



## Citrus Longhorned Beetle

*Anoplophora chinensis* Forster (Coleoptera: Cerambycidae)

### Introduction:

Citrus Longhorned Beetle (CLHB) is an exotic invasive pest from Asia accidentally introduced into the U.S. in 2001 on maple tree bonsai plants shipped from Korea to a nursery in Washington State. Considered a serious pest of citrus in China, this polyphagous feeder is considered a very high risk to successfully establish in the U.S., with the potential to cause even greater damage than its close relative, the Asian Longhorned Beetle (ALB). ALB has cost hundreds of millions of dollars in damage and suppression costs since its introduction in 1996.

### North American Distribution/Spread:

CLHB is considered to be not established in the U.S. The Washington State infestation was eradicated, and although there are occasional interceptions of CLHB at U.S. ports of entry, including Hawaii, Georgia, Wisconsin, and Washington State, infested plant materials are destroyed, preventing establishment of the pest. However, the dramatic increase in bonsai imports to the U.S. (<600 in 1993; 54,749 in 1998), keeps the risk of accidental reintroductions of CLHB high.

CLHB spread naturally by flight up to a distance of several hundred yards, and artificially by human activities. CLHB enter the U.S. as adults or larvae hidden within the stems of bonsai plants, and may also enter undetected in raw lumber, live nursery stock, or wooden shipping pallets like ALB. CLHB may then be moved throughout the nation hidden within these products.

### Host Plants:

CLHB has a greater host range than ALB, attacking and feeding in over 100 species of fruit trees, conifers and woody ornamental plants. It can survive in large and small diameter trees and bonsai plants. Unlike most native borers, which primarily attack dead or stressed trees, CLHB attack and kill apparently healthy specimens. For a list of host plants, see UMD Exotic Pest Threats CLHB Bulletin: <http://www.PestThreats.umd.edu/index.cfm>

### Biology and Damage:

CLHB typically produce one generation per year but can take up to 2 years in cooler regions, so larvae may be present year round. CLHB overwinter in the pupal or pre-adult stage inside host plants. Adults emerge April to August (peaking May-July) and feed on the bark, leaves and petioles of host plants, causing little damage beyond leaf wilt. Adults are most active during the day.

After mating, each female lays 15-200 eggs, individually deposited beneath naturally occurring cracks in the bark of the lower trunk (bottom 20", or 0.5 m) or exposed roots of a living tree. Eggs hatch after 1 to 3 weeks into grub-like larvae that initially feed on the sappy inner bark. Larvae develop into very



Adult CLHB. Art Wagner, USDA APHIS PPQ, Bugwood.org

large grubs with strong mouthparts that enable them to burrow deep into heartwood, where they bore numerous irregular tunnels that interfere with the translocation of water and nutrients within the tree. Larval feeding accounts for most of the damage caused by CLHB and can quickly girdle a tree, leading to rapid tree decline, greater susceptibility to disease pathogens, wind breakage of weakened trunks, and death.

Pupation and pre-adult development take place inside the tree. The pupal stage lasts 4-6 weeks and at the final molt transforms to a pre-adult. The inactive pre-adult takes about 1 to 2 weeks to mature. Adults emerge in the spring, leaving a distinct round or slightly oval-shaped exit hole in the bark.

### Identification:

- Adults are large, stout beetles about 1-1½" long (~ 25-40 mm); females are larger than males.
- Adults are shiny black with 10 to 12 irregular white spots on their back.
- The ventral surface is pubescent (hairy): the pubescence may be white or blue.
- The elytra (wing covers) of females are rounded distally; male elytra are tapered distally.
- Female antennae are 1.2 times the body length; male antennae are about 2 times the body length.
- Antennae are bluish/white at the base, and have 11 black and bluish/white banded segments.
- Eggs are the size/shape of a grain of rice, ~ ⅓" long (7 mm).
- Eggs are initially creamy white but gradually turn yellowish/brown prior to hatching.

- Larvae are creamy white, legless, roundheaded grubs with amber colored heads and black mouthparts, and yellow patterns on the prothorax.
- Larvae are ~0.2" (5 mm) at hatching but reach ~2.0" (up to 60 mm) by pupation.
- Pupae are 1-1½" long (~25-40 mm).



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CLHB larva. Plant Protection Service Archive, Bugwood.org

### What to Look For:

CLHB is a regulated pest, so identification of suspect beetles is critical: unknown specimens of large black, white spotted beetles should be collected and sent to your state department of agriculture, state university entomology department, or USDA-APHIS for action.



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CLHB adult feeding damage on twig. Art Wagner, Washington State Department of Agriculture, Bugwood.org

### Symptoms of CLHB infestation include:

- About ¼-½" diameter (~ 6-13 mm) round or slightly oval exit holes when adults emerge.
- Adult feeding damage: chewed leaves and leaf petioles; leaf wilt; narrow, vertical rectangular sections of scraped bark about 0.8x1.0" (~ 2x2.54 cm) on stems or branches.
- Oviposition slits, in bark fissures of living trees near the base of the trunk or on exposed roots, are hard to detect.



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Exit hole damage. Plant Protection Service Archive, Bugwood.org

- Large amounts of sawdust ejected by feeding larvae from small holes in tree trunk, accumulated at base of tree.
- Larval tunnels in the wood underneath loose or thin bark.
- Rapid tree decline in heavy infestations (leaf wilt, branch dieback); younger trees decline more rapidly than older trees with larger trunk diameters.
- Heavily mined trunks and dead branches may break, especially during strong winds.

### How to Report a Possible Sighting/Infestation

#### In Maryland:

University of Maryland Cooperative Extension Exotic Pest Threats Website:

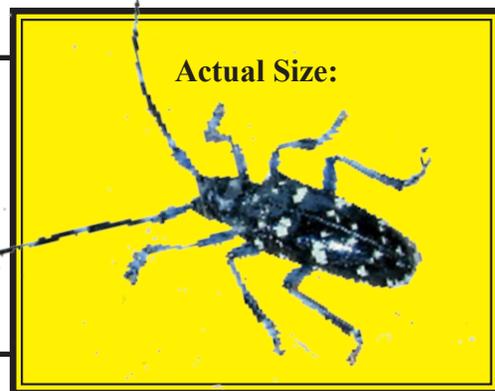
<http://hgic.umd.edu/faq/sendAQuestion.cfm>

Maryland Department of Agriculture: call 410-841-5920 to report suspect pests;

visit [http://www.mda.state.md.us/plants-pests/invasive\\_species.php](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](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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