

Ferrisia gilli Gullan, A Potential Pest of Grapes in California

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General: The striped mealybug belongs to a genus of mealybugs that can be found throughout the world, feeding on many different host plants. This mealybug was thought to have been introduced into California from the southeastern United States, an area to which it may be native. Currently in California, the striped mealybug is found in the areas around Redding (Shasta County), Sacramento (Sacramento County), San Mateo (San Mateo County), Tulare (Tulare County), Placerville (El Dorado County), Keyes (Stanislaus County) and Red Bluff (Tehama County). Many of these infestations are small and are present in ornamental plantings (mostly deciduous trees and shrubs) in urban areas. More recently, an increase number of nut orchards have become infested in multiple locations throughout the state.

The most impacted area has been near the town of Tulare where the pest was first noticed on pistachios in the late 1990's. It is estimated that the number of acres of infested pistachios has gone from around 20 to 200 to about 2,000 during the past three years. During this time, infestations have also been found in almonds in at least two counties (Tulare and Stanislaus Counties), and in about 15 acres of commercial wine grapes near Placerville (El Dorado County). Thus far, striped mealybug has not been found infesting grapes in the San Joaquin Valley.

Distribution: Mealybugs in this genus can be found throughout the tropical and subtropical parts of the world. *Ferrisia* mealybugs have been present in California since 1963 when heavy infestations were found in ornamentals in backyards in Imperial County. The mealybugs found in these infestations were identified as “the uniparental strain” of *F. virgata*. Later taxonomic research determined that the mealybugs called “*F. virgata*” in fact belonged to several species. The *Ferrisia* mealybugs in Imperial County were later identified as *F. malvestra*. These two mealybugs can cause serious pest problems in a number of crops throughout the world and can transmit at least one plant virus.

In 2003, *Ferrisia gilli* was recognized as a distinct species from *F. virgata* and *F. malvestra* (Figure 1). It was named for Ray Gill because he “first recognized the distinct nature of some specimens of this new species” (Gullan et al. 2003). This mealybug has been collected in Alabama, Georgia, Louisiana, and California. It was first collected in Baton Rouge, Louisiana, in 1921. It is thought to have been introduced into California some time between the early 1960's and 1980's. It is possible that it has been introduced several times over the last 40+years because *Ferrisia* mealybugs have been intercepted in

nursery shipments over 100 times during this time period (from CDFA Pest Damage Records).



Ferrisia malvestra



Ferrisia gilli

FIGURE 1. The two species of *Ferrisia* mealybugs found in California. *Ferrisia malvestra* is found in Imperial County and is uniparental (females only). *Ferrisia gilli* is found in a few areas of central and northern California and is biparental (females and males).

Host Plants: The following plants have been listed as hosts: pistachio, almonds, catalpa, grapes, areca palm, yaupon, Japanese aralia, barnyard grass, eastern dogwood, magnolia, Chickasaw plum, nectarine, poison ivy, mulberry, and persimmon (Figures 2 and 3).



F. gilli on mulberry



F. gilli on a trunk of a grapevine



F. gilli in a cluster

FIGURE 2. Examples of *F. gilli* on mulberry and grapes. Please note that this mealybug can also be found on other plant parts such as leaves, stems, and/or canes.



F. gilli infesting a pistachio cluster



F. gilli overwintering on the underside of pistachio branches

Figure 3. Examples of *F. gilli* infesting pistachio.

Field identification: The adult females are 2-5mm in length, and are pinkish-gray in color. The mealybugs are covered with a white mealy wax and appear to have 2 stripes (darker area) on their backs. The filaments on the margins (spines around the outside of the mealybug) are very short and button-like. They also have two long white tails about one fourth the length of the body. The larger nymphs and mature female adults produce long (5-10 mm), glassy rod-like filaments of varying lengths that tend to cover a colony (or a few mealybugs together) like a tent. Adult males are winged and have two long white tails. Aggregations of striped mealybug on deciduous trees in the late fall make the trunk and scaffolds have a white bearded appearance.

Biology and habits: Initial observations on biology have been made on pistachios in the San Joaquin Valley, where it appears that striped mealybug has 3 generations per year. During the late fall and winter, striped mealybug nymphs (second or third instars) spend the winter in cracks and crevices under the bark on the trunk or just below the ground (up to several inches below the soil surface). They do not appear to feed at this time. In the spring, the nymphs move out onto the shoots (growing tips) of the host plant and feed and continue to develop. The resulting females and males produce the next generation, and by late spring, crawlers are present on the plant. These crawlers develop and by mid summer, the second generation is produced. The third generation is produced in early to mid fall and moves to overwintering sites. The time to complete a life cycle is thought to be about 3 months in the spring and about 2 months in the summer. The nymphs of this mealybug tend to aggregate, and their wax secretions form a web-like network over the aggregated mealybug nymphs. If the aggregation of nymphs is very large, the honeydew produced will cling to the wax network, and may trap and kill some of the mealybugs.

More detailed studies on the biology and habits of this mealybug are underway in pistachios, almonds, and grapes. In addition, at least 2 species of parasites have been recovered from this mealybug in Tulare County, and 1 species of parasites has been recovered in El Dorado County. The identities of the parasites are pending.

The above information was summarized from the following references:

- Clausen, C.P., ed. 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. USDA Agric. Handbook No. 480.
- DeBach, P. and S. Warner. 1969. Importation and colonization of natural enemies of the striped mealybug, *Ferrisia virgata*, in California. Ann. Entomol. Soc. Am. 62: 1117-1119.
- Gill, R. Color-photo and host keys to the mealybugs of California. Scale and Whitefly Key #3. California Department of Food and Agriculture, Sacramento.
- Gullan, P., D. Downie, and S. Steffan. 2003. A new pest species of the mealybug genus *Ferrisia* Fullaway (Hemiptera: Pseudococcidae) from the United States. Ann. Entomol. Soc. Am. 96: 723-737.