ASHBY CONSERVATION COMMISSION PRESENTS MDAR'S

LEARNING TO RECOGNIZE THE ASIAN LONGHORNED BEETLE

Jennifer Forman Orth
State Plant Pest Survey Coordinator
Mass. Department of Agricultural Resources

MDAR
MASSACHUSETTS DEPARTMENT OF AGRICULTURAL RESOURCES

WHAT IS THE ASIAN LONGHORNED BEETLE?

- An introduced pest, native to Asia
- Longhorned beetle, Cerambycidae family
  - Scientific Name: *Anoplophora glabripennis*
- Attacks hardwood trees, bores through wood

WHY ALB IS A PROBLEM?

…And why should YOU care?

- LOSS OF TREES!
- Loss of wildlife habitat
- Loss of shade, windbreaks
- Loss of flood/erosion control
- Loss of oxygen creation; CO^2 absorption
- Numerous industries affected
  - Tourism
  - Maple syrup industry
  - Timber industry
  - Nursery industry
- **Loss of quality of life**

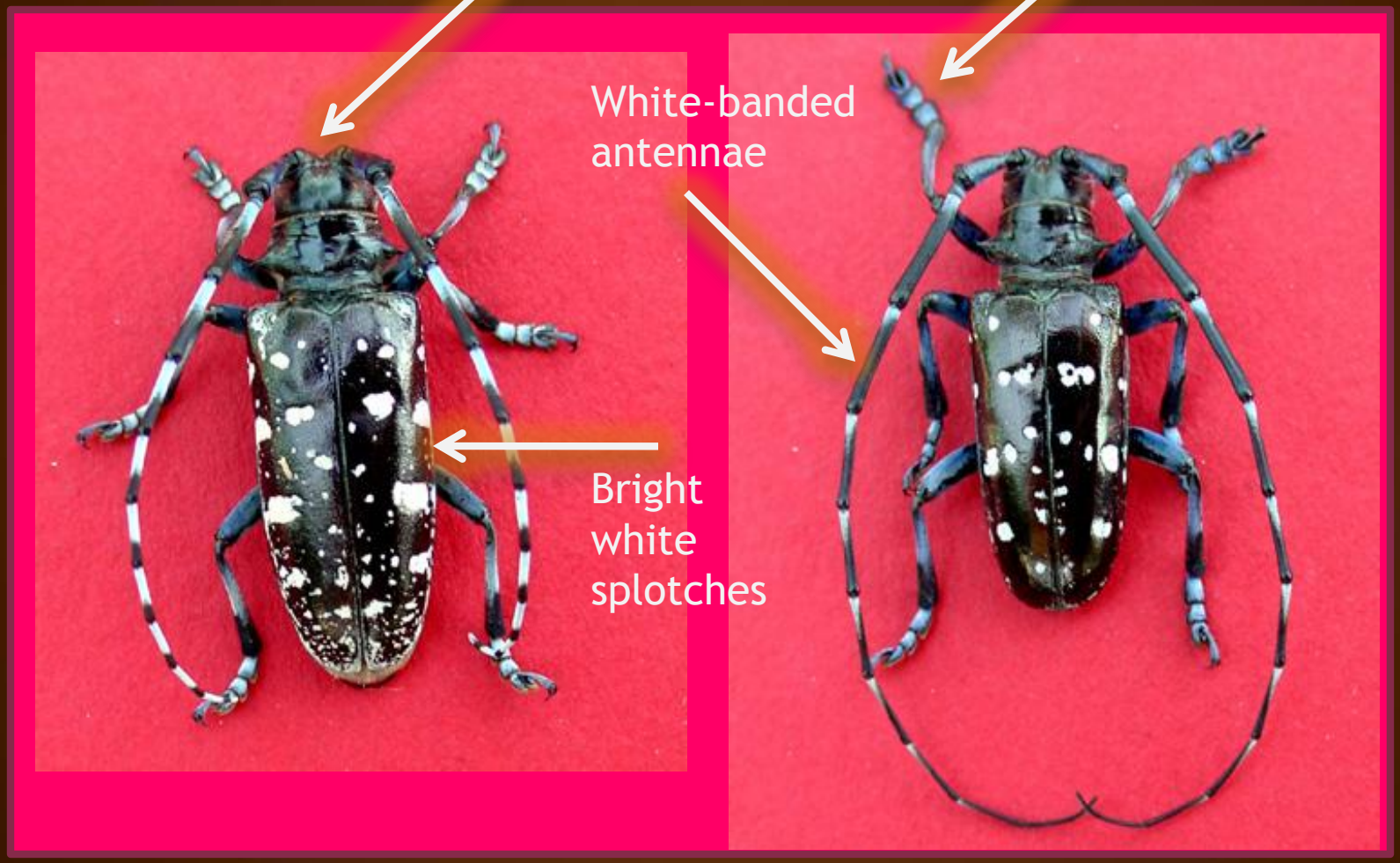
HOW DID WE FIRST FIND ALB IN MASSACHUSETTS?

AN OMINOUS PEST REPORT…FRIDAY 08/01/2008

- Donna Massie, a concerned Worcester resident, contacted:
  - Mass. Department of Agricultural Resources
  - USDA/APHIS-PPQ (Plant Protection & Quarantine)

("THE MIRACLE OF THE CELLPHONE CAM")

ASIAN LONGHORNED BEETLE



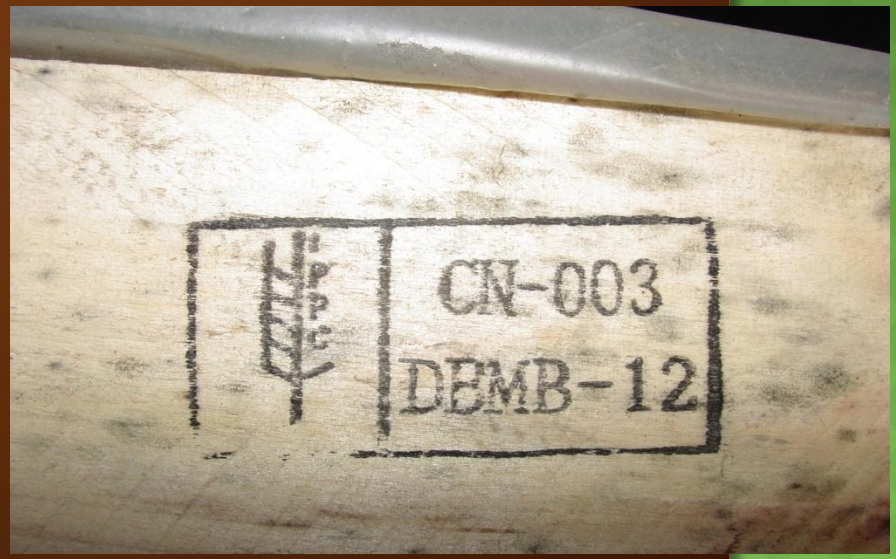
HOW DID THE ASIAN LONGHORNED BEETLE GET HERE?

ALB originates in Asia

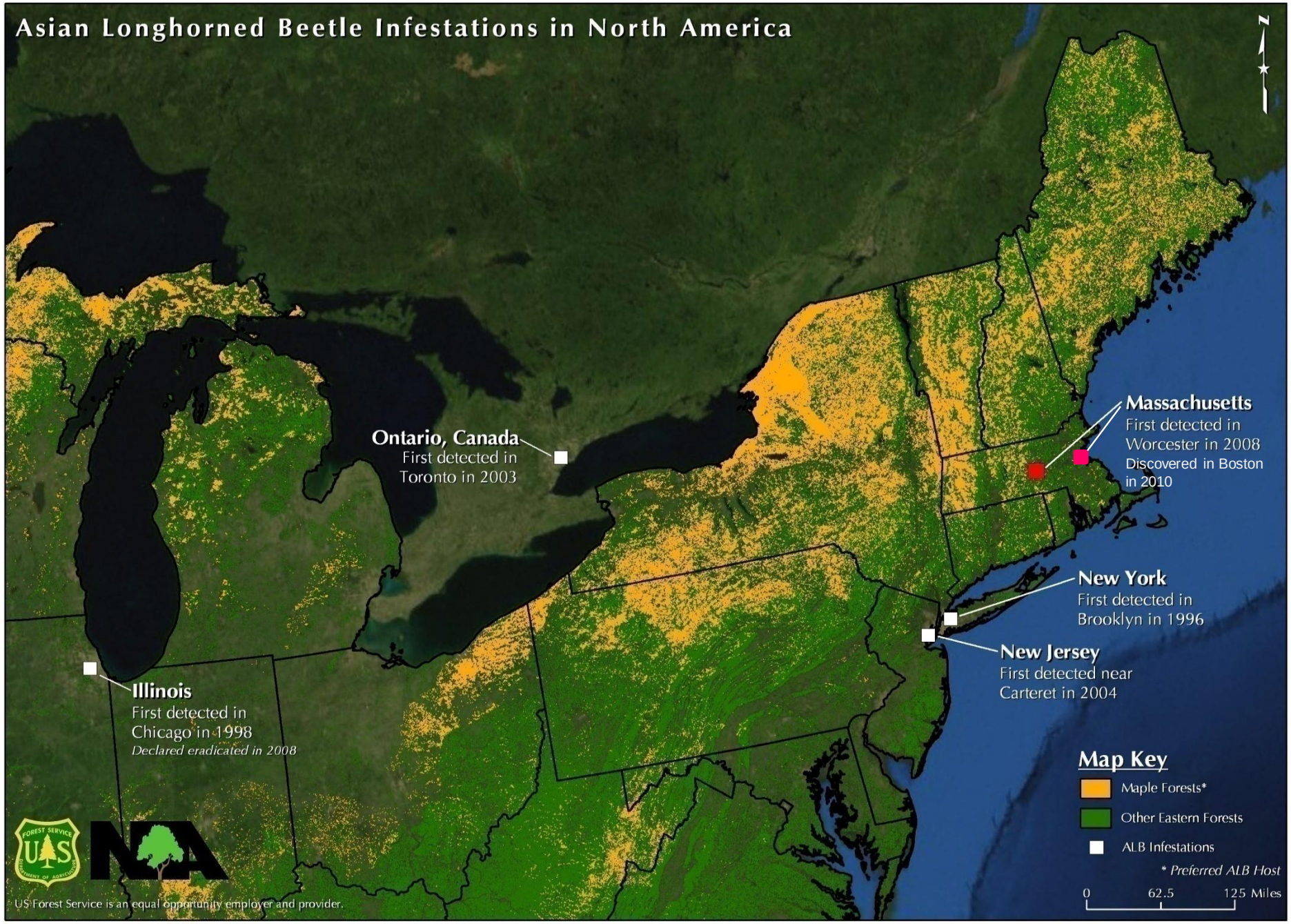
Infested wood in Asia may be used to manufacture solid wood packing material (spools, crates, pallets). ALB larvae may be present in this material when it is shipped to businesses across the US.

SOLID WOOD PACKING MATERIAL (SWPM)

December 1998: USDA amended regulations to require treatment or fumigation of all SWPM from China to prevent further introduction of exotic wood boring pests

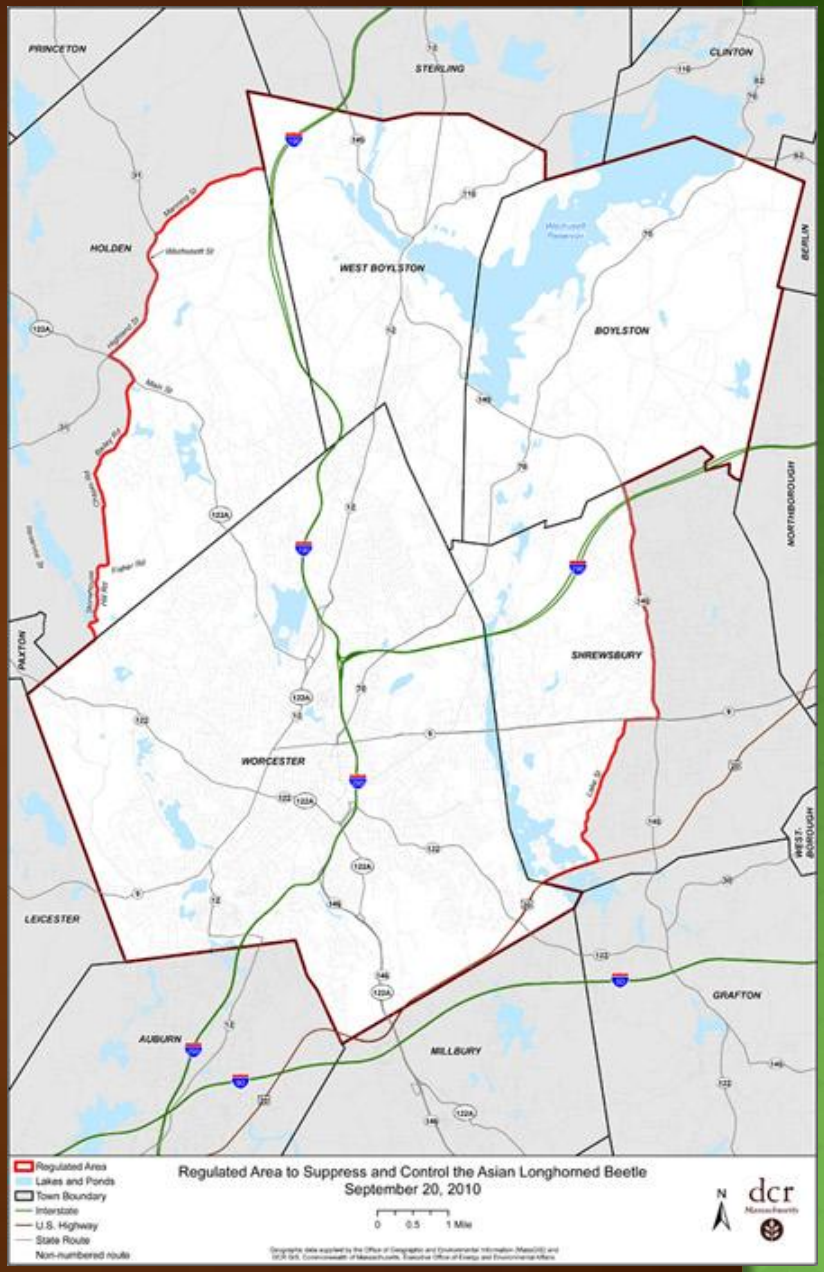


International Plant Protection Convention stamp from China (DBMB stands for Fumigation with methyl bromide)


Asian Longhorned Beetle Infestations in North America
N
Ontario, Canada
First detected in
Toronto in 2003
Massachusetts
First detected in
Worcester in 2008
Discovered in Boston
in 2010
New York
First detected in
Brooklyn in 1996
New Jersey
First detected near
Carteret in 2004
Illinois
First detected in
Chicago in 1998
Declared eradicated in 2008
Map Key
Maple Forests*
Other Eastern Forests
ALB Infestations
* Preferred ALB Host
0
62.5
125 Miles
US Forest Service is an equal opportunity employer and provider.

ALB IN WORCESTER

- Infestation discovered 2008
  - At least 12-15 years old
- As of September 2010, surveys of infested area have led to designation of a **94 square mile regulated area**
- Regulated area includes Worcester ,West Boylston, and Boylston plus parts of Holden, and Shrewsbury
- No wood from host trees, and no firewood from any species, can leave the regulated area
- When an infested tree is found outside of regulated area, area expands

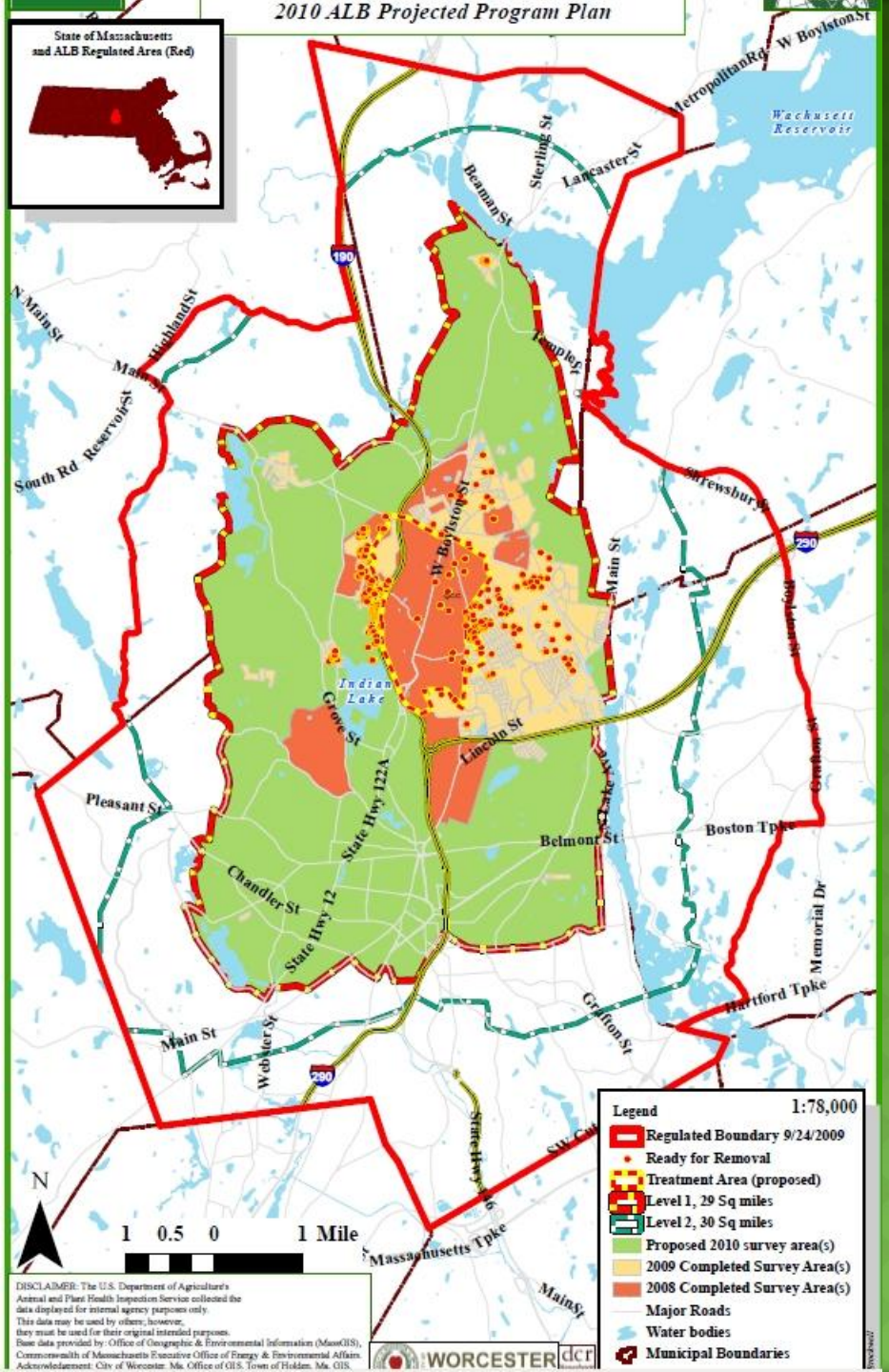


Regulated area, last changed 9/20/2010

ALB IN WORCESTER

Tree Surveys:

- 531,892 + checked as of September 2010



ALB IN WORCESTER

Tree Removals

- 28,000+ trees removed so far
  - 60% infested
  - 40% “high-risk”
  - Many are young trees

ALB IN WORCESTER

What happens to all of that wood?

- Wood taken to disposal facility in regulated area
- Reduced to chips less than one inch in two dimensions

ALB IN WORCESTER

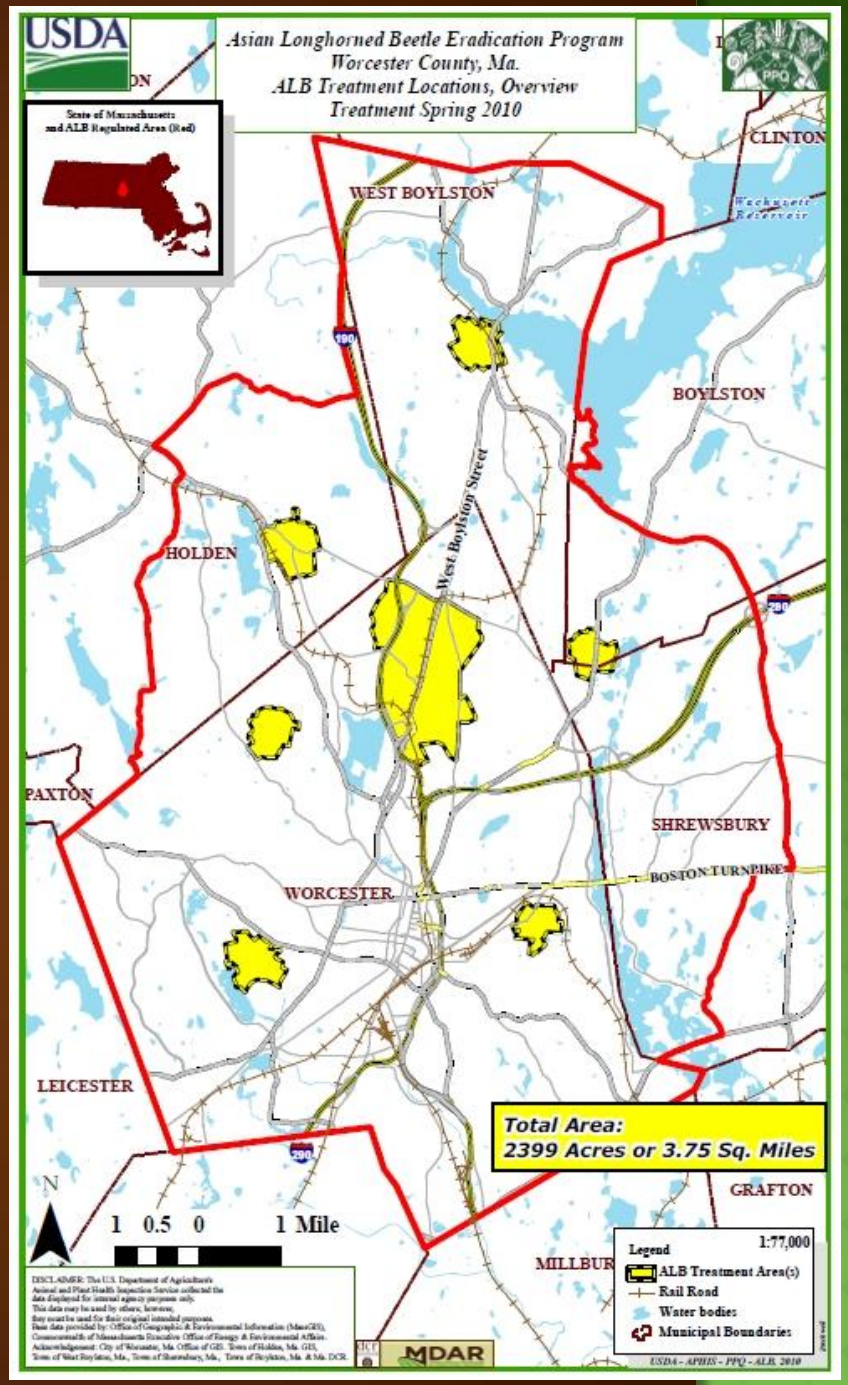
What happens to all of that wood?

- During beetle's active period, chips are ground twice to ensure even smaller pieces
- Chips can be used as mulch or burned to generate electricity

ALB IN WORCESTER

Tree Treatments

- “Knockdown” treatment of host trees began April 2010
- 62,000+ trees treated in Worcester regulated area
- Trunk injections using imidacloprid
- Area-wide 3-year treatments to begin in 2011, once surveys completed



ENCYCLOPEDIA OF PEST MANAGEMENT, VOLUME 2 BY DAVID PIMENTEL*

- "…tree trunks have been injected with the beetle-active chemical insecticide imidacloprid or soil is injected and this chemical is taken up systemically by trees. This treatment can kill smaller larvae feeding directly under the bark, larger larvae in the centers of branches and trucks, as well as adults feeding on the outer bark of twigs if they receive a high enough dose."
- "Perhaps more importantly, imidaclorprid also acts as an anti-feedant, so adults feeding on a treated tree would be repelled and larvae may stop feeding and starve to death if not killed."

*http://books.google.com/books?id=DxrMm9lMFUAC&pg=PA23&lpg=PA23

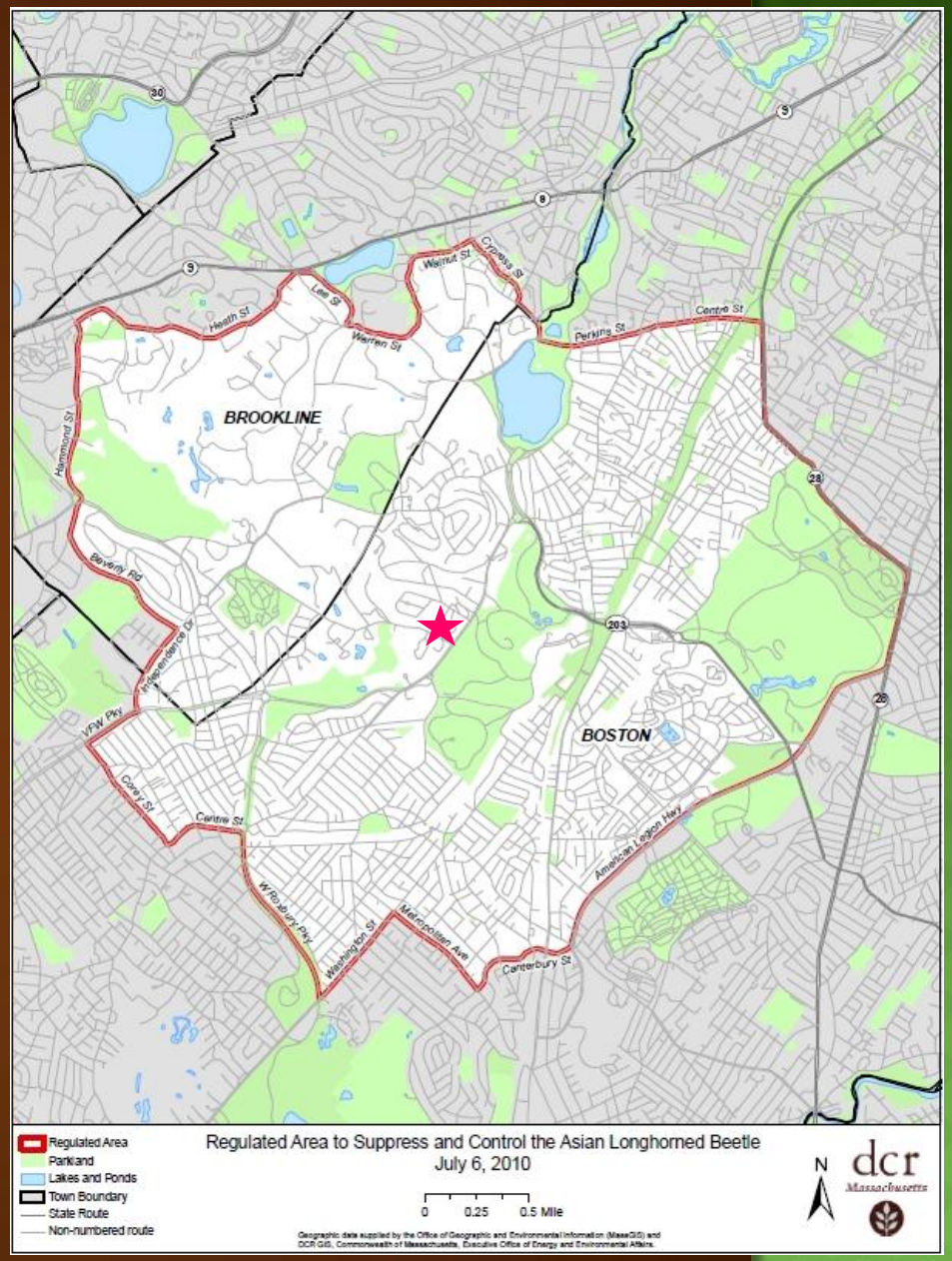
ALB IN BOSTON

- Infestation discovered July 2010
  - Reported by groundskeeper at Faulkner Hospital
  - Only 6 trees found so far
  - Infestation only a few years old

Photos by DCR/USDA

ALB IN BOSTON

- Officials have designated a **<u>10 square mile regulated area</u> in a 1.5mile radius around the infestation**
- Regulated area includes Boston and part of Brookline
- Every host tree in regulated area will need to be surveyed
  - 24,602 trees checked as of 9/17/2010



Regulated area, last changed 7/6/2010

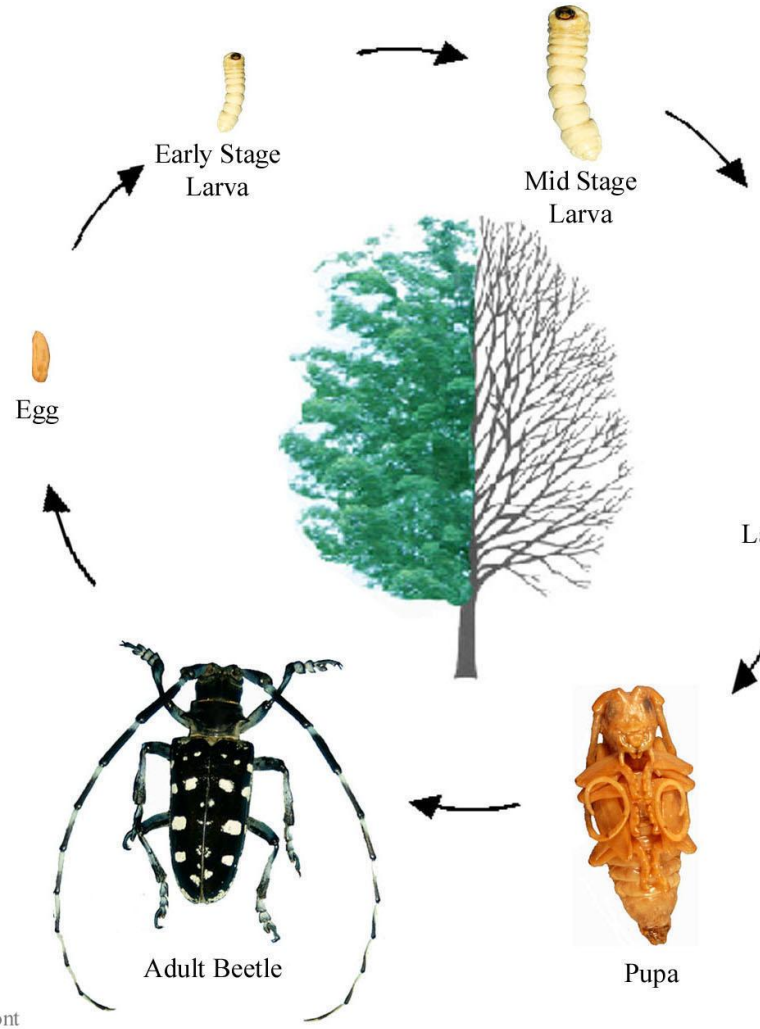
ASIAN LONGHORNED BEETLE LIFECYCLE

Asian Longhorned Beetle Lifecycle

Adults and ovipostion scars

Emergence holes

Adult emerging from tree



Larva in tree

Pupal chamber in tree

Diagram by Michael Bohne

ASIAN LONGHORNED BEETLE LIFECYCLE

- Adults active in Massachusetts July-frost

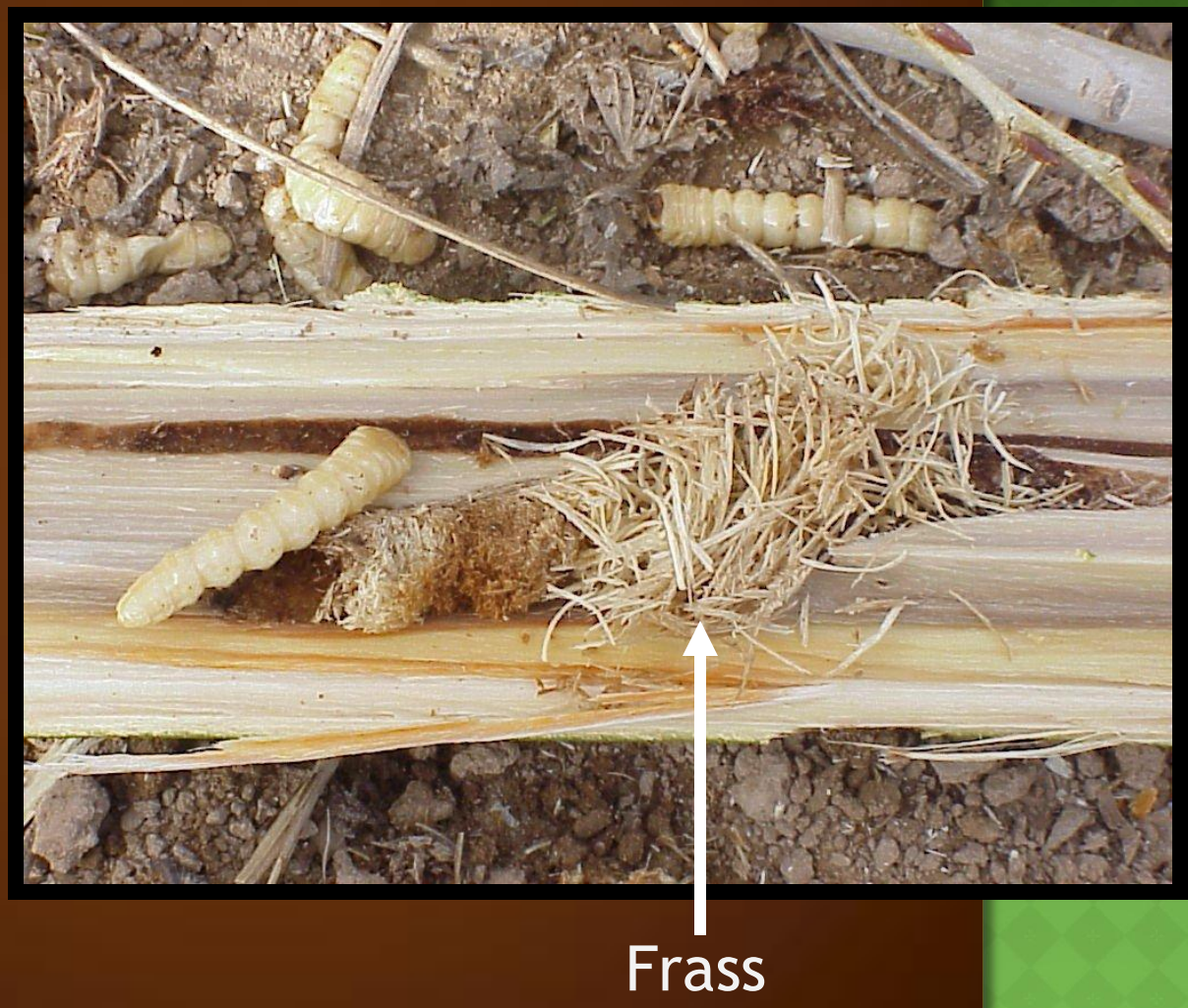
Source: Cornell University

EGG LAYING

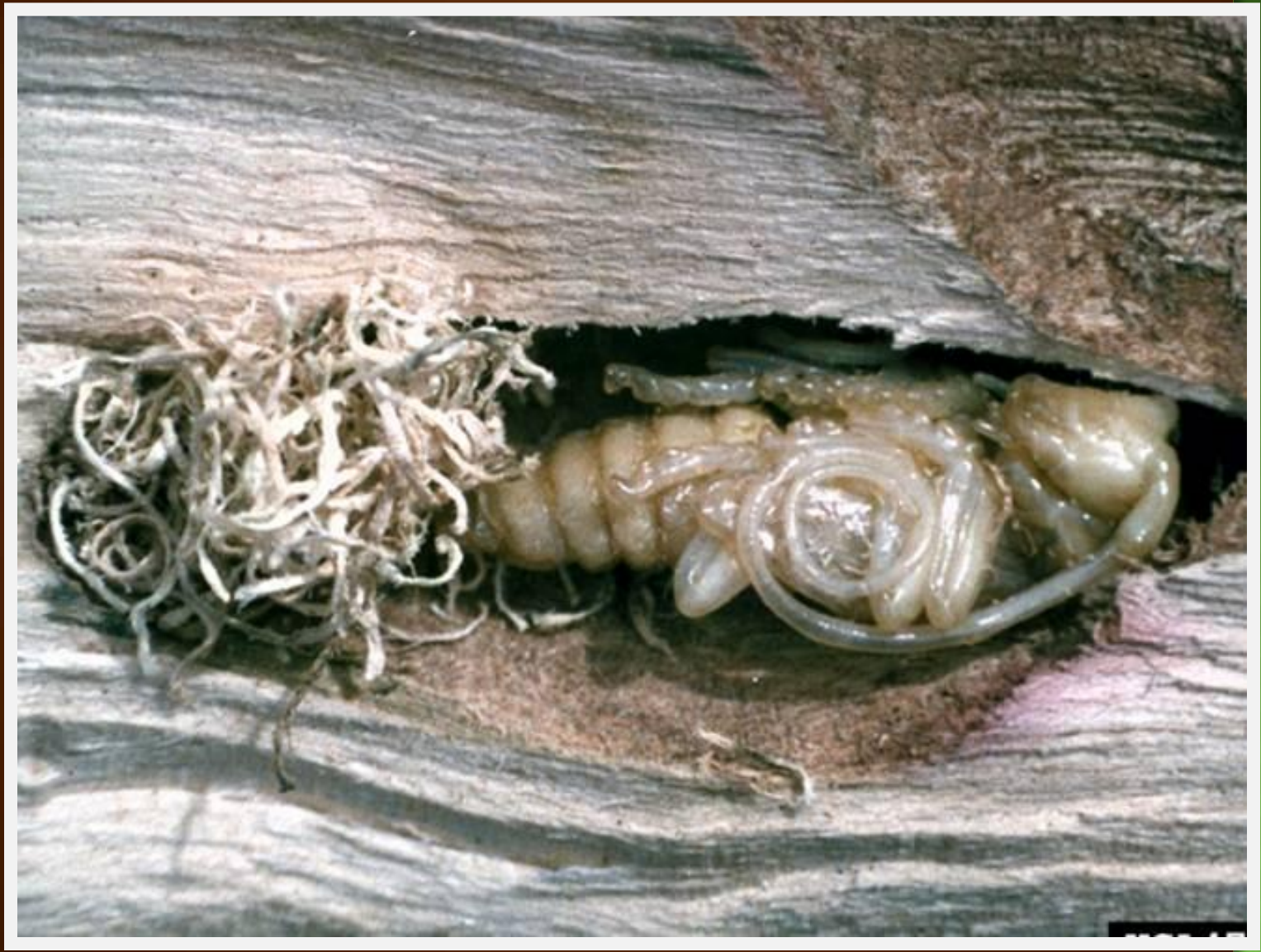
- Female chews into bark, lays one egg per site
- Male guards female during this process

LARVAL STAGE

- Larvae survive winters inside wood
- Matchstick- like “FRASS” is characteristic of this wood boring insect



PUPAL STAGE



ADULT EMERGING

ASIAN LONGHORNED BEETLE

Female

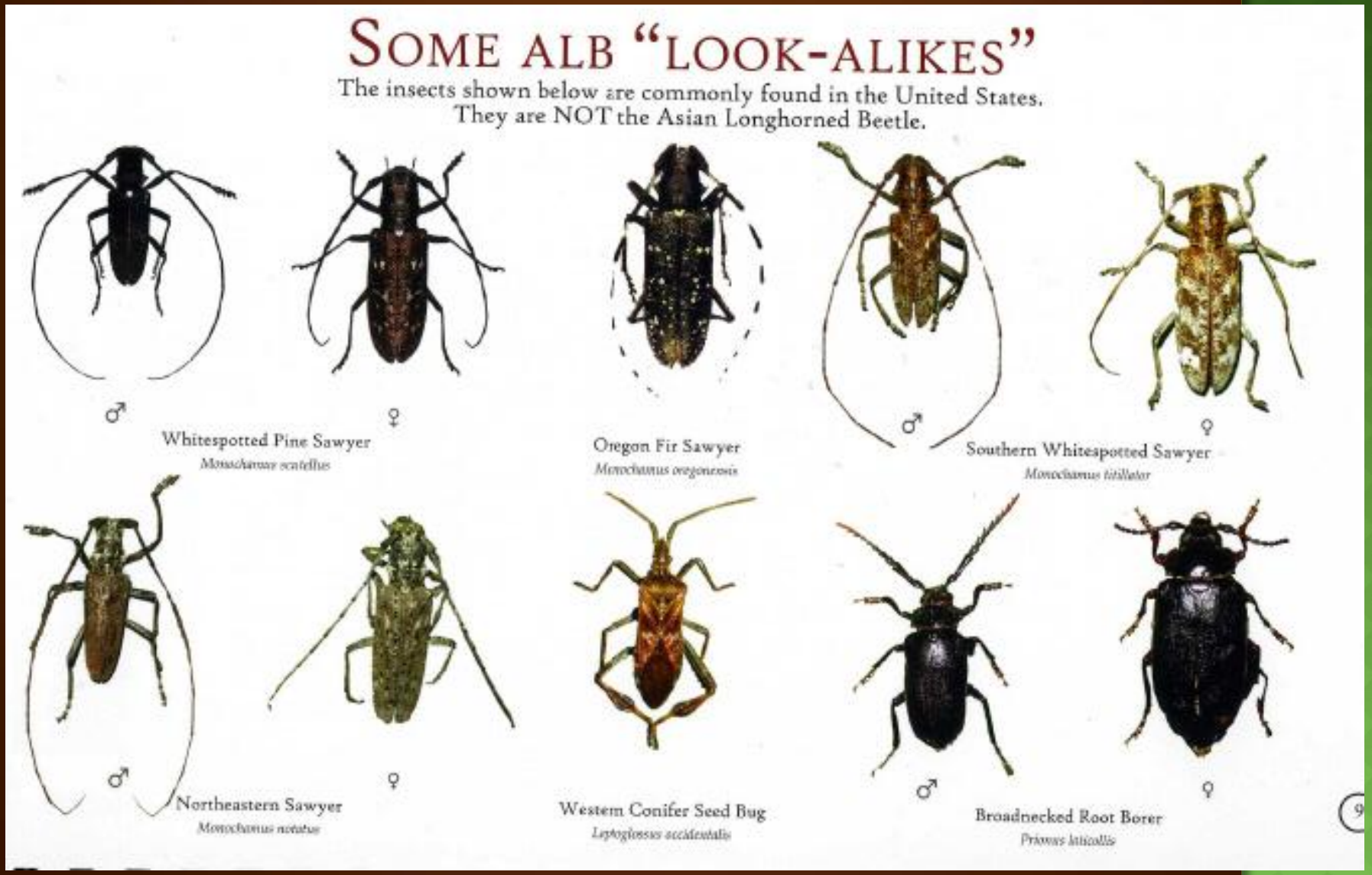
Male

ALB LOOK-ALIKES

Keep in Mind…

- There are over 200 species of longhorned beetles (Cerambycidae family) in Massachusetts
- ALB is not the only thing that makes holes in trees

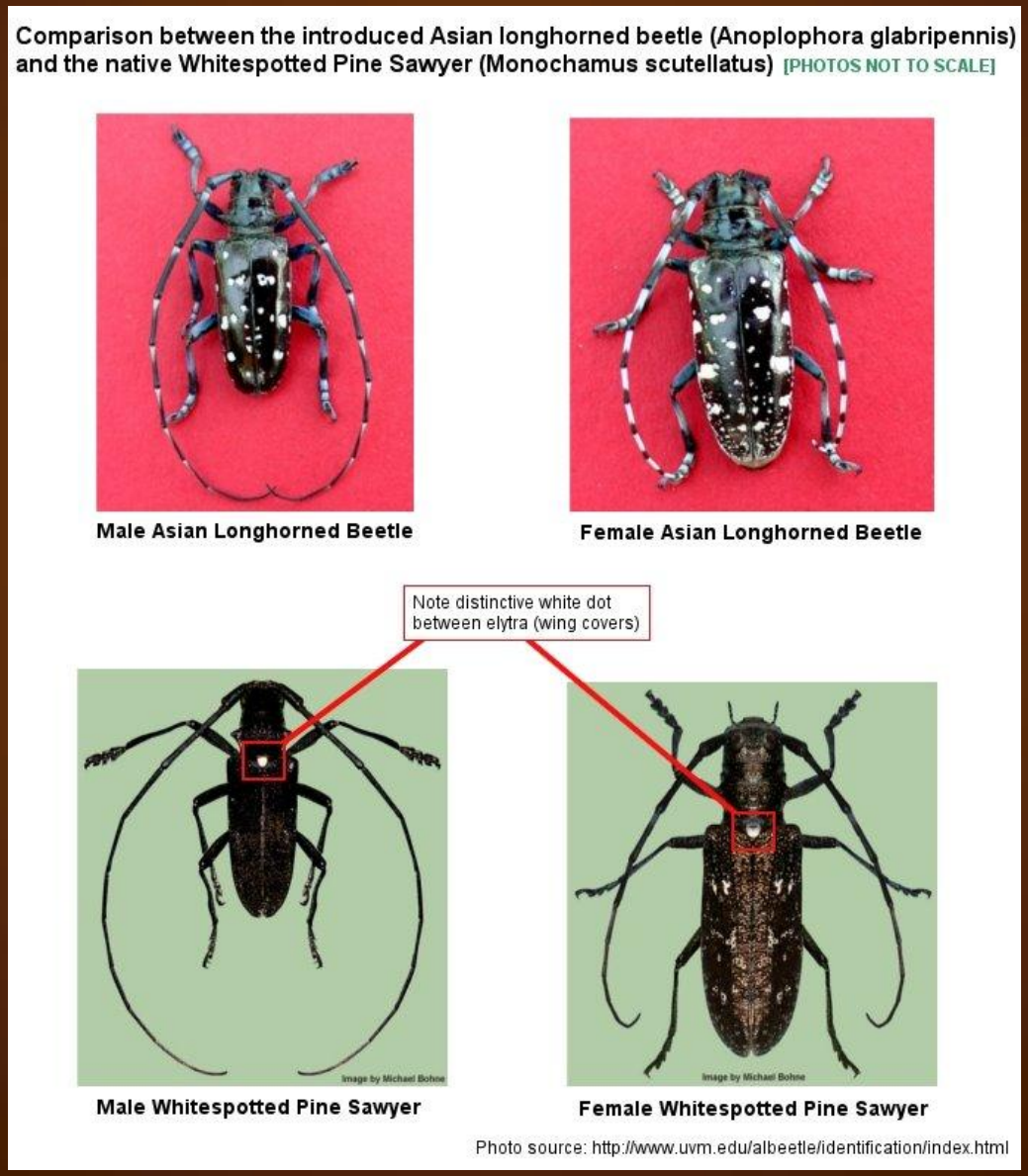
ALB LOOK-ALIKES



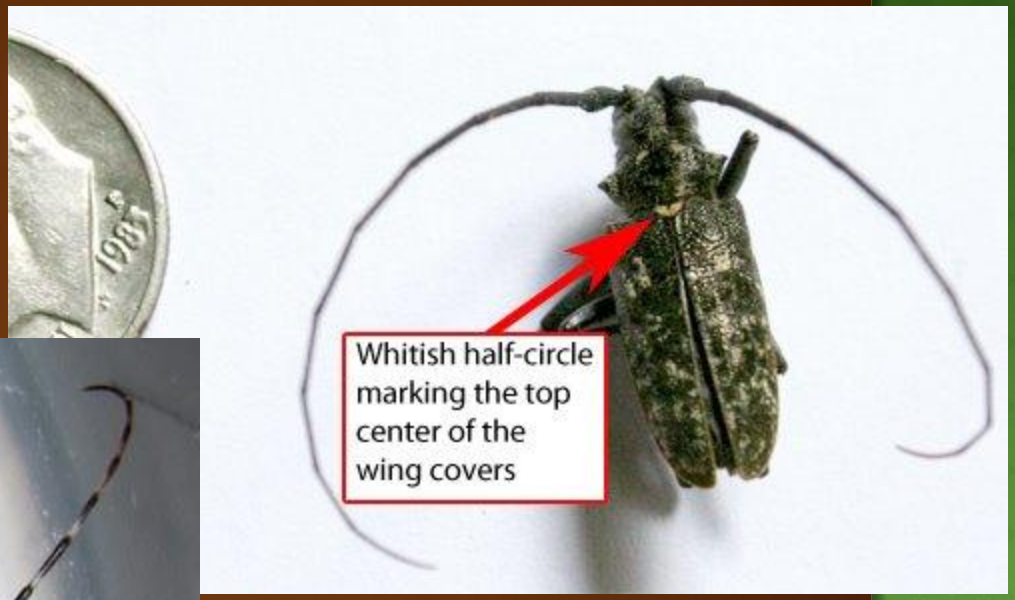
ALB LOOK-ALIKES: WHITESPOTTED SAWYER

Emerges in July

Emerges in May



ALB LOOK-ALIKES: WHITESPOTTED SAWYER



ALB HOST TREES

- Maple**
- Horsechestnut*
- Elm*
- Willow*
- Birch*
- Sycamore/Plane tree
- Mountain Ash
- Hackberry
- Ash
- Poplar/Cottonwood
- Mimosa
- Katsura

**, * preferred

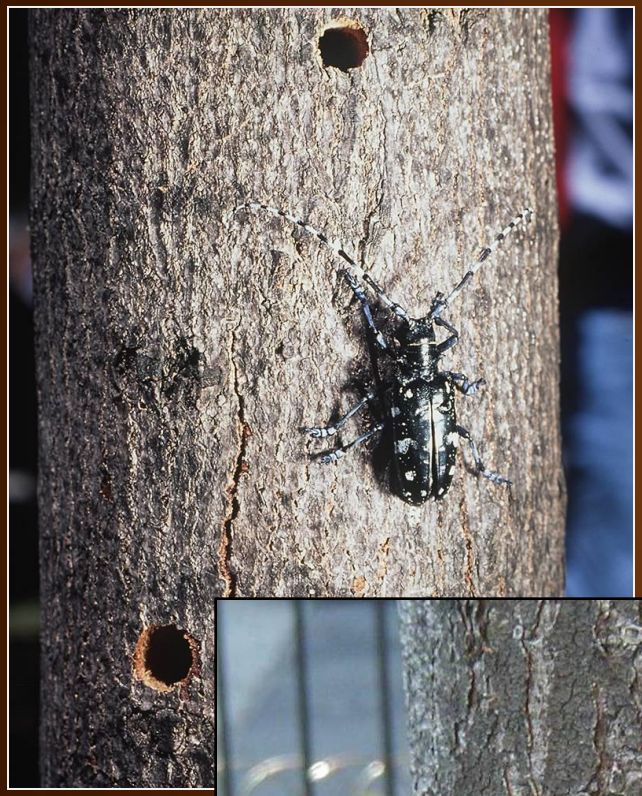
NOT ALB HOST TREES

- ALB attacks Hardwoods, not Softwoods
  - Not in pine, fir, spruce, etc.
- ALB is not known to attack:
  - Oak
  - Cherry
  - Crabapple
- TIP: ALB may attack “non-host” hardwoods in a heavily infested area, but…
  - Holes in a single cherry tree surrounded by healthy maples are not caused by ALB

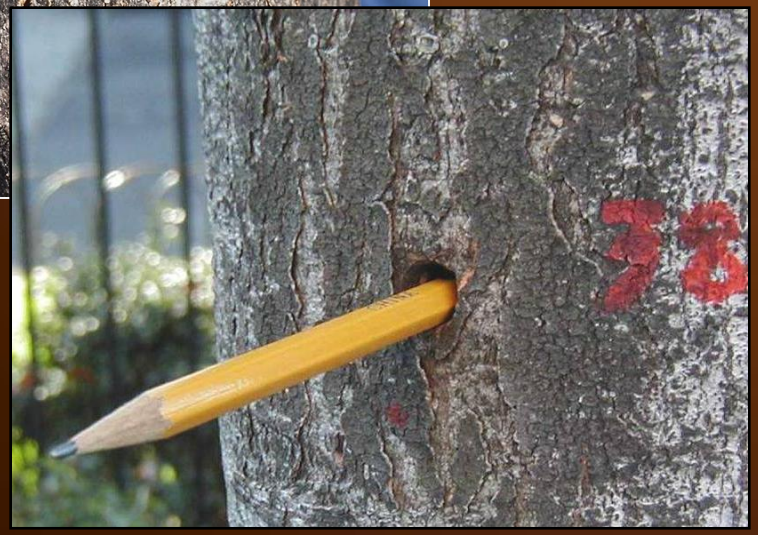
ALB TREE DAMAGE

- Exit holes
- Oviposition sites
- Leaf and twig damage
- Frass

ALB EXIT HOLES – WHAT TO LOOK FOR:



- Perfectly round (like a drill hole) exit holes 3/8” to 1/2” diameter.
- Pencil test – Possible exit hole if you can place a regular pencil inside the hole at least 1 inch.



NOT ALB

Photo via http://www.plantsgalore.com/articles/animals/001-plantfacts-Photo-Animals.htm

ALB OVIPOSITION SITES – WHAT TO LOOK FOR

- Divots in bark, about ½ in wide
- Easiest to spot the season that they are made, then they fade

ALB OVIPOSITION SITES – WHAT TO LOOK FOR

Maple

Box Elder

Birch

Willow

Poplar

FEEDING ON LEAVES BY ADULT BEETLES

Photos by Michael Smith

….Mmmmm, Midribs!

FEEDING ON TWIGS BY ADULT BEETLES

Photo by Michael Smith

FRASS

- Sawdust-like waste produced by ALB
  (They eat wood, so they excrete wood)
- Accumulates in crooks of branches, around base of trees

Photo by DCR

Photo via beetlebusters.info

ALB OR NOT – FACTORS TO CONSIDER:

- ALB takes many years to kill a tree
- ALB doesn't like dead trees
- Poor tree health not a good indicator of ALB
- Exit holes widely distributed on trees
- Beetles do not spread far or fast on their own

NOW THAT ALB IS HERE, HOW CAN IT SPREAD?

- On its own, a beetle may fly up to a mile (1/2 a mile is more likely)
- The real risk: **Movement of wood**
  - Firewood
  - Storm debris
  - Removal of wood after tree maintenance
- More info:

  www.dontmovefirewood.org

REPORT ALB AND OTHER SUSPICIOUS PESTS!

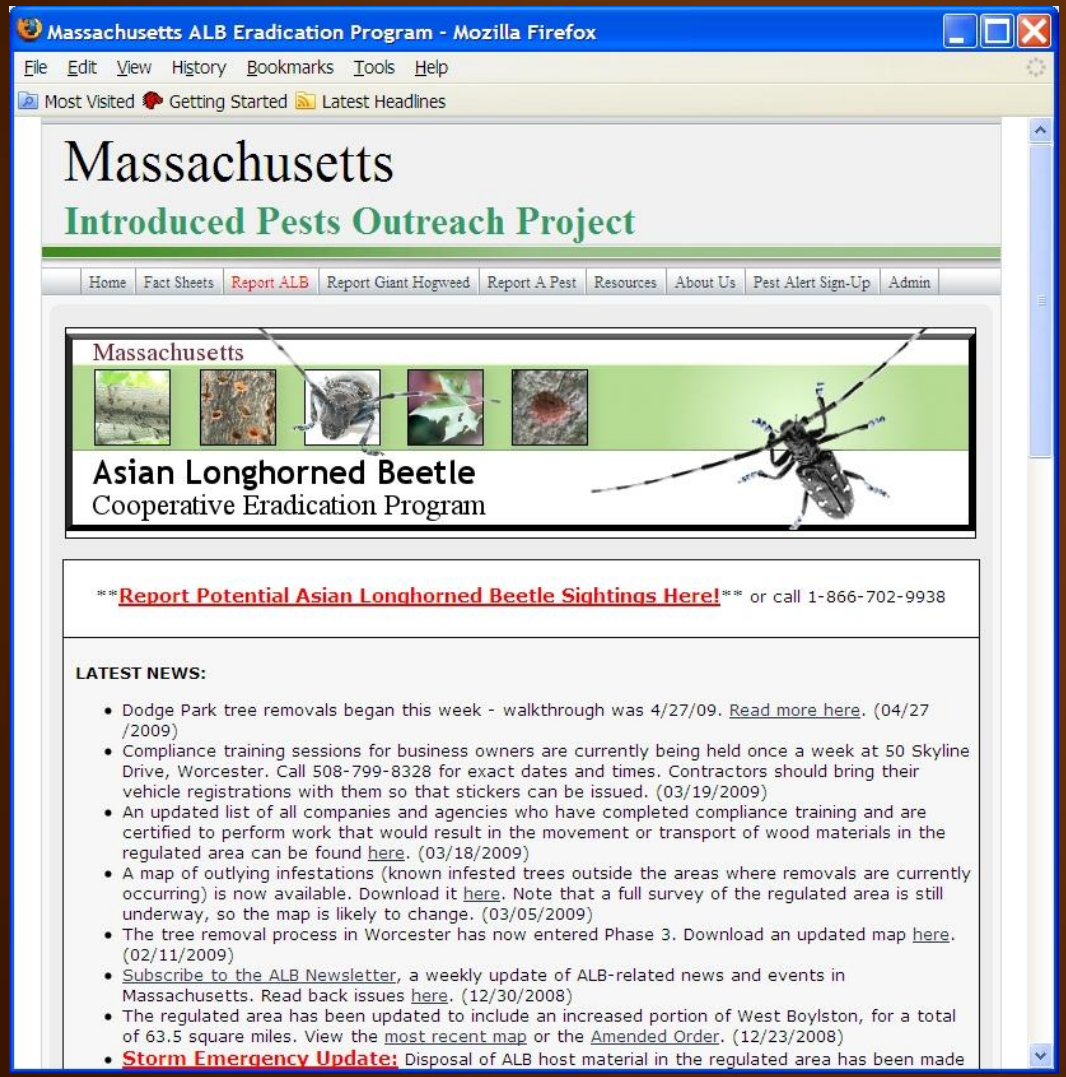
Found something odd?

1. **Get a specimen or a photo!**
   Save specimens in a container in the freezer, or in a jar with rubbing alcohol
2. **Report online: http://massnrc.org/pests**
3. **ALB? Call 1-866-702-9938**
4. Else, call the MDAR pest hotline: 617-626-1779

BEETLE TURNED IN TO ASHBY CONSERVATION COMMISSION

GET THE LATEST ALB INFO:

http://massnrc.org/pests/alb



MDAR
MASSACHUSETTS DEPARTMENT OF AGRICULTURAL RESOURCES

BEFORE AND AFTER

Source: Kenneth R. Law, USDA APHIS-PPQ

QUIZ!

- True or False?
  - Asian longhorned beetle has a distinctive white spot between its wing covers, near its head

QUIZ!

- **False**
  - It is the whitespotted sawyer that has a distinctive white spot between its wing covers, near its head

QUIZ!

- Which of the following is **NOT** considered a host tree for ALB?
  a) Silktree
  b) Oak
  c) Elm
  d) Pine

QUIZ!

- Which of the following is **NOT** considered a host tree for ALB?
  a)
  b) **Oak**
  c)
  d) **Pine**

QUIZ!

- The ALB lifestage you are most likely to see is:
  a) Egg
  b) Larvae
  c) Pupa
  d) Adult

QUIZ!

- The ALB lifestage you are most likely to see is:
  a)
  b)
  c)
  d) **Adult**

QUIZ!

- Adult ALBs typically emerge from the trees in:
  a) May
  b) June
  c) July
  d) August
  e) September

QUIZ!

- Adult ALBs typically emerge from the trees in:
  a)
  b)
  c) **July**
  d) **August**
  e) **September**

ACKNOWLEDGEMENTS

- This presentation was developed as part of the Forest Pest Outreach & Survey Project, a USDA-funded program

- Contact info:

Jennifer Forman Orth
Jennifer.forman-orth@state.ma.us
617-626-1735
http://massnrc.org/pests/alb

MDAR
MASSACHUSETTS DEPARTMENT OF AGRICULTURAL RESOURCES