

POSTERS

Updated list of the parasitoids attacking mealybugs (Hemiptera: Pseudococcidae) in Egypt

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Abstract: Mealybugs (Hemiptera: Pseudococcidae) are some of the worst pests of fruit and shade trees in many parts of the world, and especially in tropical and subtropical countries. The Egyptian mealybug fauna comprises about 42 species. Parasitoids play a considerable role in controlling the mealybug species populations. The aim of this work is to collect, record, identify and update the parasitoids attacking mealybugs in Egypt. Thirty parasitoid species were found, distributed in six families, namely Aphelinidae (2), Braconidae (1), Encyrtidae (23), Platygasteridae (2) Pteromalidae (1) and Signiphoridae (1).

Key words: mealybugs, Pseudococcidae, parasitoids, Encyrtidae, Egypt.

Introduction

Mealybugs (Hemiptera: Pseudococcidae) are amongst the worst pests of fruit and shade trees in many parts of the world, and parasitoids play an important role in controlling them (e.g. Noyes & Hayat, 1994; McFadyen, 1979; Katsoyannos, 1993; Lohr *et al.*, 1990). The natural enemies and their role in biological control of these pests have been studied by many workers all over the world including Egypt (Priesner & Hosny, 1940; Moursi, 1948a; Mani, 1989; Hamed & Hassanein, 1991; Abd-Rabou, 2000a, 2005; Mousa *et al.*, 2001; Gonzalez *et al.*, 2003; Abd-Rabou & Hendawy, 2005). Priesner & Hosny (1940), Moursi (1948 a, b, c) and Abd-Rabou (2000 a, b) have recorded nine parasitoids associated with mealybugs in Egypt.

Materials and methods

Infested crops with the different mealybug species were examined in the field, using a pocket lens. The infested parts of the plant from each crop was collected and placed in separate paper bags for further examination in the laboratory, where they were kept in a well-ventilated container until the emergence of parasitoids. Identification of parasitoids was made by mounting adults in Hoyer's medium and on card as follows:

Preservation: These parasitoid specimens are best preserved as slide mounts and on card. It may not be possible to see all the characters and measure some structures on carded specimens. However, when several specimens are available, it is preferable to have both slide-mounted and carded specimens. Since body color is likely to fade during the clearing process, it is often necessary to note the color and sculpture either from dried or freshly collected specimens preserved in alcohol. The small size of the specimens and their soft, less sclerotized bodies, make the specimens almost useless for study if preserved in alcohol for longer periods.

The procedures of slide mounts as follows: Dried specimens are soaked in glacial acetic acid (7 drops) mixed with chloral phenol (5 drops) in small watch glasses. After 48 hours specimens should be satisfactorily cleared. The cleared specimens are then mounted in Hoyer's medium. After drying for about two weeks at 40°C, the slide cover is ringed with a suitable sealer.

Results and discussion

List of the parasitoids of mealybugs in Egypt:

This list includes 30 species (two species Aphelinidae, one species Braconidae, 23 Encyrtidae, two Platygasteridae, one Pteromalidae and one Signophoridae). During the present work six parasitoids were recorded here for the first time. These are: Braconidae: *Phanerotoma dentate* (Panzer), Encyrtidae: *Clausenia josefi* Rosen, *Leptomastix algerica* Trjapitzin, *Leptomastix phenacocci* Compere and *Prochilonerus annulatus* (Ferriere), and the Platygasterid *Allotropa* sp.

Family: Aphelinidae

1. *Marietta leopardina* Motschulsky

Material Examined: 7 ♀♀, Cairo, III.2003, ex *Maconellicoccus hirsutus* (Green) on *Hibiscus* sp. (PPRI)

Distribution: Behira, Cairo and Giza governorates.

Hosts: *Dysmicoccus brevipes* (Cockerell), *M. hirsutus*, *Niacoccus minor* Green, *Nipaecoccus nipae* (Maskell) and *Planococcus citri* Risso.

Remarks: This species was recorded for the first time in Egypt by Priesner and Hosny (1940).

2. *M. picta* (Andre)

Material Examined: 6 ♀♀, Alexandria, V.2004, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Distribution: Alexandria governorate.

Hosts: *M. hirsutus*

Remarks: This species was recorded for the first time in Egypt as a hyperparasitoid associated with *M. hirsutus* (Abd-Rabou, 2000b).

Family: Braconidae

3. *Phanerotoma dentate* (Panzer)

Material Examined: 11 ♀♀, Alexandria, VI.2006, ex *M. hirsutus* on *Hibiscus* sp. (PPRI).

Hosts: *M. hirsutus*.

Distribution: Alexandria governorate.

Remarks: This species was recorded for first time in Egypt by Abd-Rabou and Hendawy, 2005.

Family: Encyrtidae

4. *Acerophagus* sp.

Material Examined: 12 ♀♀ Beni-Suef, VII.2004, ex *Nipaecoccus viridis* (Newstead) on *Lebbke* sp. (PPRI).

Distribution: Beni-Suef governorate

Hosts: *N. viridis*

Remarks: This species was recorded for the first time in Egypt by Abd-Rabou and Abd El-Gawad (2002)

5. *Anagyrus aegyptiacus* Moursi

Material Examined: 15 ♀♀, Beni-Suef, XII.1996, ex *N. viridis* on *lebbke* (PPRI)

Distribution: Beni-Suef and Giza governorates

Hosts: *N. viridis*

Remarks: This species was recorded for the first time in Egypt by Moursi (1948b)

6. *A. greeni* (Howard)

Material Examined: 18 ♀♀, Giza, X.2005, ex *Saccharicoccus sacchari* (Cockerell) on sugar cane (PPRI)

Hosts: *Antonina* sp., *Pseudococcus* sp. and *S. sacchari*

Distribution: Cairo, Giza and Qalyubiya governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou, 2001
7. *A. kamali* Moursi

Material Examined: 18 ♀♀, Giza, X.2003, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Cairo, Giza and Qalyubiya governorates

Remarks: This species was recorded for the first time in Egypt by Moursi (1948a)

8. *A. pseudococci* (Girault)

Material examined: 9 ♀♀, Alexandria, X.2004, ex *P. citri* on *Vitis venivera* (PPRI)

Hosts: *M. hirsutus* and *P. citri*

Distribution: Alexandria and Giza governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou, 2001

9. *A. saccharicola* Timberlake

Material examined: 12 ♀♀, Beni-Suef, XII.2002, ex *S. sacchari* on sugar cane (PPRI)

Hosts: *S. sacchari*

Distribution: Beni-Suef governorate

Remarks: This species was imported, reared and released for first time in Egypt by Abd-Rabou (2002b)

10. *A. shahidi* Hayat

Material examined: 7 ♀♀, Alexandria, XII.1999, ex *Antonina graminis* (Maskell) on grass (PPRI)

Hosts: *Antonina graminis* (Maskell)

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Karam and Abou-ElKhair (1996)

11. *Blepyrus insularis* (Cameron)

Material examined: 10 ♀♀, Giza, X.2004, ex *Ferrisia virgata* (Cockerell) on *Acalipha* sp. (PPRI).

Hosts: *F. virgata*

Distribution: Giza governorate

Remarks: This species was recorded for first time in Egypt by Awadallah *et al.* (1999)

12. *Clausenia josefi* Rosen

Material Examined: 11 ♀♀, Alexandria, VI.2000, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou & Hendawy, 2005

13. *Gyranusoidea indica* Shaffee, Alam & Agarwal

Material examined: 10 ♀♀, Cairo, XI.2003, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Cairo governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000b)

14. *Homalotylus vicinus* Silvestri

Material examined: 8 ♀♀, Cairo, XI.1999, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Cairo governorate

Remarks: This species was recorded for first time in Egypt by Priesner & Hosny (1940)

15. *Leptomastidea abnormis* (Girault)

Material examined: 21 ♀♀, Cairo, VIII.2003, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*, *N. nipae* and *P. citri*

Distribution: Alexandria and Cairo governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000b)

16. *L. algerica* Trjapitzin

Material Examined: 11 ♀♀, Alexandria, VI.2004, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Mousa *et al.* 2001

17. *L. dactylopii* Howard

Material examined: 12 ♀♀, Cairo, X. 002, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Cairo and Alexandria governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000b)

18. *L. flava* Mercet

Material examined: 10 ♀♀, Beni-Suef, XI.2004, ex *N. viridis* on lebbke (PPRI)

Hosts: *N. viridis*

Distribution: Beni-Suef governorate

Remarks: This species was recorded for first time in Egypt by Priesner & Hosny (1940)

19. *L. nigrocoxalis* Compere

Material examined: 19 ♀♀, Beni-Suef, X.2005, ex *N. viridis* on lebbke (PPRI)

Hosts: *N. viridis* and *M. hirsutus*

Distribution: Beni-Suef and Cairo governorates.

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (1999)

20. *L. phenacocci* Compere

Material Examined: 10 ♀♀, Alexandria, VI.2003, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000b)

21. *Microterys* sp.

Material examined: 4 ♀♀, Qena, X. 003, ex *S. sacchari* on sugar cane (PPRI)

Hosts: *S. sacchari*

Distribution: Assiut and Qena governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000a)

22. *Neoplatycerus palestinensis* (Rivany)

Material examined: 9 ♀♀, Qena, IX. 2006, ex *S. sacchari* on sugar cane (PPRI)

Hosts: *Planococcus ficus* (Signoret)

Distribution: Giza governorate

Remarks: This species was recorded for first time in Egypt by Awadallah *et al.* (2002).

23. *Paraphaenaodiscus* sp.

Material examined: 6 ♀♀, Qena, IX.2005, ex *S. sacchari* on sugar cane (PPRI)

Hosts: *S. sacchari*

Distribution: Qena governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000a)

24. *Prochiloneurus aegyptiacus* (Mercet)

Material examined: 8 ♀♀, Alexandria, X.2002, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000a)

25. *Prochiloneris annulatus* (Ferriere)

Material examined: 7 ♀♀, Alexandria, X.2005, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou and Hendawy, 2005

26. *Rhopus nigriclavus* (Girault)

Material examined: 10 ♀♀, Beni-Suef, IX.2002, ex *S. sacchari* on sugar cane (PPRI)

Hosts: *S. sacchari*

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000a)

Family : Platygasteridae

27. *Allotropia* sp.

Material examined: 11 ♀♀, Alexandria, XI.2004, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou & Hendawy, 2005

28. *Allotropia mecirida* (Walker)

Material examined: 11 ♀♀, Alexandria, XI.2004, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus*, *Pseudococcus longispinus* (Targioni- Tozzetti)

Distribution: Alexandria governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2000b) as *Allotropia* sp. Later Abd-Rabou & Hendawy (2005) identified parasitoid

Family : Pteromalidae

29. *Pachyneuron* sp.

Material examined: 13 ♀♀, Beni-Suef, XII.2005, ex *N. viridis* on lebbke (PPRI)

Hosts: *N. viridis*

Distribution: Beni-Suef governorate

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (2001)

Family : Signiphoridae

30. *Chartocerus subaeneus* (Foerster)

Material examined: 7 ♀♀, Cairo, IX.2002, ex *M. hirsutus* on *Hibiscus* sp. (PPRI)

Hosts: *M. hirsutus* and *S. sacchari*

Distribution: Alexandria, Assiut, Beni-Suef and Cairo governorates

Remarks: This species was recorded for first time in Egypt by Abd-Rabou (1999)

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