



Two new Eulophinae genera (Chalcidoidea: Eulophidae) from the Neotropical region

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Abstract

Two new Eulophinae genera, *Elasmarion* and *Celesterion*, are described based on material from sweep-net and malaise trap samples mainly from Costa Rica. The new genera are each represented by a single species, both described here, *E. longipes* and *C. reticulatum* **spp. nov.** The material for both groups is abundant and strongly female biased, 119 females and two males in *Elasmarion*, and 63 females and two males in *Celesterion*. *Elasmarion* is similar to the Old World genus *Eulophomorpha* Dodd, and a table with distinguishing characters is included, it also has some morphological features similar to the genus *Elasmus* Westwood. *Celesterion* does not show close morphological similarity to any genus in the Eulophinae. The biology is unknown for both species.

Key words: new species, Belize, Costa Rica, Peru

Introduction

Taxonomic knowledge of the Eulophinae (Chalcidoidea: Eulophidae) fauna in the Neotropical region is very poor, at both the genus and species levels. LaSalle *et al.* (2006) listed 37 genera in the subfamily from the Neotropical region, but hardly any of them have been investigated in this part of the world. The one exception is the genus *Euplectrus* Westwood, which was treated by Hansson *et al.* (2015), including 90 species from Costa Rica, and with a plethora of biological information as all included specimens were reared.

Below two new genera, including one new species each, are described, and since both species appear to be fairly common it is justified to introduce both genera. The descriptions are based on a large number of specimens, either swept or caught in malaise traps over several years, mainly in Costa Rica. No material has been reared or is otherwise associated with the biology of the species, so the biology and host remain to be discovered for both species.

Morphological abbreviations and acronyms

Morphological terms follow Gibson (1997) with the following exceptions or additions: F1–4 = flagellomeres 1–4; mesoscutellum is used instead of scutellum; Gt_{1–7} = gastral tergites 1–7; OOL = distance between one posterior ocellus and eye; POL = distance between posterior ocelli; T1–4 = tarsomeres 1–4. For illustrations of the morphological terms see www.neotropicaleulophidae.com.

Collecting methods: MT = Malaise trap, YPT = yellow pan trap.

The following acronyms are used to designate the museums in which specimens are deposited: MZLU = Entomological collections, Biological Museum, Lund University, Sweden; MZUCR = Museo de Zoología, Universidad de Costa Rica, San José, Costa Rica; NHMUK = the Natural History Museum, London, England.

The ratios in the descriptions are based on the female holotypes and one of the male paratypes.

Imaging

The colour images of the specimens were made using Canon camera equipment including an EOS 5D Mark IV body, a telezoom lens, 70–300 mm (but using only 135 & 200mm), with a 10× Mitutoyo microscope lens attached, and macro twin lite MT-24 EX for illumination. The camera was attached to a Cognisys stackshot macrorail system. The picture stacking was done with Helicon Focus version 6 software, and Adobe Photoshop was used for image processing. The SEM micrographs are from uncoated specimens and were done with a Hitachi SU 3500 microscope, in low vacuum and using a backscatter detector.

Identification

There are no identification keys to Neotropical genera of the Eulophinae. In the key to Nearctic genera by Schauff *et al.* (1997) *Elasmarion* runs to couplet 23 where the characters are contradictory: in *Elasmarion* male funiculars are unbranched, but the clypeus is entire; *Celesterion* runs to couplet 26 where toruli are distinctly above the lower level of the eyes, but the scape does not extend above the level of the vertex.

Elasmarion gen. nov.

Type species: *Elasmarion longipes* sp. nov.

Etymology. The name is based on the fact that this new genus shows some similarities with the genus *Elasmus* Westwood. The gender is neuter.

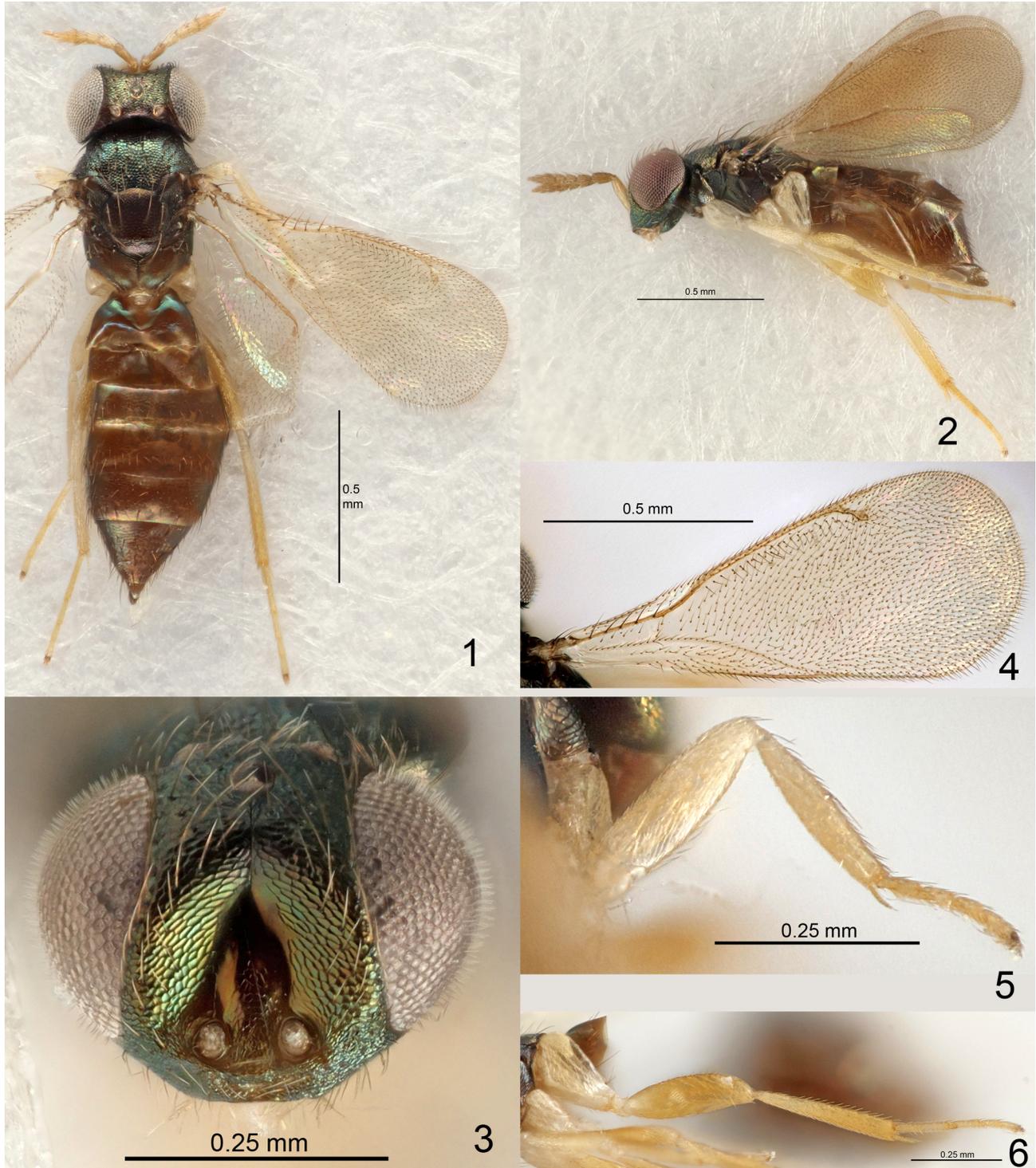
Diagnosis. Head with hairy eyes (Figs 3, 7); antennae attached just below lower level of eyes (Fig. 3); malar sulcus absent (Fig. 8); frons and vertex with scattered long and strong setae (Fig. 3). Antenna in both sexes with six flagellomeres: three funiculars and three claval segments (Figs 8, 9); male flagellomeres unbranched (Fig. 9). Thoracic dorsum with rather strong reticulation (Figs 1, 7); mesoscutum with notauli absent, midlobe with numerous long and strong setae scattered over the whole surface; mesoscutellum without longitudinal grooves, with two pairs of long and strong setae. Propodeum with an incomplete median carina, missing in posterior part (Fig. 7). Fore wing with postmarginal vein 1.2× as long as stigmal vein (Fig. 4). Fore leg with tibial spur strong, as long as basitarsus, and slightly bent, tarsus short with tarsomeres subequal in length (Fig. 5); mid and hind legs long and pointing backwards in dead specimens (Fig. 2), each with basitarsus very long, as long as combined length of T2–4 (Fig. 6); hind coxa large (Figs 2, 6). Petiole very short, just a narrow strip. Female and male are very similar.

Description. Head with eyes strongly hairy; malar sulcus absent; clypeus not delimited, clypeal area reticulate with ventral margin straight; antennal scrobes undelimited and smooth; occipital margin with a sharp edge; occiput concave in dorsal view, with strong reticulation; frons and vertex with scattered long and strong setae. Antenna inserted just below lower level of eyes, scape short and not reaching anterior ocellus; scape wider in male; with six flagellomeres: three funiculars and three claval segments, female with one large anellus, no anelli visible in male; male with unbranched flagellomeres. Pronotum short, without a carina along anterior margin of pronotal collar. Mesoscutum with rather strong reticulation throughout; midlobe with numerous long and strong setae scattered over the whole surface; notauli absent. Mesoscutellum with rather strong reticulation throughout, without longitudinal grooves, with two pairs of setae, one pair attached close to anterior margin, and one pair attached posterolaterally. Axillae with rather weak reticulation, advanced forward by half their length in front of transscutal articulation. Dorsellum with rather weak reticulation and with posterior margin rounded triangular. Propodeum with an incomplete median carina, missing in posterior part, with very weak reticulation on either side of median carina; callus with weak reticulation and with 4–6 setae. Fore wing with 7–9 setae on dorsal surface of submarginal vein; speculum absent to small, closed below and towards base of wing; costal cell with a complete row of setae on dorsal surface along anterior margin, and with an irregular but complete row of setae on ventral surface; with a row of admarginal setae along entire marginal vein on ventral side of membrane; postmarginal vein 1.2× as long as stigmal vein. Fore leg with a short tarsus with all four tarsomeres subequal in length; mid and hind legs with long tarsi with basitarsus very long, as long as combined length of T2–4; hind leg with coxa large but not flattened, tibia with two strong tibial spurs. Petiole very short, barely visible in dorsal view. Gastral tergites weakly sclerotized, ±shrivelled even when dried in a critical point drier, with very weak reticulation and shiny.

Elasmarion longipes sp. nov.

Figs 1–10

Description (female holotype). Length 2.0 mm. Head with frons with strong reticulation; antennal scrobes smooth; frons close to eyes with long and strong scattered setae. Vertex with rather strong reticulation and with long and strong scattered setae. Fore wing with nine setae on dorsal surface of submarginal vein; speculum absent. Propodeal callus with five setae. Gaster elongate.

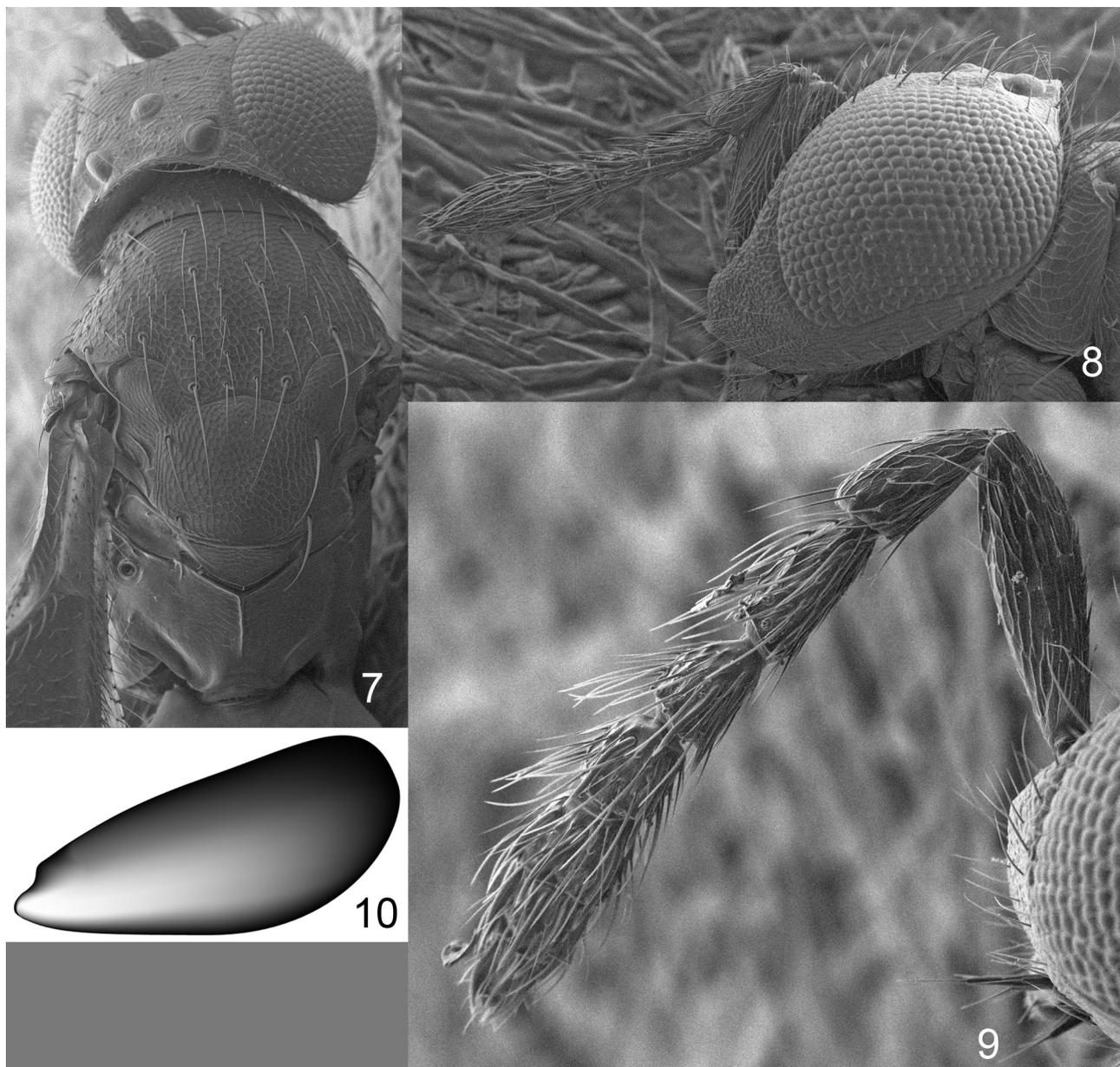


FIGURES 1–6. *Elasmarion longipes* sp. nov., female paratypes; 1 body in dorsal view; 2 body in lateral view; 3 head in frontal view; 4 right fore wing; 5 left fore leg; 6 left hind leg.

Colour. Head golden-purple. Antennae yellowish-brown, scape and pedicel somewhat darker than flagellum. Mesoscutum, mesoscutellum and propodeum golden-purple. Legs yellowish-white to yellowish-brown. Wings hyaline. Petiole yellowish-brown. Gaster dark brown, tergites with metallic tinges.

Ratios. **Head:** width/length (dorsal view) 1.95; width/length (frontal view) 1.15; POL/OOL 4.25; POL/posterior ocellus width 2.13; head width/mesosoma width 1.05; mouth width/malar space 1.19; malar space/eye height 0.34; scape length/eye height 0.60; flagellum+pedicel length/mesosoma width 0.95; scape length/width 2.80; F1 length/width 1.57; F2 length/width 1.29; F3 length/width 0.88; clava length/width 2.62; clava width/F1 width 1.20; pedicel length/F1 length 1.64; F1 width/pedicel width 1.17. **Mesosoma:** length/width 1.41; midlobe mesoscutum length/mesoscutellum length 1.33; dorsellum length/propodeum length 0.36; mesoscutellum length/width 0.83; fore wing length/width 2.50; costal cell length/width 10.3; costal cell length/marginal vein length 0.94; marginal vein length/stigmal vein length 4.13; postmarginal vein length/stigmal vein length 1.19; mid tarsus length/mid basitarsus length 0.49; hind tarsus length/hind basitarsus length 0.47. **Metasoma:** gaster length/width 2.58; gaster length/mesosoma length 1.54; Gt₇ length/width 0.62.

Variation in paratypes. Length 1.2–2.0 mm. Fore wing speculum absent to present and small and closed below and towards base of wing; submarginal vein with 7–9 setae on dorsal surface. Propodeal callus with 4–6 setae.



FIGURES 7–10. *Elasmarrion longipes* sp. nov., paratypes; **7** head+mesosoma in dorsal view, female; **8** head+antenna in lateral view, female; **9** antenna in lateral view, male; **10** left mandible, female.

Colour. Head golden-purple to golden-green. Antennae white to yellowish-brown. Mesoscutum and propodeum golden-purple to golden-green; mesoscutellum metallic purple, golden-purple or golden.

Male. Length 1.1–1.2 mm. Legs with fore and hind coxae pale brown to dark brown, mid coxa yellowish-brown; femora pale brown. Otherwise as in female.

Ratios. **Head:** width/length (dorsal view) 2.07; width/length (frontal view) 1.53; POL/OOL 3.50; head width/mesosoma width 0.97; mouth width/malar space 0.93; malar space/eye height 0.44; scape length/eye height 0.72; flagellum+pedicel length/mesosoma width 1.0; scape length/width 3.29; F1 length/width 2.20; F2 length/width 1.33; F3 length/width 1.0; clava length/width 2.57; clava width/F1 width 1.40. **Mesosoma:** length/width 1.23. **Metasoma:** gaster length/width 1.77; gaster length/mesosoma length 1.24.

Distribution. Costa Rica, Peru.

Etymology. From the Latin *longus* = long, and *pes* (*pedis*) = foot, based on the long mid and hind tarsi.

Material. Holotype female labelled “COSTA RICA, Alajuela, San Carlos, Sendero Pilón, 600 m, LN 269100/457900, 4.viii–5.ix.2000, MT, G. Carballo, #58461”, deposited in MZLU. Paratypes (117♀ 2♂): following from same locality as holotype but collected 26.viii–8.ix.1999 (1♀), 9.ix–1.x.1999 (2♀), 26.x–22.xi.1999 (3♀), 29.x–5.xi.1999 (2♀), 15.i–1.ii.2000 (1♀), 4.viii–5.ix.2000 (5♀), 5.ix–7.x.2000 (1♀); 1♀ “COSTA RICA, Alajuela, Parque Nacional Arenal, 10°28'N, 84°45'W, 617 m, 21–28.ii.2005, C. Hansson”; 2♀ “COSTA RICA, Alajuela, Upala, Dos Ríos, Estación San Gerardo, 600 m, 10.xi.2000, D. Briceño, MT, LN 384374_317994, #61179”; 2♀ “COSTA RICA, Guanacaste, Parque Nacional Palo Verde, 150m NE Estación, 40 m, LN 260952_385020, 17.viii–13.ix.1999, I. Jimenez, # 53257”; following from same locality as previous but collected 6.vii–17.viii.1999 (1♀), 16.vii–17.viii.1999 (10♀), 17.viii–13.ix.1999 (1♀), 6.x–8.xi.1999 (2♀), 10–18.viii.2000 (1♀), 10.viii–9.ix.2000 (1♀), 9.ix–10.x.2000 (3♀); 1♀ “COSTA RICA, Guanacaste, Bagaces, Parque Nacional Palo Verde, Sector Palo Verde, Cerro Guayacán, 212 m, 18.viii–14.ix.1999, I. Jiménez, MT, LN 259350_389600, #53254”; 4♀ “COSTA RICA, Guanacaste, Bagaces, Parque Nacional Palo Verde, 400m E. Puente La Espuela (Quebrada Mula), 10 m, 10.x–9.xi.2000, I. Jiménez, MT, LN 258980_396500, #60219”; 3♀ 1♂ “COSTA RICA, Guanacaste, Bagaces, Parque Nacional Palo Verde, Camino de Alto Viejo, 40 m, 11.i–10.ii.2001, I. Jiménez, MT, LN 386300_260770, #61363”; 4♀ “COSTA RICA, Guanacaste, Bagaces, Parque Nacional Palo Verde, Estación Palo Verde, 10 m, 10.x–10.xi.2000, I. Jiménez, MT, LN 259050_388400 #60220”; 1♀ “COSTA RICA, Guanacaste, B.N. Diríá, Retallano, alrededores de Torre de Control de Incendio, 600–700 m, 18.x–15.xi.2001, I. Jimenez, LN 238550_358650, #65437”; 3♀ “COSTA RICA, Guanacaste, R.V.S. Bosque Diríá, 200 m, 14–15.ii.2011, LN 239083_358610, 200 m, J.S. Noyes, BMNH(Ent) 2011-93”; 1♀ “COSTA RICA, Guanacaste, Santa Cruz, Parque Nacional Marino Las Baulas, 0 m, 16.viii.2000, Y. Cárdenas, LN 258040_332690, #59488”; 1♀ “COSTA RICA, Guanacaste, Parque Nacional Santa Rosa, 300 m, BH-12-C, 24.viii–14.ix.1985, D.H. Janzen & I.D. Gauld”, following from same locality as previous but collected 26.x–16.xi.1965 (3♀), 16.xi–7.xii.1985 (1♀), 7–28.xii.1985 (2♀), 8.ii–2.iii.1986 (1♀), 14.viii–6.ix.1986 (1♀), 6–27.ix.1986 (6♀), 27.ix–18.x.1986 (8♀), 18.x–18.xi.1986 (2♀), 8–29.xi.1986 (2♀), 21.ii–14.iii.1987 (4♀), 14.iii–4.iv.1987 (1♀); 1♀ “COSTA RICA, Guanacaste, Santa Rosa, Bosque Humedo, 10°51'N 85°31'W, 300 m, ii.2007, J.S. Noyes, BMNH(Ent) 2010-21”, 1♀ from same locality as previous but collected 23.ii.2009; 1♀ “COSTA RICA, Heredia, Estación Biológica La Selva, 75 m, 10°26'N, 84°01'W, 23–24.ii.2005, J.S. Noyes”; following from same locality as previous but collected 14.x.1994 (1♀), 14.ix.1995 (1♀), x.1995 (1♀), xi.1995 (1♀), xii.1995 (2♀), 1.iv.1996 (1♀), iv.1996 (2♀), 24–25.ii.2011 (1♀); 1♀ “COSTA RICA, Limón, 4km NE Bataam, x–xi.1999, P. Hanson”; 2♀ “COSTA RICA, Puntarenas, Golfito, Parque Nacional Corcovado, Estación Agujas, Cerro Quebraditos, 782 m, 20.ii–15.iii.2001, J. Azofeifa, MT, LS 521400_274300, #61700”; 2♀ “COSTA RICA, Puntarenas, Estación Agujas, Cerro Quebraditos, 782 m, 15.iii–28.iv.2001, J. Azofeifa, MT, LS 521400_274300, #62408”; 1♀ “COSTA RICA, Puntarenas, Golfito, Estación Agujas, 250–350m, 13–30.v.2000, J. Azofeifa, Red de Golpe, LS 276750_526550, #56680”; 1♀ “COSTA RICA, Puntarenas, A.C.O, Golfito, Estación Agujas, 250–350m, 15.viii–15.ix.1999, J. Azofeifa, MT, LS 276750_526550, #53264”; 1♀ “COSTA RICA, Puntarenas, Osa Peninsula, Estación Agujas, 18km W Puerto Jimenez, 300 m, 15.i–15.ii.2000, J.A. Azofeifa”; 2♀ “COSTA RICA, Puntarenas, Golfito, Cerro Rincón, La Tigrilla, 600 m, x.2000, J. Azofeifa, MT, LS 523600_274500, #60080”; 1♀ “COSTA RICA, Puntarenas, Golfito, Parque Nacional Corcovado, Cerro Rincón, La Tigrilla, 600 m, ix.2000, J. Azofeifa, MT, LS 523600_274500, #59153”; 2♀ “COSTA RICA, Puntarenas, Parque Nacional Corcovado, Los Patos, 08°33'N, 83°30'W, 200 m, ii.2000, MT&YPT, J.S. Noyes & J.A. Azofeifa”; 1♂ from same locality as previous but collected 1–9.iii.2000; 1♀ “COSTA RICA, Puntarenas, Los Charcos de Osa, 08°40'N, 83°30'W, 50 m, 18–19.ii.2008, J.S. Noyes”; 1♀ “COSTA RICA, Puntarenas, RA Cabo Blanco, 09°35'N, 85°06'W, 30 m, 16–17.ii.2009, J.S. Noyes”; 1♀ “PERU: Junin, Satipo, 21–24.i.1984, MT, L. Huggert” (MZLU). Paratypes deposited in MZLU, MZUCR, NHMUK.

Celesterion gen. nov.

Type species: *Celesterion reticulatum* sp. nov.

Etymology. No specific meaning intended. The gender is neuter.

Diagnosis. Head large with large eyes in female (Figs 14, 17). Antenna in both sexes with six flagellomeres: four funiculars and two claval segments (Figs 17, 18), male flagellomeres unbranched (Fig. 18). Thoracic dorsum with very strong reticulation (Figs 11, 15); mesoscutum with notauli absent, midlobe with four pairs of setae; mesoscutellum without longitudinal grooves, with two pairs of setae. Propodeum with two submedian, somewhat irregular carinae (Fig. 16). Fore wing with postmarginal vein 0.8× as long as stigmal vein (Fig. 13). Petiole very short. Female and male are very similar.

Description. Head with large eyes in female, smaller in male; with a complete and slightly curved malar sulcus; clypeus semicircular with ventral margin straight; antennal scrobes undelimited and smooth; occipital margin carinate; occiput concave in dorsal view, with strong reticulation. Antennae inserted distinctly above lower level of eyes but with scape short, not reaching anterior ocellus; scape wider in male; with six flagellomeres: four funiculars and two claval segments, no anelli visible; male with unbranched flagellomeres. Pronotum reduced, barely visible in dorsal view, without a carina along anterior margin of pronotal collar. Mesoscutum with very strong reticulation throughout; midlobe with four pairs of setae; notauli absent. Mesoscutellum with very strong reticulation throughout, without grooves, with two pairs of setae, one pair attached close to anterior margin, and one pair attached postero-laterally. Axillae with strong reticulation, advanced forward by half their length in front of transscutal articulation. Dorsellum with strong reticulation and with posterior margin rounded. Propodeum with two submedian, somewhat irregular carinae, with reticulation on either side of carinae; spiracles with a short longitudinal carina from anterior margin, carina directed towards lateral panels of metanotum; callus with strong reticulation and with 7–9 setae. Fore wing with four setae close to antero-apical margin, and with a complete row, consisting of nine setae, on ventral surface; with a row of admarginal setae along entire marginal vein on ventral side of membrane; postmarginal vein 0.8× as long as stigmal vein. Hind leg with tibial spur ½ the length of basitarsus. Petiole very short, barely visible in dorsal view. Gaster with Gt_{1,2} smooth, Gt_{3,7} with weak reticulation.

Celesterion reticulatum sp. nov.

Figs 11–18

Description (female holotype). Length 1.2 mm. Head with lower face smooth, clypeus with weak reticulation; frons with weak reticulation, antennal scrobes indistinct but with median part of frons sunk to fit the antennae, non-sunken parts close to eyes with scattered setae. Vertex with weak reticulation and with scattered setae. Propodeal callus with nine setae. Fore wing with speculum present and closed below and towards base of wing; costal cell with four setae close to antero-apical margin, and with a complete row, consisting of nine setae, on ventral surface. Gaster ovate with apex ±pointed.

Colour. Head and mesosoma dark brown, non-metallic. Antennae yellowish-brown with dorsal part of pedicel and flagellum darker. Legs with coxae pale brown, trochanters, femora, tibiae and tarsi yellowish-brown. Wings hyaline. Gaster dorsally pale brown, ventrally yellowish-brown, lateral parts of tergites dark brown.

Ratios. **Head:** width/length (dorsal view) 1.68; width/length (frontal view) 1.23; POL/OOL 4.67; POL/posterior ocellus width 2.0; head width/mesosoma width 1.23; mouth width/malar space 1.54; malar space/eye height 0.25; scape length/eye height 0.55; flagellum+pedicel length/mesosoma width 0.81; scape length/width 4.40; F1 length/width 1.0; F2 length/width 0.50; F3 length/width 0.63; F4 length/width 0.63; clava length/width 1.75; clava width/F1 width 1.60; pedicel length/F1 length 1.80; F1 width/pedicel width 1.0. **Mesosoma:** length/width 1.38; midlobe mesoscutum length/mesoscutellum length 1.37; dorsellum length/propodeum length 0.60; mesoscutellum length/width 0.87; fore wing length/width 2.21; costal cell length/width 14.0; costal cell length/marginal vein length 0.89; marginal vein length/stigmal vein length 5.88; postmarginal vein length/stigmal vein length 0.80. **Metasoma:** gaster length/width 1.57; gaster length/mesosoma length 1.31; Gt₇ length/width 0.36.

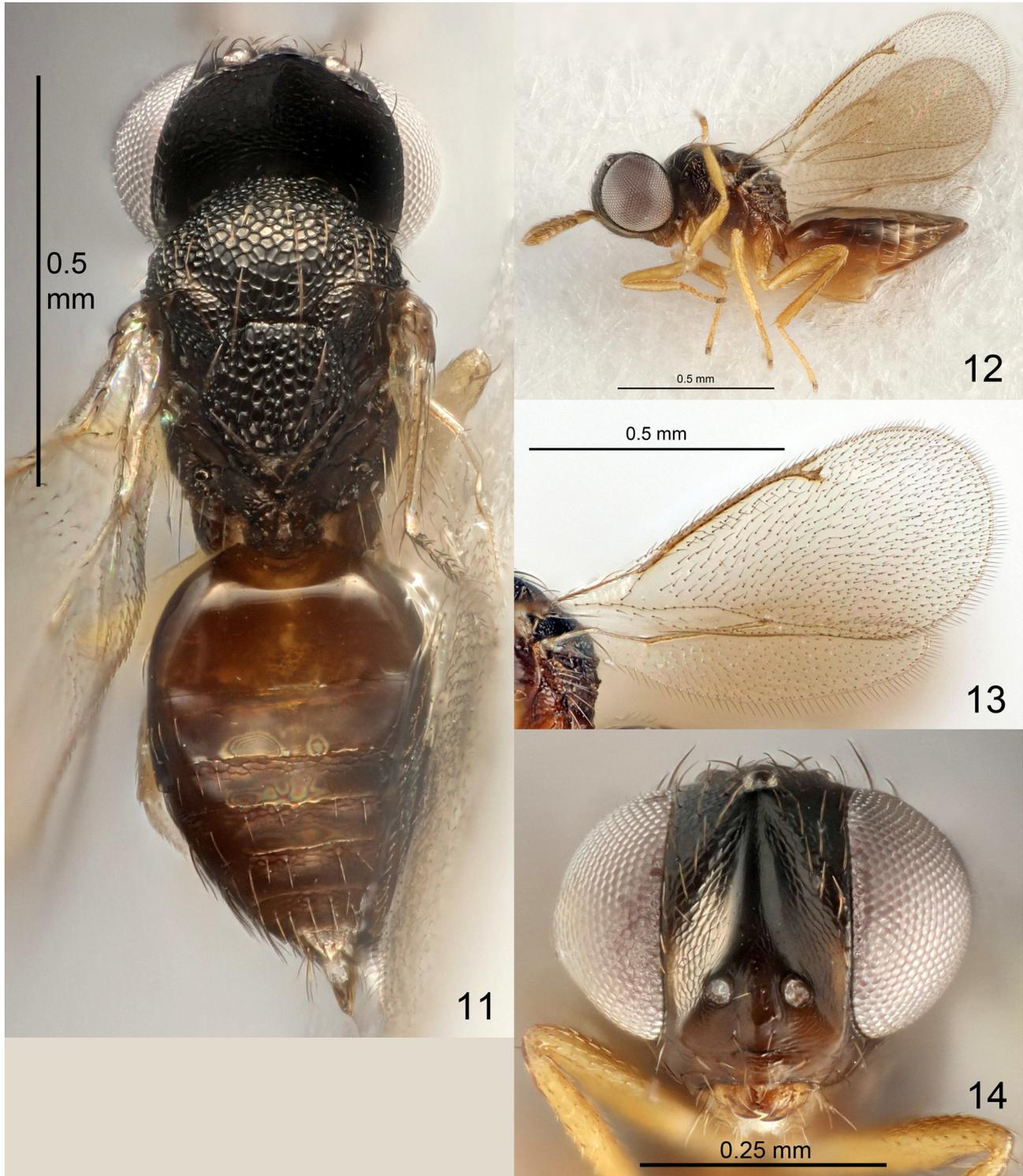
Variation in paratypes. Length 1.1–1.4 mm. Head and mesosoma dark brown to black. Coxae dark yellowish-brown to pale brown. Gaster dorsally dark brown with median ½ yellowish-brown to completely dark brown.

Male. Length 1.1 mm. Eyes smaller (malar space/eye height = 0.40, vs 0.25 in female), but otherwise as in female.

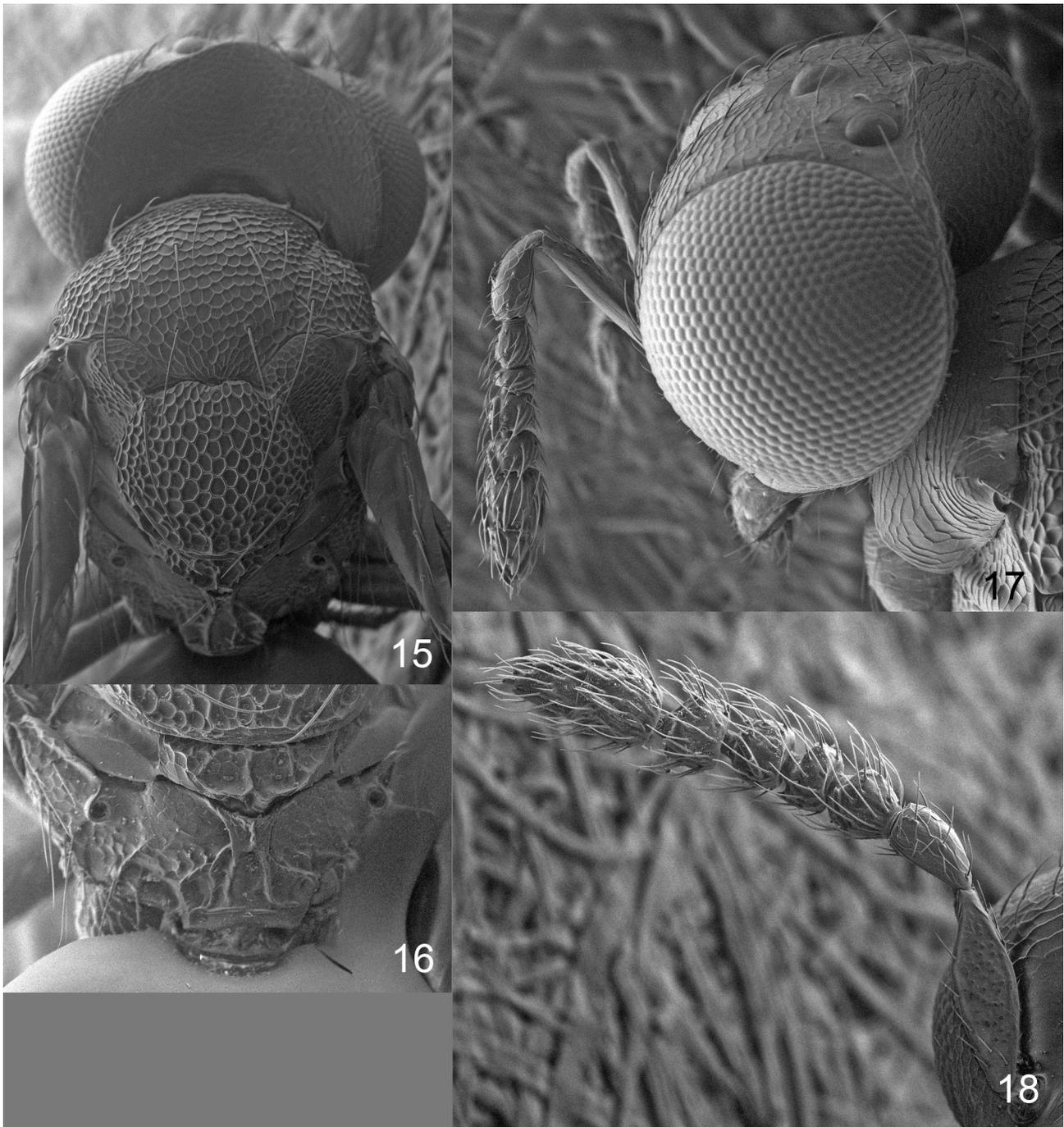
Ratios. **Head:** width/length (dorsal view) 1.23; width/length (frontal view) 0.88; POL/OOL 3.50; head width/mesosoma width 0.77; mouth width/malar space 1.58; malar space/eye height 0.40; scape length/eye height 0.67; flagellum+pedicel length/mesosoma width 1.02; scape length/width 2.86; F1 length/width 1.0; F2 length/width 0.67; F3 length/width 0.71; F4 length/width 0.71; clava length/width 2.29; clava width/F1 width 1.17. **Mesosoma:** length/width 1.46. **Metasoma:** gaster length/width 1.76; gaster length/mesosoma length 1.26.

Distribution. Belize, Costa Rica.

Etymology. The species name refers to the very strong reticulation on thoracic dorsum.



FIGURES 11–14. *Celesterion reticulatum* sp. nov., females; **11** body in dorsal view, paratype; **12** body in lateral view, holotype; **13** right wing pair, paratype; **14** head in frontal view, paratype.



FIGURES 15–18. *Celesterion reticulatum* sp. nov., paratypes; **15** head+mesosoma in dorsal view, female; **16** propodeum in dorsal view, female; **17** head+antenna in lateral view, female; **18** antenna in lateral view, male.

Material. Holotype female labelled “COSTA RICA, Puntarenas, Reserva Privada Karen Mogensen, 9°52’N, 85°03’W, 305 m, 19–20.ii.2009, J.S. Noyes, NHM(Ent) 2010-20”, deposited in NHMUK. Paratypes (62♀ 2♂): following from same locality as holotype but collected 18.iii–4.iv.2003 (1♀), 11–21.ii.2005 (2♀), 24.ii.2007 (2♀), 19–20.ii.2009 (1♀), 17–18.ii.2011 (5♀), 23–24.ii.2013 (1♀), 19–20.ii.2016 (2♀), 12.ii.2018 (11♀); 1♀ “COSTA RICA, Alajuela, Parque Nacional Arenal, Sendero Mena, 600 m, 17.iv–19.v.2001, G. Carballo, LN 454170_271800, #62409”; 24♀ 1♂ “COSTA RICA, Guanacaste, R.V.S. Bosque Diria, 200 m, 14–15.ii.2011, J.S. Noyes, BMNH(Ent) 2011-93”; 1♀ “COSTA RICA, Guanacaste, 18km N Liberia, Buena Vista Lodge, 770 m, 10°48’N, 85°24’W, 15–17.ii.2016, J.S. Noyes, BMNH(Ent) 2016-79”; 1♀ “COSTA RICA, Guanacaste, Parque Nacional Palo Verde, 40 m, LN 260952_385020, 2–10.ix.1999, I. Jiménez, #53253”; 1♀ “COSTA RICA, Guanacaste, Parque Nacional Santa Rosa, Bosque Humedo, 10°51’N, 87°37’W, 300 m, 21.ii.2003, J.S.Noyes”; 1♀ “COSTA RICA, Here-

dia, Parque Nacional Braulio Carrillo, Estación Biológica La Selva, 100–200 m, 30–31.iii.2002, J. Azofeifa Zuñiga, swept, LN 264463_532850, #67193”; 3♀ “COSTA RICA, Puntarenas, Parque Nacional Carara, 9°46’N, 84°57’W, 41 m, 1–7.iii.2005, C. Hansson”; 3♀ 1♂ “COSTA RICA, Puntarenas, RA Cabo Blanco, 09°35’N, 85°06’W, 30 m, 16–17.ii.2009, J.S. Noyes”; 1♀ “BELIZE: Airport Compound, 21.ii–2.iii.1982, Grimshaw” (NHMUK). Paratypes deposited in MZLU, MZUCR, NHMUK.

Discussion

Elasmarion is similar to the Old World genus *Eulophomorpha* Dodd. They share a female antenna with three funiculars and three claval segments; occiput concave with a sharp dorsal margin; eyes hairy; axillae distinctly advanced forwards; hind tibia with a strong apical spur; female gaster ±sessile with a short transverse petiole. However, none of these characters are unique to these genera, they occur also in other Eulophinae genera. In addition there are several characters listed in Table 1, through which *Elasmarion* and *Eulophomorpha* differ, that justify keeping them as two distinct genera. The similarity through the shared characters might indicate a close relationship between *Elasmarion* and *Eulophomorpha*, perhaps they are sister groups. Future analyses including molecular data might clarify this. *Elasmarion* also shares some features with the genus *Elasmus*, which are not present in other Eulophinae: legs pointing backwards in dead specimens; mid and hind legs elongate with very long basitarsi; hind coxa large. However, it lacks some very prominent features of *Elasmus*: the fore wing is not wedge-shaped, the dorsellum is not hyaline, the hind coxa and hind femur are not compressed, the hind tibia does not have diamond-shaped patterns made up by dark and flattened setae, the female gaster is not triangular in cross-section, and the male does not have branched antennae. Furthermore, the tibial spur on fore leg in *Elasmarion* is long, as long as basitarsus, and slightly bent, and this is a very unusual feature for the Eulophidae which almost always have a short and straight tibial spur on fore leg.

TABLE 1. Distinguishing characters between *Elasmarion* gen. nov. and *Eulophomorpha* Dodd.

<i>Elasmarion</i> gen. nov.	<i>Eulophomorpha</i> Dodd
Mandibles with a short, blunt tooth apically, but without smaller teeth above apical tooth (Fig. 10)	Mandibles with a row of five small teeth above apical large tooth (Kamijo 1996, fig. 10)
Clypeal margin straight, without incision (Fig. 3)	Clypeal margin incised medially (Kamijo 1996, fig. 9)
Frons with scattered long and strong setae (Fig. 3)	Frons with dense short setae, especially in lower ½ (Kamijo 1996, fig. 9)
Antennal toruli close (Fig. 3)	Antennal toruli wide apart (Kamijo 1996, fig. 9)
Vertex with scattered long and strong setae (Figs 3, 7)	Vertex with dense short setae throughout and with long setae laterally (Kamijo 1996, fig. 9)
Pronotum with long and strong setae along posterior margin (Fig. 7)	Pronotum with dense short setae and some long and strong setae in posterior part (Kamijo 1996)
Mesoscutum with scattered long and strong setae (Fig. 7)	Mesoscutum with dense short setae throughout and with two pair of strong setae close to posterior margin (Kamijo 1996)
Mesoscutellum with two pairs of long and strong setae (Fig. 7)	Mesoscutellum with dense short setae throughout and with two pairs of long setae (Kamijo 1996)
Dorsellum large and triangular (Fig. 7)	Dorsellum short and ovate (Bouček 1988, fig. 1091)
Female gaster weakly sclerotized and collapsed when dry (Figs 1, 2)	Female gaster strongly sclerotized and not collapsing when dry
Female gaster with cerci short and inconspicuous (Fig. 2)	Female gaster with cerci distinctly elongate (Bouček 1988, fig. 1091)
Female gaster with short apical parts of ovipositor sheaths (Figs 1, 2)	Female gaster with long and narrow apical parts of ovipositor sheaths (Bouček 1988, fig. 1091)

The characters of *Celesterion* with notauli indistinct and grooves on mesoscutellum absent are similar to genera in tribe Eulophini. However, *Celesterion* shows little morphological resemblance to any genus in that tribe. To clarify the relationship to other genera in the Eulophinae both genera will be included in a forthcoming analysis of the phylogeny of Eulophidae genera, using molecular data.

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