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The Family Chalcididae (Hym.: Chalcidoidea) from Kerman Province, Southeastern Iran with Some New Records

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Abstract: Twenty-seven species and nine genera belonging to the family Chalcididae (Hymenoptera: Chalcidoidea) were collected in the present study in Kerman province, Southeastern Iran between 2009 to 2010. Fifteen new recorded species belonging to eight genera were added to the checklist of Iranian chalcidids. Among the studied material, three species belong to subfamily Chalcidinae, one species to Dirhininae, and twelve species to the Haltichellinae. The genus *Haltichella* was reported for the first time from Iran.

Key words: Fauna, Chalcididae, Hymenoptera, New records, Iran

Introduction

The literature concerned to Iranian fauna of Chalcididae is limited to the publications of Masi (1924), Bouček (1952, 1956), Nikol'skaya (1952, 1960) and Haeselbarth (1983). Based on recent studies of Lotfalizadeh *et al.* (2011), the number of Chalcididae species in Iran reached 39 species to date and only three subfamilies, Chalcidinae, Dirhininae and Haltichellinae, have been known from Iran. Two subfamilies, Epitraninae and Smicromorphinae, have not been found in Iran. The historical review of the faunistic studies of Iranian Chalcididae fauna was widely summarised by Lotfalizadeh *et al.* (2011). They believe that this family can be augment to more than hundred species in Iran, while it contains 90 genera and 1500 species worldwide (Noyes 2010). First report on Chalcididae fauna of Kerman was made by Masi (1924) who described *Brachymeria persica* Masi and recently Lotfalizadeh *et al.* (2011) listed four other species (*Brachymeria femorata* Panzer, *Brachymeria lasus* Walker, *Brachymeria tibialis* Walker and *Chalcis rufigaster* Masi) collected from this province.

Most of the known species are parasitoids of different groups of insects and some species are hyperparasitoids via Braconidae and Ichneumonidae (Steffan 1959, Habu 1962, Bouček 1988, Delvare 1995).

Several studies have been carried out on taxonomy of this family in some geographical regions. The fauna and distribution of Chalcididae in the Palaearctic region have been studied by Bouček (1952, 1956), Steffan (1962, 1976), Masi (1924, 1929a, 1929b, 1932), Nikol'skaya (1952, 1960) and Habu (1966). The results presented here have provided a number of new records from Kerman province located in the Southeastern Iran.

Materials and Methods

The material was collected from many different habitats and localities in Kerman Province, Southeastern Iran between 2009 and 2010. Different methods were used including Malaise trap, sweeping on the host plants and also rearing of host. The

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specimens were preserved in 75% alcohol until they were mounted on cards. The identifications were mostly carried out using Bouček (1952, 1956, 1988), Habu (1960), Masi (1924, 1929a,b, 1932), Nikol'skaya (1952), Steffan (1962, 1976). Species are ordered alphabetically and new species records are indicated by an asterisk. Material examined in this study is deposited in the collection of Shahid Bahonar University of Kerman, Iran.

Results and Discussion

In this study 27 species belonging to 9 genera were collected from different parts of Kerman Province. These species are distributed in three subfamilies - Chalcidinae (7 species), Dirhininae (1) and Haltichellinae (19). Of which, 17 species belonging to 8 genera are new records for Iranian fauna.

List of species

Subfamily Chalcidinae

Nine species of *Brachymeria* Westwood have been reported from Iran (Lotfalizadeh *et al*. 2011). In this research seven species of *Brachymeria* were identified from which three species are new records for Iranian fauna.

1. *Brachymeria argenteopilosa* (Radoszkowski, 1876)*

Material examined: IRAN: Kerman Province, Sirch, N 30° 11' 26" E 57° 34' 42", 1731 m, 3.VIII.2009, (M. Rajabi), 1 ♀.

Note. This species was collected by Malaise trap in fig garden in Sirch village. Bouček (1956) believes that this species is close to *Brachymeria tibialis* Walker but can be separated with extremely finely punctuate hind femur; much denser body punctures; ivory white spots on hind tibia dorsally and hind femur apically.

2. *Brachymeria parvula* (Walker, 1834)*

Material examined: IRAN: Kerman Province, Rabor, N 29° 18' 23" E 56° 52' 33", 2439 m, 24.VI.2009, (M. Rajabi), 1 ♀.

Note. This species was swept on vegetation in a pomegranate orchard in the South of Kerman Province. *Brachymeria parvula* has been reported as parasitoid of Sarcophagidae (Dip.) (Bouček 1952).

3. *Brachymeria excarinata* Gahan, 1925

Material examined: IRAN: Kerman Province, Ab-khorak, N 29° 38' 00'' E 56° 42' 35'', 2655 m, 21.XI.2008, (M. Rajabi), 1 ♂. Kerman Province, Anbar-abad, N 28° 28' 57" E 57° 52' 58", 621 m, 22.vi.2008, (M. Rajabi), 1 ♂. Kerman Province, Sekonj, N 29° 59' 55'' E 57° 25' 59'', 2373 m, Cherry orchard, 5.IX.2009, (M. Rajabi), 1 ♀.

Note. This species has been already reported from Iran (Lotfalizadeh *et al*. 2011) but this report extends its distribution in Iran.

4. *Brachymeria femorata* (Panzer, 1801)

Material examined: IRAN: Kerman Province, Rabor, N 29° 02' 25'' E 57° 03' 57'' 1679 m, 9.VIII.2009, (M. Rajabi), 1 ♀.

Note. This species has been already reported from Iran (Davatchi, Chodjai 1968; Lotfalizadeh *et al*. 2011). *Brachymeria femorata* is widely distributed from Northwest to Southwest of Iran and we also find it in Kerman province. It is extremely variable especially in color of hind femur and is known as a common species in Mediterranean region as pupal parasitoid of various Lepidoptera (Lotfalizadeh *et al*. 2011).

5. *Brachymeria podagrica* (Fabricius, 1787)*

Material examined: IRAN: Kerman Province, Bidan, N 29° 15' 12" E 56° 41' 00", 2519 m, 11.VII.2009, swept on Fabaceae, (M. Rajabi), 1 ♀.

Note. *Brachymeria podagrica* is a characteristic species with red hind femur and as a rare species which can be quoted in red hind femur group of *Brachymeria.*

6. *Brachymeria rugulosa* (Förster, 1859)

Material examined: IRAN: Kerman Province, Goroh, N 29° 13′ 08″ E 57° 04′ 19″, 2498 m, 5.VIII.2008, (M. Rajabi), 1 ♂.

Note. This species has been already reported from central area of Iran as a parasitoid of *Ectomyelois ceratoniae* Zeller (Lep.: Pyralidae) (Lotfalizadeh *et al*. 2011).

7. *Brachymeria tibialis* (Walker, 1834)

Material examined: IRAN: Kerman Province, Sirch, N 30° 12′ 15″ E 57° 28′ 26″, 2095 m, 10.XI.2008, (M. Rajabi), 1 ♂.

Note. This species has been already reported from different localities in Iran such as Azarbaijan,

Fars, Kerman and Mazandaran provinces (Lotfalizadeh *et al*. 2011). *Brachymeria tibialis* is a common species that its morphological variation in Iranian fauna was discussed by Lotfalizadeh *et al*. (2011). They reported this species on Lymanteridae and Zygaenidae (Lepidoptera).

Subfamily Dirhininae

Based on Lotfalizadeh *et al*. (2011) two species of *Dirhinus* Dalman (*D. himalayanus* Westwood and *D. wohlfahrtiae* Ferrière) have already been found in Iran. In this research only one species was collected that is a new record for Iran.

8. *Dirhinus hesperidum* (Rossi, 1790)*

Material examined: IRAN: Kerman Province, Dehbakri, N 29° 02' 22" E 57° 54' 53", 2126 m, 7.VIII.2009, (M. Rajabi), 1 ♀. Kerman Province, Bidan, N 29° 15' 12" E 56° 41' 00", 2519 m, 11.VII.2009, (M. Rajabi), 1 ♀.

Note. This species was achieved by sweep netting in an animal fold in the first locality and on Fabaceae in the second one.

Subfamily Haltichellinae

This subfamily with 21 species is the most common subfamily of the family Chalcididae in Iranian fauna (Lotfalizadeh *et al*. 2011). In this study we found 19 species in Kerman province belonging to 7 genera *Antrocephalus* Kirby, *Haltichella* Spinola, *Hockeria* Walker, *Kriechbaumerella* Dalla Torre, *Lasiochalcidia* Masi, *Proconura* Dodd and *Psilochalcis* Kieffer from which, the genus *Haltichella* has not been reported from Iran to date.

9. *Antrocephalus hypsopygiae* Masi, 1928

Material examined: IRAN: Kerman province, Shahdad, N 30° 23' 30" E 57° 43' 23" 434 m, 1.XII.2008, (M. Rajabi), 2 ♂. Kerman province, Orzooiyeh, N 28° 22' 59" E 56° 29' 07", 1062 m, 8.X.2009, (M. Rajabi), 1 ♀.

Note. This species has been already reported from border of Caspian Sea in the North of Iran (Lotfalizadeh *et al*. 2011).

10. *Haltichella rufipes* (Olivier, 1791)*

Material examined: IRAN, Kerman province, Jiroft, N 28° 28' 57" E 57° 52' 08", 630 m, 8.VII.2009, (M. Rajabi), 1 ♂. Kerman province, Khabr National Park, Rochun, swept on Fabaceae in a pomegranate orchard, N 28° 49' 37" E 56° 16' 40", 1915 m, 8.X.2009, (M. Rajabi), 1♀.

Note. This genus has not been recorded from Iran so far. The species belonging to the genus *Haltichella* are mostly parasite of Microlepidoptera, some are hyperparasitoids of members of the family Braconidae and others are regarded as parasites of Diptera (Glossinidae) in Africa (Habu 1960).

11. *Hockeria susterai* Bouček, 1951*

Material examined: IRAN: Kerman Province, Shahdad, N 30° 23' 30" E 57° 43' 23", 435 m, 14.XII.2008, on *Tamarix* sp. (M. Rajabi), 1 ♀.

Note. Three species of *Hockeria* are known from Iran (Lotfalizadeh *et al*. 2011) but *H. susterai* is new record for Iran.

12. *Hockeria unicolor* Walker, 1834

Material examined: IRAN: Kerman Province, Lalehzar, N 29° 28' 55" E 56° 49' 12", 3069 m, 1.VII.2008, (M. Rajabi), 1 ♀. Kerman Province, Khabr National Park, N 28° 49' 37" E 56° 16' 40", 1915 m, grape vein orchard, 2.VII.2009, (M. Rajabi), 1 ♂

Note. This species has been already reported from West of Iran (Lotfalizadeh *et al*. 2011).

13. *Kriechbaumerella gracilis* (Nikol'skaya, 1952)

Material examined: IRAN: Kerman Province, Anbar-abad, N 28° 28' 57" E 57° 52' 58", 621 m, 20.XI.2008, (M. Rajabi), 1 ♂.

Note. Occurrence of this species in Iran has been already reported (Nikol'skaya 1952, Lotfalizadeh *et al*. 2011).

14. *Lasiochalcidia cincticornis* (Walker, 1871)

Material examined: IRAN: Kerman Province, Khabr National park, N 28° 39' 51" E 56° 19' 47", 1778 m, 20.X.2009, (M. Rajabi), 1 ♀.

Note. This parasitoid of Myrmeleontidae (Neuroptera) has been already reported from Southeast of Iran (Nikol'skaya 1952).

15. *Lasiochalcidia dargelasi* (Latreille, 1805)*

Material examined: IRAN: Kerman Province, Mahan, Plum garden, N 30° 06' 19" E 57° 14' 29", 1812 m, 16.III.2009, (M. Rajabi), 1 ♀.

16. *Lasiochalcidia guineensis* (Steffan, 1951)*

Material examined: IRAN: Kerman Province, Andohjerd, N 30° 13′ 21″ E 57° 45′ 00″, 877 m, 17.VI.2009, (M. Rajabi), 1 ♀.

17. *Lasiochalcidia pubescens* (Klug, 1834)*

Material examined: IRAN: Kerman Province, Bidkhan, N 29° 36' 31" E 56° 60' 33", 2650 m, 17.VI.2009, on *Cardaria draba*, (M. Rajabi), 1 ♂. Bam, Orange garden, N 29° 08' 06" E 58° 16' 45", 1138 m, 6.IX.2009, on *Tamarix* sp., (M. Rajabi), 1 ♂.

Note. This species was swept in orange orchard in this area.

18. *Proconura incongruens* (Masi, 1932)*

Material examined: IRAN: Kerman, Anbar abad, N 28° 28′ 57″ E 57° 52′ 58″, 631 m, 3.XI.2008, (M. Rajabi), 1 ♂.

Note. Two species of *Proconura* were reported from Iran (Lotfalizadeh *et al*. 2011) while we found five species in Kerman province.

19. *Proconura* near *aeneonitens* (Graham, 1983)*

Material examined: IRAN: Kerman: Lalehzar, N 29° 28' 53" E 56° 49' 08", 3042 m, 18.V.2008 (M. Rajabi), 1 ♀.

Note. Our examined specimen is closed to *Proconura aeneonitens* (Graham) but its flagellomeres are shorter with pedicel and flagellum 1.3 times as long as head width (1.5-1.6 so on *P. aeneonitens*); the punctuation on the mesonotum is on the average coarser, the posterior margin of the pronotum is less concave (Delvare, Pers. Comm.). Graham (1983) described this species based on materials collected from Madeira. This species is a shiny species with sparse punctuation.

20. *Proconura* near *asikae* (Nikol'skaya & Kyao, 1954)*

Material examined: IRAN: Kerman: Jiroft, N 28° 28' 57" E 57° 52' 08", 630 m, 21.XI.2008, (M. Rajabi), 1 ♀.

Note. Nikol'skaya & Kyao (1954) described this species in *Euchalcidia* but it was transferred to *Proconura* (Bouček, 1984). This specimen closes to *Proconura asikae* but differs by the sculpture more raised of the propodeum, a much shorter gaster with posterior margin of the first tergite less prominent. It was also compared with Fig. 13 provided by Steffan (1976) representing *P. pseudonebulosa* (Masi) on which the median areola of the propodeum is fusiform. It is also different from Fig. 10 of Steffan (1976) figuring the gaster of *P. doriae* (Masi, 1929). The gaster of the Iranian female is longer, especially with longer T2 (Delvare, Pers. Comm.).

21. *Proconura* near *barbara* (Masi, 1929)*

Material examined: IRAN: Kerman, Shahdad, N 30° 23' 30" E 57° 43' 23", 434 m, 1.XII.2008 (M. Rajabi), 1♀.

Note. Delvare believes that the Iranian specimen is smaller, with longer head in dorsal view, the genae are less converging, the interantennal projection shows a deeper median groove, the puncturation is sparser in the center of the scutellum, the pattern of ornamentation on the propodeum is the same but the sculpture is much less raised, the 3rd tergite is longer (Delvare, Pers. Comm.).

22. *Proconura near caryobori* (Hanna, 1934)

Material examined: IRAN: Kerman province, Anbar-abad, N 28° 28' 57'' E 57° 52' 58'', 630 m, 3.XI.2008, (M. Rajabi), 1 ♂.

Note. *Proconura caryobori* has been already reported from Iran (Lotfalizadeh *et al*. 2011). This specimen closes to *P. caryobori* but in some characteristics such as black antenna is different.

23. *Psilochalcis benoisti* (Steffan, 1948)*

Material examined: IRAN: Kerman province, Golbaf, N 29° 54' 46" E 57° 42' 54", 1859 m, 4.VI.2009, (M. Rajabi), 1 ♀.

Note. This species was swept in apple orchard and is a new record for Iran.

24. *Psilochalcis nigerrima* (Masi, 1929)*

Material examined: IRAN: Kerman province, Sekonj, N 29° 59' 55" E 57° 25' 59", 2373 m, 5.IX.2009, (M. Rajabi), 1 ♂.

Note. This species was collected in a cherry orchard and is a new record for Chalcididae fauna of Iran.

25. *Psilochalcis rufitarsis* (Illiger, 1807)

Material examined: IRAN: Kerman province, Mahan, N 30° 06′ 19″ E 57° 14′ 29″, 1834 m, 13.VIII.2008, (M. Rajabi), 1 ♂.

Note. This species is a parasitoid of *Ectomyelois ceratoniae* (Lep.: Pyralidae) in the central area of Iran (Lotfalizadeh *et al*. 2011).

26. *Psilochalcis subaenea* (Masi, 1929)

Material examined: IRAN: Kerman province, Bidan, N 29° 14' 11" E 56° 54' 58", 2519 m, 20.VIII.2009, (M. Rajabi), 1 ♂.

Note. This species was swept on Umbellifera plants. *Psilochalcis subaenea* has been reported from Southwest of Iran (Lotfalizadeh *et al*. 2011).

27. *Psilochalcis subarmata* (Förster, 1855)*

Material examined: IRAN: Kerman province, Rayen, N 29° 18' 23" E 56° 52' 33", 2754 m, 22.VI.2008, (M. Rajabi), 1 ♂.

Note. Examined specimen was swept on *Euphorbia* plants.

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