

New Host Records of Parasitoids of Scale Insects and Whitefly Species in Egypt

S. ABD-RABOU^{1*} and G. A. EVANS²

¹Plant Protection Research Institute, ARC, Dokki, Giza, Egypt

²USDA/APHIS/NIS, 10300 Baltimore Ave BARC-West, Bldg. 005, Rm. 09A, 20770. Beltsville, MD, USA

(Received: 13 June 2017; accepted: 21 July 2017)

Blepyrus insularis (Cameron) (Encyrtidae) was reared from *Phenacoccus parvus* Morrison, an invasive mealybug recently found infesting *Psidium* sp. in Egypt. *Encarsia cibensis* Lopez-Avila (Aphelinidae) was reared from *Aleuroclava psidii* (Singh) (Hemiptera: Aleyrodidae), an invasive whitefly found on *Ficus* sp. in Egypt. *Mesopeltita truncatipennis* (Waterston) (Pteromalidae) was reared from the lecanodiaspid scale, *Lecanodiaspis africana* (Newstead) (Hemiptera: Lecanodiaspididae) on *Ficus* sp. All of these represent new host records for the parasitoids.

Keywords: Parasitoids, mealybugs, lecanodiaspid scales, whiteflies, new records, Egypt.

Blepyrus insularis (Cameron) (Encyrtidae)

There are 21 described species of *Blepyrus*, however only *B. insularis* is known to occur in the Old World (Noyes, 2017). It is an efficient parasitoid of the mealybugs (Hemiptera, Pseudococcidae) and was recorded for first time in Egypt by Noyes (2000) Later, Abd-Rabou (2006) and Evans and Abd-Rabou (2013) recorded this species associated with *Ferrisia virgata* on *Acalypha* sp. in Egypt. Its known distribution includes: Nearctic: United States of America; Neotropical: Colombia, Costa Rica, Cuba, Guyana, Mexico, Trinidad and Tobago; Western Palaearctic: Egypt; Afrotropical: Democratic Republic of Congo, Gambia, Ghana, Guinea, Bissau, Madagascar, Nigeria, South Africa, Sudan, Togo, Zimbabwe; Eastern Palaearctic: China; Oriental: Bangladesh, India, Sri Lanka, Thailand; Austro-Oriental: Malaysia, Papua New Guinea, Philippines; Australian: Australia; Pacific Islands: Federated States of Micronesia. *Blepyrus insularis* has been recorded from the following hosts: Coccidae – *Megapulvinaria maxima*, *Parasaissetia nigra*, *Saissetia* sp.; Pseudococcidae – *Ferrisia virgata*, *Ferrisia* sp., *Maconellicoccus hirsutus*, *Phenacoccus herreni*, *P. madeirensis*, *P. manihoti*, *Planococcus citri*, *P. lilacinus*, *P. minor*, *Rastrococcus mangiferae* and Putoidae – *Puto yuccae* (Evans and Abd-Rabou, 2013). Leaves of *Ficus* sp. infested with *Phenacoccus parvus* Morrison (Hemiptera: Pseudococcidae) were collected during a field survey of mealybug parasitoids in 2017 in Giza Governorate, Egypt and placed separately in paper bags for further examination in the laboratory. The samples were maintained in a well-ventilated container and held for parasitoid emergence.

* Corresponding author; e-mail: shaabanabdrabou59@yahoo.com

The parasitoid individuals that emerged were processed and mounted in Hoyer's medium for examination and identification. The mealybug species was identified and the record was published by Abd-Rabou et al. (2010). All of the parasitoids reared from *P. parvus* were *B. insularis* (10 females).

Encarsia cibcensis Lopez-Avila (*Aphelinidae*)

Lopez-Avila (1987) described *Encarsia cibcensis* Lopez-Avila (Hymenoptera: Aphelinidae) from specimens reared from *Bemisia tabaci* (Genn.) (Hemiptera: Aleyrodidae) on beans (*Phaseolus* sp.) in Pakistan. Subsequently, it was reported by Polaszek et al. (1992); Huang and Polaszek (1998); Abd-Rabou and Ghahari (2004); Abd-Rabou et al. (2005); Abd-Rabou and Ghahari (2007); Schmidt and Polaszek (2007) and Shih et al. (2008). It is known to parasitize the following 10 species of whiteflies: *Aleuroclava ficicola* (Takahashi), *Aleuroclava neolitseae* (Takahashi), *Aleuroclava psidii* (Singh), *Aleuroclava meliosmae* (Takahashi), *Cohicaleyrodes caerulescens* (Singh), *Bemisia silvatica* (Danzig), *Bemisia tabaci* (Gennadius), *Dialeurodes agalmae* Takahashi, *Pealius mori* (Takahashi) and *Singhius hibisci* (Kotinsky). It has been reported from the following eight countries (Western Palaearctic: Iran; Oriental: India, Pakistan, Taiwan; Australian: Australia; Pacific Islands: Cook Islands, Kiribati, Nauru) (Evans, 2007). Sandhu (1994) reported on the introduction of *E. cibcensis* into Kiribati from specimens obtained from the Punjab, India, and released in Kiribati in 1990 and subsequently recovered in 1992. Leaves of *Psidium* sp. infested with *Aleuroclava psidii* (Singh) (Hemiptera: Aleyrodidae) were collected during a field survey of whitefly parasitoids in 2014 in Qalyubiya Governorate, Egypt. The infested leaves were collected and placed separately in paper bags for further examination in the laboratory. The samples were maintained in a well-ventilated container and held for parasitoid emergence. The parasitoid individuals that emerged were processed and mounted in Hoyer's medium for examination and identification. All of the parasitoids reared from *A. psidii* were *E. cibcensis* (13 females). This whitefly had been previously discovered infesting *Psidium* sp. in Qalyubiya, Egypt by Abd-Rabou and Evans (2014).

Mesopeltita truncatipennis (Waterston) (*Pteromalidae*)

This species is mainly an egg predator but may also act as a scale parasitoid. It is cosmopolitan (Tena et al., 2008) and is sometimes confused with *Scutellista caerulea* (Fonscolombe), another pteromalid species associated with scale insects, which is one of the most frequent species associated with black scale, *Saissetia oleae* (Olivier), in the world and has a similar feeding behavior (Prado et al., 2003).

Leaves of *Ficus* sp. infested with *Lecanodiaspis africana* (Newstead) (Hemiptera: Lecanodiaspididae) were collected during a field survey of scale insect parasitoids in 2017 in Qena Governorate, Egypt. The infested leaves were collected and placed separately in paper bags for further examination in the laboratory. The samples were maintained in a well-ventilated container and held for parasitoid emergence. The parasitoid individuals that emerged were processed and mounted in Hoyer's medium for examination and

identification. All of the parasitoids reared from *L. africana* were *M. truncatipennis* (12 females and 5 males).

Literature

- Abd-Rabou, S. (2006): Hymenopterous parasitoids as a bioagent for controlling homopterous insects in Egypt. *Egypt. Adv. Agric. Res.* 6, 1–65.
- Abd-Rabou, S. and Ghahari, H. (2004): A revision of *Encarsia* (Hymenoptera: Aphelinidae) from Iran. *Egyptian J. Agric. Res.* 82, 647–683.
- Abd-Rabou, S. and Ghahari, S. (2007): Two new species of the genus *Encarsia* Foerster (Hymenoptera: Aphelinidae) from Iran. *Acta Phytopathol. et Entomol. Hung.* 41, 161–167.
- Abd-Rabou, S. and Evans, G. (2014): *Aleuroclava psidii* – a new invasive whitefly in Egypt (Hemiptera: Aleyrodidae). *Acta Phytopathol. et Entomol. Hung.* 49, 271–273.
- Abd-Rabou, S., Ghahari, H., Huang, J. and Boucek, Z. (2005): New records of aphelinid and pteromalid wasps (Hymenoptera: Chalcidoidea: Aphelinidae: Pteromalidae) from Iran. *Egyptian J. Agric. Res.* 83, 1619–1623.
- Abd-Rabou, S., Germain, J. F. and Malausa, T. (2010): *Phenacoccus parvus* Morrison et *P. solenopsis* Tinsley, deux Cochenilles nouvelles pour l'Égypte (Hem., Pseudococcidae). *Bulletin de la Société entomologique de France*, 115, 509–510.
- Evans, G. A. (2007): The whiteflies (Hemiptera: Aleyrodidae) of the world and their host plants and natural enemies. http://www.sel.barc.usda.gov:8080/1WF/whitefly_catalog.htm.
- Evans, G. and Abd-Rabou, S. (2013): An annotated list of the Encyrtids of Egypt (Hymenoptera: Chalcidoidea: Encyrtidae). *Acta Phytopathol. et Entomol. Hung.* 48, 107–128.
- Huang, J. and Polaszek, A. (1998): A revision of the Chinese species of *Encarsia* Foerster (Hymenoptera: Aphelinidae): parasitoids of whiteflies, scale insects and aphids (Hemiptera: Aleyrodidae, Diaspididae, Aphidoidea). *J. Natural Hist.* 32, 1825–1966.
- Lopez-Avila, A. (1987): Two new species of *Encarsia* Foerster (Hymenoptera: Aphelinidae) from Pakistan, associated with the cotton whitefly, *Bemisia tabaci* (Gennadius) (Hemiptera: Aleyrodidae). *Bulletin of Entomol. Res.* 77, 425–430.
- Noyes, J. S. (2000): Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea), 1. The subfamily Tetracneminae, parasitoids of mealybugs (Homoptera: Pseudococcidae). *Memoirs of the American Entomol. Institute* 62, 195.
- Noyes, J. S. (2017): Universal Chalcidoidea Database. World Wide Web electronic publication. <http://www.nhm.ac.uk/chalcidoids> (accessed June 12, 2017).
- Polaszek, A., Evans, G. A. and Bennett, F. D. (1992): *Encarsia* parasitoids of *Bemisia tabaci* (Hymenoptera: Aphelinidae, Homoptera: Aleyrodidae): a preliminary guide to identification. *Bull. Ent. Res.* 82, 375–392.
- Prado, E., Larrain, P., Vargas, H. and Bobadilla, D. (2003): Plagas del olivo, sus enemigos naturales y manejo. Santiago, Chile. Colección Libros INIA, 8, 74 p.
- Sandhu, G. S. (1994): Report on vegetable pest survey consultancy. Kiribati, 3 p.
- Schmidt, S. and Polaszek, A. (2007): The Australian species of *Encarsia* Förster (Hymenoptera, Chalcidoidea: Aphelinidae), parasitoids of whiteflies (Hemiptera, Sternorrhyncha, Aleyrodidae) and armoured scale insects (Hemiptera, Coccoidea: Diaspididae). *J. Nat. Hist.* 41, 2099–2265. <http://dx.doi.org/10.1080/00222930701550766>.
- Shih, Y. T., Ko, C. C. and Polaszek, A. (2008): *Encarsia* (Hymenoptera: Aphelinidae) parasitoids of *Bemisia* species in Taiwan (Hemiptera: Aleyrodidae). *J. Nat. Hist.* 42, 47–48. 2923–2941. <http://dx.doi.org/10.1080/00222930802372482>.
- Tena, A., Soto, A. and Garcia-Marí, F. (2008): Parasitoid complex of black scale *Saissetia oleae* on citrus and olives: parasitoids species composition and seasonal trend. *BioControl* 53, 473–487.

