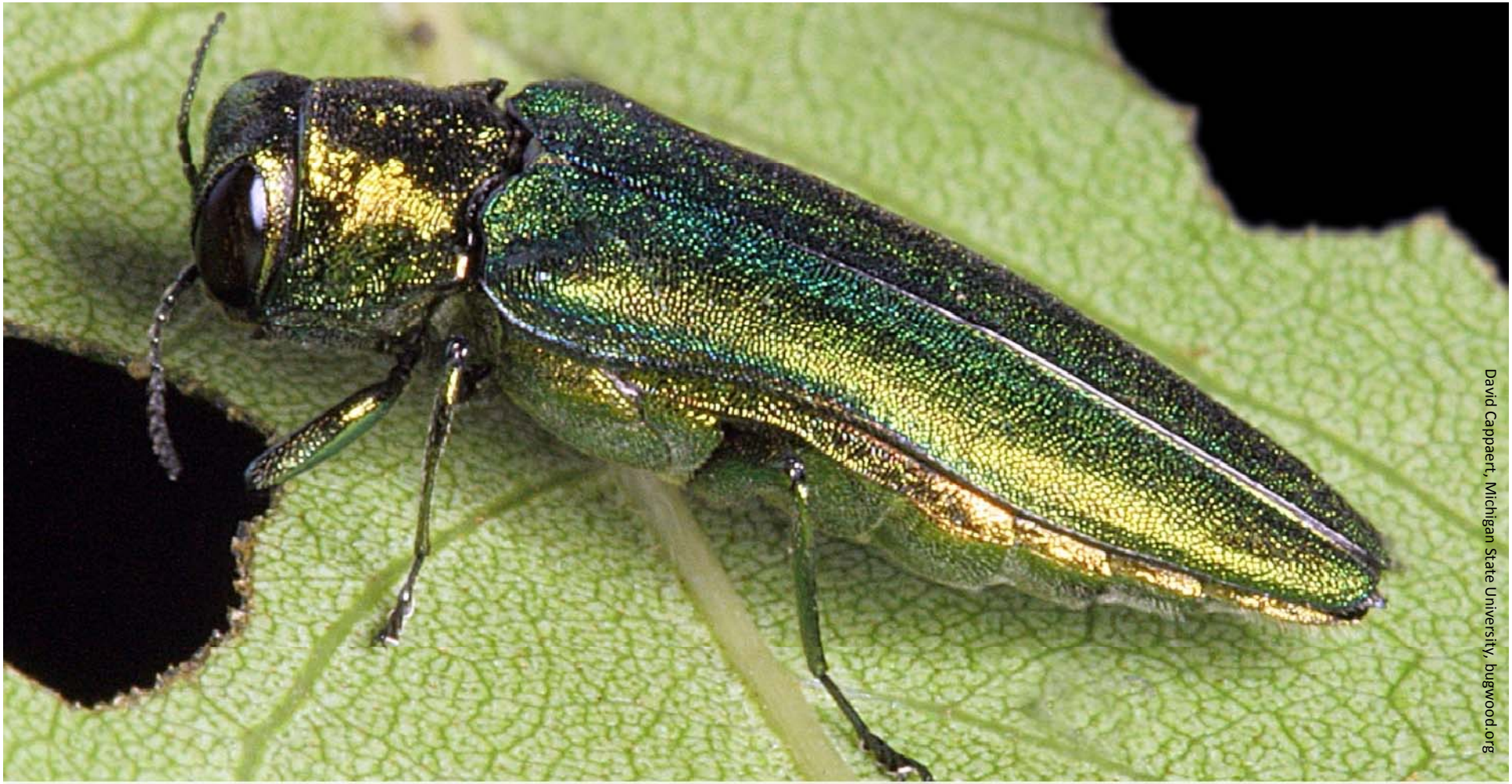


The Emerald Ash Borer In New York State

Mark Whitmore, Department of Natural Resources, Cornell University. mcw42@cornell.edu

Cornell University
Cooperative Extension

Preparing for the Emerald Ash Borer
http://nyis.info

The EAB in North America

- 2002 First detected near Detroit, MI
- First established in mid 1990's
- Hitchhiked in wood packing material
- Has spread to 15 states and 2 Provinces
- Movement by:
  - Firewood
  - Nursery stock

Howard Russell, Michigan State University, Bugwood.org

EAB Life cycle

David Cappaert, Michigan State University, forestryimages.org

Adults lay eggs in mid to late June

Eggs laid on bark surface, cracks

Creamy white turning to amber

Hatch in 7 to 10 days

Larva – four instars

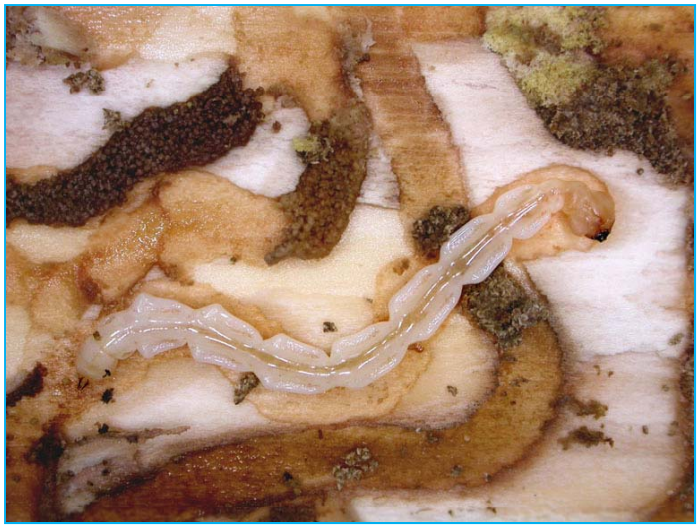
301 to 315 days

David Cappaert, Michigan State University, Bugwood.org

EAB Life cycle

David Cappaert, Michigan State University, bugwood.org

Larvae



David Cappaert, Michigan State University, bugwood.org

Larval galleries under bark

EAB Life cycle

y Petrice, USDA Forest Service, Bugwood.org

Late instar larva

David Cappaert, Michigan State University, bugwood.org

Pupa

Pre pupa

David Cappaert, Michigan State University, bugwood.org

EAB Life cycle

Daniel Herms, The Ohio State University, Bugwood.org

David Cappaert, Michigan State University, bugwood.org

Emergence holes

Toby Petrice, USDA Forest Service, Bugwood.org

EAB Life cycle

David Cappaert, Michigan State University, bugwood.org

Daniel Herms, The Ohio State University, Bugwood.org

David Cappaert, Michigan State University, bugwood.org

Adult – female lives 21 to 25 days

2-3 week maturation feeding on leaves

Female lays 60 to 90 eggs

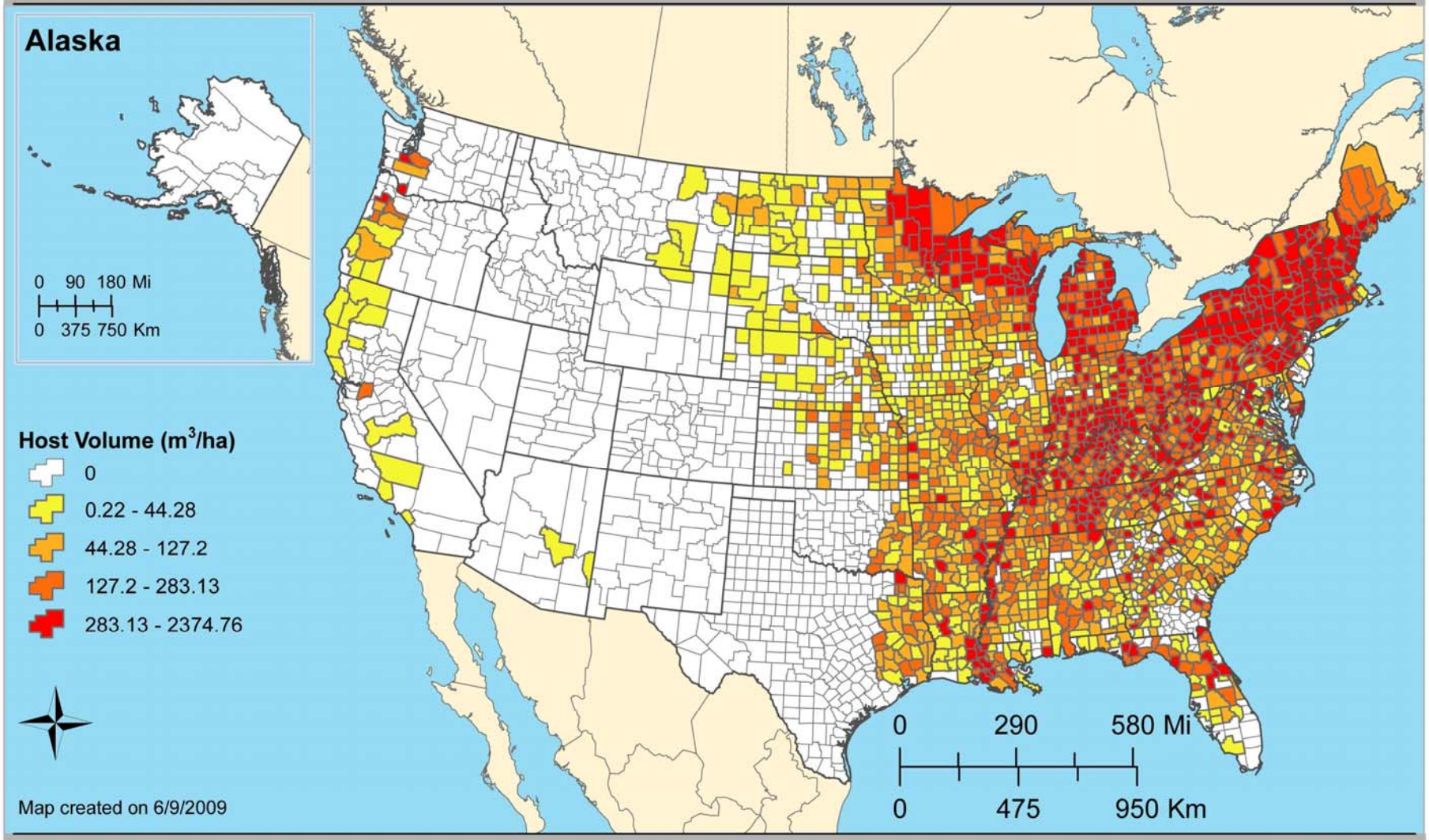
Alien Forest Pest Explorer

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

Host Tree Volume Map

Emerald Ash Borer

Agrilus planipennis



USDA Forest Service

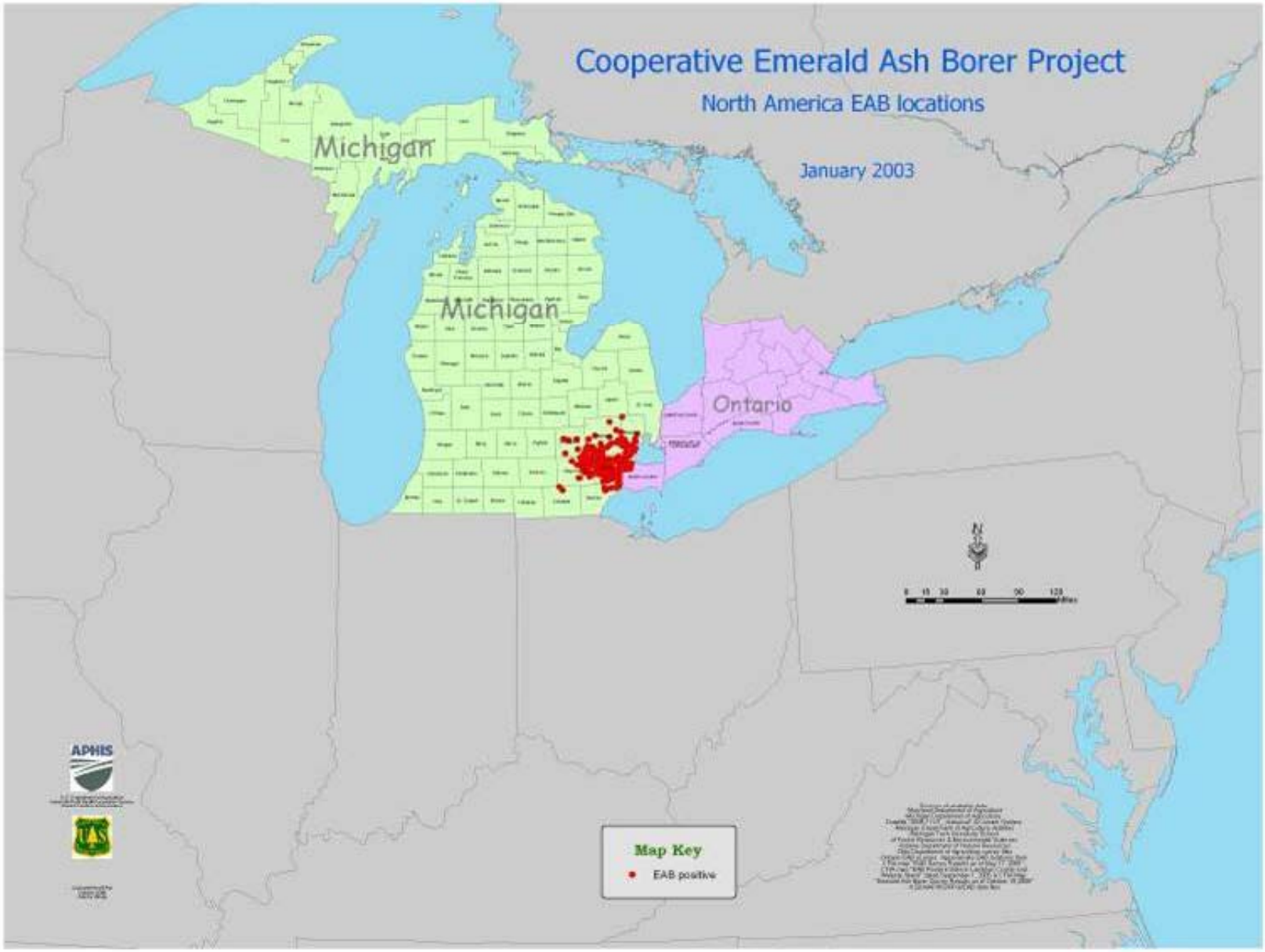
Northern Research Station

Eastern Forest Enviornmental Threat Assessment Center

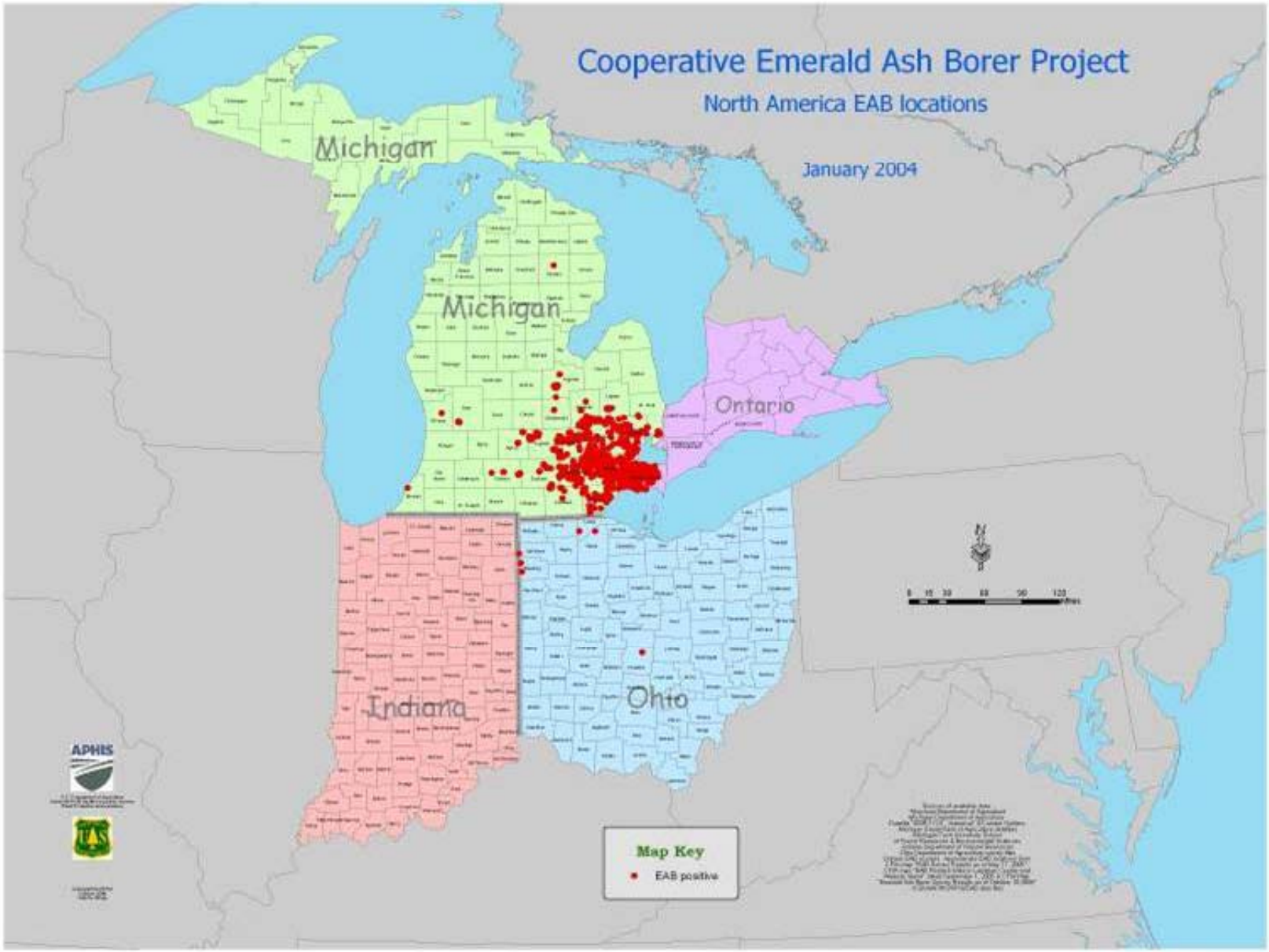
Forest Health Technology Enterprise Team

RSAC Remote Sensing Applications Center

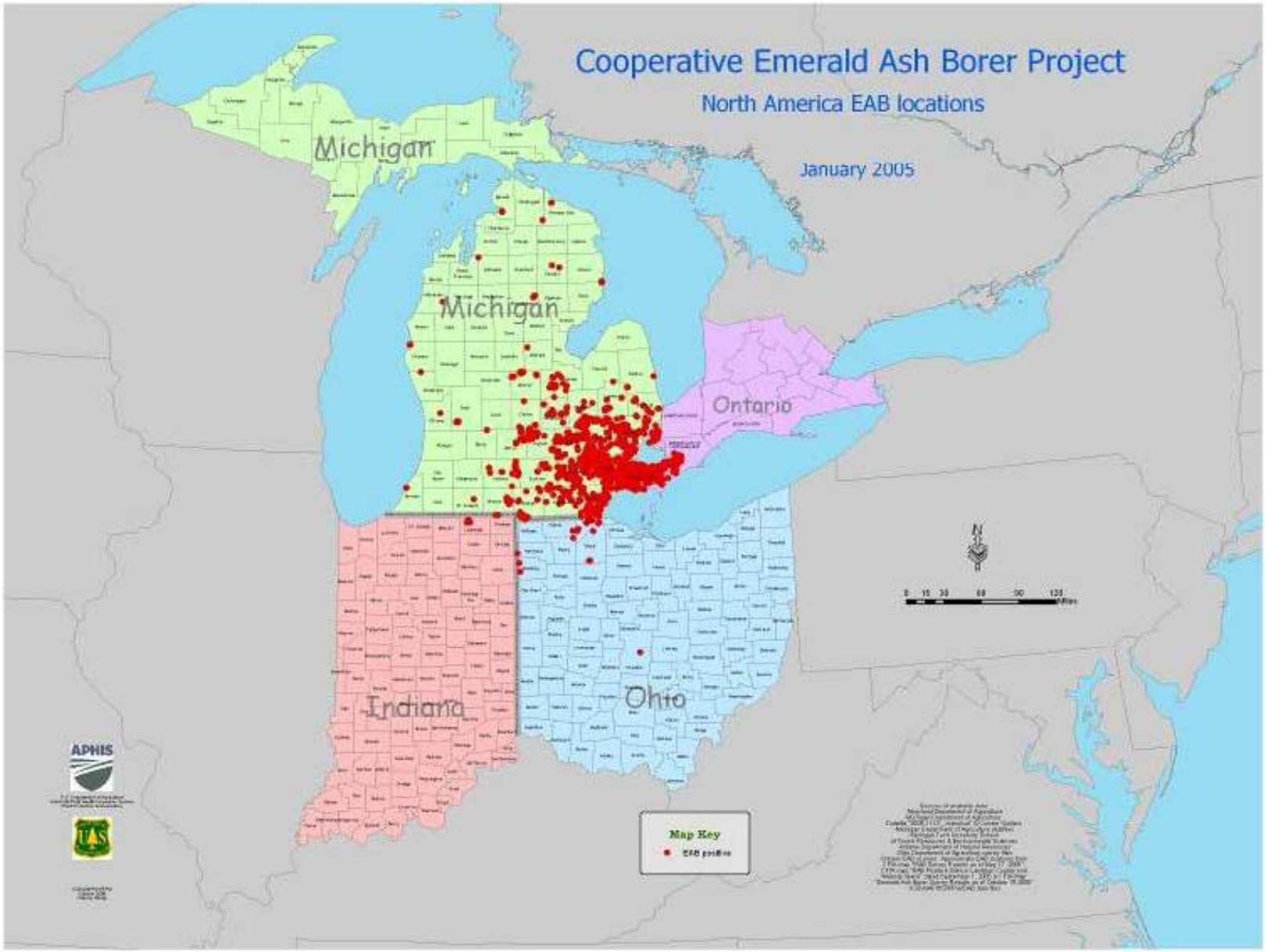
January 2003



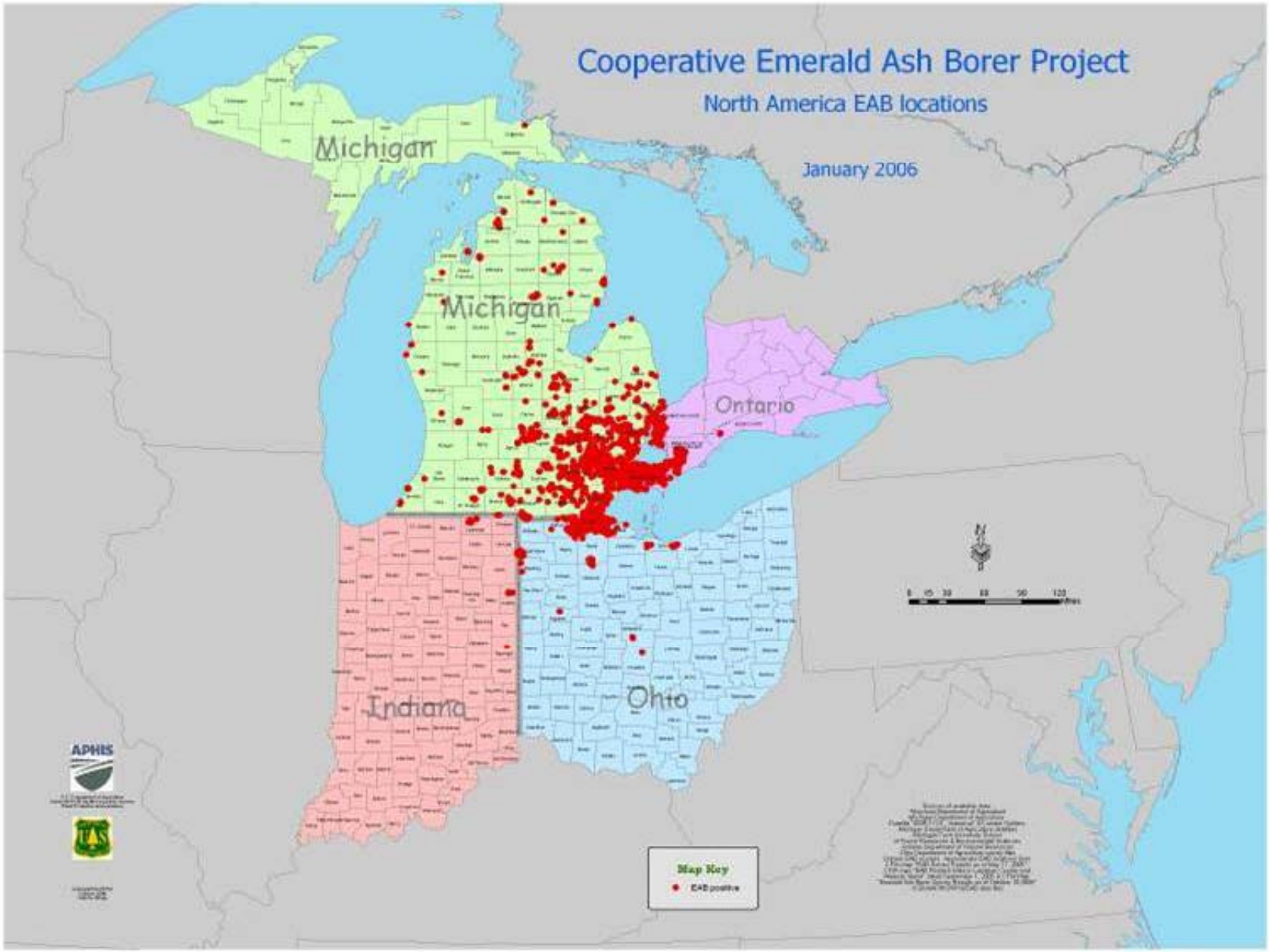
January 2004



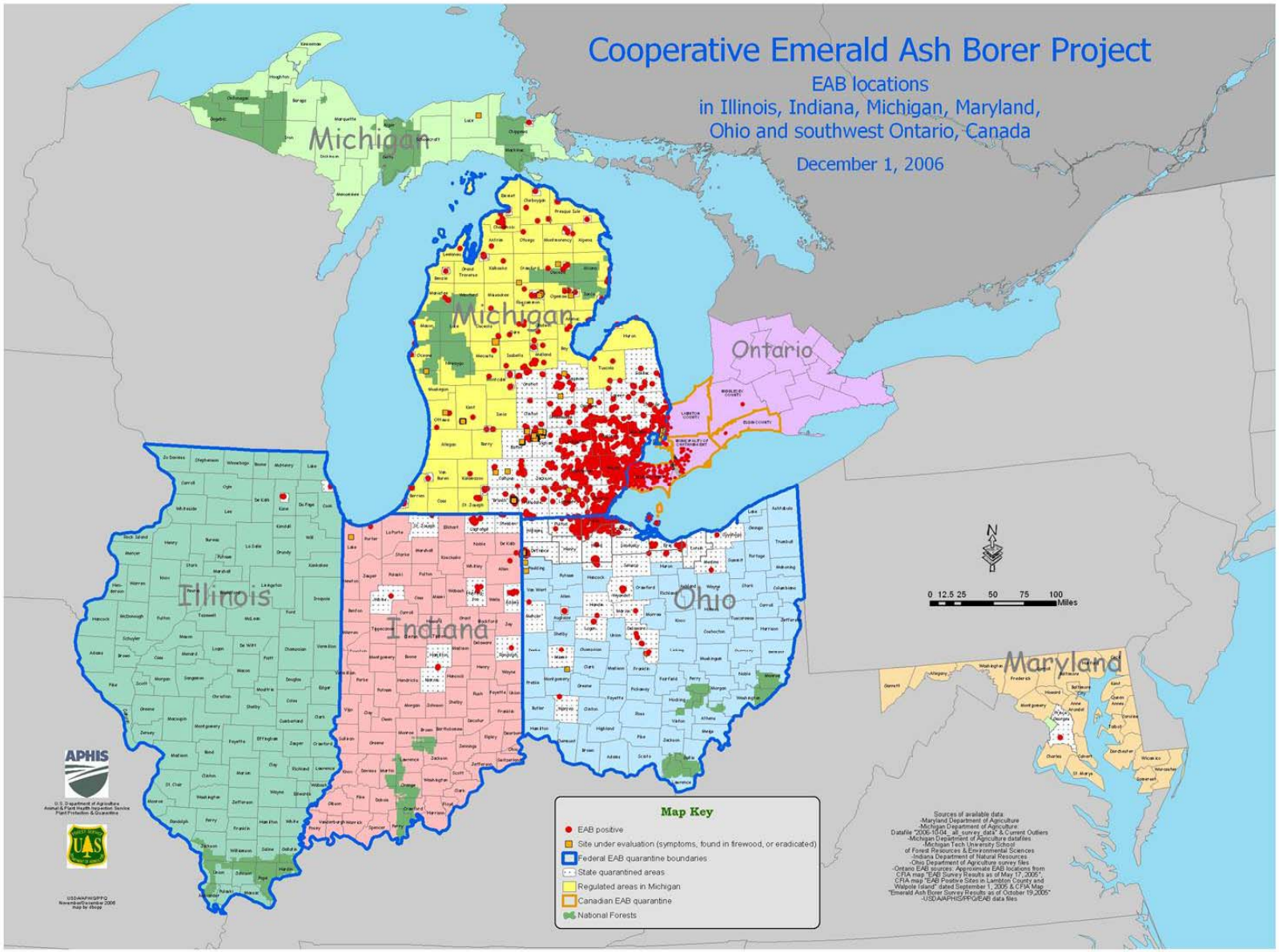
January 2005



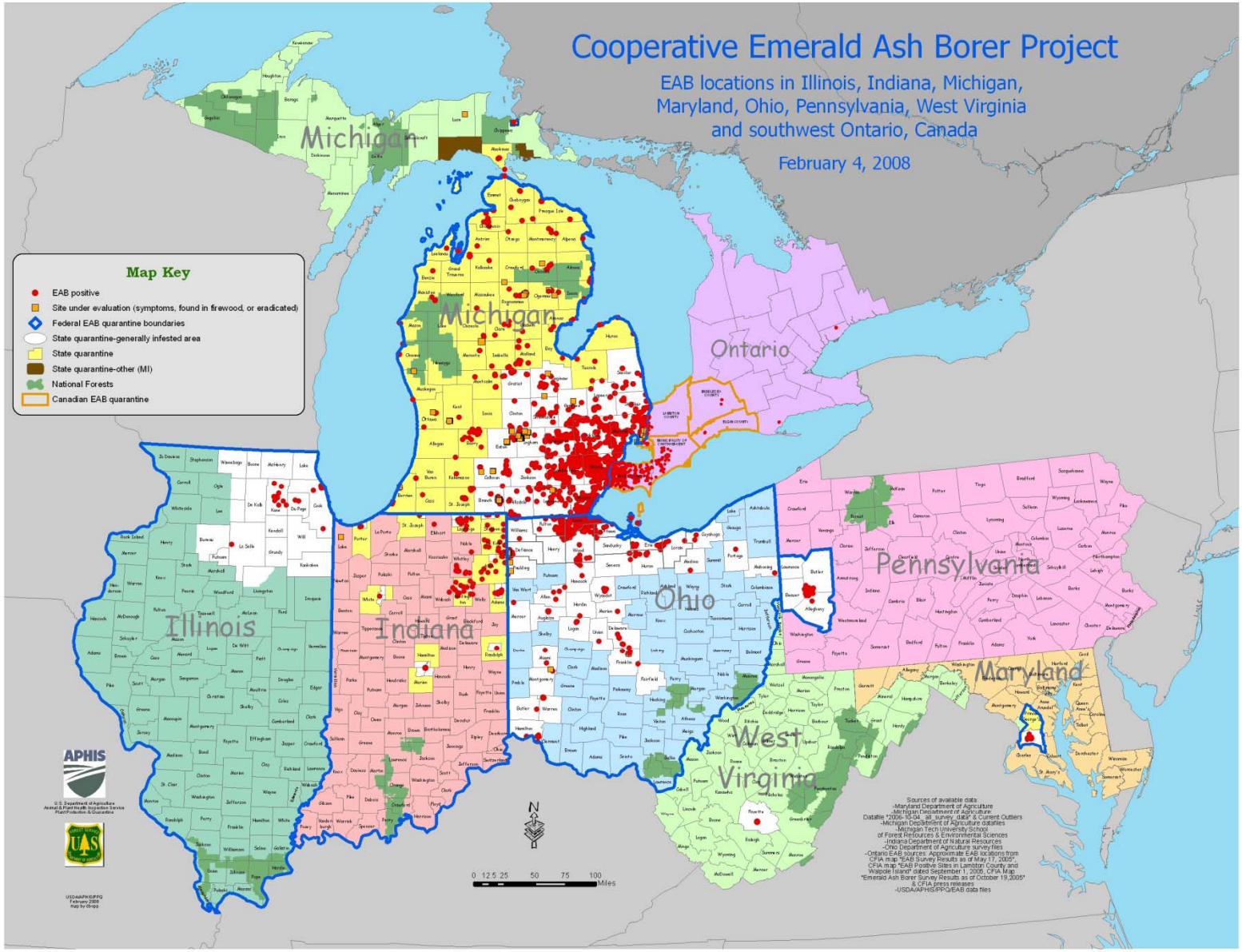
January 2006



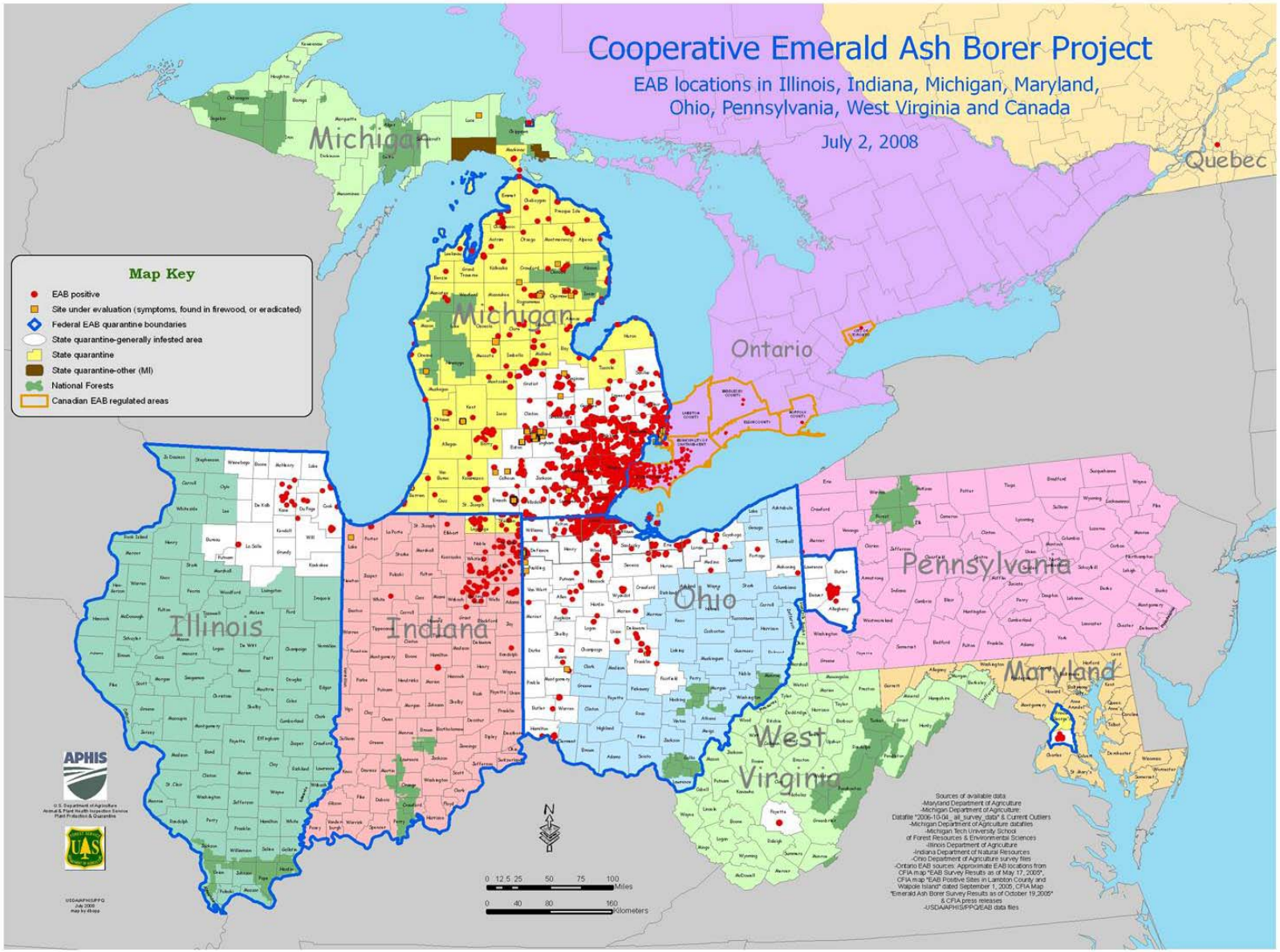
December 2006



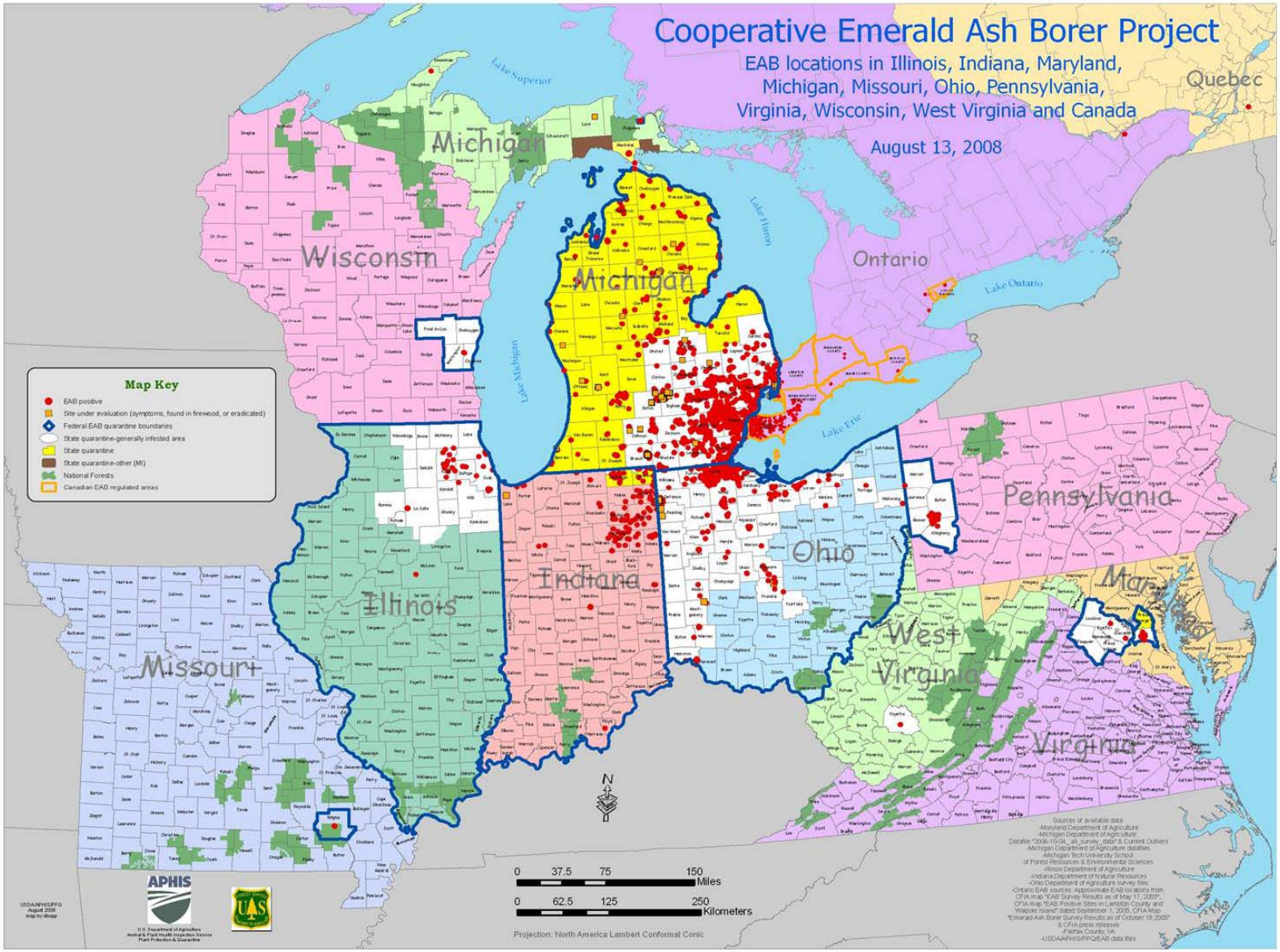
February 2008



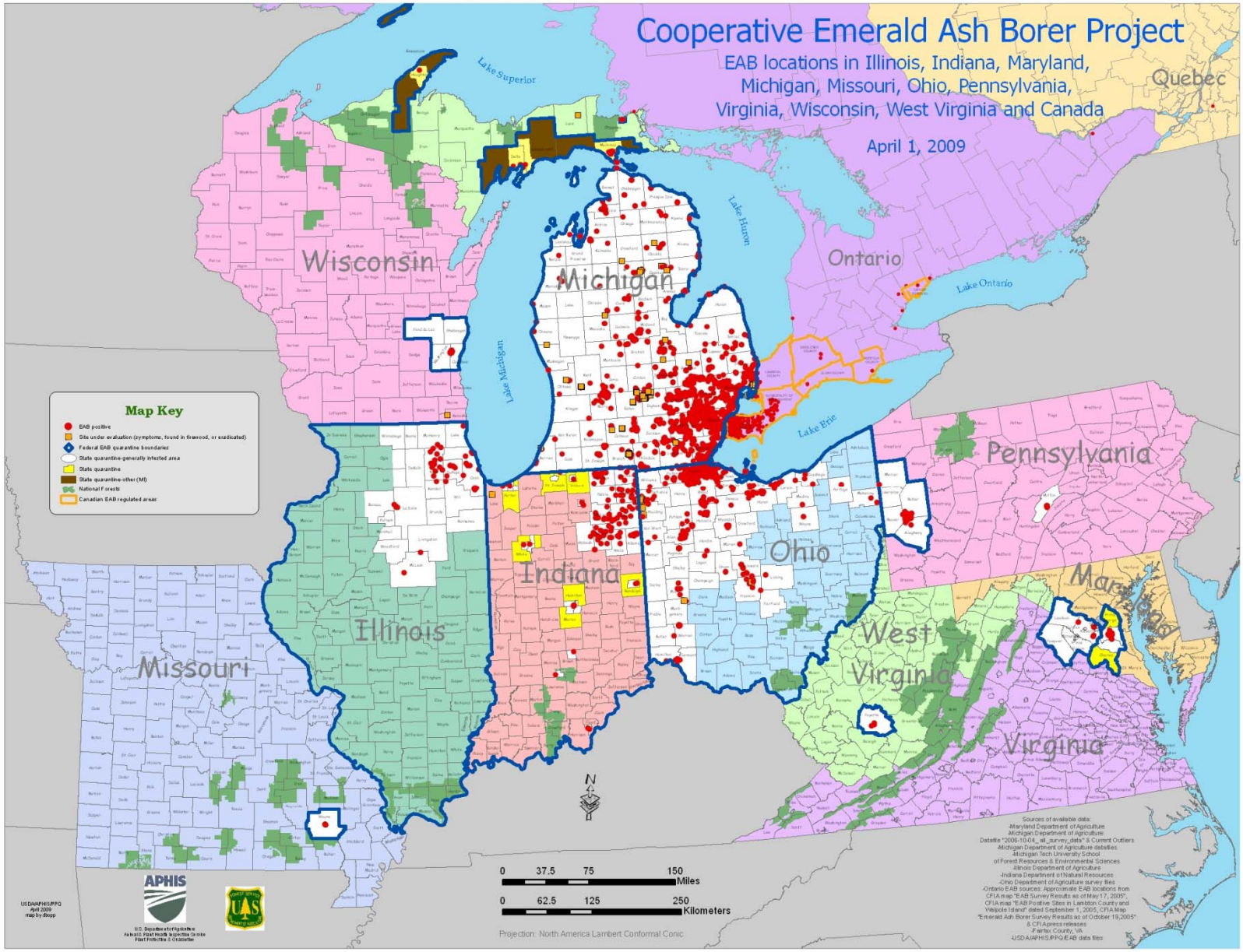
July 2008


Cooperative Emerald Ash Borer Project
EAB locations in Illinois, Indiana, Michigan, Maryland,
Ohio, Pennsylvania, West Virginia and Canada
July 2, 2008
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
Michigan
Michigan
Ontario
Quebec
Illinois
Indiana
Ohio
Pennsylvania
West Virginia
Maryland
APHIS
N
0 12.5 25 50 75 100 Miles
0 40 80 160 Kilometers

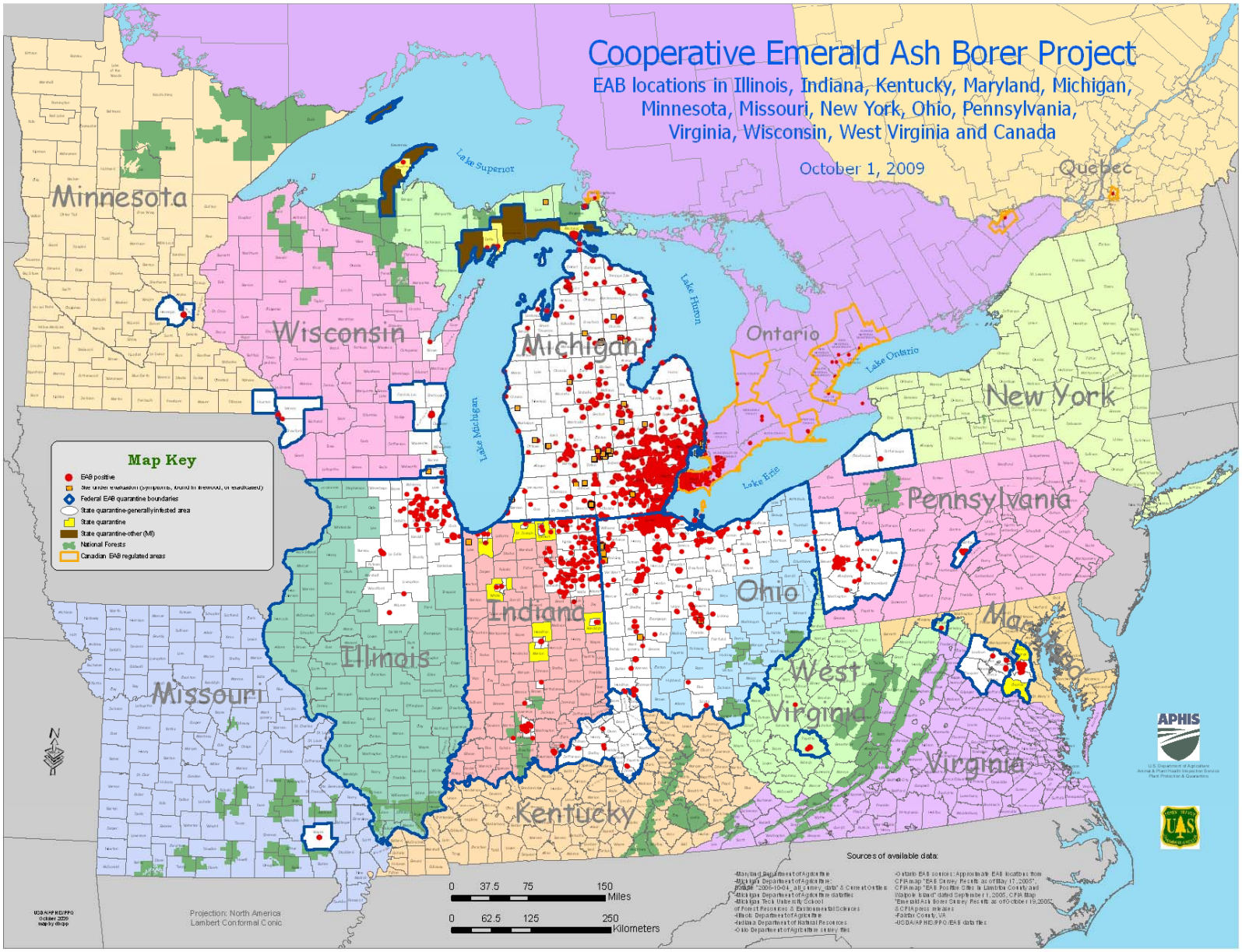
August 2008

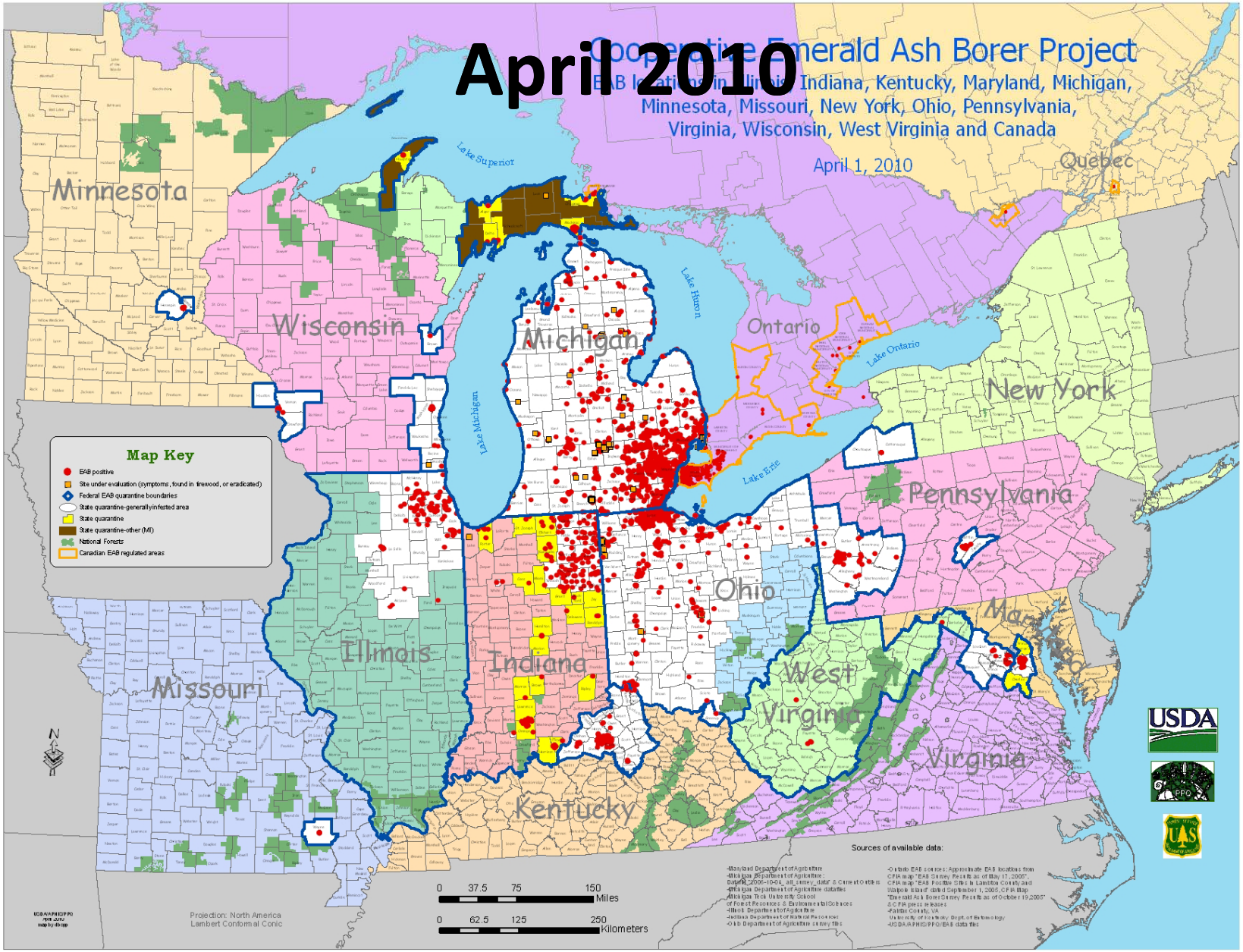

Cooperative Emerald Ash Borer Project
EAB locations in Illinois, Indiana, Maryland, Michigan, Missouri, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada
August 13, 2008
Quebec
Ontario
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
Michigan
Wisconsin
Michigan
Illinois
Indiana
Ohio
Pennsylvania
West Virginia
Virginia
Missouri
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
N
0 37.5 75 150 Miles
0 62.5 125 250 Kilometers
Projection: North America Lambert Conformal Conic
APHIS

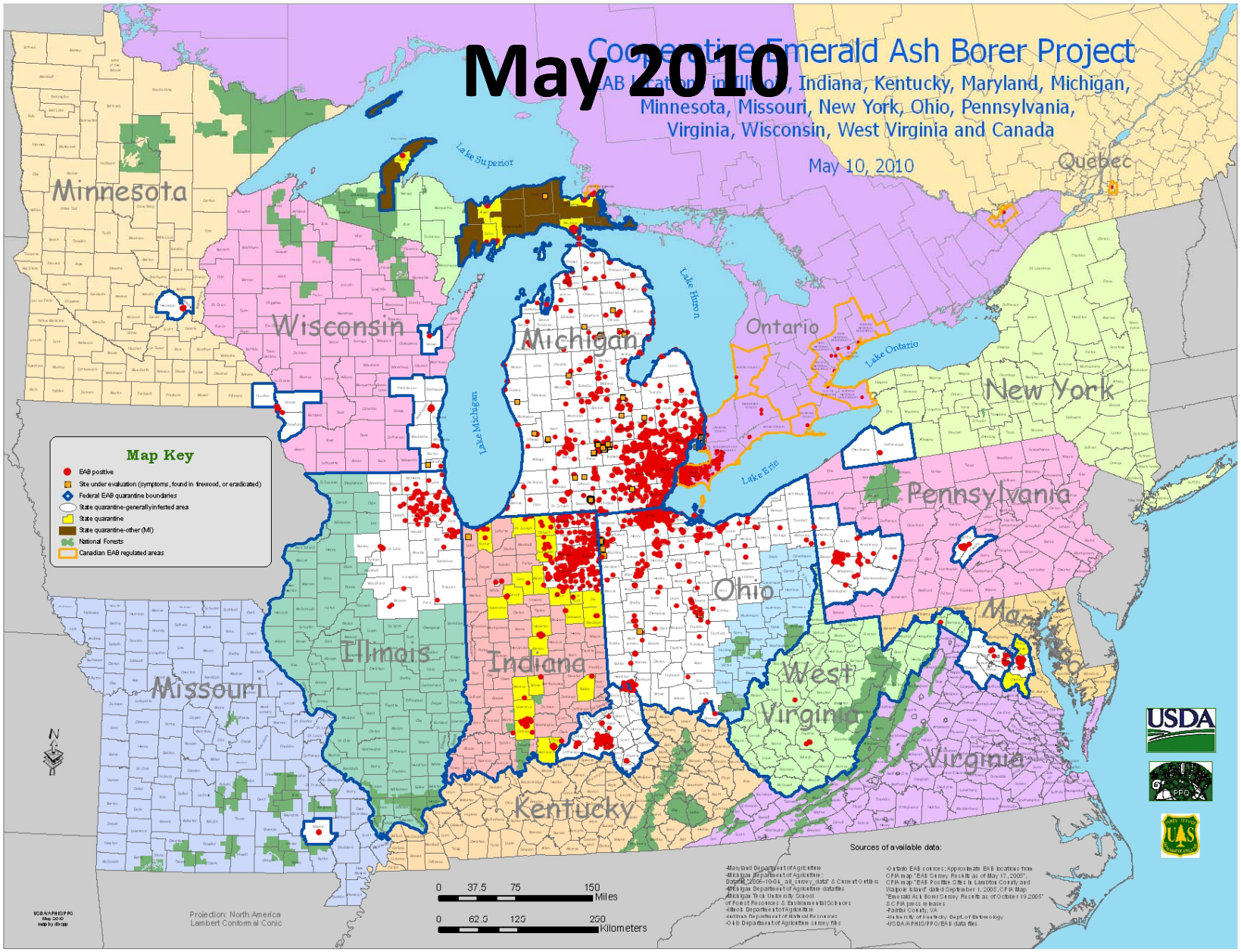
April 2009

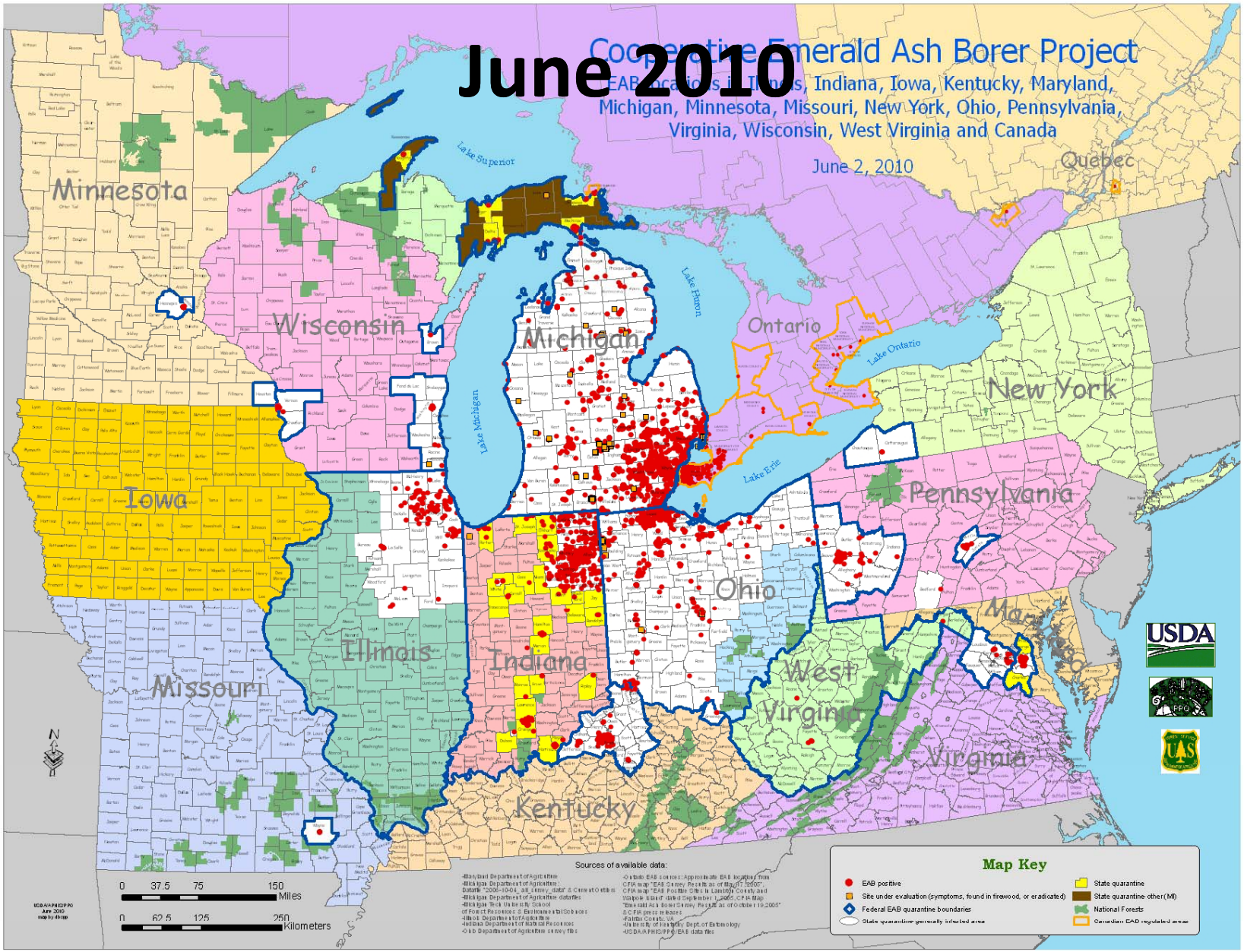

Cooperative Emerald Ash Borer Project
EAB locations in Illinois, Indiana, Maryland, Michigan, Missouri, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada
April 1, 2009
Quebec
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
Ontario
Wisconsin
Michigan
Pennsylvania
Ohio
Indiana
Illinois
Missouri
West Virginia
Virginia
Maryland
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
0 37.5 75 150 Miles
0 62.5 125 250 Kilometers
Projection: North America Lambert Conformal Conic
APHIS

October 2009

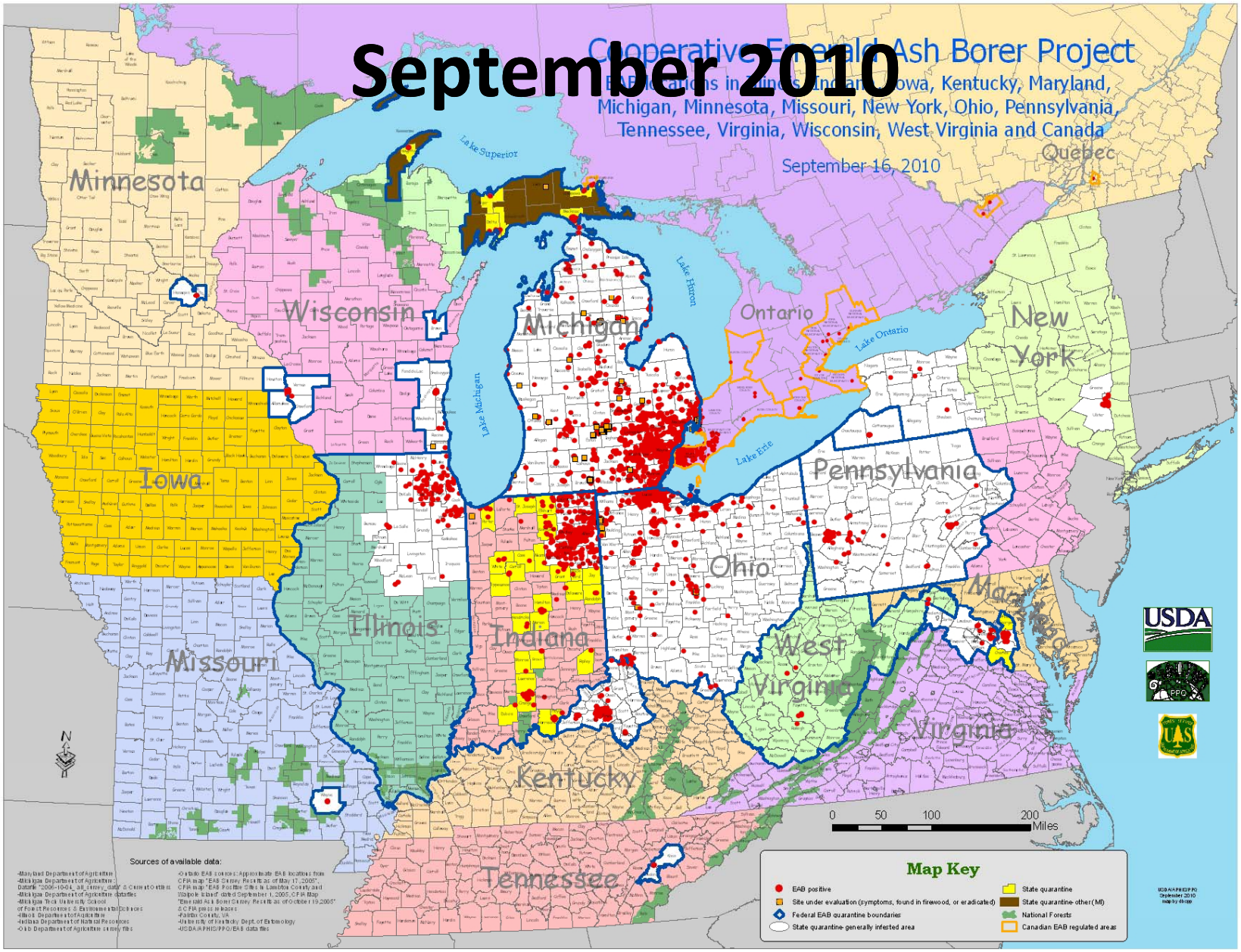


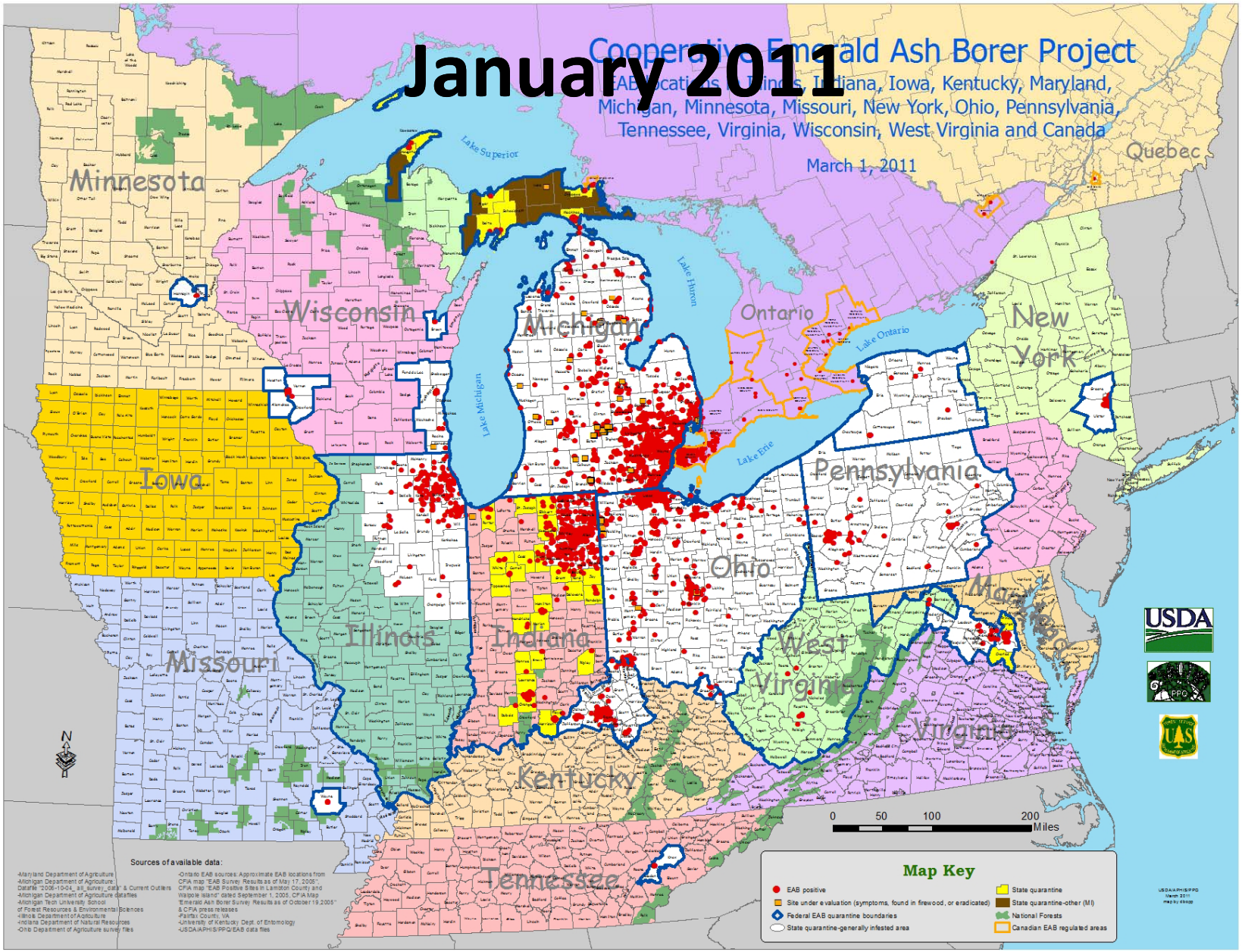

April 2010
Cooperative Emerald Ash Borer Project
EAB locations in Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada
April 1, 2010
Minnesota
Wisconsin
Michigan
Ontario
Quebec
New York
Pennsylvania
Ohio
Illinois
Indiana
Missouri
Kentucky
West Virginia
Virginia
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
N
0 37.5 75 150 Miles
0 62.5 125 250 Kilometers
Projection: North America Lambert Conformal Conic
Sources of available data:
USDA
APHIS
PPQ


May 2010
Cooperative Emerald Ash Borer Project
EAB Location in Illinois, Indiana, Kentucky, Maryland, Michigan,
Minnesota, Missouri, New York, Ohio, Pennsylvania,
Virginia, Wisconsin, West Virginia and Canada
May 10, 2010
Minnesota
Wisconsin
Michigan
Ontario
Quebec
New York
Pennsylvania
Ohio
Illinois
Indiana
Missouri
Kentucky
West Virginia
Virginia
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generallyinfested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
N
0 37.5 75 150 Miles
0 62.5 125 250 Kilometers
Projection: North America Lambert Conformal Conic
Sources of available data:
USDA
PPQ


June 2010
Cooperative Emerald Ash Borer Project
EAB locations in Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada
June 2, 2010
Minnesota
Wisconsin
Michigan
Ontario
Quebec
New York
Iowa
Illinois
Indiana
Ohio
Pennsylvania
Missouri
West Virginia
Virginia
Kentucky
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated area
Sources of available data:
0 37.5 75 150 Miles
0 62.5 125 250 Kilometers
N

September 2010




January 2011
Cooperative Emerald Ash Borer Project
EAB Locations: Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin, West Virginia and Canada
March 1, 2011
Minnesota
Wisconsin
Michigan
Iowa
Illinois
Indiana
Ohio
Missouri
Kentucky
Tennessee
West Virginia
Virginia
Pennsylvania
New York
Ontario
Quebec
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
N
0 50 100 200 Miles
Sources of available data:
Map Key
EAB positive
Site under evaluation (symptoms, found in firewood, or eradicated)
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
USDA

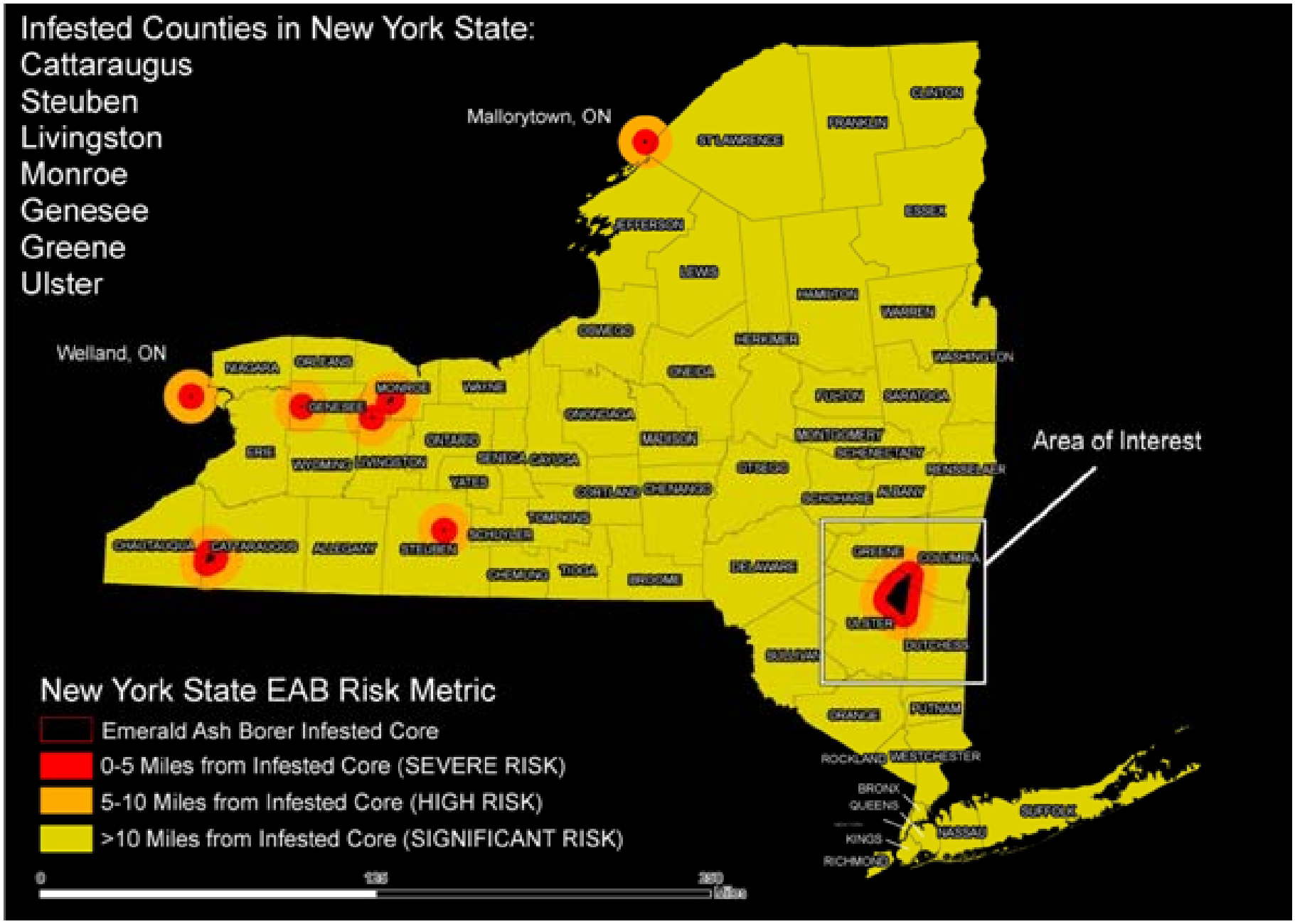
Control Options

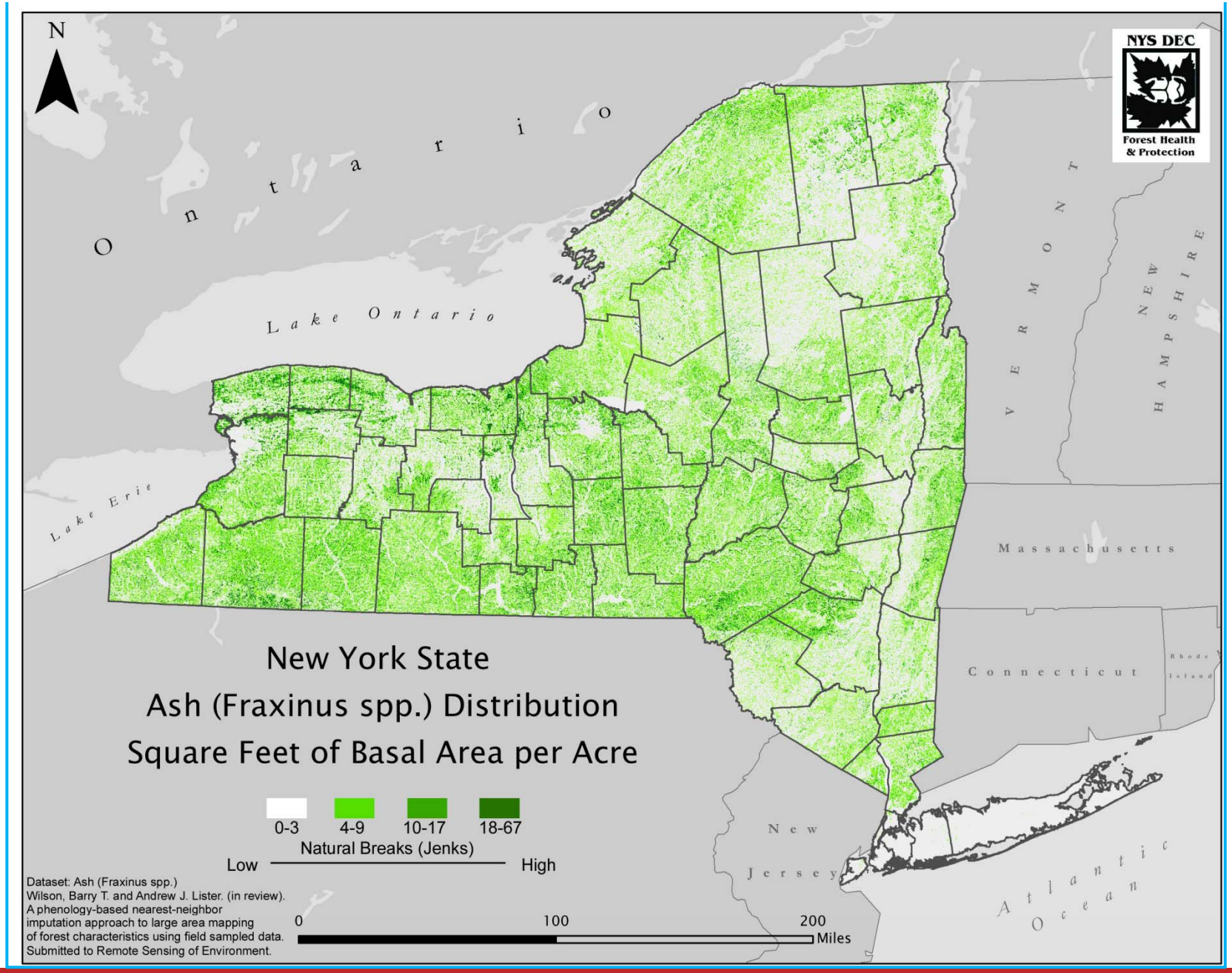
- **Resistance**
  - ID and incorporate genetically into native species
- **Biological Control**
  - Three parasitic wasps in culture. Fungi a possibility.
- **Silviculture** – tried but no success
- **Mechanical** – chipping to 1 inch / 2 dimensions
- **Pesticides**
  - Systemics are the only effective pesticides

Management Options

- **SL**ow **A**sh **M**ortality = **SLAM**
  - **Survey**
    - **Early Detection**
      - **Visual signs and symptoms**
      - **Purple traps and girdled trees**
  - **Population reduction**
    - **Remove infested trees and destroy EAB**
    - **Attractive clusters of girdled trees**
      - **Removed and destroyed after egg laying**

Randolph, NY


Infested Counties in New York State:
Cattaraugus
Steuben
Livingston
Monroe
Genesee
Greene
Ulster
Mallorytown, ON
Welland, ON
Area of Interest
New York State EAB Risk Metric
Emerald Ash Borer Infested Core
0-5 Miles from Infested Core (SEVERE RISK)
5-10 Miles from Infested Core (HIGH RISK)
>10 Miles from Infested Core (SIGNIFICANT RISK)
0
ST LAWRENCE
FRANKLIN
CLINTON
ESSEX
JEFFERSON
LEWIS
HAMILTON
WARREN
WASHINGTON
HERKIMER
ONEIDA
FULTON
SARATOGA
MONTGOMERY
SCHENECTADY
RENSSELAER
ALBANY
OSWEGO
ONONDAGA
CAYUGA
SENECA
WAYNE
MONROE
GENESEE
ORLEANS
NIAGARA
ERIE
WYOMING
LIVINGSTON
ONTARIO
YATES
SCHUYLER
CHEMUNG
TIOGA
TOMPKINS
CORTLAND
MADISON
OTSEGO
DELAWARE
CHENANGO
BROOME
CHAUTAUQUA
CATTARAUGUS
ALLEGANY
STEUBEN
GREENE
COLUMBIA
ULSTER
DUTCHESS
ORANGE
PUTNAM
ROCKLAND
WESTCHESTER
BRONX
QUEENS
KINGS
RICHMOND
NASSAU
SUFFOLK


N
NYS DEC
Forest Health & Protection
Ontario
Lake Ontario
Lake Erie
VERMONT
NEW HAMPSHIRE
Massachusetts
Connecticut
Rhode Island
New Jersey
Atlantic Ocean
New York State
Ash (Fraxinus spp.) Distribution
Square Feet of Basal Area per Acre
0-3
4-9
10-17
18-67
Natural Breaks (Jenks)
Low
High
Dataset: Ash (Fraxinus spp.)
Wilson, Barry T. and Andrew J. Lister. (in review).
A phenology-based nearest-neighbor
imputation approach to large area mapping
of forest characteristics using field sampled data.
Submitted to Remote Sensing of Environment.
0
100
200
Miles

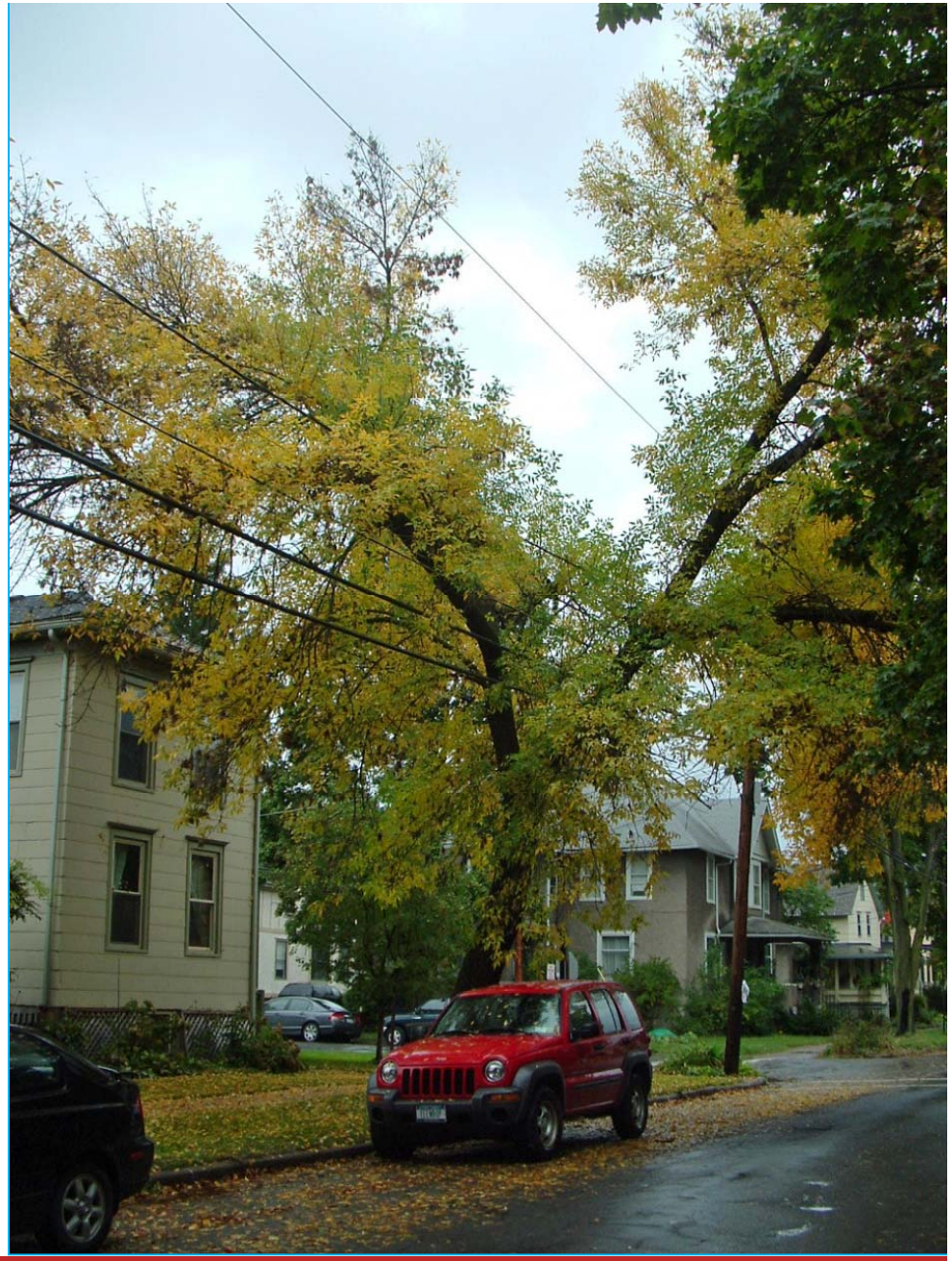
What's at stake?

What's at stake in our communities?

Street trees

What's at stake in our communities?

Power Line ROW's



What's at stake in our communities?

Residences

What's at stake in our communities?

Residences

What's at stake in our communities?

Residences

What's at Stake?

What's at Stake

Urban Forest Issues

- **Liability and Public Health Hazard**
  - **Street tree inventory.**
  - **Dead trees fall down, must act fast.**
  - **Whose tree is that anyway?**
  - **Pesticide use.**

Urban Forest Issues

- **Political**
  - **It's not here, why bother?**
  - **It doesn't look dead!**
  - **Proactive vs. reactive decision making and resource allocation**

Urban Forest Issues

- **Human and Economic Resources**
  - **Ash die quickly, not prepared.**
  - **Time needed to train personnel.**
  - **Equipment needs.**
  - **Search for funding sources.**

Community Preparedness

- **Time - Slow the Spread with SLAM**
  - **Planning essential to minimize impact**
  - **Develop Community Action Plans**
  - **Inter-municipal cooperation**
  - **Develop wood utilization options**

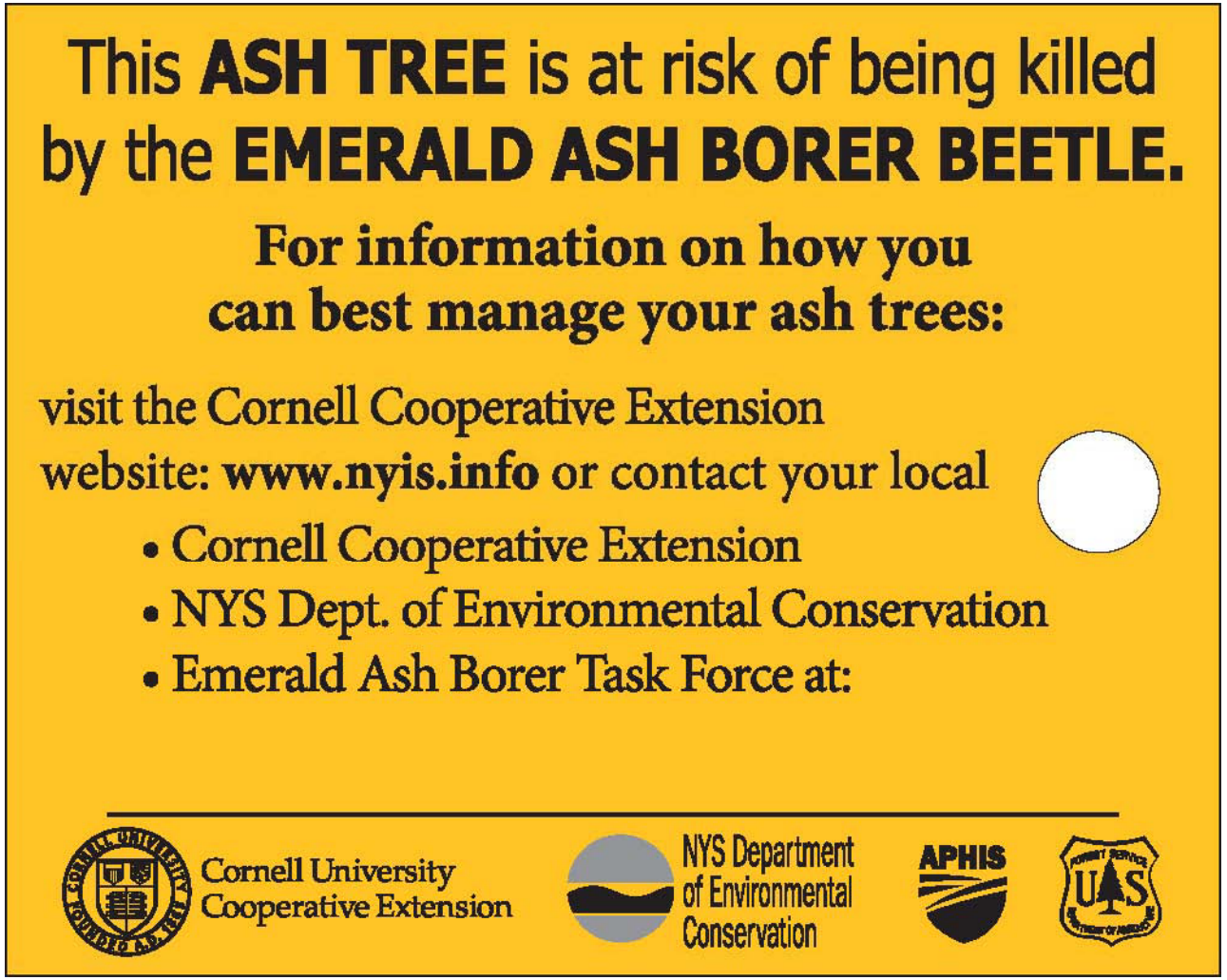
Community Preparedness

- **Develop Community Action Plans**
  - Tree inventory
  - Legal issues
  - Personnel training
  - Treatment decisions
  - Contractual arrangements
  - Education
- **New York State Emerald Ash Borer Community Preparedness Plan Development Workbook**
  - nyis.info

Community Preparedness

- **Participate in the Tompkins County EAB Task Force**
  - **Multi-agency and multi-municipality**
  - **Focus on developing county-wide priorities**
  - **Clearing house for local information**
  - **First project: Arbor Day 2011**

Community Preparedness



Inter-municipal Cooperation

- –Share machinery & expertise
- –Wood management infrastructure
  - Marshalling Yards for Arborists and Homeowners
- –Leverage funding

Wood Utilization

Develop wood utilization options

- Specialized tools for processing
- Chip utilization – mulch, power
- Develop markets for products

The EAB Message

- **Our community CAN take actions NOW to prepare for EAB & minimize impact.**
  - **Slow the Spread – Don't move firewood!**
  - **It is time to take stock of our ash resources, make plans now.**
  - **Early detection is key. Know the signs & symptoms of EAB infestation. Report it!**
  - **EAB resources are readily available**
    - **CCE and DEC**


Joe Heller ©2009
GREEN BAY PRESS-GAZ.
HAVE CAMPER WILL TRAVEL
nyis.info
I'M WITH STUPID
EMERALD ASH BORER