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The city longhorn beetle, *Aeolesthes sarta* (Solsky), is a wood-boring beetle in the family Cerambycidae that occurs in India (Western Himalayas), northern Pakistan, Afghanistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, and southern Kyrgyzstan. Cerambycid adults are highly variable but can usually be identified by their long antennae, absence of a beak, and characteristic tarsi.

Larvae of *A. sarta* cause extensive damage to host trees by feeding on tissues under the bark. They are known to attack both stressed and healthy trees, and only a few larvae are capable of killing a host tree in 2–4 years because of their large size and voracious appetite. In addition, the large larval galleries and boring holes severely decrease the commercial value of the wood. The city longhorn beetle is highly polyphagous, and while the preferred hosts are species of walnut (*Juglans* L., Juglandaceae), they have been recorded feeding on a wide range of deciduous tree species in many families, including: Aceraceae, Betulaceae, Fabaceae, Fagaceae, Hippocastanaceae, Oleaceae, Rosaceae, Salicaceae, and Ulmaceae. The widespread availability of host plants in North America makes the introduction of this pest a high risk, although Florida is the only state with a climate similar to the beetle's native range.

Adults of the city longhorn beetle are 2.8–4.7 cm in length. They are dark reddish brown with their elytra covered in fine, shining white pubescence. They are characterized by their large kidney-shaped eyes, thick and wrinkled antennal scape, and pronotum that narrows apically and is transversely wrinkled. Males are generally smaller than females and have antennae twice as long as their body, while female antennae do not extend past apices of elytra. With their large size and characteristic appearance, these beetles are unlikely to be confused with any native North American species. Detection is performed by visual inspection of wood, where their presence is indicated by large exit holes, dust from larval boring, and presence of dead branches and rotting bark. Any suspect cerambycid matching this description and of a similar size should be submitted for professional identification.

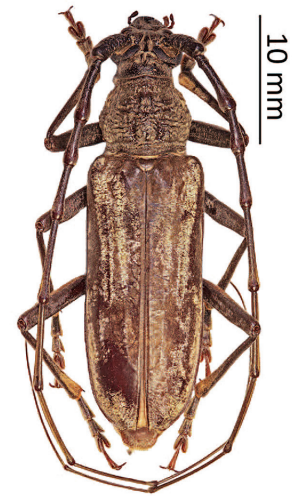


Fig. 1: Adult male of *Aeolesthes sarta*. (Photo from Kadyrov et al. 2016)



Fig. 2: Larval damage from *Aeolesthes sarta*. (Photo from Kadyrov et al. 2016)



Fig. 3: Late instar larva of *Aeolesthes sarta*. (Photo from Kadyrov et al. 2016)

Sorting

City Longhorn Beetle *Aeolesthes sarta* (Solsky)

Suspect trees or timber should be inspected for adult beetles of the appropriate size, color, and shape. Beetles meeting all of the following requirements should be moved to Level 1 Screening (Page 3):

- 1) Beetles are approximately 2–5 cm (0.78–2.0 inches) long (Fig. 4)
- 2) Beetles have an overall shape that is similar to the adults depicted in Figs. 4–7.
- 3) Beetles are a dark reddish brown, with dense white pubescence (Figs. 5–7, 9). (This pubescence may be rubbed off on older individuals.)



Fig. 4: Dorsal view of an adult male of *Aeolesthes sarta* (Actual size).



1 cm

Fig. 5: Lateral view of an adult male of *Aeolesthes sarta*.



1 cm

Fig. 6: Lateral view of an adult female of *Aeolesthes sarta*.



Fig. 7: Dorsal view of an adult female of *Aeolesthes sarta*.

Level 1 Screening

City Longhorn Beetle *Aeolesthes sarta* (Solsky)

Beetles that meet the sorting requirements should be screened for suspect cerambycids. Level 1 Screening includes species-specific characters used in the identification of *Aeolesthes sarta* adults.

The city longhorn beetle can be identified by the following combination of characters:

- 1) Antennae with scape that is thickened and wrinkled in appearance (Fig. 8).
- 2) Eyes kidney-shaped (Fig. 8).
- 3) Elytra covered with a fine, silvery pubescence. Shiny silvery spots form two irregular bands crossing the elytra (Fig. 9).
- 4) Five visible abdominal segments, first segment large, its middle portion protruding between the hind pair of legs. Second, third, and fourth segments approximately equal to each other but smaller than the first. Last segment triangular and tapering (Fig. 10).



Fig. 8: Head of *Aeolesthes sarta* male, showing thick wrinkled scape of antennae, and large kidney-shaped eyes.

Beetles meeting the above criteria should be pinned and clearly labeled before being sent to a trained coleopterist for final identification.



Fig. 10: Visible abdominal segments on adults of *Aeolesthes sarta*.



Fig. 9: Silvery pubescence on adult elytra of *Aeolesthes sarta*.

Citation

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References for more information on *Aeolesthes sarta*

European and Mediterranean Plant Protection Organization. 2005. Data sheets on quarantine pests: *Aeolesthes sarta*. OEPP/EPPO Bulletin 35: 387–389.

Kadyrov, A. Kh., L. Karpiński, W. T. Szczepański, A. Taszakowski and M. Walczak. 2016. New data on distribution, biology, and ecology of longhorn beetles from the area of west Tajikistan (Coleoptera, Cerambycidae). ZooKeys 606: 41–64. doi:10.3897/zookeys.606.9190

Pinkerton, M. and A. Hodges. 2016. City longhorn beetle – *Aeolesthes sarta*. Accessed 3 May 2018 from www.protectingusnow.org.

Sajad A. K., B. Sanjay and T. Narinder. 2013. Entomological Investigation on *Aeolesthes sarta* (Solsky), A major pest on walnut trees (*Juglans regia* L.) in Kashmir Valley. Journal of Academia and Industrial Research 25: 325–330.

Zhaurova, K. 2009. *Aeolesthes sarta* Cerambycidae: City longhorn beetle. Accessed 3 May 2018 from <http://download.ceris.purdue.edu/file/90>.

Acknowledgments

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