



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Canadian Food Inspection Agency



Science and regulation...

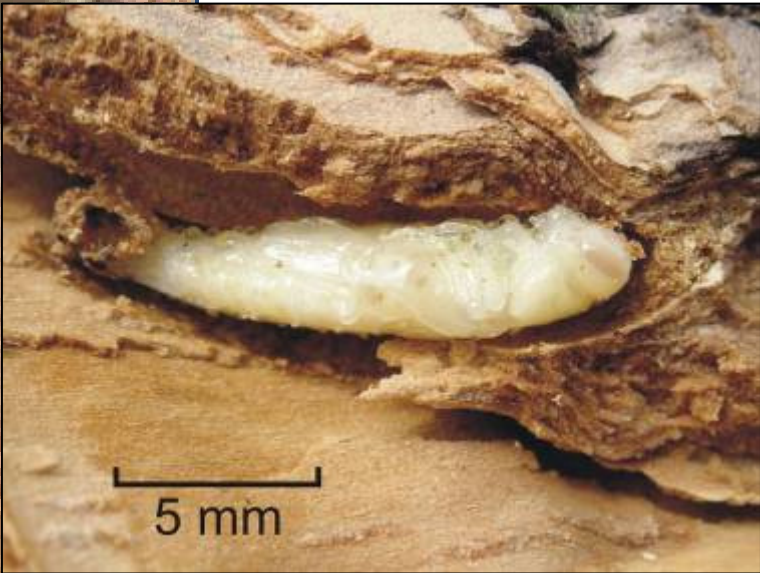
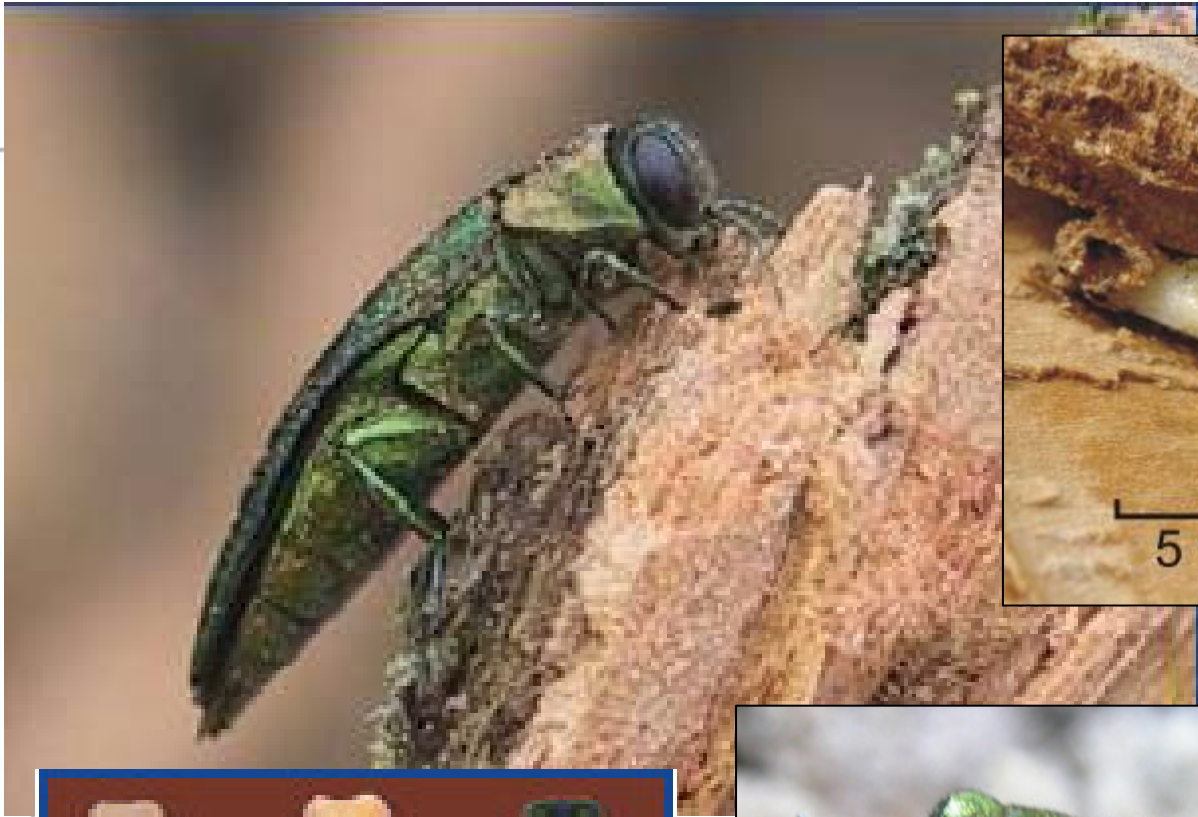
working together for Canadians

**Emerald Ash Borer (EAB) update
Bayfield, ON
December 16, 2008**

Brian Hamilton, EAB Program Specialist

Canada 







D. Cappaert,

UGA5016056

EAB Life Cycle

Egg



Larva



Pupa



Adult



Hardiness Zones in China

▲ Hardiness zone ▲	
below -45.5	1 below -50
-45.5 to -40.0	2 -50 to -40
-40.0 to -34.5	3 -40 to -30
-34.4 to -28.9	4 -30 to -20
-28.8 to -23.4	5 -20 to -10
-23.3 to -17.8	6 -10 to 0
-17.7 to -12.3	7 0 to 10
-12.2 to -6.7	8 10 to 20
-6.6 to -1.2	9 20 to 30
-1.1 to 4.4	10 30 to 40
4.5 and above	11 40 and above
Mean annual minimum temperature (°C)	Mean annual minimum temperature (°F)



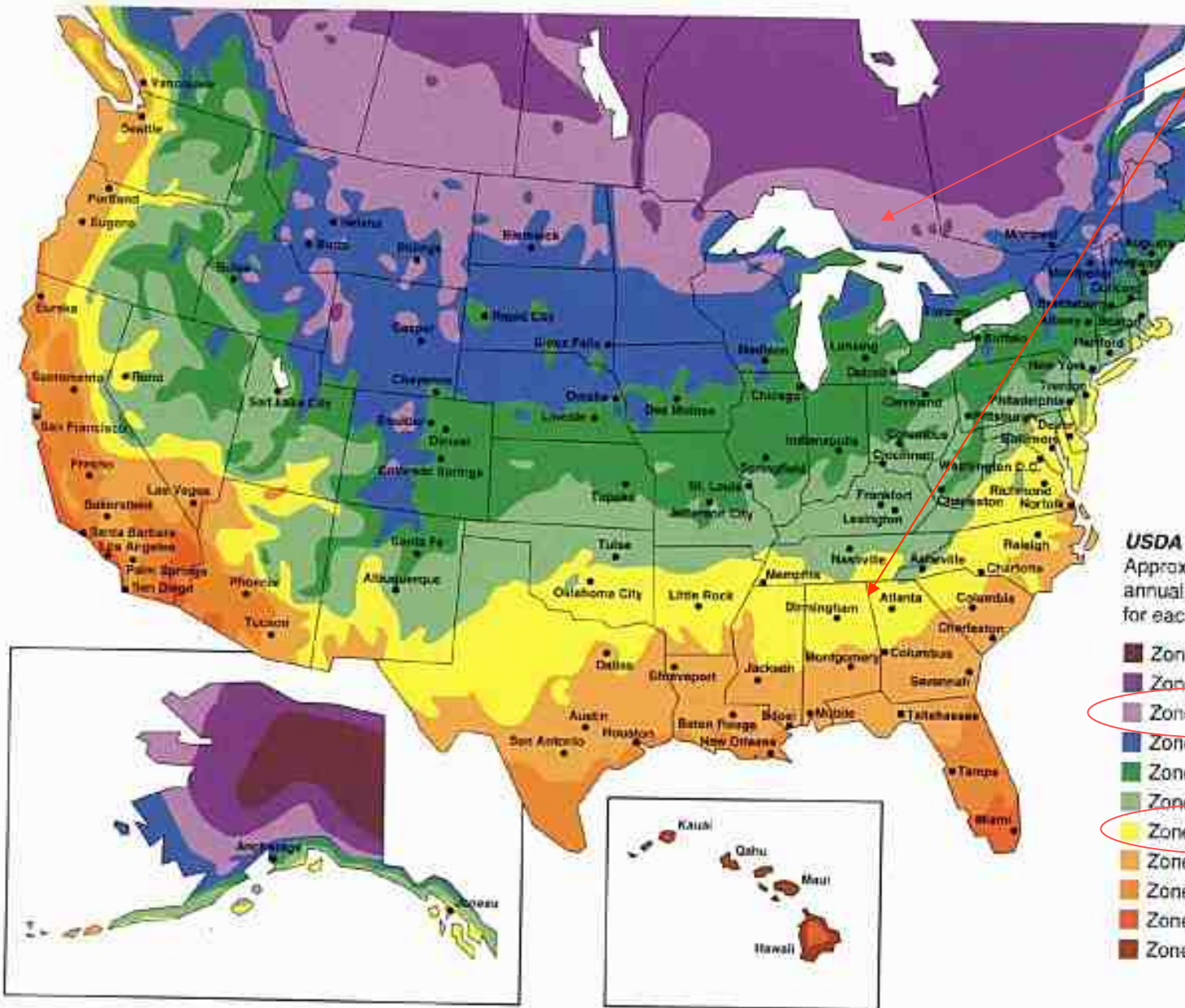
By Ma L. P. Widdiehn, Hortica Baitist
 U.S. Department of Agriculture - Agricultural Research Service,
 North Central Regional Plant Introduction Station, Iowa State
 University, Ames, IA 50011,
 1997.

Financial support was provided by the Plant Exchange Office,
 USDA-ARS, Beltsville, MD.

Temperature data were adapted from a map of mean annual minimum
 temperature in China (Zhongguo Qion Zhuan Ziyuan
 Duiji), China Atlas Press, Beijing, 280 pp. Additional data for Taiwan
 were obtained from Watts, L. E. M. (1969). Climates of China and
 Korea, pp. 1-117. In: Climates of Northern and Eastern Asia. World
 Survey of Climatology Vol. 8. H. Aulawa (ed.) Elsevier, Amsterdam,
 vol. 348 pp.



US Zone 3



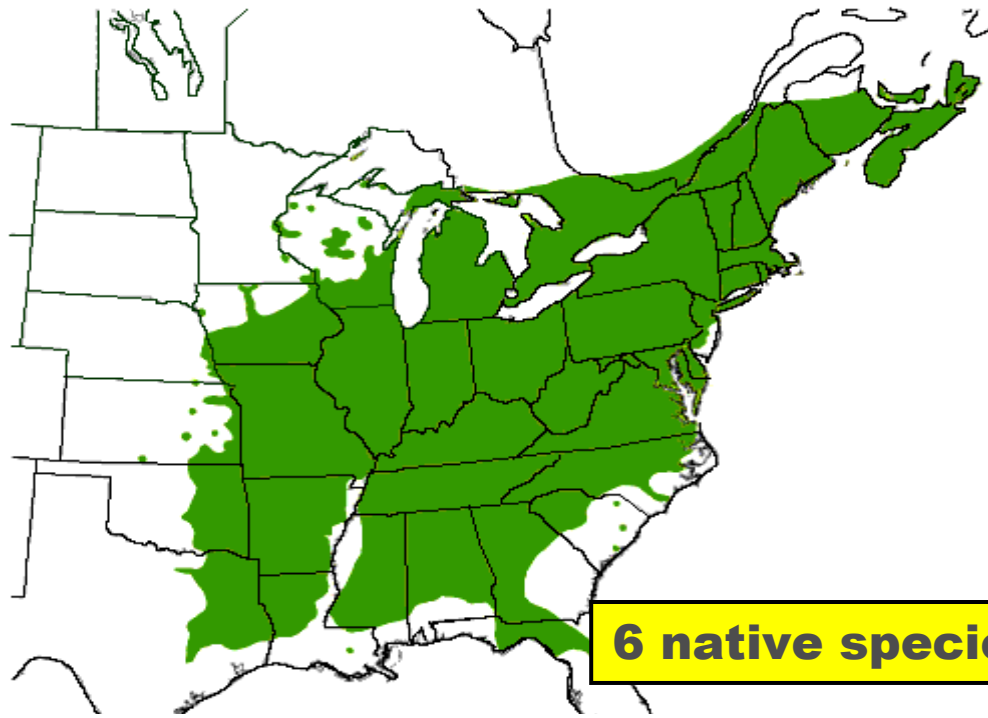
Most Hardiness Zone ratings are by John Elstey of Wayside Gardens, as listed in *Blooms of Bressingham Garden Plants* by Alan and Adrian Bloom.

USDA Map
Approximate range of average annual minimum temperatures for each zone. Degrees F

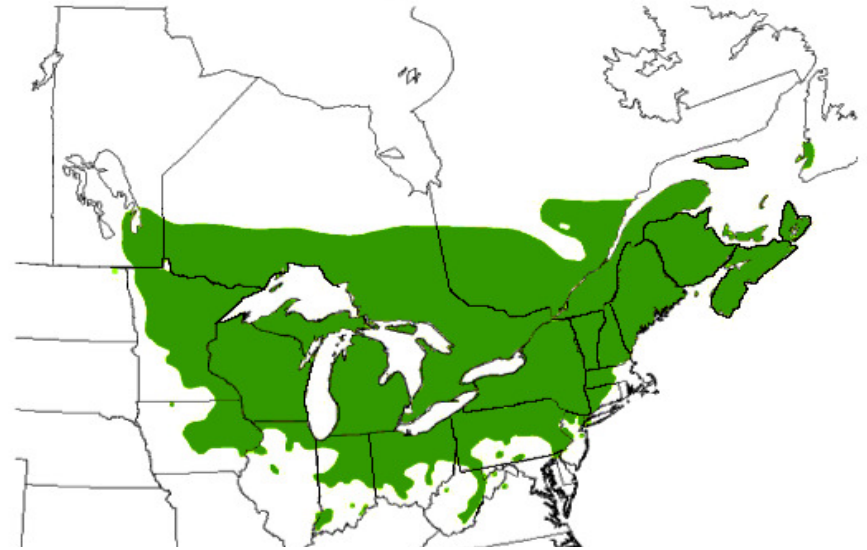
- Zone 1 Below -50°
- Zone 2 -50° To -40°
- Zone 3 -40° To -30°
- Zone 4 -30° To -20°
- Zone 5 -20° To -10°
- Zone 6 -10° To 0°
- Zone 7 0° To 10°
- Zone 8 10° To 20°
- Zone 9 20° To 30°
- Zone 10 30° To 40°
- Zone 11 Above 40°

Courtesy - John Ball

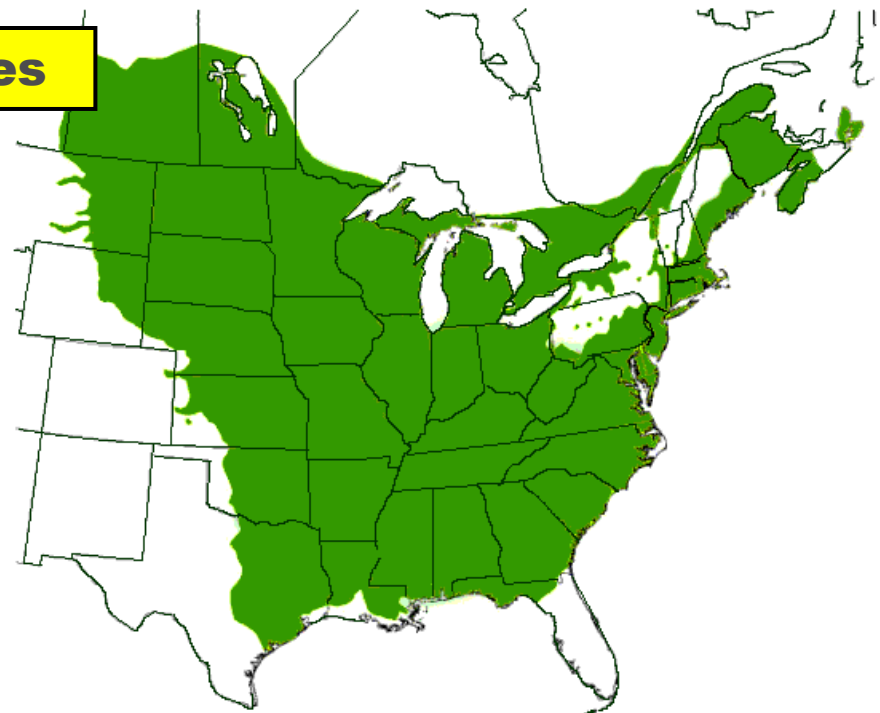
Native Range of White Ash



Native Range of Black Ash

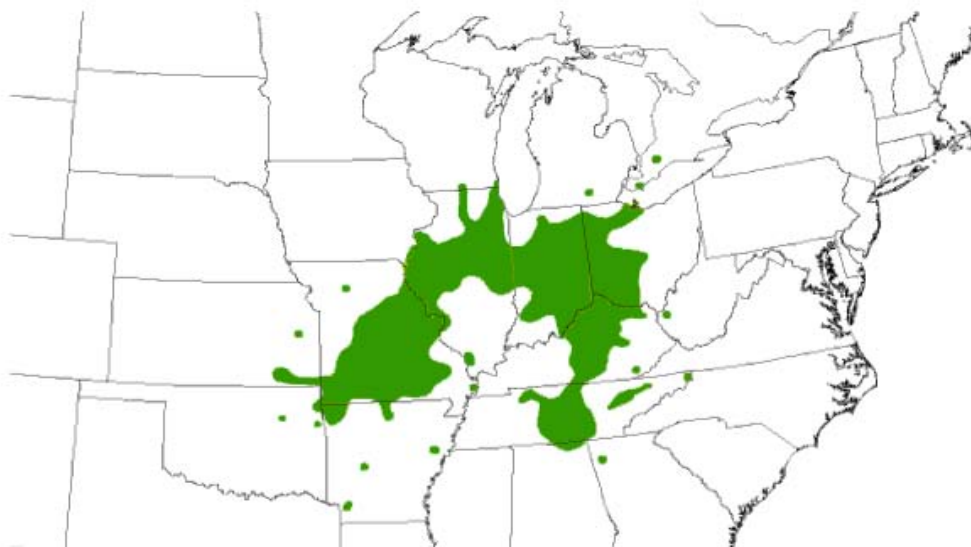


Native Range of Green Ash



6 native species

Native Range of Blue Ash



0 200 400 Miles



Canada











C. Lindell, MSU

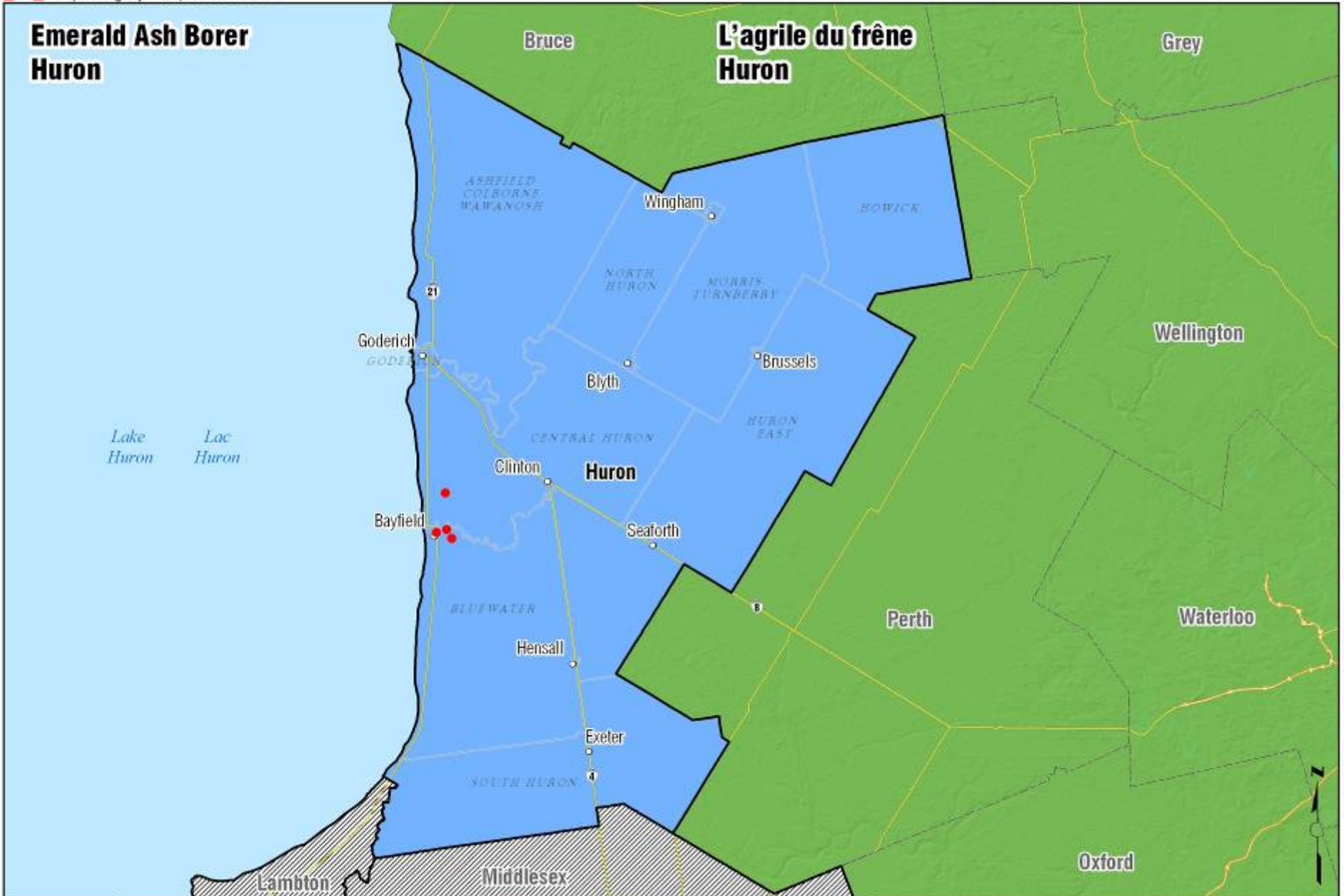
Emerald Ash Borer - Delimitation Survey

Close up of Positive Sites

(as of August 13, 2002)

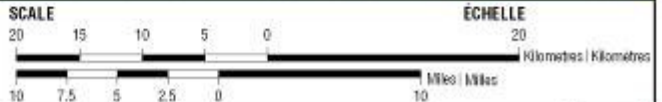


Emerald Ash Borer Huron

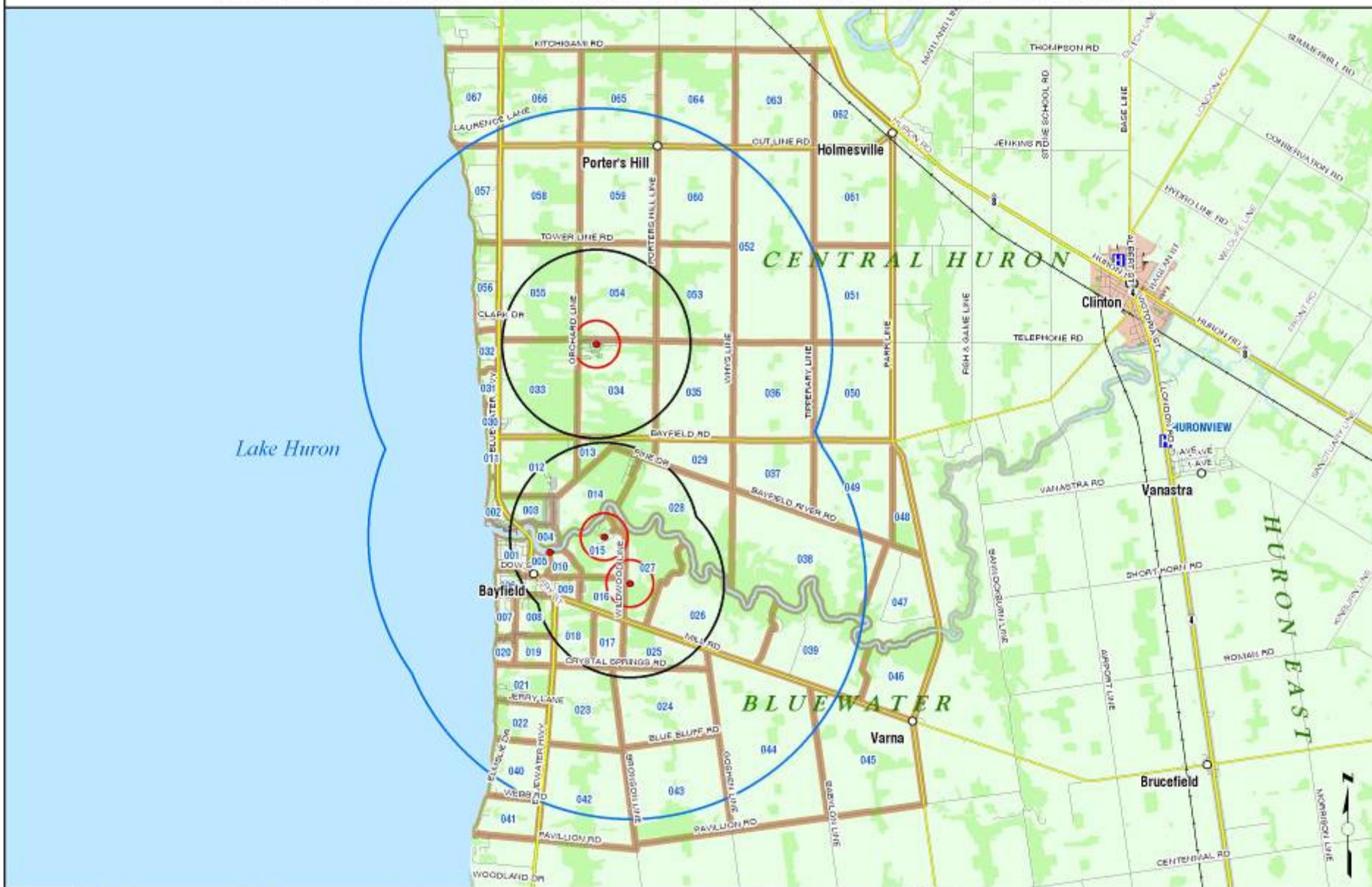


LEGEND / LÉGENDE

-  City | Ville
-  Positive Site | Site positif [2008]
-  Emerald ash borer positive county detected in 2008 | MRC positive pour l'agrile du frêne détectée en 2008
-  Areas Regulated by Ministerial Orders | Zones réglementées par des ordonnances ministérielles



HURON COUNTY – BLUEWATER AND CENTRAL HURON MUNICIPALITIES : EMERALD ASH BORER DELIMITATION SURVEY BLOCKS



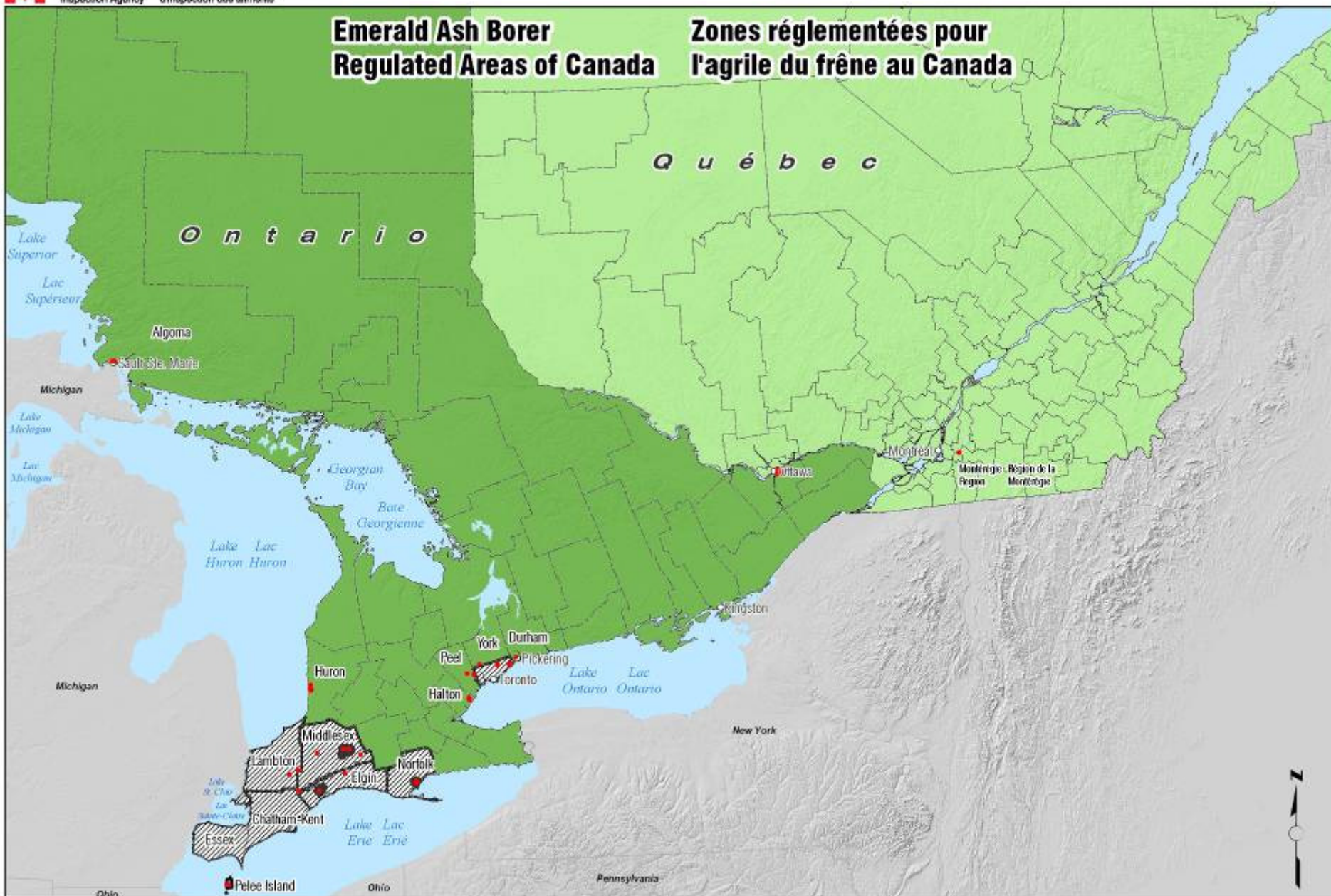
LEGEND	<ul style="list-style-type: none"> ● Positive ○ City 	<ul style="list-style-type: none"> — Road — Railway 	<ul style="list-style-type: none"> — Lake/River/Stream — Wetland 	<ul style="list-style-type: none"> ○ 500 m Radial Boundary ○ 2 Km Radial Boundary 	<ul style="list-style-type: none"> ○ 5 Km Radial Boundary ◇ Survey Block
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SCALE
 4 3 2 1 0 4 Kilometres
 2 1.5 1 0.5 0 2 Miles

Produced by the Canadian Food Inspection Agency, Mapping and GIS Services, London, Ontario. Map Projection UTM NAD 83 Zone 17, November 12, 2008.

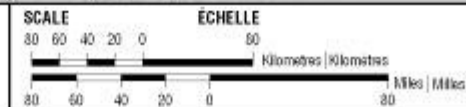
Emerald Ash Borer Regulated Areas of Canada

Zones réglementées pour l'agrile du frêne au Canada



LEGEND / LÉGENDE

- City / Ville
- Positive Site [2008] / Site positif [2008]
- Areas Regulated under Notice of Quarantine / Zones réglementées sous avis de quarantaine
- Areas Regulated by Ministerial Orders / Zones réglementées par des ordonnances ministérielles

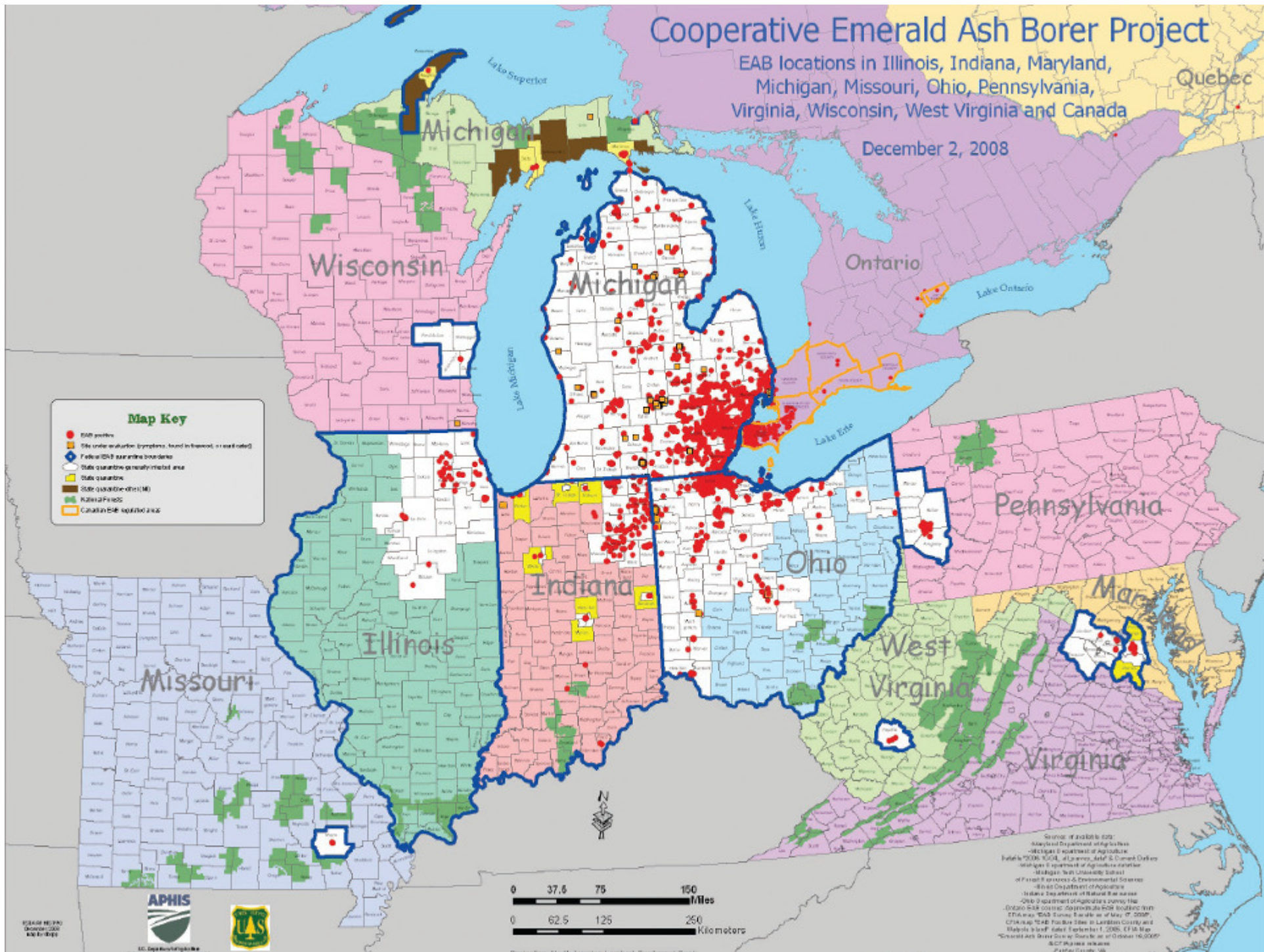


Cooperative Emerald Ash Borer Project

EAB locations in Illinois, Indiana, Maryland, Michigan, Missouri, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada

Quebec

December 2, 2008



Map Key

- EAB points
- 2006-2007 sampling boundary
- State quarantine-generalized area
- State quarantine
- State quarantine-official
- Federal Forest
- Canadian EAB quarantine area



Source: APHIS 2007
Michigan Department of Agriculture
Illinois Department of Agriculture
Maryland Department of Agriculture
Ohio Department of Agriculture
Pennsylvania Department of Agriculture
Virginia Department of Agriculture
West Virginia Department of Agriculture
Wisconsin Department of Agriculture

EMERALD ASH BORER
COOPERATIVE PROJECT



Source: North American Forest Pest Diagnostic Center



CFIA's Slow the Spread Strategy

- **Survey**

- **Detection surveys to find where EAB is present**
- **Delimitation to determine extent of infestation**

- **Challenges of surveying**

- **EAB is difficult to detect**
- **No viable traps or lures developed to date**
- **EAB is often present in an area 3-4 years prior to detection**



CFIA's Slow the Spread Strategy

- **Communications**

- **Attend forest and outdoors shows**
- **Engage stakeholders**
- **Notices, online, in print and on radio**
- **Many products have been made available**
- **Toll free line 1-866-463-6017**

- **Regulation**

- **Individual properties**
- **Larger area – to be defined**
- **Enforcement**



CFIA's role is defined by legislation and policy:

- **Plant Protection Act & Plant Protection Regulations**
- **EAB Infested Places Order (Ministerial Order)**
- **D-03-08 (EAB Policy)**
- **Canada is a signatory to the International Plant Protection Convention (IPPC) and other agreements that set the rules for dealing with pests of **Quarantine Significance** such as EAB**



Regulated Articles

- **Any ash (nursery stock, lumber, wood packaging, logs, wood/bark chips) and firewood of all species**
- **Articles can't move outside of a regulated area, but can move within.**
- **Further information regarding regulated articles can be found in D-03-08**



D-03-08

- **Rules regarding ash movement from the US (import), and from infested areas to non infested areas of Canada (domestic) are defined throughout**
- **Provides guidelines on how to deal with Regulated Articles, including:**
- **EAB Approved Facility Compliance Program**
 - **Facilities producing product in a regulated area**
 - **Facilities acquiring material from regulated areas (only during the no-flight period Oct1 – Mar 31)**



EABAFCP: Key Points

- **Facilities must develop a plan (ISO-based) to make product **CONSISTENTLY** compliant**
- **CFIA inspects a minimum of once per month**
- **In non-regulated areas facilities must state how:**
 - **segregation will be maintained**
 - **waste material will be disposed of**
 - **Compliant = Heat Treated (not Kiln Dried), incinerated, bark free (plus 1” of cambium)**



How can you help?

- **Know your by-laws and policies**
 - **Do harvest permits capture information on what is being harvested and where it is going?**
 - **What about the tops/fuelwood?**
- **The CFIA regulates the movement of wood, but we can't regulate what we don't know about.**



Enforcement Actions

- **Prohibition of Movement: halt the movement of materials**
- **Notice of Quarantine: to determine pest presence**
- **Notice of Disposal: materials to be destroyed**
- **Notice of Detention: A violation has occurred; materials can be moved, seized, disposed of made compliant**



Enforcement Actions

Plant Protection Act:

- **For those who violate the Act a penalty of up to \$200,000 and/or to imprisonment for a term not exceeding 2 years is possible**

Agriculture and Agri-Food Administrative Monetary Penalties Act:

- **For those who violate the Plant Protection Act immediate penalties of up to \$4000 may be issued**

Pests of Ash often confused with EAB



***Neoclytus acuminatus*: Red-headed Ash Borer – native secondary pest**



Pests of Ash often confused with EAB



***Podesesia syringae*: Clearwinged Ash Borer**



***Hylesinus aculeatus*:
Ash Bark Beetle**

Pests of Ash often confused with EAB



Chrysobothris femorata



Good News stories!











Biological Control of EAB

Potential native predators

Phasgonophora sulcata



Balcha indica

Atanycolus sp.



Predatory wasp larva feeding on
EAB larva



Biological Control of EAB (US release)

Classic Biocontrol - *Oobius agrili*, *Spathius agrili*, *Tetrastichus planipennis*

Tetrastichus planipennis



Spathius agrili

Biological Control of EAB

***Cerceris fumipennis*: Buprestid Hunter – predatory wasp**
Potential Survey Tool?



Canada 