

***Anoplophora chinensis* (Forster)**

syn. *A. malasiaca* (Thompson)

Coleoptera: Cerambycidae

Citrus longhorned beetle (CLB), Rough shouldered longhorned beetle

| Host(s) | CAPS-Approved Survey Method |
|--|------------------------------------|
| <p>Attacks more than 100 species of trees and shrubs in the Families:</p> <p>Aceraceae (Maple), Anacardiaceae, Aquifoliaceae, Araliaceae (Aralia), Betulaceae (Birch), Casuarinaceae, Eleagnaceae, Euphorbiaceae (Spurge), Fagaceae (Beech, includes chestnut, oak), Juglandaceae (Walnut), Lauraceae (Laurel), Leguminosae (Legume/ Pea), Moraceae (Mulberry/Fig family), Meliaceae (Mahogany), Oleaceae (Olive), Platanaceae (“Plane-tree,” includes sycamore), Polygonaceae (Knotweed), Rutaceae (Citrus/ Rue), Rosaceae (Rose), Salicaceae (Includes poplar and willow), Sapindaceae (Soapweed, includes maple and horse chestnut), Styracaceae, Theaceae, Taxodiaceae, Ulmaceae (Includes elm), Verbenaceae (Verbena)</p> <p>These families include commercially important genera such as:</p> <p><i>Citrus</i>, <i>Populus</i> (Poplar species), <i>Prunus</i> (Stone fruit species), <i>Salix</i> (Willow species)</p> <p>(McDougall, 2001)</p> | <p>Visual</p> |

Reason for Inclusion in Manual

Anoplophora chinensis was a target species in the original EWB/BB National Survey Manual.

Taxonomy

Lingafelter and Hoebeke (2002) synonymized *A. malasiaca* with *A. chinensis* due to similar characteristic features between the two. The variation of color, size of elytral macula and presence or absence of hair on the pronotum is considerable, with overlaps in specimens from the same locality.

Pest Description

Larvae:

A. chinensis larvae are typical roundheaded woodborers (McDougall, 2001). The larvae are white, opaque, legless grubs, 45-60 mm (approx. 1 ¾ to 2 ⅜ in) long and 10 mm (approx. ⅜ in) wide when mature with an amber colored head and black mouthparts (McDougall, 2001).

Adults:

The beetle is large, stout, and approximately 21 to 37 mm (approx. 1 to 1 ½ inch) long with shiny black elytra marked with 10 to 12 white round spots (Lingafelter and Hoebeke, 2002). Males are generally smaller than females, and have their abdomen tip entirely covered by the elytra, in contrast to the partially exposed abdomen of females. Also, the male elytra are narrowed distally compared to the rounded female elytra. Another difference between males and females is antennal size. The male's antennae are approximately twice as long as the body when compared to the female's antennae which are only slightly longer than the body. Each segment of the long, 11-segmented antennae is basally marked with white or light blue bands. The anteriorly and posteriorly narrowed pronotum has a pair of stout spines extending from its sides.



A. chinensis adult. (Art Wagner, USDA APHIS PPQ, Bugwood.org).

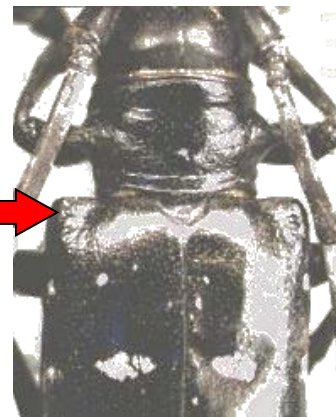
A. chinensis resembles *A. glabripennis*, the Asian long-horned beetle. However, one of the common names of *A. chinensis*, the rough-shouldered longhorned beetle, references a physical character that separates the two species upon visual inspection, as illustrated by the two photos below. *A. chinensis* has two pairs of polished white tubercles at the base of the elytra (Thomas, 2004). These are visible with a 10x hand lens and are not present on the Asian longhorn beetle, *Anoplophora glabripennis* (Thomas, 2004).



A. chinensis (Pest and Diseases Image Library, Bugwood.org)



A. chinensis (Pest and Diseases Image Library, Bugwood.org)



Left: *A. chinensis* . Right: *A. glabripennis* (ALB) adult (M.C. Thomas)

Biology and Ecology

A. chinensis can take one to two years to complete its life cycle, dependent on climatic and feeding conditions. Adults live approximately one month and can be found from April to August, most commonly found from May to July (McDougall, 2001). Adults feed on leaves, petioles, and young bark of various trees (EPPO, n.d.).

Eggs are laid about one week after mating with females laying an average of 70 each. Eggs are laid individually under the trunk bark from just above the soil surface to 60 cm (approx. 23 ⁵/₈ in) above (EPPO, n.d.) in T-shaped oviposition holes made by the female (McDougall, 2001). Once hatched, larvae tunnel under the bark of the trunk and branches and later (third instar on) feed on the woody tissues of the lower trunk and roots of host plants (McDougall, 2001; EPPO, n.d.). Larvae may be found throughout the year (McDougall, 2001). Pupation occurs in the wood,

usually towards the upper part of the feeding area (EPPO, n.d.). The exit hole is rounded or slightly oval in shape (McDougall, 2001).

Although adults are strong fliers, females heavy with eggs are likely to deposit eggs on tree from which they emerged or on host trees close by (McDougall, 2001).

Countries of Origin

The native range of *A. chinensis* is Asia and includes China, Korea and Japan with occasional records from Indonesia, Malaysia, Philippines, Taiwan and Vietnam (Haack et al., 2010)

Current Distribution

This species is present in: China (including Hong Kong and Macau), Croatia, Germany, Guernsey, Hong Kong, Indonesia, Italy, Japan, Korea, Lithuania, Malaysia, Myanmar, Philippines, Switzerland, Taiwan, and Vietnam (EPPO, 2007; CABI, 2011).

Distribution in United States

A. chinensis is present in Hawaii (CABI, 2007).

Washington reported positive NAPIS data in 2001 (K. Handy, personal communication, 2007). *A. chinensis* is not known to be established in the United States.

Pathway

A. chinensis can move through international trade. This insect is moved mainly as eggs, larvae or pupae in wood products like crates, pallets and dunnage or in imported woody plant material like bonsai or penjing trees (Anonymous, 2004).

This species has been intercepted at North American ports of entry in Georgia, Wisconsin and Washington (McDougall, 2001). Specimens were recovered from bonsai and nursery stock imported from Japan and Korea (McDougall, 2001).

Pathogens Vectored

A. chinensis is not a known vector and does not have any associated organisms.

Damage



Damage in trunk of bonsai maple (Art Wagner, USDA APHIS PPQ, Bugwood.org)

Dwarf or bonsai tree infestation symptoms include “scraped sections of bark, chewed leaves, T-shaped slits cut in the bark where females deposit eggs, sawdust-like frass or wood-pulp around small holes and larval tunnels in the wood under loose or thin bark” (McDougall, 2001). Crepe myrtle damage caused by adults includes scraped bark sections that are vertical and rectangular in shape measuring approximately 2 x 2.54 cm ($1^{3}/_{16}$ to 1 in) (McDougall, 2001).



Feeding damage on bonsai maple (Art Wagner, USDA APHIS PPQ, Bugwood.org)

Survey

CAPS-Approved Method

Visual inspection. There are no known attractants or traps for *A. chinensis*.

Visual symptoms include ovipositional scars (3 to 4 mm wide [approx. $1/8$ to $3/16$ in], 1 to 2 mm [approx. $1/16$ in] long) on bark at the base of trees; frass and wood pulp extruding from exit holes; and larval tunnels at the base of trees and in exposed roots (CABI, 2007). Surveyors should visually inspect bark around the base of host trees and exposed roots (CABI, 2007). Also, dead young host trees should be inspected for the presence of exit holes, sawdust and

oviposition scars, and beetle life stages (CABI, 2007).

Time of year to survey

In tropical and subtropical regions, adults are present between May and August (EPPO, n.d.).

Identification

CAPS-Approved Method

Morphological. Identification of *A. chinensis* must be made from the adult stage (McDougall, 2001) and should be performed by a taxonomist with expertise in the family Cerambycidae.

Mistaken Identities

This pest resembles *Anoplophora glabripennis*, Asian Longhorned Beetle (ALB). *Anoplophora chinensis* differs from ALB in having two pairs of polished white tubercles at the base of the elytra. These are visible with a 10x hand lens and are not present on ALB. This pest also resembles *Monochamus scutellatus* which is present in the United States.



Trident maple bonsai with exit hole (L. Cruse, PPQ)

Resources and High Resolution Images

Images

<http://www.invasive.org/browse/subthumb.cfm?sub=4014&Start=1&display=60&sort=2>

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