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Asian Longhorned Beetle Cooperative Eradication Program: An Overview

Brendon Reardon
National Program Manager

August 31, 2011

Anoplophora glabripennis





ITEM NO: 60-45 R
QTY: 56 PCS
N.W. 590 KGS
G.W. 720 KGS

GZE
ORDER NO: 2508NGZE
GLASSBORO NJ
GANO:
MADE IN CHINA

GANO:
MADE IN CHINA



Photo credit: A. J. Sawyer, USDA-APHIS-PPQ



Asian Longhorned Beetle (ALB)

- Lifecycle and damage
- Potential impact
- Eradication strategy
- U.S. incursions



Asian Longhorned Beetle (ALB)

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Biological and Ecological Parameters

- **Origin:** Native of China and Korea
- **Distribution:** Populations detected in Japan, Canada, Austria, France, Italy, United Kingdom, Poland, the Netherlands, and Germany
- **Host Range:** In U.S., hosts include species of 12 genera:
 - Maple, boxelder, willow, elm, birch, horsechestnut, poplar, ash, London plane tree, mimosa, European mountain ash, hackberry, katsura tree...

Asian Longhorned Beetle Lifecycle



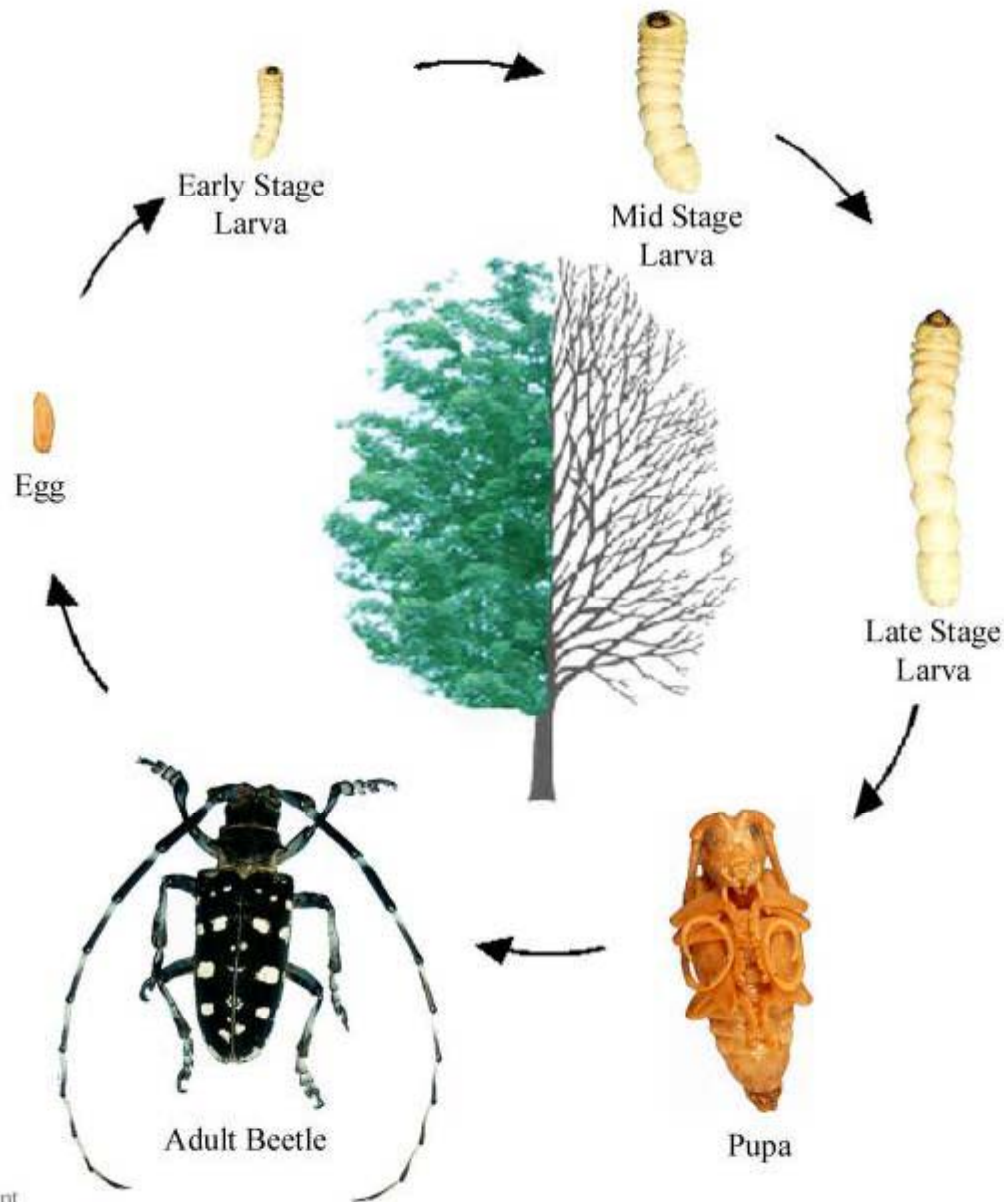
Adults and oviposition scars



Emergence holes



Adult emerging from tree



Larva in tree



Pupal chamber in tree

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Photo credit: Michael Smith, ARS





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Photo credit: Jennifer Forman-Orth, MDAR



5-7mm



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Photo credit: M. Bohne, USDA-FS-FHP



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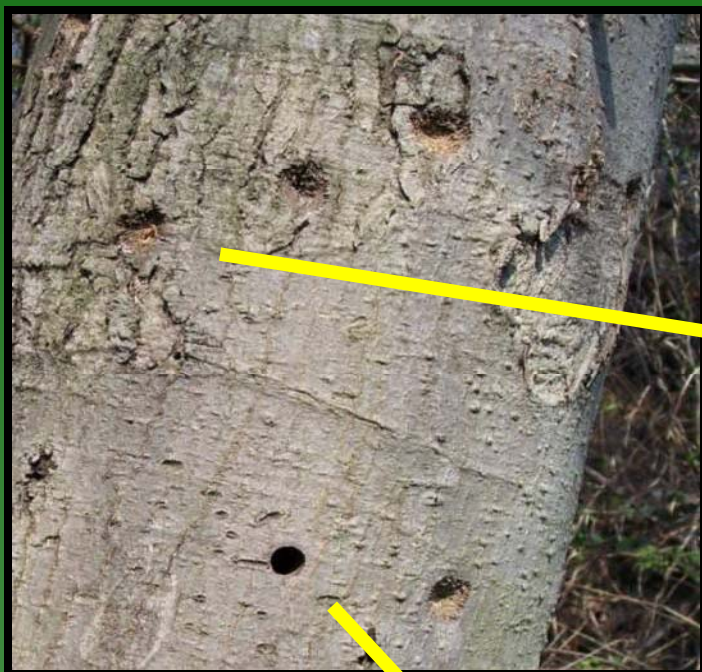






Photo credit: A. J. Sawyer, USDA-APHIS-PPQ

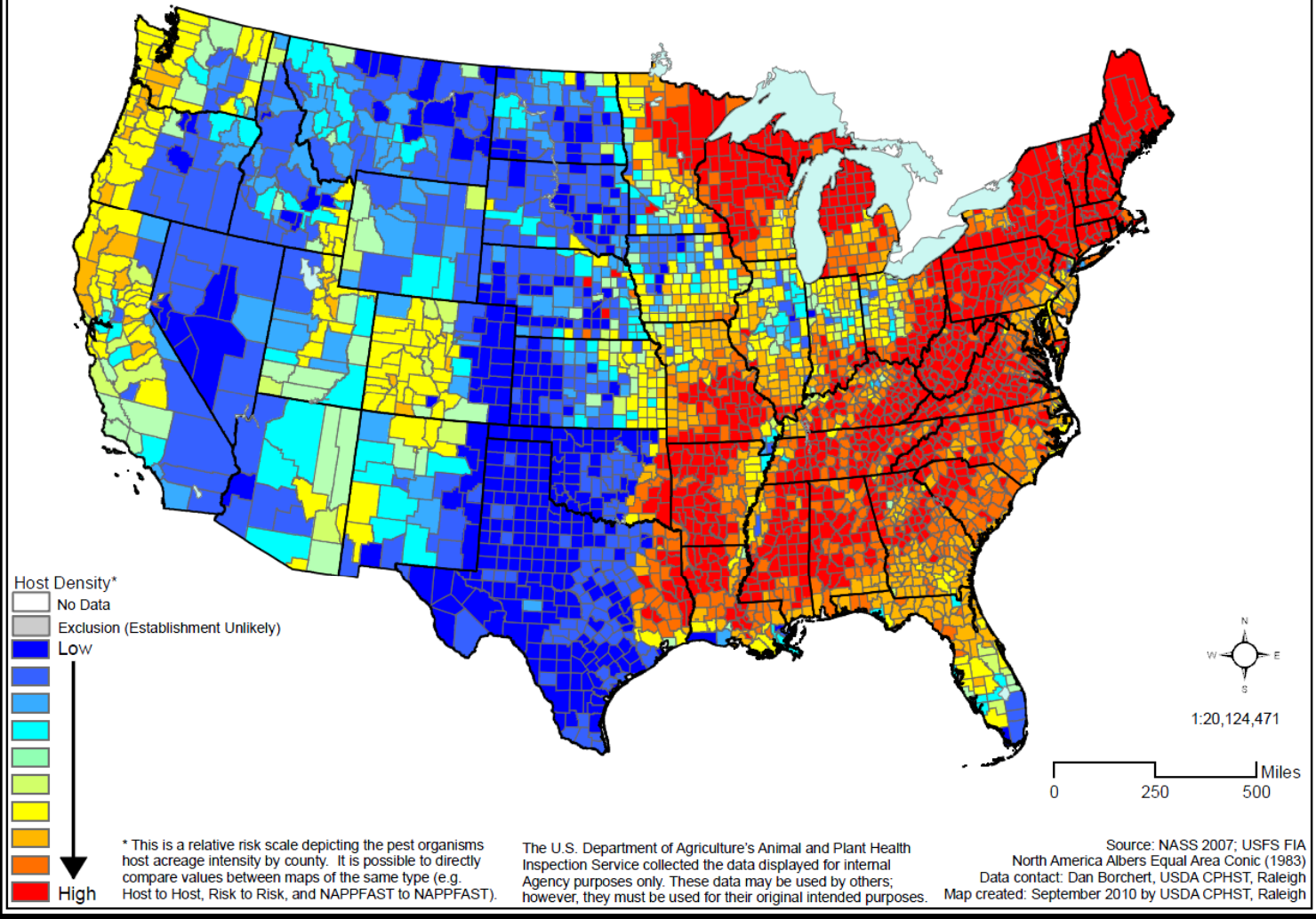


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Host Map *Anoplorphora glabripennis*, Asian Longhorned Beetle



Potential Economic Impacts

- Affected industries:
 - Maple syrup
 - Tree nurseries
 - Lumber and veneer
 - Home construction
 - Furniture and cabinets
 - Pulp and paper
 - Firewood
 - Tourism





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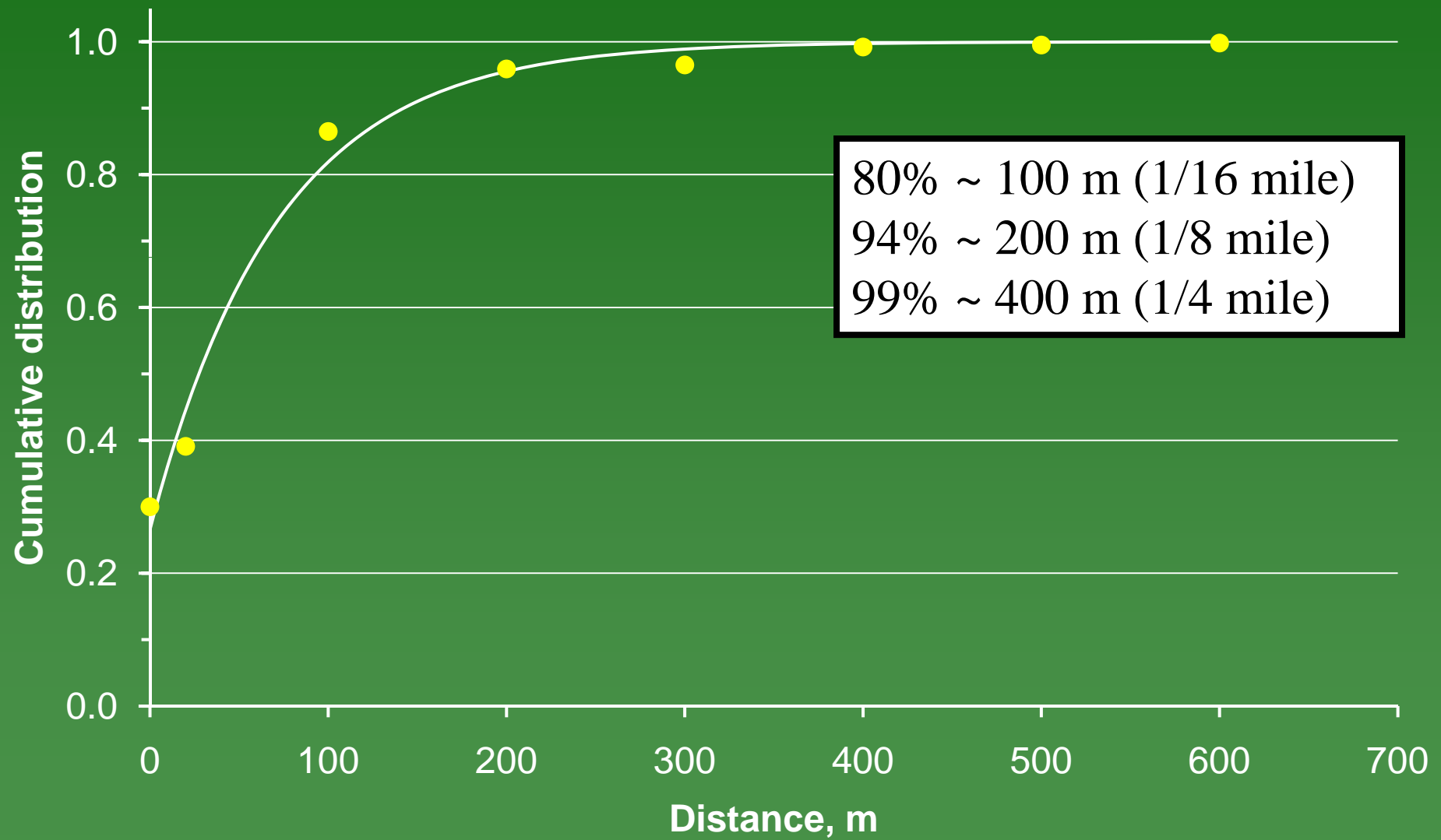
Potential Environmental Impacts

- Host trees are important component to forest ecosystems and urban environments:
 - Habitat for animals
 - Prevent soil erosion
 - Climate regulation (shade, block wind)
 - Diminish storm water runoff
 - Reduce air, water, and noise pollution



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Jul 4, 2007

Year 1

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Rahway, NJ



Woodbridge, NJ

Carteret, NJ

9044 ft

2007

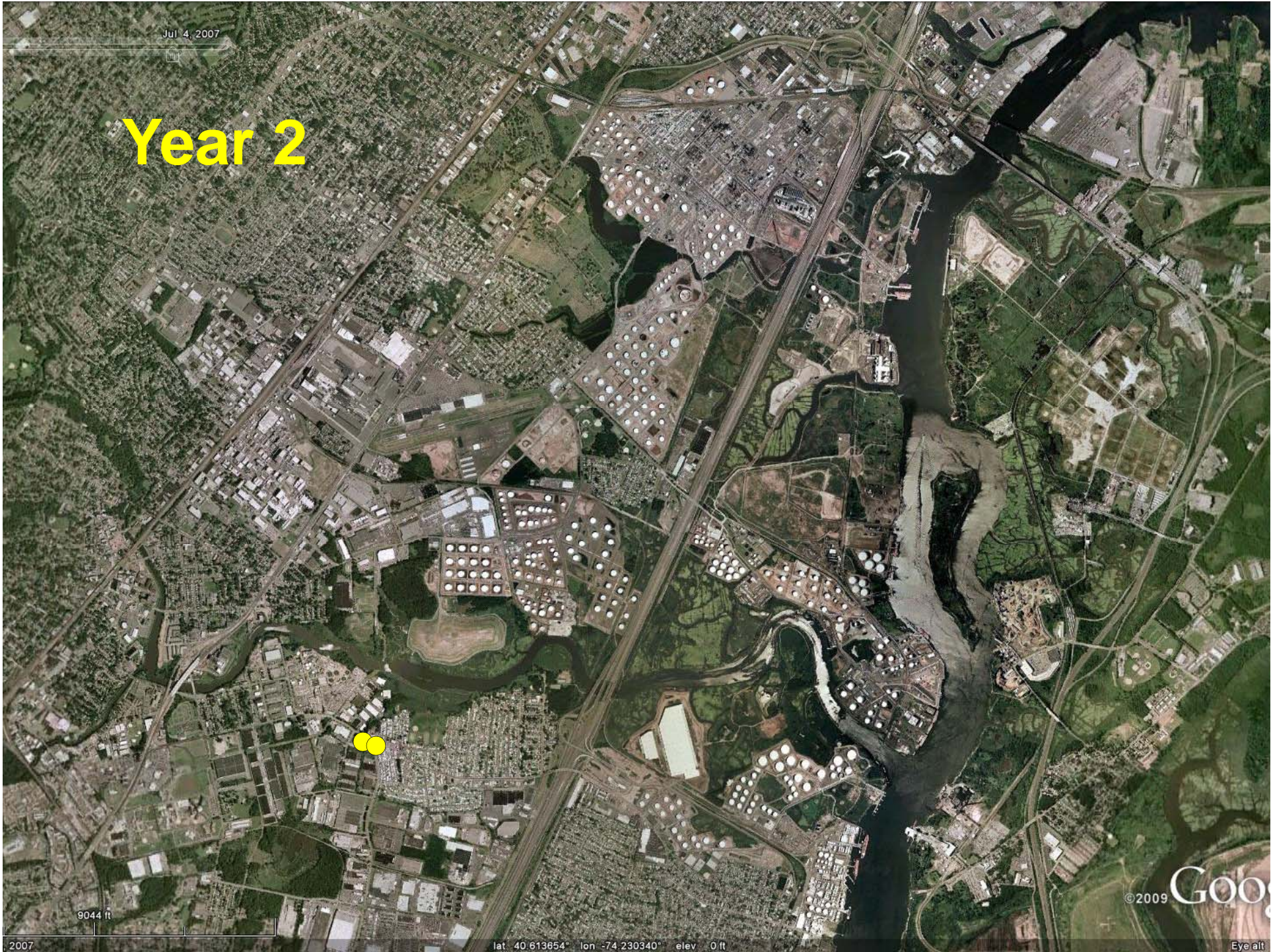
lat. 40.613654° lon -74.230340° elev. 0 ft

©2009 Google

Eye alt

Jul 4, 2007

Year 2



9044 ft

2007

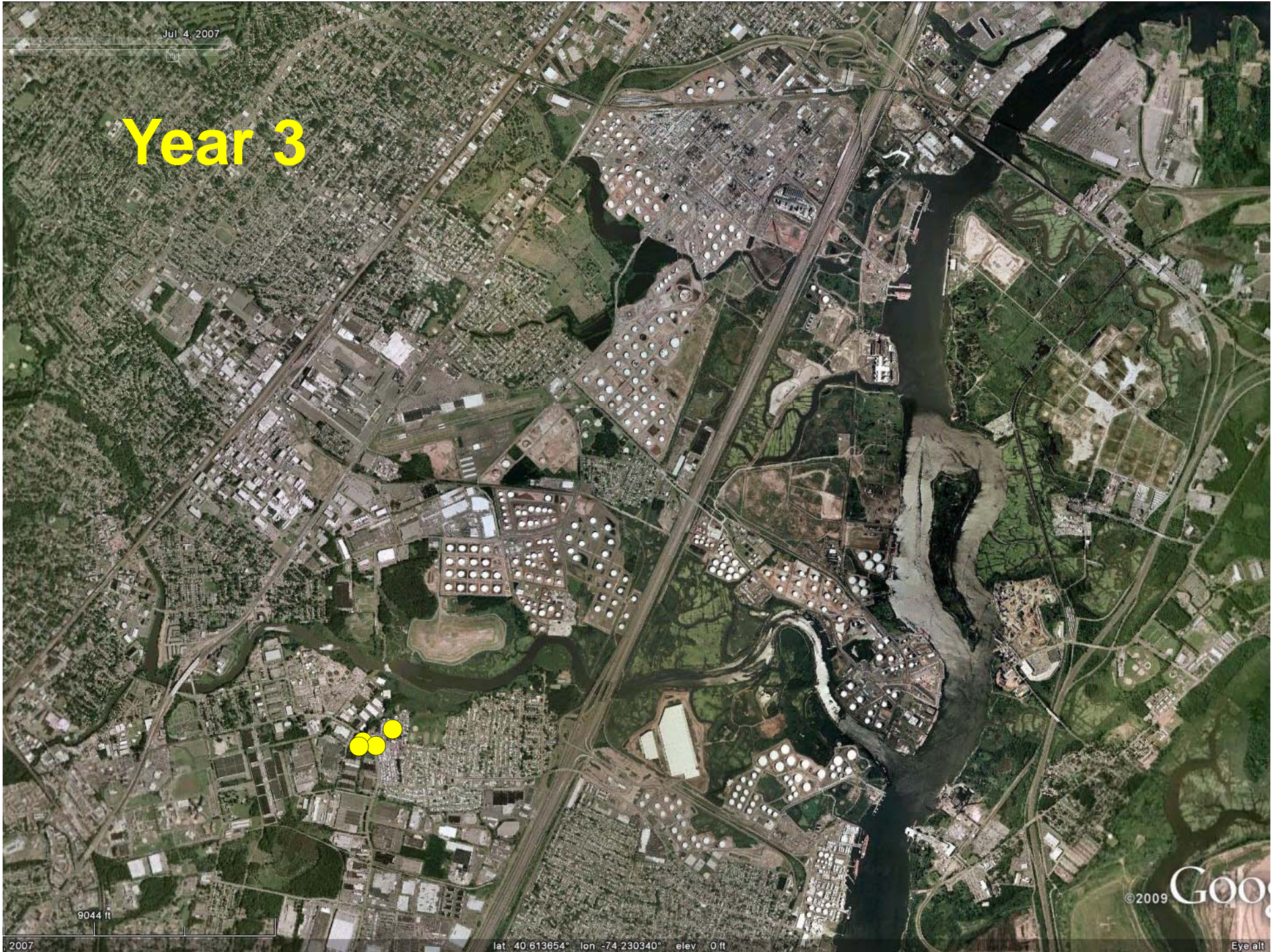
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Eye alt

Jul 4, 2007

Year 3



9044 ft

2007

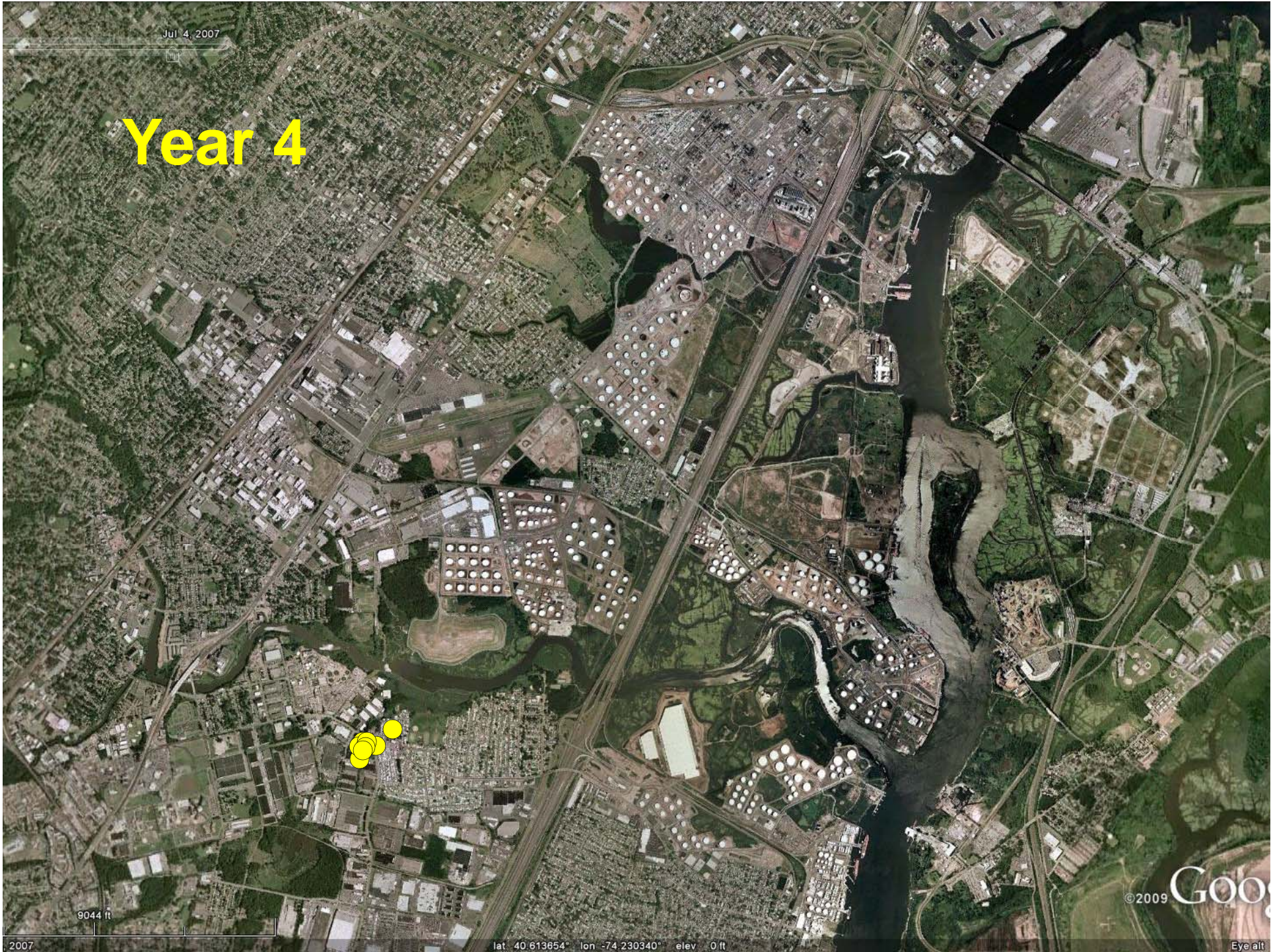
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Year 4



9044 ft

2007

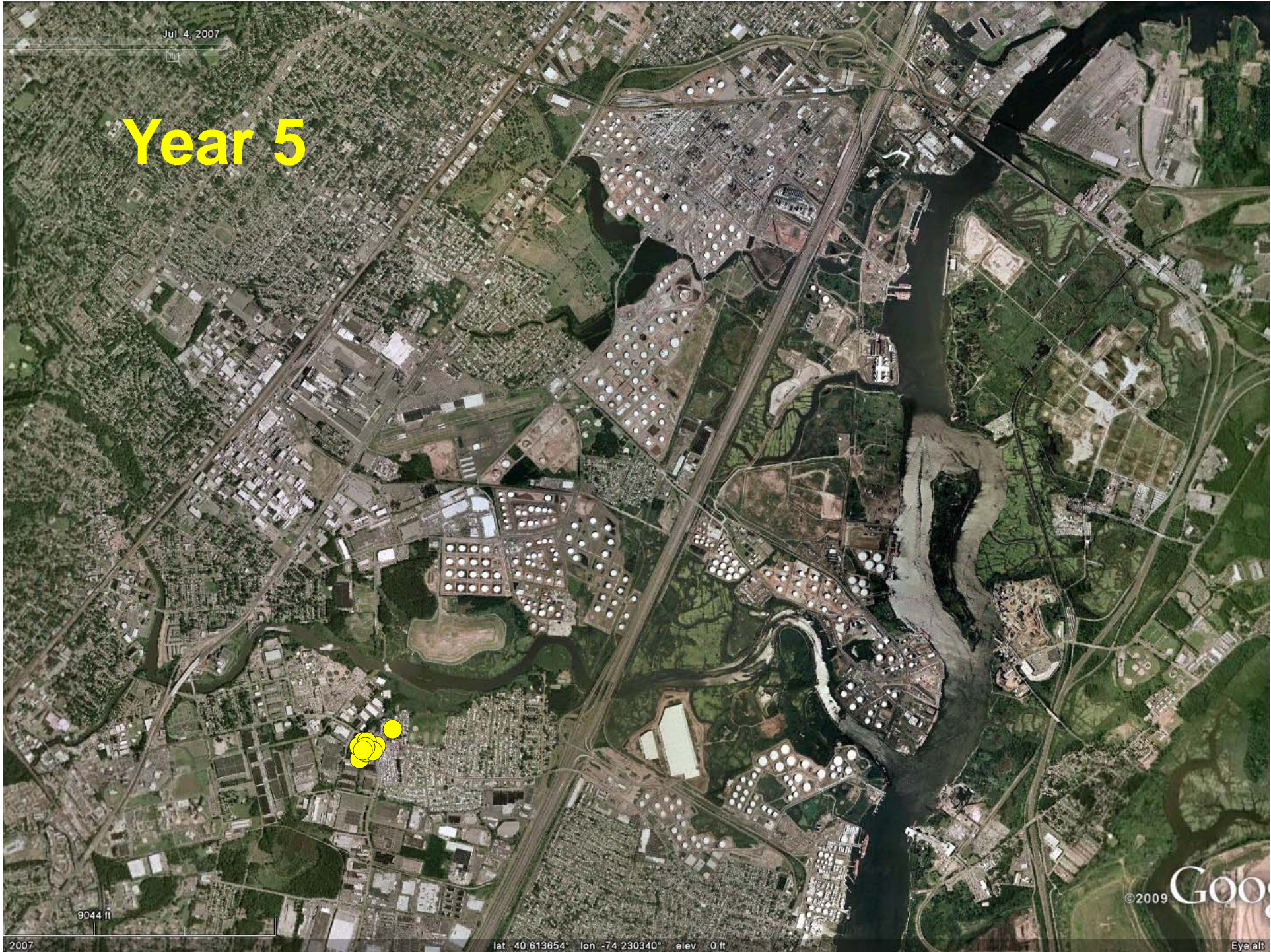
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Jul 4, 2007

Year 5



9044 ft

2007

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Jul 4, 2007

Year 6



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Jul 4, 2007

Year 7



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Jul 4, 2007

Year 8



9044 ft

2007

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Eye alt



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Eradication Strategy

- Exclusion
- Regulatory measures
- Survey / Detection
- Host removal
- Chemical treatments
- Outreach / Education
- Replanting
- Research



Eradication Strategy

- **Exclusion**
 - **Legislation**
 - Inspection/Enforcement/Deterrence
- Regulatory measures
- Survey / Detection
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Legislation

- Interim rule requiring cargo with SWPM from Chinese ports certified prior to arrival in United States in December 1998.
- ISPM 15 in July 2006.



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Eradication Strategy

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Photo credit: A. J. Sawyer, USDA-APHIS-PPQ



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Eradication Strategy

- Exclusion
- **Regulatory measures**
 - **Quarantine**
 - Compliance agreements
- Survey / Detection
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Regulatory Measures

- Regulated area; boundary at least 1 ½-mile radius around infestation.
- Federal and parallel State quarantine enacted to control movement of host material from infested area.
 - NJ: 25-square miles
 - NY: 135-square miles
 - MA: 108-square miles
 - OH: 56-square miles
 - 324-square miles regulated for ALB in United States



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Eradication Strategy

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 - Quarantine
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Regulatory Measures

- Regulated Articles
 - All ALB life stages
 - All hardwood firewood
 - All ALB host material: living, dead, cut, and fallen
- Regulated Establishments
 - Landscapers
 - Tree pruning and removal companies
 - Firewood dealers
 - Pallet distributors
 - Nurseries
 - Municipal services



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Eradication Strategy

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Survey Protocol

- Surveys conducted on host trees located within 1 ½ miles of infestation.
- Ground surveys are less effective in detecting lightly infested trees compared with aerial surveys; climbing surveys are 60-75% effective.
- 2-4 negative cycles.





Healed exit hole



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Chemical Treatments

- Systemic neonicotinoid insecticide: imidacloprid.
- All non-infested host trees within ½ mile radius of infestation treated.
- Applied spring before adult emergence.
- Minimum of three consecutive years of treatments.
- 99.9% success rate barring improper applications, poor health.

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Be a
BEETLE BUSTER
And Save Chicago's Trees!

Search for the ASIAN LONGHORNED BEETLE
 Report Your Findings
 (whether or not you see one!)
<http://beetlebusters.aphis.usda.gov>



Beetle Busters
 SAVING CHICAGO'S TREES

Identify the Asian Longhorned Beetle
 The ALB is a destructive pest that kills trees. Learn to identify the ALB, become a Beetle Buster, and help save Chicago's Trees!
Here's what to look for:

The Beetle
 Long black antennae with white bands
 Shiny black body
 White spots
 Six legs

The Trees
 The ALB grows and spreads only within hardwood trees, such as:
 Elm
 Honeylocust
 Maple
 Norway Spruce

The Lifecycle
 The ALB begins life as an egg, hatches into a larva that scratches into a tree, transforms into a pupa, and finally into an adult beetle. The ALB is visible from late spring through fall.

The Evidence
 ALBs leave characteristic signs that are easy to identify on trees. Look for cankers and signs of beetle signs:
 Bark or wood scale or bark
 Discarded sawdust
 Yellowing or dropping leaves or dead branches

Search this spring, summer, and fall. Report your findings — whether you see one or not — at <http://beetlebusters.aphis.usda.gov> or by calling 312-742-3385.

USDA
 Using Best-4-E Science To Solve a Real Community Problem

ATTACK
 OF THE
TREE KILLING ASIAN LONGHORNED BEETLE!

Look for adult beetles and signs of infestation during summer and fall. Report sightings!

SAVE OUR TREES!
 Report the Asian longhorned beetle in any signs of infestation.
 In New York: 1-800-365-6301
 In New Jersey: 1-800-365-6301
 In New York City: 1-877-STOP-ALB

For Families

BEETLE Detectives

FPOSP



<http://www.beetlebusters.info>



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Eradication Strategy

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U.S. Forest Service

Before Removal



After Removal



After Replanting





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Research

- Biology and population dynamics
- New technologies/chemicals for control
- Pilot program for fall treatments
- Regulatory treatments
- Biocontrol
- Rearing
- Effects of imidacloprid on pollinators
- Economic and environmental modelling
- Traps and lures



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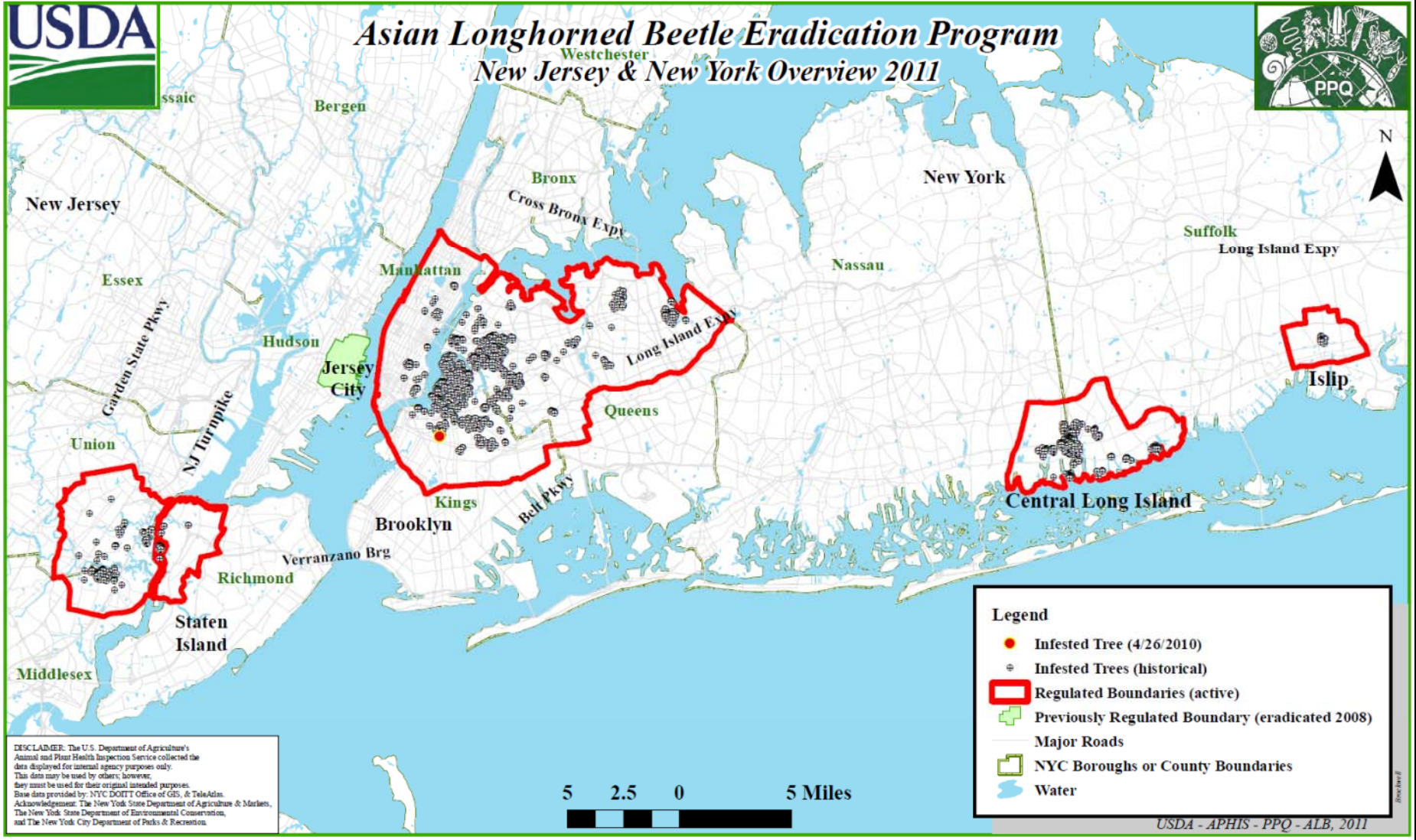


Illinois

- State of Illinois declared eradicated April 2008.
- 35-square miles regulated at one time.
- From 1998 to 2003, 1,551 infested and 220 high-risk host trees removed.
- 2,682 non-host trees replanted.
- Early cooperation among Federal, State, and local agencies made program successful.



Asian Longhorned Beetle Eradication Program New Jersey & New York Overview 2011



DISCLAIMER: The U.S. Department of Agriculture's Animal and Plant Health Inspection Service collected the data displayed for internal agency purposes only. This data may be used by others; however, they must be used for their original intended purposes. Base data provided by NYC DOITT Office of GIS, & TeleAtlas. Acknowledgement: The New York State Department of Agriculture & Markets, The New York State Department of Environmental Conservation, and The New York City Department of Parks & Recreation.



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New Jersey

Hudson County

- Eradicated April 7, 2008.
- First/last detection October 2002.
- 113 infested and 348 high-risk host trees removed.
- 433 non-host trees replanted.



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New Jersey

Middlesex/Union Counties

- First detected 2004; last detected 2006.
- Quarantined 25-square miles.
- 616 infested and 20,904 high-risk host trees removed.
- High-risk host removal $\frac{1}{4}$ mile from exit holes and $\frac{1}{8}$ mile from oviposition sites.
- Treatment completed 2009.
- Chemical treatment $\frac{1}{2}$ mile radius.
- 6,456 trees replanted.
- 2nd survey cycle will be completed in 2011; final confirmation survey initiated.



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New York

- 135-square miles regulated.
- Small pockets detected in last few years.
 - 2009: Queens (5 infested trees) and Staten Island (7 infested trees)
 - 2010: Brooklyn (1 infested tree)
- Chemical treatments completed in Islip, Manhattan, western portions of Brooklyn and Queens.
- 5,283 non-host trees replanted.



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New York Staten Island

- First detected 2007; last detected 2009.
- 10-square miles regulated.
- 51 infested trees and 10,281 high-risk host trees removed.
- High-risk host trees removed ½-mile radius from infested trees.
- Treatments completed in 2011 (9,507 trees).
- Chemical treatment 1-mile radius.
- Complete 2nd survey cycle in 2011; final confirmation survey initiated.



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New York

Brooklyn, Queens, Manhattan

- Brooklyn started 2nd survey cycle 2007 and completion in 2011; last infested tree in 2010.
- Queens started 2006 and in progress; last detection in 2009 Western Queens, 2003 in Eastern Queens.
- Manhattan final confirmation initiated in 2011; last detection 2005.



New York

Islip

- Last infested tree detected 2002.
- 27 infested trees total.
- Chemical treatments completed in 2004.
- Eradication and deregulation August 23, 2011.

Central Long Island

- Last infested tree detected 2008.
- 2nd survey cycle started 2007 and in progress.

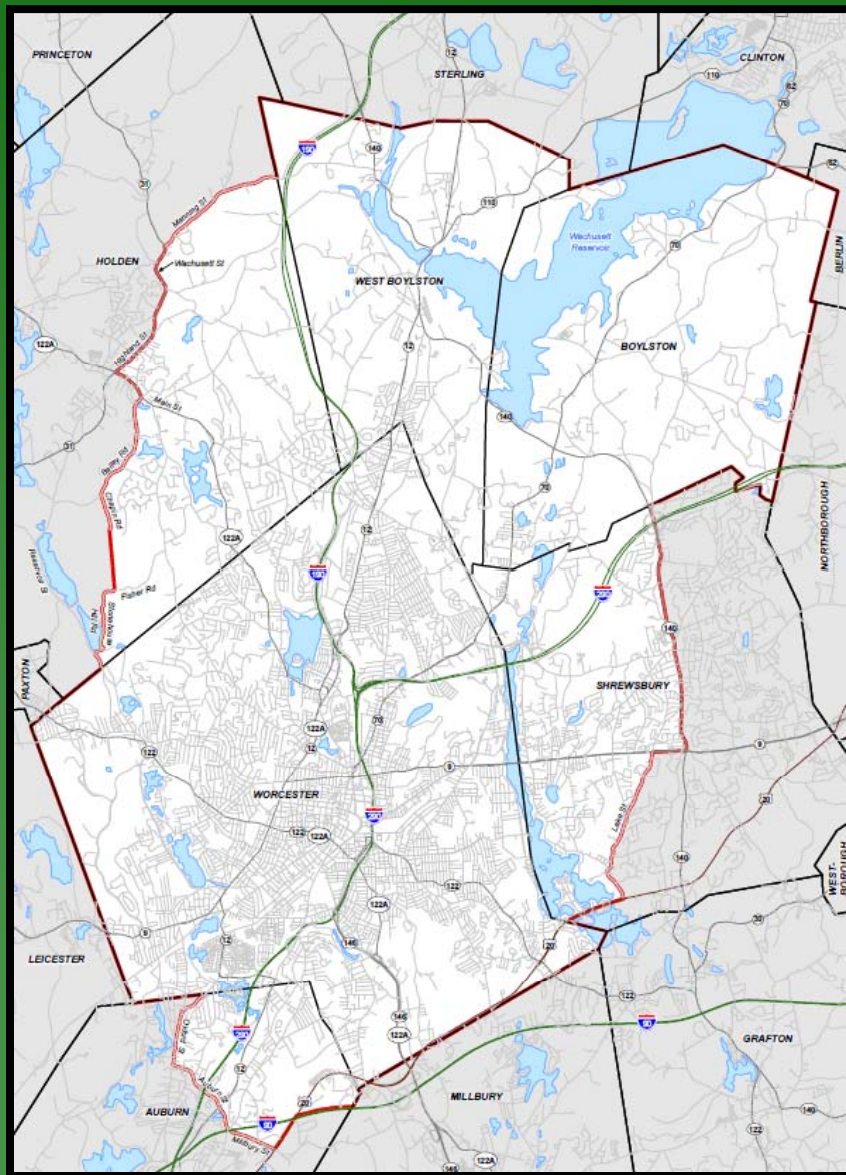


Massachusetts

- August 5, 2008 confirmation of ALB
- Infested tree detections:
 - 16,836 from 2008 through 2009
 - 2,250 in 2010
 - 1,191 in 2011
- 8,733 trees replanted and 11,490 sited.
- Regulated areas:
 - Worcester (98-square miles)
 - Boston (10-square miles)

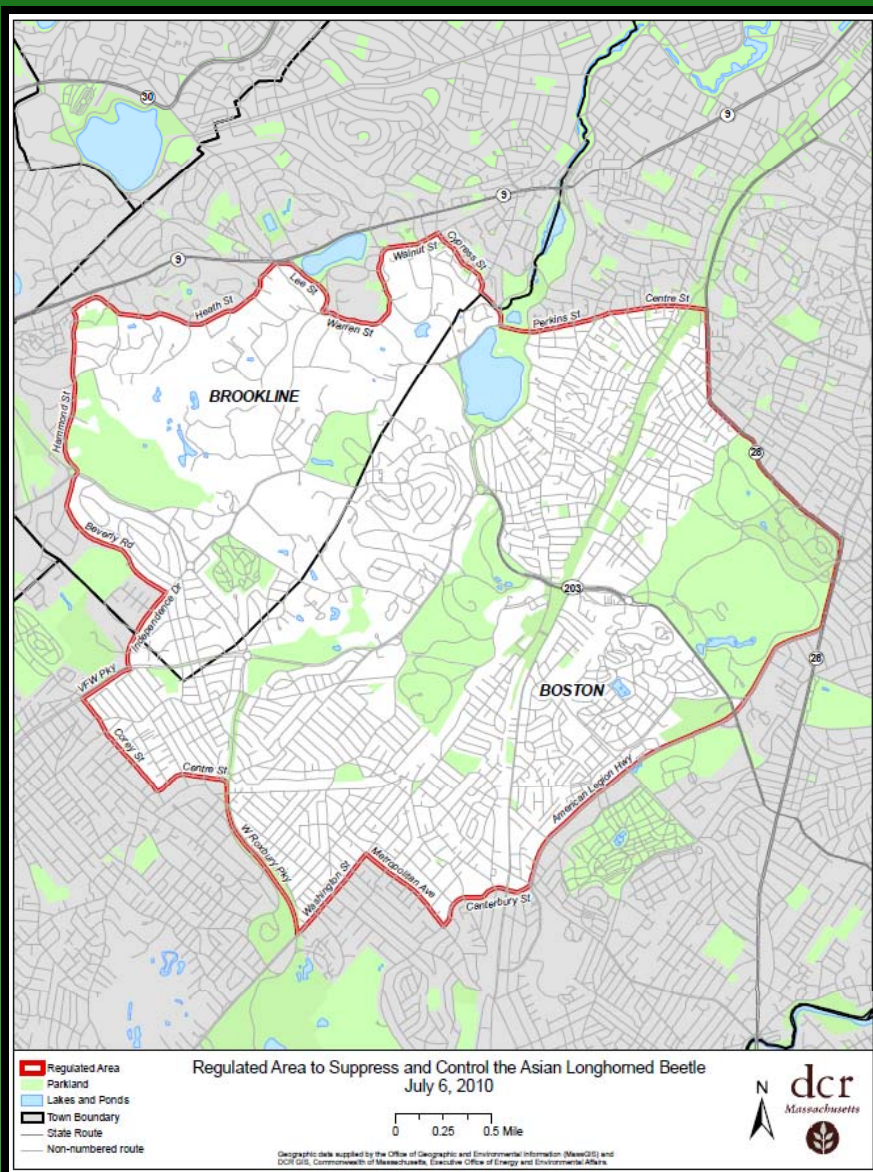
Worcester, MA regulated area

- 20,044 infested trees from onset through 2011.
- 19,850 infested and 10,250 high-risk trees removed through 2011.
- 1,365,083 host trees surveyed through 2011.
- Treated 62,320 trees in 2010.



Boston, MA regulated area

- Detected July 3, 2010.
- 6 infested trees.
- 6 trees removed; 12 replanted.
- Infestation started 2008.
- 55,259 host trees surveyed.





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Massachusetts in 2011

- 2011 treatments completed in Worcester (135,256 trees) and Boston (1,921 trees).
- Work cooperatively with local, State, and Federal groups to implement eradication plan
- Outreach to public and stakeholders
- Delimit



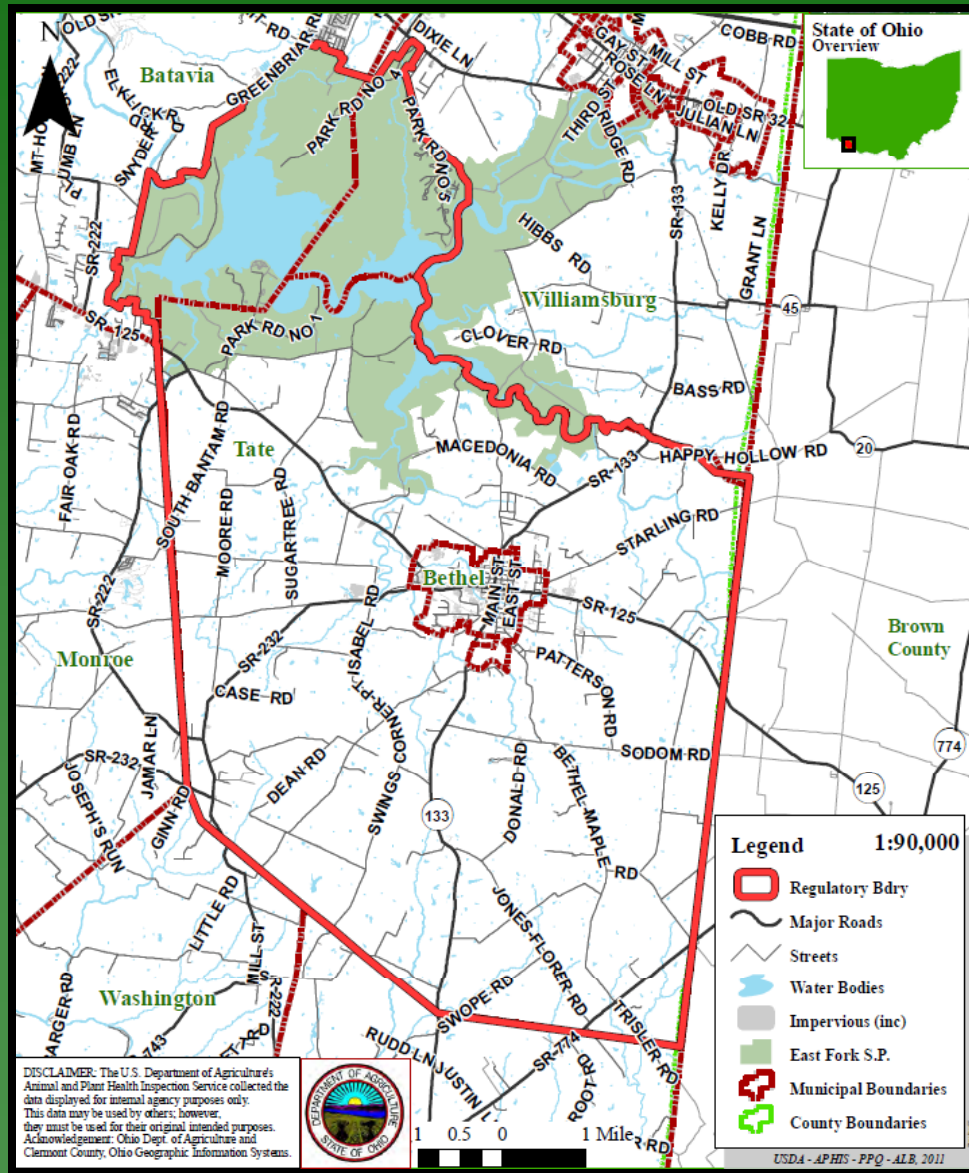
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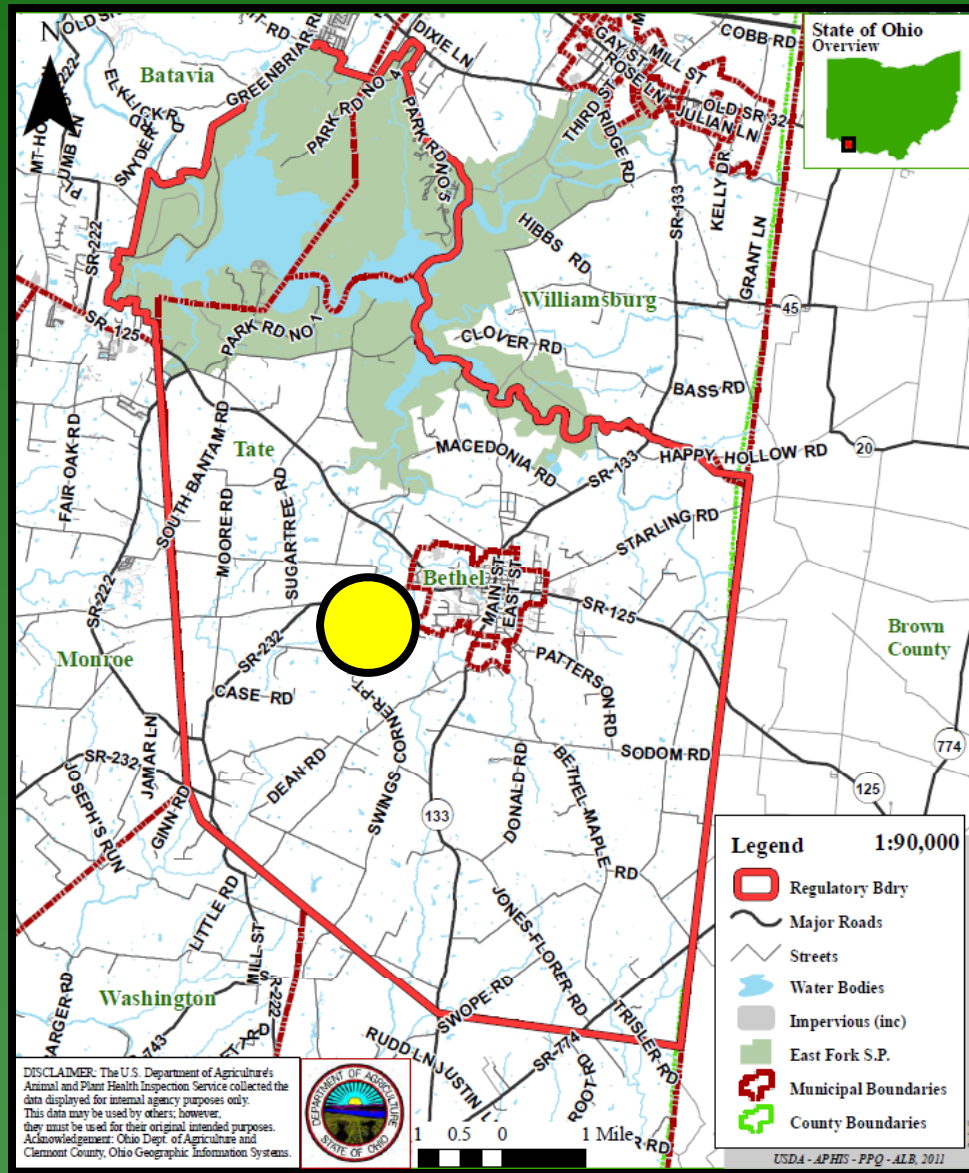
Ohio

- On July 13, APHIS issued Federal Order establishing 56 square mile regulated area in Clermont County.
- As of August 22, APHIS, ODA, and ODNR completed surveys on approximately 26,315 ALB host trees.
- Approximately 1,745 trees have been confirmed infested with ALB.



Clermont Co., OH regulated area

- On June 17, APHIS and ODA detect ALB in Bethel Village (Clermont County).
- On June 20, APHIS deployed a national incident management team to respond to the detection



Clermont Co., OH regulated area

- APHIS is cooperating with Ohio Department of Agriculture and Ohio Department of Natural Resources to evaluate the scope of the infestation, implement regulatory activities, and perform public outreach.



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Thank you.

