

A Study of the Genus *Euplectrus* Westwood (Hymenoptera: Eulophidae) in China

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Chao-Dong Zhu and Da-Wei Huang (2003) A study of the genus *Euplectrus* Westwood (Hymenoptera: Eulophidae) in China. *Zoological Studies* 42(1): 140-164. This paper treats the Chinese species of the genus *Euplectrus* Westwood. Thirty valid species are recognized from China and a key to species is provided. Four species of *Euplectrus* were known previously from China: *E. bicolor* (Swederus), *E. euplexiae* Rohwer, *E. liparidis* Ferrière, and *E. maculiventris* Westwood. Twelve species, including *E. ceylonensis* (Howard), *E. cinciventris* Ferrière, *E. flavipes* Fonscolombe, *E. indicus* Ferrière, *E. koebeli* Crawford, *E. laphygmae* Ferrière, *E. leucostomus* Rohwer, *E. manilae* Ashmead, *E. medianensis* Crawford, *E. nigrescens* Ferrière, *E. platyhypenae* Ashmead, *E. noctuidiphagus* Yasumatsu, *E. parvulus* Ferrière, *E. petiolatus* Ferrière, and *E. xanthocephalus* Girault, are newly recorded from China. Ten species are also newly recorded from other countries: *E. ceylonensis* from Malaysia and Viet Nam; *E. cinciventris* from Mexico, Papua New Guinea, and Venezuela; *E. flavipes* from the Dominican Republic, Mexico, Turkey, and Yugoslavia; *E. indicus* from Mexico and Thailand; *E. koebeli* from Mexico and Papua New Guinea; *E. leucostomus* from the Dominican Republic and Mexico; *E. manilae* from Australia, Japan, Malaysia, Papua New Guinea, and Thailand; *E. medianensis* from Guinea, Japan, and Nigeria; *E. nigrescens* from Venezuela; *E. noctuidiphagus* from Nepal; *E. xanthocephalus* from India, Indonesia, Japan, and Malaysia. Eleven new species of *E. acutigaster*, *E. brevicarinatus*, *E. brevisetulosus*, *E. flavigaster*, *E. fuscicoxalis*, *E. laeviscutellum*, *E. longigaster*, *E. longipetiolatus*, *E. paribus*, *E. reticulatus*, and *E. transversus* are described and compared to both Chinese species and other possible similar species worldwide. <http://www.sinica.edu.tw/zool/zoolstud/42.1/140.pdf>

Key words: Taxonomy, *Euplectrus*, Review, New species, New records.

Members of the tribe Euplectrini can be easily recognized because they have at least one hind tibial spur longer than the 1st tarsomere. They distribute worldwide some of them could be easily collected. However, there was no taxonomical review of this tribe or its members for lacking enough materials collected. Studying the fauna and diversity of Chinese chalcidoids (Zhu et al. 1999 2000a, Zhu and Huang 2000a b 2001a b c 2002a b c, Xiao and Huang 2001a b c d e), we sorted out many species/genera in this tribe.

Euplectrus Westwood is a morphologically unique genus in tribe Euplectrini (Hymenoptera: Eulophidae). Without sublateral grooves on the scutellum, members of this genus can easily be differentiated from others in the Euplectrini. In

some keys to eulophine genera (Bouček 1988, Schauff et al. 1997, Zhu and Huang 2001b), the transverse carina at the anterior margin of the pronotum can also be used to diagnose this genus. In reviewing Chinese species of *Euplectromorpha* Girault (Zhu and Huang 2001c) and *Platyplectrus* Ferrière (Zhu and Huang, submitted), we found many species of both genera which also possess a transverse carina anteriorly on the pronotum, while others do not. So we concluded that this feature might be stable among groups of species, but is not good for differentiation between genera.

Herting (1976) reported *E. chapadae* Ashmead from China. Liao et al. (1987) reported *E. bicolor* (Swederus) and *E. sp. (? chapadae)*.

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Yang (1986) and Luo (1989) respectively reported some biological features of *E. bicolor*. With the help of the late Dr. Chou Liang-yih, we obtained

many specimens of *Euplectrus* collected from Taiwan. This is the first attempt to review Chinese species of this genus taxonomically. We recognize

Table 1. Checklist of Chinese *Euplectrus* Westwood

Species	Distribution
1. <i>Euplectrus acutigaster</i> sp. nov.	China: Fujian, Hainan, Hubei, Sichuan; Australia; Guinea; Malaysia; Papua New Guinea
2. <i>Euplectrus bicolor</i> (Swederus)	All regions
3. <i>Euplectrus brevicarinatus</i> sp. nov.	China: Hubei, Hunan, Yunnan; Taiwan
4. <i>Euplectrus brevisetulosus</i> sp. nov.	China: Hubei, Sichuan; Taiwan; Japan
5. <i>Euplectrus ceylonensis</i> (Howard)	*China: Guangxi, Hainan; India; Indonesia; *Malaysia; Sri Lanka; *Viet Nam: Hoa-Binh
6. <i>Euplectrus cinciventris</i> Ferrière	*China: Hainan; *Dominican Republic; *Mexico; *Papua New Guinea; South Africa: Cape Prov.; Uganda; *Venezuela
7. <i>Euplectrus euplexiae</i> Rohwer	China: Hainan, Jiangxi; India; South Korea; Uganda
8. <i>Euplectrus flavigaster</i> sp. nov.	China: Hainan
9. <i>Euplectrus flavipes</i> Fonscolombe	*China: Guangxi, Hainan, Hunan; Taiwan; Bulgaria; *Dominican Republic; France; Hungary; Italy; *Mexico; Moldova; Spain; *Syria; *Turkey; *Yugoslavia
10. <i>Euplectrus fuscicoxalis</i> sp. nov.	China: Gansu, Guangxi, Yunnan
11. <i>Euplectrus indicus</i> Ferrière	*China: Guangxi, Jiangxi, Sichuan; Taiwan; *Brazil; India; *Mexico; *Thailand
12. <i>Euplectrus koebeli</i> Crawford	*China: Hubei; Taiwan; Japan; *Mexico; *Papua New Guinea
13. <i>Euplectrus laeviscutellum</i> sp. nov.	China: Fujian; Australia
14. <i>Euplectrus laphygmae</i> Ferrière	*China: Fujian, Hubei; Benin; Cameroon; Congo; Israel; Ivory Coast; Kenya; Malawi; Mauritius; Nigeria; Senegal; South Africa; Sudan; Uganda; Zimbabwe
15. <i>Euplectrus leucostomus</i> Rohwer	*China: Fujian, Guangdong, Guangxi, Hunan, Hainan; *Dominican Republic; India; *Mexico; Sri Lanka
16. <i>Euplectrus liparidis</i> Ferrière	China: Beijing, Jiangsu, Jiangxi, Qinghai; Algeria; Canada; Czech Republic; Japan; Italy; South Korea
17. <i>Euplectrus longigaster</i> sp. nov.	China: Tibet; Taiwan; Mexico; Papua New Guinea
18. <i>Euplectrus longipetiolatus</i> sp. nov.	China: Taiwan; Papua New Guinea
19. <i>Euplectrus maculiventris</i> Westwood	China: Beijing, Henan, Sichuan, Yunnan; Taiwan; Czech Republic; England; Japan; Malaysia; South Korea
20. <i>Euplectrus manilae</i> Ashmead	*China: Guizhou, Hainan, Hubei; *Australia; *Japan; *Malaysia; *Papua New Guinea; *Thailand; Philippines
21. <i>Euplectrus medanensis</i> Crawford	*China: Hainan, Hubei; *Guinea; Indonesia; *Japan; *Nigeria
22. <i>Euplectrus nigrescens</i> Ferrière	*China: Guangxi, Yunnan, Zhejiang; South Africa; *Venezuela
23. <i>Euplectrus noctuidiphagus</i> Yasumatsu	*China: Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan, Zhejiang; Taiwan; Japan; *Nepal
24. <i>Euplectrus paribus</i> sp. nov.	China: Guangzhou, Fujian, Hubei; Taiwan; Australia; Japan
25. <i>Euplectrus parvulus</i> Ferrière	*China: Guangxi; India
26. <i>Euplectrus petiolatus</i> Ferrière	*China: Guangxi; Taiwan; India
27. <i>Euplectrus platyhypenae</i> Ashmead	*China: Yunnan; Antigua; Argentina; Bahamas; Barbados; Bermuda; Bolivia; Canada; Colombia; Cuba; Dominica; Grenada; Guadeloupe; Guyana; Honduras; Jamaica; Mexico; Philippines; Puerto Rico; USA; Uruguay; Venezuela; United Kingdom
28. <i>Euplectrus reticulatus</i> sp. nov.	China: Fujian, Hubei
29. <i>Euplectrus transversus</i> sp. nov.	Taiwan
30. <i>Euplectrus xanthocephalus</i> Girault	*China: Fujian, Jiangxi; Sichuan; Australia; *India; *Indonesia; *Japan; *Malaysia; Papua New Guinea

*New records.

30 species, most of which occur in South China (Table 1). Among them (Table 1), four species were previously reported (Yang 1986, Luo 1989, Zhu and Huang 2002), twelve species are newly recorded from China, and 11 new species are described and compared to closely related ones. Dr. John LaSalle in Australia and Dr. Eiji Ikeda in Japan kindly helped us to obtain large loans of Euplectrini collected from around the world for comparison.

MATERIALS AND METHODS

Depositories: This study is based on specimens from the following collections: 1) Institute of Zoology, Chinese Academy of Sciences (IZCAS); 2) Natural History Museum, London, UK (BMNH); 3) Insect Collection, Taiwan Agricultural Research Institute (TARI); 4) Systematic Entomology, Faculty of Agriculture, Hokkaido Univ. (SEHU); 5) Insect Collection, Department of Plant Protection, Jiangxi Agricultural Univ. (ICJAU); and 6) Hungarian Museum of Natural History (HMNH).

Methods: Morphological terms follow Gibson (1997). Absolute measurements, in millimeters (mm) are used for the body and forewing length. For all other dimensions, relative measurements are used. Description Language of Taxonomy (DELTA) by Dallwitz (1980) and Dallwitz, Paine, and Zurcher (1999 onwards) were used to record and store all results of observation. Countries, regions, or provinces marked with an asterisk (*) under 'Distribution', in the species treatments indicate new records. We used the software, Where on Earth (WOE, Ver. 1), by Dick and integrated it into the Chalcidoidea Catalogue (Noyes 2002), to map current distributional patterns of Chinese species of the genus *Euplectrus*.

Genus *Euplectrus* Westwood

Euplectrus Westwood, 1832. Type species *Euplectrus maculiventris* Westwood, 1832.

Diplectron Dahlbom, 1857: 292. Type species *Pteromalus bicolor* Swederus, 1795. Designated by Gahan and Fagan 1923. Synonymized by Dalla Torre 1898.

Pachyscapa Howard, 1897: 159. Type species *Pachyscapa insularis* Howard, 1897. [Monotypy]. Synonymized by Ferrière 1941.

Rekabia testaceipes Cameron, 1904: 65. Type species *Rekabia testaceipes* Cameron, 1904. [Monotypy]. Synonymized by Kerrich 1974.

Heteroscapus Brèthes, 1918: 9. Type species *Heteroscapus ronnai* Brèthes, 1918. [Monotypy]. Synonymized by De Santis 1980.

Heteroscapiscus Ghèsquiere, 1946: 370. Replacement name for *Heteroscapus* Brèthes, 1918.

Diagnosis: Among Chinese genera of Euplectrini, members of *Euplectrus* have no sub-lateral grooves on the scutellum.

Host range: Members of this genus have been reported (Noyes 1998 2002) to attack species of the Aphididae, Lophopidae (Hemiptera), Arctiidae, Coleophoridae, Ctenuchidae, Epiplemididae, Gelechiidae, Geometridae, Gracillariidae, Hesperiididae, Lasiocampidae, Limacodidae, Lymantriidae, Noctuidae, Nolidae, Papilionidae, Pieridae, Pyralidae (Lepidoptera), Braconidae, Eulophidae (Hymenoptera) (Table 2).

Distribution: All regions. Among Chinese species, *E. bicolor* is the only species occurring north to south (except for the Qinghai-Xizang Plateau). *E. liparidis* (Beijing, Jiangsu, Jiangxi, Qinghai) and *E. longigaster* (Xizang; Taiwan) have been collected from the Qinghai-Xizang Plateau, which biogeographic components or statues are not yet understood. Other species are completely distributed south to the Qinling Mountains and the Yellow River (Fig. 68).

Key to the species of the genus *Euplectrus* in China

1. Mid lobe of the mesoscutum irregularly transversely striate, with longitudinal median carina generally complete, very rarely shortened in front (Fig. 29).....2
- Mid lobe of the mesoscutum regularly reticulate, generally without longitudinal median carina, very rarely with short median carina posteriorly (Figs. 6, 42).....10
2. Scutellum longitudinally striate (Fig. 29).....*E. leucostomus*
- Scutellum smooth, reticulate, or rugulose.....3
3. Head completely black (Fig. 19).....4
- Head with supraclipeal area, clypeus, or partial to



Fig. 68. Distributional patterns: *Euplectrus bicolor* (Swederus) - green; other species - yellow; both - red.

- complete gena yellow or reddish brown.....6
4. Hind coxae dark (Fig. 21).....*E. fuscicoxalis* sp. nov.
- Hind coxae yellow.....5
5. Scutellum smooth; funicle with all segments subequal in length (Fig. 62); metasoma brownish at apex, with T1 longer than 2/3 of entire length (Fig. 63).....
.....*E. platyhypenae*
- Scutellum very finely reticulate; funicle with all segments gradually slightly shortening apically (Fig. 47); metasoma broadly black at and near apex, with T1 shorter than 1/3 of entire length.....*E. nigrescens*
6. Head with only supraclypeal area and clypeus yellow or reddish brown (Figs. 12, 33, 48).....7
- Head with supraclypeal area, clypeus, and at least lower 1/2 of gena yellow or reddish brown....*E. flavipes*
Male: sensillar area all along scape, scape less than 2.7 times as long as broad.
7. Hind coxae dark (Fig. 36).....*E. longigaster* sp. nov.
- Hind coxae yellow.....8
8. Metasoma yellow with a dark transverse band before apex, sides slightly dark (Fig. 13).....*E. cinciventris*
- Metasoma black at apex and on sides.....9
9. Scutellum distinctly reticulate; mid lobe of the mesoscutum sometimes with additional setae to 4 pairs of longer setae scattering anterolaterally (Fig. 51).....
.....*E. noctuidiphagus*
- Scutellum very finely reticulate or smooth; mid lobe of the mesoscutum without additional setae to 3 pairs of longer setae anterolaterally.....*E. indicus*
10. Scutellum strongly longitudinally striate.....11
- Scutellum smooth, reticulate, or rugulose.....12
11. Metasoma broadly black at apex and on sides; female head black with only supraclypeal area and clypeus yellow or reddish brown, male with part of gena also yellow; mid lobe of the mesoscutum with only 3 pairs of setae.....*E. bicolor*
Male: Ventral plaque all along scape, scape 3.3-3.4 times as long as broad.
- Metasoma yellow at apex and with a broad band dark before apex; both sexes with supraclypeal area, clypeus, and at least part of gena yellow; mid lobe of the mesoscutum with 5 pairs of setae.....*E. liparidis*
12. Head completely black (Figs. 10, 16, 37, 43, 66).....13
- Head with supraclypeal area, clypeus, or at least part of gena yellow or reddish brown.....19
13. Hind coxae dark (Fig. 39).....14
- Hind coxae yellow (Fig. 10).....15
14. Hind coxae and at least part of hind femora dark (Fig. 39).....*E. longipetiolatus* sp. nov.
- Only hind coxae dark; all legs yellow.....
.....*E. brevisetulosus* sp. nov.
15. Funicle with F1 slightly longer than pedicel, F2 to F4 becoming shorter, darker and slightly broadening, barely longer than wide, with F4 less than 1.5 times as

Table 2. Host list of Chinese species of *Euplectrus* Westwood

1. <i>E. bicolor</i>	larvae of many geometrids, noctuids, pyralids and tortricids (Lepidoptera)	<i>Leucania</i> sp.
2. <i>E. ceylonensis</i>	lymantrids and noctuids (Lepidoptera)	<i>Dendrolimus</i> sp. (Lasiocampidae)
3. <i>E. euplexiae</i>	larvae of several noctuids (Lepidoptera)	<i>Spodoptera exigua</i> (Hübner) (Noctuidae), <i>Diaphania pyloalis</i> (Walker) (Pyralidae)
4. <i>E. flavipes</i>	larval parasitoids of noctuids, tortricids (Lepidoptera)	
5. <i>E. indicus</i>	<i>Apanteles</i> sp. (Braconidae); geometrid (Lepidoptera)	
6. <i>E. laeviscutellum</i>	? larval parasitoids of notodontids (Lepidoptera)	
7. <i>E. laphygmae</i>	larval parasitoids of arctiids and noctuids (Lepidoptera)	
8. <i>E. leucostomus</i>	lasiocampids and noctuids (Lepidoptera)	<i>Dendrolimus</i> sp. (Lasiocampidae), <i>Pericyma cruegeri</i> Butler (Noctuidae)
9. <i>E. liparidis</i>	lymantrids (Lepidoptera)	larvae of <i>Agrapha agnata</i> (Staudinger) (Noctuidae)
10. <i>E. manilae</i>	noctuids and papilionids (Lepidoptera)	
11. <i>E. noctuidiphagus</i>	noctuids (Lepidoptera)	<i>Oraesia emarginata</i> Fabricius, <i>Pseudaletia separata</i> (Walker), <i>Naranga aenescens</i> Moore (Noctuidae)
12. <i>E. parvulus</i>	geometrids, lophopids, noctuids, pyralids (Lepidoptera); <i>Elasmus</i> sp. or tetrastichine (Hymenoptera)	
13. <i>E. petiolatus</i>	larvae of lymantrids (Lepidoptera)	
14. <i>E. xanthocephalus</i>	noctuids	

- broad as F1 (Fig. 22).....*E. koebeli*
- Funicle with all segments distinctly longer than broad (Figs. 10, 16, 43, 66).....16
 - 16. Metasoma nearly as long as head plus mesosoma....17
 - Metasoma less than 1/2 length of head plus mesosoma (Fig. 10).....*E. ceylonensis*
 - 17. F1 nearly twice as long as pedicel (Figs. 16, 66); longer cercus straight, less than twice as long as others.....18
 - F1 less than 1.5 times as long as pedicel (Fig. 43); longer cercus sinuate, more than twice as long as others (Fig. 44).....*E. manilae*
 - 18. Metasoma with broad transverse dark bands near and at apex; malar sulcus absent (Fig. 66).....
 -*E. transversus* sp. nov.
 - Metasoma nearly completely yellow dorsally (Fig. 17); malar sulcus present (Fig. 16).....*E. flavigaster* sp. nov.
 - 19. Head with only supraclypeal area and clypeus yellow or reddish brown (Figs. 1, 5, 23, 45, 54, 56).....20
 - Head with supraclypeal area, clypeus, and at least part of gena yellow or reddish brown (Figs. 14, 24, 25, 40, 52, 67).....27
 - 20. Hind coxae dark (Fig. 7).....*E. brevicarinatus* sp. nov.
 - Hind coxae yellow (Fig. 1).....21
 - 21. Metasoma yellow at apex (Fig. 55).....22
 - Metasoma dark at apex and on sides (Fig. 1).....24
 - 22. Mid lobe of the mesoscutum without median carina posteriorly.....23
 - Mid lobe of the mesoscutum with median carina posteriorly.....*E. reticulatus* sp. nov.
 - 23. Petiole shorter than broad, smooth dorsally (Fig. 55)....
 -*E. parvulus*
 - Petiole as long as or longer than broad, reticulate or granulate dorsally.....*E. laeviscutellum* sp. nov.
 - 24. Mid lobe of the mesoscutum without median carina posteriorly.....25
 - Mid lobe of the mesoscutum with median carina posteriorly (Fig. 42).....26
 - 25. Petiole at least 1.5 times as long as broad.....
 -*E. petiolatus*
 - Petiole less than 1.2 times as long as broad.....
 -*E. medanensis*
 - 26. Petiole shorter than broad; scutellum distinctly reticulate.....*E. maculiventris* (part)
 - Petiole slightly longer than broad; scutellum very finely reticulate (Fig. 1).....*E. acutigaster* sp. nov.
 - 27. Metasoma yellow at apex (Fig. 15).....*E. euplexiae*
 - Metasoma dark at apex.....28
 - 28. Mid lobe of the mesoscutum without median carina posteriorly.....29
 - Mid lobe of the mesoscutum with median carina posteriorly (Fig. 42).....30
 - 29. Gena nearly entirely yellow (Fig. 24).....
 - male with mostly yellow head.....
 -External *E. laphygmae* (not examined)
 - male with mostly black head (Fig. 25).....
 -Chinese *E. laphygmae*
 - Gena at most yellow on lower 1/2 (Fig. 67).....
 -*E. xanthocephalus*
- Note: Papua New Guinean, Indian, Japanese, Indonesian, and Malaysian *E. xanthocephalus* (head of male completely yellow); Chinese *E. xanthocephalus* (male same as female); Thailand and Australian *E. xanthocephalus*.
30. Mid lobe of the mesoscutum with additional setae

scattering anterolaterally besides 3 paired ones medially (Fig. 42); scutellum entirely with distinct reticulations.....*E. maculiventris*

- Mid lobe of the mesoscutum without the other scattered setae on anterolateral parts other than paired median setae; scutellum very vaguely reticulate, smooth posteriorly.....*E. paribus* sp. nov.

***Euplectrus acutigaster* sp. nov.**

(Fig. 1)

Diagnosis: Petiole 1.8-2 times longer than broad; scutellum very finely reticulate; mid lobe of the mesoscutum regularly reticulate, with median carina posteriorly; metasoma dark at apex and on sides; hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown.

Among Chinese species, *E. acutigaster* sp. nov. morphologically resembles *E. maculiventris* in having a median carina on the posterior part of mid lobe of the mesoscutum. But the latter differs from this species in having the petiole that is shorter than broad and the scutellum distinctly reticulate. *E. singularis* Ferrière 1941, which occurs in Uganda, also has the same diagnosis as *E. acutigaster*. However, *E. singularis* has the metasoma shorter than the mesosoma and truncate at the posterior end, while in this new species the metasoma is as long as the mesosoma, and is not truncate at the posterior end.

Description: Female. Body length 1.75 mm, forewing length 1.66 mm. Body black. Head dark except for yellow supraclypeal area and clypeus. Eyes white. Ocelli yellow. Antennae brown except for scape and pedicel. Mandibles yellow. Venation yellow. Legs yellow. Metasoma dark at apex and on sides.

Head wider than high. Eyes bare. Postoccipital carina absent. Toruli placed slightly above lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 12, OOL 7, scape 22, pedicel 9, F1 7, F2 9, F3 9, F4 9, clava 15.

Notauli straight, converging, ending at anterior margin of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, reticulate, with median carina posteriorly. Axillae with anterior margin in line with scutoscuteellar sutures, smooth. Scutellum longer than the mesoscutum, with very vague reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 6 setae. Median carina present, inverted T-

shaped posteriorly. Plicae absent.

Forewing hyaline. Setae on lower side of costal cell in a complete line on the surface, those on upper surface only appearing apically. Submarginal vein with 5 setae on dorsal surface. Admarginal setae 8. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed. Hind wing acute apically. Relative measurements: submarginal vein 28, costal cell 38, parastigma 10, marginal vein 49, postmarginal vein 29, stigmal vein 15. Hind coxae yellow.

Petiole 1.8-2 times as long as broad, granulate dorsally. Metasoma subrotund, as broad as mesosoma, dark at apex and on sides. Apex of metasoma not acute. Longer setae of cerci more than twice length of others, sinuate. Apex of ovipositor sheath visible.

Male: Same as female, except for scape with sensillar area in apical 1/2.

Materials examined: Holotype: ♀, Guinea: Mt. Nimba, Gouan River, 1-16 Dec. 1990, 514 m (L. Lebianc) (SEHU). Paratypes: 1 ♀, Guinea: Mt. Nimba, Gouan River, 1-16 Dec. 1990, 514 m (L. Lebianc) (SEHU); China: 1 ♀, Hubei, Xuan'en, 5 Aug. 1985, 1000 m (Huang Da-wei) (IZCAS); 1 ♂, Fujian, Liancheng, Taipingliao, 16 Sept. 1996 (Xiao Hui) (IZCAS); 2 ♀♀, Hainan, Bawang Mts., 8 Apr. 1984 (Li Chang-fang) (IZCAS); 1 ♀, Sichuan, Institute of Citrus, 31 Oct. 1983 (Li Chang-fang) (IZCAS). 1 ♀, Australia: Queensland, Port Douglas, 31 Mar. 1991 (J. D. Pinto) (SEHU). 1 ♀, Malaysia: Borneo, Sabah Mt. Kinabalu N. P., Poring Hot Springs, 13 May 1987, 480 m (A. Smetana) (SEHU); 1 ♀, Papua New Guinea: Morobe Prov., Wau Mt. Kaindi, 8 Feb. 1993, 1150-2300 m, fogging tray under *Piper plagiophyllum* K. Sch. and Laut. (Piperaceae) (Y. Basset) (SEHU).

Distribution: China: Fujian, Hainan, Hubei, Sichuan; Australia; Guinea; Malaysia; Papua New Guinea.

Euplectrus bicolor (Swederus)

(Figs. 2-4)

Pteromalus bicolor Swederus, 1795: 204. Transferred into *Eulophus* by Walker 1839: 173; transferred into *Euplectrus* by Haliday 1844: 297.

Elachertus albiventris Spinola, 1811: 151. Transferred into *Eulophus* by Haliday 1842; transferred into *Euplectrus* by Walker 1872a: 112. Synonymized by Bouček and Askew 1968: 15.

Euplectrus intactus Walker, 1872b: 102. Synonymized by Bouček and Askew 1968: 15.

Diagnosis: Gaster broadly black at apex and on sides; female head black with only supraclypeal

area and clypeus yellow or reddish brown (Fig. 2), male with part of gena also yellow (Fig. 3); mid lobe of the mesoscutum with only 3 pairs of setae, regularly reticulate, without longitudinal median carina (Fig. 4); scutellum strongly longitudinally striate (Fig. 4).

This species is very close to *E. liparidis* Ferrière, 1941 morphologically. Both species have a strongly longitudinally striated scutellum. But the latter differs by having yellow apex and a broad dark band before apex of metasoma; in both sexes the supraclypeal area, clypeus, and at least part of gena are yellow. Examination of 2 specimens of *E. maculiventris* (Westwood, 1832) determined by Z. Bouček has shown that there is some difference from *E. bicolor* (Swederus, 1795): *E. maculiventris*

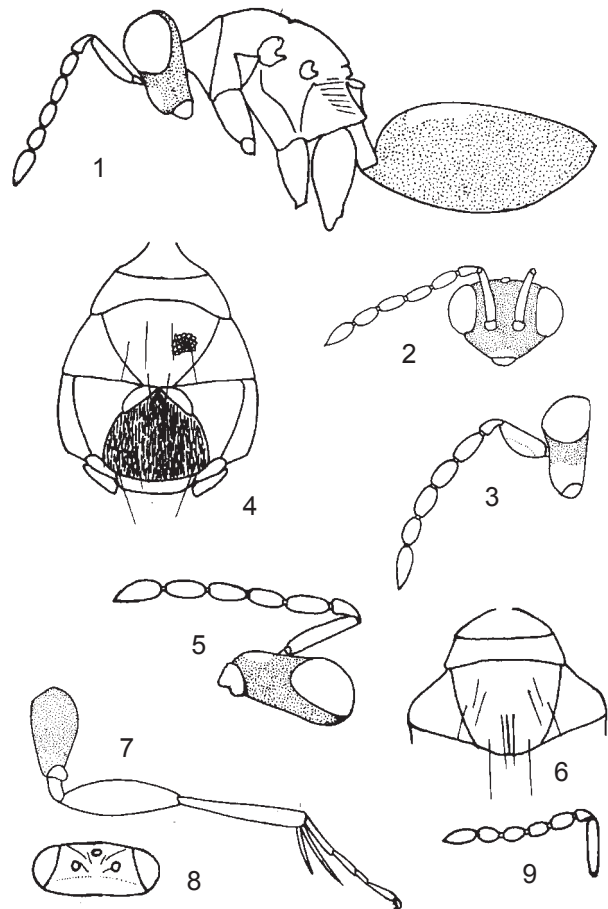


Fig. 1. *Euplectrus acutigaster* sp. nov.: lateral view of body. Figs. 2-4. *Euplectrus bicolor* (Swederus): 2. frontal view of head with antenna; 3. male head with antenna; 4. dorsal view of mesosoma excluding propodeum. Figs. 5-7. *Euplectrus brevicarinatus* sp. nov.: 5. lateral view of head with antenna; 6. dorsal view of pronotum and mesoscutum; 7. hind leg. Figs. 8-9. *Euplectrus brevisetulosus* sp. nov.: 8. dorsal view of head; 9. antenna.

has the distinctly reticulate scutellum, while *E. bicolor* has the scutellum strongly striate longitudinally at least laterally. So we removed *E. maculiventris* from the synonymy list of *E. bicolor* (Zhu and Huang 2002).

When staying in Hungary, the senior author was able to check the determined specimens of *E. bicolor* deposited in HMNH. We found males' head are at least partly reddish brown, and the vertex is smooth; females' scutellum are at least longitudinally striate laterally. Sometimes, the scutellum is completely reticulate, and the reticulations are arranged very regularly, thus appearing to be striate.

Materials examined: See Zhu and Huang (2002).

Hungarian materials deposited in HMNH: 10 ♂♂, 17 ♀♀, collected from various localities in Hungary.

Host range: Gregarious parasitoids of larvae of many geometrids, noctuidae, pyralids, and tortricids (Lepidoptera) (Noyes 1998 2002). Newly recorded from *Leucania* sp.

Distribution: China: Anhui, Beijing, Fujian, Gansu, Guangdong, Hainan, Helongjiang, Henan, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Shandong, Sichuan, Tianjing, Yunnan; Australia; Bulgaria; Canada, the Caribbean; Czech Republic; Denmark; France; Germany; Hungary; Italy; Japan; Korea; Russia; Seychelles Islands; Somalia; Sweden; Turkey; Turkmenistan; United Kingdom.

***Euplectrus brevicarinatus* sp. nov.**

(Figs. 5-7)

Diagnosis: Hind coxae dark; head with only supraclypeal area and clypeus yellow or reddish brown (Fig. 5); scutellum reticulate; mid lobe of the mesoscutum regularly reticulate, with short median carina posteriorly.

Among Chinese species, *E. fuscicoxalis*, *E. longigaster*, *E. longipetiolatus*, and *E. brevisetulosus* also have dark hind coxae. However, this species is distinct in having a yellow part on head and the short carina on the posterior 1/3-1/4 of mid lobe of the mesoscutum. It is also possibly close to *E. gopimohani* Mani, 1941 (not examined), but the latter species has no median carina on the mid lobe of the mesoscutum.

Description: Female. Body length 2.06 mm, forewing length 2.31 mm. Body black. Eyes white. Ocelli yellow. Antennae yellow. Head black with only supraclypeal area, clypeus, and

mandibles yellow. Legs yellow except hind coxae black. Metasomal T1 is mostly yellow. Anterior part of T1 and the remaining segments of metasoma are brown.

Head wider than high. Eyes bare. Postocipital carina absent. Toruli placed at lower margin of eyes. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 15, OOL 10, scape 28, pedicel 21, F1 19, F2 19, F3 21, clava 25.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 4 pairs of setae, without the other scattered setae, with isodiametric, raised reticulations, with incomplete median carina posteriorly. Axillae with anterior margin in line with scutoscuteellar sutures, smooth. Scutellum longer than the mesoscutum, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 11 setae. Median carina present, enlarged posteriorly to form 1 triangular plate. Plicae absent.

Forewing hyaline. Submarginal vein with 6 setae on dorsal surface. Admarginal setae 23. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, partially closed. Hind wing subacute apically. Relative measurements: submarginal vein 46, costal cell 64, parastigma 18, marginal vein 65, postmarginal vein 37, stigmal vein 19. Hind coxae dark.

Metasoma subrotund, shorter than mesosoma, narrower than mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice length of others. Apex of ovipositor sheath visible.

Male: same as female, except sensillar area nearly all along scape, less than 3.3 times as long as broad.

Materials examined: (IZCAS) Holotype: ♀, Yunnan, Lijiang, Baishui, 17 July 1987, 3000 m (Li Chang-fang). Paratypes: 24 ♂♂, 11 ♀♀: 1 ♂, Hubei, Hefeng, 1 Aug. 1989, 1400 m (Huang Da-wei); 1 ♂, Hubei, Xuan'en, 6 Aug. 1989, 1100 m (Huang Da-wei); 1 ♂, Hunan, 29 June 1989; 1 ♂, 2 ♀♀, Yunnan, Lijiang, Lidiping, 14 Aug. 1984, 3400 m (Li Chang-fang); 1 ♂, 1 ♀, Lijiang, Dieqing, Shangguancun, 7 Aug. 1984, 2800 m (Li Chang-fang); 1 ♀, Yunnan, Lijiang, Baishui, 19 July 1984, 2850 m (Li Chang-fang); 13 ♂♂, 4 ♀♀, Yunnan, Lijiang, Ludian, Machang, Aug. 1984, 3200 m (Li Chang-fang); 1 ♂, 1 ♀, Yunnan, Lijiang, Ludian, Machang, 16 Aug. 1984, 3200 m

(Li Chang-fang); 2 ♂♂, Yunnan, Lanping, 22 Aug. 1984, 2300 m (Li Chang-fang); 1 ♂, Yunnan, Lijiang, Yuhu, 23 July 1984, 2750 m (Li Chang-fang); 1 ♂, Yunnan, Lijiang, Yuhu, 24 July 1984, 2750 m (Li Chang-fang); 1 ♂, Yunnan, Dieqing, Xiaozhongdian, 31 July 1984, 3200 m (Li Chang-fang).

Other specimens examined: (TARI). 1 ♀, C. Taiwan, Nantou, Meifeng, 31 July-2 Sept. 1982, 2250 m (Chou L.Y. and Chou K.C.); 1 ♀, C. Taiwan, Nantou, Meifeng, 28-29 Aug. 1981, 2150 m (Chou L.Y. and Lin S.C.).

Host range: Unknown.

Distribution: China: Hubei, Hunan, Yunnan; Taiwan.

Euplectrus brevisetulosus sp. nov.

(Figs. 8-9)

Diagnosis: Shorter setae present between posterior ocelli (Fig. 8); mid lobe of the mesoscutum with regular, raised reticulations, without median carina; scutellum smooth or reticulate; petiole smooth or granulate dorsally; only hind coxae dark; head completely black.

Both this species and *E. longipetiolatus* have dark hind coxae, but the latter species differs in having dark hind coxae and at least partial dark hind femora. It may be similar to *E. colliosilvus* Wijesekara and Schauff, 1994 (not examined), but latter species has no shorter setae between the posterior ocelli.

Description: Female. Body length 2.03 mm, forewing length 1.85 mm. Body black. Head completely black. Eyes reddish black. Ocelli reddish brown. Antennae yellowish brown, except for the yellow scape. Mandibles yellow. Venation yellow. Legs yellow, except for dark hind coxae. Metasoma broadly dark near and at apex, with 1 yellow sub-basal spot.

Head wider than high. Eyes bare. Shorter setae present between posterior ocelli. Postoccipital carina absent. Toruli placed at lower margin of eyes. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 17, OOL 8, scape 25, pedicel 10.5, F1 11, F2 9, F3 11, F4 10, clava 20 (Fig. 9).

Notauli straight, converging, ending at inner apex of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, reticulate, without median carina posteriorly. Axillae with anterior margin in line with scutoscutellar sutures, with engraved reticulations. Scutellum

longer than the mesoscutum, with vague reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 9 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Setae on lower side of costal cell in a complete line, those on upper surface only appearing apically. Submarginal vein with 5 setae on dorsal surface. Admarginal setae 13. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed. Hind wing acute apically. Relative measurements: submarginal vein 36, costal cell 50, parastigma 12, marginal vein 56, postmarginal vein 26, stigmal vein 14. Hind coxae dark.

Petiole nearly 1.5-1.6 times as long as broad, longitudinally striate dorsally. Metasoma subrotund, as broad as mesosoma. Apex of metasoma not acute. Longer setae of cerci nearly twice length of others. Apex of ovipositor sheath visible.

Male: Same as female, except for scape with sensillar area on apical 1/2.

Materials examined: Holotype: ♀, Sichuan, Wan, Wang'er Bao, 28 Sept. 1994, 1200 m (Li Fashen) (IZCAS). Paratypes: 1 ♀, Japan: Honshu, Aichi, Misawa, Seto, 31 Oct.-6 Nov. 1989 (A. Takano) (SEHU); 1 ♀, Japan: Kyushu, Fukuoka, Mt. Hiko, 25 Aug.-4 Sept. 1989 (K. Takeno and M. J. Sharkey) (SEHU); 1 ♀, Japan: Kyushu, Fukuoka, Mt. Hiko, 21-29 July 1989, 700 m (K. Takeno and M. J. Sharkey) (SEHU). Other specimens examined: 1 ♀, Hubei, Xuan'en, 4 Aug. 1989, 1000 m (Huang Da-wei) (IZCAS); 2 ♂♂, 2 ♀♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (Lin K.S. and Wang C.H.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 15 July 1982 (Lin S.C. and Lin CN) (TARI); 2 ♂♂, 2 ♀♀, C. Taiwan, Nantou, Meifeng, 31 July-2 Sept. 1982, 2250 m (Chou L.Y. and Chou K.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 5-9 Oct. 1980, 2150 m (Chen C.C. and Chien C.C.) (TARI); 3 ♂♂, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 28-29 Aug. 1981, 2150 m (Chou L.Y. and Lin S.C.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 7-9 May 1981, 2150 m (Lin K.S. and Lin S.C.) (TARI).

Host range: Unknown.

Distribution: China: Hubei, Sichuan; Taiwan; Japan.

***Euplectrus ceylonensis* Howard**

(Fig. 10)

Euplectrus ceylonensis Howard, 1896: 641.*Euplectrus insulanus* Crawford, 1911: 281. Synonymized by Ferrière, 1941: 34.

Diagnosis: Metasoma less than 1/2 length of head plus mesosoma (Fig. 10); funicle with all segments distinctly longer than broad; hind coxae yellow. Head completely black; scutellum smooth to reticulate; the mesoscutum regularly reticulate, with short median carina posteriorly, with only 3 pairs of strong setae.

Among Chinese species, it is more similar to *E. koebeli*, *E. manilae*, *E. transverses*, and *E. flavigaster*. *E. koebeli* differs from the others in that the 1st funicular segment is slightly shorter than the pedicel, with F2 to F4 becoming shorter, darker, and slightly broader, barely longer than wide; while *E. manilae*, *E. transversus*, and *E. flavigaster* differ from this species in having the metasoma nearly as long as the head plus the mesosoma. Indian species, *E. nyctemeræ* Crawford, 1912 and another South African species, *E. nigroclypeatus* Ferrière, 1941 could be also diagnosed here. We found no morphological characters to distinguish *E. nyctemeræ* from *E. ceylonensis* based on Crawford's description. *E. ceylonensis* has the petiole more than 1.5 times as long as broad, while *E. nigroclypeatus* has the petiole slightly longer than broad.

Materials examined deposited in IZCAS: 5 ♀♀, Guangxi, Dasin, 29 Mar. 1998 (Zhu Chao-dong); 3 ♂♂, Guangxi, Dasin, 30 Mar. 1998 (Zhu Chao-dong); 2 ♀♀, Guangxi, Dasin, 31 Mar. 1998 (Zhu Chao-dong); 1 ♀, Guangxi, Ningming, 7 Aug. 1980, ex. *Dendrolimus* sp. (Yuan Gan-lin); 1 ♀, Guangxi, Longzhou, 14 June 1980 (Yuan Gan-lin); 1 ♀, Hainan, Lingshui, Diaoluoshan, 20 Apr. 1984 (Li Chang-fang); 1 ♀, Tonkin, Hoa-Binh, Viet Nam, July 1940 (A. de Cooman).

Determined specimens compared (BMNH): 3 ♀♀ on separate points, Malaysia: Banting, 6 June 1931, Entom. Div. Agric. Dept., ex. 7738, no. 7753, det. Ch. Ferrière; 2 ♀♀ on separate points, Malay Peninsula, 28 Apr. 1932, no. 8554, ex. 8553, *Plesocaspus indicus*, det. Ch. Ferrière (P. Dickson); 2 ♀♀, Malaysia: Sabah, Tawau, Guoin Hill, 18 Aug. 1987, ex. *Dasychira* sp. 655 ISAF591, C.I.E.A. 19196, det. Z. Bouček, 1987 (C.H. Sim); 1 ♂, Malaysia: Ruala Lumpus, 25 Nov. 1922, ex. larva of *Nygmia scintillens*, det. Z. Bouček, 1987 (B.R.R. Gater and G.H. Corbett); 3 ♂♂, Malaysia: Ruala Lumpus, 25 Nov. 1922, ex. larva of *Nygmia*

scintillens, det. Ch. Ferrière, 1987 (B.R.R. Gater and G.H. Corbett).

Host range: Parasitoids of some species of lymantrids and noctuids (Lepidoptera) (Noyes 1998 2002). Newly reported from *Dendrolimus* sp. (Lasiocampidae).

Distribution: *China: Guangxi, Hainan; India; Indonesia; *Malaysia; Sri Lanka; *Viet Nam: Hoa-Binh.

***Euplectrus cinctiventris* Ferrière**

(Figs. 12-13, ref. Fig. 11)

Euplectrus cinctiventris Ferrière, 1941: 36.

Diagnosis: Metasoma mostly dark except for 1 longitudinal paler median stripe on dorsum (Fig. 13, refer to Fig. 11 of *E. coimbatorensis* Ferrière); legs (including all coxae) all yellow; head with only supraclypeal area and clypeus yellow, otherwise black (Fig. 12); mid lobe of the mesoscutum irregularly transversely striate, with complete median carina, with only 3 pairs of strong setae.

Chinese, Dominican Republic, and Papua New Guinean specimens all have brown funicle segments, while Mexican and Venezuelan ones have yellow funicle. Sensory pores restricted to near apex of scape, forming narrow ventral scape.

Among examined materials, we found this species more similar to both *E. noctuidiphagus* and *E. indicus* in the yellow hind coxae. The latter 2 species differ from it in the black apex and sides of metasoma. Other species possibly close to it include *E. agaristae* Crawford, 1911 (Australia), *E. ceresensis* Ferrière, 1941 (South Africa), and *E. cacoeciae* Ferrière, 1941 (Bulgaria). *E. agaristae* and *E. ceresensis* differ from this species in the metasoma being yellow above, and only narrowly black at the apex and on the sides. The senior author examined the following determined specimens of *E. cacoeciae* from HMNH: 2 ♀♀, Hungary: Bakonp, 3 June 1953 (Erdős); 1 ♂, Hungary: Pellerre, 26 Aug. 1944 (Erdős); 1 ♂, Hungary: Hegyalja, 13 July 1955 (Erdős). And we found *E. cacoeciae* shares the same color pattern on the metasoma as do *E. noctuidiphagus* and *E. indicus*. We also examined the material of *E. coimbatorensis* (Fig. 11) for comparison between the color patterns of the metasoma.

Materials examined: 1 ♀, China: Hainan, Lingshui, Diaoluoshan, 14 Apr. 1984 (Li Chang-fang); 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 11 July 1992, 1150-2000 m, ex. fogging tray under *Castanopsis acuminatissima* A.

DC., (Fagaceae) (Y. Basset); 3 ♀♀, Mexico: Quintana Roo 2 km NW. Tulum (Hwy. to Coba), screen sweep, 8 Dec. 1993 (L. Masner); 1 ♀, Venezuela: Merida, Tabay LaMucuy, 1900 m, FIT, 18 June - 2 Aug. 1989, streams on meadows (S. and J. Peck); 1 ♂, Dominican Republic: Prov. Pedemale, Sra. Bahoruco, 26 km N. Cabo Rojo 730 m, July 1990 (L. Masner).

Distribution: *China: Hainan; *Dominican Republic; *Mexico; *Papua New Guinea; South Africa: Cape Prov.; Uganda; *Venezuela.

Euplectrus euplexiae Rohwer

(Figs. 14-15)

Euplectrus euplexiae Rohwer, 1921: 135.

Diagnosis: Metasoma yellow at apex (Fig. 15); head yellow at clypeus, supraclypeal area, and at least part of gena, otherwise black (Fig. 14); scutellum reticulate; mid lobe of the mesoscutum regularly reticulate, with only 3 pairs of setae, with short median carina posteriorly.

Morphologically similar species in China include *E. laphygmae* Ferrière, 1941 (Malawi), *E. xanthocephalus* Girault, 1913 (Australia, Papua New Guinea), *E. maculiventris* Westwood, 1832 (USA, UK), and *E. paribus* sp. nov. But all 4 species differ from *E. euplexiae* in having a dark apex on the metasoma. *Euplectrus hargreavesi* Ferrière, 1941 (Uganda) (not examined) is also diagnosed here, but it has no median carina on the posterior part of the mid lobe of the mesoscutum.

In Ferrière (1941), this species is said to have no median line on the mesoscutum. We also examined several determined female specimens by Bouček and found that the median carina was absent from mid lobe of the mesoscutum. However, Wijesekara and Schauff (1994) presented a diagnosis and a SEM picture of this species. They stated that it has an incomplete median carina distinct on posterior 1/3 of the mid lobe of the mesoscutum. As Wijesekara and Schauff based their diagnosis on the types they examined, we follow their understanding of this species.

Materials examined (IZCAS): 1 ♀, Jiangxi, Yichun, 18 Sept. 1973; 3 ♀♀, Jiangxi, Linchuan, Hedong, 13 Oct. 1989, ex. *Laphygma exigua* (Hubner) (Chang Peng-yang); 2 ♀♀, Jiangxi, Dengjiabu, 10 Oct. 1992, ex. *Margaronia pyloalis* Walker, (Zhang Zhong-ying); 2 ♀♀, Jiangxi, Yichun, Aoyang, 5 Apr. 1980 (Liu Bao-hua); 1 ♀, Hainan, Lingshui, Diaoluoshan, 14 Apr. 1984 (Li Chang-fang); 2 ♀♀, Hainan, Lingshui, Diaolu-

shan, 17 Apr. 1984 (Li Chang-fang).

Materials examined (BMNH): 1 ♀, Uganda: Kibale, Forest nr. Fort Portal, Mar. 1973 (H. Falke). Determined specimens compared: India: Haryana, Nissar, 4 Aug. 1978, ex. semilooper on greengram, K. B. Rustongi, paratypes. *E. euplexiae* Rohwer, det. Z. Bouček, 1978; 1 ♀, India: Missar, 4 Aug. 1978, no. 29, ex. *Plusia orichalcea* on moono, C.I.E.A. 13696, det. Z. Bouček, 1982 (K. B. Rustongi).

Host range: Parasitoids of larvae of several noctuids. Newly recorded from *Spodoptera exigua* (Hübner) (Noctuidae) and *Diaphania pyloalis* (Walker) (Pylalidae).

Distribution: China: Hainan, Jiangxi; India; Uganda; South Korea.

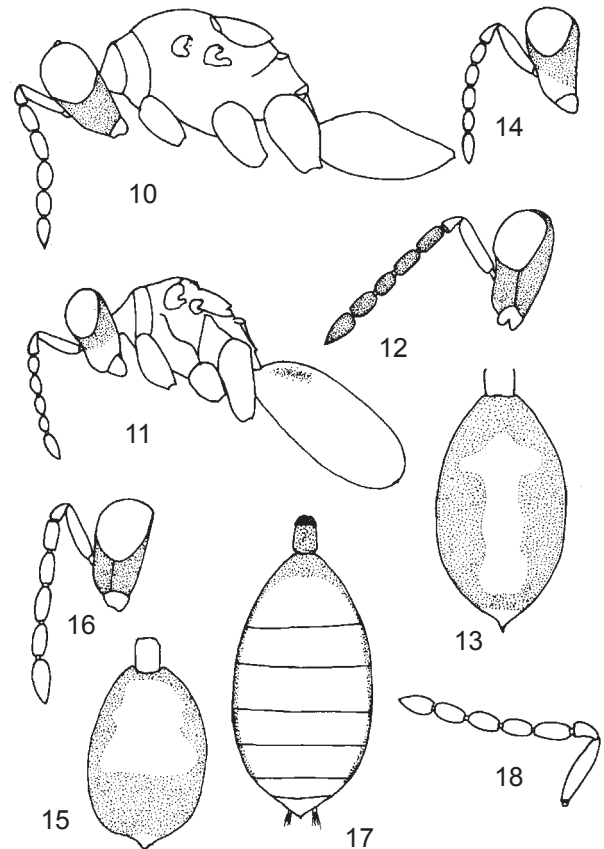


Fig. 10. *Euplectrus ceylonensis* (Howard): lateral view of body. **Fig. 11.** *Euplectrus coimbatorensis* Ferrière: lateral view of body. **Figs. 12-13.** *Euplectrus cinctiventris* Ferrière: 12. lateral view of head; 13. dorsal view of metasoma. **Figs. 14-15.** *Euplectrus euplexiae* Rohwer: 14. lateral view of head with antenna; 15. dorsal view of metasoma. **Figs. 16-17.** *Euplectrus flavigaster* sp. nov.: 16. lateral view of head with antenna; 17. dorsal view of metasoma. **Fig. 18.** *Euplectrus flavipes* Fonscolombe: antenna.

***Euplectrus flavigaster* sp. nov.**

(Figs. 16-17)

Diagnosis: Metasoma almost entirely yellow, only dark on sides at base, nearly as long as head plus mesosoma (Fig. 17); malar sulcus present; funicle with all segments distinctly longer than broad, with F1 nearly twice as long as pedicel; longer cercus straight, less than twice as long as others; hind coxae yellow; head completely black (Fig. 16); mid lobe of the mesoscutum regularly reticulate, with short median carina posteriorly, with only 3 pairs of strong setae.

Among Chinese species, it is very similar to *E. transversus*, from which it differs by the latter species having metasoma with broad, transverse dark bands near and at apex, and no malar sulcus. *Euplectrus manilae* Ashmead, 1904 (Philippines) also has metasoma nearly as long as the head plus mesosoma, but it differs from both species in its F1 being less than 1.5 times as long as the pedicel, as well as a longer cercus being sinuate, which is more than twice as long as the others.

Description: Female. Body length 2.25 mm, forewing length 2.06 mm. Body black. Head completely black. Eyes white. Ocelli yellow. Antennae yellow. Mandibles yellow. Venation yellow. Legs yellow. Metasoma almost entirely yellow, only dark on sides at base.

Head wider than high. Eyes bare. Postoccipital carina absent. Four minute setae present between posterior ocelli. Malar sulcus present. Toruli placed above lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Funicle more than twice as long as broad, with F1 about 1.5 times as long as pedicel. Clava longer than each funicular segment. Relative measurements: POL 12, OOL 7, scape 27, pedicel 10, F1 13, F2 13, F3 13, F4 13, clava 17.

Notauli straight, converging, ending at inner apex of axillae. Mid lobe of the mesoscutum with only 3 pairs of setae, without the other scattered setae, reticulate, with median carina posteriorly. Axillae with anterior margin in line with scutoscutellar sutures, smooth or with very vaguely engraved reticulations. Scutellum longer than the mesoscutum, smooth. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 9 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Setae on lower side of costal cell in 2 lines, those on upper surface

appearing after mid point. Submarginal vein with 6 setae on dorsal surface. Admarginal setae 8. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare under parastigma and near basal vein, hairy on remaining parts, closed. Hind wing acute apically. Relative measurements: submarginal vein 35, costal cell 52, parastigma 17, marginal vein 65, postmarginal vein 43, stigmal vein 16.

Petiole as long as broad. Metasoma subrotund, as broad as mesosoma, almost entirely yellow, only dark on sides at base, nearly as long as head plus mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice length of others. Apex of ovipositor sheath visible.

Male: Unknown.

Material examined: Holotype: ♀, Hainan, Lingshui, Diaoluoshan, 17 Apr. 1984 (Li Chang-fang) (IZCAS).

Distribution: China: Hainan.

***Euplectrus flavipes* Fonscolombe**

(Fig. 18)

Spalangia flavipes Fonscolombe, 1832: 299. Transferred into *Euplectrus* by Fonscolombe 1840: 186.

Euplectrus cacoeciae Ferrière, 1941: 42. Synonymized by Bouček 1970: 88.

Diagnosis: Head with supraclypeal area, clypeus, and at least lower 1/2 of gena yellow or reddish brown; scutellum reticulate; mid lobe of the mesoscutum irregularly transversely striate, with complete median carina.

Based on Ferrière's description of *E. cacoeciae*, it differs from *E. flavipes* by having completely black gena, and the finely striate scutellum. Males same as females, except that the sensillar area covers all the scape, and the scape is less than 2.7 times as long as broad in males.

Materials examined: (IZCAS) 2 ♀♀, Hunan, Liuyang, 7 May 1984 (Tong Xing-wang); 1 ♀, Guangxi, Nanning, Xiaogaofeng; 6 ♀♀; 1 ♀, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.); 1 ♀, Hainan, Jianfeng Mts., 1350 m, 4 Apr. 1984 (Li Chang-fang). (SEHU) 1 ♂, 3 ♀♀, Mexico: Quintana Roo 20 km NW. Tulum (Hwy. to Coba), screen sweep, 8 Dec. 1993 (L. Masner); 1 ♀, Spain: Sierra, Nevada Hwy., 2230 m, 9 Aug. 1986 (J. R. Vockeroth); 1 ♀, Dominican Republic: Prov. Pedernales, Sra. Bohoruco, 26 km N Cabo Rojo, 730 m, July 1990 (L. Masner).

Determined specimens compared: (BMNH): 1 ♀, Cyprus: Kyrenia, 10 Oct. 1955, ex. *Pr* (?). *lili-*

na (G. P. Georghiu), paratypes *E. flavipes* (Fonscolombe), det. Z. Bouček, 1977; 1 ♀, Turkey: Cadirtepe, Erzincan, 16 July 1981, ex. *Plusia* sp., det. Z. Bouček, 1982 (M. Aydemir); 1 ♀, France: Montpellier, 29 June 1981, CSIRO, det. Z. Bouček, 1981 (J-P Aeschlimann); 1 ♀, Yugoslavia: Slavonia, Postojne, edge of mixed forest, det. Z. Bouček 1971; 1 ♀, Italy: Quart (Aosta), 13 Sept. 1969, det. Z. Bouček 1970 (Z. Bouček); 1 ♂, Syria: Dair as Zor, 15 May 1980, ex. *Laphygma* sp., Hym 27, C.I.E.A. 13495, det. Z. Bouček 1981 (R. Stamcoll); 1 ♂, Turkey: Sadirtepa, Erzincan, 16 July 1981, ex. *Plusia* sp., det. Z. Bouček 1982 (M. Aydemir); 1 ♂, Spain: Calella d. Costa (Barcelona), July 1971, det. Z. Bouček 1973 (Z. Bouček).

Host range: Larval parasitoids of noctuids and tortricids.

Distribution: *China: Guangxi, Hunan, Hainan; Taiwan; Bulgaria; *Dominican Republic; France; Hungary; Italy; *Mexico; Moldova; Spain; *Syria; *Turkey; *Yugoslavia.

***Euplectrus fuscicoxalis* sp. nov.**

(Figs. 19-21)

Diagnosis: Hind coxae dark (Fig. 21); head completely black (Fig. 19); scutellum slightly reticulate; mid lobe of the mesoscutum with complete median carina.

Euplectrus platyhypenae Howard, 1885 (many regions) and *E. nigrescens* Ferrière, 1941 (South Africa) also have a complete median carina on the mid lobe of the mesoscutum and completely black head. Both species differs from this one in having yellow hind coxae.

Description: Female. Body length 2.46 mm, forewing length 2.4 mm. Body black. Head black. Eyes reddish white. Ocelli yellow. Antennae brown except for yellow scape and pedicel. Mandibles yellow. Venation yellow. Legs yellow with only hind coxae brown. Metasoma mostly black, except for 1 small central yellow spot.

Head wider than high. Eyes bare. Post-occipital carina absent. Toruli placed below lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 16, OOL 11, scape 34, pedicel 13, F1 17, F2 16, F3 15, F4 15, clava 21.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 2 pairs of setae, without the other scattered setae, with isodiametric and raised reticulations, with

complete median carina longitudinally. Axillae with anterior margin in line with scutoscuteellar sutures, smooth. Scutellum longer than the mesoscutum, with 2 pairs of setae, with vague reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 15 setae. Median carina present, enlarged into a small triangular plate posteriorly. Plicae absent.

Forewing hyaline. Submarginal vein with 4 setae on dorsal surface. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed. Hind wing subacute apically. Relative measurements: submarginal vein 45, costal cell 58, parastigma 18, marginal vein 75, postmarginal vein 32, stigmal vein 18.

Petiole broader than long, granulate dorsally. Metasoma subrotund, as broad as mesosoma. Apex of metasoma rounded. Longer cercus more than twice length of others. Apex of ovipositor sheath visible.

Males: Same as female, except slightly smaller, scape less than 3.2 times as long as broad, with sensillar area nearly all along venter (Fig. 20).

Materials examined: (IZCAS): Holotype: ♀, Yunnan, Lijiang, Yulong Mts., 13 Aug. 1984, 4100 m (Li Chang-fang). Paratypes: 2 ♂♂, Yunnan, Lanping, Jinding, 24 Aug. 1984, 2300 m (Li Chang-fang); 1 ♂, Yunnan, Yingjiang, 14 Apr. 1980 (Song Shi-mei); 1 ♂, Guangxi, Napo, Dehu, 4 Apr. 1998, 1440 m (Zhu Chao-dong); 1 ♀, Gansu, Kangxian, Qinghe Forestry Centre, 7 July 1999, 1350 m (Zhu Chao-dong).

Distribution: China: Gansu, Guangxi, Yunnan.

***Euplectrus indicus* Ferrière**

Euplectrus indicus Ferrière, 1941: 33.

Diagnosis: Scutellum very vaguely reticulate, nearly smooth; mid lobe of the mesoscutum with only 3 pairs of setae, with complete median carina; metasoma black at apex and on sides; hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown. Male with sensillar area which starts 1/5 from base of scape, scape less than 3.3 times as long as broad.

Another Chinese species, *E. noctuidiphagus* Yasumatsu is similar to this species except for having a distinctly reticulated scutellum and additional setae to 4 pairs of longer setae present on the mid lobe of the mesoscutum anterolaterally.

Materials examined: 1 ♂, 3 ♀♀, Jiangxi,

Nanchang, Agricultural Univ., ex. larvae of Noctuidae (3 ♂♂ damaged without head) (ICJAU); 11 ♀♀, Jiangxi, Nanchang, Agricultural Univ., ex. Larvae of *Naranga* sp., 11 July (ICJAU); 1 ♀, Guangxi, Fangcheng, Fulong, 13 Mar. 1998 (Zhu Chao-dong) (IZCAS); 1 ♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 4-7 Oct. 1982, 2150 m (Chou K.C.) (TARI); 1 ♂, Sichuan, Pengshui, 10 July 1989, 850 m (Huang Da-wei) (IZCAS); 5 ♀♀, Mexico: Quintana Roo 20 km NW Tulum (Hwy. to Coba), 8 Dec. 1993 (L. Masner) (SEHU); 1 ♀, Brazil: Represa Rio Grande, Guanabara, Sept. 199? (M. Alvarenga) (SEHU).

Determined specimens compared: 3 ♂♂, 3 ♀♀, Dehra Dun, U.P. S.N. Chatterjee, 10 Apr. 1928, parasitic on Geometridae larvae on mustard, paratypes, det. Z. Bouček (BMNH); 2 ♂♂ on 1 rectangular plate, Thailand: Chiangmai, MacTaeng, Banruey Rni, 3 Jan. 1974 (H. Bauziger per K. Yasumatsu), det. Z. Bouček 1977 (BMNH).

Host range: *Apanteles* sp. (Braconidae); geometriid.

Distribution: *China: Guangxi, Jiangxi, Sichuan; Taiwan; *Brazil; India; *Mexico; *Thailand.

Euplectrus koebelei Crawford

(Fig. 22)

Euplectrus koebelei Crawford, 1911: 621.

Diagnosis: Funicle with F1 slightly longer than pedicel, F2 to F4 becoming shorter, darker and slightly broader, barely longer than broad, with F4 less than 1.5 times as broad as F1 (Fig. 22); hind coxae yellow; head completely black; scutellum reticulate; mid lobe of the mesoscutum regularly reticulate, with short mediana carina posteriorly.

It is very similar to *E. turneri* Ferrière, 1941 (South Africa), but the latter has a strongly broadening funicle from F1 to F4, with F4 nearly twice as broad as F1 and subquadrate.

Materials examined: 2 ♀♀, Hubei, Hefeng, 31 July 1989, 1450 m (Huang Da-wei) (IZCAS); 1 ♀, Hubei, Hefeng, 29 July 1989, 1100 m (Huang Da-wei) (IZCAS); 1 ♀, Taiwan, Taichung, Wufeng, 2-9 May 1992, 60 m (A. Smetana) (TARI); 8 ♀♀, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 31 July-2 Sept. 1982, 2250 m (Chou L.Y. and Chou K.C.) (TARI); 2 ♀♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150

m (Lin K.S. and Wang C.H.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, fogging tray under *Ficus nodose* Teys. and Binn. (Moraceae) 1150-2300 m, 20-30 Dec. 1992 (Y. Basset) (SEHU); 1 ♀, Malaysia: Borneo, Sabah, Mt. Kinabalu N.P., HQ 1500 m, 8-16 May 1987 (A. Smetana) (SEHU).

Distribution: *China: Hubei; Taiwan; Japan; *Mexico; *Papua New Guinea.

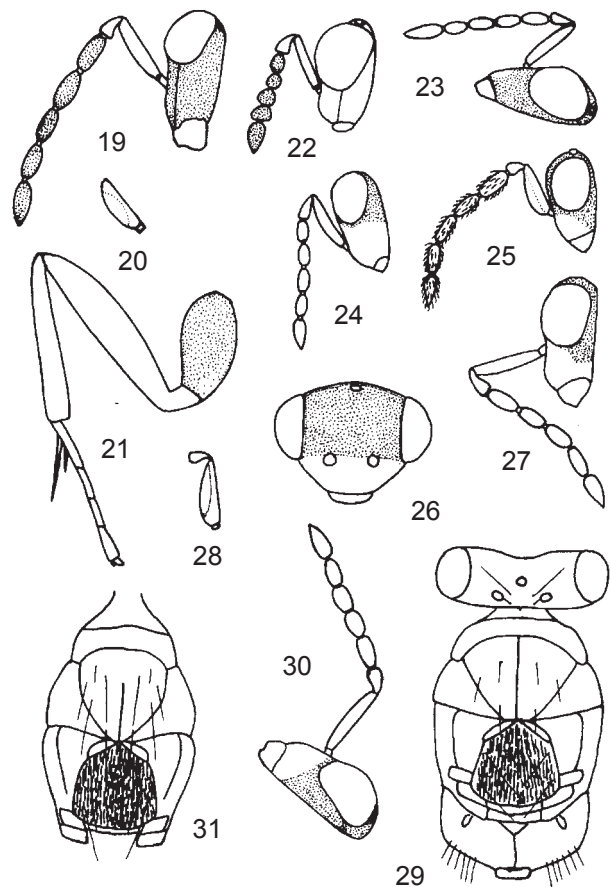


Fig. 19-21. *Euplectrus fuscicoxalis* sp. nov.: 19. lateral view of head with antenna; 20. male scape; 21. hind coxa. **Fig. 22.** *Euplectrus koebelei* Crawford: lateral view of head with antenna. **Fig. 23.** *Euplectrus laeviscutellum* sp. nov.: lateral view of head with antenna. **Figs. 24-25.** *Euplectrus laphygmae* Ferrière: lateral view of head with antenna: 24. female; 25. male. **Figs. 26-29.** *Euplectrus leucostomus* Rohwer: 26. frontal view of female head; 27. lateral view of head with antenna (male); 28. scape (male); 29. dorsal view of head and mesosoma. **Figs. 30-31.** *Euplectrus liparidis* Ferrière: 30. lateral view of head; 31. dorsal view of mesosoma (excluding propodeum).

***Euplectrus laeviscutellum* sp. nov.**

(Fig. 23)

Diagnosis: Petiole as long as, or longer than broad; metasoma yellow with a dark broad band before apex; mid lobe of the mesoscutum without median carina posteriorly; hind coxae yellow; head with only supraclypeal area and clypeus yellow; scutellum shiny smooth, at most with very vague reticulations.

It is mostly similar to *E. parvulus* Ferrière, 1941 from China. The morphological characters which distinguish the 2 species include the ratio between the petiole length and breadth and the sculpture type of the dorsal surface of the petiole: the petiole of *E. parvulus* is shorter than broad, and smooth dorsally. Sri Lankan *E. littoralis* Wijesekara and Schauff (not examined) has a similar petiole as *E. laeviscutellum*, but *E. littoralis* differs from this new species in having a scutellum coriaceous to weakly reticulate anteriorly, smooth posteriorly; and F1-4 are subequal in length, and 2.8 times as long as broad.

Description: Female. Body length 2.34 mm, forewing length 1.97 mm. Body black. Head dark except for yellow supraclypeal area and clypeus (Fig. 23). Eyes reddish. Ocelli yellow. Antennae yellow. Mandibles yellow. Venation yellow. Legs yellow. Metasoma yellow at apex, with transverse band before apex and sides dark.

Head wider than high. Eyes bare. Postoccipital carina absent. Toruli placed at lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 14, OOL 8, scape 27, pedicel 11, F1 11, F2 10, F3 9, F4 10, clava 14.

Notauli straight, converging, ending at inner apex of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, reticulate, without median carina. Axillae with anterior margin in line with scutoscutellar sutures, smooth. Scutellum longer than the mesoscutum, smooth. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 7 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Setae on lower side of costal cell in a complete line, those on upper surface only appearing apically. Submarginal vein with 5 setae on dorsal surface. Admarginal setae 11. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed.

Hind wing acute apically. Relative measurements: submarginal vein 38, costal cell 53, parastigma 15, marginal vein 62, postmarginal vein 37, stigmal vein 16.

Petiole 1.5-1.6 times as long as broad, granulate dorsally. Metasoma subrotund, as broad as mesosoma. Apex of metasoma not acute. Longer setae of cerci more than twice length of others, sinuate. Apex of ovipositor sheath visible.

Materials examined: Holotype: ♀, Australia: Queensland, Cooloola N. P. 30 m, screen sweep, 7 Mar. 1984 (L. Masner) (SEHU). Paratypes: ♀, Australia: Queensland, Gordonvale nr. Mulgrave River, screen sweep, riv. for., 30 Mar. 1991 (J. D. Pinto) (SEHU). Other specimens examined: 1 ♂, 1 ♀, Fujian, Fuzhou, ex. larvae of Notodontidae (Li Yun-wei) (IZCAS).

Host range: Possible larval parasitoids of notodontids.

Distribution: China: Fujian; Australia.

***Euplectrus laphygmae* Ferrière**

(Figs. 24-25)

Euplectrus laphygmae Ferrière, 1941: 40.

Diagnosis: Gena nearly entirely yellow (Fig. 24); mid lobe of the mesoscutum without median carina posteriorly, distinctly reticulate; scutellum very vaguely reticulate; metasoma dark at apex.

Scape in males from China have the sensillar area all along the ventral margin, head mostly dark, while head of those outside of China completely yellow heads (Fig. 25). It is morphologically similar to *E. xanthocephalus* Girault, 1913 among Chinese species. The latter species has the gena which is at most yellow at the lower 1/2 in females; some males outside of China have completely yellow heads, while Chinese males have the same color pattern as on female heads.

Materials examined: 1 ♂, Hubei, Badong, 11 Aug. 1989, 1500 m (Huang Da-wei) (IZCAS); 1 ♂, Fujian, Shanghang, Buyun, 19 Sept. 1996, 1100 m (Xiao Hui) (IZCAS); 1 ♀, Fujian, Shanghang, Buyun, 20 Sept. 1996, 1100 m (Xiao Hui) (IZCAS); 1 ♀, Fujian, Shanghang, Gutian, 14 Sept. 1996 (Xiao Hui) (IZCAS); 1 ♀, Nigeria: Ibadan, 20 July 1962 (D. C. Eidt) (SEHU).

Host range: Larval parasitoids of arctiids and noctuids.

Distribution: *China: Fujian, Hubei; Benin; Cameroon; Congo; Israel; Ivory Coast; Kenya; Malawi; Mauritius; Nigeria; Senegal; South Africa; Sudan; Uganda; Zimbabwe.

***Euplectrus leucostomus* Rohwer**

(Figs. 26-29)

Euplectrus leucostomus Rohwer, 1921: 134.

Diagnosis: Scutellum strongly striate longitudinally; mid lobe of the mesoscutum with complete median carina. Males same as females, except for being slightly smaller, scape less than 3 times as long as broad, with sensillar area extending nearly all along the ventre.

Euplectrus bicolor (Swederus) and *E. liparidis* (Ferrière) also have strongly striated scutellums. They also share the same color pattern of the head as *E. leucostomus*: head dark with supra-clypeal area, clypeus, and at least part of the gena yellow (Fig. 26). But both species differ from latter in having no complete median carina on the mid lobe of the mesoscutum. Other possible morphologically similar species may include the Indian *E. mathuri* Bhatnagar (not examined), Sri Lankan *E. sp. C* (not examined) (Wijesekara and Schauff 1994), and unknown forms collected from Mexico. But they all differ in having a dark gena. Based on Bhatnagar (1952), *E. mathuri* is also distinct in having dark hind coxae.

Materials examined: 1 ♀, Fujian, Chong'an, Xingcun, San'gang, 4 June 1960, 740 m (Zuo Yong) (IZCAS); 1 ♀, Fujian, Chong'an, Xingcun, Longdu, 19 June 1960, 580-640 m (Zhang Yi-rang) (IZCAS); 2 ♀♀, Hunan, Yizhang, Aug. 1973, ex. larvae of *Dendrolimus* sp., (Liao Ding-xi) (IZCAS); 1 ♂, 5 ♀♀, Guangdong, Guangzhou, 1988 (Liang Wei-guang) (IZCAS); 1 ♀, Guangxi, Shangsi, Hongqi Forestry Center, 18 Mar. 1998 (Zhu Chao-dong) (IZCAS); 1 ♀, Guangxi, Dasin, 30 Mar. 1998 (Zhu Chao-dong) (IZCAS); 1 ♂, Guangxi, Napo, Baihe, 8 Apr. 1998 (Zhu Chao-dong) (IZCAS); 2 ♀♀, Hainan, Jianfeng Mts., 17 Aug. 1980, ex. larvae of *Pericyma cruegeri* (Noctuidae) (Liu Mao-bing) (IZCAS); 1 ♂, 3 ♀♀, Yunnan, Simao, 1981 (Liao Ding-xi) (IZCAS); external specimens: 1 ♀, Dominican Republic: Prov. Pedemale, Sra. Bahoruco, Alcoa Rd. 530-750 m, 14 Aug. 1990 (L. Masner) (SEHU); 1 ♀, Mexico, QuintanaRoo 20 km NW Tulum (Hwy. to Coba), screen sweep, 8 Dec. 1993 (L. Masner) (SEHU).

Determined specimens compared: (BMNH) 2 ♂♂, 2 ♀♀ on 1 rectangular plate, India: Maheshwaram ? And. Prad. 18 Aug. 1987, semi-looper on *Caston* CIE A19192, det. Z. Bouček, 1988; 1 ♀, Bangalore, Mysore State, Oct. 1964, ex. larva of *Achaea janata* on *Caston*, det. G. J. Kerrich, 1966; 1 ♀, S. India: Coimbatore, foot of

Marudamalay Hills on *Achaea* sp., T. K. V. Coll. 18 Jan. 1929, Ferrière det.; 7 ♀♀ on two rectangular plates, Sri Lanka: Maha Illuppallama, Dec. 1976, ex. *Achaea janata*, 124A CIE A9355, det. Z. Bouček, 1977; 5 ♂♂ on two rectangular plates, Sri Lanka: Maha Illuppallama, Dec. 1976 no. 124 A, ex. larva of *Achaea janata* on *Castor*, CIE A. 9355, det. Z. Bouček, 1977.

Host range: Parasitoids of lasiocampids and noctuids. Newly recorded from *Dendrolimus* sp. (Lasiocampidae), *Pericyma cruegeri* Butler (Noctuidae).

Distribution: *China: Fujian, Guangdong, Guangxi, Hainan, Hunan; *Dominican Republic; India; *Mexico; Sri Lanka.

***Euplectrus liparidis* Ferrière**

(Figs. 30-32)

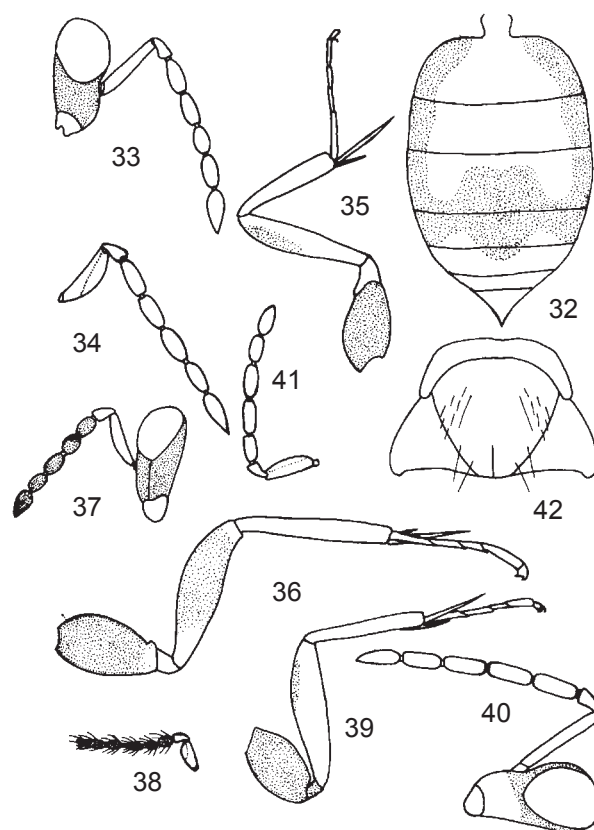


Fig. 32. *Euplectrus liparidis* Ferrière: dorsal view of metasoma. **Figs. 33-36.** *Euplectrus longigaster* sp. nov.: 33. lateral view of head with antenna; 34. male antenna; 35. hind leg (Papua New Guinea); 36. hind leg (Mexico). **Figs. 37-39.** *Euplectrus longipetiolatus* sp. nov.: 37. lateral view of head with antenna; 38. male antenna; 39. hind leg. **Figs. 40-42.** *Euplectrus maculiventris* Westwood: 40. lateral view of head with antenna; 41. male antenna; 42. mid lobe of mesoscutum.

Euplectrus liparidis Ferrière, 1941: 43.

Diagnosis: Metasoma yellow at apex and with a broad dark band before apex (Fig. 32); both sexes with supraclypeal area, clypeus, and at least part of gena yellow (Fig. 30); scutellum strongly striate longitudinally (Fig. 31); mid lobe of the mesoscutum regularly reticulate, with incomplete median carina posteriorly (Fig. 31).

Euplectrus liparidis from Beijing and Qinghai in China, and from Canada have the metasoma dark at the base, on the sides, near and at the apex. One from Jiangsu has the metasoma only dark at the base, and very narrowly on the sides. Those collected respectively from the Czech Republic, Japan, and South Korea agree well with paratypes.

Materials examined: See Zhu and Huang (2002).

Host range: Parasitoids of lymantrids. Newly recorded from larvae of *Agrapha agnata* (Staudinger) (Noctuidae).

Distribution: China: Beijing, Jiangsu, Jiangxi, Qinghai; Algeria; Canada; Czech Republic; Japan; Italy; South Korea.

***Euplectrus longigaster* sp. nov.**

(Figs. 33-36)

Diagnosis: Hind coxae dark (Figs. 35, 36); head with only supraclypeal area and clypeus yellow or reddish brown (Fig. 33); scutellum reticulate; mid lobe of the mesoscutum with complete median carina.

One female from Mexico has completely brown hind femora (Fig. 36); one male from Papua New Guinea has the hind femora only partly yellowish brown dorsally near the apex (Fig. 35), scape, supraclypeal area, and clypeus white; all Chinese specimens have the yellow hind femora, supraclypeal area and clypeus yellow, yellowish brown, or slightly different from other areas of head.

This species is very similar to *E. fulvicoxis* Ferrière, but the metasoma of the latter species is shorter than mesosoma, and mostly yellow dorsally.

Description: Female. Body length 2.22 mm, forewing length 2.86 mm. Body black. Eyes reddish. Ocelli yellowish brown. Antennae yellowish brown, except for yellow scape, pedicel, and anelli. Head black with supraclypeal area, clypeus, and mandibles yellowish brown or yellow. Legs yellow except for black hind coxae. Metasoma dark

brown near and at apex to completely black.

Head wider than high. Vertex with isodiametric, engraved reticulations. Eyes bare. Postoccipital carina absent. Toruli placed at lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 15, OOL 9, scape 33, pedicel 12, F1 14, F2 15, F3 15, F4 14, clava 18.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, with isodiametric, raised reticulations. Axillae with anterior margin in line with scutoscuteellar sutures, reticulate. Scutellum as long as the mesoscutum, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 14 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Submarginal vein with 4 setae on dorsal surface. Admarginal setae 14. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, open. Hind wing subacute apically. Relative measurements: submarginal vein 43, costal cell 62, parastigma 21, marginal vein 92, postmarginal vein 45, stigmal vein 21.

Metasoma subrotund, as long as mesosoma, as broad as mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice the length of others. Apex of ovipositor sheath visible.

Male: Same as female, except scape less than 3.5 times as long as broad, with sensillar area starting 1/7 from base (Fig. 34).

Materials examined: Holotype: ♀, Tibet, Bomi, 11 July 1997 (Zhu Chao-dong) (IZCAS). Paratypes: 1 ♂, 1 ♀, Tibet, Zayü, 19 July 1997 (Zhu Chao-dong) (IZCAS); 2 ♀♀, C. Taiwan, Nantou, Meifeng, 7 Nov. 1981, 2150 m (Lin S.C. and Tang W.S.) (TARI); 17 ♀♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (Lin K.S. and Wang C.H.) (TARI); 1 ♂, 4 ♀♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♂, 2 ♀♀, C. Taiwan, Nantou, Meifeng, 7-9 May 1981 (Lin K.S. and Lin S.C.) (TARI); 4 ♀♀, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI); 2 ♀♀, C. Taiwan, Nantou, Meifeng, 4-7 Oct. 1982, 2150 m (Chou K.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 7 Nov. 1981, 2150 m (Lin S.C. and Tang W.S.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 22 May 1982,

2150 m (Chou L.Y.) (TARI); 1 ♀, Mexico: Quintana Roo, 20 km NW. Tulum (Hwy. to Coba), screen sweep, 8 Dec. 1993 (L. Masner) (SEHU); 1 ♂, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 1150-2300 m, 27 Mar.-6 Apr. 1992 (Y. Basset) (SEHU).

Distribution: China: Tibet; Taiwan; Mexico; Papua New Guinea.

***Euplectrus longipetiolatus* sp. nov.**

(Figs. 37-39)

Diagnosis: Hind coxae and at least part of hind femora dark (Fig. 39); head completely black (Fig. 37); scutellum entirely with very fine reticulations; mid lobe of the mesoscutum without complete median carina.

This new species is similar to *E. brevisetulosus*, which differs in having only hind coxae dark. *Euplectrus himalayensis* Mani, (1935) (not examined) and *E. fuscipes* Ferrière (Uganda) may be similar to this species, but both species differs in the petiole being broader than long and the hind femur being dark except at the apex.

Description: Female. Body length 1.51 mm, forewing length 1.51 mm. Body black. Eyes white. Ocelli yellow. Antennae yellowish brown, except scape, pedicel, and anelli yellow. Mandibles yellow. Hind coxae and part of hind femora dark. Metasomal T1 brown anteriorly and yellow mostly. The remaining segments of metasoma are brown.

Head completely black, wider than high. Eyes bare. Postoccipital carina absent. Toruli placed at lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 13, OOL 6, scape 22, pedicel 10, F1 8, F2 7, F3 7, F4 8, clava 15.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, with isodiametric, superficial reticulations. Axillae with anterior margin in line with scutoscuteellar sutures, smooth. Scutellum longer than the mesoscutum, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with setae 7. Median carina present, inverted T-shaped posteriorly. Plicae present. Petiole at least 1.5 times as long as broad.

Forewing hyaline. Submarginal vein with 4 setae on dorsal surface. Admarginal setae 14.

Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, open on lower side. Hind wing nearly truncate apically. Hind coxae dark, hind femora mostly yellow, at mostly slightly dark dorso-medially. Relative measurements: submarginal vein 26, costal cell 37, parastigma 10, marginal vein 47, postmarginal vein 18, stigmal vein 11.

Metasoma ovoid, as long as mesosoma, as broad as mesosoma. Apex of metasoma acute. Longer setae of cerci more than twice length of remaining setae. Apex of ovipositor sheath visible.

Males: Same as female, except for scape with sensillar area starting nearly medially (Fig. 38).

Materials examined: Holotype: ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 8 Mar. 1993, 1150-2300 m, ex. fogging tray under *Piper plagiophyllum* K. Sch. and Laut. (Piperaceae) (Y. Basset) (SEHU). Paratypes: 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 4 Dec. 1992, 1150-2300 m, ex. fogging tray under *Melicope denhamii* (seem) T. Hartled (Rutaceae) (Y. Basset) (SEHU); 4 ♀♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 5 Jan. 1993, 1150-2300 m, ex. fogging tray under *Cinnamomum culilaban* (L) (Y. Basset) (SEHU); 2 ♀♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 11 Dec. 1992, 1150-2300 m, ex. fogging tray under *Castanopsis acuminatissima* A. DC. (Fagaceae) (Y. Basset) (SEHU); 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 30 Dec. 1992, 1150-2300 m, ex. fogging tray under *Ficus nodosa* Teys. and Binn. (Moraceae) (SEHU); 1 ♂, 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 13 Mar. 1993, 1150-2300 m, ex. fogging tray under *Aleurites moluccana* Willd. (Euphorbiaceae) (Y. Basset) (SEHU); 1 ♂, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 30 Dec. - 9 Jan. 1993, 1150-2300 m, ex. fogging tray under *Piper plagiophyllum* K. Sch. and Laut. (Piperaceae) (SEHU); 1 ♂, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 11 Dec. 1992, 1150-2300 m, ex. fogging tray under *Castanopsis acuminatissima* A. DC. (Fagaceae) (Y. Basset) (SEHU); 2 ♂♂, Guinea, Mt. Nimba, 514-740 m, Dec. 1990-Mar. 1991 (L. Lebianc) (SEHU). Other specimens examined: 1 ♀, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI).

Distribution: Taiwan; Papua New Guinea.

***Euplectrus maculiventris* Westwood**

(Figs. 40-42)

Euplectrus maculiventris Westwood, 1832: 128. Transferred into *Eulophus* by Haliday, 1842. Synonymized as *Euplectrus bicolor* (Swederus) by Bouček and Askew, 1968: 15. Validated by Zhu and Huang 2002.

Diagnosis: Mid lobe of the mesoscutum distinctly reticulate, with additional setae to 3 pairs of longer setae anterolaterally, with median carina posteriorly (Fig. 42); scutellum entirely with distinct reticulations; metasoma dark at apex and on sides; hind coxae yellow; head with supraclypeal area and clypeus yellow or reddish brown (Fig. 42).

As discussed under *E. acutigaster*, this species is similar to *E. singularis* Ferrière (not examined) and *E. acutigaster*, but both species have a petiole which is slightly longer than broad and a scutellum that is very finely reticulate.

Male: Same as female, except scape with sensillar area is nearly all along venter (Fig. 41).

Materials examined: See Zhu and Huang (2002).

Distribution: China: Beijing, Henan, Sichuan, Yunnan; Taiwan; Czech Republic; UK; Japan; Malaysia; South Korea.

***Euplectrus manilae* Ashmead**
(Figs. 43-44)

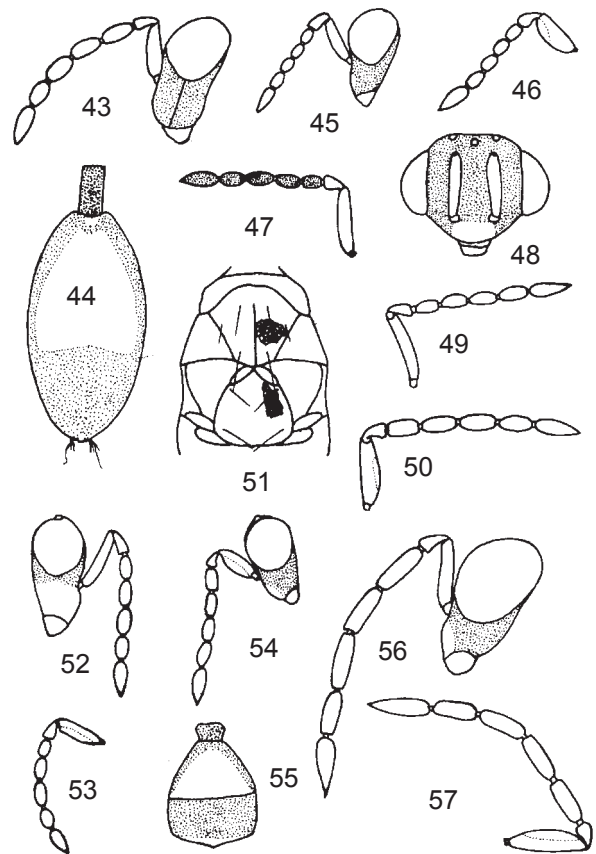
Euplectrus manilae Ashmead, 1904: 16.

Diagnosis: Funicle with all segments distinctly longer than broad, with F1 less than 1.5 times as long as pedicel, F4 less than 1.5 times as broad as F1; longer cercus sinuate, more than twice length of others (Fig. 43); metasoma nearly as long as head plus mesosoma, broadly dark near and at apex (Fig. 44); hind coxae and femora yellow; scutellum smooth or very vaguely reticulate anteriorly.

This species is similar to *E. transversus* and *E. flavigaster*, but the latter species differs in having F1 nearly twice as long as pedicel and a longer straight cercus being less than twice as long as other.

Materials examined: 1 ♀, Hubei, Xingshan, Longmenhe, 11 Sept. 1994 (Li Fa-sheng) (IZCAS); 1 ♂, 1 ♀, Hainan, Lingshui, Diaoluoshan, 14 Apr. 1984 (Li Chang-fang) (IZCAS); 1 ♀, Hainan, Lingshui, Diaoluoshan, 15 Apr. 1984 (Li Chang-fang) (IZCAS); 1 ♂, Hainan, Lingshui, Diaoluoshan, 17 Apr. 1984 (Li Chang-fang) (IZCAS); 1 ♀, Hainan, Wuzhishan, 26 Apr. 1984, 1867 m (Li Chang-fang) (IZCAS); 1 ♀, Hainan, Bawang Mts., 8 Apr. 1984 (Li Chang-fang)

(IZCAS); 1 ♀, Australia: Queensland, 8 km Se. Darntree, 31 Mar. 1991 (J. D. Pinto) (SEHU); 1 ♀, Japan: Kyushu, Iriomote, Okinawa, 32 May 1992 (S. Shiyake) (SEHU); 1 ♀, Japan: Shikoku, Uchinomi, Shodoshima, Kagawa, 19 Aug. 1992 (E. Ikeda) (SEHU); 1 ♀, Malaysia: Sarawak, 32 mile, Kuching Serian Road, 1 Division, 10 Oct. 1974 (Chin T.) (SEHU); 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 1150-2300 m, 11 Dec. 1992, fogging tray under *Castanopsis acuminatissima* A. DC (Fagaceae) (Y. Basset) (SEHU); 1 ♀, Papua New Guinea: Morobe Prov., Wau, Mt. Kaindi, 1150-2300 m, 15 June 1992, fogging tray under *Cordia dichotoma* Forst. (Boraginaceae) (Y.



Figs. 43-44. *Euplectrus manilae* Ashmead: 43. lateral view of head with antenna; 44. metasoma. **Figs. 45-46.** *Euplectrus medanensis* Crawford: 45. lateral view of head and antenna; 46. male antenna. **Fig. 47.** *Euplectrus nigrescens* Ferrière: antenna. **Figs. 48-51.** *Euplectrus noctuidiphagus* Yasumatsu: 48. frontal view of head; 49. antenna (female); 50. antenna (male); 51. dorsal view of mesosoma excluding propodeum. **Figs. 52-53.** *Euplectrus paribus* sp. nov.: 52. lateral view of head with antenna; 53. male antenna. **Figs. 54-55.** *Euplectrus parvulus* Ferrière: 54. lateral view of head with antenna; 55. metasoma. **Figs. 56-57.** *Euplectrus petiolatus* Ferrière: 56. lateral view of head with antenna; 57. male antenna.

Basset) (SEHU); 1 ♀, Papua New Guinea: Boroi, 12 May 1982 (P. Grootaert) (SEHU); 1 ♀, Thailand: Doi Inthanon N.P. 70 km SW, Chiang Mai 247-530 m, 31/I-7 Feb. 1989 (T. W. Thormin) (SEHU). Determined specimens (BMNH) compared: 1 ♀, Country (?) Mt. Makiling, Luzon, ex. a 'tussock' larva, Baker, det. Z. Bouček 1976.

Host range: Parasitoids of noctuids and papilionids.

Distribution: *China: Guizhou, Hainan, Hubei; *Australia; *Japan; *Malaysia; *Papua New Guinea; *Thailand; Philippines.

***Euplectrus medanensis* Crawford**
(Figs. 45-46)

Euplectrus medanensis Crawford, 1911: 280.

Diagnosis: Petiole less than 1.2 times as long as broad; mid lobe of the mesoscutum without median carina posteriorly; metasoma dark at apex and on sides, nearly as long as mesosoma; hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown (Fig. 45); scutellum reticulate. Males same as females, except for scape with sensillar area starting medially upwards (Fig. 46).

Among Chinese species, *E. petiolatus* is similar to this species, but it differs in having the petiole more than 1.5 times longer than broad. Other species, which also have the petiole less than 1.2 times as long as broad, include the Sri Lankan *E. nibilis* Wijesekera and Schauf (not examined) and Ugandan *E. epiplemae* Ferrière (not examined). *Euplectrus nibilis* differs from *E. epiplemae* and *E. medanensis* in having the rugulose scutellum, and T2 covering almost the entire metasoma. *Euplectrus epiplemae* has the metasoma which is much shorter than mesosoma, while *E. medanensis* has the metasoma which is almost as long as the mesosoma.

Materials examined: 1 ♀, Hubei, Xuan'en, 5 Aug. 1989, 1000 m (Huang Da-wei) (IZCAS); 1 ♀, Hainan, Lingshui, Diaoluoshan, 19 Apr. 1984 (Li Chang-fang) (IZCAS); 2 ♂♂, Hainan, Jianfeng Mts., 31 Mar. 1984 (Li Chang-fang) (IZCAS); 1 ♀, Japan: Sapporo, Hokudai, Hokkaido, 12 May 1992 (E. Ikeda) (SEHU); 1 ♀, Nigeria: Ibadan, 4 Aug. 1962 (D. C. Eidt) (SEHU); 1 ♀, Guinea, Mt. Nimba, 514-740 m, Dec. 1990-Mar. 1991 (L. Liebianc) (SEHU). Determined specimens (BMNH) compared: 1 ♀, Medan, Sumatra, LPduBuss, paratypes, det. Z. Bouček, 1976, paratype.

Distribution: *China: Hubei, Hainan; *Guinea; Indonesia; *Japan; *Nigeria.

***Euplectrus nigrescens* Ferrière**
(Fig. 47)

Euplectrus nigrescens Ferrière, 1941: 35.

Diagnosis: Scutellum very finely reticulate; funicle with all segments gradually and slightly shortened apically (Fig. 47); metasoma broadly black on sides, at and near apex, with T1 less than 1/3 of entire length; hind coxae yellow; head completely black; mid lobe of the mesoscutum with complete median carina. Males same as females.

It is very similar to *E. platyhypenae* Howard. Differences between each species are given under *E. platyhypenae*.

Materials examined: 1 ♂, 3 ♀♀, Zhejiang, Lin'an, Tianmu Mt., 9 June 1999, 350 m (Xiao Hui) (IZCAS); 1 ♀, Guangxi, Napo, Baidou, Baiwai, 10 Apr. 1998, 540 m (Zhu Chao-dong) (IZCAS); 2 ♀♀, Yunnan, Ruili, 30 Oct. 1981 (Wang Lu-zhe) (IZCAS); 4 ♀♀, Venezuela: Merida, Tabay LaMucuy, 18 June-2 Aug. 1989, streams on meadows, 1900 m (S. and J. Peck) (SEHU); 2 ♀♀, Venezuela: Trujillo, Mosquey nr. Bocono, 24 Aug. 1992, maxinet, coffee plant, 1500 m (SEHU).

Distribution: *China: Guangxi, Yunnan, Zhejiang; South Africa; *Venezuela.

***Euplectrus noctuidiphagus* Yasumatsu**
(Figs. 48-51)

Euplectrus noctuidiphagus Yasumatsu, 1953: 164.

Diagnosis: Scutellum distinctly reticulate (Fig. 51); mid lobe of the mesoscutum with complete median carina, sometimes with additional setae to 4 pairs of longer setae scattered anterolaterally; metasoma black at apex and on sides; hind coxae yellow; head with only supraclypeal area and clypeus yellow (Fig. 48). Males (Fig. 50) same as females (Fig. 49).

Materials examined: 10 ♀♀, 2 on separate plate on 1 pin, China: Prov. Jiangsu, Shanghai, Musee Heude, 31 July 1921 (O. Piel) (IZCAS); 2 ♀♀, Zhejiang, Huangyan, Aug. 1957, ex. *Oraesia emarginata*; 2 ♀♀ on separate points on 1 pin, Zhejiang, Tiantai, 22 Sept. 1957, det. by Liao Ding-xi as *Euplectrus chapadae* Ashmead (IZCAS); 1 ♀, Hunan, Yongshun, 5 Aug. 1988 (Yang Long-long) (IZCAS); 1 ♀, Hubei, Badong, 11 Aug. 1989, 1500 m (Huang Da-wei) (IZCAS); 5 ♀♀, Guangxi, Nanning, Sept. 1980; 3 ♀♀, C. Taiwan, Nantou,

Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI); 2 ♂♂, 1 ♀, C. Taiwan, Nantou, Meifeng, 4-7 Oct. 1982, 2150 m (Chou K.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 22 May 1982 (Chou L.Y.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 7 Nov. 1981, 2150 m (Lin S.C. and Tang W.S.) (TARI); 1 ♂, Sichuan, Wanggong, 15 July 1980 (IZCAS); 2 ♂♂, 3 ♀♀, Sichuan, Wanggong, 15 July 1980 (IZCAS); 2 ♀♀, Sichuan, Wanggong, 23 July 1980 (IZCAS); 12 ♀♀, Sichuan, Laijing, July 1980, ex. larvae of *Leucania separata* (IZCAS); 5 ♀♀, Sichuan, Xinjing, Zhongxing, ex. larvae of *Naranga aenescens*, 30 May 1980 (IZCAS); 1 ♂, 2 ♀♀, Sichuan Jun-lian, 5 July 1980; 1 ♀, Sichuan, Wanggong, 10 Sept. 1980 (IZCAS); 2 ♀♀, Sichuan, Jiang'an, ex. larvae of *Naranga aenescens* (IZCAS); 2 ♀♀, Sichuan, Jiang'an, larvae of *Leucania separata* (IZCAS); 5 ♀♀, Sichuan, Jiang'an, larvae of *Leucania separata* (IZCAS); 6 ♀♀, Sichuan, Kaixian, ex. larvae of *Leucania separata*, 22 July 1980 (IZCAS); 2 ♀♀, Sichuan, Youyang, Zhongduo, ex. larvae of *Leucania separata*, Sept. 1980 (IZCAS); 5 ♀♀, Sichuan, Luxian, ex. larvae of *Naranga aenescens*, Aug. 1980 (IZCAS); 2 ♀♀, Sichuan, Emei Mts., 23 July 1980 (IZCAS); 1 ♀, Sichuan, Chendu, 29 Sept. 1963 (Liao Ding-xi) (IZCAS); 1 ♀, Guizhou, Leishan, 5 July 1988, 1100 m (Yang Long-long) (IZCAS); 1 ♂, Yunnan, Ruili, 30 Oct. 1981 (Wang Lu-zhe) (IZCAS); 1 ♀, Nepal: Kathmandu Godavari, 600 ft, 14-17 July 1967 (Can. Exp.) (SEHU). Determined specimens (BMNH) compared: 1 ♀, Japan: Kyushu, Miyazaki, 14 Oct. 1951, S. Nasu, paratype.

Host range: Parasitoids of noctuids. Newly recorded from *Oraesia emarginata* Fabricius, *Pseudaletia separata* (Walker), *Naranga aenescens* Moore (Noctuidae).

Distribution: *China: Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan, Zhejiang; Taiwan; Japan; *Nepal.

***Euplectrus paribus* sp. nov.**

(Figs. 52-53)

Diagnosis: Mid lobe of the mesoscutum distinctly reticulate, without anterolateral setae additional to 3 pairs of longer setae, with median carina posteriorly; scutellum very vaguely reticulate anteriorly, smooth posteriorly; metasoma dark at apex; head with supraclypeal area, clypeus, and at least part of gena yellow (Fig. 52).

It is very similar to *E. maculiventris*, but the latter species differs by having the mid lobe of the mesoscutum with anterolateral shorter setae in addition to the 3 pairs of longer ones; scutellum entirely with distinct reticulations.

Description: Female. Body length 1.72 mm, forewing length 1.78 mm. Body black. Eyes white. Ocelli yellow. Antennae yellow. Head black with supraclypeal area, gena, clypeus, and mandibles yellow. Sometimes, head reddish brown around eye margin on vertex. Legs yellow. Metasoma dark at apex.

Head wider than high. Vertex smooth. Eyes bare. Postoccipital carina absent. Toruli placed at lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 13, OOL 10, scape 27, pedicel 12, F1 8, F2 9, F3 9, F4 9, clava 15.

Notauli straight, converging, ending at anterior margin of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, with isodiametric, raised reticulations, with distinct median carina posteriorly. Axillae with anterior margin in line with scuto-scutellar sutures, reticulate. Scutellum longer than the mesoscutum, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 7 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Setae on lower side of costal cell in a line all along the surface, those on upper surface only appearing after mid point. Submarginal vein with 4 setae on dorsal surface. Admarginal setae 11. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed underside. Hind wing subacute apically. Relative measurements: submarginal vein 27, costal cell 37, parastigma 11, marginal vein 56, postmarginal vein 36, stigmal vein 20.

Metasoma subrotund, shorter than mesosoma, as broad as mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice length of others.

Male: Same as female, except scape with sensillar area nearly all along venter (Fig. 53).

Materials examined: Holotype: ♀, Fujian, Liancheng, Chendi, 17 Sept. 1996, 500-700 m (Xiao Hui) (IZCAS). Paratypes: ♀, Fujian, Liancheng, Chendi, 17 Sept. 1996, 500-700 m (Xiao Hui) (IZCAS). Other specimens examined: 1 ♀, Hubei, Lichuan, Xingdou Mts., 21 July 1989, 800 m (Huang Da-wei) (IZCAS); 1 ♀, Fujian,

Chong'an, 6 May 1982 (Lin Nai-quan) (IZCAS); 3 ♀♀, Guangzhou, 1988 (Liang Wei-guang) (IZCAS); 1 ♀, Guangzhou, Wengcheng, July 1975 (IZCAS); 1 ♀, C. Taiwan, Nantou, Meifeng, 4-7 Oct. 1982, 2150 m (Chou K.C.) (TARI); 1 ♀, Australia: Queensland, Gordonvale nr. Mulgrave River, screen sweep, river forest, 30 Mar. 1991 (J. D. Pinto) (SEHU); 1 ♀, Japan: Kyushu, Fukuoka, Mt. Tachibana, 12-18 Aug. 1979 (K. Yamagishi) (SEHU); 1 ♂, Japan: Honshu, Ibaraki, Tsukuba, Niaes, 13 Nov.-22 Dec. 1989 (M. J. Sharkey) (SEHU).

Distribution: China: Fujian, Guangzhou, Hubei; Taiwan; Australia; Japan.

Euplectrus parvulus Ferrière

(Figs. 54-55)

Euplectrus parvulus Ferrière, 1941: 33.

Euplectrus plecopterae Mani, 1941: 31. Synonymized by Chatterjee 1945: 95.

Diagnosis: Petiole shorter than broad, smooth dorsally; metasoma yellow with a transverse, dark band before apex (Fig. 55); hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown (Fig. 54); scutellum reticulate; mid lobe of the mesoscutum with median carina posteriorly. Males same as females, except sensillar area nearly all along venter of scape.

Materials examined: 1 ♂, 2 ♀♀, Guangxi, Hepu, ectoparasitoid of Plusiinae (Cui Ying) (IZCAS). Determined specimens (BMNH) compared: 1 ♀, Khanewal, Pln. Punjab., 29 July 1928, ex. larva of *Plecoptera reflexa*, Dahlbergia Sissoo, det. Z. Bouček 1974, para-lectotype; 2 females on one rectangular plate, para-lectotypes, Dalbergia Sissoo, Khanewal, Pln. Punjab., R N M23 July 1928, ex. larva of *Plecoptera reflexa*, det. Z. Bouček 1974; 1 ♀, para-lectotypes, Dalbergia Sissoo, Khanewal, Pln. Punjab., R N. M. 29 July 1929, ex. larva of *Plecoptera reflexa*, det. Z. Bouček 1974; 2 females on 1 rectangular plate, para-lectotypes, Dalbergia Sissoo, Khanewal, Pln. Punjab., R. N. M. 30 July 1928, ex. larva of *Plecoptera reflexa*, det. Z. Bouček 1974; 2 ♂♂ on 1 rectangular plate, para-lectotypes, Dalbergia Sissoo, Khanewal, Pln. Punjab., R. N. M. 30 July 1928, ex. larva of *Plecoptera reflexa*, det. Z. Bouček 1974; 2 ♂♂ on 1 rectangular plate, para-lectotypes, Dalbergia Sissoo, Daphar, Pln. Punjab, 23 May 1938, Ent. Survey 1938, det. Z. Bouček 1974.

Host range: Parasitoids of geometrids, lophopids, noctuids, and pyralids (Lepidoptera). It

also attacks *Elasmus* sp. or tetrastichines in Eulophidae (Hymenoptera).

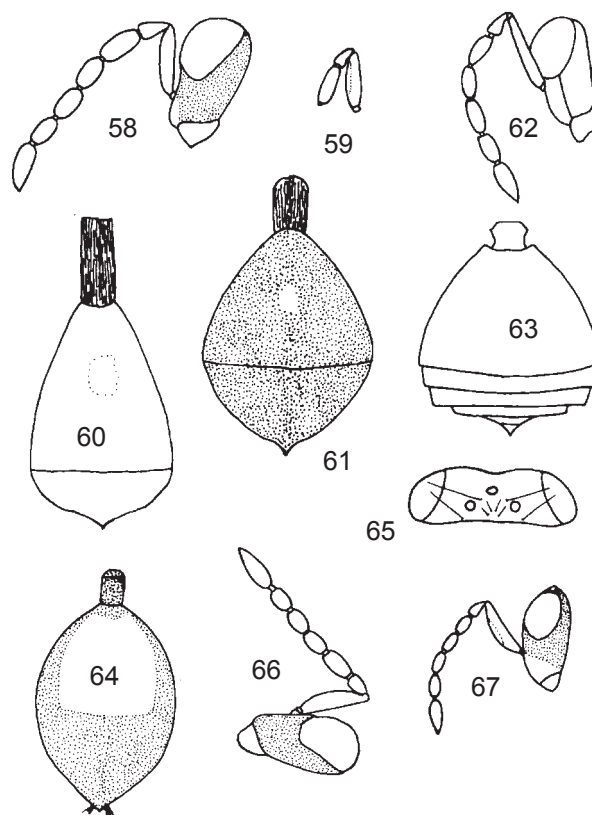
Distribution: *China: Guangxi; India.

Euplectrus petiolatus Ferrière

(Figs. 56-61)

Euplectrus petiolatus Ferrière, 1941: 34.

Diagnosis: Petiole 1.5 to more than 4 times as long as broad (Figs. 60, 61), smooth anteriorly; metasoma dark at apex and on sides, with very vague small weaker spot sub-basally, or with distinct large yellow spot sub-basally, or metasoma dark near and at apex; mid lobe of the mesoscutum without median carina posteriorly; hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown (Figs. 56, 58);



Figs. 58-61. *Euplectrus petiolatus* Ferrière: 58. lateral view of head with antenna; 59. male scape; 60. metasoma with elongate petiole; 61. metasoma with shorter petiole. **Figs. 62-63.** *Euplectrus platyhypenae* Ashmead: 62. lateral view of head with antenna; 63. metasoma. **Figs. 64.** *Euplectrus reticulatus* sp. nov.: 64. metasoma. **Figs. 65-66.** *Euplectrus transversus* sp. nov.: 65. dorsal view of head; 66. lateral view of head with antenna. **Fig. 67.** *Euplectrus xanthocephalus* Girault: lateral view of head with antenna.

scutellum smooth. Male same as female, except scape with sensillar area (Figs. 57, 59).

It is very similar to *E. medanensis* (see details under the latter). In some materials from Taiwan, each funicular segment is around 2.0 times as long as broad, and the petiole is 1.5-2.0 times as long as broad (Fig. 61), while in others, each funicular segment is more than 3.0 times as long as broad (Fig. 56) and the petiole is more than 4 times as long as broad (Fig. 60). Materials from mainland China and 2 females from India have petioles 2.4-3 times as long as broad.

Materials examined: 1 ♀, Guangxi, Napo, Dehu, 4 Apr. 1998, 1440 m (Zhu Chao-dong) (IZCAS); 1 ♀, Guangxi, Napo, Dehu, 5 Apr. 1998, 1440 m (Zhu Chao-dong) (IZCAS); 1 ♀, Guangxi, Napo, Baidu, Xiaobaihe, May 1998, 1100 m (Zhu Chao-dong) (IZCAS); 2 ♀♀, C. Taiwan, Nantou, Meifeng, 24-26 June, 2150 m (Lin K.S. and Tang W.S.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980, 2150 m (Lin K.S. and Wang C.H.) (TARI); 2 ♂♂, 3 ♀♀, C. Taiwan, Nantou, Meifeng, 7-9 May 1981, 2150 m (Lin K.S. and Lin S.C.) (TARI); 2 ♀♀, C. Taiwan, Nantou, Meifeng, 4-7 Oct. 1982, 2150 m (Chou K.C.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 31 Aug; 2 Sept. 1982, 2150 m (Chou L.Y. and Chou K.C.) (TARI); 1 ♂, 1 ♀, C. Taiwan, Nantou, Meifeng, 26 Aug. 1980 (Lin S.C. and Wang C.H.) (TARI); 1 ♀, C. Taiwan, Nantou, Meifeng, 2-4 June 1980, 2150 m (Chou L.Y. and Chen C.C.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 24-26 June 1981, 2150 m (Lin K.S. and Tang W.S.) (TARI); 1 ♂, C. Taiwan, Nantou, Meifeng, 28-29 Aug. 1981, 2150 m (Chou L.Y. and Lin S.C.) (TARI); 2 ♀♀, India: United Provinces, Dehra Dun, 5 Nov. 1928, ex. Lymantriidae larvae on teak (S. N. Chatterjee) (BMNH).

Host range: Larvae of lymantrids.

Distribution: *China: Guangxi; Taiwan; India.

***Euplectrus platyhypenae* Howard**

(Figs. 62-63)

Euplectrus platyhypenae Howard, 1885: 26.

Euplectrus nigriceps Ferrière, 1941: 42. Synonymized by Bouček and Graham 1978: 233.

Diagnosis: Scutellum smooth to slightly reticulate; funicle with all segments subequal in length (Fig. 62); metasoma broadly black on sides, at base, at and near apex, with T1 more than 2/3 of entire length (Fig. 63); hind coxae yellow; head completely black; mid lobe of the mesoscutum with complete median carina.

It is very similar to *E. nigrescens*. With the types of the latter species available in the future, we could determine whether these species are the same or different.

Materials examined: 2 ♀♀, Yunnan, Ruili, 30 Oct. 1981 (Wang Lu-zhe) (IZCAS).

Distribution: *China: Yunnan; Antigua; Argentina; Bahamas; Barbados; Bermuda; Bolivia; Canada; Colombia; Cuba; Dominica; Grenada; Guadeloupe; Guyana; Honduras; Jamaica; Mexico; Philippines; Puerto Rico; U.S.A.; Uruguay; Venezuela; United Kingdom.

***Euplectrus reticulatus* sp. nov.**

(Fig. 64)

Diagnosis: Metasoma with a broad dark spot (Fig. 64); mid lobe of the mesoscutum with median carina posteriorly; hind coxae yellow; head with only supraclypeal area and clypeus yellow or reddish brown; scutellum reticulate.

Among Chinese species, it is similar to *E. parvulus* Ferrière and *E. laeviscutellum*, but both the latter 2 species have no median carina posteriorly on the mid lobe of the mesoscutum. Based on Wijesekara and Schauff (1994), it is also similar to the Sri Lankan *E. geethae*, but its F1 is longer than the pedicel, shorter setae are present between the posterior ocelli and the scutellum is reticulate; while *E. geethae*'s F1 is as long as the pedicel, shorter setae are absent from between posterior ocelli and the scutellum is smooth.

Description: Female. Body length 1.91 mm, forewing length 1.75 mm. Body black. Eyes yellowish white. Ocelli yellow. Antennae brown except for the yellow scape, pedicel, and anelli. Head black with supraclypeal area, clypeus, and mandibles yellow. Legs yellow. Metasoma yellow at apex, with broad band before apex.

Head wider than high. Eyes bare. Post-occipital carina absent. Toruli placed at lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer than each funicular segment. Relative measurements: POL 12, OOL 11, scape 25, pedicel 11, F1 11, F2 10, F3 10, F4 9, clava 15.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 3 pairs of setae, without the other scattered setae, reticulate. Axillae with anterior margin in line with scutoscutellar sutures, smooth. Scutellum as long as the mesoscutum, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutel-

lum, medially distinctly longer than dorsellum, smooth. Callus with 8 setae. Median carina present, inverted T-shaped posteriorly. Plicae absent.

Forewing hyaline. Submarginal vein with 5 setae on dorsal surface. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, closed. Hind wing subacute apically. Relative measurements: submarginal vein 30, costal cell 45, parastigma 15, marginal vein 55, postmarginal vein 30, stigmal vein 18.

Metasoma subrotund, longer than mesosoma, as broad as mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice length of others.

Materials examined: Holotype: ♀, Hubei, Lichuan, Xingdoushan, 25 July 1989, 900 m (Huang Da-wei) (IZCAS). Paratypes: 1 ♀, Fujian, Chong'an, Guadun, 23 June 1980 (Xu Jian-fei) (IZCAS); 1 ♀, Fujian, San'gang, 5 Aug. 1979 (IZCAS).

Distribution: China: Fujian, Hubei.

***Euplectrus transversus* sp. nov.**

(Figs. 65-66)

Diagnosis: Metasoma with broad dark band near and at apex; funicle with all segments distinctly longer than broad; F1 nearly twice as long as broad (Fig. 66); longer cercus straight, less than twice as long as others; scutellum smooth or very vaguely reticulate anteriorly; hind femora yellow; petiole more than 1.5 times as long as broad; metasoma nearly as long as head plus mesosoma; hind coxae yellow; head completely black (Fig. 66); mid lobe of the mesoscutum with median carina posteriorly.

Among Chinese species, it is very similar to *E. flavigaster*, but the latter species has the metasoma which is nearly completely yellow dorsally, and the malar sulcus is present. It is also similar to the known species, *E. manilae* Ashmead, but the latter species differs by its F1 being less than 1.5 times as long as the pedicel, and the longer cercus being sinuate, and more than twice as long as the others.

Description: Female. Body length 2.03 mm, forewing length 2.09 mm. Body black. Eyes yellow. Ocelli yellow. Head completely black. Antennae yellow. Mandibles yellow. Legs yellow. Metasoma with broad dark band near and at apex.

Head wider than high. Eyes bare. Post-occipital carina absent. Toruli placed above lower eye margin. Scape slightly flattened. Each flagellum is usually about same breadth. Clava longer

than each funicular segment. Relative measurements: POL 13, OOL 10, scape 25, pedicel 8, F1 13, F2 10, F3 10, F4 10, clava 19.

Notauli straight, converging, ending at inner angles of axillae. Mid lobe of the mesoscutum with 2 pairs of setae, without the other scattered setae, with isodiametric, engraved reticulations. Axillae with anterior margin in line with scutoscuteellar sutures, smooth. Scutellum longer than the mesoscutum, vaguely sculptured, with isodiametric, engraved reticulations. Dorsellum smooth, with rectangular posterior margin. Propodeum shorter than scutellum, medially distinctly longer than dorsellum, smooth. Callus with 9 setae. Median carina present, inverted T-shaped posteriorly. Plicae present.

Forewing hyaline. Submarginal vein with 4 setae on dorsal surface. Admarginal setae 12. Cubital vein straight at base. Basal cell bare below submarginal vein. Speculum bare, partially closed. Hind wing subacute apically. Relative measurements: submarginal vein 39, costal cell 56, parastigma 17, marginal vein 65, postmarginal vein 27, stigmal vein 13.

Metasoma subrotund, longer than mesosoma, narrower than mesosoma. Apex of metasoma not acute. Longer setae of cerci less than twice length of others.

Material examined: Holotype: ♀, Taiwan: Nantou, Wushe, 16 Mar. 1983, 1200 m (H. K. M. Townes) (TARI)

Distribution: Taiwan.

***Euplectrus xanthocephalus* Girault**

(Fig. 67)

Euplectrus xanthocephalus Girault, 1913: 101.

Diagnosis: Gena at most yellow on lower 1/2 (Fig. 67); mid lobe of the mesoscutum distinctly reticulate, without median carina posteriorly; hind tarsi normal, 4th segment not much longer than 2nd one; metasoma dark at apex; scutellum reticulate. Those from Indonesia and Malaysia with head completely yellow, while those from China with head same as females.

It is very similar to *E. laphygmae*. The genal color pattern is the only character separating these 2 species.

Materials examined: 1 ♀, Fujian, Shanghang, Gutian, 14 Sept. 1996 (Xiao Hui) (IZCAS); 1 ♀, Fujian, Shanghang, Buyun, 20 Sept. 1996, 1100 m (Xiao Hui); 1 ♂, Sichuan, Pengshui, 11 July 1989, 850 m (Huang Da-wei) (IZCAS); 1 ♀, Australia:

Queensland, Cooloola N.P. 30 m, screen sweep, 7 Mar. 1984 (L. Masner) (SEHU); 1 ♀, Australia: Queensland, Port Douglas, 31 Mar. 1991 (J. D. Pinto) (SEHU); 1 ♂, Indonesia: Java, Borobudur, 8 Nov. 1978 (J. T. Huber) (SEHU); 1 ♀, Japan: Kyushu, Mt. Hikosan, Soeda, Fukuoka, 3 Aug. 1992 (E. Ikeda) (SEHU); 3 ♂♂, 1 ♀, Malaysia: Sarawak, Sematin, 23 Feb. 1987 (A. T. Finnamore and C. Baxfield) (SEHU); 1 ♀, Thailand: Nun Prov. Nan, 31 Aug. 1985 (M. J. E. Reacher-Huber) (SEHU).

Determined specimens compared: (BMNH) 1 ♀, Papua New Guinea: Hoyobe dist., Bubla via Lae, 22 May 1980, ex. larva of *Spodoptera pea* on taro (K.Govea), det. Z. Bouček, 1980; 4 ♀♀ on one rectangular plate, 3 ♀♀ on 1 rectangular plate, India: Anand, Oct. 1981, no. 5, ex. larva of *Spodoptera litura* on groundnut, C.I.E.A. 13695, det. Z. Bouček, 1982 (V. R. Vivanc).

Host range: Parasitoids of noctuids.

Distribution: *China: Fujian, Jiangxi, Sichuan; Australia; *India; *Indonesia; *Japan; *Malaysia; Papua New Guinea.

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REFERENCES

- Ashmead WH. 1904. A list of Hymenoptera of the Philippine Islands with descriptions of new species. *J. New York Entomol. S.* **12**: 1-22.
- Bhatnagar SP. 1952. Descriptions of new and records of known Chalcidoidea (Parasitic, Hymenoptera) from India. *Indian J. Agr. Sci.* **21**: 155-178.
- Bouček Z. 1970. Contribution to the knowledge of Italian Chalcidoidea based mainly on a study at the Institute of Entomology in Turin, with descriptions of some new European species (Hymenoptera). *Mem. Soc. Entomol. Italiana* **49**: 35-102.
- Bouček Z, RR Askew. 1968. Palaearctic Eulophidae sine Tetrastichinae. In V Delucchi, G Remaudière, L Francois, eds. *Index of Entomophagous Insects 3*, Paris: 260 pp.
- Bouček Z, MWR de V Graham. 1978. British check-list of Chalcidoidea (Hymenoptera): taxonomic notes and additions. *Entomol. Gaz.* **29**: 225-235.
- Brèthes J. 1918. Sobre algunos Hymenoptères utiles del sud del Brasil. *Anales Soc. Rural Argentina* **52**: 7-11.
- Cameron P. 1904. New Hymenoptera, mostly from Nicaragua. *Invertebr. Pac.* **1**: 46-69.
- Chatterjee PN. 1945. On the biology and morphology of *Euplectrus parvulus* Ferrière (Hymenoptera: Eulophidae). *Indian J. Entomol.* **6**: 95-101.
- Crawford JC. 1911. Descriptions of new Hymenoptera, 3. *Proc. US Nat. Mus.* **41**: 267-282.
- Crawford JC. 1912. Descriptions of new Hymenoptera, 4. *Proc. US Nat. Mus.* **42**: 1-10.
- Dahlbom AG. 1857. Svenska Sm Ichneumonernas familjer och slagten. Öfversigt af Kongl. Vetenskaps Akad. Förhandlingar **14**: 289-298.
- Dalla Torre KW von. 1898. *Catalogus Hymenopterum hucusque descriptorum systematicus et synonymicus. V. Chalcididae et Proctotrupidae.* Leipzig, 598 pp.
- Dallwitz MJ. 1980. A general system for coding taxonomic descriptions. *Taxon* **29**: 41.
- Dallwitz MJ, TA Paine, EJ Zurcher. 1993 onwards. User's guide to the DELTA System: a general system for processing taxonomic descriptions. 4th ed. Available at <http://biodiversity.uno.edu/delta/>
- Dallwitz MJ, TA Paine, EJ Zurcher. 1999 onwards. User's guide to the DELTA editor. Available at <http://biodiversity.uno.edu/delta>
- De Santis L. 1980. Nueva sinonimia, nueva combinacion y nuevas citas de Himenopteros Chalcidoideos para La Republica Argentina (Insecta). *Neotropica* **26**: 153-154, 196.
- Ferrière C. 1941. New species of Euplectrini (Hym. Chalcidoidea) from Europe, Africa and Asia. *Bull. Entomol. Res.* **32**: 17-48.
- Fonscolombe ELJH Boyer de. 1832. *Monographia chalciditum galloprovinciae circa aquas degentum.* *Ann. Sci. Nat. Zool.* **26**: 273-307.
- Fonscolombe ELJH Boyer de. 1840. Addenda errata ad monographium chalciditum galloprovinciae ciria aquas sextias degentum. *Ann. Sci. Nat.* **13**: 186-192.
- Gahan AB, MM Fagan. 1923. The type species of the genera of Chalcidoidea or chalcid-flies. *Bull. US Nat. Mus.* **124**: 1-173.
- Ghesquière J. 1946. Contribution à l'étude des Microhymenoptères du Congo Belge. X-XI. *Rev. Zool. Bot. Afr.* **39**: 367-373.
- Girault AA. 1913. Diagnoses of new chalcidoid Hymenoptera from Queensland, Australia. *Arch. Nat. (A)* **79**: 90-107.
- Haliday AH. 1842. Plates A-P illustrating the genera of Chalcidoidea. *Entomologist* **1**: v-vi (explanation), pls. A-P.
- Haliday AH. 1844. Contributions towards the classification of the Chalcididae. *Trans. Entomol. Soc. London* **3**: 295-301.
- Herting B. 1976. *Lepidoptera, Part 2 (Macrolepidoptera). A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or prey/enemy.* Commonwealth

- Agricultural Bureaux, Commonwealth Institute of Biological Control 7: 1-221.
- Howard LO. 1885. Descriptions of North American Chalcididae from the collections of the U.S. Department of Agriculture and of Dr C. V. Riley, with biological notes. (First paper). Together with a list of the described North American species of the family. Bull. US Depart. Agri., Bur. Entomol. 5: 1-47.
- Howard LO. 1897. On the Chalcididae of the Island of Grenada. J. Linn. Soc. (Zool.) 26: 129-178.
- Howard LO, WH Ashmead. 1896. On some reared parasitic hymenopterous insects from Ceylon. Proc. US Nat. Mus. 18: 633-648.
- Kerrich GJ. 1974. Systematic studies of Eulophidae of economic significance (Hymenoptera, Chalcidoidea). Bull. Entomol. Res. 63: 629-639.
- Liao DX, XL Li, XF Pang, et al. 1987. Hymenoptera: Chalcidoidea (1). Economic Insect Fauna of China 34. Science Press: x + 241 pp.
- Luo WG. 1989. Biological observations on *Euplectrus bicolor* (Hym., Eulophidae), a parasitoid of armyworm in Anhui. Chinese J. Biol. Contr. 5: 44.
- Mani MS. 1935. New Indian Chalcidoidea (Parasitic Hymenoptera). Rec. Indian Mus. 37: 241-258.
- Mani MS. 1941. Studies on Indian parasitic Hymenoptera I. Indian J. Entomol. 3: 25-36.
- Noyes JS. 1998. Catalogue of the Chalcidoidea of the World. Biodiversity catalogue database and image library CD-Rom series. Amsterdam: ETI, and London: The Natural History Museum.
- Noyes JS. 2002. Interactive Catalogue of World Chalcidoidea (2001 - 2nd edition). CD-Rom. Taxapad and The Natural History Museum.
- Rohwer SA. 1921. Description of new chalcidoid flies from Coimbatore, south India. Ann. Mag. Nat. Hist. 7: 123-135.
- Schauff ME, J LaSalle, LD Coote. 1997. Chapter 10. Eulophidae. In GAP Gibson, JT Huber, JB Woolley, eds. Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera). Ottawa: NRC Research Press.
- Spinola M. 1811. Essai d'une nouvelle classification générale des Diplolépaires. Ann. Mus. Nat. Hist. Nat. (Paris) 17: 138-152.
- Swederus NS. 1795. Beskrifning p et nytt genus *Pteromalus* ibland Insecterna, haerande til Hymenoptera. Kungliga Svenska Vetenskapsakademiens Handlingar 16: 201-205, 216-222.
- Walker F. 1839. Monographia Chalciditum. London: 333 pp.
- Walker F. 1872a. Notes on Chalcidiae 106-129, 17 figs. 7. Notice of species found in Madeira. London.
- Walker F. 1872b. Hormoceridae, Sphegigasteridae, Pteromalidae, Elasmidae, Elachistidae, Eulophidae, Entedonidae, Tetrastichidae and Trichogrammatidae. Notes on Chalcidiae 89-105, 18 figs. Part 6. London.
- Westwood JO. 1832. Descriptions of several new British forms amongst the parasitic hymenopterous insects. Phil. Mag. 1: 127-129.
- Wijesekara GAW, ME Schauff. 1994. Revision of the tribe Euplectrini of Sri Lanka (Hymenoptera: Eulophidae). Orient. Insects 28: 1-48.
- Yang GA. 1986. Preliminary study on *Euplectrus bicolor* (Hym., Eulophidae). Kunchong Tiandi (Natural Enemies of Insects) 8: 101-103. (in Chinese)
- Yasumatsu K. 1953. A new eulophid parasite of *Adris tyrannus* Guénée from Japan (Hym. Eulophidae). J. Fac. Agr. Kyushu U. 10: 163-168.
- Xiao H, DW Huang. 2001a. A review of Eunotinae (Hymenoptera: Chalcidoidea: Pteromalidae) from China. J. Nat. Hist. 35: 1587-1605.
- Xiao H, DW Huang. 2001b. A revision of *Systasis* Walker (Hymenoptera: Pteromalidae) of China. Zool. Stud. 40: 7-13.
- Xiao H, DW Huang. 2001c. A new genus and species of Pteromalidae from China, with SEM study of the flagellar sense receptors. Zool. Stud. 40: 189-192.
- Xiao H, DW Huang. 2001d. Two new genera and two newly recorded genera of Pteromalidae (Hym.: Chal.) from China, with descriptions of two new species. Trans. Am. Ent. Society 127: 229-237.
- Xiao H, DW Huang. 2001e. A study on genus *Agiommatus* from China, with description of one new species. Entomol. News 112: 136-140.
- Zhu CD, DW Huang. 2001a. A taxonomic study on Eulophidae from Zhejiang, China (Hymenoptera: Chalcidoidea). Acta Zootax. Sin. 26: 533-547.
- Zhu CD, DW Huang. 2001b. A study of Chinese *Elachertus* Spinola (Hymenoptera: Eulophidae). Zool. Stud. 40: 317-354.
- Zhu CD, DW Huang. 2001c. Revision of Chinese *Euplectromorpha* Girault (Hymenoptera: Eulophidae). Insect Syst. Evol. 31: 401-410.
- Zhu CD, DW Huang. 2002a. A study of Chinese *Cirrospilus* Westwood (Hymenoptera: Eulophidae). Zool. Stud. 41: 23-46.
- Zhu CD, DW Huang. 2002b. A taxonomic study on Eulophidae (Hymenoptera: Chalcidoidea) from Guangxi, China. Acta Zootax. Sin. 27: 583-607.
- Zhu CD, DW Huang. 2002c. *Platyplectrus medius*, new species, and new records of *Euplectrus* from South Korea (Insecta: Hymenoptera: Eulophidae). Raffles Bull. Zool. 50: 129-136.
- Zhu CD, DW Huang. A study of *Platyplectrus* Ferrière (Hymenoptera: Eulophidae) in mainland of China. J. Nat. Hist. (submitted)
- Zhu CD, J LaSalle, DW Huang. 1999. A study on Chinese species of *Aulogygnus* Förster (Hymenoptera: Eulophidae). Entom. Sin. 6: 299-308.
- Zhu CD, J LaSalle, DW Huang. 2000a. A review of the Chinese *Diglyphus* Walker (Hymenoptera: Eulophidae). Orient. Insects 34: 263-288.
- Zhu CD, J LaSalle, DW Huang. 2000b. Revision of Chinese species of *Hemiptarsenus* Westwood (Hymenoptera: Eulophidae). Entom. Sin. 7: 1-11.