



Asian Longhorned Beetle

Anoplophora glabripennis Motschulsky (Coleoptera: Cerambycidae)

Introduction:

The Asian Longhorned Beetle (ALB) is an exotic wood boring beetle that entered the U.S. via solid wood packing materials originating in East Asia. First detected in Brooklyn, NY, in 1996, then in Chicago, IL, in 1998, ALB attacks both healthy and stressed specimens of many species of hardwood trees found in North America. In 1997 the USDA enacted federal regulatory and control actions to eradicate the beetle. To date, over 66,000 infested trees have been destroyed at a cost of more than \$269 million.

U.S. Distribution/Spread:

There have been multiple interceptions of ALB at shipping ports throughout the U.S., and ALB infested cargo has been found and destroyed in warehouses in at least 17 states nationwide. ALB infestations have become established in New York City and Long Island (NY), Chicago (IL), New Jersey, Worcester and Boston (MA), and Ontario, Canada. Quarantines and control efforts aimed at eradication have been initiated in all locations; however, the established ALB infestations detected in Worcester and Boston in 2008 and 2010 raise concerns that new, stricter international import regulations enacted in 2001 may not be adequate to prevent new introductions.

ALB adults are very strong flyers, easily covering distances greater than 400 yards. ALB larvae live deep inside trees, undetectable for up to one year, and are spread by people moving infested materials such as firewood, timber or nursery stock. North America has an abundance of host trees and ALB are tolerant of very cold temperatures, so it is thought that ALB will be able to spread through both landscapes and forests, and further north than they are currently found.

Host Plants:

In the U.S., ALB is known to attack and reproduce in 23 species of deciduous hardwood trees, preferring many maple species, as well as boxelder, elm, willow, birch, London Plane-tree, Mountain ash, horsechestnut and buckeye. ALB has also been reported to attack a number of other tree species, such as oaks, Russian olive and Linden, but it has not been documented that it successfully reproduces in these trees.

Biology and Damage:

ALB complete one generation every one or two years and usually overwinter as larvae in the cambium and xylem, although they may also overwinter as eggs or pupae. Mature larvae pupate just beneath the bark in spring. Emergence of adult beetles begins in late May to early June, peaks from early to late July and quickly declines in August. Emerging adult beetles create dime-sized, round exit holes in the bark. Newly emerged adults begin feeding



ALB adult (top); larva (below). K. R. Law, USDA APHIS PPQ, Bugwood.org



on leaves and twigs of the current host trees, or may fly to new hosts to feed. Adults continue feeding and laying eggs throughout the summer into late fall, but perish before winter.

After mating, female ALB chew individual, oval/round shaped shallow notches into the bark of trees and lay one egg in each notch. The hole is then plugged with digested wood to protect the egg and young larva. Females repeat this procedure until they lay 25-90 (ave. 35) eggs. Eggs hatch in about 11 days and the small, white, legless larvae tunnel into and begin feeding in the tree. Larvae are the most destructive stage, feeding on and damaging cambial tissues, disrupting nutrient transport vessels, and damaging water transport vessels deep in the tree. In the fall, the large, mature larvae tunnel deep into the heartwood and feed on living tree tissue over the winter.

Identification:

- Adult beetles are large, $\frac{3}{4}$ -1 $\frac{1}{2}$ " long (20-40 mm), shiny black, with irregular white spots.
- Antennae are very long (1 $\frac{1}{2}$ -2 $\frac{1}{2}$ times the body length) with black and white alternating bands.
- Eggs are the size/shape of a grain of rice: 1/5- $\frac{1}{3}$ " long (5-7 mm).
- Larvae are cylindrical, segmented, roundheaded, and legless, with a white body and brown head, and breathing pores (spiracles) along the sides.
- Mature larvae are robust and reach 2" long (5 cm).
- Pupae are 1 $\frac{1}{4}$ " long (~ 32 mm). See an image at: <http://tncweeds.ucdavis.edu/photos/anogl03.jpg>

What to Look For:

ALB attack trees that are healthy or stressed, young or old, living or felled, and from nursery stock size to trees large in diameter.

Symptoms of ALB infestation include:

- Adult feeding damage on leaves (holes, often clustered along a vein), leaf stems, and small twigs (stripped bark).
- Shallow oval/round depressions (oviposition notches) up to ½” diameter (13 mm), in the bark of infested trees.
- Round, nearly dime-sized (⅜-½” diameter, or 9.5-13 mm) adult exit holes in bark.
- Bark staining and oozing sap from oviposition notches or exit holes may be present on tree trunk.
- Frass may be brown to cream-colored; stringy and wet or coarse and dry; extruding from vent or oviposition holes, clinging to the bark, lodged within the crotches of branches, or piled at the base of the tree.
- Galleries are individual, 4-12” long (10-30 cm), initially horizontal deep into the sapwood, then turn upwards.
- Broken branches/stems in heavily mined trees, especially after strong winds.
- Adult beetles may be found anywhere, not just on trees.



Adult feeding damage on twig (stripped bark). Dean Morewood, Health Canada, Bugwood.org



Adult feeding damage on leaf (holes clustered along a vein). Michael T. Smith, USDA-ARS, BIIRU, Newark, DE



ALB oviposition notch (upper left) and exit hole (lower right). Dennis Haugen, USDA Forest Service, Bugwood.org

How to Report a Possible Sighting/Infestation

In Maryland:

University of Maryland Cooperative Extension Exotic Pest Threats Website:
<http://hgic.umd.edu/faq/sendquestion.cfm>

Maryland Department of Agriculture: call 410-841-5920 to report suspect pests; visit http://www.mda.state.md.us/plants-pests/invasive_species.php for information.

Nationally: USDA-Animal and Plant Health Inspection Service (APHIS) at http://www.aphis.usda.gov/services/report_pest_disease/report_pest_disease.shtml

Where to Get More Information:

UMD Cooperative Extension Exotic Pest Threats Website: <http://www.PestThreats.umd.edu/index.cfm>

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Adult ALB Actual Size:



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