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## **ON A COLLECTION OF CHALCIDOIDEA (HYMENOPTERA : INSECTA) FROM THE MANGROVE ECOSYSTEMS OF KERALA, SOUTH INDIA WITH THE DESCRIPTION OF A NEW SPECIES**

P. M. SURESHAN

*Zoological Survey of India, Western Regional Station, Pune-411 044, India*

### **INTRODUCTION**

Entomofauna associated with the mangroves is poorly known. The order Hymenoptera (Insecta) of the mangrove ecosystem is represented by the pollinator, predator, phytophagous and parasitic species. Among the parasitic Hymenoptera Chalcidoidea represents an economically important group, members of which are mostly parasitic on other insects, thus playing a vital role in the natural regulation of insect population. The present account is based on the study of a small collection of Chalcidoidea from the mangrove and associated vegetations from North Kerala with Zoological Survey of India, Western Ghats Field Research Station, Calicut. Eleven species of Chalcidoidea belonging to 3 families are reported here for the first time from the mangrove ecosystem. The account also includes description of a new chalcid species belonging to the family Eurytomidae viz. *Tetramesa calicutensis* sp. nov. The specimens were identified following Narendran (1989, 1994) and Sureshan 2003. Terminology in this paper follows to that of Boucek (1988). Following abbreviations are also used.

### **ABBREVIATIONS**

- F1–F5 – Funicular segments 1 to 5
- MV – Marginal vein
- OOL – Ocellocular distance
- PMV – Post marginal vein
- POL – Post ocellar distance
- SMV – Submarginal vein
- STV – Stigmal vein
- T1–T6 – Gastral tergites 1 to 6.

## SYSTEMATIC ACCOUNT

Order HYMENOPTERA

Suborder APOCRITA (Parasitica)

Superfamily CHALCIDOIDEA

Family CHALCIDIDAE

Subfamily CHALCIDINAE

Tribe BRACHYMERINI

1. *Brachymeria lasus* (Walker)1841. *Chalcis lasus* Walker. *Entomologist*, **1** : 219.1973. *Brachymeria lasus* : Joseph et al., *Zool. Monograph. Calicut. Uni.*, **1** : 29.1989. *Brachymeria lasus* : Narendran, *Zool. Monograph. Calicut. Uni.*, **1** : 29.

*Diagnostic characters* : Length 5–7 mm. Black, hind femur black with apex yellow; hind tibia yellow with base black; head not wider than thorax, with fine and close punctuation, preorbital carina absent, post orbital carina reaching posterior margin of genotemporal region; hind coxa with a distinct ventromesal tooth; apex of scutellum weakly emarginated; gaster oval, short, T1 smooth.

*Material examined* : 2 Females, 4 males, INDIA : Kerala : Calicut dist., Kolavipalam, 19.ix.2001, coll. P. M. Sureshan.

*Distribution* : Cosmopolitan.

*Remarks* : Common polyphagous species, parasitising several Lepidoptera, helpful in controlling pest species.

Subfamily HALTICHELLINAE

Tribe HALTICHELLINI

2. *Hockeria atra* Masi1929. *Hockeria atra* Masi. *Boll. Lab. Ent. R. Ist. Sup. agr. Bologna*, **2** : 180.

*Diagnostic characters* : Length 3 mm. Black, forewing with transverse fuscous brown band. Head triangular, face almost flat; antenna with scape about 0.5x flagellum; thorax punctuate; propodeum with median areola narrowly hexagonal; gaster fusiform, shiny; T1 almost 0.5x total length with reticulate sculpture.

*Material examined* : 1 Female, Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India, Philippines and Java.

*Remarks* : Common species.

Family PTEROMALIDAE

Subfamily EUNOTINAE

3. *Cephaleta brunneiventris* Motschulsky

1859. *Cephaleta brunneiventris* Motschulsky. *Etud. Ent.*, 8 : 174.

*Diagnostic characters* : Length 1.5 mm. Head and thorax shiny black, gaster shiny purple violet, antennae brown. Head very slightly wider than thorax; antennae with scape slender, as long as the funicular segments combined; F1 shortest, F3–F5 gradually becoming thicker; thorax delicately reticulate; gaster almost as long as thorax, with a small tuft of white setae at base on either side of petiole.

*Material examined* : 1 Female. Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India, Sri Lanka, America, China, Philippines and Formosa.

*Remarks* : A polyphagous species parasitising various coccids.

Subfamily PTEROMALINAE

Tribe PTEROMALINI

4. *Propicroscytus oryzae* (Subba Rao)

1973. *Obtusiclava oryzae* : Subba Rao, *Bull. Ent. Res.*, 62 : 627.

1988. *Propicroscytus oryzae* : Boucek, *Aust. Hym. CAB. Int.*, 410.

*Diagnostic characters* : Length 2.5–4 mm. Head and thorax metallic green; dorsum with distinct green iridescence in certain lights; gaster yellow with sides and middle with brown streaks longitudinally; antennae with funicular segments elongated; pronotum distinctly at a low level; gaster lanceolate, 1.2x as long as head plus thorax.

*Material examined* : 2 Females, Kerala : Kannur dist., Melur, 27.ii.2002, coll. M. P. Sureshan.

*Distribution* : India (Kerala, Orissa, Maharashtra, Andhra Pradesh).

*Remarks* : Species parasitising gall midges in grass stems, commonly occurring in grass.

5. *Dinarmus maculatus* (Masi)

1924. *Sphaerakis maculatus* Masi. *Ann. Mus. Civ. Stor. Nat. Giacomo Doria*, 51 : 157.

1979. *Dinarmus maculatus* : Boucek et al., *Oriental Ins.*, 12(4) : 442.

*Diagnostic characters* : Length 2.5–3 mm. Body metallic blue with bronzy patches; antennae yellowish brown; anterior margin of clypeus almost straight; antennae with third anellus as long as first and second combined; propodeum with moderate nucha, plicae strong; forewing with PMV as long as or little longer than MV; gaster cordiform.

*Material examined* : 2 Females, Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India (Kerala, Maharashtra, West Bengal).

*Remarks* : Species parasitising bruchid beetles.

#### 6. *Chlorocythus indicus* (Walker)

2000. *Chlorocythus indicus* Sureshan, *Rec. Zool. Sur. India*, **98**(2) : 143.

*Diagnostic characters* : Length 1.6–2.4 mm. Bright metallic bluish green with golden reflection; antennae brown. Head distinctly and closely punctuate; antennae with pedicel plus flagellum 1.2x head width; pronotal collar sharply carinate anteriorly; propodeum with complete median carina; gaster longer than head plus thorax combined.

*Material examined* : 1 Female, Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India (Kerala).

*Remarks* : Common species associated with grasses.

#### 7. *Norbanus thekkadiensis* Sureshan

2003. *Norbanus thekkadiensis* Sureshan. *Rec. Zool. Sur. India, Occ. Paper No. 205* : 60.

*Diagnostic characters* : Length 1.8–2.2 mm. Head and thorax bluish black, gaster golden yellow, antennae testaceous; clypeus radiately striated, anterior margin shallowly emarginated; antennae with scape reaching median ocellus, club with terminal stylus elongate; posterior margin of pronotal collar deeply emarginated; gaster not much pointed towards the tip, as long as head plus thorax combined.

*Material examined* : 7 Females, 3 males, Kerala : Calicut dist., Kolavipalam, 19.ix.2001, coll. P. M. Sureshan.

*Distribution* : India (Kerala).

*Remarks* : Collected by sweeping over *Avicenia marina* plants, probably parasitising wood boring beetles.

### Family EURYTOMIDAE

#### Subfamily EURYTOMINAE

#### 8. *Eurytoma poroensis* Mukerjee

1981. *Eurytoma poroensis* Mukerjee, *Rec. Zool. Sur. India. Misc. publ.*, **25** : 1-87.

*Diagnostic characters* : Length 1.6–3 mm. Black, antennae dark brown, legs yellowish brown except coxae black; antennal scape distinctly exceeding vertex level, funicular segments

characteristically elongate, oval; propodeum with distinct median groove; hind tibia with three spines or bristles on dorsal margin; gaster distinctly longer than combined length of head and thorax.

*Material examined* : 2 Females, Kerala : Calicut dist., Kolavipalam, 5.x.2001, coll. P. M. Sureshan.

*Distribution* : India (Kerala, Karnataka, Tamil Nadu).

*Remarks* : Common species.

#### 9. *Eurytoma agalica* Narendran

1994. *Eurytoma agalica* Narendran. *Zool. Monograph. Uni. of Calicut*, 239.

*Diagnostic characters* : Length 2.5 mm. Black, antenna brownish black; antenna with scape just reaching level of front ocellus; propodeum with its median part broadly concave with shallow depression containing microsculptures and some vertical irregular rugae; gaster with petiole as long as broad, distinctly longer than head plus thorax combined.

*Material examined* : 1 Female, Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India (Kerala, Tamil Nadu).

*Remarks* : Uncommon species.

#### 10. *Plutarchia marginata* Narendran & Padmasenan.

1990. *Plutarchia marginata* Narendran & Padmasenan. *J. Bombay Nat. Hist. Soc.*, 87 : 114-115.

*Diagnostic characters* : Length 2.3 mm. Black. Antennae brownish black, face with radiating striae; POL nearly 2X OOL; antennal scape reaching lower level of median ocellus; forewing with MV short and broad; hind tibia with 7 strong backwardly directed spines; gaster with exerted part of ovipositor distinctly shorter than dorsal length of epipygium; T1–T2 very small and fused to T3 dorsally.

*Material examined* : 1 Female. Kerala : Kannur dist., Melur, 27.ii.2002, coll. P. M. Sureshan.

*Distribution* : India (Kerala).

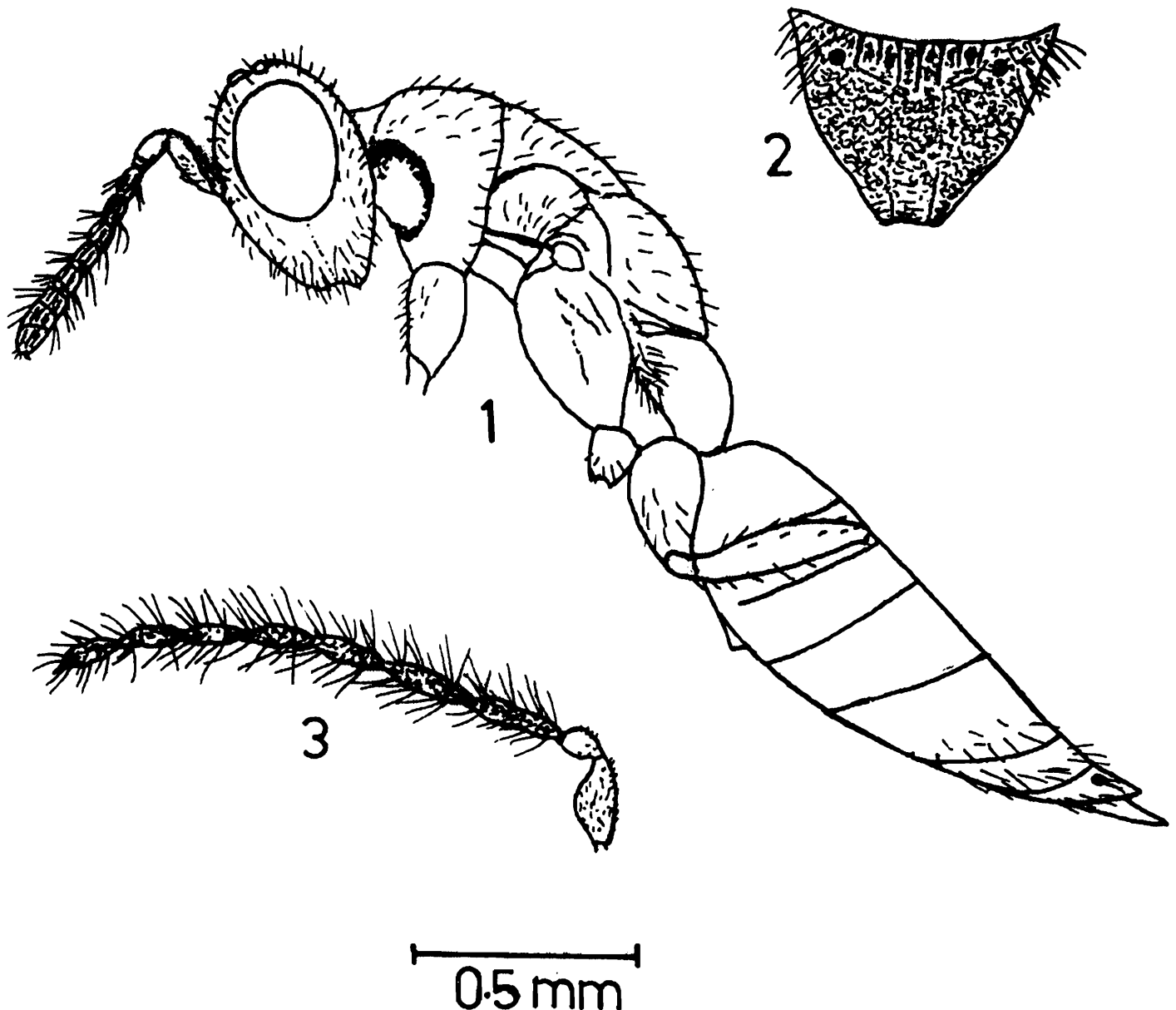
*Remarks* : Uncommon species.

#### 11. *Tetramesa calicutensis* sp. nov.

(Figs. 1-3)

*Diagnostic characters* : Length 2.6 mm. Body black, Pubescence white; mandibles brown, lower face yellowish brown; pronotum with a broad yellowish white patch on antero lateral corners; legs brown except tips of tibiae and tarsi testaceous; antennae brown; eyes and ocelli grey; gaster blackish brown, ovipositor sheaths testaceous; tegulae brown, wings hyaline, veins pale yellow.

*Head* : Uniformly and finely reticulate, meshes very small, with long white hairs; gena almost shiny, malar grooves weakly indicated; clypeal area slightly raised, anterior margin angularly produced. Head in dorsal view 1.6x as wide as long; temple length 0.43x eye length; POL 2x OOL. In front view head width 1.2x height; eye length 1.23x width in profile; malar space 0.46x eye length; scrobe deep, not reaching median ocellus. Antennae (Fig. 1) inserted above lower margin of eyes; scape hardly reaching median ocellus, finely reticulate, length 0.7x eye length; pedicel plus flagellum length as long as head width; antennal formula 11153; pedicel as long as F1 and as wide as F5; F2–F5 equal in length, shorter than F1; funicular segments longer than wide, except F5 almost subquadrate, club as long as 3 preceding segments combined; funicular segments covered with long setae.



Figs. 1-3. : *Tetramesa calicutensis* sp. nov. 1. Female body in profile; 2. Porpodeum dorsal view; 3. Male antenna.

**Thorax** : 2.3x as long as wide, pronotum almost as long as wide, collar ecarinate, finely reticulate. Mesoscutum medially shorter than pronotum and 1.6x as wide as long, notauli complete, deep and groove like. Scutellum similarly reticulate as on mesoscutum and pronotum, medially little longer than mesoscutum. Propodeum (Fig. 2) lies at 45° to longitudinal line of mesoscutum, convex, uniformly reticulate punctate, meshes small, medially 0.7x as long as scutellum, medially with a shallow fovea, basal part with few short carinulae separated by deep foveae, only upper part of callus covered with white hairs. Prepectus finely reticulate. Mesopleuron with mesepisternum moderately reticulate, mesepimeron transversely striated. Metapleuron similarly reticulate as on propodeum. Forewing length 2.7x width, basal part with less pubescence, speculum open below, PMV short, stigma slightly enlarged. Relative lengths of SMV 33, MV 12, PMV 6, STV 4. Hind coxae finely reticulate, femur finely and longitudinally striated. Relative lengths of hind coxa 12, femur 20, tibia 26, tarsus 24.

**Gaster** : (Fig. 1) sessile, elongatedly ovate, as long as head plus thorax combined, dorsally collapsing; T1 dorsally as long as T2 and T3 combined; T4 little longer than T3; T5 1.2x longer than T4; exerted part of ovipositor sheath little shorter than T6 dorsally.

**Male** : Length 2.2 mm. Similar to female but differs in having antennal scape swollen (Fig. 3), funicular segments pedunculate with whorls of long hairs; gaster petiolate, short, only 0.72x as long as head plus thorax combined.

**Holotype** : Female : INDIA : Kerala : Calicut dist., Kolavipalam, 5.x.2001, coll. P. M. Sureshan.  
**Paratype** : Male : Data same as that of holotype.

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

**Remarks** : Among the species with 5 segmented funicle and pronotum (including column) distinctly longer than mesoscutum, *T. calicutensis* sp. nov. resembles *T. distincta* Narandran and *T. narendrani* Sureshan (Sureshan, 2004) and runs to couplet 5 of the key to Indian species of *Tetramesa* (Narendran, 1994). But it differs from *T. distincta* in having forewing with MV 2x PMV, POL 2x OOL, gaster as long as head plus thorax combined, shorter antennae, and genal area almost smooth with very fine reticulation. (in *distincta* MV 1.65x PMV, POL 1.46x OOL, gaster little longer than head plus thorax combined, longer antennae and genal area distinctly striated). It differs from *T. narendrani* in having smaller size, genal area smooth, POL 2x OOL, antennae with F1 as long as pedicel, pedicel plus flagellum as long as head width, thorax with small meshed reticulation, pronotum almost as long as broad, propodeum with small meshed reticulation and covered with hairs only on upper callus, forewing with MV 2x PMV and gaster as long as head plus thorax combined with T4 little longer than T3. (in *narendrani* body size larger, genal area striate, POL 1.3x OOL, F1 longer than pedicel, pedicel plus flagellum 1.3x as long as head width, thorax with broad meshed reticulation, pronotum width 1.3x median length, MV 1.6x PMV; propodeum with broad meshed reticulation and whole surface covered with white hairs, gaster 1.3x as long as head plus thorax combined with T4 distinctly longer than T3).

## DISCUSSION

Eleven species of Chalcidoidea (Hymenoptera : Insecta) belonging to 10 genera and 3 families are reported for the first time from the mangrove ecosystems of Kerala, South India. One species belonging to the family Eurytomidae viz. *Tetramesa calicutensis* is described new to science.

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## REFERENCES

- Boucek, Z. 1988. Australasian Chalcidoidea (Hymenoptera). CAB International. Wallingford, U.K., pp. 832.
- Narendran, T. C. 1989. Oriental Chalcididae (Hymenoptera : Chalcidoidea). *Monograph, Dept. Zool. Uni. Calicut.*, pp. 440.
- Narendran, T. C. 1994. Torymidae and Eurytomidae of Indian subcontinent (Hymenoptera : Chalcidoidea). *Monograph. Dept. Zool. Uni. Calicut*, pp. 500.
- Sureshan, P. M. 2003. Pteromalinae (Pteromalidae : Chalcidoidea : Hymenoptera) of Indian subcontinent. *Rec. Zool. Sur, India, Occ. Paper No. 205*, pp. 170.
- Sureshan, P. M. 2004. Two new species of Eurytomidae (Hymenoptera : Chalcidoidea) from India. *Perspectives on Biosystematics and Biodiversity. T.C.N. Com. Vol. 503-508.*