYMPTOMS

- Canopy thinning
- Epicormic sprouting
- Increased woodpecker activity
- Vertical splits in the bark



UGA1301046

Photo: Terry Vance

SIGNS

Winding larval galleries



D-shaped exit holes



Management

- Prevention/early detection
- Removal
- Insecticides
 - If infested treat early!
 - Protection:
 - If EAB is within 15 miles
 - Repeat often



DON'T MOVE FIREWOOD

