

## PARASITOID WASPS OF EULOPHINAE (HYMENOPTERA: EULOPHIDAE) IN NUSA TENGGARA TIMUR, INDONESIA

**Rosichon Ubaidillah**

Division of Zoology, Research Center for Biology, Indonesian Institute of Sciences  
Jl. Raya Bogor Km. 46, Cibinong, 16911 Indonesia

### Abstract

*Eulophid parasitoid wasps of the Eulophinae in Nusa Tenggara Timur, Indonesia, were studied taxonomically. A total of 15 species in nine genera are recorded. From those species eight are described new to science. Keys to genera and species are presented.*

**Key words:** Hymenoptera, Chalcidoidea, Eulophidae, Eulophinae, new record and new species, key, Indonesia, Timor, Flores, Sumba.

### Introduction

One thousand and three hundred species in 97 genera are currently recognized in Eulophinae (Noyes, 2002) and the subfamily is divided into three tribes (Gauthier *et al.*, 2000): Eulophini (Ashmead, 1904), Cirrospilini (LaSalle, 2000) and Elasmimi (Förster, 1856). Species of the Eulophinae are distributed in all zoogeographical regions and are mainly idiobiont ectoparasitoids which attack hosts of concealed life forms, such as leaf miners, wood borers, leaf rollers and gall makers of Diptera, Coleoptera and Lepidoptera.

Despite of their expected diversity, the Indonesian Eulophine fauna is still very poorly studied, with only 26 species in 12 genera so far have been recorded, mainly in Java (17 species). Nine and two species have respectively been recorded from Sumatra and Sulawesi (Ubaidillah & Kojima, 2002), while many other areas, especially those in eastern parts of Indonesia, still remain virtually unexplored. In this paper, 15 species of Eulophinae are reported from Nusa Tenggara Timur (= NTT) including eight species described as new to science.

### Materials and Methods

This study is based mainly on the specimens collected during my field research in NTT, including the major islands of Flores, Timor and Sumba from 23 January to 3 February 2003. Specimens are deposited in the Museum Zoologicum Bogoriense, Bogor, Indonesia. Terminology follows Graham (1959) and Bouek (1988).

Abbreviations of acronyms of institutions in which specimens were deposited are as follows:

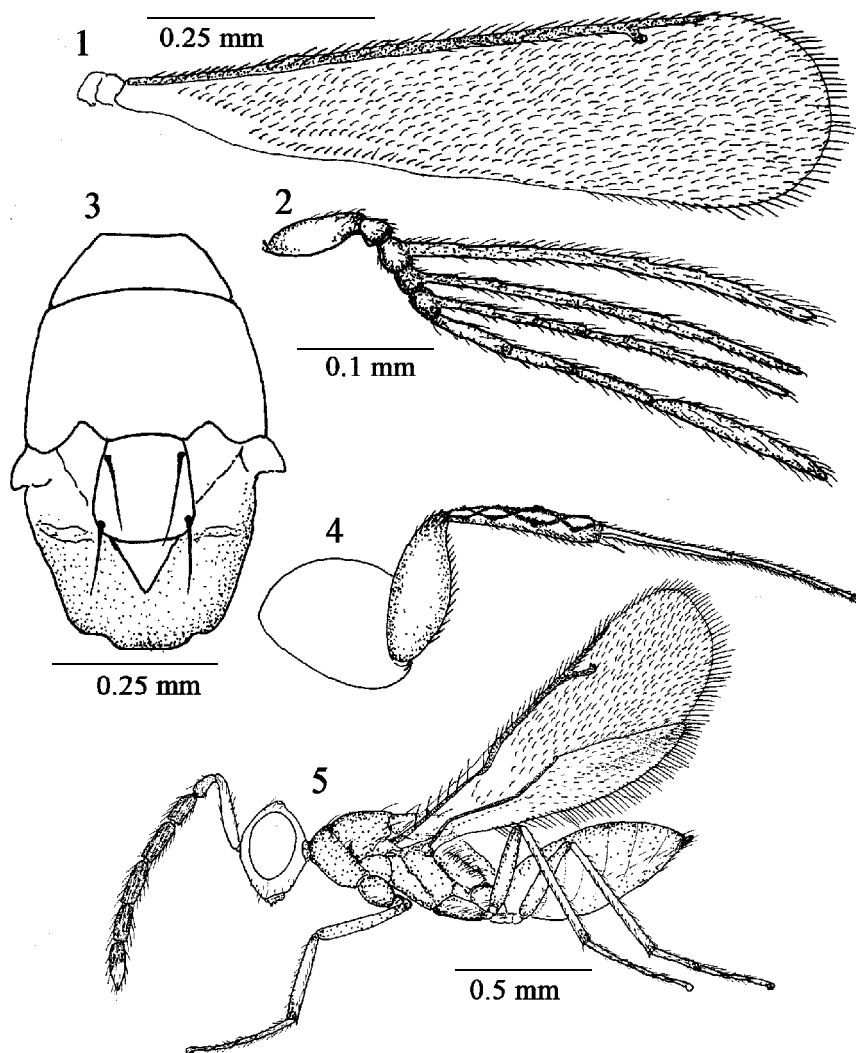
- ANIC : Australian National Insect Collection, Canberra, Australia.
- IUNH : Natural History Collection, Ibaraki University, Mito, Japan.
- QMB : Queensland Museum, Brisbane, Australia.

MZB : Museum Zoologicum Bogoriense, Bogor, Indonesia.

USNM : United States National Museum of Natural History, Washington, D.C., USA.

### Key to genera of the Eulophinae in Nusa Tenggara Timur

1. Hind coxa flattened and enlarged; hind tibia with dark setae arranged in diamond-shape or wavy rows (Fig. 4). Forewing elongate, narrow and wedge-shaped (Fig. 1). Dorsellum hyaline, projecting backward over propodeum to form a triangle (Fig. 3). Antenna with three funicles in female, four funicles (the first three with branches) in male (Fig. 2). Body color varying from black to brown, sometimes with metallic color and/or yellow markings ..... **Elasmus** Westwood (Elasmini)
- Hind coxa neither flattened nor enlarged; hind tibia without dark setae, or if dark setae present then they are never arranged in diamond-shaped or wavy rows. Forewing not elongate or narrow (Figs. 5, 18, 24, 31). Dorsellum not hyaline, never projecting backward over propodeum (Figs. 15, 58, 63) ... .. 2
2. Antenna with two funicles (Figs. 7, 10) ... .. 3 (Cirrospilini)
- Antenna with three to five funicles (Figs. 13, 16, 58, 65) ... .. 4 (Eulophini)
3. Vertex vaulted, swollen dorsally well above level of dorsal margins of eyes (Fig. 6). Notaulus curved outward to meet axilla (Fig. 8). Axilla placed almost entirely anterior to scuto-scutellar suture (Fig. 8). Forewing often with dark areas; submarginal vein with 5 or 6 dorsal setae. Scutellum with paired, fine submedian lines; propodeum shiny and finely sculptured, with median carina indicated posteriorly. Body never metallic, usually yellow with black stripes, or sometimes entirely black ... .. **Zagrammosoma** Ashmead
- Vertex not vaulted (Fig. 9). Notaulus complete and variable (Fig. 11), but never strongly curved to meet anterior part of axilla. Forewing usually without dark areas; submarginal vein with 3 or more dorsal setae; postmarginal vein as long as or slightly longer than stigmal vein. Body variable in color, sometimes metallic green to non-metallic yellow or entirely black ... .. **Cirrospilus** Westwood
4. Hind tibia with at least one spur longer than basitarsus (Figs. 17, 23). Pronotum transverse, dorsally with a fine transverse carina (Fig. 40), area behind the transverse carina smooth and furnished with six long, thick white setae. Four funicles in both sexes (Figs. 19, 25). Mesoscutum with four pairs of thick, long setae; scutellum finely sculptured or smooth, without submarginal grooves; propodeum with a median carina (Fig. 15). Body black except yellowish-brown markings on legs and antenna; metasoma sometimes yellowish brown .... **Euplectrus** Westwood
- Spurs of hind tibia never longer than basitarsus (Figs. 59, 68). Pronotum bell shaped or elongate, dorsally without transverse carina, with or without pairs of thick setae. Male funicles sometimes with branched. Scutellum with or without sublateral grooves, if grooves absent then sculpture on body surface is coarse or reticulate (Figs. 58, 63.) ... .. 5



Figs. 1-4. *Elasmus* sp. : 1. Forwing; 2. male antenna; 3. mesonotum; 4. hind leg;  
 Fig. 5. *Hemiptarsenus varikornis* (Girault), habitus, female, in lateral view.

5. Notaulus incomplete. Scutellum generally without sublateral grooves. First three male funicles branched (Figs. 56, 57) ... .. 6
- Notaulus complete. Scutellum with sublateral groove (Figs. 62, 63). Male flagellomeres usually without branches ... .. 8
6. Mesoscutum hairy; surface not shining, with irregularly raised reticulation; propodeum with complete step-like plicae, hence the area between plicae slightly higher than area lateral to plicae; propodeal disk reticulate (Fig. 58), but sometimes smooth. Four funicles in both sexes. Notaulus incomplete or rarely indicated (Fig.

- 58). Submarginal vein with 3 or more dorsal setae; postmarginal vein at least 2x as long as stigmal vein... .. **Notanisomorphella** Girault
- Mesoscutum not hairy but with one to three pairs of setae; propodeum convex or flat medially and weakly sloping laterally; plicae incomplete or if absent, then the area of plicae gradually step-like without carina; median part of mesoscutum often with reduced pilosity ..... 7
7. Torulus located above mid-height of face; scape when rested exceeding level of vertex (Fig. 5). Antenna with four or five funicles; branches of male flagellomeres covered with very short hairs (Fig. 57). Mesosoma slightly flattened; notaulus absent; axilla only slightly advanced anterior to scutellar margin. Forewing at least 2.6x longer than broad; costal cell 7-15x as long as broad. Body slender; legs elongate; females sometimes brachypterous. Propodeal median carina and plicae present or absent ..... **Hemiptarsenus** Westwood
- Torulus located below mid-height of face; scape when rested never exceeding beyond level of vertex. Four funicles in both sexes, sometimes five funicles in a few species; branches of male flagellomeres covered with long hairs (Fig. 56). Body not slender, or if slender, then legs are not elongate. Notaulus incomplete or terminated in anterior half of axilla; mesosoma not flattened. Propodeal median carina complete, incomplete or absent; propodeal costula and plica incomplete or absent. Forewing usually less than 2.6x longer than broad, costal cell usually less than 7x longer than broad; submarginal vein with four or more dorsal setae; postmarginal vein longer than stigmal vein ..... **Sympiesis** Förster
8. Occiput strongly concave; vertex usually carinate. Mesoscutal midlobe with one or two pairs of setae; scutellar submarginal groove present and sometimes sinuate and converging medially; propodeal median carina forked posteriorly, forming large areole enclosing nucha; plicae incomplete, projecting from anterior corners of nuchal areole (Fig. 61). Four or five funicles in both female and male, sometimes apical-most funicle and club with very narrow gape (Fig. 59); eyes setose ..... **Deutereulophus** Schulz
- Occiput not strongly concave; transverse carina on vertex present or absent. Mesoscutal midlobe with two or more pairs of setae; scutellar submarginal groove not sinuate and never converging medially; propodeal median carina not forked posteriorly. Often four funicles in both female and male; eyes not setose (Fig. 65, 68) ..... 9
9. Disks of mesoscutum and scutellum with deep punctures; scutellar submarginal groove punctuate, sharply carinate on sides of the groove; propodeal median carina T-shaped anteriorly, often raised into a perpendicular lamina (Fig. 63, 66); plicae present, turned outward; disk of propodeum with irregular sculpture. Vertex with transverse carina; frons sometimes with short transverse carina, situated below median ocellus, and as long as diameter of median ocellus. Four funicles in both

female and male, in male club sometimes hardly defined .....

..... ***Diglyphomorphomyia*** Girault

- Disks of mesoscutum and scutellum lacking in deep punctures; scutellar submarginal grooves faint, meeting posteriorly to form U-shaped; propodeal median carina usually simple, sometimes Y-shaped anteriorly (Fig. 67); plicae absent, replaced by groove; disk of propodeum smooth medially. Occiput with or without transverse carina; short transverse carina on frons absent; four funicles in female (Fig. 68) and five in male; midlobe of mesoscutum with three or more pairs of setae, sometimes with additional irregularly placed setae ..... ***Elachertus*** Spinola

### Genus ***Elasmus*** Westwood, 1833

During the research in NTT, I collected at least five species of *Elasmus*. This genus is the largest in Eulophinae, comprising 212 described species world wide (Noyes, 2002), and its taxonomy of species level is still very poorly reviewed. Thus, I hesitate at this moment to proceed further species-level taxonomy of my specimens from NTT.

### Genus ***Zagrammosoma*** Ashmead, 1904

#### ***Zagrammosoma latilineatum*** Ubaidillah

(Figs.6-8)

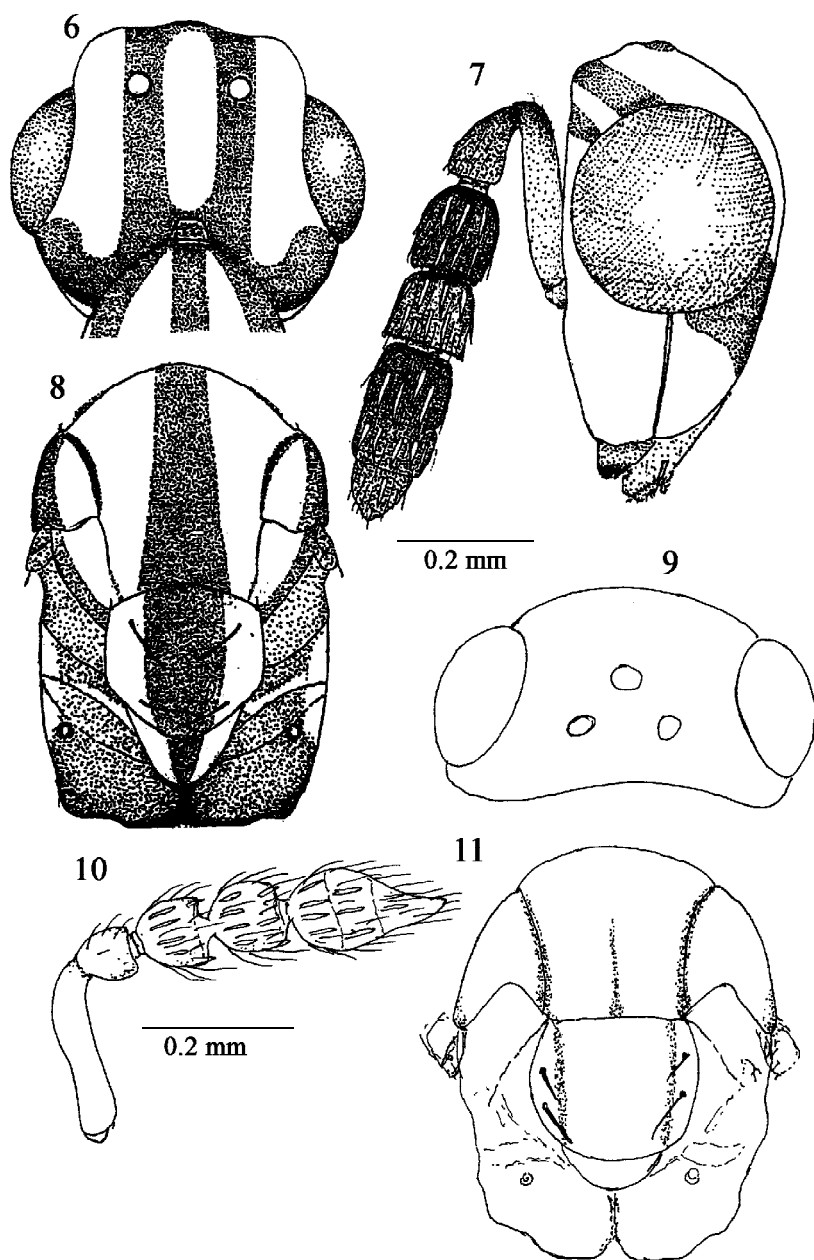
*Zagrammosoma latilineatum* Ubaidillah, in Ubaidillah *et al.* 2000: 23-225. Female (MZB), "Indonesia, West Java, Bandung, Pangalengan, ex. *Liriomyza huidobrensis*" on potato, collected 11.xi.1997, emerged 20-28.xi.97 (Rauf)"; also from Queensland, Australia.

**Material examined:** INDONESIA: 1 female (MZB), Nonbes (10°11'2"S 123°49'40"E), Amarasi, Kupang, NTT, 2.ii.2003 (R. Ubaidillah), sweep sample; 1 female " (holotype-MZB), labeled, "Indonesia, West Java, Bandung, Pangalengan, ex. *Liriomyza huidobrensis*" on potato, collected 11.xi.1997, emerged 20-28.xi.97 (Rauf).

This species was described based on a single female from West Java and two female specimens from Queensland, Australia and the above listed specimen from NTT is the second record of this species from Indonesia. The specimen from NTT is much smaller (0.8 mm in body length) than the holotype (1.5 mm). The species is easily distinguished from other species of *Zagrammosoma* by having mesoscutum and scutellum with broad median dark brown stripe, which is distinctly broader at the scuto-scutellar suture than lateral yellow bands; propodeum nearly entirely dark brown; occiput with paired wide longitudinal stripes continuing to longitudinal stripes on gena; forewing hyaline, with dark markings restricted to a small area around stigmal vein and parastigma.

**Biology.** *Liriomyza huidobrensis* (Diptera: Agromyzidae) is only known host (Ubaidillah *et al.*, 2000)

**Distribution:** Indonesia: Java, Timor Island (new records); Australia: Queensland.



Figs. 6-8, *Zagrammosoma latilineatum* Ubaidillah, female, 6. head in dorsal view; 7. antenna and head, lateral view; 8. mesonotum, dorsal view; 9-10, *Cirrospilus ambiguus* Hansson & LaSalle, female, 9. head, dorsal view; 10. antenna; 11, *Cirrospilus* sp., mesonotum.

Genus ***Cirrospilus* Westwood, 1832**  
***Cirrospilus ambiguus* Hansson and LaSalle**  
 (Figs. 9-10)

*Cirrospilus ambiguus* Hansson & LaSalle, 1996: 94-196. Female (BMNH), "TANZANIA: Uluguru Mountains, Near Morogoro", also from South Africa, Taiwan and India.

**Material examined:** Indonesia, 1 female (MZB), Ndona Woloweku (Farm), Central Flores, NTT, 24.i.2003 (R. Ubaidillah); 1 female (IUNH), Molonggota, Tinggola, Gorontalo, North Sulawesi, 8.ix.2003 (Ubaidillah & Kojima); 1 female (MZB), Patunuang Nature Reserve, (05°03'S 119°43'E), Maros, South Sulawesi, 8.ix. 2003 (Ubaidillah & Kojima); 2 female (MZB), Jati (01°05'N 29°29'E) Jailolo, Halmahera, North Maluku, 8.ix.2003 (Ubaidillah & Kojima).

The present species is widely distributed from South Africa to Asia. In NTT, it was collected only on Flores Island. In the course of this study, we examined specimens from Sulawesi and Halmahera. The specimens from Sulawesi were collected around the crops of *Vigna* sp. attacked by agromyzid leafminer, *Liriomyza* sp., which may be a host of this parasitoid.

**Biology:** Recorded as a parasitoid of *Liriomyza sativae*, *Liriomyza trifoli* (Diptera: Agromyzidae) on *Erechtites hieracifolia*, *Gerbera jamesonii* and *Solanum nigrum* as their host plants (Hansson and LaSalle, 1996)

**Distribution:** Java, Indonesia: Java, Flores (NEW RECORD), Halmahera (NEW RECORD), Sulawesi (NEW RECORD); India; Malay Peninsula; Taiwan; South Africa; Tanzania.

Genus ***Euplectrus* Westwood, 1832**

**Key to *Euplectrus* species from Nusa Tenggara Timur**

1. Head entirely yellow or darker only on ocellar area ... .. 2
- Head entirely black, or face below level of toruli, clypeus and at least part of malar space yellowish brown or reddish brown (Figs. 28, 37, 45) .... .. 3
2. Second funicle slightly longer than the other funicles (Fig. 16). Scutellum finely reticulate and dull. Metasomal petiole longer than broad (Fig. 15). Fore and mid coxae whitish yellow; longest hind tibial spur nearly as long as length of first two tarsomeres combined (Fig. 17) ... .. ***E. flavus* sp. nov.**
- All funicles equal in length. Scutellum smooth and shiny. Metasomal petiole as long as or slightly longer than broad (Fig. 41). Fore and mid coxae yellowish brown; longest hind tibial spur half as long as second tarsomere (Fig. 42) ..... ***E. laphygmae* Ferrière**
3. Head entirely black; paired of posterolateral spiracle of pronotum opening on thorn-like projection (Fig. 22). Area between lateral ocelli with two minute setae (Fig. 21). Mesoscutum reticulate, without posterior median carina; scutellum with reticulate in median area of, but striate in submedian area ... .. ***E. spinosus* sp. nov.**

- Head black but face below level of toruli, clypeus and malar space yellow or reddish brown (Fig. 28). paired of posterolateral spiracle of pronotum normal ... .. 4
- 4. Head with small reddish brown spots on clypeus and face below level of toruli (Figs. 28, 32) ... .. 5
- Malar space, whole face below level of toruli and clypeus yellow or reddish brown (Figs. 37, 45, 51) ... .. 6
- 5. Area between lateral ocelli with four minute setae (Fig. 27). First funicle slightly longer than second funicle (Fig. 25). Longest hind tibial spur slightly longer than length of first and second tarsomeres combined (Fig. 30) ... .. ***E. sumbaensis* sp. nov.**
- Area between lateral ocelli with two minute setae (Fig. 33). First funicle as long as second funicle. Longest hind tibial spur nearly as long as length of first and second tarsomeres combined (Fig 35) ... .. ***E. parvulus* Ferrière**
- 6. Face below level of toruli and malar space entirely yellow to yellowish brown (Fig. 37); malar space short, less than 0.7x as long as eye height ..... ***E. laphygmae* Ferrière**
- Face below level of toruli and anterior half of malar space yellowish brown or brown (Fig. 51), malar space more than 0.8x as long as eye height, in lateral view ..... 7
- 7. Area between lateral ocelli with two minute setae (Fig. 43); scape and all legs pale yellow, disk of scutellum striate (Fig. 46) ... .. ***E. striatus* sp. nov.**
- Minute setae on the area between lateral ocelli absent (Fig. 52); scape and all legs yellowish brown, darker on hind coxa; disk of scutellum finely reticulate ..... ***E. partitus* sp. nov.**

***Euplectrus flavus* sp. nov.**

(Figs. 12-18)

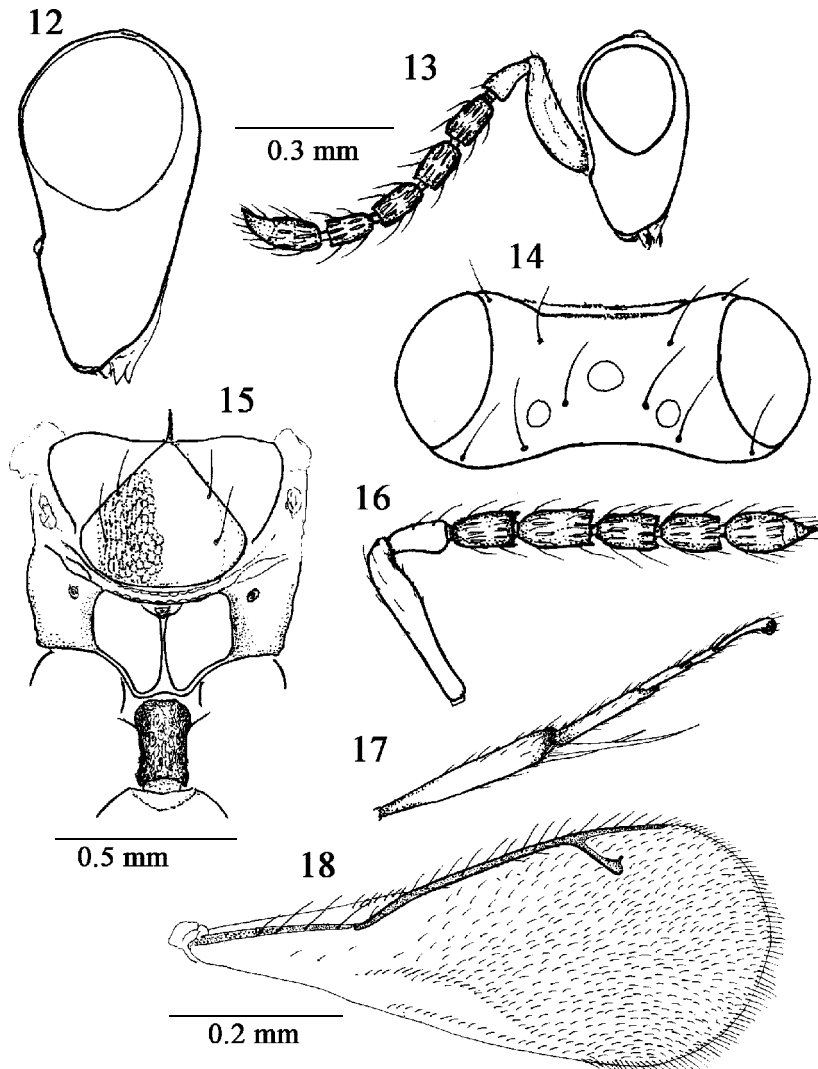
*Holotype.* Female (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Takari-Takari, Kupang, Forest edge (09°58'12"S 124°01'04"E), 1.i.2003, sweep sample (R. Ubaidillah)".

*Paratypes.* 1 male (MZB) 1 female (IUNH), same data as holotype; 1 male (IUNH), West Java, Argapura near Gua Gudawong, Cigudeg, Bogor, 7.ix.2002 (R. Ubaidillah).

Female.- Body length 1.8 mm. Body black but head and all legs yellowish brown; antenna yellowish brown, darker on club; dorsal margin and lateral areas of first to fourth of metasomal terga and last two terga dark brown.

*Head.*- Width 1.25x height; head in dorsal view 2.6x as broad as long; interocular distance about 2.5x eye width (Fig. 14); malar space 0.9x eye height (Fig. 13); scape when rested ending at level of anterior ocellus; first funicle as long as pedicel, slightly shorter than second funicle; club longer than length of any funicle (Fig. 16); scrobe smooth and shiny; vertex smooth; occiput without transverse carina; lateral ocellus closer to anterior ocellus than to inner eye margin; minute setae between lateral ocelli absent; post-ocellar distance (POL): ocello-ocular distance (OOL) = 60:40. (Fig. 14)





Figs. 12-18. *Euplectrus flavus* sp. nov., female. 12. head, in lateral view; 13. male, head, in lateral view; 14. head, in dorsal view; 15. scutellum, propodeum and petiole; 16. female, antenna; 17. hind tibia; 18. fore wing

*Mesosoma*. - Mesonotum with sides lobe coriaceous, rough imbricate to reticulate posteriorly, longitudinal carina present (Fig. 15); axilla and scutellum finely reticulate and dull; dorsellum and propodeum dull; plica indicated (Fig. 15).

*Metasoma*. - Petiole in dorsal view 1.3x as long as broad; granulate on dorsal surface (Fig. 15); dorsal margin and the last two metasomal terga brown, the rest is yellowish brown.

*Legs and wings.*- Hind coxa coriaceous dorsally; longest tibial spur almost as long as first two tarsal segments combined (Fig. 17); forewing 2.6x as long as broad, costal cell margin with 4 setae; ratio of submarginal:marginal:stigmatal:postmarginal vein, 22:31: 9:19 (Fig. 18).

*Male.*- Same as female except for wider antennal scape (Fig. 13) and slightly smaller body size.

*Host.*- Unknown

**Etymology.** The specific name is derived from Latin, *flavus*, meaning yellow, refers to the yellow head.

*Notes:* This species resembles *E. laphygmae* (Ferrière, 1941) in that the posterior median carina on the mesoscutum is present and the male has yellow head, but can be distinguished from the latter by having the second funicle longer than the first (Fig. 19) and the scutellum dull and finely reticulate.

### ***Euplectrus spinosus* sp. nov.**

(Figs. 19-24)

*Holotype.* Female (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Takari-Takari, Kupang, Forest edge (09°58'02"S 124°01'04"E), 1.i.2003, sweep sample (R. Ubaidillah)".

*Female.*- Body length 1.5 mm. Black but scape, funicles, and all legs yellowish brown; club dark brown; dorsal margin, lateral and first metasomal terga yellowish brown;.

*Head.*- Width 1.2x height; in dorsal view 2.6x as broad as long (Fig. 21); malar space short, about 0.55x eye height (Fig. 20); scape when rested never extending above level of anterior ocellus; pedicel as long as first funicle (Fig. 19), first funicle slightly longer than any other funicles; club longer than length of any funicle; scrobe smooth and shiny; vertex smooth, occiput without transverse carina; lateral ocellus closer to anterior ocellus than to inner eye margin; area between lateral ocelli with two minute setae; POL:OOL = 70:35 (Fig. 21).

*Mesosoma.*- Pronotum conical, paired of posterolateral spiracle of pronotum opening on thorn-like projection (Fig. 22); mesonotum with sublateral disk finely imbricate, reticulate medially, median carina absent; axilla finely imbricate; scutellum reticulate and dull; dorsellum and propodeum dull; plicae incomplete.

*Metasoma.*- Petiole in dorsal view 1.4x as long as broad, granulate posteriorly; abdomen with yellowish brown, lateral sides and before the tip of last terga dark brown.

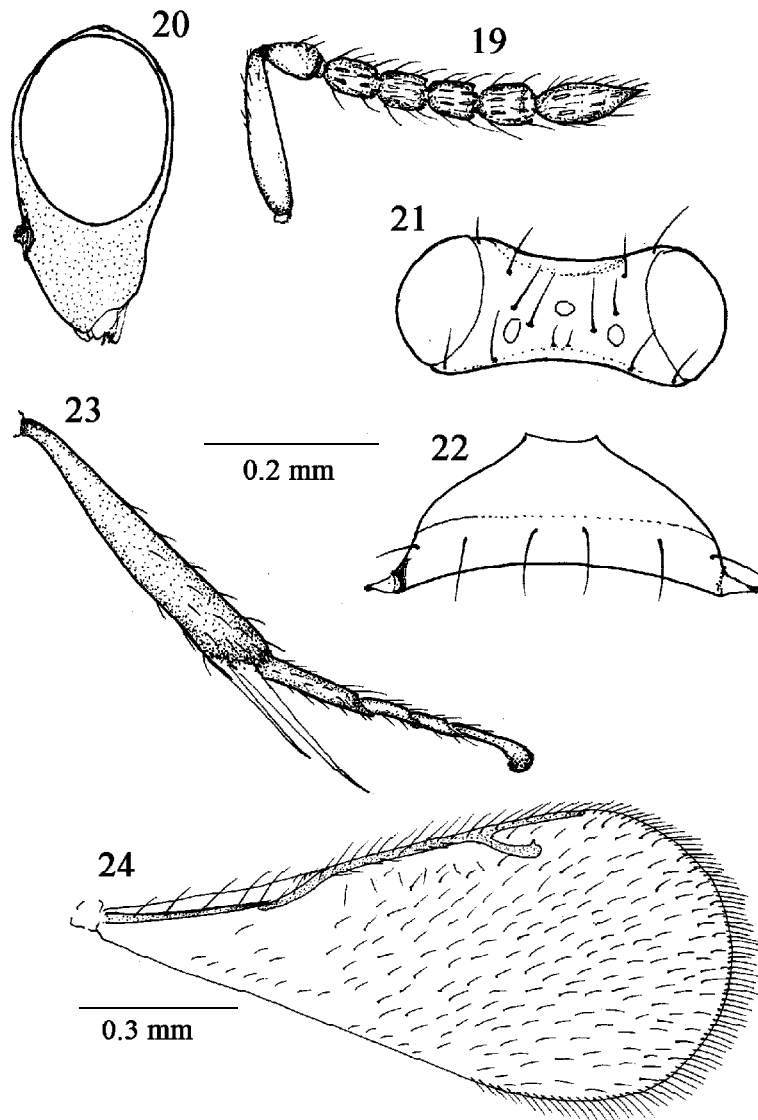
*Legs and wings.*- Hind coxa coriaceous dorsally; longest hind tibial spur as long as length of fist and two tarsomeres combined (Fig. 23); forewing 2.2x as long as broad, submarginal vein with 4 setae; ratio of submarginal:marginal:stigmatal:postmarginal, 19:24:5:12 (Fig. 24).

*Male.*- Unknown

*Host.*-Unknown

**Etymology.** From Latin, *spinosus*, meaning spine or spur, refers to paired of posterolateral spiracle of pronotum opening on thorn-like projection.

**Notes:** This species is easily recognized by its paired of posterolateral spiracle of pronotum opening on thorn-like projection and head entirely black. This species is closed to *E. ceylonensis* Howard 1896, but the latter has smooth and shiny scutellum, longest hind tibial spur is shorter than length of first and second tarsomeres combined.



Figs. 19-24. *Euplectrus spinosus* sp. nov., female: 19. antenna; 20. head, in lateral view; 21. head, in dorsal view; 22. pronotum; 23. hind tibia; 24. fore wing.

***Euplectrus sumbaensis* sp. nov.**

(Figs. 25-31)

*Holotype.* Male (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Telukada, Umaluku, East Sumba (09°60'12"S 120°38'40"E), 29.i. 2003, sweep sample, (R. Ubaidillah)".

*Male.* Body length 1.5 mm. Body black but scape, funicles, all legs yellowish brown; club dark brown; face below level of toruli with a reddish brown spot (Fig. 28); first to third metasomal terga light brown dorsally, and metasomal laterally and last terga dark brown.

*Head.*- Width 1.2x height; interocular distance 2.9x eye width in dorsal view (Fig. 27); malar space short, about 0.45x eye height in lateral view (Fig. 26); scape when rested not ending the level of anterior ocellus; pedicel shorter than first funicle; first funicle longer than length of any funicles about 1.3x length of second funicle; second to fourth funicles equal length; club longer than length of any funicles, 1.7x length of second funicle (Fig. 25); scrobe smooth and shiny; vertex smooth, occiput without transverse caina; ocellar area raised, lateral ocelli closer to the eyes margins than to the anterior ocellus; ocelli bigger than alternate; area between lateral ocelli with four minute setae (Fig. 27); POL:OOL = 60:20. (Fig. 27)

*Mesosoma.*- Mesoscutum disk finely imbricate sublaterally and reticulate posteriorly, posterior carina present; axilla finely imbricate; scutellum finely striate and slightly dull; dorsellum and propodeum smooth but dull; plicae present incomplete.

*Metasoma.*- Petiole 1.1x as long as broad, finely granulate dorsally (Fig. 29); sublateral and lateral metasomal terga and last two segment of terga brown, the rest yellowish of terga.

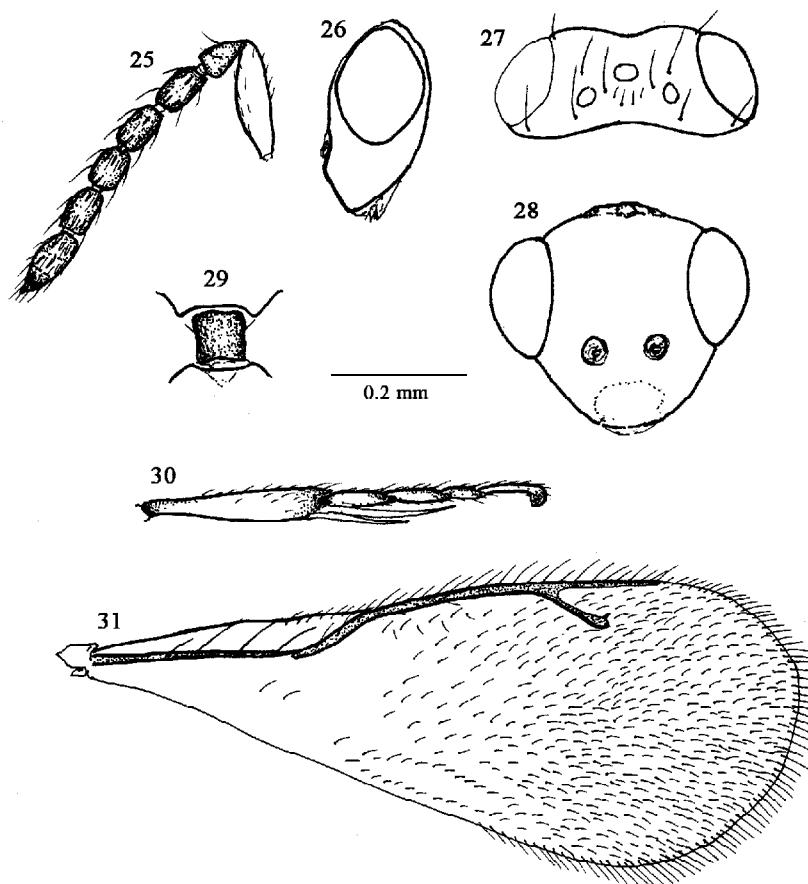
*Legs and wings.*- Hind coxa coriaceous dorsally; longest hind tibial spur slightly longer than length of first and two tarsomeres combined (Fig. 30); forewing 2.3x as long as broad; submarginal vein with 4 setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 16:25: 8: 15 (Fig. 31)

*Female.*- Unknown

*Host.*- Unknown

***Etymology.*** The specific name is after the type locality.

*Notes.* *Euplectrus sumbaensis* resembles to *E. litoralis* Wijesekara & Schauff, 1994 described from Sri Lanka based on a single male specimen (USNM-examined). Both species share several characters *i.e.*: area between lateral ocelli with four minute setae, lateral ocelli closer to the eyes margins than to the anterior ocellus, reddish spot on face below level of toruli, color pattern on abdomen and longest tibial spur as long as first two tarsal segments together. These two species can be separated by the first funicle slightly longer, scutellum finely striate and dull, and metasomal petiole transverse in *E. sumbaensis*, while in *E. litoralis* the funicles equal size, scutellum smooth and shiny, and the metasomal petiole as long as broad.



Figs. 25-31. *Euplectrus sumbaensis* sp. nov., female: 25. antenna; 26. head, in lateral view; 27. head, in dorsal view; 28. head, in frontal view; 29. petiole dorsal view; 30. hind tibia; 31. fore wing.

### ***Euplectrus parvulus* Ferrière**

(Figs. 32-36)

*Euplectrus parvulus* Ferrière, 1941: 33. Female, INDIA Punjab, Khanewal Pln.

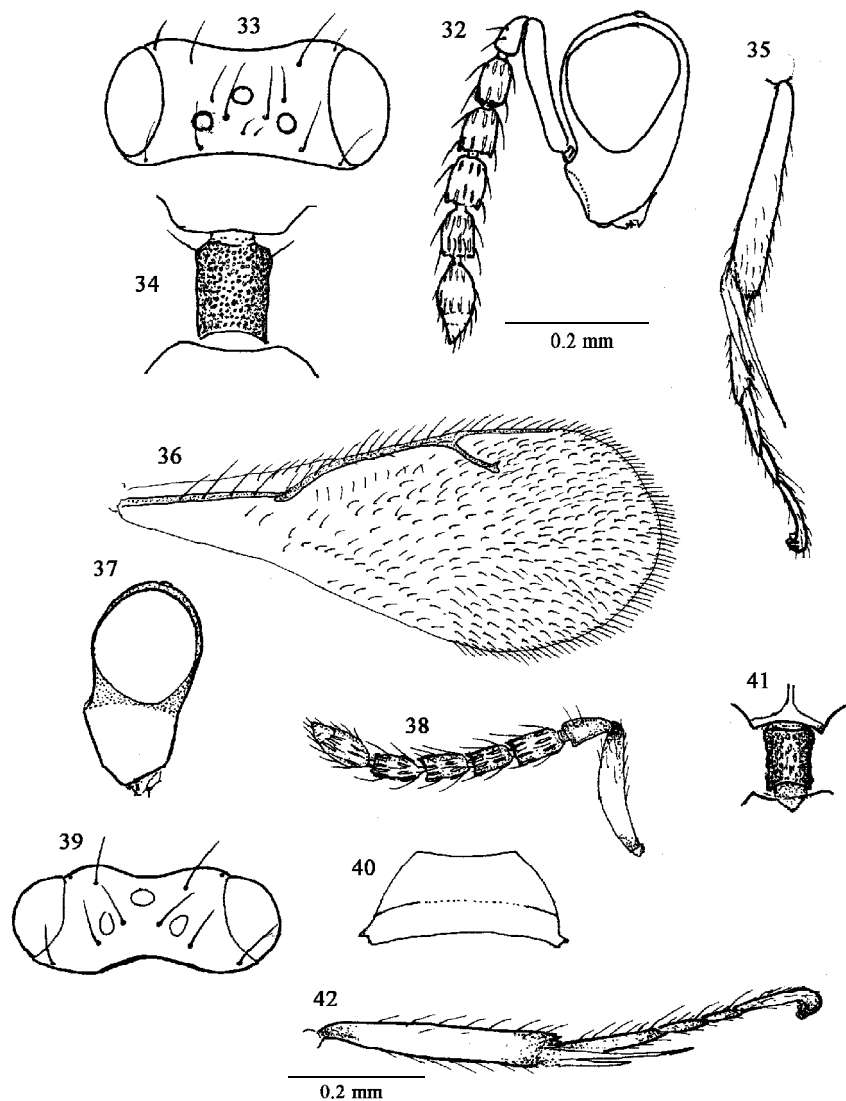
*Euplectrus plecoptera* Mani, 1941: 31. India, synonymised by Chatterjee, 1945: 95.

**Material examined:** Indonesia: 1 female (MZB), Nanggaroro (08°47'S 121°23'E), Ngada, Flores Island, NTT, 20 January 2003 (R. Ubaidillah).

**Female.** Body length 1.6 mm. Body black but scape, funicles, and all legs yellow, club dark brown; first to third metasomal terga light brown, and five to six darker; last terga yellowish brown apically.

**Head.**- Width 1.25x height; in dorsal view 2.6x as broad as long; interocular distance 2.8x eye width in dorsal view (Fig. 33); malar space 0.65x eye height (Fig. 32);

scape when rested lower than the level of anterior ocellus; pedicel shorter than first funicle; remaining funicles equal in size; club longer than length of any funicle; 1.5x length of second funicle (Fig. 32); scrobe smooth and shiny; vertex finely imbricate, without transverse carina; lateral ocellus closer to inner eye margin than to anterior ocellus; minute setae between lateral ocelli one (Fig. 32); POL:OOL = 70:30.



Figs. 32-36. *Euplectrus parvulus* Ferrière. Male: 32. head, in dorsal view; 33. head and antenna, lateral view; 34. petiole, dorsal view; 35. hind tibia; 36. fore wing; 37-42. *Euplectrus laphygmae* Ferrière. Female: 37. head, lateral view; 38. antenna; 39. head, dorsal view; 40. pronotum; 41. petiole dorsal view; 42. hind tibia.

*Mesosoma*.- Sublateral disk of mesoscutum finely imbricate, reticulate posteriorly; posterior carina of mesoscutum present, very short; axilla finely imbricate; scutellum finely shagrened and shiny; dorsellum and propodeum dull smooth; plicae indicated.

*Metasoma*.- Petiole 1.5x as long as broad (Fig. 34); dorsal surface of petiole finely granulate; dorsal margin and last two metasomal terga brown, the rest of yellowish brown.

*Legs and wings*.- Hind coxa coriaceous dorsally; longest hind tibial spur shorter than length of first and second tarsomeres combined (Fig. 35); forewing 2.55x as long as broad; submarginal vein with 4 dorsal setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 19:31: 9: 16. (Fig. 36)

*Host*.- *Ascotis selenaria*, *Isturgia disputaria* (Geometridae); *Plecoptera reflexa* (Noctuidae); *Elasmus* sp, *Tetrastichus* sp (Eulophidae) (Noyes, 2001)

***Euplectrus laphygmae* Ferrière**  
(Figs. 37-42)

*Euplectrus laphygmae* Ferrière, 1941, 32 (1): 40 Female, Malawi, Zomba, iv.1936

**Material examined:** INDONESIA, 1 female (MZB), Takari-Takari (09°58'S 124°01'E), Kupang, Timor Island, NTT, 1.ii.2003 (R. Ubaidillah); 2 female (MZB), Naibonat (10°06'S 123°47'E), East Kupang, Timor Island, 1.ii.2003 (R. Ubaidillah); 1 female (ANIC), Oekabiti (10°10'S 123°49'E), Amarasi, Kupang, Timor Island, 2.ii.2003 (R. Ubaidillah); 1 female 1 male (IUNH), Nanggaroro (08°47'S 121°23'E), Ngada, Flores Island, 25.i. 2003 (R. Ubaidillah); 1 male (ANIC), Umalulu (09°55' S 120°38' E), Watuhadang, East Sumba, Sumba Island, 25.i. 2003 (R. Ubaidillah); Dambalo (00°51'N 122°55'E.), Kuandang, Gorontalo, North Sulawesi, 1.ix. 2003 (R. Ubaidillah & J. Kojima); West Java, Bogor Botanic Garden, Bogor, 17.v.2001 (R. Ubaidillah)

*Female*. Body length 1.4-1.9 mm. Body black, but face below level of toruli and entirely malar space yellowish (Fig. 37); antenna with scape and funicles yellow, club brown; all legs pale yellow; two to five metasomal terga brown but yellowish brown ventrally.

*Head*.- Width ?1.19x height; in dorsal view 2.5 as broad as long; interocular distance 3.5x eye (Fig. 39); malar space 1.3x eye height (Fig. 37); tips of scape nearly at the level of anterior ocellus; funicles equal in length, pedicel about 0.9x first funicle; club slightly broader than the length of funicle, 2.3x as long as broad (Fig. 38); scrobe smooth and shiny; vertex smooth, without transverse carina; lateral ocellus closer to anterior ocellus than to inner eye margin; minute setae between lateral ocelli absent; POL:OOL = 70:50 (Fig. 39).

*Mesosoma*.- Pronotum with transverse carina, weak dorsally (Fig. 40); mesoscutum disk imbricate, gradually reticulate posteriorly with posterior carina present; axilla smooth; scutellum finely reticulate in median disk and striate on submedian; dorsellum and propodeum smooth; plicae indicated.

*Metasoma*. - Petiole 1.5x as long as broad, dorsal surface granulate (Fig. 41); two to five metasomal terga brown but yellowish brown ventrally.

*Legs and wings*. - Hind coxa coriaceous dorsally; longest hind tibial spur slightly longer than length of first tarsomere (Fig. 42); forewing 2.6x as long as broad, submarginal vein with 4 dorsal setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 20:35: 8: 12.

*Male*. - Similar to female except smaller body size (1.3mm), antennae darker and most anterior malar space darker.

*Host*. - This species has been recorded as parasitoid of Lepidopteran moths Arctiidae and Noctuidae (Noyes, 2002)

***Distribution***. **Indonesia: Timor and Flores Islands** (NEW RECORD); China (Zhu and Huang, 2003a); Ivory Coast; Kenya; Malawi; Mauritius; Nigeria; Senegal; South Africa; Sudan; Uganda; Zimbabwe (Noyes, 2001)

*Notes*. This species is similar to *E. euplexiae* Rohwer, 1921 (holotype in USNM, examined) in many respects, but it can be distinguished from the latter by the absence of minute setae between the lateral ocelli (two minute setae in *E. euplexiae*), longest hind tibial spur slightly longer than first tarsomere (as long as first two tarsal segments combined in *E. euplexiae*).

***Euplectrus striatus* sp. nov.**

(Figs. 43-49)

*Holotype*. Female (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Takari-Takari, Kupang, Forest edge (09°58'02"S 124°01'04"E), 1.i.2003 (R. Ubaidillah)".

*Paratype*. 1 male (MZB), labeled, same data as holotype.

*Female*. Body length 2.1 mm. Body black but face below level of toruli and one-third of anterior malar space brown; all legs, first to fifth segments of terga and sternite yellow; scape pale yellow, club yellowish brown; fore coxa pale yellow.

*Head*. - Width 1.3x height; in dorsal view 2.6x as broad as long, interocular distance 3.8x eye width (Fig. 43); malar space 0.9x eye height in lateral view (Fig. 45); scape when rested almost reaching level of anterior ocellus; funicles equal length, pedicel about 0.9x as long as first funicle; club slightly broader than funicle, 2.4x as long as broad (Fig. 44); scrobe and vertex smooth; occiput with finely transverse carina; lateral ocelli closer to anterior ocellus than to inner eye margin; minute setae between lateral ocelli two (Fig. 43); POL:OOL = 80:40

*Mesosoma*. - Mesoscutum with sides disk coriaceous and gradually imbricate to reticulate posteriorly, longitudinal carina present, very short (Fig. 46); axilla finely imbricate and slightly dull; dorsellum and propodeum smooth; plicae indicated.

*Metasoma*. - Petiole 1.5x as long as broad, surface finely granulate posteriorly (Fig. 47); lateral and the last two metasomal terga brown, the rest yellowish.



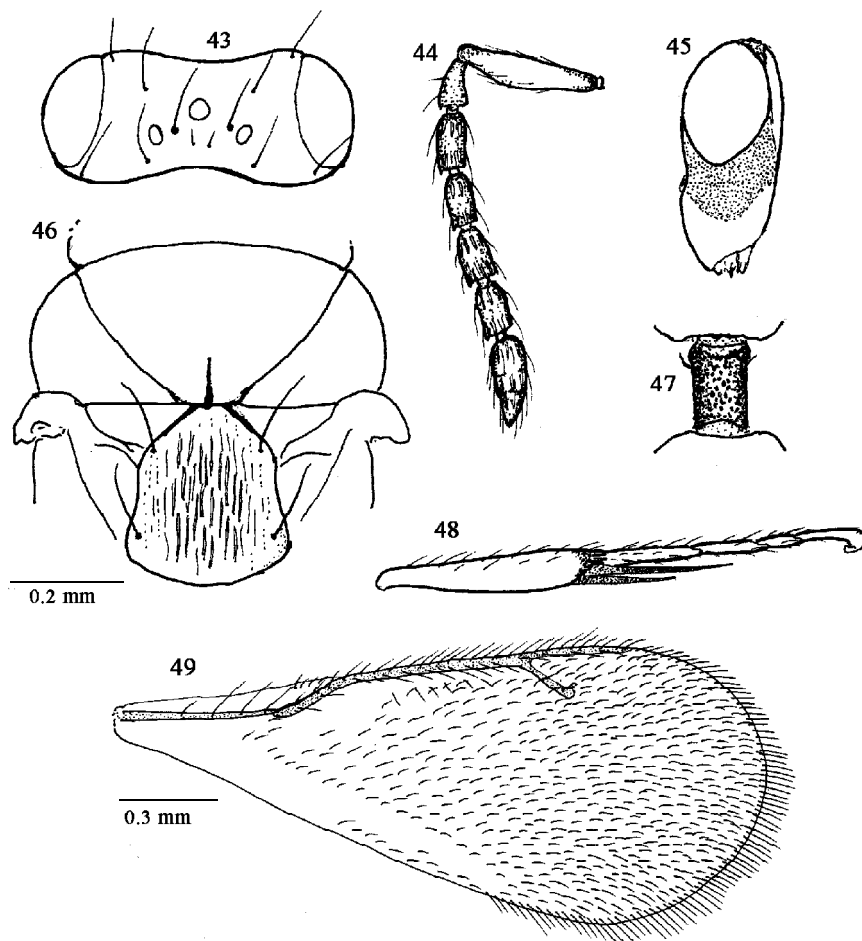
*Legs and wings.*- Hind coxa coriaceous dorsally; longest hind tibial spur shorter than length of first and second combined (Fig. 48); forewing 2.8x as long as broad, submarginal vein with 4 dorsal setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 27:39:9:20 (Fig. 49).

*Male.*- Similar to female except smaller body size (1.9mm) and paler antennal scape.

*Host.*- Unknown

***Etymology:*** Named *striatus* to emphasize the rough striate sculpture on the scutellum.

***Notes:*** The species is very closed to *E. atrafacies* Wejasekara & Schauff, 1994 (holotype in USNM, examined), but differs from the latter in having rough striates sculpture on scutellum, yellowish brown on face below level of toruli and anterior part of malar space.



Figs. 43-49. *Euplectrus striatus* sp. nov. Female: 43. head, in dorsal view; 44. antenna; 45. head, in lateral view; 46. mesoscutum and scutellum; 47. petiole, in dorsal view; 48. hind tibia; 49. fore wing.

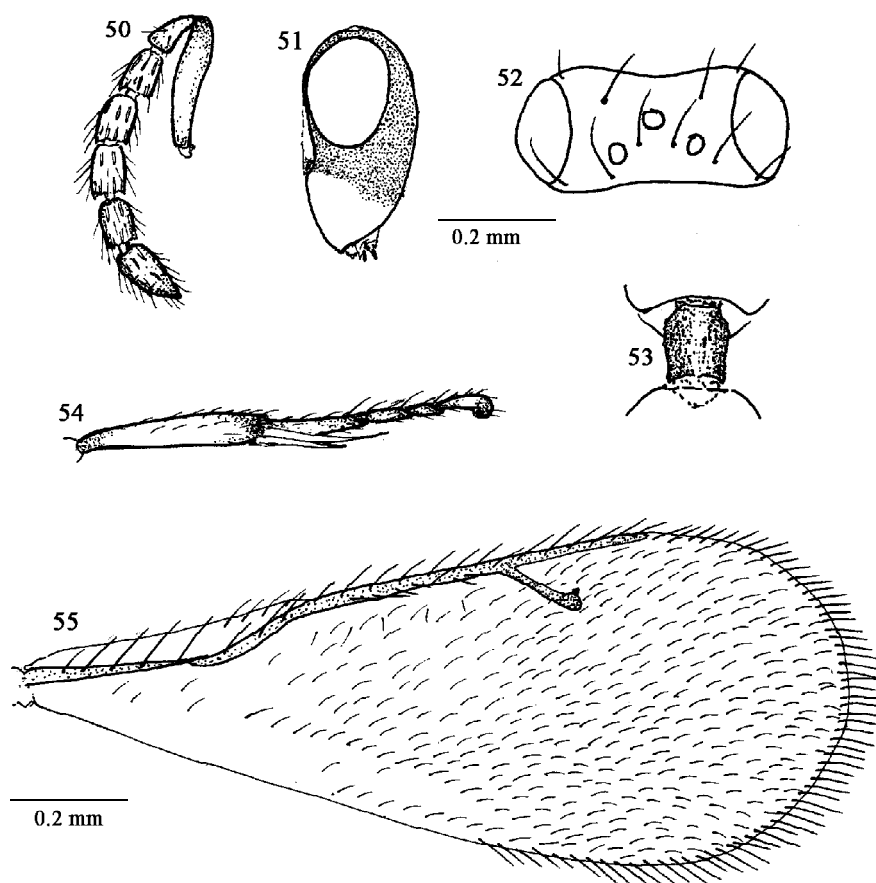
***Euplectrus partitus* sp. nov.**

(Figs. 50-55)

*Holotype*. Female (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Nonbes, Amarasi, Kupang, Timor Island (10°11'12"S 123°49'40"E), 2.ii.2003 (R. Ubaidillah)".

*Paratypes*. 1 female (MZB), labeled "Nusa Tenggara Timur, Woloweku, Ndona, Ende, Flores Island, 24.i.2003 (R. Ubaidillah); 1 female (MZB), North Maluku, Gamtala, Jailolo, Halmahera 09.ix.2003 (Ubaidillah&Kojima)".

*Female*. Body length 1.3-1.5 mm. Body black but face below level of toruli and half anterior malar space yellowish brown (Fig. 51); antennal scape yellowish brown, funicles and club darker; all legs brown, darker on hind coxa; dorsal margin of metasomal terga brown but yellowish brown ventrally.



Figs. 50-55. *Euplectrus partitus* sp. nov., female: 50. antenna; 51. head, lateral view; 52. head, in dorsal view; 53. petiole, dorsal view; 54. hind tibia; 55. fore wing.

**Head.**- Width 1.2x height; in dorsal view 2.6x as broad as long, interocular distance 4.4x eye width (Fig. 52); malar space 0.9x eye height in lateral view (Fig. 51); scape when rested at the level of anterior ocellus; funicles equal size, pedicel about 0.9x as long as first funicle; club slightly broader than funicle, 2.4x as long as broad (Fig. 50); scrobe and vertex smooth, without transverse carina behind lateral ocelli; lateral ocelli closer to anterior ocellus than to inner eye margin (Fig. 52); minute setae between lateral ocelli absent; POL:OOL = 70:40

**Mesosoma.**- Mesonotum with submedian disk imbricate, gradually reticulate posteriorly; median carina on mesoscutum present, very short at posterior margin; axilla finely imbricate and slightly dull; scutellum finely reticulate; dorsellum finely imbricate; propodeum smooth; plicae indicated.

**Metasoma.**- Petiole 1.2x as long as broad, granulate posteriorly (Fig. 53); lateral metasomal terga and tip of last terga brown.

**Legs and wings.**- Hind coxa coriaceous dorsally; longest hind tibial spur nearly as long as first and second tarsomeres combined (Fig. 54); forewing 2.6x as long as broad, submarginal vein with 4 dorsal setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 20:31:9:14 (Fig. 55).

**Male.**- Unknown

**Host.**- Unknown

**Etymology.** The species named is derived from Latin, *partitus*, means, part, referring to the posterior half of malar space is yellow, and while the anterior half is black.

**Notes.** This species close to *E. striatus*, but can be distinguished from the latter in having yellowish-brown scape; scutellum finely reticulate and shorter petiole.

## Genus *Hemiptarsenus* Westwood, 1833

### *Hemiptarsenus varicornis* (Girault)

(Figs. 57)

*Eriglyptoideus varicornis* Girault, 1913:154. Female "Murray Bridge, South Australia".

*Hemiptarsenoideus semialbiclava* Girault, 1916: 221. Female, "Perth, West Australia. G. Compere ",  
Synonymised with *Hemiptarsenus varicornis* by Bouek (1988: 627).

*Hemiptarsenus antennalis* Masi, 1917: 208. Female, "Seychelles Island" Mahe, Marshycoastal plains of Anse aux Pins and Anse Royale". Synonymised with *Hemiptarsenus varicornis* by Kerrich (1969: 210).

*Neodimmockia agromyzae* Dodd, 1917 :344-368. Female "Queensland" Cairns district. Synonymised with *Hemiptarsenus varicornis* by Bouek (1988: 627).

*Hemiptarsenus ophiomyzae* Risbec, 1957: 247. Female, and male "Sènègal: M'Boro, A. Wane".  
Synonymised with *Hemiptarsenus varicornis* by Bouek (1988: 627).

**Material examined.** INDONESIA: 6 female 4 male (MZB), Woloweku, Ndona, Central Flores Flores Island, NTT, 24.i.2003 (R. Ubaidillah); 3 female 2 male (IUNH), Takari-Takari (9°58'S 124°01'E), Kupang, Timor Island, 1.i.2003 (R. Ubaidillah); 2 female 1

male (MZB), Taduma, Ternate, North Maluku, 10.ix.2003 (Ubaidillah & Kojima); 2 female 1 male (MZB), Patunuang Nature Reserve, Maros, South Sulawesi, (05°03'S 119°43'E), Maros 18 .ix. 2003 (Ubaidillah & Kojima).

This species is widely distributed in the Old World tropics and subtropics, and is well known as a parasitoid of *Liriomyza* spp (Diptera, Agromyzidae), an important pests of vegetable crops. In the course of this study, we added new records from NTT and Ternate. It was rather abundant in vegetable crops which are attacked by leaf miners pest, *Liriomyza*.

The species can be immediately recognized by its long scape, that exceeds the level of vertex; female club whitish posteriorly (Fig. 5), basal three of male funicles branched (Fig. 56); mesosoma dark green metallic; scape and all legs yellowish brown; metasoma dark green metallic; mesoscutum subequal reticulation; scutellum without sublateral groove; propodeum smooth and shiny without median carina.

**Biology:** This species has been recorded from several leaf miner agromyzid (Diptera) (Noyes, 2002).

**Distribution:** **Indonesia:** Java (Bandung, Bogor) Sumatra, Bali, Sulawesi, **Timor and Flores Islands** (NEW RECORD) **Ternate** (NEW RECORD) Australia, Fiji, Guam, India, China Ghana; Ethiopia.

### Genus *Sympiesis* Försters, 1856

#### *Sympiesis dolichogaster* Ashmead (Fig. 56)

*Sympiesis dolichogaster* Ashmead, 1888:7. Female [Locality not mentioned in the original citation; Noyes (2002) mentioned "U.S.A. Kansas"]

*Sympiesis mikado* Ashmead, 1940:164. Female, "JAPAN ... Atami" (lectotype female designated by Kamijo (1976:486), Synonymized with *Sympiesis dolichogaster* by Kamijo (1976: 485)

*Asympiesella nelsonensis* Girault, 1913:78. Synonymized with *Sympiesis dolichogaster* by Bouek (1988:62)

*Sympiesis nelsonensis* Girault, 1914: 11. Female, male, " Australia-Nelson (Cairns), N.Q." . Synonymized with *Sympiesis dolichogaster* by Bouek (1988:621)

*Asympiesiella india* Girault, 1916: 341. Female, male, " : Pusa, Behar, India. Synonymized with *Sympiesis dolichogaster* by Bouek (1988:621)

*Sympiesis nowickii* Szelényi, 1941:28. Female, male, "Hungarry". Synonymized with *Sympiesis dolichogaster* by Bouek (1959: 130)

**Material examined.** INDONESIA: 7 female 4 male (MZB), 4 female 3 male (IUNH), Boentukan (10°07'S 123°48'N), West Amalon, Timur Tengah Selatan, Timor Island, NTT, 1.i.2003 (R. Ubaidillah); 1 male (MZB), Molonggota, Tinggola, Gorontalo, North Sulawesi, 08.ix.2003 (Ubaidillah & Kojima) sweep sample

The present species is cosmopolitan except for Afrotropics. In NTT, it was found only on Timor Island. An additional specimen collected in Gorontalo, North Sulawesi is also new record for Sulawesi. This species is easily distinguished from other *Sympiesis*

in having very long metasoma, which is about twice as long as head and mesosoma combined, head and mesonotum with hexagonal reticulation; notaulus indicated anteriorly; body metallic bluish green; all femur, tibia and tarsus whitish yellow, but last tarsal segment dark brown; first of three male funicles branched (Fig. 56).

**Biology:** This species is mostly known as parasitoid of lepidopteran leaf miners family of Gelechiidae, Gracillariidae, Tortricidae, and Pyralidae (Noyes, 2002)

**Distribution:** **Indonesia:** Sumatra, **Timor Island** (NEW RECORD), **Sulawesi** (NEW RECORD); Australia, Thailand, Japan, Russia, Sri Lanka, India, Tajikistan, Armenia, Romania, Ukraine, Greece, Hungary, Slovakia, Austria, Czech Republic, Italy, Switzerland, France, United Kingdom, Canary Islands, Cuba, United States of America, and Canada.

#### Genus *Notanisomorphella* Girault, 1913

##### *Notanisomorphella fuscocauda* sp. nov.

(Fig. 58)

*Holotype.* Female (MZB), labeled "INDONESIA, NTT, Woloweku, Ndona, Central Flores, Flores Island, sweep sample, 24.i.2003 (R. Ubaidillah)".

*Female.* Body length 1.8 mm. Body black glossy; antenna with scape yellow, pedicel yellowish brown with dorsal part darker, flagellum dark brown.

*Head.*- In dorsal view wider than mesosoma; sculpture on vertex and frons finely rugose; face below level of toruli smooth, but dull; ocellar area limited by a circle shallow line, forming a border of the three ocellus, OOL:POL = 9:5; frons and vertex with sparse, short whitish setae; eyes bare. Antenna with scape extending to the level of vertex; pedicel small and very short, much shorter and smaller than first funicle; four funicles, almost similar in size; club with two articles.

*Mesosoma.*- Pronotum, mesonotum, and scutellum black glossy with regular reticulation; propodeal sculpture finer than in scutellum. Pronotum transverse with scattered short white setae dorsally and a row of four long pairs setae on posterior margin. Notaulus indicated just at the anterior margin of mesoscutum (Fig. 58); mesoscutum with two pairs of white long setae and scattered small setae. Scutellum without sub lateral groove, with two pairs of dorsal setae; the anterior pair of scutellar setae situated about at the middle. Propodeum with distinct step-like plicae laterally, hence area between plicae slightly higher than the area lateral to plicae; propodeal median carina present. Forewing with postmarginal about 1.6x as long as stigmal vein; submarginal vein with eight dorsal setae.

*Metasoma.*- Ovate, petiole transverse, metasomal terga smooth and shiny; ground color yellowish brown but dorsal margin and median area of terga dark brown (Fig. 58); last segment of tergite dark.

*Male*.- Unknown

*Host*.- Unknown

**Etymology:** From Latin *fuscous*, dark brown, *cauda*, tail, referring to the dark brown spot on median tergite.

*Notes:* *Notanisomorphella* presently comprise of ten species worldwide and Bouek (1988) divided the three Australian species into two species groups based on the characters of propodeum. They are *proserpinensis*-group in which the propodeum smooth and *flaviventris*-group where the propodeum strongly punctured. This new species is the first record of this genus from Indonesia and this species can be placed in the *flaviventris*-group based on the strongly punctured propodeum. The species closely resembles to *N. flaviventris* (Girault, 1913) (holotype in QMB, examined), but differs from the latter in having more rough sculpture on propodeum, dark brown on flagellum, and a dark brown round spot on median of metasoma.

#### Genus *Deutereulophus* Schulz, 1906

##### *Deutereulophus timorensis* sp. nov.

(Figs. 59-62)

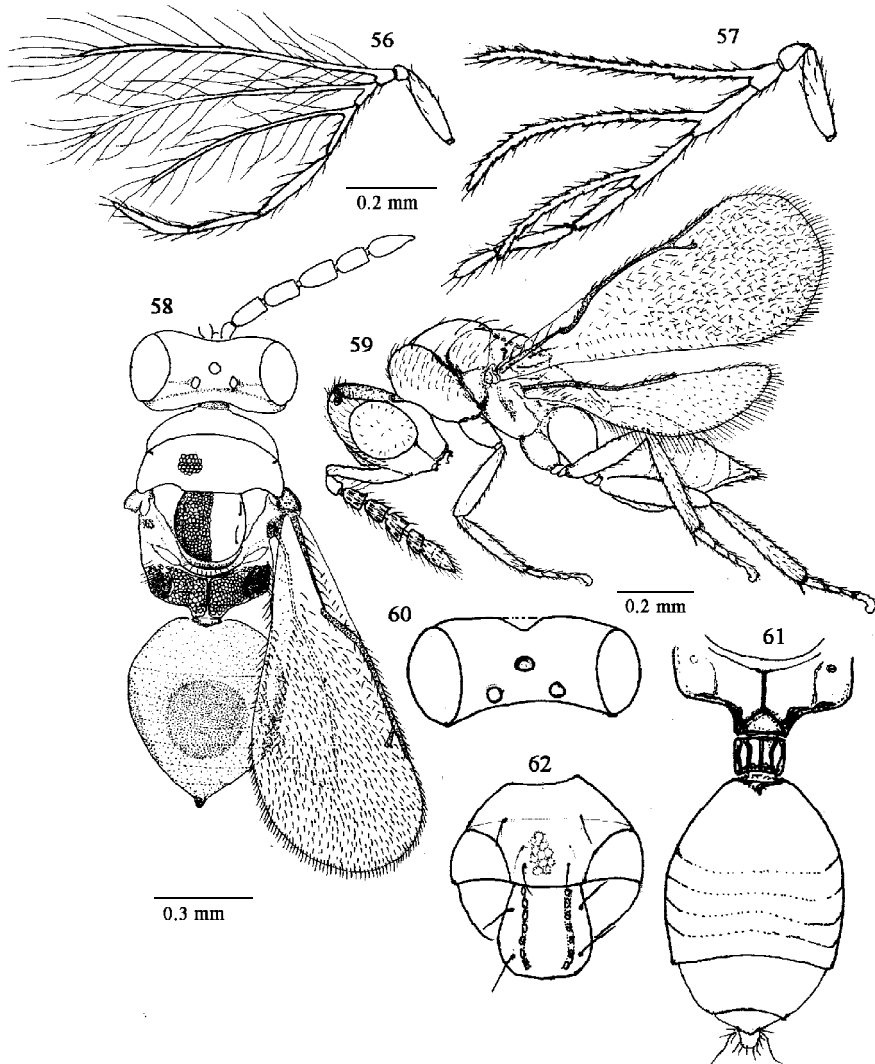
*Holotype.* Female (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Boenthuka, West Amalobon, Timur Tengah Selatan District, (Farm & paddy field) 10°07'46"S 123°48'60"S, 1.ii.2003 (R. Ubaidillah), sweep sample".

*Paratypes.* 6 female (MZB), South Sulawesi, Patunuang Nature Reserve, Maros, 18.ix.2003 (R. Ubaidillah & J. Kojima).

*Female.* Body length 1.2 mm, ground color metallic dark blue; antenna with scape yellowish white, pedicel, funicles and club brown; all legs yellow.

*Head.*- in frontal view about 1.2x as width as height, wider than mesosoma; interocular distance 2.6x eye width; occiput strongly concave and transverse carina present; POL:OOL = 12:6 (Fig. 60); frons and vertex smooth, shiny, with scattered short setae; malar space bare, smooth and shiny, malar sulcus present; scape short; anelli two; four funicles, gap between last funicle and club very narrow (Fig. 59).

*Mesosoma.*- Pronotum shorter than mesoscutum, reticulate, covered by scattered short setae and three pairs long setae on posterior margin; mid lobe of mesoscutum bare, only two pairs of setae; sculpture on mesoscutum with large finely reticulation; notaulus strongly curved outward anteriorly; scutellum slightly longer than mesoscutum, with two pairs of setae; scutellar submarginal groove sinuate (Fig. 62); dorsellum smooth and shiny; propodeum smooth and shiny; propodeal median carina strong, forked at nucha, forming areole enclosing nucha; plicae incomplete, projecting from anterior corners of nuchal areole (Fig. 61), callus hairy.



Figs. 56-62. *Sympiesis dolichogaster* Ashmead, 56. male antenna; 57. *Hemiptarsenus varicornis* (Girault), male antenna; *Notanisomorphella fuscocauda* sp. nov., 58 habitus, female, in dorsal view; *Deutereulophus timorensis* sp. nov., female, 59. habitus, in lateral; 60. head, in dorsal view; 61. propodeum and metasoma; 62. mesosoma, in dorsal view.

*Metasoma*. - Petiole 0.8x as long as broad, with dorsal median carina and pairs of carinae on sides (Fig. 61); abdomen shorter than mesosoma, dark brown on tergum, cerci with one long setae much longer than the others.

*Legs and wing*. - Hind coxa smooth and shiny; hind spur one, shorter than basitarsus; all legs yellow; fore wing 2.6x width, ratio of submarginal:marginal:stigmatal:postmarginal veins, 3.0:5.2:0.9:1.9.

*Male.*- Unknown

*Host.*- Unknown

**Etymology:** This species is named after the type locality.

*Notes:* Bouek (1988) has recognized two species groups in this genus, *froudei*-group and *tennysoni*-group, based on the number of funicles, segmentation of club and structure of scutellar groove. This species is placed in *tennysoni*-group, which is characterised three funicles, four-articled club and scutellar line almost straight. This species can be separated from its congener, *D. tennysoni* (Girault, 1913), by its petiole shape, the petiole of *D. tennysoni* longer than broad and without carinae dorsally, whereas in *D. timorensis* the petiole shorter than broad, and with a median dorsal carina and pairs of sub marginal carinae (Fig. 61).

### Genus *Diglyphomorphomyia* Girault, 1913

#### *Diglyphomorphomyia floresensis* sp. nov. (Figs. 63-66)

*Holotype.* 1B& (MZB), labeled "INDONESIA, Nusa Tenggara Timur, Aesesa, Kalilambo, Ngada, Flores Island, 25.i.2003 (R. Ubaidillah), sweep sample".

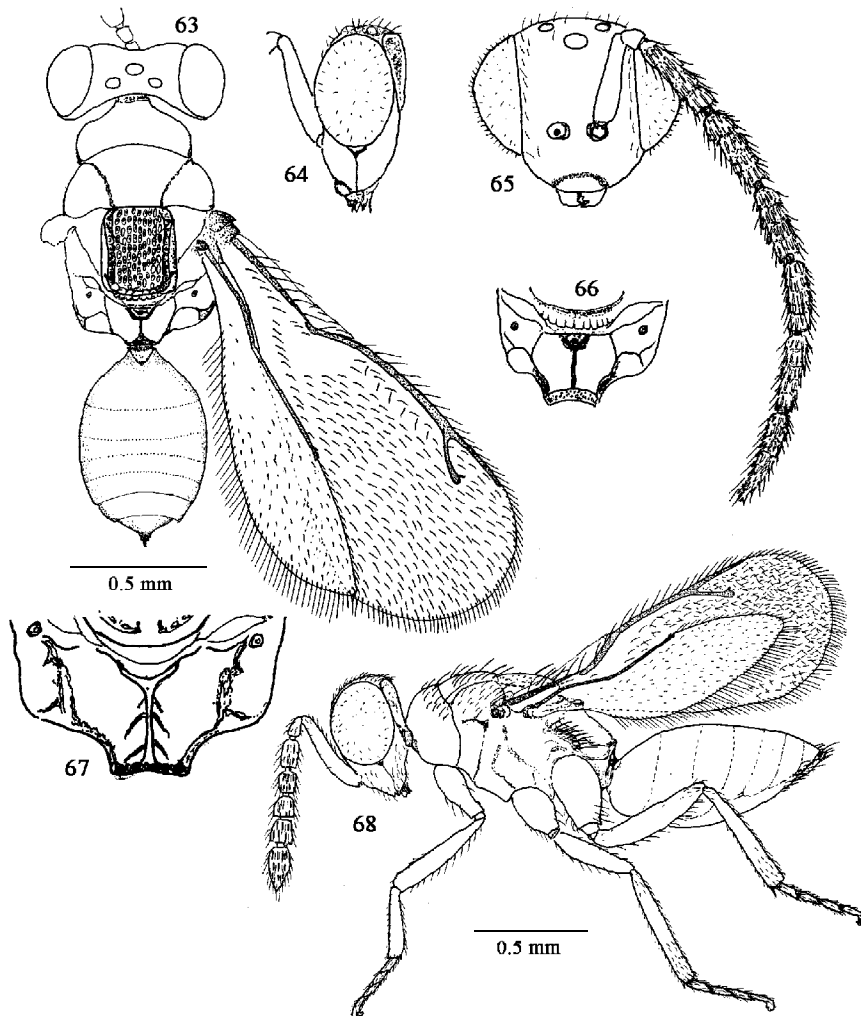
*Male.* Body length 1.9 mm, ground colour brown; head black; propodeum and metasoma dark brown; fore coxa light brown, middle and hind coxa yellow pale; all femur, tibia and tarsus yellowish brown.

*Head.*- Width 1.1x height, in dorsal view 1.4x as width as mesosoma; interocular distance 2.8x eye width (Fig. 63); malar space 0.3x eye height (Fig. 64); malar sulcus present, straight, with fovea anteriorly; eyes with short densely setae; five funicles; first funicle 4.6x as long as broad, slightly longer than the others funicles; club is difficult to distinguish with the last funicle (Fig. 65); frons imbricate and shiny; scrobe imbricate and glossy; vertex rough imbricate; occiput concave, transverse carina finely; lateral ocelli closer to inner eye margin than to anterior ocellus; clypeus defined by narrow, depressed line (Fig. 65); POL:OOL = 60:20.

*Mesosoma.*- Pronotum conical, narrower than mesoscutum as 8:11; notaulus complete, ending at anterior margin of scutellum (Fig. 63); mesoscutum with three pairs of setae; sculpture on disk of mesoscutum deep and dense; scutellum with submarginal groove; scutellar sculpture dense and deep; propodeum smooth and shiny, with T-shaped anteriorly median carina; anterior propodeal median carina raised into a perpendicular lamina; propodeal plicae present; neck of propodeum distinct, 0.3x as long as propodeum (Fig. 66).

*Metasoma.*- Metasoma short, 0.6x as long as mesosoma; petiole transverse, 0.5x as long as broad, finely granulate dorsally; metasomal terga smooth and shiny.





Figs. 63-68. *Diglyphomorphomyia floresensis* sp. nov., male, 63-66: 63. habitus, in dorsal view; 64. head, in lateral view; 65. head and antenna, in frontal view; 66. propodeum. *Elachertus sobrinus* (Girault and Dodd), female, 67-68: 67. habitus, in lateral view; 68. propodeum

*Legs and wings.*- Hind coxa striate dorsally, but smooth laterally; spure of hind tibia as long as basitarsal; wing hyaline, forewing 2.2x as long as broad, submarginal vein with 6 dorsal setae; ratio of submarginal:marginal:stigmatal:postmarginal veins, 25:30:10:16.

*Female.*- Unknown

*Host.*- Unknown

**Etymology.** This species is named after the type locality.

*Notes.* This genus presently consists of seven species worldwide: four recently reported from China (Zhu and Huang, 2003b) and three were described by Girault (1913, 1915) from Australia. This new species is the first record of this genus from Indonesia and closely resembles to *D. nigriscutellum* (Girault, 1913) (holotype in QMB, examined), but differs from the latter in having engraved reticulation on mesoscutum and scutellum, yellowish brown on scutellum, head entirely black and dark brown on propodeum and metasoma.

Genus ***Elachertus* Spinola, 811**  
***Elachertus sobrinus* (Girault and Dodd)**  
 (Figs. 67-68)

*Parentedon sobrinus* Girault and Dodd, 1915, in Girault, 1915: 283. Female, " AUSTRALIA, North Queensland, Gordanvale near Cairns".

**Material examined.** INDONESIA: 1 female (MZB), Makamingit (09°42'S 119°52'E), Oriango, Nggada, East Sumba, NTT, 30.i.2003 (R. Ubaidillah); 1 female (ANIC), Sowawa (00°33'N 123°10'E), Bone Bolango, Gorontalo, North Sulawesi, 16.ix.2003 (R. Ubaidillah); 2 female (MZB), Jati, Tidore, North Maluku, 11.ix.2003 (R. Ubaidillah); 1 female (IUNH), Hoku-hoku Kie (01°06'N 127°28'E), Jailolo, Halmahera, North Maluku, 9.ix. 2003 (R. Ubaidillah & J. Kojima).

*Female.* Body length 2.0 mm, ground colour dark green metallic but metasoma dark brown; scape yellow; antenna with pedicel and first funicle yellowish brown, remaining funicles darker; all legs pale yellow.

*Head.*- Wider than mesosoma as 10:8; head width 1.1x height, interocular distance 2.6x eye width; malar space 0.3x eye height; malar sulcus straight, with small fovea anteriorly; eyes with dense short erect setae; antenna with four funicles, size of each funicle longer than board (Fig. 68); first funicle 2.2x as long as broad, slightly longer than the others funicles; club three articles; scrobe imbricate and shiny; vertex rough imbricate; occiput behind lateral ocelli with finely transverse carina; lateral ocelli closer to inner eye margin than to anterior ocellus; clypeus not defined; POL:OOL = 60:30.

*Mesosoma.*- Pronotum conical, without transverse carina; notaulus complete, ending at anterior margin of axila; mesoscutum bearing dense setae; mesoscutal sculpture densely reticulate; scutellum with sublateral groove meeting posteriorly; propodeal median carina strong, with short three branched carinae (rami) on lateral sides (Fig. 67)

*Metasoma.*- Metasoma as long as mesosoma; petiole transverse, 0.4x as long as broad; metasoma smooth and shiny, dark brown;.

*Legs and wings.*- legs yellow with the tip of last tarsal segment dark; wing hyaline, forewing 2.5x as long as broad, submarginal vein with 5 dorsal setae; relative measurements of submarginal:marginal:stigmatal:postmarginal = 18:20:6:10.

*Male.*- Unknown

*Host.*- Unknown

**Distribution: Indonesia: Sumba Island** (NEW RECORD), **Sulawesi** (NEW RECORD)  
Australia, Queensland

*Notes:* *Elachertus* currently consist of about 115 species, including 14 species recently described from China (Zhu & Huang, 2001). In this study, *E. sobrinus* is recorded for the first time from Indonesia. This species can be distinguished from the other *Elachertus* species in having three branches carinae (rami) on the lateral sides of propodeal median carina and dark green metallic body coloration.

### Acknowledgments

I would like to express my sincere thanks to M. Ohara and S.Hartini for their collaboration during my fieldwork. I thank J. LaSalle of Australian National Insect Collection, Canberra, Australia and J. Kojima of Faculty of Science, Ibaraki University, Mito, Japan for their critical review on the manuscript. I also sincerely thank M. Gates and M. Schauff of the US National Museum, Washington D.C., USA and C. Burwell of the Queensland Museum, Brisbane, Australia for their arrangement of loan type specimens for this study. This study was partly supported by the RONPAKU (Dissertation Ph.D.) program of the Japan Society for the Promotion of Science.

### Literature Cited

- Ashmead, W.H. 1904. A list of Hymenoptera of the Philippine Islands with descriptions of new species. *Jour. New York Entomol. Soc.*, 12(1): 1-22.
- Bouek, Z. 1988. *Australasian Chalcidoidea (Hymenoptera). A biosystematic revision of genera of fourteen families, with a reclassification of species.* 832 pp. CAB Internat., Wallingford, Oxon, U.K., Cambrian News Ltd; Aberystwyth, Wales.
- Crawford, J.C. 1911. Descriptions of new Hymenoptera. 3. *Proc. United States Nat. Mus.*, 41: 267-282.
- \_\_\_\_\_. 1912. Descriptions of new Hymenoptera. No 4. *Proc. United States Nat. Mus.*, 42:1-10.
- Ferrière, C. 1930. Notes on Asiatic Chalcidoidea. *Bull. Entomol. Resear*21(3): 353-360.
- \_\_\_\_\_. 1941. New species of Euplectrini (Hym. Chalcidoidea) from Europe, Africa and Asia. *Bull. Entomol. Res.*, 32(1): 17-48.
- Förster, A. 1856. Hymenopterologische Studien. 2. Chalcidiae und Proctotrupii. 152 pp. Aachen.
- Gahan, A.B. 1922. Report on a small collection of parasitic Hymenoptera from Java and Sumatra. *Treubia*, 3: 47-52.
- Girault, A.A. 1913. Australian Hymenoptera Chalcidoidea - IV. *Mem. Queensland Mus.*, 2: 140-296.

- \_\_\_\_\_. 1915. Australian Hymenoptera Chalcidoidea IV. Supplement. *Mem. Queensland Mus.*, 3: 180-299.
- Graham, M. W. R. de V. 1959. Keys to the British genera and species of Elachertinae, Eulophinae, Entedonitinae, and Euderinae (Hym., Chalcidoidea). *Trans. Soc. British Entomol.*, 13: 169-204.
- Gauthier, N., J. Lasalle., D. L. J. Quicke & H. C. J. Godfray, 2000. Phylogeny of the Eulophidae (Hymenoptera, Chalcidoidea), with a reclassification of the Eulophinae and the recognition that the elasmidae are derived eulophids. *Systematic Entomology*, 25: 521-539.
- Hansson, C. & J. Lasalle, 1996. Two new eulophid parasitoids (Hymenoptera: Chalcidoidea: Eulophidae) of *Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae). *Oriental Insects*, 30: 193-202.
- Noyes, J. 2002. *Interactive Catalogue of World Chalcidoidea* (2nd edn). (CD-ROM) Taxapad, Vancouver, Canada and The Natural History Museum, London.
- Ubaidillah, R. & J. Kojima, 2002. Checklist of the species in the chalcidoid subfamily Eulophinae in Indonesia (Hymenoptera: Eulophidae). *Nat. Hist. Bull. Ibaraki Univ.*, 6: 11-22.
- Ubaidillah, R., J. Lasalle & A. Rauf, 2000. A new species of *Zagrammosoma* (Hymenoptera: Eulophidae) from the Indo-Australian region, a parasitoid of the invasive pest species *Liriomyza huidobrensis* (Diptera: Agromyzidae). *Oriental Insects*, 34: 221-228.
- Wijesekara, G.A.W. & M.E. Schauff, 1994. Revision of the tribe Euplectrini of Sri Lanka (Hymenoptera: Eulophidae). *Oriental Insects*, 28: 1-48.
- Wijesekara, G.A.W. & M.E. Schauff, 1997. Two new genera and three new species of Euplectrini (Hymenoptera: Eulophidae) from the New World. *Proc. Entomol. Soc. Washington*, 99(1): 101-109.
- Zhu, C.-D & D.-W. Huang, 2001. A study of Chinese *Elachertus* Spinola (Hymenoptera: Eulophidae) from south China. *Zoological Studies*, 40(4): 317-354.
- \_\_\_\_\_. 2003a. A study of the Genus *Euplectrus* Westwood (Hymenoptera: Eulophidae) in China. *Zoological Studies*, 42(1): 140- 164.
- \_\_\_\_\_. 2003b. Chinese species of Genus *Diglyphomorphomyia* Girault (Hymenoptera: Eulophidae). *Zoological Studies*, 42(3): 444- 449.