



## Research Article

# A contribution to Iranian Aphelinidae (Hymenoptera: Chalcidoidea)

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**ABSTRACT:** The fauna of Iranian Aphelinidae (Hymenoptera: Chalcidoidea) is dealt with in this paper. A total of 43 aphelinid species from five genera (*Aphelinus* Dalman, *Aphytis* Howard, *Coccobius* Ratzeburg, *Coccophagus* Westwood and *Pteroptrix* Westwood) are listed in this paper. Additionally the hosts of some species are given.

**KEY WORDS:** Aphelinidae, fauna, new record, host, Iran

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## INTRODUCTION

Aphelinidae (Hymenoptera) is a diverse family of insects with some of the most widely used and successful entomophagous biological control agents. Aphelinidae is a cosmopolitan family with 31 valid genera and over 1200 species. Most species are primary solitary endoparasitoids of mealybugs, scale insects, whiteflies and aphids. However, some species parasitize eggs and others are hyperparasitic. Various species of aphelinids may attack all host stages (Viggiani, 1984; Huang, 1990; Hayat, 1998). The family is important in biological control, having been used worldwide, especially against scale insects, aphids and whiteflies (Yasnosh, 1983; Viggiani, 1990).

The family Aphelinidae is poorly studied in Iran with 33 identified species listed in Modarres Awal (1997) and a few others in some short papers (e.g. Fallahzadeh *et al.*, 2002; Davoodi *et al.*, 2004; Abd-Rabou and Ghahari, 2005; Manzari, 2007). The present paper deals with the Iranian species of 5 genera, *Aphelinus*, *Aphytis*, *Coccobius*, *Coccophagus* and *Pteroptrix*, and their hemipteran hosts in Iran.

## MATERIALS AND METHODS

The specimens were collected by different methods including sweeping net, malaise trap, aspirator and rearing

of hemipteran pests (scale insects and aphids). In addition to the collected material from different regions of Iran, many insect collections of different universities (especially different branches of Islamic Azad Universities) were checked. To obtain parasitoids from known host insects, host infested plant parts were placed in plastic bags and emergence of adult parasitoids was monitored. The emerged adult parasitoids were transferred into vials of 70% ethanol and determined under a binocular microscope.

## RESULTS AND DISCUSSION

The result of this research indicated that there is a diverse fauna of Aphelinidae in different regions of Iran. In total 43 aphelinid species from 5 genera are listed in this paper. Of these, 10 species (asterisked) are new records for Iranian fauna.

### Genus *Aphelinus* Dalman

#### *Aphelinus abdominalis* (Dalman)

Material: Mazandaran: Behshahr (2 female, 1 male), August 2001, ex *Macrosiphum euphorbiae* (Aphididae).

#### *Aphelinus albipodus* Hayat & Fatima

Material: Kerman: Jiroft (2 female), unknown date ex *Aphis fabae* (Aphididae).

**\**Aphelinus ancer* Hayat**

Material: Khorasan: Mashhad (1 female, 2 male), September 2002, ex *Macrosiphoniella sanborni* (Aphididae).

***Aphelinus argiope* Walker**

Material: Golestan: Gorgan (2 female), October 2001, ex *Aphis grossulariae* (Aphididae).

***Aphelinus asychis* (Walker)**

Material: Guilan: Rasht (1 female, 2 male), June 2002, ex *Aphis craccivora* (Aphididae).

***Aphelinus desantisi* Hayat**

Material: Isfahan: Najaf-Abad (3 female), August 2000, ex *Longiungius pyrarius* (Aphididae).

**\**Aphelinus gossypii* Timberlake**

Material: Guilan: Lahijan (1 female), June 2002, ex *Aphis gossypii* (Aphididae).

***Aphelinus humilis* Mercet**

Material: Isfahan: Isfahan (3 female), unknown date ex *Macrosiphum rosae* (Aphididae).

***Aphelinus maidis* Timberlake**

Material: Golestan: Gorgan (2 female, 2 male), September 2000, ex *Aphis* sp. (Aphididae).

***Aphelinus mali* Haldeman**

Material: Mazandaran: Sari (4 female), August 2001, ex *Eriosoma lanigerum* (Pemphigidae).

**\**Aphelinus perpallidus* (Gahan)**

Material: Mazandaran: Sari (2 female, 2 male), August 2001, ex *Brevicoryne* sp. (Aphididae).

***Aphelinus varipes* (Foerster)**

Material: Isfahan: Isfahan (3 female), August 2000, ex *Diuraphis noxia* (Pemphigidae).

**Genus *Aphytis* Howard**

***Aphytis africanus* Quednau**

Material: Mazandaran: Sari (1 female), August 2001, ex *Parlatoria zizyphi* (Diaspididae).

***Aphytis aonidiae* (Mercet)**

Material: Hamedan: Hamedan (3 female, 1 male), July 2000, ex *Diaspidiotus perniciosus* (Diaspididae).

***Aphytis hispanicus* (Mercet)**

Material: Hamedan: Hamedan (3 female), July 2000, ex *Diaspidiotus perniciosus* (Diaspididae).

***Aphytis lepidosaphes* Compere**

Material: Isfahan: Isfahan (4 female), June 1998, ex *Chrysomphalus dictiospermi* (Diaspididae).

***Aphytis lingnanensis* Compere**

Material: Golestan: Gorgan (2 female), September 2000, ex *Aonidiella orientalis* (Diaspididae).

***Aphytis melinus* De Bach**

Material: Mazandaran: Chalus, Marzanabad (7 female, 3 male), ex *Aonidiella aurantii* (Diaspididae).

**Genus *Coccobius* Ratzeburg**

***Coccobius annulicornis* Ratzeburg**

Material: Isfahan: Isfahan (2 female), June 1998, ex *Chionaspis salicis* (Diaspididae). Golestan: Gorgan (1 female); September 1999, ex *Aspidiotus hederæ* (Diaspididae).

***Coccobius diaspidis* (Howard)**

Material: Kermanshah: Kermanshah (3 female), July 2002, ex *Diaspis boisduvalii* (Diaspididae).

***Coccobius flaviceps* (Girault & Dodd)**

Material: West Azarbaijan: Ourmieh (6 female), September 2003, ex *Lepidosaphes conchiformis* (Diaspididae).

***Coccobius flaviventris* (Howard)**

Material: Mazandaran: Sari (5 female, 3 male), April 2000, ex *Aonidiella aurantii* (Diaspididae).

***Coccobius fulvus* (Compere & Annecke)**

Material: Khorasan: Mashhad (2 female), ex *Chionaspis asiatica* (Diaspididae). Guilan: Lahijan (1 female), June 2002, ex *Aulacaspis rosae* (Diaspididae).

**\**Coccobius fusciventris* (Girault)**

Material: Isfahan: Najaf-Abad (1 female, 1 male), unknown date, ex *Parlatoria blanchardii* (Diaspididae).

***Coccobius indefinitus* (Yasnosh & Myartseva)**

Material: Mazandaran: Savadkooh (2 female, 1 male), August 2001, ex *Quadraspidotus zonatus* (Diaspididae). Golestan: Gorgan (1 female), September 2000, ex *Quadraspidotus zonatus* (Diaspididae).

**\**Coccobius multicolor* (Girault)**

Material: Mazandaran: Ghaemshahr (1 female), May 2003, ex *Parlatoria oleae* (Diaspididae).

***Coccobius nigriceps* (Girault)**

Material: Hamedan: Hamedan (1 female), September 2003, *Lepidosaphes granati* (Diaspididae).

***Coccobius pullus* Prinsloo**

Material: Kermanshah: Kermanshah (2 female, 1 male), July 2002, ex *Melanaspis inopinata* (Diaspididae).

***Coccobius viggianii* (Yasnosh)**

Material: Kerman: Jiroft (1 female), July 2002, ex *Leucaspis ulmi* (Diaspididae). Golestan: Gonbad (1 female), September 2000, ex *Lepidosaphes pistaciae* (Diaspididae).

***Coccobius varicornis* Howard**

Material: Kerman: Kerman (5 female), July 2002, ex *Parlatoria asiatica* (Diaspididae). Mazandarn: Ghaemshahr (3 female, 2 male), September 2002, ex *Odonaspis secreta* (Diaspididae).

**Genus *Coccophagus* Westwood**

***Coccophagus bivittatus* Compère**

Material: Mazandaran: Sari (3 female), ex *Ceroplastes floridensis* (Coccidae) on citrus.

***Coccophagus ceroplastae* (Howard)**

Material: Kerman: Kerman (2 female, 1 male), July 2002, ex *Chloropulvinaria aurantii* (Coccidae).

***Coccophagus cowperi* Girault**

Material: Khorasan: Mashhad (2 female), September 2002, ex *Coccus floccifera* (Coccidae). Tehran: Shahreyar (2 female), October 2004, ex *Pulvinaria* sp. (Coccidae).

**\**Coccophagus differens* Yasnosh**

Material: Guilan: Lahijan (1 female), ex *Sphaerolecanium prunastri* (Coccidae).

***Coccophagus lutescens* Compère**

Material: Kermanshah: Kermanshah (4 female), July 2002, ex *Ceroplastes sinensis* (Coccidae).

**\**Coccophagus lycimniae* (Walker)**

Material: West Azarbayjan: Ourmieh (2 female), September 2003, ex *Pulvinaria betulae* (Coccidae).

***Coccophagus proximus* Yasnosh**

Material: Guilan: Rasht (3 female, 2 male), June 2002, ex *Planococcus vovae* (Pseudococcidae).

***Coccophagus rusti* Compère**

Material: Semnan: Damghan (1 female, 1 male), June 2003, ex *Coccus* sp. (Coccidae).

***Coccophagus scutellaris* (Dalman)**

Material: Mazandaran: Ramsar (2 female), August 2001, ex *Coccus hesperidum* (Coccidae). Guilan: Rasht (1 female), June 2002, ex *Pulvinaria vitis* (Coccidae).

**\**Coccophagus semicircularis* (Förster)**

Material: East Azarbayjan: (2 female), September 2003, ex *Pulvinaria betulae* L. (Coccidae).

***Coccophagus silvestrii* Compere**

Material: Tehran: Karaj (2 female, 1 male), September 2003, ex *Coccus hesperidum* (Coccidae).

**Genus *Pteroptrix* Westwood**

**\**Pteroptrix lauri* (Mercet)**

Material: Kerman: Kerman (1 female), July 2002, ex *Salicicola davatchii* (Diaspididae).

**\**Pteroptrix bicolor* (Howard)**

Material: Mazandaran: Behshahr (2 female, 3 male), unknown date, ex *Salicicola kermanensis* (Diaspididae).

The result of this research indicates that the fauna of Iranian Aphelinidae is very diverse, but with the exception two genera, *Encarsia* Foerster and *Eretmocerus* Haldeman (e.g. Abd-Rabou and Ghahari, 2004; Abd-Rabou *et al.*, 2005; Ghahari *et al.*, 2006), the species in other genera are very poorly known. Iran is a large country incorporating various geographical regions and climates, and we expect that a large number of aphelinid species remain to be discovered. To find new species and new distributional records, more studies should be conducted on this important insect group in Iran.

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