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HOST RANGE AND DISTRIBUTION OF *MARIETTA LEOPARDINA* (HYMENOPTERA: APHELINIDAE), A HYPERPARASITOID OF HEMIPTEROUS AND HYMENOPTEROUS INSECTS IN EGYPT

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Abstract

Through a survey conducted during May 1999-May 2001, the hyperparasitoid *Marietta leopardina* (Mots.)(Aphelinidae : Hymenoptera) was reared out of 48 Hemiptera and scales parasitic Hymenoptera species. The survey covered 16 governorates in Egypt.

Classically orders, families and species of the host insects associated with this hyperparasitoid are given together with locality and month of abundance.

INTRODUCTION

Marietta leopardina (Mots.) (Aphelinidae: Hymenoptera) is a hyperparasitoid of different species of Hemiptera and Hymenoptera (Annecke & Insley, 1972; Kfir & Rosen, 1981). It develops as a secondary, tertiary or quarternary parasitoid and can also develop on larvae and pupae of its own species (Kfir & Rosen, 1981). This species is mainly a secondary parasitoid of hemipteran chalcidoids, while in literature it is stated to be a primary parasitoids of Hemiptera. This hyperparasitoid was recorded from 59 species belonging to the orders : Hemiptera, Hymenoptera and Lepidoptera from 23 countries of the world (Hayat, 1986).

The present work deals with the host range, distribution and month of abundance of this hyperparasitoid.

MATERIALS AND METHODS

Samples of species belonging to different families of Hemiptera and scales parasitic Hymenoptera were collected from various host plants from May 1999 till May 2001 in Egypt. Leaves, leaflets, stems and fruits from different host plants were dissected and stored in well ventilated glass tubes for one week for identification of species after the emergence of the adult parasitoids and hyperparasitoids. The specimens were prepared

for microscopic examination according to the method described by Noyes (1982) for slide mounting of Chalcidoidea. Specimens of hosts, parasitoids and hyperparasitoids were identified and confirmed by the second author and Prof. Dr. Mohammad Hayat at Aliger Moslim University, India.

RESULTS AND DISCUSSION

Host range: The hyperparasitoid *M. leopardina* was reared from 48 species of Hemiptera and scales parasitic Hymenoptera, Table 1.

Hayat (1986) recorded 59 species to be attacked this hyperparasitoid. In Egypt, *M. leopardina* was recorded for the first time by Priesner and Hosny (1940) from the pit scale insect, *Asterolecanium pustulans* (Cockerell) and *Lepidosaphes ulmi* (L.). Later, many workers recorded this species associated with different hemipterous and hymenopterous Species, for example, El-Agamy (1981) on *A. lepidosaphes*, Hafez et al., (1987) on *Lepidosaphes beckii*, Hafez (1988) on *Aonidiella aurantii* (Mask.), Abd-Rabou (1997 and 2000) on *Parlatoria oleae* (Colvee`), *Aonidiella aurantii* (Maskell), *Chrysomphalus dictyospermi* (Morgan), *Saissetia oleae* (Oliver), *Maconellicoccus hirsutus* (Green), *Saissetia coffeae* (Walker) and Coll & Abd-Rabou (1998) on *Parlatoria ziziphi* (Lucas).

In the present work, this hyperparasitoid was recorded associated with 48 species of Hemiptera and scales parasitic Hymenoptera. Forty one of them are recorded here for the first time in Egypt.

Distribution: *M. leopardina* was collected from 16 governorates of Egypt; Alexandria, Beni-Suef, Cairo, Giza, Gharbiya, Ismailiya, Matruh, North Sinai, Qalyubiya, Sharqiya, Sohag, South Sinai, Beheira, Eastern desert, Red Sea and Qena.

M. leopardina was present most of the year and its population was very high and is considered the most efficient hyperparasitoid. Abundance of this hyperparsitoid on different hosts was studied by Abd-Rabou (1997 and 2000) where recorded this species on *P. oleae, A. aurantii, S. oleae, M. hirsutus* and *S. coffeae* with average parasitism rates of 2.3, 2.6, 0.5, 4.3, 4.1 and 6%, respectively. Rosen *et. al.* (1971) found *M. leopardina* to be an abundant hyperparsitoid on *S. oleae.* Kfir *et al.* (1981) also mentioned that *M. leopardina* was the most efficient in eliminating the population of the host *Microterys flavus* (Howard); whereas *Cheiloneurus parolia* (Walker) *Pachyneuron muscarum* (L.) were not able to do so. The superiority of *Marietta* may be due to the fact that it is capable of utilizing its competitors as hosts, whereas they cannot develop upon it. Abd-Rabou (2000) recorded the negative role of *M. leopardina* on the parasitoids of *M. hirsutus* specially on the parasitoid, *Anagyrus kamali* Moursi.

Table 1.

Hosts			Locality		Month of abundance
Order	**Family**	**Species**	**Governorate**	**Regions**	
Hemiptera	Asterolecanidea	*Bambuaspis bambusae (Boisduval)**	Qalyubiya	El-Qanater El-Khairiya	Sept., 1999
		Russellaspis pustulans (Cockerel)	Sharqiya	Abou-Hammad	Oct., 1999
	Coccidae	*Ceroplastes floridensis Comstock**	Gharbiya	Kafr El-Zayat	Nov., 2000
		*C. rusci (L.)**	Giza	Dokki	Sept., 2000
		*Coccus hesperidum L.**	Giza	El-Manyal	Nov., 1999
		*C. longulus (Douglas)**	Alexandria	Alexandria	Oct., 2000
		*Parasaissetia nigra (Nietner)**	Northern Sinai	El-Arish	Oct., 1999
		*Pulvinaria psidii Maskell**	Giza	El-Saf	Sept., 2000
		*Pulvinariella mesembryanthemi (Vallot)**	Sharqiya	Bilbeis	March, 2000
		Saissetia coffeae (Walker)	Matruh	Matruh	Oct., 1999
		S. oleae (Oliver)	Northern Sinai	El-Arish	Nov., 2000
		*Aonidiella aurantii (Maskell)**	Southern Sinai	El-Tor	March, 2000
		*A. orientalis (Newstead)**	Giza	Dokki	Jan., 2000
		*Aspidiotus hederae (Vallot)**	Qalyubiya	Tukh	Sept., 1999

Table 1. Cont'd

Hosts			Locality		Month of abundance
Order	Family	Species	Governorate	Regions	
Hemiptera	Diaspididae	*Chrysomphalus dictyospermi (Morgan)*	Qalyubiya	El-Qanater El-Khairiya	March, 2000
		*C. aonidum L.**	Beni-Suef	Beni-Adi	Oct., 2000
		*Hemiberlesia latania (Signoret)**	Ismailiya	Ismailiya	March, 2001
		*Insulaspis pallidula (Green)**	Sharqiya	Abou-Hammad	Oct., 2000
		*Lindingaspis floridana Ferris**	Cairo	Heliopolis	Sept., 2000
		*Parlatoria blanchardi (Targioni-Tozzetti)**	Northern Sinai	El-Arish	Oct., 1999
		P. oleae (Colvee')	Northern coast	Northern coast	June, 2000
		P. ziziphi (Lucas)	Giza	Dokki	Sept., 1999
	Pseudococcidae	*Dysmicoccus brevipes (Cockerell)**	Eastern desert	El-Salloum	Aug., 2000
		Maconellicoccus hirsutus (Green)	Cairo	Maadi	Aug., 1999
		*Niacoccus minor Green**	Beni-Suef	Naser	Oct., 1999
		*Nipaecoccus nipae (Maskell)**	Beni-Suef	El-Fashn	Oct., 1999
		*Planococcus citri Risso**	Beheira	Itay El-Baroud	Sept., 2000

Table 1. Cont'd

Hosts			Locality		Month of abundance
Order	Family	Species	Governorate	Regions	
Hymenoptera	Aphelinidae	*Aphytis chrysomphali (Mercet)**	Northern coast	Northern coast	Oct., 2000
		*A. diaspidis Howard**	Northern coast	Northern coast	April, 2000
		*A. holoxanthus De Bach**	Qalyubiya	Shubra	March, 2000
		*B. maculicornis Mercet**	Northern coast	Northern coast	Nov., 2000
		*C. paramaculicornis De Bach & Rosen**	Matruh	Matruh	Nov., 2000
		*D. phoenicis De Bach & Rosen**	Northern Sinai	El-Arish	Nov., 2000
		*Coccophagus lycimnia Walker**	Northern coast	Northern coast	Oct., 2000
		*C. scutellaris (Dalman)**	Gharbiya	Tanta	Nov., 1999
		*Encarsia aurantii Howard**	Beheira	Itay El-Baroud	Nov., 2000
		*E. inaron (Walker)**	Qalyubiya	Tukh	June, 1999
	Encyrtidae	*Anagyrus kamali Moursi**	Cairo	Maadi	Aug., 1999
		*A. saccharicola Timberlake**	Beni-Suef	El-Fashn	Oct., 2000
		*Gyranusoides indica Shafee, Alam & Agarwal**	Cairo	Maadi	Aug., 1999
		*Habrolepis aspidioti Compere &Annecke**	Qalyubiya	Tukh	Nov., 1999
		*H. rouxi Compere**	Red Sea	Ghardakah	Feb., 2001

Table 1. Cont'd

Hosts			Locality		Month of abundance
Order	Family	Species	Governorate	Regions	
Hymenoptera	Encyrtidae	*Leptomastidea abnormis (Girault)**	Qena	Isna	Nov., 1999
		*Metaphycus bartletti Annescke & Mynhardtt**	Matruh	Matruh	Oct., 2000
		*M. helvolus (Compere)**	Northern Sinai	El-Arish	June, 1999
		*Microterys flavus (Howard)**	Giza	Dokki	Sept., 1999
		*Pachyneuron sp.**	Gharbiya	Samanoud	Oct., 2000
	Pteromalidae	*Scutellista caerulea (Fonscolombe)**	Northern coast	Northern coast	Oct., 1999

* Recorded for the first time in Egypt.

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مدى إنتشار العائل *Marietta Leopardina* وتوزيعة الجغرافى كطفيل ثانوى على الحشرات من رتبتى نصفية الأجنحة وغشائية الأجنحة فى مصر

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تم عمل حصر للطفيل الثانوى *Marietta Leopardina* فى الفترة من مايو ١٩٩٩ مايو ٢٠٠٠ وكان من نتائجه حصر ٤٨ نوعاً من رتبتى نصفية الأجنحة وغشائية الأجنحة تنتشر فى ١٦ محافظة فى مصر . وقد تم ترتيب النتائج فى جداول موضح بها الرتبة والفصيلة والنوع الحشرى المصاحب لهذا الطفيل الثانوى الى جانب مكان وزمن تواجده .