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ISSN 2146-0035-E-ISSN 2548-1002 ***Orijinal araştırma* (*Original article*)**

# A new record of a parasitoid (Hymenoptera: Encyrtidae) of an invasive mealybug *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) from Turkey

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## İstilacı unlubit *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae)'in Türkiye'den yeni bir parazitoitinin (Hymenoptera: Encyrtidae) kaydı

**Öz:** Türkiye'de istilacı unlubit türü *Phenacoccus solenopsis* Tinsley, 1898 (Hemiptera: Pseudococcidae) üzerinde etkili olan bir parazitoit *Aenasius arizonensis* (Girault, 1915) (Hymenoptera: Encyrtidae) 2016 yılında toplanan parazitli ergin unlubit bireylerinden çıkan erginlerden ilk kez tespiti yapılmıştır. Bu tür Türkiye Encyrtidae faunası için yeni kayıt niteliğindedir.

**Anahtar kelimeler:** *Aenasius*, Encyrtidae, *Phenacoccus solenopsis*, yeni kayıt, Türkiye

**Abstract:** The parasitoid, *Aenasius arizonensis* (Girault, 1915) (Hymenoptera: Encyrtidae), was recorded from the invasive mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) after the collection of 2016 adults in Turkey. *Aenasius arizonensis* is a new record for the Encyrtidae of Turkey.

**Keywords:** *Aenasius*, Encyrtidae, *Phenacoccus solenopsis*, new record, Turkey

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## Introduction

The cotton mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae), has recently emerged as a serious insect pest of ornamental plants and vegetables in Turkey (Çalışkan 2015). This mealybug has been reported from 202 host plants from 55 families in the Australasian, Afrotropical, Nearctic, Oriental and Neotropical Regions (Fand & Suroshe 2015; Garcia et al. 2017; McKenzie 1967). It has been recorded in Cyprus, Egypt, France, Iran, Israel and Japan in the Palearctic Region, and also recently in Turkey (Garcia et al. 2017; Kaydan et al. 2013).

*Phenacoccus solenopsis* causes damage to economically important cultivated plant species belonging to the Amaranthaceae, Asteraceae, Compositae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lamiaceae, Malvaceae, Solanaceae, Verbenaceae, Zygophyllaceae families (Arif et al. 2009; Dhawan et al. 2010; Nagrare et al. 2011). It is one of the most important pests of cotton (*Gossypium hirsutum* L., Malvaceae) (Fand & Suroshe 2015).

Twenty one species of parasitic hymenopteran chalcidoids that include 19 species of Encyrtidae, one Eulophidae and one Signiphoridae have been reported from *Phenacoccus solenopsis* (Noyes 2015). Some natural enemies from various groups have been recorded for this mealybug species from Turkey (Çalışkan et al. 2016). In this study, the parasitoid, *Aenasius arizonensis* (Girault 1915) (Hymenoptera: Encyrtidae), is reported from *P. solenopsis* for the first time in Turkey.

## Materials and methods

Mealybug samples including parasitized and unparasitized individuals were collected from ornamental plants in Adana, Turkey. Each sample was placed into a plastic bag along with the parts of the plant it was on and taken to the laboratory for examination. Parasitized individuals were placed in parasitoid boxes on which plant organs removed from other pests. The specimens were obtained from the mealybug and initially preserved in 80% alcohol. They were card-mounted, and at least one specimen of each species (or parts of one specimen), were mounted on slides. Identification of the parasitoid species was made Dr. Mohammad Hayat.

Mealybug specimens were prepared for light microscopy by using the slide-mounted method of Kosztarab & Kozár (1988) and identified according to the key of Williams (2004). Identification of mealybug species was done by first author.

## Result and discussion

**Tribe Aenasiini Kerrich 1967**

**Genus *Aenasius* Walker 1846**

***Aenasius arizonensis* (Girault 1915)**

***Aenasius bambawalei* Hayat 2009 syn.nov. (Figures 1-5)**

**Material examined.** 2♀♀, 3♂♂, TURKEY: Adana, 05.viii.2016, Coll. A.F. Çalışkan (No. 1979), ex *P. solenopsis* on *Lantana camara* L. (Verbenaceae); 5♀♀, 4♂♂, 10.viii.2016, Coll. A.F. Çalışkan (No. 1980), ex *P. solenopsis* on *Hibiscus rosa-sinensis* L. (Malvaceae); 1♀, 2♂♂, 10.viii.2016, Coll. A.F. Çalışkan (No. 1981), ex *P. solenopsis* on *Gazania rigens var. rigens* L. Gaertn. (Asteraceae) (**37°057'531″N**, **35°360'487″E)**.

**Hosts.** *P. solenopsis* on *Gossypium hirsutum* (Malvaceae) and many weed species (Hayat 2009; Nalini & Manickavasagam 2011).

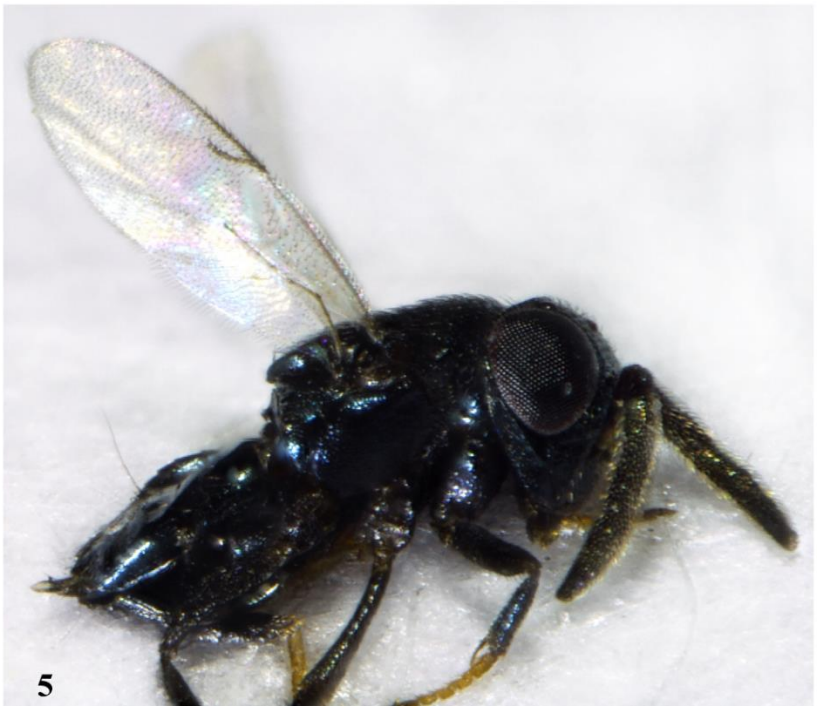
**Distribution.** Turkey (new record). Recorded from several countries in China, India, Iran, Pakistan, USA (Girault 1915; Hayat 2009; Chen et al. 2011; Fallahzadeh et al. 2014; www.nhm.ac.uk/entomology/chalcidoids/index.html.)

**Comments**. This parasitoid is new species for the Turkey fauna. This species is considered a primary, solitary endoparasitoid of cotton mealybug.

Prior to our study, three parasitoids, a hyperparasitoid and an associate parasitoid were recorded from the invasive mealybug, *P. solenopsis* in Turkey (Çalışkan et. al. 2016). As a result of this present study, 1 genus and 1 species (*Aenasius arizonensis* Girault, 1915) was added to the faunal list of Turkey. Furthermore, this species was determined as a major parasitoid of *P. solenopsis* in Turkey.

As it is apparent that this species is such an important parasitoid of the *P. solenopsis* mealybug in Turkey and other parts of the world (Hayat 2009; Chen et al. 2011; Zain-ul-Abdin et al. 2012), further studies of its biology and behaviors should be conducted.


Figures 1-3. *Aenasius arizonensis*, female: 1. body, lateral view; 2. Head, frontal view; 3. Antenna.


Figures 4-5. *Aenasius arizonensis*, female: 4. body, dorso-lateral view; male: 5. body, lateral view.

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