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Notes on some Asian species of *Euceros* GRAVENHORST, with description of a new species (Hymenoptera, Ichneumonidae, Eucerotinae)

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A b s t r a c t : In this study, new distributional records and notes on the structure and color pattern of five Asian species of the genus *Euceros* GRAVENHORST are presented.

One new species, *Euceros flagellator* nov.sp., is described and illustrated. This new species is characterized by the unique structure of male flagellum and color pattern.

K e y w o r d s : Ichneumonidae, Eucerotinae, *Euceros*, new species, East Palaearctic region, Oriental region

Introduction

The small subfamily Eucerotinae (Hymenoptera, Ichneumonidae) contains two genera, the monotypical Chilean genus *Barronia* GAULD & WAHL and the almost cosmopolitan *Euceros* GRAVENHORST with 50 known taxa (YU et al. 2016, BROAD et al. 2018, RIEDEL 2018). As far as known, all *Euceros* species are hyperparasitoids (BROAD et al. 2018).

The non-Nearctic species of *Euceros* were comprehensively studied by BARRON (1978) and the Palaearctic species revised by KASPARYAN & TOLKANITZ (1999). The *Euceros* males are characterized by a more or less modified flagellum, and this feature makes it easier to differentiate males than females of this genus.

Here, I present new distributional records and morphological data of some specimens of *Euceros* from the East Palaearctic and Oriental regions and a new *Euceros* species from Northern China.

Material and methods

The examined specimens are deposited in the Biodiversitätszentrum Linz/Austria (Linz) and in the Senckenberg Deutsches Entomologisches Museum in Müncheberg/Germany (SDEI).

For the descriptions below, morphological terms follow BROAD et al. (2018). The distributional records were taken from the catalogue of YU et al. (2016).

For the measurements the following relations were used: length of 1st flagellar segment was measured in lateral view (length without annellus) and length and width of hind femur in lateral view. For the punctuation of body parts, the following definitions were used:

sparse – distance of punctures larger than their diameter; dense – diameter larger than their distance.

For the measurements an Olympus SZX 7 stereo microscope with dividing eyepiece was used. The figures were mainly taken with an Olympus SC 50 CCD-camera using the cellSens Imaging software and processed with the Helicon Pro software and Microsoft Office Picture Manager.

Species account

Euceros dentatus BARRON, 1978

Material examined: China: Shaanxi, Huoditang wide env., 33°26'N 108°27'E, 1600–2000 m, 1♀ 15-19.VI.2016, leg. E. Jendek & O. Šauša (Linz).

Description: Body length 7.0 mm. Flagellum with 24 segments; 1st flagellar segment 3.3× as long as wide. Distance between lateral ocellus and eye 1.8× ocellar diameter. Hind femur 3.9× as long as wide. 1st tergite 1.1× as wide as long, with latero-median carina in basal 0.3. Structure otherwise as described by BARRON (1978: 356) and KASPARYAN & TOLKANITZ (1999: 339-340).

Color. Black. Palps, mandible except teeth, clypeus, inner orbit, gena and outer orbit, spot on collar, tegula, subtegular ridge and side of scutellum ivory. Anterolateral and posterolateral spots on 1st tergite and posterolateral spots and lateral margins of 2nd and 3rd tergites ivory. Fore and mid legs including coxae cream yellow. Hind leg black; spot on hind trochantellus, basal 0.3 of hind tibia and apical tibial spurs ivory. Fore wing with distal brownish spot. Pterostigma dark brown.

Distribution: East Palaearctic and Oriental regions; known from China, new record for the Chinese province Shaanxi.

Euceros flagellator nov.sp. (Figs 1-5)

Holotype: (♂) China, Jilin province, Da Gu Jia, 20 km SEE Jilin, 43°47'33"N 126°46'48" E, 350 m, 21.VI.2017, E. Jendek & O. Šauša (Linz).

Etymology: The species name refers to the unique flagellar structure.

Description: Body length 9.5 mm. Flagellum with >29 segments (tips broken off); flagellar segments 5-12 highly modified, segments 6-11 with long denticular extensions on outer side, segments 10-12 with small basal extensions on inner side; segments 9-12 with rows of small oval tyloids dorsally (Fig. 3). Head large, temple slightly widened behind eye, finely punctate and shining (Fig. 5). Ocelli small, distance between lateral ocellus and eye 2.1× ocellar diameter. Occipital carina complete, not excavated medially. Frons densely rugose-punctate, dull. Face with dense punctures, shining. Clypeus not separated from face, with sparse punctures and blunt apical margin (Fig. 4). Mandibular teeth short, ventral tooth slightly smaller than dorsal tooth. Median process of pronotal collar (only partly visible) with shallow median excision. Mesoscutum with dense punctures, shiny. Notaulus sharply impressed in frontal third of mesoscutum. Mesopleuron and metapleuron densely punctate, shiny; speculum smooth. Propodeum rugose-punctate; apical area almost as long as basal area, with longitudinal rugae and median longitudinal

ridge. Fore tibia without apical tooth. Hind trochantellus not flattened ventrally. Hind femur slender, $5.0\times$ as long as high. All claws completely pectinate. Areolet of fore wing open, e. g. without vein 3rs-m. Vein M between veins 2rs-m and 2m-cu short. Vein 1cu-a postfurcal (fig. 2). 1st tergite sessile, $1.1\times$ as long as wide; its spiracle protruding; latero-median carina in basal half. All tergites densely punctate, without swellings, shiny between punctures.



Figs 1-2: *Euceros flagellator* nov.sp., holotype, ♂: (1) dorsal view, (2) lateral view.

Color. Black. Flagellum brownish; flagellar segments 6-13 with ochreous external margins and segments 8-10 with internal ochreous stripes. Palps, mandible except teeth, clypeus, face, gena and ventral half of frontal orbit ivory. Mesosoma black; mesoscutum with two small antero-lateral yellow spots on each side (Fig. 2); subtegular ridge with yellow spot, and mesopleuron with small yellow spot frontally. Tergites black; 2nd to 4th tergites with narrow yellow transverse basal bands, 7th tergite reddish-brown. Fore and mid coxae black, yellow apically; fore and mid trochanters and all trochantelli yellow; fore and mid legs otherwise reddish-yellow, its femora \pm blackish ventrally. Hind coxa, hind trochanter and hind femur black; hind tibia black, yellow in basal 0.2; hind tarsus except brown basal 2/3 of metatarsus yellow (Fig. 2). Wings hyaline; pterostigma brown.

♀ unknown.

Taxonomical remark. This new species can easily be identified by the unique flagellar structure and color pattern. In the key of non-Nearctic *Euceros* species (BARRON 1978) the species runs to *Euceros pectinis* BARRON, but differs by its flagellum and different color patterns on mesosoma, metasoma and legs.

Despite a different color pattern, this specimen might represent the unknown male of *Eucerus albibasalis* UCHIDA due to a similar form of the pronotal process, but more material and/or genetical data are necessary to confirm a possible correlation of both sexes.

Distribution: Only known from Northern China.



Figs 3-5: *Euceros flagellator* nov.sp., holotype, ♂: (3) Flagellum, ventral view, (4) head, frontal view, (5) head, dorsal view.

***Euceros kiushuensis* UCHIDA, 1958**

Material examined: Taiwan: Taichung Prov., 15 km W Lishan, 1410 m, 24.258°N 121.211°E, 1♂ 25.V.2012, leg. J. Halada (Linz); Laos: Hua Phan Prov., Ban Saleui, Phon-Pan-Mt., 20°13'30"N 103°59'26"E, 1350-1900 m, 1♀ 30.IV.2012, 1♀ 6.V.2012, 2♀♀ 27.VI.2013, 1♀ 19-21.IV.2014, leg. C. Holzschuh & natives (Linz).

Description: ♀. Body length 8.5-12.0 mm. Flagellum with 45-50 segments, 1st flagellar segment 4.0-4.5× as long as wide. Distance between lateral ocellus and eye 2.0-2.3× ocellar diameter. Hind femur 3.7-4.1× as long as wide. 1st tergite 1.2× as wide as long, latero-median carina in basal 0.3-0.4. Structure otherwise as described by BARRON (1978: 335-337) and KASPARYAN & TOLKANITZ (1999: 340-342).

Color. Yellow. Flagellar segments 1-16/18 brown, distal segments black. Mandibular teeth, v-shaped spot on ventral frons confluent with dorso-median spot on face, stemmaticum and small spot on occiput, collar, central spot and lateral stripes on mesoscutum, dorso-frontal stripe on mesopleuron, frontal margin of metapleuron, posterior spot on mesosternum, median stripe on scutellum, antero-median spot on propodeum and central transverse stripes on all tergites. Legs yellow; external and ventral stripes on hind coxa, basal 0.2-0.4 of hind femur and often base of hind tibia black. Fore wing usually slightly infusate apically; pterostigma brownish, ochreous basally.

♂. Body length 11.0 mm. Flagellum with 44 segments, 1st flagellar segment 3.2× as long as wide. Distance between lateral ocellus and eye 1.7× ocellar diameter. Hind femur 4.2× as long as wide. 1st tergite about as long as wide, latero-median carina in basal 0.5. Structure otherwise as described by BARRON (1978: 335-337) and KASPARYAN & TOLKANITZ (1999: 340-342).

Color. Yellow. Flagellum brown, flagellar segments 5-12 black, segments 5-17 ochreous laterally. Mandibular teeth, V-shaped spot on ventral frons, stemmaticum and small spot on occiput, central spot on mesoscutum, median stripe on scutellum, antero-median spot on propodeum and median and lateral spots on each tergite black. Lateral lobe of mesoscutum and frontal stripes on all femora reddish. Wings hyaline; pterostigma brownish, ochreous basally.

Distribution: Transpalaeartic and Oriental, known from Taiwan (KASPARYAN & TOLKANITZ 1999), new record for Laos.

***Euceros latitarsus* BARRON 1978**

Material examined: China: Yunnan, Gongshan 10 km NW, N27.798° E 98.583°, 2100 m, 1♀ 10.VI.2009, leg. Blank, Liston, Taeger (SDEI).

Description: Body length 8.5 mm. Flagellum with 40 segments, 1st flagellar segment 4.0× as long as wide. Distance between lateral ocellus and eye 2.1× ocellar diameter. Hind femur 5.1× as long as wide. Hind metatarsus slightly flattened. 1st tergite 1.2× as wide as long, latero-median carina in its basal 1/3. Structure otherwise as described by BARRON (1978: 348-350) and KASPARYAN & TOLKANITZ (1999: 342).

Color. Black. Flagellum black, basal 12 flagellar segments brownish. Palps, mandible except teeth, apical margin of clypeus, facial orbit and transverse median band on face, gena and upper outer orbit cream-yellow. Mesosoma black; ventral and hind edges of pronotum, spot on tegula, subtegular ridge, antero-median hook-shaped spot and posterior paramedian stripe on mesoscutum, longitudinal band on ventral mesopleuron, apical half of metapleuron, scutellum except black baso-median spot and postscutellum cream-

yellow. Apical area of propodeum reddish. Tergites black; 1st tergite basally and apically cream-yellow, 2nd to 7th tergites with apical cream-yellow bands (wider laterally). Legs mainly reddish-yellow; fore and mid coxae and trochanters cream-yellow; hind trochanter yellow, with brown spot; hind tibia black, narrowly yellowish at base; hind tarsus black, 4th hind tarsomere ivory. Wings hyaline, pterostigma brown.

D i s t r i b u t i o n : Known from India (Himalaya region), new record for China.

***Euceros rufocinctus* (ASHMEAD, 1906) (figs 6-7)**

M a t e r i a l e x a m i n e d : China, Jilin province, Da Gu Jia, 20 km SEE Jilin, 43.4733°N 126.4648°E, 350 m, 1♀ 21.VI.2017, leg. E. Jendek & O. Šauša (Linz); Laos, Hua Phan Prov., Ban Saleui, Phon-Pan-Mt., 20°13'30"N 103°59'26"E, 1350-1900 m, 1♀ 19-21.IV.2016, leg. C. Holzschuh & natives (Linz).

D e s c r i p t i o n : Body length 7.0-7.5 mm. Flagellum with 30-31 segments, 1st flagellar segment 4.2-4.8× as long as wide. Distance between lateral ocellus and eye 1.8-2.3× ocellar diameter. Hind femur 3.8-4.2× as long as wide. 1st tergite 1.1× as wide as long, latero-median carina in basal 0.5. Structure otherwise as described by BARRON (1978: 355) and KASPARYAN & TOLKANITZ (1999: 347-348).

Color. Chinese ♀ (Fig. 6): black. Palps, inner orbit and spot on upper outer orbit ivory. Mandible reddish medially. 2nd and 3rd tergites red. All coxae black; fore and mid trochanters and trochantelli ivory, with black spots; fore and mid femora reddish-yellow, with black stripes; fore and mid tibiae and tarsi reddish-yellow. Hind leg except yellow tibial spurs black. Wings hyaline, pterostigma brown.

Laotic ♀ (Fig. 7): black. Palps, mandible except teeth, clypeus, inner orbit, gena and outer orbit pale yellow. 2nd and 3rd tergites red. All coxae black; fore and mid legs otherwise reddish-yellow, its distal tarsomeres brownish; hind leg black, bases of hind tibia and hind metatarsus and tibial spurs yellow. Wings hyaline, pterostigma brown.

Remark. As already stated by BARRON (1978: 355), the color pattern of females of *Euceros rufocinctus* is variable. The typical morphological features, e.g. the deeply incised median occiput and form of median pronotal process, are similar in the East Palearctic and Oriental specimens examined here.

D i s t r i b u t i o n : East Palearctic and Oriental regions, new records for China and Laos.



Figs 6-7: Heads of *Euceros rufocinctus* (ASHMEAD), frontal view: (6) ♀ from Northern China, (7) ♀ from Laos.

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Zusammenfassung

In dieser Studie werden neue Verbreitungsangaben und Angaben zur Struktur und Färbung von fünf asiatischen Arten der Gattung *Euceros* GRAVENHORST gemacht.

Eine neue Art, *Euceros flagellator* nov.sp., wird beschrieben und illustriert. Sie ist charakterisiert durch die eigenartige Struktur der Fühlergeißel und der Färbung des Männchens.

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