

## New records of the genus *Euplectrus* Westwood (Hymenoptera: Eulophidae) from Southeast Asia, South Asia and Oceania, with description of three new species and a key

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### ABSTRACT

Twenty-two species of the genus *Euplectrus* are newly recorded from Southeast Asia, South Asia and Oceania, sometimes from more than one country: 18 species from Vietnam (*bicolor*, *brevisetulosus*, *cinctiventris*, *colliosilvus*, *flavigaster*, *fuscicoxalis*, *indicus*, *koebelei*, *laphygmae*, *leucostomus*, *liparidis*, *longipetiolatus*, *manilae*, *parvulus*, *peduncularis* n. sp., *petiolatus*, *reticulatus*, *transversus*); nine from Malaysia (*brevisetulosus*, *euplexiae*, *fuscicoxalis*, *laphygmae*, *leucostomus*, *longipetiolatus*, *reticulatus*, *pahangi* n. sp., *selangori* n. sp.); five from Papua New Guinea (*brevisetulosus*, *ceylonensis*, *flavigaster*, *fuscicoxalis*, *laphygmae*); two from Thailand (*ceylonensis*, *fuscicoxalis*); three from Cambodia (*colliosilvus*, *koebelei*, *leucostomus*); two from Taiwan (*euplexiae*, *fuscicoxalis*); and one from each of Nepal (*ceylonensis*), India (*laphygmae*), Sri Lanka (*manilae*), South Korea (*manilae*), and French Polynesia (*manilae*). Seven species are redescribed. An identification key to *Euplectrus* species from Southeast Asia is provided.

**KEYWORDS:** Chalcidoidea, Eulophinae, Indo-Malaya, Cambodia, Malaysia, Polynesia, Thailand, Vietnam, new records, new species.

### INTRODUCTION

*Euplectrus* Westwood, is a cosmopolitan genus with 201 valid species names (Noyes 2017). Larvae of *Euplectrus* species develop as ectoparasitoids on lepidopterans Arctiidae, Erebidae, Geometriidae, Hesperidae, Lasiocampidae, Limacodidae, Noctuidae, Papilionidae, Pyralidae and Tortricidae (Thompson 1955; Bouček & Askew 1968; Herting 1976; Fry 1989; Yefremova 1994; Glavendekic 2000; Hellrigl & Ambrosi 2000; Zhu & Huang 2002a, 2003), as well as on *Apanteles* sp. (Hymenoptera: Braconidae) (Zhu & Huang 2003). Zhu & Huang (2003) mention the Lophopidae (Hemiptera: Fulgoromorpha) as *Euplectrus* hosts, but this information should be treated with caution since members of the genus have been known as parasites of neither planthoppers nor leafhoppers. Novel data on the *Euplectrus* taxonomy and hosts were obtained by Hansson *et al.* (2015), whereas detailed information about *Euplectrus* biology and hosts is summarized by Noyes (2017). Most species are gregarious (Schauff & Janzen 2001) and only *Euplectrus laphygmae* lays one egg per host (Neser 1973; Gerling & Limon 1976).

Morphology of the *Euplectrus* preimaginal stages (egg, larva and pupa) was described by Neser (1973). He also described for the first time the egg pedicel of

*Euplectrus* nr *laphygmae* on *Plusia acuta* Walker and noted four molts (i.e. the 5<sup>th</sup> instar larva) in the parasitoid life circle. Later, Gerling and Limon (1976) recorded three to five molts for this species.

Taxonomic treatment of *Euplectrus* in Southeast Asia and adjacent regions is uneven. The Burmese (Myanmar) species (*E. parvulus* Ferrière) are covered by Husain and Khan (1986); Vietnamese species (*E. ceylonensis* Howard and *E. thanhi* Yefremova) by Yefremova (1994) and Zhu & Huang (2002a, 2003); species from Thailand (*E. indicus* Ferrière, *E. manilae* Ashmead, and *E. xanthocephalus* Girault) by Zhu & Huang (2003); Malaysian species (*E. acutigaster* Zhu & Huang, *E. ceylonensis*, *E. koebelei* Crawford, *E. maculiventris* Westwood, *E. manilae* Ashmead, and *E. xanthocephalus*) by Zhu & Huang 2003); Indonesian species (*E. ceylonensis*, *E. cinctiventris* Ferrière, *E. colliosilvus* Wijesekara & Schauff, *E. euplexiae* Rohwer, *E. flavus* Ubaidillah, *E. fulvicoxis* Ferrière, *E. laphygmae* Ferrière, *E. manilae*, *E. noctuidiphagus* Yasumatsu, *E. spinosus* Ubaidillah, *E. sumbaensis* Ubaidillah, *E. parvulus*, *E. striatus* Ubaidillah, *E. partitus* Ubaidillah, *E. xanthocephalus* and *E. sp. nr platyhyphenae* Howard) by Ubaidillah (2003, 2007); and Philippines species (*E. manilae*) by Ashmead (1904), Baltazar (1966) and Zhu & Huang (2003). No *Euplectrus* species have been recorded so far from Brunei, Cambodia, Christmas Island, East Timor, Laos or Singapore. Neighbouring countries have been studied by Narendran (2011) who reports 35 *Euplectrus* species from India, Wijesekera and Schauff (1994) who records 11 species from Sri Lanka, and by Zhu and Huang (2003) who gives account of 14 species on Taiwan. Among 201 valid species host are known for 109 species in the world (Noyes 2017)

In this study, descriptions of new species, redescrptions of already known species, new distribution records, and a key to *Euplectrus* species known from Southeast Asia are provided. No new host information is recorded from Southeast Asia and adjacent areas for *Euplectrus* species.

#### MATERIALS AND METHODS

The examined material comes from the following institutions:

- BMNH – Natural History Museum, London, UK;
- CASC – California Academy of Sciences, San Francisco, USA;
- EIHU – Entomological Laboratory, Hokkaido University, Japan;
- IZCAS – Institute of Zoology, Chinese Academy of Sciences, Beijing, China;
- QMB – Queensland Museum, Brisbane, Australia;
- RBINS – Royal Belgian Institute of Natural Sciences, Belgium;
- SMNH-TAU – Steinhardt Museum Natural History, Tel Aviv University, Israel;
- TARI – Taiwan Agriculture Research Institute, Taichung City, Taiwan;
- UCRC – University of California, Riverside, California, USA;
- USNM – National Museum of Natural History; Smithsonian Institution; Washington, DC, USA;
- ZISP – Zoological Institution, Russian Academy of Sciences, St. Petersburg, Russia.

The material from North and Central Vietnam was collected by A.V. Sharkov in 1980s and S.A. Belokobylskij and E.S. Sugonyaev in 1989–1990 (ZISP); from southern Thailand and northern Malaysia by J. Heraty and D. Yanega in 1990 (UCRC); and from South Vietnam by the author in 2011. In total, 264 specimens from Southeast Asia are dealt with in the present article. Several specimens from China, South Korea, India, Sri Lanka, Papua New Guinea, and French Polynesia are also included.

The morphological terminology follows Gibson (1997) and Hansson *et al.* (2015). The antenna has six flagellomeres (Hansson *et al.* 2015) including clava and excluding anelli. The following abbreviations are used: F1–F4 length of the first, second, third and fourth antennal flagellomeres; SMV, MV, PMV, STV – length of the submarginal, marginal, postmarginal and stigmal veins; POL – the minimum distance between the posterior ocelli; OOL – the minimum distance between the eye margin and the adjacent posterior ocellus;  $G_t$  – gastral tergites; TS1 – length of the longest tibial spur; TS2 – length of the shortest tibial spur.

Absolute measurements in millimetres are used for body and forewing length. All other dimensions are given in micrometres. Observations and measurements were made using a Leica M80 microscope. The photographs were taken using an M-205 C Stereomicroscope with a Leica Digital Camera DFC 295.

Distribution of the Eulophidae is presented according to Olson *et al.* (2001). New species records are denoted by an asterisk (\*).

The holotypes of the new species are deposited in the UCRC and ZISP.

#### TAXONOMY

Family Eulophidae Westwood, 1829

Subfamily Eulophinae Westwood, 1829

Genus *Euplectrus* Westwood, 1832

A complete synonymy list can be found in Hansson *et al.* (2015) and Noyes (2017).

A complete diagnosis of the genus was given by Hansson *et al.* (2015), here a shortened version is provided.

**Diagnosis:** Female: Head with paired long setae on vertex; eyes bare. Scutellum lacking longitudinal grooves or fovea; propodeum with distinct median carina and semicircular or triangular cup. Hind coxa enlarge and globose; TS1 as long as 1<sup>st</sup> tarsomere and 2<sup>nd</sup> tarsomere combined or less; hind tibial spurs very long. Forewing large, 0.8 as long as body, SMV with 4–5 setae.

Male similar to female, but smaller, antennal scape broader at middle than in female, rarely swollen (Yefremova 2007; Hansson *et al.* 2015). Body with black or yellow markings, legs yellow, sometimes hind coxae and femora brown (e.g. Figs 4, 17, 18), antennae yellow or brownish, gaster brown with yellow markings.

**Identification:** A key to species of Africa was published by Ferrière (1941), Sri Lanka by Wijesekara and Schauff (1994), China by Zhu and Huang (2003), India by Narendran (2011) and northern Costa Rica by Hansson *et al.* (2015).

Twenty-five species of *Euplectrus* are included in the key below (23 species have been collected in Southeast Asia). *Euplectrus agaristae* Crawford originally described from Australia, *E. kuwanae* Crawford from Japan and *E. acutigaster* Zhu & Huang from Guinea (West Africa) and China (Zhu & Huang 2003) may be found in Southeast Asia and adjacent regions. *Euplectrus peduncularis* n. sp. is not included in the key since it is known only from male.

**Key to species of *Euplectrus* from Thailand, Cambodia, Vietnam and Malaysia (females only)**

- 1 Mid lobe of mesoscutum with complete median carina ..... 2
- Mid lobe of mesoscutum without median carina or at most with a short median carina posteriorly ..... 6
- 2(1) Hind coxae brown (Fig. 16) ..... *E. fuscicoxalis* Zhu & Huang
- Hind coxae yellow ..... 3
- 3(2) Face, cheeks and clypeus yellow (Fig. 19) ..... *E. leucostomus* Rohwer
- Face, cheeks black, clypeus yellow ..... 4
- 4(3) Malar sulcus absent ..... *E. indicus* Rohwer
- Malar sulcus present ..... 5
- 5(4) Clava 2.0× as long as broad ..... *E. cinctiventris* Ferrière
- Clava 2.7× as long as broad (Fig. 11) ..... *E. selangori* n. sp.
- 6(1) Head entirely black, hind coxae brown (Figs 17, 18, 20) ..... 7
- Head with yellow clypeus and supraclypeal area, hind coxae yellow ..... 9
- 7(6) Propodeum with plicae (Fig. 18) ..... *E. longipetiolatus* Zhu & Huang
- Propodeum without plicae ..... 8
- 8(7) F1 1.05× as long as pedicel; petiole 1.5× as long as broad (Fig. 17) ..... *E. brevisetulosus* Zhu & Huang
- F1 1.8× as long as pedicel; petiole as long as broad (Fig. 20) ..... *E. colliosilvus* Wijesekera & Schauff
- 9(6) Petiole 1.5× or more as long as broad ..... 10
- Petiole as long as broad. (Fig. 15) ..... *E. flavigaster* Zhu & Huang
- 10(9) Mesoscutum with 5 pairs of setae ..... *E. liparidis* Ferrière
- Mesoscutum with 3 pairs of setae ..... 11
- 11(10) Mid lobe of mesoscutum with median carina posteriorly ..... 14
- Mid lobe of mesoscutum without median carina ..... 12
- 12(11) F1 3.0× as long as broad, other flagellomeres 2.5× as long as broad; petiole 2.0–4.0× as long as broad (Fig. 8) ..... *E. petiolatus* Ferrière
- F1–F4 subequal in length to each other; petiole less 2.0× as long as broad ..... 13
- 13(12) Gena entirely yellow; head with minute setae between lateral ocelli; male head completely yellow (Fig. 6) ..... *E. laphygmae* Ferrière

- Gena with lower half yellow (Fig. 24); head without minute setae between lateral ocelli; male head black..... *E. xanthocephalus* Girault
- 14(11) Petiole with lateral projections (Fig. 10).....*E. pahangi* n. sp.
- Petiole without lateral projections (Fig. 4) ..... 15
- 15(14) Gaster entirely yellow ..... *E. thanhi* Yefremova
- Gaster with dark pattern ..... 16
- 16(15) Petiole as long as broad or shorter than broad ..... 17
- Petiole 1.5× as long as broad..... 18
- 17(16) Petiole strongly reticulate; head with black supraclypeal area (Fig. 5) .....  
..... *E. kuwanae* Crawford
- Petiole smooth; head with yellow supraclypeal area .....  
..... *E. parvulus* Ferrière
- 18(16) POL 1.8–2.3× as long as OOL (Fig. 22)..... 19
- POL 1.1–1.3× as long as OOL..... 21
- 19(18) PMV 1.8–2.0× as long as STV (Fig. 22) ..... 20
- PMV 1.6× as long as STV (Fig. 1) .....*E. bicolor* Swederus
- 20(19) Clava 2.7× as long as broad, gaster yellow (Fig. 22).....  
..... *E. euplexiae* Rohwer
- Clava 1.9× as long as broad, gaster dorsally brownish with yellow spot (Fig. 4)..... *E. koebelei* Crawford
- 21(18) Pedicel equal to F1 or slightly (1.2×) longer ..... 22
- Pedicel 1.5× shorter than F1 ..... 23
- 22(21) Scutellum with vague reticulation, metasoma dark at apex.....  
..... *E. acutigaster* Zhu & Huang
- Scutellum with engraved reticulation, metasoma yellow at apex (Fig. 21) .....  
..... *E. reticulatus* Zhu & Huang
- 23(21) F1 2.0× as long as broad ..... *E. transversus* Zhu & Huang
- F1 1.5× as long as broad ..... 24
- 24(23) PMV 2.5× as long as STV (Fig. 2) ..... *E. ceylonensis* Howard
- PMV 1.4× as long as STV (Fig. 7) ..... *E. manillae* Ashmead

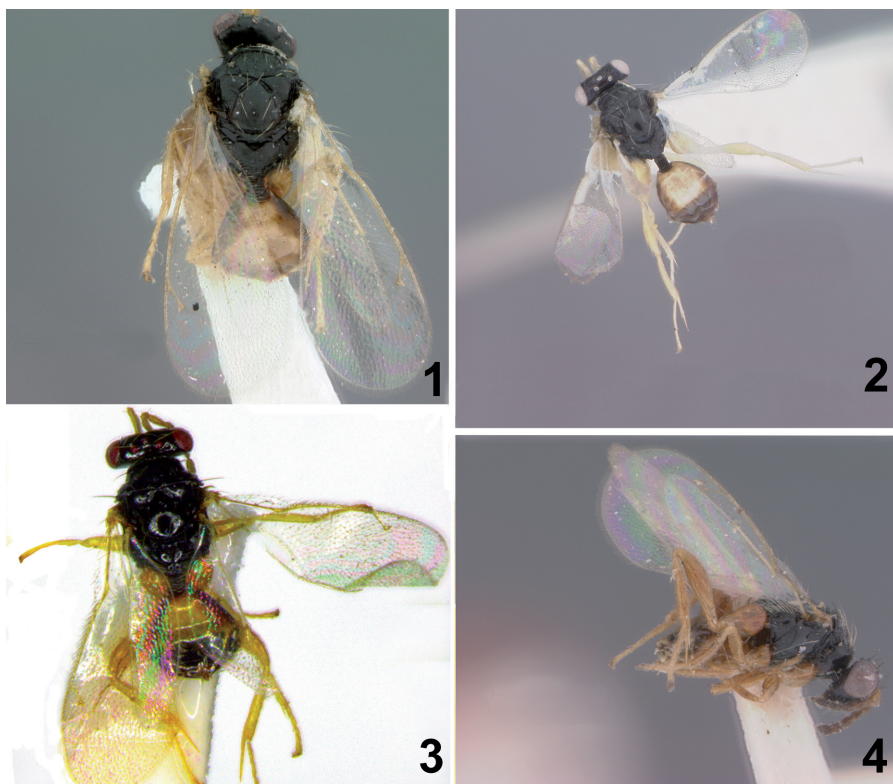
*Euplectrus agaristae* Crawford, 1911

(Fig. 1)

*Euplectrus agaristae* Crawford, 1911b: 281; Zhu & Huang 2003: 148.

**Diagnosis:** F1 1.75× as long as pedicel (Fig. 1), F2 equal to F3. Mesoscutum reticulate, with complete median carina. Head brown with yellow clypeus. Gaster dorsally and ventrally yellow.

**Original description:** “Female.—Length about 2.25 mm. Black, the abdomen largely reddish-testaceous; the clypeal region whitish, the legs, including coxæ,



**Figs 1–4:** (1) *Euplectrus agaristae* Crawford, female, holotype, lateral-dorsal view; (2) *E. ceylonensis* Howard, female, holotype, dorsal view; (3) *E. indicus* Ferrière, female, dorsal view; (4) *E. koebelei* Crawford, female, holotype, lateral view.

reddish-testaceous; antennæ testaceous becoming darker towards tips; first joint of funicle distinctly longer than pedicel; following joints decreasing in length, the fourth about equal in length to pedicel; mesoscutum with a median longitudinal carina, rather finely rugose, the rugæ more or less transverse, the parapsidal area more finely sculptured than median lobe; axillæ much more finely striate; scutellum finely indistinctly lineolately reticulated, the lines more or less longitudinal; wings slightly yellowish, the veins honey colored; first joint of hind tarsi slightly longer than second; abdomen reddish-testaceous margined all around with dark brown” (Crawford 1911b: 281).

**Redescription:** Holotype. Female (Fig. 1): Body length 2.2 mm, forewing length 2.1 mm.

Colour: head brown (clypeus yellow in lower part), eyes red, ocelli yellow, antennae yellow. Thorax black, tegulae yellow. Legs yellow, hind coxae reddish testaceous (Fig. 1). Gaster dorsally and ventrally yellow, laterally brown.



Head. POL  $1.5\times$  as long as OOL. Eyes not setose. Malar sulcus present. Two setae between lateral ocelli. Antenna: pedicel  $1.75\times$  shorter than F1, F1  $1.1\times$  as long as F2, F2 equal to F3, F3  $1.1\times$  as long as F4, F4  $1.3\times$  shorter than clava. Clava  $2.5\times$  as long as broad.

Mesosoma. Pronotum short. Mesoscutum reticulate, with complete median carina and 3 pairs long setae. Axillae, scutellum and propodeum finely reticulate and shiny. Callus of propodeum with 4 long setae in one row.

Forewing  $2.6\times$  as long as broad; SMV with 4 long setae, speculum extending along  $\frac{1}{2}$  MV, MV  $1.8\times$  as long as SMV, and  $2.0\times$  longer than PMV; PMV  $2.5\times$  as long as STV. Hind tibia with 2 spurs: TS1  $1.4\times$  as long as TS2 and  $1.2\times$  as long as 1<sup>st</sup> tarsomere.

Petiole short and strong reticulate. Gaster  $1.7\times$  as long as broad.

**Holotype:** ♀ **Australia:** New South Wales, Sydney, reared from larva *Agarista glycinae*, adult, Feb. 1904, № 13972 (USNM, examined). *Note:* The holotype is redescribed here for the first time in 105 years.

**Distribution:** Australia (Crawford 1911b).

**Host:** The species is ectoparasitoid of *Phalaenoides glycinae* Lewin (Lepidoptera: Noctuidae: Agaristinae) (Crawford 1911b, as *Agarista glycinae* Lewin; Noble 1938).

### *Euplectrus bicolor* (Swederus, 1795)

(Fig. 23)

*Pteromalus bicolor* Swederus, 1795: 204.

*Euplectrus bicolor* (Swederus): Haliday 1844: 297; Zhu & Huang 2003: 145.

*Euplectrus maculiventris* Westwood, 1832: 128; Graham 1963: 172; Bouček & Askew 1968: 159; Zhu & Huang 2002b: 134.

**Diagnosis:** It was given by Ferrière (1941) and Zhu & Huang (2003). Additional characters: F1  $1.5\times$  as long as pedicel and F2. TS1  $1.5\times$  as long as 1<sup>st</sup> tarsomere. Mesoscutum areolate with posteriorly indicated carina or without carina and with 3 pairs of setae. Scapulae finely areolate and axillae slightly reticulate. Scutellum striate longitudinally. Gaster broadly black at apex.

**Material examined:** **Sweden:** 2♀ 16.vii.1938, Kivik, det. Bouček, 1974 (BMNH). **United Kingdom:** 1♀ England, Ascot, 2.ix.1975, ex *Mamestra brassica*, A. Montagne, det. Bouček, 1975 (BMNH); 1♂ England, Berkshire, Wytham Wood, 26.vii.1964, coll. Bouček, det. Z. Bouček, 1974 (BMNH); **Vietnam:** 1♀ 125 km W Than Con, Lang Batuok, on *Salix*, 21.i.1989, E.S. Sugonayev (ZISP); 1♀ 1♂ Gia Lai-Con, Tum Tram Lap, 20 km N, Buon Luoi, 3–9.xii.1988, A. Sharkov (ZISP); 1♀ N. Vietnam, Hoa Binh prov., Ky Son, Cao Phong, forest, 25.x.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam, Hoa Binh prov., vil. Mai Chou, forest, 2.xi.1990, S.A. Belokobylskij (ZISP); 4♀ Vinh Phuc prov., Tam Dao, 200 m, 100 nr NW Hanoi, forest. 14–15.xi.1990, S.A. Belokobylskij (ZISP); 1♀ S. Vietnam, Cat Tien, Malaise trap, xii.2011 (Z. Yefremova) (SMNHTAU).

**Distribution:** Though the species is cosmopolitan, this is its first record in Vietnam.

**Hosts:** Gregarious ectoparasitoid of larvae of many Geometridae, Noctuidae, Pyralidae and Tortricidae (Lepidoptera) (Bouček & Askew 1968; Glavendekic 2000; Hellrigl & Ambrosi 2000).

**Remarks:** Zhu and Huang (2002b: 134) validated *E. maculiventris* (Westwood) and gave the following diagnosis for the species: “Mid lobe of mesoscutum distinctly reticulate, with additional setae to 3 pairs of longer setae anterolateral, with median carina posteriorly: scutellum entirely with distinct reticulation; hind tarsi normal, 4<sup>th</sup> segment not much longer than 2<sup>nd</sup> one; gaster dark at apex: head with supraclypeal area; clypeus, and at least part of gena yellow or reddish brown”.

I examined the following specimens: 4♂ Sweden, 29.vii.1931, Z. Nondsbrom, det. Bouček, 1974 (BMNH) as *E. maculiventris*; 1♀ Le Puy. coll. H. Maneval, 2 May. 1933, det. Ferrière as *Euplectrus bicolor* and label of Z. Bouček 1974 as *Euplectrus maculiventris*.

Differences between specimens labelled *Euplectrus maculiventris* and *E. bicolor* are as following. The median carina indicated in two-thirds of the mesoscutum in *E. maculiventris* (only posteriorly in *E. bicolor*), the areola in *E. maculiventris* on the mesoscutum is larger than in *E. bicolor*. The reticulation of the scutellum in *E. bicolor* is longitudinally striate and in *E. maculiventris* slightly striate (Fig. 23, specimen det. Zhu, 2002).

Relative measurements of both species are basically the same: F1 2.6× as long as pedicel and 1.3× as long as F2, clava as long as F4, TS1 1.3× as long as 1<sup>st</sup> tarsomere in *E. maculiventris* (F1 2.3–2.4× as long as pedicel and 1.5× as long as F2, clava as long as F4, TS1 1.4× as long as 1<sup>st</sup> tarsomere in *E. bicolor*).

The lectotype of *E. maculiventris* was designated by Graham (1963: 172) (Hope Departement, Oxford University, England, not examined), but Graham mentioned the scutellum with striate-reticulate sculpture and median longitudinal carina on the mesoscutum (“present in at most rather more than the hinder half”).

Seeing these differences insignificant, I concur with Bouček and Askew (1968) regarding synonymy of *E. maculiventris* and *E. bicolor*.

### *Euplectrus brevisetulosus* Zhu & Huang, 2003

(Fig. 17)

*Euplectrus brevisetulosus* Zhu & Huang, 2003: 147.

**Diagnosis:** Mesoscutum reticulate without median carina. Scutellum finely reticulate. Petiole granulate dorsally. Body mostly black, head including clypeus completely black, gaster on Gt<sub>1-4</sub> dorsally yellow and laterally brown; legs yellow (except brown dorsally hind coxae (Fig. 17) (Zhu & Huang 2003).

**Extended diagnosis** (based on examined material): Head. Malar sulcus absent. Several scattered setae between lateral ocelli. POL 1.6× as long as OOL. Mesoscutum reticulate, scutellum finely reticulate, scapulae and axillae smooth, propodeum smooth, shiny with median carina. Propodeum, callus with 5 long setae (Fig. 17). Forewing 2.0× as long as broad; SMV with 3 long setae, speculum small and closed, MV 1.9× as long as SMV, MV 1.1× longer than PMV; PMV 2.2× as long as STV. Hind legs with two spurs: TS1 1.6× as long as 1<sup>st</sup> tarsomere. Gaster 1.2× as long as broad.



**Holotype:** ♀ **China:** Sichuan, Wan, Wang'er Bao, 28.ix.1994, 1200 m, Li Fashen (IZCAS, not examined).

**Material examined:** **Vietnam:** 3♀ Vinh Phuc prov., Tam Dao, 800 m, forest, 18–19.v.1995, E.S. Sugonayev (ZISP). **Malaysia:** 1♀ Selangor, University of Malay, Forest study center 16 mi E of Gombak, 15.vi.1990, 300 m, J. Heraty (UCRC). **Papua New Guinea:** 1♀ Central prov., NW 45 km Port Moresby nr Eicogo, rainforest, sweeping, 29.xii.1985, G. Gordh (UCRC).

**Distribution:** China, Taiwan, Japan (Zhu & Huang 2003), \*Vietnam, \*Malaysia and \*Papua New Guinea.

**Host:** Unknown.

*Euplectrus ceylonensis* Howard, 1896

(Fig. 2)

*Euplectrus ceylonensis* Howard in Howard & Ashmead, 1896: 641; Zhu & Huang 2003: 148.

*Euplectrus insulanus* Crawford, 1911b: 281. Synonymized by Ferrière, 1941: 34.

**Diagnosis:** It was given by Wijesekara and Schauf (1994) based on the type material and three females from Sri Lanka. Additional characters: POL 1.2× as long as OOL. F1 1.5× as long as pedicel. Mesoscutum reticulate with short median carina posteriorly. Scutellum smooth. Callus with 6 long setae. Female: Clava 2.7–3.0× as long as broad. Gaster 1.6–1.8× as long as broad. Male: Clava 3.7× as long as broad. Gaster 1.1× as long as broad.

**Redescription:** Female (Fig. 2): Body length 1.8 mm, forewing length 2.2 mm (these dimensions are considerably less than those given by Howard (Howard & Ashmead 1896: 641): length 2.8 mm, expanse 6.3 mm). Colour. Head brown (clypeus yellow), antennae yellow, thorax black, legs yellow, gaster black with yellow spot.

Head. POL 1.2× as long as OOL. Two setae between lateral ocelli. Malar sulcus present. Antenna. Pedicel 1.5× shorter than F1, F1 1.1× as long as F2; F2 1.1× as long as F3; F3 1.1× as long as F4; F4 2.0× shorter than clava. Clava 2.7× as long as broad.

Mesosoma. Mesoscutum reticulate, with short median carina posteriorly and 3 pairs of long setae. Axillae and scutellum smooth and shiny, dorsellum and propodeum shagreened. Callus of propodeum with 6 long setae: 4 in first row and 2 in second. Forewing 2.7× as long as broad; SMV with 4 setae (the same length as setae on MV and PMV), speculum extending along 0.5 MV, MV 1.5× as long as SMV and 2.0× longer than PMV; PMV 2.5× longer than STV. Petiole 1.8× as long as broad. Gaster 1.6× as long as broad.

Male: Body length 1.20 mm. POL 1.2× as short as OOL. F1 1.1× as long as F2; F2 1.1× shorter than F3; F3 equal to F4; F4 1.1 shorter than clava. Clava 3.7× as long as broad. Gaster 1.1× as long as broad.

**Variation:** Female. Body length 1.60–1.80 mm. Antenna. F4 1.8–2.0× shorter than clava. Clava 2.7–3.0× as long as broad. Forewing 2.3–2.6× as long as broad; SMV with 3–4 long setae. PMV 1.9–2.5× longer than STV. Hind legs with two spurs: TS1 1.1× as long as 1<sup>st</sup> tarsomere. Gaster 1.6–1.8× as long as broad.

**Holotype:** ♀ **Sri Lanka:** Punduloya, Ceylon, 6914 Par: on l. of *Euproctis fraterna* E. Ernest Green. № 3261 USNM, '*Euplectrus ceylonensis*' (examined). *Note:* The holotype is redescribed here for the first time in 120 years.

**Other material examined:** **Nepal:** 1♂ Nagarrot, 25.vi.1981, G. Gordh (UCRC). **Thailand:** 1♀ 1♂ Loei prov., Na Hao, Huai Som Khop, 10.ii.1999, dry net sweeping, river, gallery forest, P. Grootaert (RBINS). **Malaysia:** 1♀ Borneo, Sarawak, Gunung Buda, 64 km S Limbang, 4°12'N 114°56'E, 22–28.xi.1996, S.L. Heydon & S. Fung (CASC); 1♀ Gia Lai-Con, 11.vi.1936, Entom. Dik Agric. Dep. ex *Homodes graeteigutta*, det. Ferrière (BMNH). **Vietnam:** 2♀ N. Vietnam, Hoa Binh prov., Ky Son, Cao Phong, forest, 25–29.x.1990, S.A. Belokobylskij (ZISP); 3♀ N. Vietnam, Vinh Phuc prov., Tam Dao, 200 m, 100 nr NW Hanoi, forest, 12–14.xi.1990, S.A. Belokobylskij (ZISP); 2♀ 3♂ Gia Lai prov., 20 km N., vil. Buon Luoi, 8–14.xii.1988, A. Sharkov (ZISP); 1♀ C. Vietnam, Gia Lai prov., 20 km N., vil. Buon Luoi, 25.xii.1988, A. Sharkov (ZISP); 2♀ C. Vietnam, 6 km W, vil. Kanack, 16.xi.1988, A. Sharkov (ZISP); 2♀ 125 km W Than Con, Lang Batuok, on *Salix*, 21.i.1989, E.S. Sugonayev (ZISP); 1♀ Kon Tum prov., Kon Plong district, vil. Mang Canh, 1300 m, secondary rain forest, 6.vi.2006, V. Zolotuhin (ZISP). **China:** 1♀ 1♂ W. Hupeh prov., Lichuan district, Suisapa, 3.viii. 1948, Hsiao-Ho (CASC). **Taiwan:** 1♀ Nantou Hsien, Taipei, 10.iii.1961, Schlinger (UCRC); 1♀ Nantou Hsien, Wushe, 1100 m, deciduous forest, 27.v.1990, J. Heraty (UCRC); 6♀ Nantou Hsien, Sun Moon Lake, 800–900 m, Tehuache, 6–7.vi.1990, J. Heraty (UCRC); 1♀ 1♂ Taoyuan, E Sheng Bailing, 800 m, cloud forest, 25.v.1990, J. Heraty (UCRC). **Papua New Guinea:** 2♀ Central prov., 40 km Port Moresby nr Eicogo, rainforest, 26.xii.1985, G. Gordh (UCRC).

**Distribution:** India (Husain & Khan 1986), Indonesia (as *E. insulanus*; Crawford 1911b), China, Malaysia, Sri Lanka (Herting 1976), Taiwan, Vietnam (Zhu & Huang 2003), \*Nepal, \*Papua New Guinea and \*Thailand.

**Hosts:** Ectoparasitoids of *Euproctis* sp. (Lepidoptera: Erebiidae: Limantriinae) and *Dendrolimus* sp. (Lepidoptera: Lasiocampidae) (Zhu & Huang 2002a, 2003), *Thysanoprusia orichalcea* F. (Lepidoptera: Noctuidae) (Men & Thakre 1998) and *Homodes graeteigutta* (Walker) (Lepidoptera: Noctuidae).

### *Euplectrus cinctiventris* Ferrière, 1941

*Euplectrus cinctiventris* Ferrière, 1941: 36; Zhu & Huang 2003: 148.

**Diagnosis:** It was provided by Ferrière (1941) and later by Zhu & Huang (2003) without redescription of the type material. Additional characters: Malar sulcus present. F1, F2 and F3 equal to each other. Mesoscutum with short median carina. Petiole transverse. Gaster brown with yellow spot.

**Redescription:** Female: Head black, clypeus yellow, eyes cherry, antennal pedicel without dark spot. Thorax black, legs yellow, tegulae black. Gaster brown with yellow big spot, brown band and yellow apically.

Head. Malar sulcus present. POL 1.8× as long as OOL. Vertex with two long setae lower under each of posterior ocelli. Antenna. F1 1.7× as long as broad. F1=F2=F3. F2 and F3 1.6× as long as broad. F3 1.3× as long as F4. Clava 1.9× longer than F4 and 2.1× as long as broad.

Mesosoma. Thorax 1.8× as long as gaster. Mesoscutum with very short median carina. scutellum finely superficial reticulate.

Forewing with 3 long setae on SMV. TS1 2.0× as long as TS2, both thick.

Petiole transverse strong reticulate.

Gaster 1.1× as long as broad.

**Syntype:** ♀ **Uganda:** Kampala, 14.i.1930, H. Hargreaves ex caterpillars on grass lumundi? *Euplectrus cinctiventris* det. Ch. Ferrière, 1245 (BMNH, examined). *Note:* The specimen bears a purple lectotype label with “Bouček 1974” on the reverse side but no valid lectotype designation was ever published by Bouček. Thus the type material is redescribed here for the first time in 75 years.

**Other material examined:** 1♀ **Vietnam:** 6 km W vil. Kanack, 14.xii.1988, A. Sharkov (ZISP); 4♀ N. Vietnam, Ha Son Binh, Mai Chou, 2.xi.1990, S.A. Belokobylskij (ZISP).

**Distribution:** China, Dominican Republic, Mexico, Venezuela, Papua New Guinea, South Africa, Uganda (Zhu & Huang 2003) and \*Vietnam.

**Host:** Unknown.

*Euplectrus colliosilvus* Wijesekera & Schauff, 1994

(Fig. 20)

*Euplectrus colliosilvus* Wijesekera & Schauff, 1994: 7; Narendran 2011: 219.

**Diagnosis:** It was given by Wijesekera and Schauff (1994) based on four females from Sri Lanka. Additional characters: Mesoscutum without median carina. Scutellum smooth. Petiole granulate dorsally. Body mostly black, head completely black, legs yellow, only hind coxae dark.

The below specimens identified as *E. colliosilvus* have dark brown hind coxa (honey brown in holotype), POL 1.4× as OOL (1.5 in holotype), F1 1.9× as long as pedicel (1.8 in holotype), scutellum smooth and shiny (alutaceous in holotype).

**Holotype:** ♀ **Sri Lanka:** Hortain Plains, 16.xi.1987, coll. A. Wijesekera (USNM, examined).

**Other material examined:** **Vietnam:** 1♀ 6 km W vil. Kanack, 16.xi.1988, A. Sharkov (ZISP); 1♀ 125 km W Than Con, Lang Batuok, on *Salix*, 21.i.1989, E.S. Sugonayev (ZISP). **Cambodia:** 1♀ Sam Reap prov., Sam Veasna Center, 15–31.i.2014, Malaise trap, F. Goes (RBINS).

**Distribution:** Sri Lanka (Wijesekera & Schauff, 1994), \*Cambodia and \*Vietnam.

**Host:** Unknown.

*Euplectrus euplexiae* Rohwer, 1921

(Fig. 22)

*Euplectrus euplexiae* Rohwer, 1921: 135; Zhu & Huang 2003: 149; Narendran 2011: 221.

**Diagnosis** (after Narendran 2011): Vertex with two setae between lateral ocelli. Pedicel as long as F1. Mesoscutum with short incomplete median carina posteriorly. Petiole 1.2× as long as broad. Head black, yellow at clypeus and part of genae. Gaster yellow with brown cross band before posterior end, legs incl. coxae yellow. Additional characters: Malar sulcus absent. POL 2.0× as OOL (Fig. 22). PMV 1.8× as long as STV. Clava 2.7× as long as broad and 2.3× as long as F4.

**Paratype:** 1♀ **India:** Coimbatore, on *Euplexia conducta*, 8.ii.1914, Ramakrishna Coll., USNM, № 20980 (BMNH, examined).

**Other material examined:** **Malaysia:** 1♀ Selangor, University of Malay, Forest study center 16 mi E of Gombak, 15.vi.1990, J. Heraty (UCRC); 1♀ 1♂ Selangor, Ulu Gombak, 18.vi.1970, J.E. Tobler (CASC); 1♀ Borneo, Sarawak, 2 km Santubok, 1°44'N 110°19'E, 26–29.xi.1996, S.L. Heydon & S. Fung (CASC). **Taiwan:** 1♀ Nantou Hsien, Tungpu, 1200 m, lush forest, 2.vi.1990, J. Heraty (UCRC);

1♀ Tungpu, 1200 m, lush forest, sweep, 1.vi.1990. J. Heraty (UCRC); 1♀ Taoyuan, Shang Bailing, Tungpu, 1200 m, 23.v.1990. J. Heraty (UCRC).

**Distribution:** India, China, Uganda, South Korea (Zhu & Huang 2003), \*Malaysia and \*Taiwan.

**Host:** Ectoparasitoid of *Euplexia conducta* (Walker), *Selepa docilis* Butler (Lepidoptera: Noctuidae) (Narendran 2011). Narendran (2011: 221) cited '*Euplexia capensis* (Guen)' as a host, but there is no such species in the Noctuidae; apparently he meant *Condica capensis* (Guenée), whose distribution range includes Africa, South and Southeast Asia (Hampson 1902).

### *Euplectrus flavigaster* Zhu & Huang, 2003

(Fig. 15)

*Euplectrus flavigaster* Zhu & Huang, 2003: 150.

**Diagnosis:** According to Zhu and Huang (2003): F1 1.3–1.4× as long as pedicel. Hind legs with TS1 1.45× as long as 1<sup>st</sup> tarsomere (Fig. 15). Gaster almost entirely yellow, hind coxae yellow; head completely black (Fig. 15). Additional characters: Mesoscutum with median carina posteriorly. Longest cercal seta straight, less than twice as long as others.

**Holotype:** ♀ **China:** Hainan, Lingshui, Diaoluoshan, 17.iv.1984, Li Chang-fang (IZCAS, not examined).

**Material examined:** **Vietnam:** 1♀ 1♂ Cat Tien, xii.2011, Malaise trap, Z. Yefremova (SMNHTAU). **Papua New Guinea:** 2♀ Canopy mission, Madang prov., Baiteta, 3.vi.1993, Olivier Missa (RBINS); 1♀ Canopy mission, Madang prov., Baiteta, 16.iii.1994, Olivier Missa (RBINS); 2♀ Canopy mission, Madang prov., Baiteta, 26.v.1994, Olivier Missa (RBINS).

**Distribution:** China (Zhu & Huang 2003), \*Vietnam and \*Papua New Guinea.

**Host:** Unknown.

### *Euplectrus fuscicoxalis* Zhu & Huang, 2003

(Fig. 16)

*Euplectrus fuscicoxalis* Zhu & Huang, 2003: 151.

**Diagnosis:** Mesoscutum with complete median carina. Head including clypeus completely black (Fig. 16). Hind coxae dark brown (Fig. 16).

**Holotype:** ♀ **China:** Yunnan, Lijiang, Yulong Mts. 13.viii.1984 (IZCAS, not examined).

**Material examined:** **Thailand:** ♂ Trang prov., Nam Tok Tom Yai, Khao Chong, 65 m, 7°32'N 99°47'E, 10.ii.2005, D. Yanega (UCRC). **Malaysia:** 1♀ Selangor, University of Malay, Forest study center 16 mi E of Gombak, 15.vi.1990, 300 m, J. Heraty; 2♀ Selangor, Kuala Lumpur, University of Malay, Rimba Ilmu, 100 m, 14.vi.1990, 100 m, J. Heraty (UCRC). **Vietnam:** 1♀ Hoa Binh prov., Da Bac, Tuly forest, 23.x.1990, S.A. Belokobylskij (ZISP). **Taiwan:** 3♀ Nantou Hsien, Sun Moon Lake, 800–900 m, Tehuache, 5–7.vi.1990. J. Heraty (UCRC); 1♀ Nantou, Lushan Hot Spgs. 1100 m, 29.v.1990, J. Heraty (UCRC). **Papua New Guinea:** 2♀ Canopy mission, Madang prov., Baiteta, 3.vi.1993, Olivier Missa (RBINS); 2♀ Canopy mission, Madang prov., Baiteta, 1.vi.1994, Olivier Missa (RBINS); 1♂ Canopy mission, Madang prov., Baiteta, 22.vi.1994, Olivier Missa (RBINS); 1♀ Canopy mission, Madang prov., Baiteta, 24.iii.1994, Olivier Missa (RBINS).

**Distribution:** China (Zhu & Huang 2003), \*Thailand, \*Malaysia, \*Vietnam, \*Papua New Guinea and \*Taiwan.

**Host:** Unknown.

*Euplectrus indicus* Ferrière, 1941

(Fig. 3)

*Euplectrus indicus* Ferrière, 1941: 33; Zhu & Huang 2003: 151; Narendran 2011: 224.

**Diagnosis:** It was given Ferrière (1941) and later by Zhu and Huang (2003); Narendran (2011) redescribed the species. Additional characters: Malar sulcus absent. Mesoscutum with complete median carina. Head completely black with yellow clypeus. Hind coxae yellow.

**Redescription:** Female (Fig. 3): Head black with only supraclypeal area and clypeus yellow or reddish brown, eyes cherry, thorax black, gaster brown at apex and with  $\frac{1}{2}$  yellow upper part, antenna yellow with brownish F3, F4 and clava; legs including hind yellow. Malar sulcus absent. Axilla, scutellum and propodeum smooth. Mesoscutum finely reticulate with complete median carina. Pedicel  $1.6\times$  as long as F1, F1  $1.4\times$  shorter than F2, F2  $1.04\times$  shorter than or equal to F3, and equal to F4. Clava  $1.8\times$  as long as F4.

Male with scape less than  $3.3\times$  as long as broad.

**Syntype:** ♀ **India:** Dahra Dun, U.P. India, S.N. Chatterjee, 10.iv.1928. Parasitoid on Geometridae larva, *Euplectrus indicus* Ch. Ferrière (BMNH, 1239, examined). *Note:* The specimen bears a purple lectotype label with "Bouček 1974" on the reverse side but no valid lectotype designation was ever published by Bouček. Narendran (2011) re-examined this specimen, but failed to designate the lectotype according to provisions of Art. 74.7 of *The Code* (ICZN 1999, 2003).

**Material examined:** **India:** 1♀ Dehra Dun U.P.S.N. Chatterjee, 17.iii.1928 on *Apanteles obligus*, var. Wiek, det. Z. Bouček (BMNH). **Vietnam:** 4♀ Gia Lai prov., 20 km N., vil. Buon Luoi, 20–25.xi.1988, A. Sharkov (ZISP); 1♀ C. Vietnam, 3 km W, vil. Kanack, 9.xi.1988, A. Sharkov (ZISP); 3♀ C. Vietnam, Gia Lai prov., 20 km N., vil. Buon Luoi, 3.xii.1988, A. Sharkov (ZISP); 5♀ 125 km W Than Con, Lang Batuok, on *Salix*, 21–22.i.1989, E.S. Sugonayev (ZISP); 3♀ Vietnam, Hoa Binh prov., Da Bac, vil. Tuly forest, 22–23.x.1990, S.A. Belokobylskij (ZISP); 7♀ N. Vietnam, Hoa Binh prov., forest, 1–5.xi.1990, S.A. Belokobylskij (ZISP); 2♀ 1♂ N. Vietnam, Vinh Phuc prov., Tam Dao, 700 m, 100 km nr NW Hanoi, forest. 10–14.xi.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam, Vinh Phuc prov., Tam Dao, 800 m, forest. 18–19.v.1995, E.S. Sugonayev (ZISP); 4♀ N. Vietnam, Ha Son Binh, Mai Chou, 1–2.xi.1990, S.A. Belokobylskij (ZISP); 4♀ N. Vietnam, Hoa Binh prov., Ky Son, Cao Phong, forest, 29.x.1990, S.A. Belokobylskij (ZISP).

**Distribution:** Brazil, China, Mexico, Thailand, Taiwan (Zhu & Huang 2003), India (Ferrière 1941; Narendran 2011) and \*Vietnam.

**Hosts:** Ectoparasitoid of unspecified Geometridae (Lepidoptera) and *Apanteles* sp. (Hymenoptera: Braconidae) (Zhu & Huang 2003), *Eudocima materna* (L.) (Lepidoptera: Erebidæ) (Bhumannavar & Viraktamath 2001).

*Euplectrus koebelei* Crawford, 1911

(Fig. 4)

*Euplectrus koebelei* Crawford, 1911a: 621; Zhu & Huang 2003: 152.

**Diagnosis:** POL  $2.3\times$  as long as OOL. Two setae between lateral ocelli. Clava  $2.0\times$  as long as F4. Mesoscutum strong reticulate with short median carina. Head brown. Scutellum alutaceous. All legs brownish (Fig. 4).

**Original description** (abridged): “Female.—Length, 2 mm. Head and thorax, including clypeal region, black; ... first joint of funicle not distinctly longer than pedicel, following joints shorter...; median lobe of mesonotum coarsely rugosely reticulated, posteriorly with a short median carina ...” (Crawford 1911a: 621).

**Redescription:** Female (Fig. 4): Body length 1.85 mm. Forewing length 1.75 mm. Colour. Head brown including clypeus, antennae brownish, thorax black. All legs brown reddish (Fig. 4). Zhu and Huang (2003: 152) stated that the “hind coxae yellow”, which is incorrect (cf. Fig. 5, holotype). Gaster dorsally brownish with large basal yellow spot and ventrally brownish with yellow spot.

Head. POL  $2.3\times$  as long as OOL. Two setae between lateral ocelli. Antenna. Pedicel almost equal to F1, one thick anellus, F1  $1.8\times$  as long as broad and slightly longer than F2; F2  $1.6\times$  as long as broad and  $1.2\times$  as long as F3; F3  $1.2\times$  as long as broad and  $1.1\times$  as long as F4; F4  $1.1\times$  as long as broad and  $2.0\times$  shorter than clava. Clava  $1.9\times$  as long as broad.

Mesosoma. Mesoscutum with short median carina posteriorly, strong reticulate. Axillae and scutellum alutaceous. Forewing  $2.2\times$  as long as broad; speculum narrow and extending along MV. MV  $1.6\times$  as long as SMV and  $2.0\times$  as long as PMV; PMV  $2.0\times$  as long as STV. TS1  $1.2\times$  as long as 1<sup>st</sup> tarsomere.

Gaster  $1.1\times$  as broad as long.

**Holotype:** ♀ **Japan:** Hakone, A. Koebele. Cat. № 13461 (USNM, examined). *Note:* This is the first redescription of the holotype in 105 years.

**Other material examined:** **Vietnam:** 1♂ Hoa Binh prov., vil. Mai Chou, 4.xi.1990, S.A. Belokobitskij (ZISP). **Cambodia:** 1♂ Seam Reap, Sam Veasna Center, Malaise trap, 15–31.i.2004, F. Goes (RBINS).

**Distribution:** Japan, Malaysia, China, Taiwan, Papua New Guinea (Crawford 1911a; Zhu & Huang 2003), \*Cambodia and \*Vietnam. Extending the species range to Mexico (Zhu & Huang 2003) has been unsupported by examined material.

**Host:** Unknown.

### *Euplectrus kuwanae* Crawford, 1911

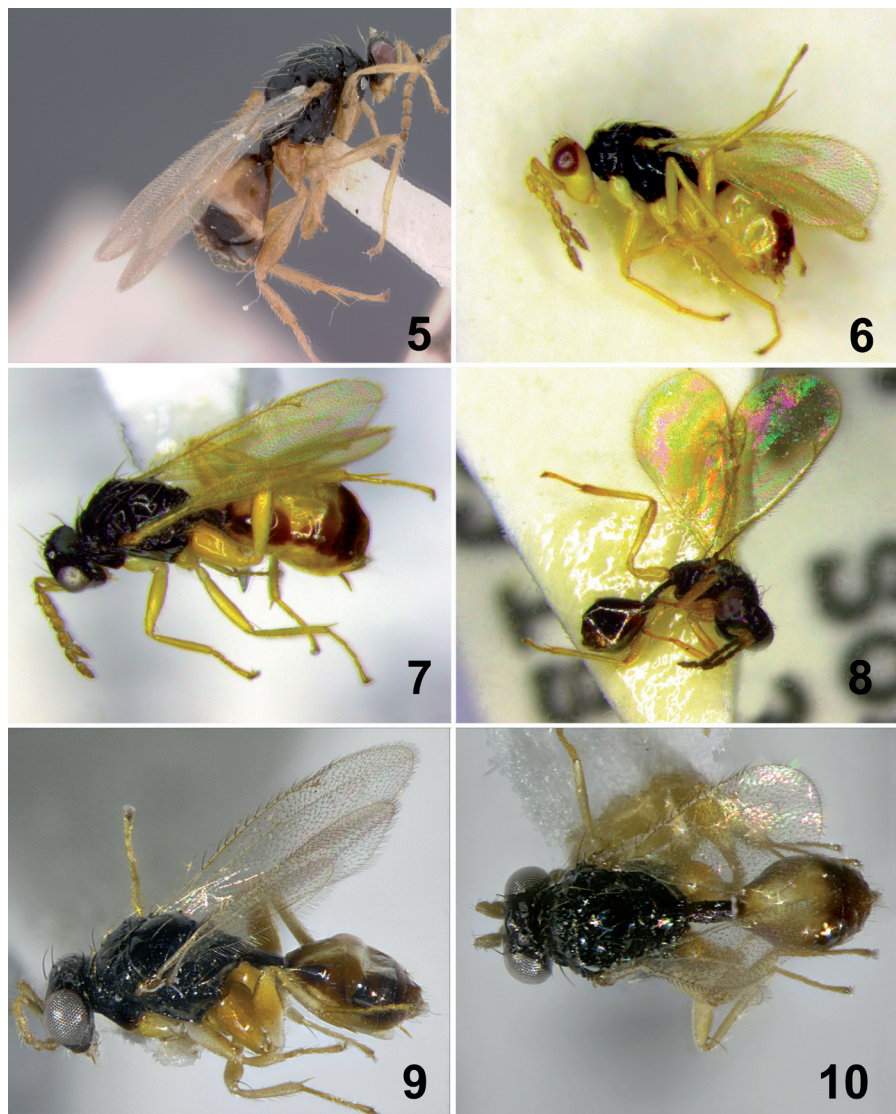
(Fig. 5)

*Euplectrus kuwanae* Crawford, 1911a: 621.

**Diagnosis:** POL  $1.5\times$  as long as OOL. F1  $1.4\times$  as long as F1. Mesoscutum with short median carina posteriorly. Petiole  $1.1\times$  as long as broad. Head black with yellow clypeus. All legs yellow.

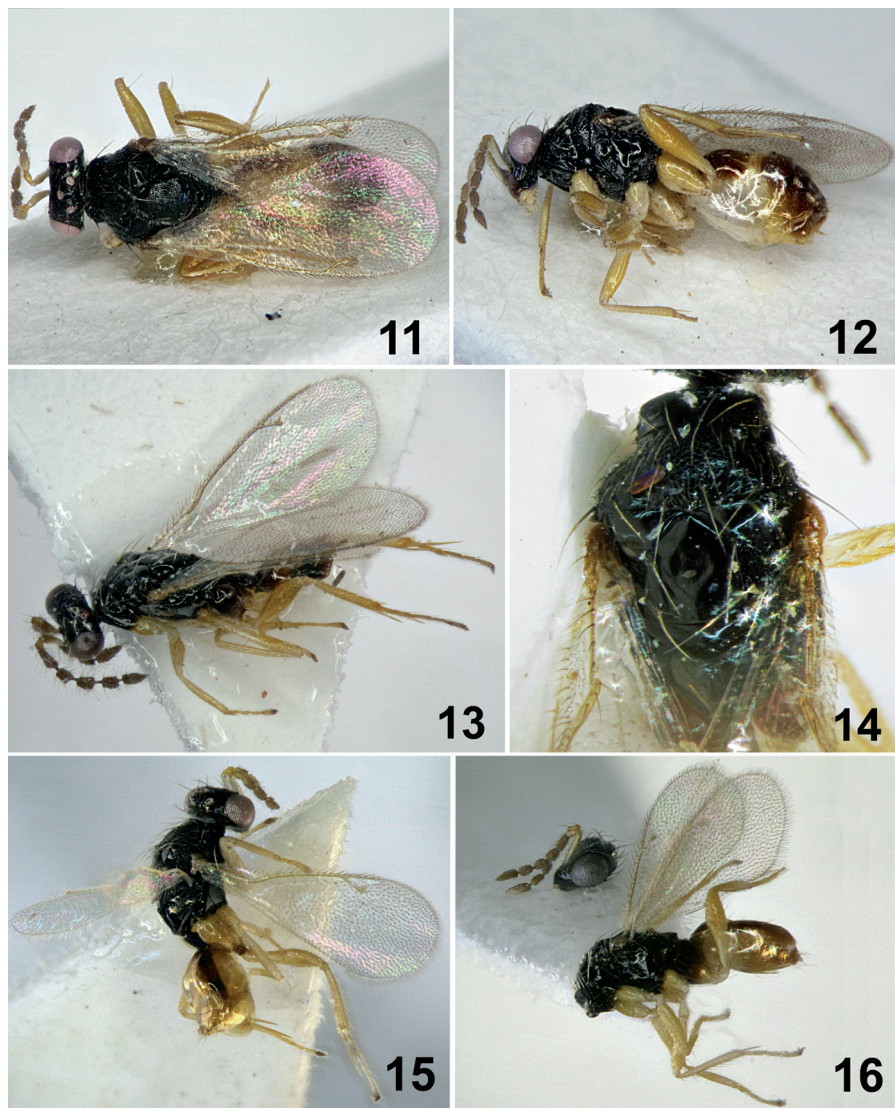
**Original description** (abridged): “Female.—Length about 2 mm. Head and thorax black, clypeal area white; ... pedicel distinctly shorter than first joint of funicle,





**Figs 5–10:** (5) *Euplectrus kuwanae* Crawford, female, holotype, head and mesosoma, lateral view; (6) *E. laphygmae* Ferrière, male, lateral view; (7) *E. manilae* Ashmead, female, dorsolateral view; (8) *E. petiolatus* Ferrière, female, lateral view; (9) *Euplectrus selangeri* n. sp., female, lateral view; (10) *E. pahangi* n. sp., female, dorsal view.

following joints of funicle successively shorter ...; median lobe of mesonotum coarsely rugosely reticulated ...; scutellum with irregularly longitudinal lines ...” (Crawford 1911a: 621–622).



**Figs 11–16:** (11) *Euplectrus selangeri* n. sp., dorsal view; (12) *E. pahangi* n. sp., lateral view; (13) *E. peduncularis* n. sp., male, lateral view; (14) *E. peduncularis* n. sp., male, mesosoma, dorsal view; (15) *Euplectrus flavigaster* Zhu & Huang, female, dorsolateral view; (16) *E. fuscicoxalis* Zhu & Huang, female, head with antennae in lateral view and body in lateral view.

**Redescription:** Female (Fig. 5): Body length 1.75 mm. Forewing length 1.6 mm. Colour. Head (clypeus yellow) and thorax black (tegulae yellow), antenna yellow, legs yellow, gaster dorsally yellow and brownish on sides and at apex yellow.





**Figs 17–22:** (17) *Euplectrus brevisetulosus* Zhu & Huang, female, lateral view; (18) *E. longipetiolatus* Zhu & Huang, female, lateral view; (19) *Euplectrus leucostomus* Rohwer, lateral view; (20) *E. colliosilvus* Wijesekera & Schauff, paratype, lateral view; (21) *E. reticulatus* Zhu & Huang, dorsal view; (22) *E. euplexiae* Rohwer, holotype, dorsal view.

Head. Eyes bare. POL 1.5× as long as OOL. Two setae between lateral ocelli present. Antenna (Fig. 5). Scape about 3× as long as pedicel. Pedicel 1.4× shorter than F1, one anellus, F2 1.2× as long as F3; F3 almost equal to F4. Clava 2.3× as long as broad.

Mesosoma. Mesoscutum with short median carina posteriorly, strong reticulate, with 3 pairs long setae. Axillae finely reticulate, scutellum strong reticulate and propodeum smooth. Callus with 8 setae in 2 rows: 5 in first and 3 in second. Forewing  $2.4\times$  as long as broad; speculum narrow and extending along MV, MV  $1.4\times$  as long as SMV and  $2.6\times$  as long as PMV; PMV  $1.7\times$  as long as STV. TS1  $1.3\times$  as long as 1<sup>st</sup> tarsomere. Petiole strong reticulate,  $1.1\times$  as long as broad.

Gaster  $1.1\times$  broader than long.

**Holotype:** ♀ **Japan:** ex *Parnara guttatus* S.L. Kuwana. Cat. № 13462 (USNM, examined). *Note:* This is the first redescription of the holotype in 105 years.

**Distribution:** Japan (Crawford 1911a).

**Host:** *Parnara guttatus* Bremer & Grey (Lepidoptera: Hesperidae) (Crawford 1911a), *Argyrogramma albostrata* Bremer & Grey (Lepidoptera: Noctuidae) (Uematsu 1981).

### *Euplectrus laphygmae* Ferrière, 1941

(Fig. 6)

*Euplectrus laphygmae* Ferrière, 1941: 40; Zhu & Huang 2003: 153.

**Diagnosis:** F1–F4 equal to each other. Mesoscutum with short median carina posteriorly. Head brown with yellow clypeus. All legs yellow.

**Additional characters** to Ferrière's (1941) description: Female: Colour. Head brown (clypeus yellow, genae nearly entirely yellow), thorax black, tegulae yellow, legs yellow, petiole black, gaster yellow, brownish on Gt<sub>5-7</sub>. Eyes grey, ocelli grey. Male with complete yellow head (Fig. 6). Ocelli very small compared to other species of *Euplectrus*. OOL  $1.2\times$  as long as POL. Pedicel  $1.3\times$  shorter than F1. Length of F1–F4 almost equal to each other.

Mesosoma. Thorax  $1.6\times$  as long as broad. Mesoscutum with short median carina posteriorly. Forewing  $2.8\times$  as long as broad; SMV with 3 long setae, speculum extending along  $\frac{2}{3}$  MV. Petiole subquadrate.

Gaster  $1.36\times$  as long as broad.

**Syntype:** ♀ **Malawi:** Nyasaland, Zomba, 2500 m, iv.1936, C. Smee, ex *Laphygma exempta*; Ntonowe. (BMNH, 1254, examined). *Note:* The specimen bears a purple lectotype label with "Bouček 1974" on the reverse side but no valid lectotype designation was ever published by Bouček.

**Other material examined:** **India:** 1♂ Assam, Abhooypur For. Naphuk, 360 m, 7–12.1961, E.S. Ross & D. Cavagnaro Coll (UCRC). **Vietnam:** 2♀ 6 km W, vil. Kanack, 16.xi.1988, A. Sharkov (ZISP); 1♀ Vietnam, Ba Vi National Park, Ha Tay prov., 400 m, 23.xi.1990, E.S. Sugonyaev (ZISP); 1♂ N. Vietnam, Hoa Binh prov., Da Bac, vil. Tuly forest, 17.x.1990, S.A. Belokobylskij (ZISP). **Malaysia:** 2♀ 2♂ Selangor, University of Malay, Forest Study Center 13 mi E of Gombak, 15–24.vi.1990, 300 m, J. Heraty (UCRC); 5♀ 3♂ Pahang, Kuala Tahan, Taman Negara Nat. Park, 200 m, 20–21.vi.1990, sweep, rainforest, J. Heraty (UCRC); 2♂ Selangor, Kuala Lumpur, University of Malay, Rimba Ilmu, 100 m, 14.vi.1990, J. Heraty (UCRC). **Papua New Guinea:** 1♂ 40 m E Port Moresby, nr Eikogo, 26.xii.1985, G. Gordh (UCRC).

**Distribution:** Benin, Nigeria (Delvare & Rasplus 1994; Zhu & Huang 2003), Tanzania, Cape Verde (Fry 1989), Indonesia (Ubaidillah 2003), Kenya (Gerling &

Limon 1976), Congo, Cameroon, Ivory Coast (Herting 1976), Uganda, Senegal, Sudan, Malawi, Zimbabwe (Ferrière 1941), China (Zhu & Huang 2003), \*India, \*Malaysia, \*Vietnam and \*Papua New Guinea. The report of the species from Mauritius, South Africa and Israel (Zhu & Huang 2003) has been unsupported by examined material.

**Hosts:** Ectoparasitoids of the African armyworm *Spodoptera exempta* (Walker) (Lepidoptera: Noctuidae) (Ferrière 1941), beet armyworm *Spodoptera exigua* (Hübner) (Lepidoptera: Noctuidae) (Bashir & Venkatraman 1968), Arctiidae and Noctuidae (Lepidoptera) (Herting 1976; Gerling & Limon 1976; Fry 1989; Delvare & Rasplus 1994).

### *Euplectrus leucostomus* Rohwer, 1921

*Euplectrus leucostomus* Rohwer, 1921: 134; Wijesekara & Schauff 1994: 10; Zhu & Huang 2003: 154.

**Diagnosis:** Wijesekara and Schauff (1994) provided diagnosis based on type material and material from Sri Lanka. Mesoscutum strongly reticulate with complete median carina. Axillae smooth. Scutellum strongly striate longitudinally. Petiole short as long as broad. Female. Clava 1.01× as long as broad and 1.3× as long as F4. Male. Clava 3.2× as long as broad and 1.4× as long as F4.

Some specimens from Vietnam have black spot on vertex and frons of head as in the male paratype.

**Paratype:** ♂ **India:** № 108/17-18, Coimbatore, 5.xi.1917. Parasites on *Coslor* C.V.S. Coll. (BMNH, examined).

**Material examined:** **Sri Lanka:** 2♀ Central Kandy District, Randenigota Rentembe Sanctuary, 7°13'N 80°57'E, Malaise trap, 20–30.viii.1999, J Wasbauer (CASC). **China:** 3♀ Chi-Au-Shan, 20.vii.1948, Gressitt Djou, Coll (CASC); 1♀ W. Hubei prov., Lichuan district, Suisapa, 31.vii.1948, Hsiao-Ho (CASC). 1♀ **Cambodia:** Siem Reap prov., Sam Veasna Center, Malaise trap, 28.xii.2014, I. Var (RBINS). **Malaysia:** 2♀ Kedah, Pantai Kok Pulau, 6°22'N 99°42'E, 19–21.vi.1996, S.L. Heydon & S. Fung (CASC). **Vietnam:** 1♀ Gia Lai -Con, Tum Tram Lap, 20 km N, Buon Luoi, 14.xi.1988, A. Sharkov (ZISP); 9♀ 1♂ Gia Lai-Con, Tum Tram Lap, 20 km N, Buon Luoi, 3–13.xii.1988, A. Sharkov (ZISP); 2♀ 3♂ Gia Lai -Con, Tum Tram Lap, 20 km N, Buon Luoi, 20–25.xi.1988, A. Sharkov (ZISP); 1♀ Hanoi, on Poacea, 13.ii.1989, E.S. Sugonayev (ZISP); 2♀ Vietnam, Hoa Binh prov., vil. Mai Chou, 2–3.xi.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam, Hanoi, 8.x.1990, S.A. Belokobylskij (ZISP).

**Distribution:** Dominican Rep., Sri Lanka, China, Mexico (Zhu & Huang 2003), India (Herting 1976), \*Cambodia, \*Malaysia and \*Vietnam.

**Hosts:** Ectoparasitoid of Lasiocampidae and Noctuidae (Lepidoptera) (Herting 1976; Zhu & Huang 2003).

### *Euplectrus liparidis* Ferrière, 1941

*Euplectrus liparidis* Ferrière, 1941: 43; Zhu & Huang 2002b: 134, 2003: 154.

**Diagnosis:** F1 2.4× as long as broad. Mesoscutum with short median carina posteriorly. Scutellum with longitudinal sculpture. Head black with yellow clypeus. All legs yellow.

**Redescription:** Female: POL 1.5× as long as OOL. Vertex with 2 setae between posterior ocelli. Antenna. F1 2.4× as long as broad, F1=F2=F3, F2 and F3 2.2× as long as broad, F4 1.1× shorter than F3 and 2.0× as long as broad. Clava 1.3× as long as F4 and 2.1× as long as broad. Head black. Clypeus yellow from half of neck till toruli. Eyes cherry, pedicel with dark spot. Thorax black, 2.4× as long as gaster. Mesoscutum areolate with short median carina and 5 pairs of setae. Tegula yellow. Scutellum with longitudinal sculpture. Petiole 2.0× as long as broad. Legs yellow, TS1 1.4× as long as TS2.

Gaster 1.3× as long as broad, brown with yellow spot, lower margin almost straight.

**Syntype:** ♀ **Algeria:** Algiers, Bou Zegza, ix.1936, M. Delassus, *Euplectrus liparidis* n. sp. Ch. Ferrière det. (BMNH, 5 1238, examined). *Note:* The specimen bears a purple lectotype label with “Boucek 1974” on the reverse side but no valid lectotype designation was ever published by Bouček. This is the first redescription of the type material in 75 years.

**Material examined:** **Vietnam:** 1♀ Ha Son Binh, Da Bac, Tully, forest, 17.x.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam, Hoa Binh prov., vil. Mai Chou, 2.xi.1990, S.A. Belokobylskij (ZISP).

**Distribution:** Palearctic; \*Vietnam. Extending the species range to Canada (Zhu & Huang 2003) has been unsupported by examined material.

**Hosts:** Ectoparasitoid of *Limantria dispar*, L. sp. (L.) (Lepidoptera: Erebidae: Limantriinae) (Bouček & Askew 1968; Zhu & Huang 2002), *Agrapha agnata* (Staudinger), *Leucania loreyi* (Duponchel), *Ctenoplusia agnata* (Staudinger) (Lepidoptera: Noctuidae) (Zhu & Huang 2003; Yefremova *et al.* 2007).

#### *Euplectrus longipetiolatus* Zhu & Huang, 2003

*Euplectrus longipetiolatus* Zhu & Huang, 2003: 156.

**Diagnosis:** Mesoscutum without complete median carina. Scutellum entirely with very fine reticulations. Head completely black, hind coxae and at least part of hind femora dark (Zhu & Huang 2003). Propodeum, callus with 7 long setae (Fig. 18). Petiole 1.55–1.66× as long as broad (Fig. 18). Specimen is very easily recognized by dark brown hind coxae and dark brown dorsal hind femora (Fig. 18).

**Holotype:** ♀ **Papua New Guinea:** Morobe prov., Wau, Mt. Kaindi, 8.iii.1993, 1150–2300 m, ex fogging tray under *Piper plagiophyllum* K. Sch and Laut. (Y. Basset) (EIHU, not examined).

**Material examined:** **Vietnam:** 10♀ Gia Lai-Con, Tum Tram Lap, 20 km N, Buon Luoi, 6–12. xii.1988, A. Sharkov (ZISP). **Malaysia:** 2♀ Selangor, Kuala Lumpur, University of Malay, Rimba Ilmu, 100 m, 23.vi.1990, J. Heraty (UCRC); 1♀ Selangor, Templer Nat. Park, 200 m, 26.iv.1990, J. Heraty (UCRC).

**Distribution:** China, Taiwan, Papua New Guinea (Zhu & Huang 2003), \*Malaysia and \*Vietnam.

**Host:** Unknown.

#### *Euplectrus manilae* Ashmead, 1904

(Fig. 7)

*Euplectrus manilae* Ashmead, 1904: 16; Zhu & Huang 2003: 157; Narendran 2011: 231.



**Diagnosis:** Pedicel  $1.2\times$  as long as broad, and  $1.6\times$  shorter than F1. Mesoscutum without median carina. Head brown with yellow clypeus. All legs yellow.

**Original description** (abridged): “♀. Length 1.5 mm. Head and thorax black, shining ... the mesonotum posteriorly delicately shagreened, but without a median carina posteriorly; mouth parts, scape, pedicel, legs, including coxae, and the abdomen beneath and a large spot on disk above yellowish-white ... the petiole of the abdomen and the body of abdomen at the sides and apex black. Wings hyaline, the veins pale or yellowish” (Ashmead 1904: 16).

**Redescription:** Female (Fig. 7): Body length cannot be measured correctly because of destroyed gaster. Colour. Head brown (clypeus yellow), thorax black, tegulae yellow, legs yellow, petiole black, gaster yellow, brownish on Gt<sub>1</sub>.

Head. Malar sulcus present. OOL  $1.1\times$  shorter than POL. Pedicel  $1.2\times$  as long as broad and  $1.6\times$  shorter than F1. F1  $1.5\times$  as long as broad and  $1.1\times$  as long as F2. F2 about  $1.5\times$  as long as broad and  $1.1\times$  as long as F3. F3  $1.3\times$  as long as broad and  $1.1\times$  as short as F4. F4  $1.5\times$  as long as broad. Clava  $2.2\times$  as long as broad and  $1.7\times$  as long as F4.

Mesosoma. Mesoscutum without median carina, with 3 pairs long setae, alutaceous. Scapulae smooth, axillae smooth, scutellum smooth, propodeum in middle part smooth and on both sides slightly striate. Callus of propodeum with 3 long setae in first row and 2 setae in the second. Forewing  $2.3\times$  as long as broad. SMV with 1 short and 4 long setae ( $2.0\text{--}3.0\times$  as long as setae on MV and PMV). Speculum extending along  $\frac{2}{3}$  MV. MV  $1.6\times$  as long as SMV and  $2.3\times$  as long as PMV. PMV  $1.4\times$  as long as STV. TS1  $1.5\times$  as long as 1<sup>st</sup> tarsomere.

**Variation** (11♀ 1♂): Female. Body length 1.30–1.60 mm. F4  $1.7\text{--}1.9\times$  shorter than clava. Clava  $1.5\text{--}1.7\times$  as long as broad. Forewing  $2.3\text{--}2.4\times$  as long as broad. MV  $1.6\text{--}1.8\times$  as long as SMV and  $2.1\text{--}2.3\times$  as long as PMV. PMV  $1.4\text{--}1.6\times$  as long as STV. Callus of propodeum with 5 long setae in 2 rows; 3 in the first and 2 in the second. Longest cercal seta  $2.3\text{--}2.2\times$  as long as others.

**Holotype:** ♀ **Philippines:** Manila (W.A. Stanton), № 1723. *Euplectrus manilae* Ashmead 1904 (USNM, examined). *Note:* This is the first redescription of the holotype in 112 years.

**Material examined:** **Sri Lanka:** 1♀ Central Kandy District, Randenigota Rentembe Sanctuary, 7°13'N 80°57'E, 20–30.viii.1999, Malaise trap, J. Wasbauer (CASC). **Thailand:** 3♀ Trang prov., Forest Research Station, Khao Chong, 7°33'N 99°47'E, 29–31.i.2005, MT, D. Lohman (UCRC); 4♀ Trang prov., Forest Research Station, Khao, Khao Chong, trail, 75 m, 7°33'N 99°47'E, 8.ii.2005, D. Yanega (UCRC); 1♀ Songkhla, Khao, Khaw [=Kho] Hong, 7°01'N 100°31'E, 15.ii.2005, D. Yanega (UCRC); 1♀ Suphanburi, Khao Yai National Park, Khang Kheo waterfall, 900 m, 30.vi.1990, rainforest, J. Heraty (UCRC); 2♀ Suphanburi, Khao Yai National Park, Nam Tok Naew Narok, 550 m, 2.vii.1990, J. Heraty (UCRC); 2♀ Kanchanaburi, Erawan National Park, Khang Kheo waterfall, 900 m, 5.vii.1990, mix bamboo forest, J. Heraty (UCRC). **Malaysia:** 2♀ 1♂ Pahang, Kuala Tahan, Taman Negara Nat. Park, 200m, 20–21.vi.1990, sweep, rainforest, J. Heraty (UCRC); 7♀ 1♂ Selangor, University of Malay, Forest study center 13 mi E of Gombak, 15–24.vi.1990, 300 m, J. Heraty; 5♀ Selangor, University of Malay, Rimba Ilmu, 14–23.vi.1990, 100 m, J. Heraty; 5♀ 2♂ Borneo, Sarawak, Gunung Buda, 64 km S Limbang, 4°12'N 114°56'E, 20–28.xi.1996, S.L. Heydon & S. Fung (CASC); 1♀ Selangor, University of Malay, Botanical garden, 10–12.vi.1996, S.L. Heydon (CASC); 6♀ Kedah, Pantai Kok Pulau, 6°22'N 99°42'E, 19–21.vi.1996, S.L. Heydon & S. Fung (CASC). **South Korea:** 1♀ Suwon-Si, Seudun Dong, Yegosinan, 7.x.1997, J.-Y. Choi, YPT (CASC). **Taiwan:** 1♀ Nantou,

Lushan Hot Spgs. 1100 m, 29.v.1990, J. Heraty (UCRC); 1♀ Nantou, Tungpu, 1200 m, 1.vi.1990, J. Heraty (UCRC); 5♀ 1♂ Nantou, Hsien, Soon Moon Lake, Tehuache, 800–900 m, 6.vi.1990, J. Heraty (UCRC). **Papua New Guinea:** 1♀ Canopy mission, Madang prov., Baiteta, 8.vi.1993, Olivier Missa (RBINS); 1♀ Canopy mission, Madang prov., Baiteta, 21.vi.1994, Olivier Missa (RBINS); 1♀ Canopy mission, Madang prov., Baiteta, 4.v.1995, Olivier Missa (RBINS); 1♀ Canopy mission, Madang prov., Baiteta, 31.v.1994, Olivier Missa (RBINS). **French Polynesia:** 1♀ Society Islands, Moorea Opunohu, 15.xii.2004, J. Grandgirard (RBINS).

**Distribution:** Australia, China, Japan, Malaysia, Papua New Guinea, Philippines, Thailand (Zhu & Huang 2003), \*Sri Lanka, \*Vietnam, \*South Korea and \*French Polynesia.

**Host:** Parasitoids of Noctuidae and Papilionidae (Lepidoptera) (Zhu & Huang 2003) and *Anomis flava* (Fabricius) (Lepidoptera: Erebididae) (Muniappan *et al.* 2012).

*Euplectrus pahangi* n. sp.

(Figs 10, 12)

**LSID:** urn:lsid:zoobank.org:act:1416E3F7-BD71-4B72-AA15-54D852917EF1.

**Etymology:** The species name refers to the type locality, Pahang.

**Diagnosis:** Malar sulcus absent. Petiole in the middle with lateral projections with 1 seta (Fig. 10). Mesoscutum reticulate with short median carina posteriorly. Axillae, scutellum, propodeum smooth. Basal cell of forewing with one row of short setae and 2 long setae near MV. TS1 1.4× as long as 1<sup>st</sup> tarsomere.

**Description:** Female (Figs 10, 12): Body size 1.5 mm, forewing 1.3 mm.

Colour. Body mostly black, head black, clypeus brown, antennae yellow (scape pale yellow), tegulae yellow, gaster yellow with brown on Gt<sub>5-7</sub>, fore and mid legs pale yellow, hind legs citron yellow.

Head. Malar sulcus absent. Two pairs setae between lateral ocelli present. POL 2.6× as long as OOL. Antennae inserted slightly below the level of eyes (Fig. 12). Scape 2.2× as long as pedicel. F1 1.1× as long as pedicel. F1, F2, F3 and F4 equal to each other. Clava 2.0× as long as broad and 1.6× as long as F4.

Mesosoma. Mesoscutum reticulate, scapulae, axillae and scutellum smooth, propodeum smooth, shiny, with median carina. Mesoscutum with short median carina posteriorly and with 3 pairs long setae. Propodeum with median carina, callus with 4 long setae in one row. Forewing 2.2× as long as broad. SMV with 3 long setae. Speculum small, closed. MV 2.1× as long as SMV. MV 2.1× as long as PMV. PMV 1.6× as long as STV. Basal cell with one row of short setae and 2 long setae near MV. Hindwing rounded apically. Hind legs with two spurs; TS1 1.4× as long as 1<sup>st</sup> tarsomere and 1.1× as long as 1<sup>st</sup> tarsomere and 2<sup>nd</sup> tarsomere together. Petiole (Fig. 10) 1.9× as long as broad, with lateral projections with 1 seta, granulate.

Gaster 1.4× as long as broad. Longest cercal seta 3.0× as length of others, sinuate.

**Holotype:** ♀ **Malaysia:** Pahang, Taman Negara Nat. Park, Kuala Tahan [4°22'N 102°24'E], 200 m, 20–21.vi.1990, sweep, rainforest, J. Heraty (UCRC).

**Distribution:** Currently known only from Malaysia.

**Host:** Unknown.

**Comments:** The new species has a long petiole as in *E. petiolatus* and *E. ceylonensis*, but the latter two species do not have lateral projections with setae. This is an important feature separating the new species from others.

*Euplectrus parvulus* Ferrière, 1941

*Euplectrus parvulus* Ferrière, 1941: 33; Zhu & Huang 2003: 160; Narendran 2011: 241.

**Diagnosis:** Antenna very short. Mesoscutum with median carina posteriorly. Petiole short, smooth dorsally; clypeus yellow or reddish brown, thorax black. Gaster yellow dark band before apex, legs pale yellow, hind coxae yellow (Zhu & Huang 2003).

**Syntype:** ♀ **India:** Khanewal Pin Punjab R.N. M., 29.vii.1928 on *Plecoptera reflexa*, det. Bouček, 1974 (BMNH, examined). *Note:* Narendran (2011) re-examined the specimen labelled (but never published) as lectotype by Bouček, but failed to designate the lectotype according to provisions of Art. 74.7 of *The Code* (ICZN 1999, 2003).

**Other material examined:** 1♀ **Vietnam:** Hanoi, 30.x.1988, A. Sharkov (ZISP).

**Distribution:** China, India, Myanmar (Zhu & Huang 2003; Narendran 2011) and \*Vietnam.

**Host:** Parasitoids of Geometridae, Noctuidae, Pyralidae (Lepidoptera) and Lophopidae (Hemiptera: Fulgoromorpha) (Zhu & Huang 2003). It also attacks *Elasmus* sp. or tetrastichines in Eulophidae (Hymenoptera) (Zhu & Huang 2003).

*Euplectrus peduncularis* n. sp.

(Figs 13, 14)

**LSID:** urn:lsid:zoobank.org:act:E0776DF2-F22B-4071-B9AE-DF4CBE72EDF1.

**Etymology:** From Latin *peduncularis* (stalked), in reference to long flagellomere stalks in the antenna.

**Diagnosis:** Male antenna with pedunculate flagellomeres covered by long whitish hair (Fig. 13). Mesoscutum reticulate with short median carina posteriorly. Axillae, scutellum, propodeum smooth (Fig. 14). Basal cell of forewing with several rows of short setae TS1 1.5× as long as 1<sup>st</sup> tarsomere. Body mostly dark, legs yellow except dark brown hind coxae.

**Description:** Male (Figs 13, 14): Body size 1.5 mm.

Colour. Body mostly black, head black including clypeus, eyes dark pink, ocelli light brown; antennal funicle brownish with long whitish hair (scape and pedicel yellow with brown setae), tegulae yellow, gaster brown with yellow spot in middle on Gt<sub>2-5</sub>, legs yellow, hind coxae brown.

Head. Malar sulcus present. No mandibles. Two long pairs and two short pairs setae between lateral ocelli present. Eyes aetose. POL  $1.2\times$  as long as OOL. Antennae inserted above the lower margin level of eyes. Scape  $3.0\times$  as long as wide. Length of sensory area (plaque) is situated in anterior half ventral length of scape. Pedicel short with 2 long brown setae. Flagellomeres 1–4 with long peduncles (Fig. 13). F1 with long hair ( $2.0\times$  as long as broad of F1)  $3.1\times$  as long as pedicel, and  $1.3\times$  as long as F2, F2, F3 and F4 almost equal to each other with long hair. Clava 3-segmented with long hair and  $2.1\times$  as long as broad and  $1.5\times$  as long as F4.

Mesosoma. Pronotum smooth. Mesoscutum (Fig. 14) reticulate, axillae, scutellum and propodeum smooth, shiny. Mesoscutum with very short median carina posteriorly. Propodeum with median carina, callus with 4 long setae in one row. Forewing  $2.5\times$  as long as broad. SMV with 5 long setae. Speculum narrow  $\frac{1}{3}$  along MV. MV  $1.6\times$  as long as SMV. MV  $1.6\times$  as long as PMV. PMV  $2.5\times$  as long as STV. Basal cell with several rows of short setae. Hindwing rounded apically. Hind legs with two spurs; TS1  $1.5\times$  as long as 1<sup>st</sup> tarsomere and  $1.7\times$  as long as TS2. Petiole  $2.2\times$  as long as broad, reticulate.

Gaster  $2.0\times$  as long as broad. Genitalia. Digitus with one spine.

**Holotype:** ♂ **Vietnam:** Hanoi [21°00'N 105°50'E], 7.xi.1994, Sugonyaev (ZISP).

**Distribution:** Currently known only from Vietnam.

**Host:** Unknown.

**Comments:** *Euplectrus peduncularis* n. sp. has flagellomeres 1–4 with peduncles and thus differs from other known species in Southeast Asia and adjacent countries. Hansson *et al.* (2015) described male of *E. alvarowillei* with swollen scape and flagellomeres 3–4 with peduncles from Costa Rica.

### *Euplectrus petiolatus* Ferrière, 1941

(Fig. 8)

*Euplectrus petiolatus* Ferrière, 1941: 34; Zhu & Huang 2003: 160; Narendran 2011: 245.

**Diagnosis:** Female: F1  $3.0\times$  as long as broad, others flagellomeres  $2.5\times$  longer than broad. Petiole  $2.4\times$  as long as broad (Fig. 8). Mesoscutum without median carina. Scutellum smooth. Gaster  $2.0\times$  as long as broad. Forewing about  $2.7\times$  as long as broad. SMV with 3 long setae. Body black, antenna and legs yellow, gaster brown with yellow spot.

**Variation:** Specimens from Vietnam have petiole  $1.5\text{--}2.0\times$  as long as broad. Female from Taiwan has petiole  $4.0\times$  as long as broad.

**Lectotype:** ♀ **India:** Dehra Dun U.P.S.N. Chatterijee, 5.xi.1928 on Lymantriidae larva, det. Bouček (BMNH, examined; designated by Narendran (2011)).

**Other material examined:** **Vietnam:** 1♀ Gia Lai prov., 20 km N., vil. Buon Luoi, 22.xi.1988, A. Sharkov (ZISP); 2♀ C. Vietnam, Gia Lai prov., Tram Lap, 20 km N Buon Luoi 7–8.xii.1988, A. Sharkov (ZISP); 2♀ Vietnam, Hoa Binh prov., Da Bac, vil. Tuly forest, 18–23.x.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam, Hoa Binh prov., forest. 3.xi.1990, S.A. Belokobylskij (ZISP); 1♀ N. Vietnam,

Vinh Phuc prov., Tam Dao, 200 m, 100 nr NW Hanoi, forest, 12.xi.1990, S.A. Belokobylskij (ZISP).  
**Taiwan:** 1♀ Nantou, E. Shankan, 2100 m, 28.v.1990, J. Heraty (UCRC).

**Distribution:** India (Ferrière 1941; Narendran 2011), China, Taiwan (Zhu & Huang 2003) and \*Vietnam.

**Host:** Ectoparasitoid of Lymantriinae (Lepidoptera: Erebidae) (Narendran 2011).

*Euplectrus reticulatus* Zhu & Huang, 2003

*Euplectrus reticulatus* Zhu & Huang, 2003: 161.

**Diagnosis:** Mesoscutum with median carina posteriorly. Scutellum reticulate. Head with only supraclypeal area and clypeus yellow or reddish brown. Gaster with a broad dark spot. Hind coxae yellow (Zhu & Huang 2003).

**Holotype:** ♀ **China:** Hubei, Lichuan, Xingdoushan, 25.viii.1989, 900 m, Hunang Da-wei (IZCAS, not examined).

**Material examined:** **Vietnam:** 1♀ Hanoi, 8.x.1990, S. Belokobylskij (ZISP). **Malaysia:** 1♀ Pahang, Kuala Tahan, Taman Negara Nat. Park, 200 m, 20–21.vi.1990, sweep, rainforest, J. Heraty (UCRC).

**Distribution:** China (Zhu & Huang, 2003), \*Vietnam and \*Malaysia.

**Host:** Unknown.

*Euplectrus selangori* n. sp.

(Figs 9, 11)

**LSID:** urn:lsid:zoobank.org:act:C1BF30CF-4C9C-4734-8E37-55ADDB4927C7.

**Etymology:** The species name refers to the place, where the holotype was collected.

**Diagnosis:** F1 2.0× as long as pedicel. Clava 2.7× as long as broad. Mesoscutum with complete median carina, reticulate. Scutellum reticulate, petiole 1.4× as long as broad. Basal cell of forewing with 6 short setae near MV. TS1 1.3× as long as 1<sup>st</sup> tarsomere.

**Description:** Female (Figs 9, 11): Body size 1.9 mm, forewing 1.6 mm.

**Colour.** Body (Fig. 9) mostly black, head black with yellow brownish clypeus. Scape pale yellow ventrally, flagellum brownish. Tegulae brownish. Gaster yellow with black Gt<sub>5–7</sub>, brown on sides and apically, ventrally whitish. Fore leg pale yellow, mid and hind legs dark yellow.

**Head.** Malar sulcus present. Two setae between lateral ocelli present. POL 1.7× as long as OOL. Antenna (Fig. 11). Pedicel 2.0× shorter than F1. F1, F2 and F3 equal to each other. F3 1.1× as long as F4. Clava 2.7× as long as broad with long apical sensillum and 1.4× as long as F4.

**Mesosoma.** Mesoscutum strong reticulated, with complete median carina (Fig. 11), and 3 pairs long setae. Scutellum reticulate longitudinally, scapulae and axillae smooth, propodeum smooth. Propodeum with median carina, callus with 4 long setae. Forewing 2.4× as long as broad. SMV with 3 long setae Speculum small, closed. MV 1.7× as long as SMV, PMV 1.7× as long as STV. Basal cell with 6

short setae near MV. Hind tibia with 2 spurs: TS1 1.5× as long as TS2 and 1.3× as long as 1<sup>st</sup> tarsomere. Petiole 1.4× as long as broad.

Gaster 1.6× as long as broad.

**Holotype:** ♀ **Malaysia:** Selangor, University of Malay, Forest Study Center [3°19'N 101°45'E], 16 mi E of Gombak, 15.vi.1990, 300 m, J. Heraty (UCRC).

**Distribution:** Currently known only from Malaysia.

**Host:** Unknown.

**Comments:** In Asia, there are six *Euplectrus* species with complete median carina on mesoscutum (*E. fuscicoxalis*, *E. leucostomus*, *E. indicus*, *E. cinctiventris*, *E. agaristae* and *E. selangori* n. sp.). The new species similar to *E. agaristae* in having the pedicel shorter than F1, F2 equal to F3 and black head with yellow clypeus, but differs in the petiole being 1.4× as long as broad (1.1× in *E. agaristae*), brown tegulae (yellow in *E. agaristae*) and grey eyes (red in *E. agaristae*).

*Euplectrus thanhi* Yefremova, 1994

*Euplectrus thanhi* Yefremova, 1994: 149.

**Diagnosis:** POL 1.3× as OOL. Mesoscutum with weak and incomplete median carina. Petiole 1.5–1.6× as long as broad. Longest spur on hind tibia (TS1) 1.3× as long as 1<sup>st</sup> tarsomere. Scutellum smooth. Head (except yellow clypeus) and thorax brown. Gaster completely yellow.

**Holotype:** ♀ **Vietnam:** Hay-Hing, ex *Anomia flava* Fabr., 10.vii.1989, Nguen S. Thanh (ZISP, examined).

**Paratypes:** 2♀ 1♂ Hay-Hing, ex *Anomis flava* Fabr., 10.vii.1989, Nguen S. Thanh (ZISP, ♂ on slide).

**Distribution:** Vietnam.

**Hosts:** Larval ectoparasitoid of *Anomis flava* Fabricius (Lepidoptera: Noctuidae) (Yefremova 1994).



**Figs 23, 24:** (23) *Euplectrus bicolor* (Swederus), male, dorsal view (photo courtesy Natalie Dale-Skey, BMNH); (24) *E. xanthocephalus* Girault, female, lateral view.



*Euplectrus transversus* Zhu & Huang, 2003*Euplectrus transversus* Zhu & Huang, 2003: 162.**Diagnosis:** Malar sulcus absent. Mesoscutum with median carina posteriorly. Petiole 1.5× as long as broad. Head black. Hind coxae yellow.**Holotype:** ♀ **Taiwan:** Nantou, Wushe, 16.iii.1983, 1200 m, H.K.M. Townes (TARI, not examined).**Material examined:** 1♀ **Vietnam:** prov. Gia Lai-Con Tum, Tram Lap, 20 km N vil. Buon Luoi, 25.xii.1988, A. Sharkov (ZISP).**Distribution:** Taiwan (Zhu & Huang 2003) and \*Vietnam.**Host:** Unknown.*Euplectrus xanthocephalus* Girault, 1913

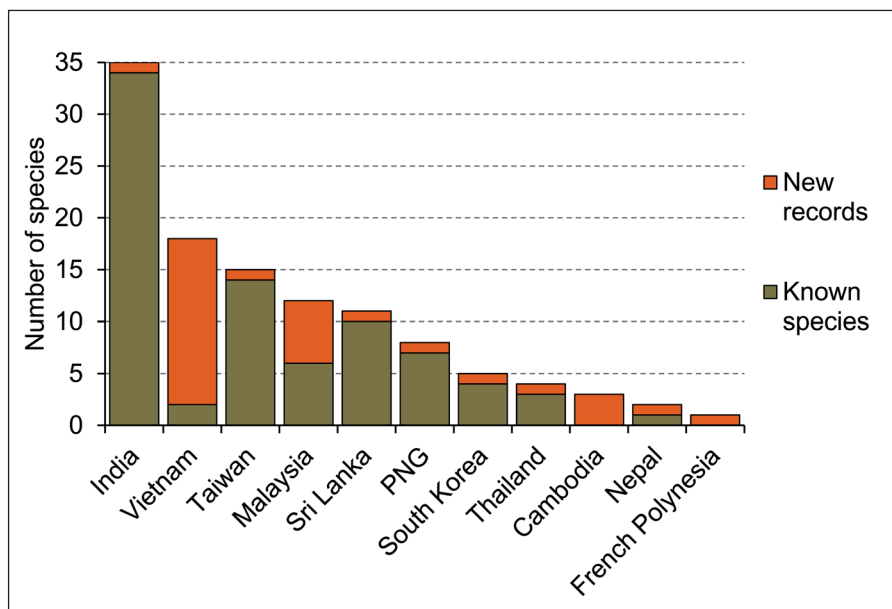
(Fig. 24)

*Euplectrus xanthocephalus* Girault, 1913: 101; Zhu & Huang 2003: 162; Narendran 2011: 252.**Diagnosis:** Malar sulcus absent. F1 1.1× as long as pedicel. Mesoscutum without median carina. PMV 1.3× as STV. Petiole subquadrate.**Holotype:** ♀ **Australia:** Queensland, Cairns, 15.iv.1912, by sweeping (QMB, not examined).**Material examined:** **Thailand:** 1♂ Trang prov., Forest Research Station, Khao Chong, trail, 75 m, 7°33'N 99°47'E, 8.ii.2005, D. Yanega (UCRC).**Distribution:** Australia, China, Indonesia, Japan, Papua New Guinea, Malaysia, Thailand (Bouček 1988; Zhu & Huang 2003), India (Narendran 2011).**Host:** *Spodoptera litura* (Lepidoptera: Noctuidae) (Bouček 1988).

## CONCLUSION

The present study has resulted in the expansion of distributional ranges of quite a few species of *Euplectrus*, including three species new to science. There are 18 newly recorded species for Vietnam (*E. bicolor*, *E. brevisetulosus*, *E. cinctiventris*, *E. colliosilvus*, *E. flavigaster*, *E. fuscicoxalis*, *E. indicus*, *E. koebelei*, *E. laphygmae*, *E. leucostomus*, *E. liparidis*, *E. longipetiolatus*, *E. manilae*, *E. parvulus*, *E. peduncularis* n. sp., *E. petiolatus*, *E. reticulatus* and *E. transversus*), nine for Malaysia (*E. brevisetulosus*, *E. euplexiae*, *E. fuscicoxalis*, *E. laphygmae*, *E. leucostomus*, *E. longipetiolatus*, *E. reticulatus*, *E. pahangi* n. sp. and *E. selangori* n. sp.), five for Papua New Guinea (*E. brevisetulosus*, *E. ceylonensis*, *E. flavigaster*, *E. fuscicoxalis*, *E. laphygmae*), three for Thailand (*E. ceylonensis*, *E. fuscicoxalis* and *E. xanthocephalus*), three for Cambodia (*E. colliosilvus*, *E. koebelei* and *E. leucostomus*), two for Taiwan (*E. euplexiae*, *E. fuscicoxalis*), one for each of Nepal (*E. ceylonensis*), India (*E. laphygmae*), Sri Lanka (*E. manilae*), South Korea (*E. manilae*), and French Polynesia (*E. manilae*).

The best studied area in Indo-Malaya is India and the greatest number of new records in Southeast Asia is from Vietnam (Fig. 25). There is little doubt that further collecting in Asia and Oceania will yield many more new records of known and new species.



**Fig. 25:** Number of *Euplectrus* species in Southeast Asia and neighboring regions. Abbreviation: PNG – Papua New Guinea.

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