GLASSY-WINGED SHARPSHOOTER

Integrated Pest Management for Home Gardeners and Landscape Professionals

The glassy-winged sharpshooter, *Homalodisca coagulata*, is an insect that was inadvertently introduced into southern California in the early 1990s. This insect is native to the southeastern United States and was most likely accidentally brought into California as egg masses in ornamental or agricultural plant foliage.

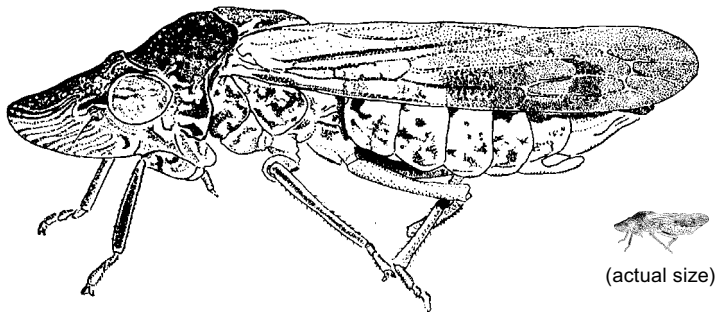

Figure 1. Female glassy-winged sharpshooter.

THE PROBLEM

The glassy-winged sharpshooter is a large leafhopper that obtains its nutrients by feeding on plant fluids in the water-conducting tissues of a plant (the xylem). Feeding on plants rarely causes significant plant damage, although the insects do excrete copious amounts of liquid that can make leaves and fruit appear white washed when it dries. The excrement is a special nuisance when shade trees are heavily infested because cars parked under the trees tend to become spotted. During hot weather, heavy populations of glassy-winged sharpshooters feeding on small plants may cause them to wilt. For a list of plants that host the glassy-winged sharpshooter, see the California Department of Food and Agriculture (CDFA) Web site listed in "Online References."

The real problem associated with glassy-winged sharpshooter, however, is that it can spread the disease-causing bacterium *Xylella fastidiosa* from one plant to another. This bacterium is the causal agent of devastating plant diseases such as Pierce's disease of grape, oleander leaf scorch, and almond leaf scorch. Outside California, other strains of *Xylella fastidiosa* cause phony peach disease, plum leaf scald, and variegated citrus chlorosis, but these diseases have not been detected in California. At the present time there is no cure for any of these diseases. For more information on oleander leaf scorch, see the *Pest Notes: Oleander Leaf Scorch* listed in "References."

When a glassy-winged sharpshooter feeds on a plant that is infected with *Xylella fastidiosa*, it acquires the bacteria, which then multiply within the insect's mouthparts. The sharpshooter then transfers the bacteria to another plant when it feeds. For more information about *Xylella fastidiosa* see the Web sites listed in "Online References." It is important to note that *Xylella fastidiosa* can reside in many plants, such as bermudagrass, without causing a disease.

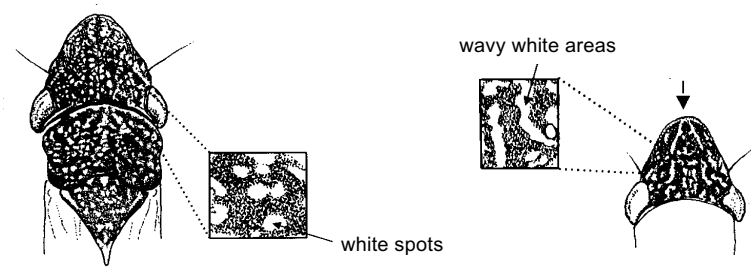

Figure 2. Detail of head of glassy-winged sharpshooter (*left*) and smoke-tree sharpshooter (*right*).

IDENTIFICATION AND BIOLOGY

The glassy-winged sharpshooter is a large insect compared to other leafhoppers. Adults are about ½ inch long and are generally dark brown to black when viewed from the top or side (Fig. 1). The abdomen is whitish or

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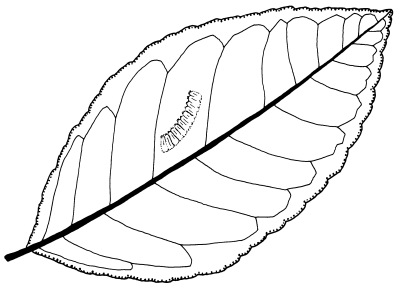

Figure 3. Glassy-winged sharpshooter egg mass in lower surface of leaf.

yellow. The head is brown to black and covered with numerous ivory to yellowish spots (Fig. 2). These spots help distinguish glassy-winged sharpshooter from a close relative, smoke-tree sharpshooter (*H. lacerata*), which is native to the desert region of southern California. The head of the smoke-tree sharpshooter is covered with wavy, light-colored lines, rather than spots (Fig. 2). Immature stages (nymphs) of the glassy-winged sharpshooter look similar to the adults except they are smaller, wingless, uniform olive-gray in color, and have prominent bulging eyes.

Females lay their eggs in masses of about 10 to 12 in the lower leaf surface of young, fully developed leaves. When it is first laid, the egg mass appears as a greenish blister on the leaf (Fig. 3). The female covers the leaf blister with a secretion that resembles white chalk and is more visible than the leaf blister. Shortly after the eggs hatch, the leaf tissue begins to turn brown. The dead leaf tissue remains as a permanent brown scar.

Nymphs hatch in 10 to 14 days and proceed to feed on the leaf petioles or small stems while they progress through five molts before becoming winged adults. In southern California, there are generally two peaks of adult activity, one in the summer (first generation) from late June through July and another from late fall through the winter (second generation). Adults of the second generation spend the winter feeding in citrus and other evergreens and can move to deciduous plants in January and February, returning to the evergreens during cooler evening hours. These overwintered adults begin laying eggs in February but lay most of their eggs in late March and April; peak egg laying for the second generation occurs in July and August.

Glassy-winged sharpshooter has become established in most of southern California and in certain localized sites in central and northern California. There is great concern that this insect may eventually invade most California counties. Figure 4 shows the areas in California where this sharpshooter has been found and counties where it is feared that the pest may spread. California county agricultural commissioners are following this pest closely. For the most recent information, see the CDFA Web site listed in "Online References."

MANAGEMENT

The principal reason for controlling the glassy-winged sharpshooter is to prevent the spread of the *Xylella* bacterium to susceptible plants. Because very low numbers of sharpshooters can spread the disease, it is not known how effective insecticides applied to suppress sharpshooters will be in controlling disease spread; research is currently underway to study this issue.

The current strategy for containing the problem is to keep the insect out of new areas. This requires careful monitoring and detection as described below. If glassy-winged sharpshooter is found in an area not currently known to have this pest, immediately contact the local agricultural commissioner's office (the address and phone number are usually found in the telephone directory under "County Government").

In areas where the glassy-winged sharpshooter is established, efforts are underway to bring in biological control agents for long-term management. Chemical treatments can be applied to reduce glassy-winged sharpshooter numbers but are generally not required

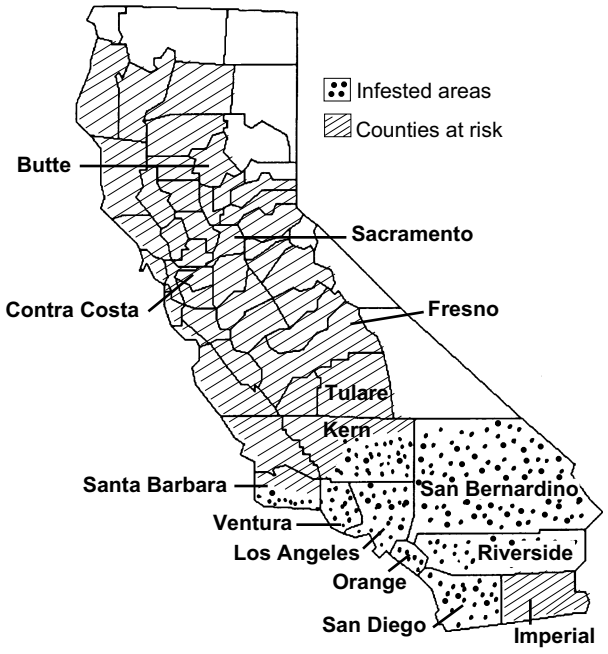

Figure 4. Distribution of glassy-winged sharpshooter in California as of June, 2001. Infested areas are dot filled and "at risk" areas are lined.

to protect the health of plants not susceptible to the *Xylella fastidiosa* bacterium.

Detection and Monitoring

Even though this insect is large enough to be seen with the naked eye, it is very inconspicuous in nature. The brown coloration of the insect blends very well with the color of the twigs where it is usually found, and it hides by moving to the other side of the twig or branch when it detects movement or is otherwise approached or disturbed. Leaves or fruit coated with a whitish, powdery material may indicate that there has been heavy glassy-winged sharpshooter feeding on that plant. Large, yellow sticky traps are commonly used in orchards to monitor for the adults. Sweep nets are also used to monitor for glassy-winged sharpshooter in agricultural situations. Glassy-winged sharpshooter infestations can also be determined by examining the underside of plant leaves for egg masses.

Cultural Control

There are no known cultural controls for glassy-winged sharpshooter, but its spread in California can be slowed by preventing transport of infested plant material to areas where glassy-winged sharpshooter has not been found. Nurseries shipping plants out of an infested area must follow rigorous plant inspection and treatment before the plants are shipped and then the plants must be inspected again after they arrive at their destination.

Biological Control

Only one group of biological control agents of any significance has been noted to date. Small egg parasites in the *Gonatocerus* genus attack glassy-winged sharpshooter egg masses starting in spring. The rate of parasitism gradually increases over the season. During the first period of egg laying in late April to May, parasitism is usually between 10 to 50%, but during the second egg-laying period in late summer and early fall, it can reach as high as 90 to 100%. Eggs parasitized by these tiny wasps are easily identified by the pinpointlike holes found at one end of the egg (Fig. 5). Work is currently underway to find additional biocontrol agents.

Chemical Control

In areas where glassy-winged sharpshooter is not well established, local agricultural commissioners will treat infestations with carbaryl or other materials such as pyrethroids or imidacloprid in an attempt to eradicate this pest if it is found.

Where glassy-winged sharpshooter is established, insecticide treatments to reduce populations of this pest may be used on *Xylella*-susceptible plants to slow the spread of the disease. Management of glassy-winged sharpshooter is not normally recommended on plants not susceptible to disease because the pest causes limited damage. However, on lemon, a preferred host, both yield and fruit quality are reduced after season-long infestations of high populations (more than 100 glassy-winged sharpshooters per tree).

The main material used to protect *Xylella*-susceptible plants is imidacloprid, which is registered for home and landscape use on nonfood crops. Imidacloprid is sold in two formulations: one for soil application and one for foliar application. The soil-application formulation provides the most effective, long-lasting control and will not disrupt the biological control provided by the parasitic wasps, but it takes several weeks to become effective. Foliar applications of this material are effective for a much shorter period of time and may disrupt biological control agents.

In instances where the white excrement produced by this pest is causing intolerable residues on cars or other surfaces, other insecticides can be applied to infested foliage to provide immediate relief. The least toxic and disruptive to biological control are insecticidal soaps and oils. Insecticidal soaps and oils are only effective in killing the soft-bodied nymphs of the glassy-winged sharpshooter and must directly contact the insect to kill it, so thorough coverage of the plant or tree foliage is essential. Applications of these materials need to be repeated at about 7- to 10-day intervals. Pyrethrin plus piperonyl butoxide, carbaryl (Sevin), and pyrethroids (e.g., cyfluthrin, permethrin) can also be used for foliar applications, but these materials are much more destructive to the parasitic wasps that are being introduced for biological control. While there is no residual control when pyrethrin with piperonyl butoxide is used, one application of the other two materials usually provides control for about 5 weeks.

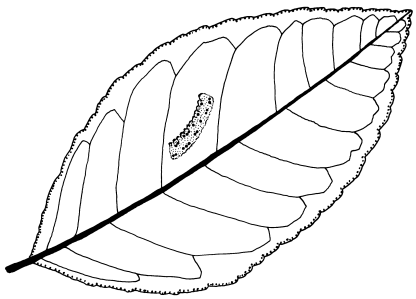

Figure 5. Parasite emergence holes in glassy-winged sharpshooter egg mass.

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Wilen, C. A., J. S. Hartin, J. M. Henry, H. S. Costa, M. Blua, and A. H. Purcell. July 2000. *Pest Notes: Oleander Leaf Scorch.* Oakland: Univ. Calif. Agric. Nat. Res. Publ. 7480. Also available online at http://www.ipm.ucdavis.edu/PMG/selectnewpest.home.html

ONLINE REFERENCES

http://plant.cdfa.ca.gov/gwss/ for a current map of infested sites in Calif. and a partial list of host plants.

http://danr.ucop.edu/news/MediaKit/GWSS.shtml for the latest Univ. of Calif. news releases on glassy-winged sharpshooter and links to other UC Web sites on this topic.

For more information, contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

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