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The Sycamore Lace Bug, *Corythucha ciliata* (Say) (Hemiptera: Tingidae)[1]

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INTRODUCTION: The sycamore lace bug, *Corythucha ciliata* (Say) (Fig. 1) is a native North American insect that feeds on sycamore trees (*Platanus* spp., especially *Platanus occidentalis* L.). The bugs feed on the undersides of the leaves, initially causing a white stippling that can eventually progress into chlorotic or bronzed foliage and premature senescence of leaves (Fig. 2). In cases of severe infestations, trees may be defoliated in late summer. Several consecutive years of severe lace bug damage, combined with other stress factors, may kill the trees (Barnard and Dixon 1983). Heavy infestations are more common in urban areas than in natural settings. Damage is more severe during dry weather (Filer *et al.* 1977). The sycamore lace bug occurs throughout the eastern USA and in eastern Canada. In most years, it is common in most of the places that sycamores grow in Florida.

The sycamore lace bug was discovered in Europe in 1964 in Padova, Italy. Since that time, it has spread through much of southern and central Europe (d'Aguilar *et al.* 1977). In northern Italy, the sycamore lace bug is associated with two fungi, *Ceratocystis fimbriata* Ellis and Halst. *forma platani* J.M. Walter and *Apiognomonia* (=*Gnomonia*) *veneta* (Sacc. and Spreg.), which, in combination with the lace bug, cause decline and death of the trees. It is suspected that the lace bugs may serve as vectors for these fungi (Maceljski 1986).

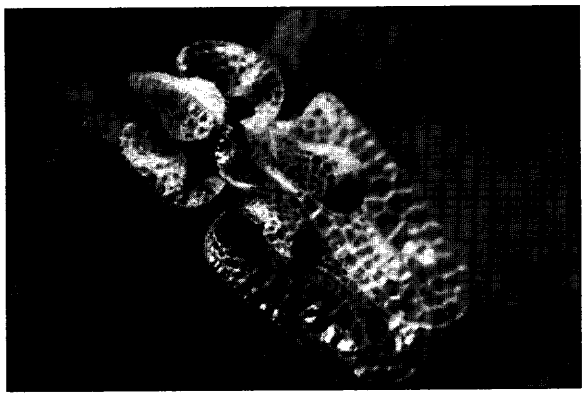

Fig. 1. *Corythucha ciliata* adult. Photography credit: Jeffrey W. Lotz (DPI)

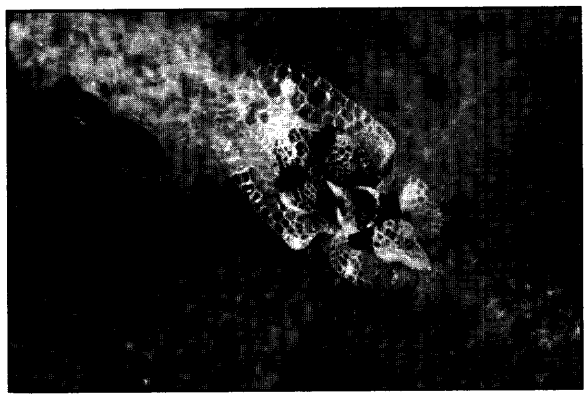

Fig. 2. *Corythucha ciliata* on sycamore, showing frass and damage. Photography credit: Jeffrey W. Lotz (DPI).

In addition to damaging trees, the sycamore lace bug has become a major nuisance in Europe, as sycamore is a very popular shade tree in parks in southern Europe. The sycamore lace bugs are particularly bothersome in open air bars and cafes that are shaded by sycamore trees. They also may invade homes in large numbers (Maceljski 1986).

DESCRIPTION: The sycamore lace bug is the only lace bug listed as feeding on *P. occidentalis* according to the world host list for lace bugs (Drake and Ruhoff 1965). Adults are whitish in color and about 3 mm in length. For practical purposes, the association with the host plant should be diagnostic for this species.

Sycamore lace bug is very similar in appearance to *Corythucha floridana* Heidemann, the Florida oak lace bug, and to *Corythucha gossypii* (Fabricius), the cotton lace bug. The sycamore lace bug can be differentiated from other common Florida species by the following characters: the cells on the swollen part of the hood are slightly larger than those on the paranotal area. The hood is only slightly higher than the median carina in lateral view. There is a brown spot at the rear of the tumid elevation in each eletron and there may be darkened veins near the posterior ends of the elytra. A key separating common Florida species can be found in Entomology Circular No. 324 on the cotton lace bug (Mead 1989). The entire genus was reviewed by Gibson (1918). Blatchley (1926) includes a key to eastern species.

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HOSTS: The major host of the sycamore lace bug is the American sycamore tree, *P. occidentalis*. Other *Platanus* spp. also may be affected (Wade 1917). Several other host plants are listed in the literature, including *Broussonetia papyrifera* (L.) Vent., *Carya ovata* (Mill.) K. Koch, *Chamaedaphne* sp., and *Fraxinus* sp. (Drake and Ruhoff 1965). The vast majority of Florida Department of Agriculture and Consumer Services, Division of Plant Industry (DPI) records for sycamore lace bugs list *P. occidentalis* as the host. There are no DPI host records for sycamore lace bug on *Broussonetia*, *Carya*, *Chamaedaphne*, or *Fraxinus*; however, there is one collection of a colony, including immatures, from *Quercus laurifolia* Michx. A single collection of both adults and nymphs from *Liquidambar sytraciflua* L. also contained sycamore lace bug. Single DPI records of sycamore lace bugs from *Euphorbia pulcherrima* Willd. ex Klotzsch, *Castanea* sp. and *Vaccinium* sp. could not be verified.

LIFE HISTORY: The sycamore lace bug feeds on the undersides of leaves, causing dessication of tissue, first near the veins, and subsequently affecting the entire leaf, which may drop prematurely. The most detailed life history information on sycamore lace bug can be found in Wade (1917). According to Wade's (1917) observations in Oklahoma, mating pairs of sycamore lace bugs initiate colonies by laying eggs along leaf veins, especially near the forks. One to several pairs occupy a newly colonized leaf. A single female can lay at least 284 eggs. d'Aguilar *et al.* (1977) counted 350 eggs from one female. Wade (1917) observed five immature instars. Nymphs stay close together at first, only moving to new leaves after they reach the fourth instar. One life cycle is completed in 43-45 days under summer conditions in Oklahoma, and several generations per year occur in the South. Sycamore lace bugs overwinter as adults, either under loose bark of the trees, or in nearby cracks and crevices. They are extremely cold tolerant, withstanding temperatures as low as -10° F. According to Wade (1917), the flying wings of adults are very delicate, and thus, these insects rarely fly very far; however, Maceljski (1986) writes that adults "are very mobile and are good fliers. Supported by wind they can fly over many kilometres." Both authors surmise that the majority of long distance distribution occurs as a result of human activity.

CONTROL: There are several North American parasites and pathogenic fungi that attack sycamore lace bugs, but these seldom reduce populations enough to prevent significant damage to sycamore trees in Florida's urban areas. Although a wide variety of insecticides and associated methods of application (*e.g.*, foliar sprays, trunk injections, soil treatments) are available for use against sycamore lace bugs, these are costly, and efficacy is often marginal. Additionally, there are problems associated with large scale use of insecticides in urban areas. Most of the time in Florida, applications of pesticides on sycamores are unnecessary and unwarranted. Despite the spectacular appearance of severe damage, the practical impact of occasional late-season defoliation on otherwise healthy sycamore trees is principally only aesthetic in nature.

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