

## New Records and Accounts

### ***Fiorinia phantasma* Cockerell and Robinson (Hemiptera: Diaspididae), an Armored Scale Pest New to Hawaii**

**Janis N. Garcia**

Hawaii Department of Agriculture, Plant Pest Control Branch  
1428 S. King St. Honolulu, HI 96822; e-mail: Janis.N.Garcia@hawaii.gov

**Abstract.** A diaspidid species new to both Hawaii and the Western Hemisphere is confirmed. *Fiorinia phantasma* Cockerell and Robinson, a new state record, is a polyphagous species and pest of many ornamental plants in Hawaii.

**Key words:** *Fiorinia phantasma*, Hawaii new state record, Diaspididae

*Fiorinia phantasma*, described by Cockerell & Robinson in 1915, was first collected on the undersides of *Neolitsea* sp. (Lauraceae) leaves on Mt. Makiling, Philippine Islands, and until our discovery, it was not known to occur anywhere else in the world (Veilleux et al. 2010).

This armored scale species was first discovered in Moiliili, Oahu, Hawaii in December 2004. Scales were found heavily infesting the undersides of *Ligustrum japonicum* (Oleaceae), causing distinct yellow blotching on leaves, and eventually, leaf drop. Additional specimens were not collected until November 2008, from *Pittosporum tobira* (Pittosporaceae) in Hawaii Kai, Oahu. Subsequently, Douglass R. Miller (Sternorrhyncha), Systematic Entomology Laboratory, Agricultural Research Service, U.S. Department of Agriculture, identified these as *Fiorinia phantasma* Cockerell & Robinson, a species new to both Hawaii and the Western Hemisphere (D.R. Miller, pers. comm.). Voucher specimens have been deposited into the Hawaii Department of Agriculture, Plant Pest Control Branch's Zoological Reference Collection.

Following the identification of *F. phantasma*, further collections of this new pest species indicated its host polyphagy and pest potential in Hawaii. Host plants which *F. phantasma* have been collected on in Hawaii include *Chrysalidocarpus lutescens*, *Cocos nucifera*, *Hyophorbe lagenicaulis*, *Veitchia merrillii*, *Wodyetia bifurcata* (Arecaceae); *Calophyllum inophyllum* (Clusiaceae); *Cassia* sp. (Fabaceae); *Heliconia caribaea* (Heliconiaceae); *Ficus benjamina* (Moraceae); *Myoporum sandwicense* (Myoporaceae); *Noronhia emarginata* (Oleaceae); *Pandanus tectorius* (Pandanaeae); *Murraya paniculata* (Rutaceae); *Ravenala madagascariensis* (Strelitziaceae). In addition, MacGillivray (1921) lists *Machilus* sp. (Lauraceae) as a host plant in the Philippines.

In September 2011, *F. phantasma* was found severely infesting landscaped areca palms throughout the Kihei-Wailea area of Maui (A. Hara, UH-CTAHR, pers. comm.), indicating a new island record. It is likely that this species is being spread by the interisland transport of nursery plants, as this is the common pathway in the spread of invasive pests across the Hawaiian Island chain (Kraus et al. 1999, Chun et al. 2005, Conant et al. 2008).

Male and female scales can be found intermingled on the undersides of leaves. When populations have reached high densities, crawlers begin to colonize the topsides of foliage. The collection off *Hyophorbe lagenicaulis* was taken from the fruit, mixed with a population of *Fiorinia fioriniae* Targioni Tozzetti, the palm fiorinia scale.



**Figure 1.** Male and female (yellow with red stripes) *Fiorinia phantasma* on *Pittosporum tobira* leaf.

Mature female scales of the *Fiorinia* genus are completely enclosed within their second pupillarial exuviae. After the second instar, their bodies shrink in size, becoming encased within their shed skin (Miller and Davidson 2008). The mussel-shaped scale covering of the female *Fiorinia phantasma* may have distinct red horizontal stripes running across its width. However, some individuals have indistinct or pale red dashes, a full red covering, or a full pale yellow-clear covering. Some populations have variations of the different types. Females dissected from their exuviae are yellow and can range anywhere from 0.42 mm to around 0.67 mm in length. They usually still contain their relatively large eggs; one egg can reach more than 1/5 of their body size.

Predators found feeding on and associated with *F. phantasma* include *Telsimia nitida* (Coccinellidae), *Cybocephalus nipponicus* (Cybocephalidae), *Chrysoperla comanche* (Chrysopidae), and *Aleurodothrips fasciapennis* (Phlaeothripidae). Manila palm leaves infested with *F. phantasma*, collected from Kunia, Oahu, were held in jars and observed for parasitoid emergence. Several individuals of *Aphytis* sp. (Aphelinidae) emerged from parasitized scales, with the total rate of parasitism < 10%.

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