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## **A new species *Bracon (Cyanopterobracon) subfallax* nov.sp. from Turkey (Hymenoptera, Braconidae, Braconinae)**

**Ahmet BEYARSLAN**

### **Abstract**

In this study a new species *Bracon (Cyanopterobracon) subfallax* nov.sp. has been described from the material collected from Central and South Anatolian regions of Turkey. The new species is described and its morphological diagnostic characters are illustrated and compared with the related species.

Key words: Braconidae, *Cyanopterobracon*, *Bracon*, new species, Turkey.

### **Zusammenfassung**

Vorliegende Studie beschreibt die neue Art *Bracon (Cyanopterobracon) subfallax* nov.sp. aus Material, das in mittel- und südanatolischen Regionen der Türkei gesammelt wurde.

## Introduction

*Bracon* FABRICIUS, 1804 is a cosmopolitan genus with more than 880 described species worldwide, and its greatest success and diversity is seen in the Palaearctic region. *Bracon* FABRICIUS is a large genus divided into eighteen subgenera and it is represented in Turkish fauna with only *Bracon* FAHRINGER, *Glabrobracon* FAHRINGER, *Lucobracon* FAHRINGER, *Orthobracon* FAHRINGER, *Asiabracon* TOBIAS, *Cyanopteobracon* TOBIAS, *Rostrobracon* TOBIAS, *Habrobracon* ASHMEAD, *Pigeria* ACHRTERBERG and *Oscolobracon* PAPP (YU et. al. 2012).

The genus was reported to be represented in Turkey fauna with 160 species and among these, hosts of only 42 species are known (BEYARSLAN 1986a, 1986b, 1988, 1996, 1999, 2002a, 2002b, 2009, 2010, 2011, 2014, 2015, 2016; BEYARSLAN & CETIN ERDOGAN, 2010, 2011, 2012; BEYARSLAN et al. 2002a, 2002b, 2005, 2006, 2008, 2010, 2011, 2014; BEYARSLAN & FISCHER 1990; BEYARSLAN & TOBIAS 2008).

*Bracon* species are ectoparasites of larval stages of Coleoptera, Diptera, Hymenoptera and Lepidoptera. The females of genus *Bracon* lay their eggs on larvae of cryptobiotic plant pests insects. The developing Braconid larvae completes its development as a parasitoid of such insect hosts who dies eventually and such a role they undertake ensures the biological balance in nature. It is therefore Braconid species are one of the commonly used biological control agents. For instance, *Etiella zinckenella* (TREITSCHKE, 1832) (Lepidoptera, Pyralidae) lives in a wide region including Europe, Asia and western America. This lepidopteran species causes harms on fava bean (*Vicia* sp.), water melon (*Citrullus* sp.), black locust (*Robinia pseudoacacia*) and redbud (*Cercis siliquastrum*). *Bracon* (*Bracon*) *pectoralis* (WESMAEL, 1838) and *Bracon* (*Glabrobracon*) *variator* NEES, 1811 are used in biological control of this pest lepidopteran species (BARTLETT et al. 1978). *Bracon* (*Glabrobracon*) *obscurator* NEES, 1811 is another taxa used as a biological control agent against *Ips typographus* (LINNAEUS, 1758) (Coleoptera, Scolytidae) who leads to large amounts of damage on pine trees (*Pinus* spp., *Larix* spp., *Pseudotsuga* spp. and *Abies* spp.) (ELZINGA et al. 2007).

Here, a new species, *B. (C.) subfallax* nov.sp. is reported after evaluation of the material collected from Central and South Anatolian regions. The new species is described and its morphological diagnostic characters are illustrated and compared with the related species.

## Material and Methods

Adult specimens of Braconinae were collected from various habitats of Central and South Anatolian regions between 2003 and 2009, to determine the Turkish Braconinae fauna. Sweeping nets were used to obtain samples on grass-type plants. Relevant literature (BEYARSLAN & FISCHER 1990; PAPP 1997, 2008; TOBIAS 1986) were used for taxonomical examination and identification of the specimens and distribution of species. Figures of the new species were drawn and measurements were taken using a camera lucida 5 attached to a stereomikroskop (Nikon SMZ 1000). Type material and other material are deposited in the collection of the Biology Department of Faculty of Science and Art, University of Bitlis Eren.

The definitions, ratios and abbreviations follow those of van ACHTERBERG (1993). The following abbreviations are used in the text: OOL = ocellar-ocular line (shortest distance between ocellus and compound eye), POL = postocellar line (shortest distance between hind two ocelli); OD= maximal diameter of lateral ocelli. A= analis; C= costa; CU= cubitus; M= media; R= radius; SC= subcosta; SR= sectio radii (or RS of "radial sector" a= transverse anal vein; cu-a= transverse cubito-anal vein; m-cu= transverse medio-cubital vein; r= transverse radial vein; r-m= transverse radio-medial vein; pa= parastigma; pt= pterostigma.

2-CU1=second section of the cubital vein, 3-CU1=third section of cubital vein, 1-M = basal vein, 2-M=second section of medial vein, 1-R1 = first section of the metacarpal vein, 1-SR+M = first section of the cubital vein, 2-SR = first transverse cubital vein, 2-SR+M= second transverse cubital vein, 3-SR = second section of the radial vein, SR1 = third section of the radial vein

## Results

### *Bracon (CyanopteroBracon) subfallax nov.sp. (Figs 1-7)*

**D e s c r i p t i o n .** Female (holotype). Length of body 4.6 mm, of antennae 4.5 mm, of fore wing 4.5 mm, of hind wing 4.0 mm, of hind leg 4.6 mm, of mesosoma 1.8 mm, of metasoma 2.2 mm, of ovipositor sheath 1.0 mm.

**Head.** Subcubish, ratios of width: length: height of head = 60: 40: 50 (Fig 2). Antenna with 41 segments, first flagellomere 1.3 times longer than its width and as long as second flagellomere, penultimate antennal segment 1.6 as long as its width (Fig 1b, 3). Width of the hypoclypeal depression 0.5 times longitudinal diameter of eye and 1.1 times length of malar space; longitudinal diameter of eye 1.3 times longer than its transverse diameter; ratios of height of clypeus: inter-tentorial distance: tentorio-ocular distance = 5 : 25 : 9; length of maxillary palp 0.9 times height of head; width of face 1.3 times its height, face smooth and with long, white setae; height of eye : width of face : width of head= 30 : 32 : 59; vertex and frons smooth and glabrous with some white setae; length of eye 1.5 times as long as temple in dorsal view; ratios of OOL: OD: POL = 15: 5: 7; basal part of mandible microsculptured; temple smooth, shiny; length of malar space 2.0 times as long as basal width of mandible and 0.4 times longitudinal diameter of eye.

**Mesosoma** (Fig 1a, 4). Mesosoma approximately 1.9 times longer than height; pronotum and propleuron with very fine longitudinal carina, smooth; mesoscutum smooth, glabrous, with silvery setae; notauli uncertain; scutellar sulcus smooth, scutellum compressed, smooth and shiny; flange of metapleuron distinctly developed; metanotum smooth, shiny; surface of propodeum smooth and with silvery setae laterally.

**Wings** (Fig 1c, 5). Pterostigma almost triangular, length of pterostigma 2.8 times its maximal width and 4.10 times as long as parastigma, 1-SR+M straight and 2.00 times as long as length of m-cu; vein cu-a interstitial; ratio of r: 3-SR: SR1 = 13: 31: 65; CUIb very short, 3-CU1 0.80 times as long as m-cu; ratios of 2- SR: 3-SR: r-m: 2-M: 2-SR+M= 10: 19: 9: 26: 4.

Hind wing. Ratios of 1-SC+R: 2-SC+R: SC+R1: 1r-m: 1-M: M+CU: cu-a=55: 3: 16: 5: 33: 14: 7.

Hind leg (Fig 6). Hind coxa smooth, with long, whitish setae; femur weakly compressed; ratios of femur : tibia : basitarsus: tarsus of hind leg = 43: 60: 19: 50; length of femur, tibia and basitarsus of hind leg 3.4, 9.0 and 5.0 times their maximum width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus; length of longer fore tibial spurs 0.5 basitarsus, tibia and tarsus densely setose.

Metasoma (Fig 7). Length of first tergite 0.75 times its apical width and smooth; suture between 2<sup>nd</sup> and 3<sup>rd</sup> metasomal tergites deep and sinuate; medial length of 2<sup>nd</sup> tergite 0.4 times as long as medial length of 3<sup>rd</sup> tergite; all tergites smooth. Ovipositor sheath 0.45 times as long as metasomal length.

Colour. Yellowish red; only head, antenna, propleuron, mesopleuron, metathorax, propodeum, all coxae, basal half of fore femur, apical part of tibiae and tarsi of fore legs, basal half of middle and hind femura, basal sides of hind femura, apical part of middle and hind tibiae black; wing membrane very dark brown; pterostigma and veins brownish-black.

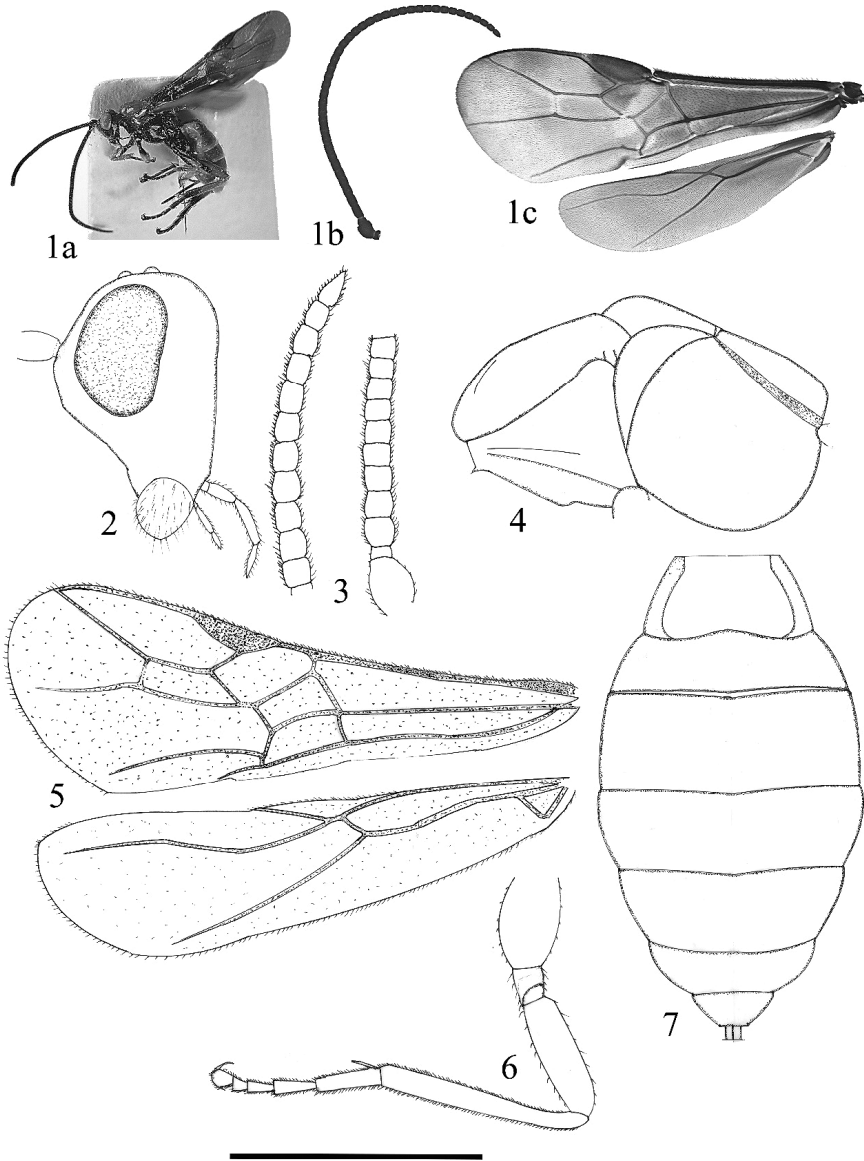
Male: Unknown.

Material examined. Holotype: Female (♀) – Niğde-Çamardı (Xeroeuxin province with *Artemisia caucasica*, *Convolvulus assyricus*, *Fumana procumbens*, *Helianthemum canum*, *Pterocephalus pinardii*, *Acantholimon acerorum*, *Astragalus condensatus*, *Centaurea carduiiformis*, *Galium incanum*, *Hedysarum varium*, *Crocus danfordiae*, *Androsace maxima*), (37° 49' 53" N, 34° 58' 58" E), 1600 m a.s.l., 4.7.2003, leg. H. Başibüyük. Paratype: Female. Kayseri, Kalkancık, (Xeroeuxin province with *Salix caprea*, *Populus tremula*, *Prunus armeniaca*, *Beta vulgaris* Natural reeds, Umbellifera) (38° 53' 03" N, 35° 07' 31" E), 1142 m a.s.l., 12. 7.2007, 1 ♀, leg. A. Beyarslan. Isparta-Gölcük-Pilav Tepe, MT (Mediterranean province with *Quercus* spp., *Pinus nigra*, *Astragalus* spp. Mixed weeds) (37° 47' 0" N, 33° 33' 0" E), 1551 m a.s.l., 4.8.2009, 1 ♀, leg. G. Japoshvili.

Etymology. The specific name is from the related species *Bracon* (*Cyanopterobracon*) *fallax* SZÉPLIGETI.

Differential diagnosis. *Bracon* (*Cyanopterobracon*) *subfallax* nov.sp. is related to *B. (C.) fallax* SZÉPLIGETI. These two species can be separated by the combination of following characters:

- 1 Medial length of 2<sup>nd</sup> tergite as long as medial length of third tergite; radial vein originating from middle of pterostigma and 0.40 times as long as 3-RS; 1-M 1.50 times as long as m-cu; body 3.4-6.0 mm.....*Bracon (C.) fallax* SZÉPLIGETI
- Medial length of 2<sup>nd</sup> tergite 0.40 times as long as medial length of 3<sup>rd</sup> tergite; Radial vein originating from middle of pterostigma and 0.50 times as long as 3-RS; 1-M 1.70 times as long as m-cu; forewing (Fig 5); body 3.4-6.0 mm.....*B. (C.) subfallax* nov.sp.



**Figs 1-7:** *Bracon (Cyanopterobracon) subfallax* nov.sp. (♀): (1) (1a. habitus lateral view, 1b. antenna, 1c. Wings); (2) head in lateral view; (3) antenna; (4) mesosoma in lateral view; (5) wings; (6) hind leg; (7) metasoma in dorsal view. Scale: 0.9 mm (Fig. 2), 2.5 mm (Fig. 4), 1.9 mm (Figs 3, 5 (hind wing 1.8 mm), (6), 1.1 mm (Fig. 7).

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Author's address:

Prof. Dr. Ahmet BEYARSLAN

Department of Biology, Faculty of Arts and Sciences

Bitlis Eren University, 13000 Bitlis, Turkey

E-mail: abeyars@gmail.com

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Maximilian SCHWARZ, Konsulent f. Wissenschaft der Oberösterreichischen Landesregierung, Eibenweg 6, A-4052 Ansfelden, Austria; maximilian.schwarz@liwest.at.

Redaktion: Fritz GUSENLEITNER, Biologiezentrum Linz, f.gusenleitner@landesmuseum.at  
Roland GERSTMEIER, Lehrstuhl f. Zoologie, TU München, gerstmei@wzw.tum.de  
Thomas WITT, Tengstraße 33, D-80796 München, thomas@witt-thomas.com  
Berthold CLEWING, Akademischer Verlag München, avm@druckmedien.de  
Harald SULAK, Museum Witt München, h.sulak@atelier-sulak.de.

Mitarbeiter: Karin TRAXLER, Biologiezentrum Linz, bio.redaktion@landesmuseum.at  
Heike REICHERT, Museum Witt München, heike\_reichert66@web.de  
Erich DILLER, Zool. Staatssammlung München, erich.diller@zsm.mwn.de.

Adresse: Entomofauna, Redaktion und Schriftentausch Thomas WITT, c/o Museum Witt München, Tengstr. 33, 80796 München, Deutschland, thomas@witt-thomas.com;  
Entomofauna, Redaktion c/o Fritz GUSENLEITNER, Lungitzerstr. 51, 4222 St. Georgen/Gusen, Austria, f.gusenleitner@landesmuseum.at.



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