

Avocado Lace Bug, *Pseudacysta perseae* (Hemiptera: Tingidae)¹

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INTRODUCTION: The avocado lace bug, *Pseudacysta perseae* (Heidemann), was described in 1908 as *Acysta perseae* from Florida specimens. Blatchley (1926) stated that *Acysta perseae* Heidemann differed widely from *Acysta* spp. of Champion (1898). Blatchley described the genus *Pseudacysta* for *A. perseae*. For most of the 83 years since its description, the avocado lace bug has been regarded as having limited distribution, primarily to peninsular Florida, and being of only occasional minor economic importance. Recently the number of complaints about its damage to avocado leaves, *Persea americana* P. Mill., has increased in Florida, and within the last two years damaging populations have been reported for the first time in Puerto Rico (Medina-Gaud *et al.*, 1991) and the Dominican Republic (Abud Antun, 1991).

DESCRIPTION and IDENTIFICATION: Adults as in fig. 1, nymphs fig. 2. The most complete description of adults and late instar nymphs was by Heidemann (1908). Medina-Gaud *et al.* (1991) gave a shorter version of Heidemann's description. Blatchley (1926) described adults as 2 mm long and oblong-oval shaped. Body beneath, head, pronotum, except front edge and tips of posterior third, and a bar crossing basal third of elytra, but reaching only slightly outside of discoidal area, piceous brown or blackish; remainder of upper surface yellowish white (we have seen numerous specimens with elytra more tawny in color, being orangish at basal area); legs and antennae pale yellow, the claws and apical half of fourth antennal segment blackish. Pronotum subpentagonal, with front side margins obtuse and converging strongly toward the apex; posterior portion flat, triangular, acutely pointed; disc finely and densely punctate and with a single entire, low, median carina. Elytra much surpassing abdomen, their tips broadly rounded; discoidal area long, narrow, not closed behind. Heidemann (1908) illustrated both nymphs and adult forms. Medina-Gaud (1991) included color photographs of adults, nymphs, eggs, and leaf damage. Beshear *et al.* (1976) published a photograph of an adult museum specimen. Wolfenbarger (1963) in one photograph illustrated nymphs, adults, eggs, and excrement on the underside of an avocado leaf. Moznette (1922) provided an excellent drawing of the adult.

Pseudacysta perseae is the only described species in this genus, so identification to genus is tantamount to the specific level. 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. Brailovsky and Torre (1985) redescribed *Pseudacysta* and mentioned that it was a pest on avocado in Mexico. They commented that *Pseudacysta* is characterized by the reduction of the paranotum, confined to the humeral angles, and formed by one or two small cells, and by a discoidal area open apically. *Acysta* was cited as having the discoidal area closed in its posterior end and by having a more developed paranotum. The paranota of *Pseudacysta* are present only as small ear-like flaps on humeri.

HOSTS: Avocado (=alligator pear, aguacate), *Persea americana* P. Mill.; red bay, *Persea borbonia* (L.) Spreng.; camphor, *Cinnamomum camphora* (L.) J. Presl. are the known hosts. Heidemann (1908) in his original description listed "*Persea carolinensis*" and "*Persea gratissima*" as hosts of specimens collected in Florida. *Persea carolinensis* is a synonym of swamp red bay, *Persea palustris* (Raf.) Sarg.

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Figure 1. Avocado lace bug, *Pseudacysta perseae* (Heid.).
Adult (lifesize = 2mm.)

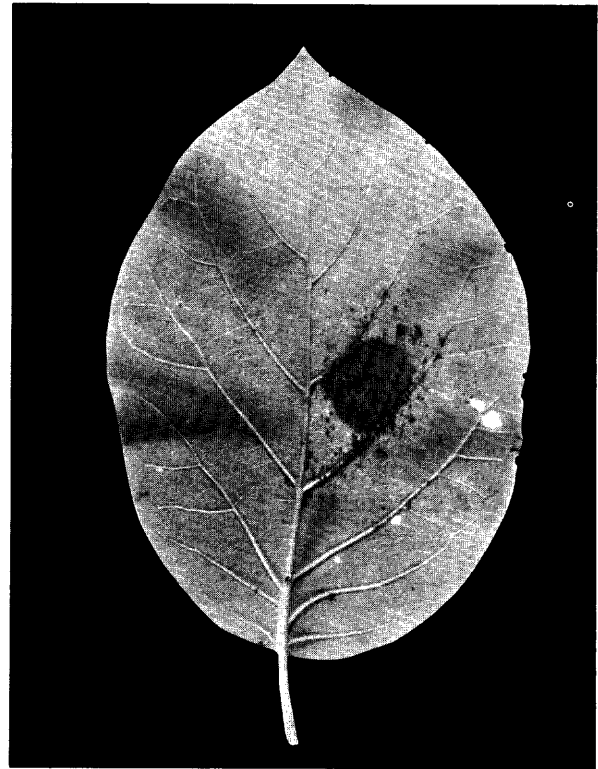


Figure 3. Underside of avocado leaf, *Persea americana*,
showing lace bug colony (*Pseudacysta perseae*) and
associated necrotic area due to anthracnose.



Figure 2. *Pseudacysta perseae* (Heid.) Late instar nymph on
avocado leaf.

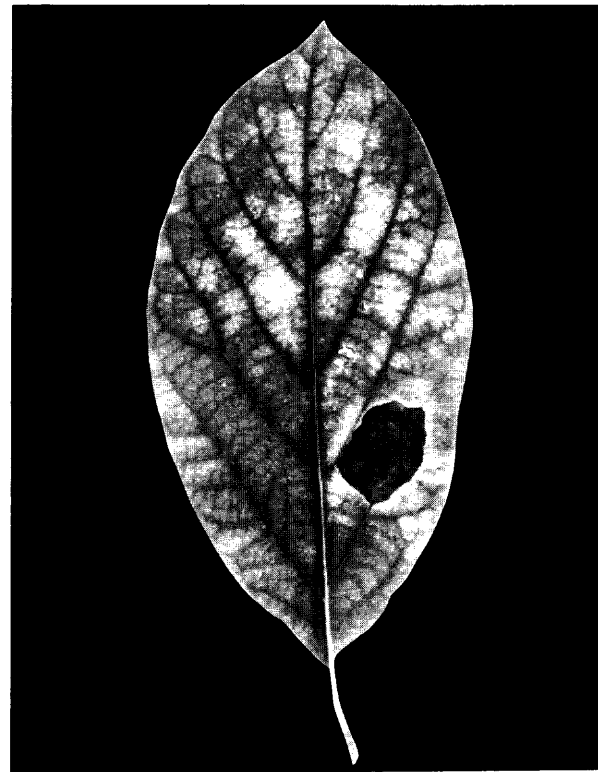


Figure 4. Upper surface of avocado leaf showing chlorotic
areas due to early stage powdery mildew infections (*Oid-
ium* sp.), and brown necrotic patch due to secondary
infection by the anthracnose fungus, *Colletotrichum*
gloeosporioides.

References differ as to whether *P. palustris* is a valid species. We follow Kartesz and Kartesz (1980) in which *P. palustris* is listed as a synonym of *P. borbonia*. *Persea gratissima* Gaertn. F. is a synonym of *P. americana*. In the northern part of peninsula Florida, and other parts of the Deep South, camphor is the main host. Avocado is the main host in the southern coastal region of Florida.

BIONOMICS: The life cycle of *Pseudacysta perseae* was reported by Abud Antun (1991) to be 22 days from egg to adult stage. Mozzette (1922) reported that this lace bug confines its attacks to the lower surface of the foliage, where it feeds by extracting the juices from the plant. It usually lives in colonies, depositing eggs upright in irregular rows in clusters on the lower leaf surface. The extraction of the juices from the foliage causes a gradual localized destruction of the plant cells. The resulting chlorotic areas correspond to the location of the lace bugs below. Where a colony of these insects is present, the eggs and the lower surface of the leaf are more or less thickly covered by a dark, sticky secretion from the insects. The principal injury, however, is the destruction of the leaf cells due to the sucking habit of the insects. Wolfenbarger (1963) reported an instance of avocado trees in one Florida grove becoming defoliated, and stated that during the previous decade avocados were rarely infested with lace bugs. Wolfe *et al.* (1949) stated that it preferred the West Indian "race" of avocado, although no variety was known to be free from attack. There are 42 records of the avocado lace bug in the Florida State Collection of Arthropods (FSCA), and 29 of these have been since 1983. This bug is becoming more of a problem in Florida, but not nearly to the extent as it is in the Dominican Republic, for instance, where whole trees have been defoliated by it.

Wolfe *et al.* (1949) reported that this lace bug was found occasionally infesting the underside of leaves in winter, but more often it was found in the warmer, dry spring months. There are no May records of *P. perseae* in the FSCA, but all other months have adult records, and most have nymphal collections. Both nymphs and adults have been reported several times during the winter months in southern Florida, but we have very few nymphal and adult records during winter in northern Florida.

Brown necrotic areas on avocado leaves are frequently associated with lace bugs (fig. 3 & 4). Freshly affected leaves from the Homestead, Florida, area were analyzed by Dr. Timothy Schubert, Bureau of Plant Pathology, FDACS, Gainesville (personal communication). He suggested that injuries from lace bug activities provided the infection court for the anthracnose fungus, *Colletotrichum gloeosporioides*, the cause of the large necrotic blotches on the leaves, that first catches attention when surveying avocado and other hosts. The anthracnose pathogen was isolated consistently from the advancing margins of the necrosis surrounding the lace bug colonies. Schubert added that dendritic necrotic patterns were due to infections by powdery mildew, *Oidium* sp.

SURVEY AND DETECTION: Yellowish or brownish necrotic areas, either above or below the leaf, are indications of the presence of avocado lace bugs underneath. Black pepper-like objects, centered in the brown patches usually are eggs covered with a black, sticky substance, sometimes moldy. Also on the underside look for black specks of excreta, cast skins, nymphs, and adults, no longer than 2 mm. For identification, place a few infested leaves and a paper towel in a plastic bag, tie securely, and ship in mailing tube with collection data.

DISTRIBUTION: U.S.A: Florida, Georgia, Louisiana, Texas. Florida counties: Alachua, Brevard, Broward, Collier, Dade, Duval, Highlands, Indian River, Lake, Lee, Levy, Manatee, Orange, Osceola, Palm Beach, Pasco, Polk, Putnam, Saint Johns, Seminole. We have no county records from the "Big Bend" area of Florida, westward through the Panhandle. BERMUDA: Paget, Warrick Parrish, Coral Beach Club, 15-I-1991, K. D. Monkman, coll., nymphs and adults on avocado, *Persea americana*, imported from Florida. Determined by F. W. Mead, 1991. No tingid was listed for BERMUDA in the paper by Henry and Hilburn (1990). PUERTO RICO: Fortuna, University Puerto Rico, Agric. Experiment Station, 28-III-1990; H. W. Browning, nymphs and adults on avocado, *Persea americana*. Determined by F. W. Mead, confirmed (1990 correspondence) by R. C. Froeschner, U.S. National Museum of Natural History. Details of avocado lace bug in Puerto Rico were published by Medina-Gaud *et al.* 1991. DOMINICAN REPUBLIC: Ensanche Ozama, Distrito Nacional, 4-XI-1990, Abud Antun, collector and identifier. (Abstract by Abud Antun, 1991).

CONTROL: All insecticides registered for use on avocado provide control of the lace bugs (J. E. Peña, unpublished data). Consult your county extension agent for further information. Homeowners may use malathion at the rate of 2 teaspoons 57% EC per gal. water. Follow directions and precautions on label of container. Sprays should be directed to the underside of leaves and repeated at approximate 2 week intervals until control is achieved.

BIOCONTROL: Abud Antun (1991) reported that the most important predator of the avocado lace bug in the Dominican Republic is the thrips, *Frankliniella vespiformis* (Crawford).

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