Avocado lace bug

*Pseudacysta persea*ae

The avocado lace bug, *Pseudacysta persea*ae (Heidemann) (Hemiptera: Tingidae), was described in 1908 from specimens collected in Florida (USA). For most of the twentieth century it was regarded as having a limited distribution, primarily to peninsular Florida, and being of only occasional minor economic importance (Mead & Peña, 2012). However, during the last decade or so it has expanded its distribution in the Caribbean and become a more damaging pest of avocado. It was found for the first time in the British Virgin Islands (UKOT) in 2013. In 2014 it was found in commercial orchards in Madeira (Portugal) and has been added to the European and Mediterranean Plant Protection Organisation (EPPO) Alert List.

**Geographical distribution**

*Pseudacysta persea*ae occurs widely in the Caribbean, and if found from northern South America to southern parts of North America (Humeres et al. 2009; CAB International, 2013). It is likely to be more widespread than indicated below but can be easily overlooked as the symptoms on avocado are similar to those produced by thrips, mites and certain diseases.

- **Europe**: Madeira (Portugal).
- **North America**: Bermuda, Mexico, USA (California and south-eastern states).
- **Central America**: Guatemala.
Caribbean: Bermuda, British Virgin Islands, Cuba, Dominican Republic, Guadeloupe, Jamaica, Martinique, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Trinidad and Tobago, and the US Virgin Islands.

South America: French Guiana, Venezuela.

Host plants

*Pseudacysta perseae* is oligophagous on Lauraceae. Its preferred host in most areas where it is found is avocado (*Persea americana*), but it has also been recorded feeding on camphor (*Cinnamomum camphora*) and red bay (*Persea borbonia*).

Description

The adults are oblong-oval and about 2 mm long. They are distinctive in colour with their lace-like wings being yellowish white with a transverse black bar, the head and prothorax (section of body behind the head) are black (Fig. 1). The wings are sometimes darker, being brownish or orange. The legs and antennae are pale yellow, with blackish tips. The nymphs are blackish with paler wing buds, and blunt spine-like projections emerging from the body (Fig. 1). The eggs are oval, black and have a circular lid (Fig. 2) and are often hidden beneath black blobs of tar-like faecal matter.

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**Fig. 2** Avocado lace bug eggs showing the distinct lids © Adrian Hunsberger, University of Florida

**Fig. 3** Colony of avocado lace bug with adults, eggs, nymphs, exuviae and black faecal matter © David Rosen

**Fig. 4** Avocado lace bug colony on the underside of a leaf and damage on the upper side of adjacent infested leaves © David Rosen

**Fig. 5** An avocado leaf with damage to the upper surface caused by avocado lace bug © James Castner, University of Florida
*Pseudacysta perseae* is the only species in the genus *Pseudacysta*, so identification to genus is tantamount to specific level (Mead & Peña, 2012). Blatchley (1926) described the genus *Pseudacysta* and provided keys to the Tingidae of eastern United States. Hurd (1946) provided a key to the lace bug genera of North America. The most detailed descriptions of adults and late instar nymphs are provided by Heidemann (1908).

**Pest biology, dispersal and detection**

*Pseudacysta perseae* is sexually reproductive, lays eggs and has five nymphal instars. It can take as little as three weeks to complete develop from egg to adult in warm weather (Abud-Antum, 1991) but several months in cooler conditions. It has several generations a year and all developmental stages can be found together throughout the year. The lace bugs usually live in colonies, depositing eggs upright in irregular rows in groups on the lower leaf surface. The nymphs and adults only feed on the lower surface of the foliage (Moznette, 1922), which causes gradual local destruction of the plant cells, resulting in chlorotic patches (Figs 4-5). The lower surface of the leaf becomes covered in exuviae, frass spots, and mould (Fig. 3), and the upper leaf surface develops yellow and eventually bronze patches (Fig. 5).

The bug is likely to be first detected by the damage to the foliage. However, thrips, mites, and certain diseases and disorders can cause leaf damage superficially resembling that of lace bugs. The leaves therefore need to be examined carefully with a X10 hand lens to confirm the presence of the lace bug. Adult lace bugs can fly and disperse locally; long distance dispersal is more likely to occur in trade, for example with the movement of infested avocado plants for planting.

**Natural enemies**

The natural enemies of *P. perseae* have been studied intensively in Florida (USA) (Peña et al., 2008, 2012, and references cited therein) and include four hymenopteran egg parasitoids: *Erythmelus klopmor* Triapitsyn (Trichogrammatidae); *Oligosita* sp. (Trichogrammatidae); an undescribed species of Trichogrammatidae; and an unidentified Mymarida. Four predators were also recorded: *Chrysoperla rufilabris* (Burmeister) (Neuroptera: Chrysopidae); *Paracarniella cubana* (Bruner) (Hemiptera: Miridae); *Stethoconus vitripennis* (Distant) (Hemiptera: Miridae); and *Tingidoletes praelonga* Gagné (Diptera: Cecidomyiidae). The total percent mortality of *P. perseae* caused by biotic factors was 16 to 90% above the mortality caused by abiotic factors during 3 seasons (Peña et al., 2012).

**Economic importance and damage**

Infestations of the foliage result in distinct brown necrotic patches (Fig. 5). These patches, however, may be caused by the anthracnose fungus, *Colletotrichum gloeosporioides* (Stoneman) Spauld. & H. Schrenk (Glomerellales: Glomerellaceae), that is often found in association with the bug. Heavily damaged leaves become dry, curl up, and drop prematurely. The avocado bug has been particularly damaging in the Dominican Republic, where it has caused complete defoliation of avocado trees. Trees stressed by defoliation may have reduced fruit yields in the future.
References


Author: Chris Malumphy. Email: chris.malumphy@fera.gsi.gov.uk
Address: The Food and Environment Research Agency, Sand Hutton, York, YO41 1LZ, UK. Website: www.fera.defra.gov.uk
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