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Phenacoccus sisymbriifolium Granara de Willink (Pseudococcidae: Coccomorpha: Hemiptera), a new U.S. continental record in Florida and potential pest

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INTRODUCTION

According to the FDACS-DPI database and ScaleNet (García et al., 2016), there are about 34 genera and 90 species of mealybugs in Florida. More than one third of them occur on roots and are easily overlooked during inspection. *Phenacoccus sisymbriifolium* Granara de Willink is one of the overlooked root mealybugs in Florida. In general, root mealybugs feed on plant roots by sucking sap from the tissues. In small numbers, they have no obvious effects on plant health. However, the ability for mealybugs to multiply at an exponentially fast rate means they can rapidly transform from a mild problem to a heavy infestation. If the infestation gets too large, the plants are likely to die (Hodgson 2018).

The first sample of *P. sisymbriifolium* recognized in Florida was collected by Nora Marquez (FDACS-DPI) on January 8, 2019 from Lake County on *Bidens alba* (L.) DC. (Asteraceae) (FDACS-DPI sample number E2019-0093). Follow up samples were submitted to support the identification on March 12, 2019 by Nora Marquez from the same location (E2019-1068 and E2019-1069). It was identified as a new U.S. continental record and further confirmed by Gregory A. Evans (USDA/APHIS/PPQ) and Scott Schneider (USDA/ARS/SEL). There were several new Florida host and county records subsequently collected by Nora Marquez: E2019-1744 and E2019-1747 on April 5, 2019 from Sumter County on *B. alba* and *Ambrosia artemisiifolia* L. (Asteraceae); E2019-2068 on April 17, 2019 from Lake County on *Gamochaeta antillana* (Urb.) Anderb. (Asteraceae); E2019-2370 on April 30, 2019 from *B. alba* from Hernando County; E2019-2374 on May 1, 2019 from Orange County on *Ambrosia artemisiifolia* L. (Asteraceae). The most recent county record (E2019-3077) was collected by Lily Deeter (FDACS-DPI) on May 9, 2019 from St. Johns County on *Gnaphalium* sp. (Asteraceae). In addition, Nora Marquez submitted 29 additional samples containing *P. sisymbriifolium* in the succeeding two months. The roots in most samples were heavily infested. These data indicate *P. sisymbriifolium* is common and possibly widespread in peninsular Florida. There is no information about the pest status of this species in the literature. However, *P. sisymbriifolium* was first reported from *Solanum sisymbriifolium* Lam. a member of plant family Solanaceae (Granara de Willink and Szumik, 2007), which includes commercial vegetable and ornamental plants such as tomato, potato, eggplant and petunia. Therefore, *P. sisymbriifolium* has the potential of becoming a pest in Florida. However, all the records from Florida were reported from the Asteraceae.

GEOGRAPHCIAL RANGE

It was first reported in South America from Argentina and Uruguay (Granara de Willink and Szumik, 2007), but in fact, it has never been collected in Argentina (personal email communication to Dr. Douglass Miller by Granara de Willink, July 29, 2019). In Florida, it has been reported from five counties including Hernando, Lake, Orange, St. Johns and Sumter.

HOST PLANTS

Reported from one host *Solanum sisymbriifolium* of the family Solanaceae in the past (Granara de Willink and Szumik, 2007). Records from Florida include several new host plant species from new host plant family; Asteraceae (*Ambrosia artemisiifolia*, *Bidens alba*, *Gamochaeta antillana*, *Gnaphalium* sp.).

IDENTIFICATION

Detection of this species can only occur by examining the plant roots. When looking at *P. sisymbriifolium* from above, the body color is light yellow, covered with white mealy wax, has indefinite submarginal light areas, and there are up to 18 pairs of filaments, about the same length along the body margin (Fig. 1).

DIAGNOSTIC DESCRIPTION OF ADULT FEMALE

The adult female has 18 pairs of cerarii; marginal dorsal tubular ducts with wide oral collar; usually with one or more dorsal multilocular pores on the margin of the abdomen; ventral multilocular pores up to the margin and up to the fourth segment of the abdomen; the tubular ducts with wide oral collar are numerous, there are other oral collar tubular ducts with a thin collar; quinquelocular pores are present on the head, thorax, and anterior abdomen, but are absent from the posterior abdominal segments; quinquelocular pores are numerous, with approximately 32 anterior of the mouthparts; hind tibiae with a few small translucent pores; antennae with nine segments; circulus variable (Granara de Willink and Szumik, 2007) from totally absent, to a small circle, to laterally produce in an ox yoke shape, or two small circles (Fig. 2).

BIOLOGY

The life history of this species is unknown.

DAMAGE

The damage potential of this species is unknown.

REFERENCES

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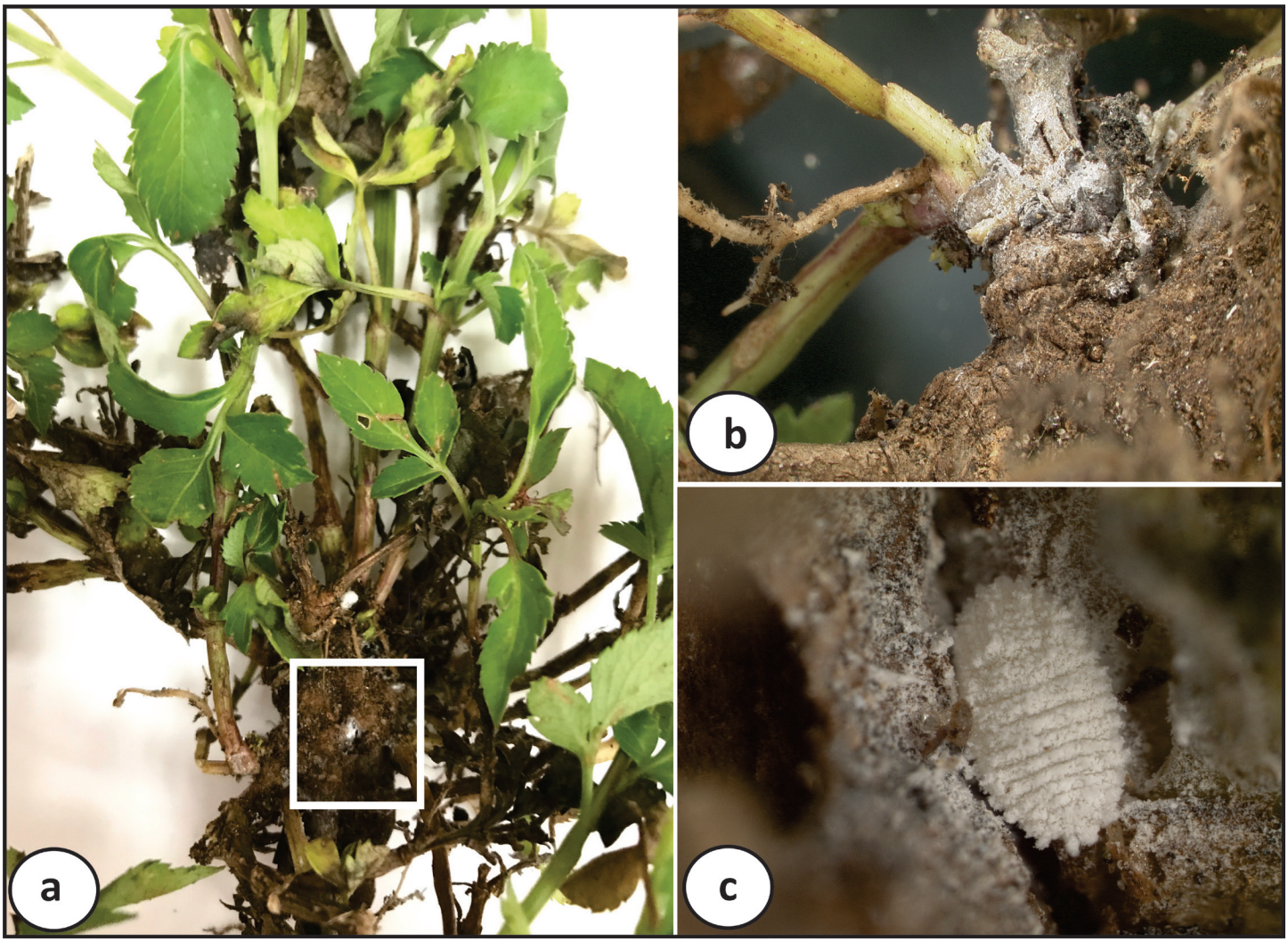

Figure 1. **(a)** Infestation of *Phenacoccus sisymbriifolium* on roots of *Bidens alba* (E2019-1744). **(b)** Close-up of white wax on roots. **(c)** Close-up of adult female on roots. Photo by Muhammad Z. 'Zee' Ahmed, FDACS-DPI.

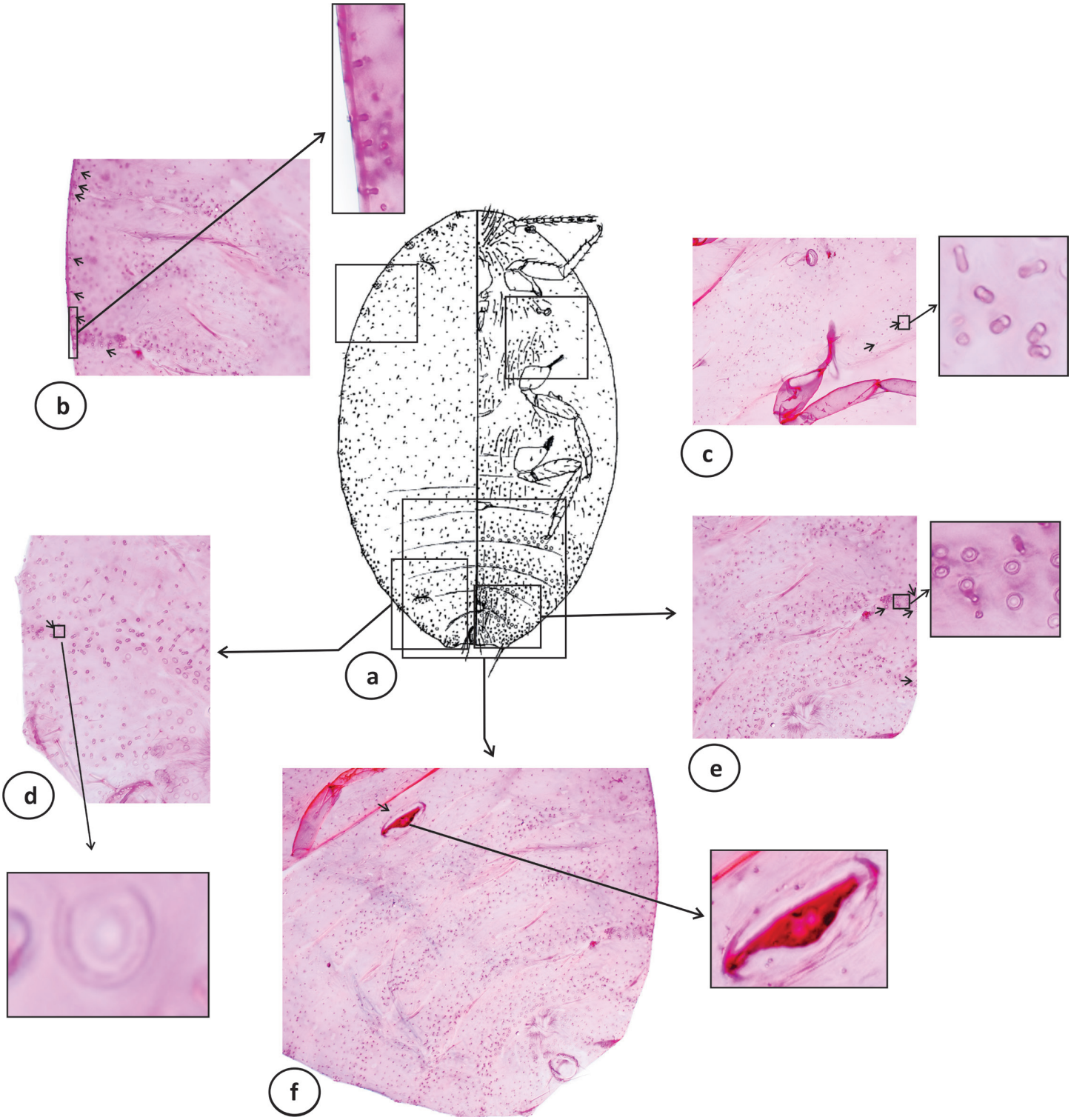

Figure 2. Illustration and slide-mounted view of adult female of *Phenacoccus sisymbriifolium* (E2019-1068). **(a)** Published illustration. **(b)** Close-up of tubular ducts along margin on dorsum. **(c)** Close-up of cluster of mesothoracic tubular ducts. **(d)** Dorsal multilocular pores along margin. **(e)** Marginal multilocular pores on venter. **(f)** Ventral abdominal segments IV-VIII with circulus. Slide prepared by Jessica Awad. Photo by Muhammad Z. 'Zee' Ahmed, FDACS-DPI. Illustration from Granara de Willink and Szumik, 2007.