

A New Species of *Omphale* Haliday, 1833 (Hymenoptera, Eulophidae) from Bulgaria

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Abstract: A new species of the genus *Omphale* Haliday (Hymenoptera: Eulophidae: Entedoninae), *Omphale rodopiensis* Yefremova, Yegorenkova & Boyadzhiev, sp. n. is described from the Rhodope Mts., Bulgaria.

Key words: Chalcidoidea, Entedoninae, *Omphale rodopiensis*, description, taxonomy.

Introduction

The large genus *Omphale* Haliday, 1833 (Hymenoptera: Eulophidae: Entedoninae) occurs in all zoogeographical regions (GIJSWIJT 1976, HANSSON 1996, 1997, 2004, HANSSON & SHEVTSOVA 2012, NARENDHAN 2006) and currently includes 266 valid species (NOYES 2016). The most recently described species of *Omphale* were discovered in South Africa (YEFREMOVA 2011) and Europe (11 new species, see HANSSON & SHEVTSOVA 2012). HANSSON & SHEVTSOVA (2012) were first to sort all previously known species of the genus into six species groups.

In this article, we diagnose, describe and illustrate a new distinctive species of *Omphale* with 3-4 admarginal setae and radial cell bare.

Material and Methods

The specimens were collected by sweeping or screen-sweeping (BOYADZHEV & TRIAPITSYN 2007) in grass communities in the Rhodope Mountains and fixed in 96% ethanol. In laboratory conditions, they were air dried using isopropanol or HMDS and mounted on card-points. The antennae and fore wings of the two paratypes were mounted on microscope slides with Canada balsam. They were examined under a Leica

DM1000 compound microscope and photographed using a Leica DFC-295 digital still camera. The holotype was photographed with reflected light under a Carl Zeiss SteREO Discovery, V8 with AxiCam ERc 5s digital still camera. For registration of the wing interference patterns (WIPs) with reflected light, we used a Carl Zeiss Amplitiv microscope supplied with a Canon PowerShot SD990 IS digital camera and with a micromanipulator (BOYADZHEV et al. 2012). The junior author adapted the method of SHEVTSOVA & HANSSON (2011) for this purpose by arranging the wings between two cover glasses (see inset of Fig. 7). After that, coverslips were glued only on their periphery. For further mounting on microscope micromanipulator or for sticking on the pin below the original specimen, the lower coverslip was previously glued on a card-board with suitable shape on its lower proximal third. Thus the wings remain in the permanent micro-slide not included in a mediator and allow further examinations or registration of WIPs easily. All photos were processed by CombineZP software and following the method of SHEVTSOVA & HANSSON (2011) were subsequently edited by manually combining, adjusting and cleaning in Adobe Photoshop. Examinations and descriptions were done under an

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Olympus SZ51 stereomicroscope. Morphological terminology and measurements follows that of GIBSON (1997) and <http://www.neotropicalesulophidae.com/Terminology.html> (© Christer Hansson). The recent identification key to the European species of *Omphale* by HANSSON & SHEVTSOVA (2012) was used as the basis for our study.

The abbreviations used in the text are listed below: F1-F3 – funicular segments 1-3 (flagellomeres 1-3); C1-C2 – claval segments 1-2 (clavomeres 1-2); SMV, MV, PMV, STV – submarginal, marginal, postmarginal and stigmal veins; POL – the minimum distance between posterior ocelli, OOL – the minimum distance between eye margin and the adjacent posterior ocellus. All measurements are given in millimeters (mm).

The examined specimens are deposited in the collections indicated by the following acronyms: PUPB, Department of Zoology, University of Plovdiv “Paisii Hilendarski”, Plovdiv, Bulgaria; IBER, Institute of Biodiversity and Ecosystem Research, Sofia, Bulgaria.

Results

Genus *Omphale* Haliday, 1833

Omphale Haliday, 1833: 339. Type species: *Omphale salicis* Haliday, 1833, by monotypy.

Diagnosis. Head with vertex not projecting antero-laterally, scape and funicular segments not flattened, mid lobe of mesoscutum with two pairs of setae (rarely with one pair or with setae missing) (HANSSON 2004), fore wing usually hyaline, but if infuscate then not in a longitudinal pattern. Clypeus delimited by grooves at least laterally (HANSSON 2012); pronotum reduced and usually not visible in dorsal view; occiput without median groove.

Biology. Endoparasitoids of Cecidomyiidae (Diptera) (BOUČEK & ASKEW 1968; GILSWILT 1976; SCHAUFF 1991; HANSSON 1996; EMEHUTE 1998).

Distribution. Cosmopolitan (NOYES 2016).

Description.

Omphalerodopiensis YEFREMOVA, YEGORENKOVA & BOYADZHIEV sp. n.

(Figs 1-7)

Diagnosis. Forewing with 3-4 admarginal setae and long bare radial cell, STV broadly enlarged and PMV 0.83-0.93 times as long as STV. Gaster 2.1-2.5 times as long as broad. Pronotum and mesoscutum brownish with green tint; lower face, gaster ventrally and legs yellow.

Holotype: female: Bulgaria, Rhodope Mts., mountain hostel Persenk, 41°50'45"N, 24°33'02"E,

1690 m a.s.l., 13.VIII.1996, by sweeping, dried with isopropanol (leg. A. Stojanova) (IBER). Paratypes: 3 females: the same data as holotype (IBER, PUPB); 1 female: Bulgaria, Rhodope Mts., mountain hostel Persenk, 41°50'45"N, 24°32'02"E, 1690 m, 17.VIII.2016, by screen-sweeping, dried with HMDS (leg. P. S. Boyadzhiev) (PUPB); 1 female: Bulgaria, Rhodope Mts., village Lilkovo, 41°54'09"N, 24°35'14"E, 1474 m, 17.VIII.2016, by screen-sweeping, dried with HMDS (leg. P. S. Boyadzhiev) (IBER); 1 female: Bulgaria, Rhodope Mts., village Hvoyna, 41°52'14"N, 24°41'18"E, 700 m, 18.VII.1993, by sweeping, dried with isopropanol (leg. P.S. Boyadzhiev) (PUPB).

Body length 0.94-1.7 mm (holotype: 1.04 mm), fore wing length 0.66-1.02 mm (holotype: 0.72 mm).

Colour (Figs 1-4). Body mostly yellow, with green tint. Head yellow with small spots around ocelli or with a brownish spot below frontal grooves up to lateral ocelli, occiput with a brownish spot. Mandibles light brownish. Pronotum and mesoscutum brownish with green tint, mid lobe of mes-



Fig. 1-4. *Omphalerodopiensis* sp. n., female: 1 – Head, frontal view; 2 – Head and thorax, dorsal view (holotype); 3 – Lateral view of body (holotype); 4 – Dorsal view of body (holotype). Scale bars = 0.01 mm for inset of Fig. 1; for others = 0.1 mm

oscutum brown or with lightly fuscous lateral parts, scutellum yellow with brownish median longitudinal strip, tegulae yellow, dorsellum citron yellow, smooth and narrow, lateral sites of propodeum yellow, metasoma yellow with green tint and with more or less brownish transverse stripe on each tergum. Scape and pedicel yellow with brownish dorsal parts, flagellum brownish. All legs yellow sometimes with basal parts of hind coxae lightly fuscous.

Head 1.30-1.33 times as broad as high and 2.17 times as broad as long. Eyes 1.24 times as high as broad with sporadic setae. POL 1.79 times as OOL. Face smooth. Clypeus delimited and covered by four setae (Fig. 1). Mandibles with two large teeth and one small tooth (inset of Fig. 1). Frontal suture present as V-shaped lines. Antennal scrobes join on frontal suture in upper third of eyes height; subtorular area smooth. Antennae inserted slightly above lower level of eyes. Antenna (Fig. 5) with scape 4.6 times as long as broad, pedicel 1.9-2.0 times as long as broad, scape 2.25-2.40 times as long as pedicel. With three anneli (inset of Fig. 5). F1 1.8-2.14 times as long as broad and 1.14-1.33 times as long as F2, F2 1.8-2.0 times as long as broad and as long as F3, F3 1.8-2.0 times as long as broad, clava 2-segmented, 4.5-4.6 times as long as broad and 1.9-2.0 times as long as F3, C1 equal to C2, C2 with long apical sensillum.

Mesosoma. Thorax + propodeum 1.21-1.43 times as long as broad. Pronotum smooth. Mesoscutum 1.53-1.69 times as broad as long, with shallow notauli, smooth; mid lobe of mesoscutum with one pair of setae. Scutellum 1.20 times as long as broad, smooth, with one pair of long setae. Dorsellum citron yellow, smooth and narrow, 0.14-0.20 times as long as wide, and 0.34-0.40 times as long as length of median propodeum. Propodeum 6-8 times as broad as long, smooth, with short median carina, spiracle small with rim. Callus with two long brown setae. Fore wing (Fig. 6) 1.79-1.94 times as long as broad. MV 4.85-5.0 times as long as STV. PMV 0.83-0.93 times as long as STV. Speculum closed; admarginal setae 3-4; radial cell bare and 2.2 times as long as PMV; STV moderately to broadly enlarged (especially in the biggest female from village Lilkovo: inset of Fig. 6). Forewing WIP (Fig. 7) with apical ½ mix of yellow and magenta, basal ½ magenta; borders with narrow bands in blue-green, yellow and magenta.

Metasoma. Petiole yellow. Gaster 2.1-2.5 times as long as broad, 1.6-1.9 times as long as length of mesosoma, with 7th gastral tergum 1.0-1.3 as long as wide and 0.17-0.26 times as long as length of gaster.

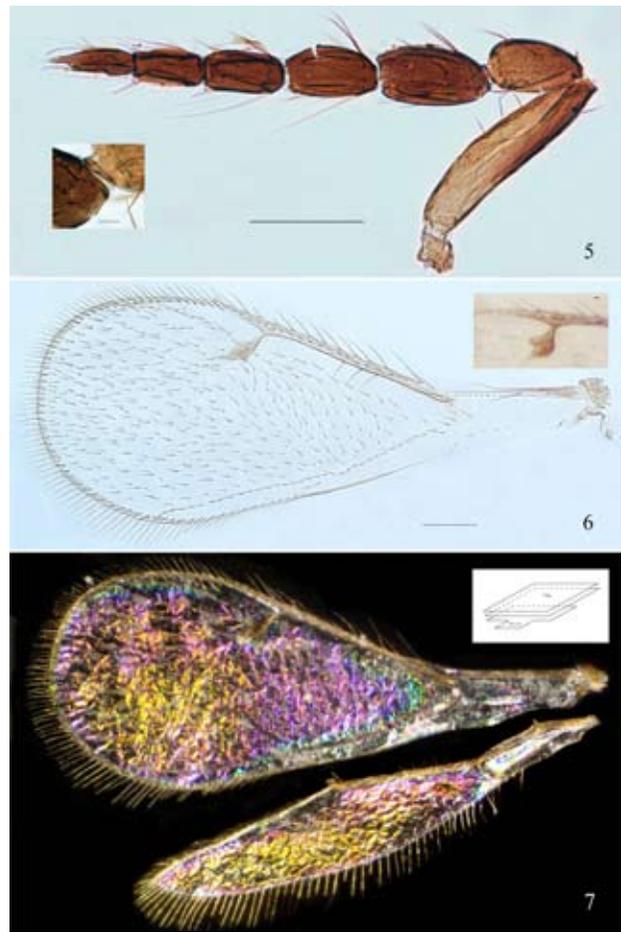


Fig. 5-7. *Omphale rodopiensis* sp. n., female: 5 – Antenna; 6 – Forewing; 7 – Wing interference patterns. Scale bars = 0.01 mm for insets of Figs 5 and 6; for others = 0.1 mm

Distribution. Bulgaria.

Biology. Unknown.

Etymology. Named after Rhodope Mountains (Greek: Ροδόπη, Rodopi) where holotype and paratypes were collected.

Discussion

The best identification key of the European *Omphale* is published by HANSSON & SHEVTSOVA (2012). *O. rodopiensis* sp. n. is similar to *O. matrana* ERDÖS, 1954 and *O. ochra* HANSSON & SHEVTSOVA, 2012 and runs to couplets 18(17) and 23(22). To include it in the key of European species, the following changes can be made:

- 18(17) Gaster elongate, at least 1.5× as long as mesosoma..... 18a
 – Gaster shorter, 1.4-1.5× as long as mesosoma...
 *O. matrana* ERDÖS
 18a(18) Gaster about 2.0× as long as mesosoma..... *O. ochra* HANSSON & SHEVTSOVA
 – Gaster 1.6-1.9× as long as mesosoma. .

..... *O. rodopiensis* sp. n.
 23(22) Mesoscutum brownish or dark brown with golden and green metallic tinges, midlobe with one pair of setae (posterior pair). Fore wing with 3-4 admarginal setae.....23a
 – Mesoscutum with anterior 1/2 golden green with a median yellowish brown stripe, posterior 1/2 yellowish brown, midlobe with two pairs of setae. Fore wing with 5 admarginal setae.....*O. ochra* HANSSON & SHEVTSOVA
 23a(23) Vertex dark brown with metallic tinges. Dorsellum yellow, smooth and convex, 0.3× as long as wide, and 0.6× as long as length of median propodeum.....*O. matrana* ERDÖS
 – Vertex yellowish brown or yellowish with small brownish spots around the ocelli. Dorsellum citron yellow, smooth and narrow, 0.2× as long as wide, and 0.3-0.4× as long as length of median propodeum *O. rodopiensis* sp. n.
Omphale rodopiensis sp. n. is similar to *O. acu-*

minata GIJSWIJT, 1976, which belongs to the *salicis* species group by having bare radial cell and enlarged stigmal vein. Both species differ as follow:

1(2) Gaster with 7th tergite 0.6-1.1 times as long as wide; F1 1.0 times as long as F2. Clava 4.0 times as long as wide and 1.9 times as long as F3. Face and clypeus bluish green metallic..... *O. acuminata* GIJSWIJT
 2(1) Gaster with 7th tergite 1.0-1.3 times as long as wide. F1 about 1.2 times as long as F2. Clava 4.5-4.6 times as long as wide and 1.95-2.0 times as long as F3. Face and clypeus yellow.....
*O. rodopiensis* sp. n.

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