

PEST ALERT

FDACS-P-01880

April 2018

Florida Department of Agriculture and Consumer Services Division of Plant Industry

First U.S. Continental Record of *Fiorinia phantasma* Cockerell & Robinson (Hemiptera: Diaspididae), Phantasma Scale, Potential Pest of Palms and Ornamentals Plants

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INTRODUCTION:

Fiorinia phantasma Cockerell & Robinson (Hemiptera: Diaspididae), phantasma scale, is a significant pest of nursery plants, particularly of ornamental palms, and apparently has been transported worldwide by movement of live nursery stock (Garcia & Hara 2011; Watson et al. 2015). It was first found in the Philippine Islands in 1915 (Watson et al. 2015). However, its major global expansion has occurred primarily in the last decade, and it is known in 21 countries (American Samoa, France, French Polynesia, Grenada, Guam, Hong Kong, Indonesia, Malaysia, Maldives, Nauru, Netherlands, New Caledonia, Papua New Guinea, Reunion, Saint Martin and St. Barthelemy, Singapore, Solomon Islands, Taiwan, Thailand and Vietnam), including the Hawaiian Islands (Watson et al. 2015). The first U.S. continental record (E2018-789-1) was collected by Olga Garcia (USDA) from *Phoenix canariensis* Hort, Canary Island date palm on March 1, 2018 from a non-commercial setting in Miami-Dade County, Florida. More samples (E2018-1244-1) from the same host plant species in the same area were collected on March 22, 2018. All trees sampled were heavily infested with *F. phantasma* and were planted along both sides of the road. Mike Twyford and Olga Garcia (USDA) conducted a survey of the area on March 23, 2018, and found that all the *P. canariensis* trees, in total 27 (11 one side of the road and 16 on the other side) were infested with *F. phantasma* (Figs. 1, 2). Heavy infestations of *F. phantasma* have also been reported on palms in Hawaii, Grenada, and the Maldives (Watson et al. 2015). It has been previously reported to have been introduced without any natural enemies in the environment, and has the potential to cause serious damage (Bethke 2012; Garcia & Hara 2011; Watson et al. 2015). Its preference for palms may be of concern in Florida where palms are important components of natural and ornamental environments.

IDENTIFICATION:

Species in the genus *Fiorinia* are unusual in that adult females are encased within the second-instar shed skin. Male and female scales usually intermingle on the undersides of leaves and if populations reach high densities, crawlers colonize the topsides of foliage (Fig. 1). Adult females (Fig. 2-IIa) inconsistently show red stripes running the width of the scale covering, but many of the specimens observed in Florida lack these stripes (Fig. 2-Ia,b). The body shape of the adult female is unusual in that the body is wide in the thorax and anterior abdomen, but abruptly narrows to the body apex (Fig. 2-VIa). Slide-mounted specimens are unique by having a rounded process between the antennae bearing several small projections (Fig 2-VId).

Fiorinia phantasma is similar to *F. fioriniae*, but differs (characters in parentheses are those of *F. fioriniae*) in the shape of the body being broad and abruptly narrowing to the body apex (body long and narrow) (Fig. 2-VIa), and the presence of a process between the antennae (process is absent) (Fig. 2-VId).

HOST PLANTS:

Fiorinia phantasma has been found infesting the undersides of leaves on a wide range of host plants in at least 24 families with marked preference for Araceae (palm trees). Other ornamental plant families include: Araceae, Apocynaceae, Calophyllaceae, Commelinaceae, Cycadaceae, Euphorbiaceae, Fabaceae, Heliconiaceae, Lauraceae, Malvaceae, Meliaceae, Moraceae, Oleaceae, Orchidaceae, Pandanaceae, Pittosporaceae, Poaceae, Rutaceae, Sapindaceae, Scrophulariaceae, Strelitziaceae etc. (Watson et al. 2015).



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DAMAGE:

Fiorinia phantasma causes chlorotic patches on leaves and premature leaf drop (Garcia & Hara 2011). It has been reported to cause serious damage on areca palms in the landscape in Maui, Hawaii in 2011 (Garcia & Hara 2011). According to Watson et al. (2015), one resort in the Republic of the Maldives had 6,000 palms infested with this scale insect. Species in the genus *Fiorinia* cause damage by sucking plant juices, causing yellowing of the leaves, which sometimes leads to leaf drop, loss of plant vigor, stunting of the host, and even death.

MANAGEMENT:

In Hawaii, *Aphytis* sp. (Aphelinidae: Hymenoptera) was found attacking about 10% of the scales (Bethke 2012). In addition, scales were found preyed upon by *Telsimia nitida* (Coccinellidae: Coleoptera), *Cybocephalus nipponicus* (Cybocephalidae: Coleoptera), *Chrysoperla comanche* (Chrysopidae: Neuroptera), and *Aleurodothrips fasciapennis* (Phlaeothripidae: Thysanoptera) in Hawaii (Bethke 2012). When using insecticides, it is important to spray when there is as little impact on natural enemies as possible. For pesticide recommendations, please contact local University of Florida IFAS Extension offices. Under certain circumstances, mechanical control using high-pressure water sprays or hand picking visible infestations may be possible.

LITERATURE CITED

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- Watson, G.W., D.J. Williams, and D.R. Miller. 2015.** The identity and distribution of *Fiorinia phantasma* (Cockerell & Robinson) (Hemiptera: Coccothraupidae: Diaspididae), with a new synonym. *Zootaxa* 4048: 291-300.



Fig. 1. The heavy infestation of *Fiorinia phantasma* on *Phoenix canariensis*, Canary Island date palm in Miami. Arrows show the damage and infestation (Fig. 1a), upper side (Fig. 1b) and underside (Fig. 1c) of the leaves, leaves with extremely high density of *F. phantasma* population (Fig. 1d), and the close-up showing male and female infestations of *F. phantasma* on leaves (Fig. 1e).

Photograph courtesy of Mike Twyford (USDA), Olga Garcia (USDA), and Muhammad Z. Ahmed (FDACS/DPI), adapted by Muhammad Z. Ahmed.

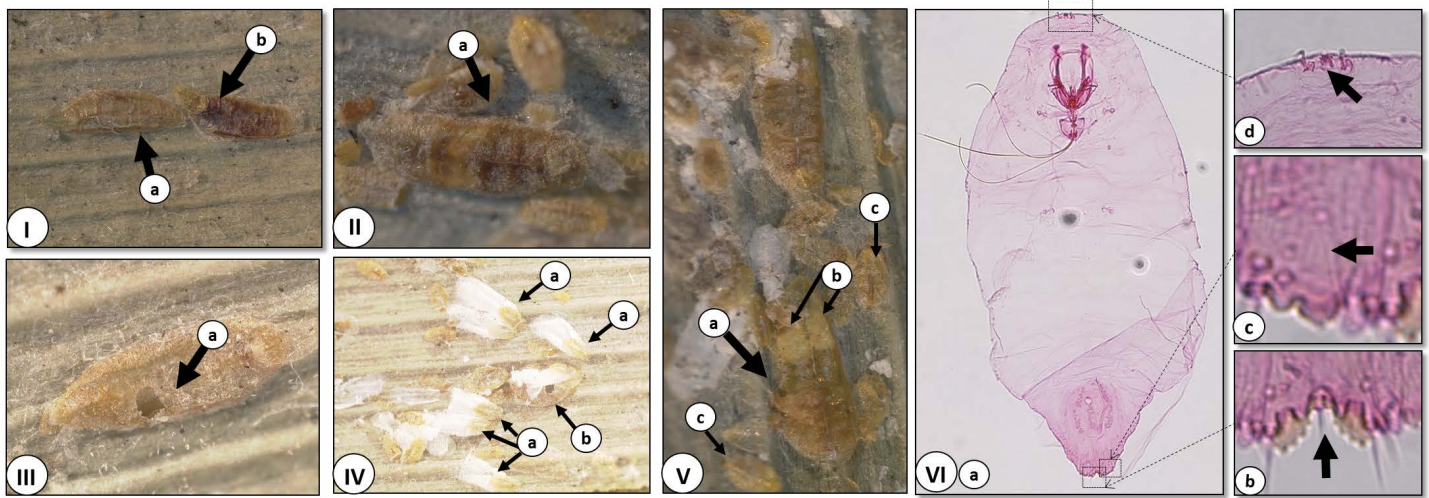


Fig. 2. Appearances of different life stages of male and female of *Fiorinia phantasma*. The elongate second-instar female shed skin containing pupillarial adult female without transverse red-brown stripes or median series of red-brown spots (Fig. 2-Ia) and entirely red body (Fig. 2-Ib), adult female with transverse red-brown strips (Fig. 2-IIa), parasitized adult female with the emergence hole of parasitoid (Fig. 2-IIIa), adult male covers (Fig. 2-IVa) and adult male exuviae after the emergence of adult male (Fig. 2-IVb), adult female (Fig. 2-Va) with eggs (Fig. 2-Vb) and crawlers (Fig. 2-Vc). Slide-mounted view of body of adult female, about 0.65 mm long and widest at about second abdominal segment, then narrowing abruptly to a triangular pygidium (Fig. 2-VIa), pygidium with notch at apex formed by parallel median lobes separated by about the width of one lobe (Fig. 2-VIb), pygidial margin with 4 marginal macroducts, each duct about 2x longer than wide and arrow show the shape of first one (Fig. 2-VIc); rounded process between the antennae bearing several small projections shown by arrow (Fig. 2-VId). Photograph courtesy of Muhammad Z. Ahmed, FDACS-DPI.