Homalodisca vitripennis 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hemiptera	Cicdellidae

Common name glassy-winged sharp shooter (English)

Synonym *Homalodisca coagulata*

Similar species *Pheralacerta coagulata, Homalodisca liturata*

Summary The glassy-winged sharpshooter (GWSS), *Homalodisca vitripennis* (Germar), is a xylem-feeding leafhopper native to the southeastern United States and regions of northern Mexico. This insect is an important vector of the xylem-limited bacterium, *Xylella fastidiosa*. *X. fastidiosa* is responsible for many economically important diseases including phony peach disease, numerous leaf scold and scorch diseases, variegated citrus chlorosis and Pierce's disease of grape. This insect has been accidently introduced to California, Arizona and a number of South Pacific islands where it threatens the grape and citrus industries. They lay their eggs inconspicuously below the epidermis of plant leaves which has allowed them to spread to new locations through the nursery trade at an alarming rate.

view this species on IUCN Red List

Species Description
Glassy-winged sharp shooter (*Homalodisca vitripennis*) adults are about 13-14mm long. They have dark brown bodies with small yellow dots on the head and thorax. The underside of the abdomen has ivory and black markings. They have large translucent smoky-brown wings with red markings. The face and legs are yellow-orange in colour, and the eyes are yellow with dark speckles. Nymphs have a similar body shape to adults but are wingless, gray and have prominent bulging eyes (PaDIL 2006).
Please see PaDIL (Pests and Diseases Image Library) Species Content Page Bugs: Glassy-Winged Sharp Shooter for high quality diagnostic and overview images.

Notes
The glassy-winged sharp shooter (*Homalodisca vitripennis*) is also referred to as *Homalodisca coagulata* in literature. *Homalodisca vitripennis* is considered a senior synonym of *Tettigonia coagulata* syn. nov. and therefore should be used as the scientific name for the glassy-winged sharpshooter, a major vector of the bacterial Pierce's disease of grapes, phonypeach disease, plum leaf scald, and oleander leaf scorch in southern United States and northern Mexico. Please see Takiya *et al.* 2006 for details.

Lifecycle Stages
There are two generations of *Homalodisca vitripennis* in California per year. Females overwinter as adults and lay eggs in late-winter or early spring. The young wingless nymphs emerge from eggs after about two weeks. Nymphs undergo five molting stages before reaching maturity, during which time they feed on the stems of the host plants. They mature in late spring through summer and lay more eggs. This second generation begins to mature in summer and provides the overwintering adults for the following year (MAF n.d.).

Habitat Description
Glassy-winged sharp shooters (*Homalodisca vitripennis*) are native to the south-eastern part of the USA, where they are found to occur in forest margins. In their introduced range, in California, riparian woodlands in coastal and foothill areas seem to be suitable habitat.

Reproduction
Females lay eggs on host plants below the leaf epidermis once during their two-month (can live much longer when overwintering) adult stage. Oviposition predominantly occurs at night (Tipping *et al*. 2005 in Mizell *et al*. 2008) with 10 to 12 eggs produced at a time. Egg masses vary from 3-28 dependent on past feeding history (Varela *et al*. 2007).

Nutrition
Glassy-winged sharpshooters (*Homalodisca vitripennis*) have a vast host range of over 100 species (ornamental landscape plants, agricultural crops, and natural vegetation; they especially prefer sumac and crepe myrtle). They feed on the xylem (plant tissue that transports water and minerals from roots) of their hosts. Because xylem fluid is nutrient poor *H. vitripennis* displays very high consumption rates (Mizell *et al*. 2008).
\nYoung nymphs feed on the stems of the plant on which they hatched and are known to consume up to 10 times their weight in liquids in one hour. Active stages of the insect must feed constantly to avoid starving to death as adults cannot survive for more than about 4h without food (MAF n.d.). Because xylem is so nutrient poor *H. vitripennis* display host switching which allows them to take advantage of differing nutrient levels between plants. They must respond quickly to changes in xylem fluid content by dispersing to find plants with the highest nutrient levels. Adult glassy-winged sharpshooters are strong fliers and can disperse great distances to search for optimal host plants (Blackmer *et al*. 2003 in Mizell *et al*. 2008).

General Impacts
The glassy-winged sharpshooter is an extremely polyphagous insect, feeding on the xylem fluid of over 100 known species of plant, in at least 37 different families (Alderz, 1980 in Boucias *et al*. 2007). The actual feeding on plants causes little damage; it is the ability of the GWSS to vector the bacterium *Xylella fastidiosa* that causes devastating diseases of many plants which is a major problem (Varela *et al*. 2007).
There are almost 150 known strains of *X. fastidiosa*, which may be benign or cause mild to severe disease symptoms. In grapes one of these strains causes a lethal disease known as Pierce's disease, which is a particular problem in California vineyards as grapes are one of the most economically important crops in California (US $4.1 billion/year) (Krugner *et al*. 2008). Pierce's disease has been particularly damaging to wine grapes in the Temecula Valley viticulture area, where losses have been as high as 20-30% for some vineyards (Hix 2001 in Byrne and Toscano 2007). Although the disease has been present for many years, it was easily managed because native sharpshooters were poor vectors. The arrival of GWSS, which are far more efficient vectors, has allowed the bacterium to spread much further causing damage to hundreds of hectares of vines (MAF n.d.).
In California *X. fastidiosa* also causes oleander leaf scorch, almond leaf scorch, mulberry leaf scorch, cherry plum leaf scorch and sweet gum dieback. Outside of California other strains of the bacterium cause phony peach disease, plum leaf scald, leaf scorches in sycamore, elm, maple, and oak,and variegated citrus chlorosis (Varela *et al*. 2007).
The glassy-winged sharpshooter is also a problem due to the production of large amounts of white excrement ("sharpshooter rain") which damages cars and other surfaces (Varela *et al*. 2007).

Management Info
The current strategy for containing the problem of GWSS and the disease causing *Xylella fastidiosa* bacterium it transmits is to keep the insect out of new areas. In the United States tighter inspections and regulations of nursery trade in infected areas have been imposed in an attempt to slow down the rapid spread of the pest. The main chemical used to protect *Xylella*-susceptible plants in both commercial agriculture and urban landscapes is imidacloprid, which is registered for home and professional landscape use on nonfood crops. Parasitoid wasps are the most commonly used biocontrol agent against GWSS. Searches for parasitoid wasps have resulted in the collection of several mymarid and trichogrammatid species. In California species released include *Gonatocerus ashmeadi*, *G. fasciatus*, *G. morrilli*, and *G. triguttatus*, and most recently a strain of *Anagrus epos* from Minnesota (Morse *et al*. 2006). Research by Krugner *et al*. (2008) aims to determine host range and efficacy of *A. epos* against GWSS populations.
Please follow this link for more details on the control options used for the management of the glassy-winged sharpshooter.

Pathway
Glassy-winged sharp shooters (*Homalodisca vitripennis*) were probably introduced as eggs on plants.

Principal source:

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[1] CHILE
[7] FRENCH POLYNESIA
[16] UNITED STATES
[1] COOK ISLANDS
[1] HONDURAS

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