



Research Note

New record of *Brachymeria albicrus* (Klug) (Hymenoptera: Chalcididae), a pupal parasitoid of the cabbage white butterfly, *Pieris rapae* (Linnaeus) from Iran

GHOLAMHOSEIN HASANSHAHI¹, HABIB ABBASIPOUR^{1*}, FATEMEH JAHAN¹, RICHARD ASKEW², and ANTONI RIBES ESCOLÀ³

¹ Department of Plant Protection, Faculty of Agricultural Sciences, Shahed University, Tehran, Iran

² Tarporley, Cheshire CW6 9TZ, England.

³ c/Lleida, 36 25170 Torres de Segre Lleida, Spain.

* Corresponding author e-mail: habbasipour@yahoo.com

ABSTRACT: Small cabbage white butterfly, *Pieris rapae* is the most important insect pest of the plants belonging to family Brassicaceae. In order to identify its parasitoids, sampling was made in the cauliflower fields of southern Tehran from June until October 2011. The pupae were collected from fields and then reared under controlled conditions of 27°C, 60±10% Rh and 14L:10D photoperiod until the emergence of parasitoid adults. These parasitoids were put in alcohol 75°. One parasitoid wasp specimen was collected from the pupal samples. This parasitoid was identified as *Brachymeria albicrus* (Klug) (Hymenoptera: Chalcididae). This species is a new host record from *P. rapae* and distribution record from Tehran for the fauna of Iran.

KEY WORDS: *Brachymeria albicrus*, *Pieris rapae*, pupal parasitoid, Tehran, Iran

(Article chronicle: Received: 15-01-2013; Revised: 24-06-2013; Accepted: 26-06-2013)

Wasps of the family Chalcididae have a worldwide distribution and most are observed in the tropical regions. All Chalcididae are parasitoids of larvae or pupae of Lepidoptera, Diptera, Hymenoptera, Coleoptera, Strepsiptera and Neuroptera (Gauld and Bolton, 1988; Askew, 1994; Hanson and Gauld, 1995). The majority are probably endoparasitoids or ectoparasitoids. Most have idiobiont behavior and some species are koinobiont (Hanson and Gauld 1995). Some species of this family are of economic importance in view of their parasitizing ability on important key pests. A number of species can also be effective in the management of important lepidopteran pests (Hanson and Gauld, 1995; Gauld and Bolton 1988).

Brachymeria excarinata Gahan, 1925 is active in cabbage farms of Iran (Golizadeh 2008). This species is a solitary internal parasitoid of pupae of the diamondback moth, *Plutella xylostella* L. (Hirashima *et al.*, 1989), and other insect species belonging to Tortricidae, Pyralidae, and Noctuidae, besides, as a hyperparasitoid of insects belonging to Braconidae & Microgastrinae (Noyes, 2012). *Brachymeria femorata* (Panzer, 1801) was recorded as a

pupal parasitoid from *Pieris brassicae* (Linnaeus) in Uromiyeh, Iran (Razmi *et al.*, 2011) and other larvae belonging to Nymphalidae and other Lepidoptera (Noyes, 2012).

Collections of pupae of *P. rapae* were made from cabbage fields of south of Tehran during 2011. The pupae were maintained in clear plastic containers (5 × 20 × 10 cm) with the mouth of the lid closed with a piece of net at 27°C, 60±10% RH and 14L:10D photoperiod till the emergence of host/parasitoids. The parasitoids emerged were preserved in 75% alcohol to enable further identification.

Brachymeria albicrus (Klug, 1834) (= *B. amphissa* (Walker), = *B. responsator* (Walker)), belongs to family Chalcididae, was determined by R. R. Askew, and according to the resources available to us this species is reported for the first time from Iran. It was previously recorded as a parasitoid of *Pieris rapae* (Linnaeus) (Lepidoptera: Pieridae) (Fry 1989). Other hosts of this parasitoid are *Acraea acerata* Hewitson (Lepidoptera: Nymphalidae) (Azerefegne *et al.*, 2001), *Danaus chrysippus* (Linnaeus) (Lepidoptera:

Nymphalidae) (Boucek, 1956), *Belenois aurota* (Fabricius) (Lepidoptera: Pieridae) (Narendran, 1989), *Gonometa postica* Walker (Lepidoptera: Lasiocampidae) (Fening *et al.*, 2009) and *Earias* sp. (Lepidoptera: Noctuidae) (Narendran, 1989). This species has been reported from Asian countries such as Pakistan (Fry, 1989), India. Also this species has been reported from Ethiopia, Somalia, Egypt, Israel, India-Orissa; India-Tamil Nadu; Nepal; Papua New Guinea (Noyes, 2012).

Some of the morphological characteristics of *B. albicrus*, according to Masi (1951) and Narendran (1989) are as follows: 2nd tergite with small fine punctuation, and with some coarser piliferous punctures near the base; apex of scutellum distinctly bilobed or incised, with dense silvery pubescence on two lobes; head with postorbital carina absent or indistinct; tegulae white; hind femora reddish to dark reddish-brown, except the white apex, sometimes with varying black patches of varying size. It is most similar to *B. femorata* by the shape and pubescence of scutellum and punctuation of 2nd tergite (Boucek, 1956), but differing by the postorbital carina absent (distinct in *B. femorata*) and legs and tegulae colour (posterior femora black with yellow apex, and yellow tegulae in *B. femorata*).

ACKNOWLEDGEMENTS

This work was supported by Faculty of Agricultural Sciences, Shahed University, Tehran, Iran.

REFERENCES

- Askew RR. 1994. Further observations of Chalcididae (Hymenoptera) from Spain with some nomenclatural changes and the description of a new species. *Graellsia* **50**: 29–34.
- Azerefegne F, Solbreck H, Ives AR. 2001. Environmental forcing and high amplitude fluctuations in the population dynamics of the tropical butterfly, *Acraea acerata* (Lepidoptera: Nymphalidae). *J Anim Ecol.* **70**(6): 1032–1045.
- Boucek Z. 1956. A contribution to the knowledge of the Chalcididae, Leucospidae and Eucharitidae (Hymenoptera: Chalcidoidea) of the Near East. *Bull Res Coun Israel* **5**: 227–259.
- Fening KO, Kioko EN, Raina SK. 2009. Effect of parasitoids' exit and predators' ingress holes on silk yield of the African wild silkmoth, *Gonometa postica* Walker (Lepidoptera: Lasiocampidae). *Inter J Ind Ent.* **19**(2): 265–268.
- Fry JM. 1989. Natural enemy databank, 1987. *A catalogue of natural enemies of arthropods derived from records in the CIBC Natural Enemy Databank*. CAB International, Wallingford, Oxford, UK, 115 pp.
- Gauld ID, Bolton B. 1988. *The Hymenoptera*. Oxford: Oxford University Press, Oxford.
- Golizadeh A. 2008. Thermal requirements and population dynamics of diamondback moth, *Plutella xylostella* (L.) (Lep.: Plutellidae) in Tehran region. Thesis submitted in partial fulfillment of the requirement for the degree of doctor of philosophy (Ph.D.) in Agricultural Entomology, Department of Entomology, Faculty of Agriculture, Tarbiat Modares University, 197 pp.
- Hanson PE, Gauld ID. 1995. *The Hymenoptera of Costa Rica*. Oxford: Oxford University Press, 893 pp.
- Hirashima H, Abe Tadauchi M, Konishi O, Maeto K. 1989. The hymenopterous parasitoids of the diamondback moth, *Plutella xylostella* (Lepidoptera: Yponomeutidae) in Japan. *ESAKIA* **28**: 63–73.
- Masi L. 1951. Materiali per una monografia delle *Brachymeria* paleartiche (Hym. Chalcidoidea). *Eos. Revista Española di Entomologia*. Madrid. *Tomo extraordinario* 27–58.
- Narendran TC. 1989. *Oriental Chalcididae (Hymenoptera: Chalcidoidea)*: Zoological Monograph. Department of Zoology, University of Calicut, Kerala, India, 441 pp.
- Noyes JS. 2012. *Universal Chalcidoidea Database*. World Wide Web electronic publication. <http://www.nhm.ac.uk/chalcidoids>.
- Razmi M, Kariopour Y, Safaralizadeh MH, Safavi SA. 2011. Parasitoid complex of cabbage large white butterfly *Pieris brassicae* (L.) (Lepidoptera, Pieridae) in Urmia with new records from Iran. *J Pl Prot Res.* **51**(3): 248–251.