

TWO NEW SPECIES OF *ZAISCHNOPHIS* ASHMEAD (HYMENOPTERA: EUPELMIDAE) FROM SOUTHERN INDIA AND A KEY TO ORIENTAL SPECIES

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ABSTRACT

The genus *Zaischnopsis* Ashmead is represented in India by three species viz. *Zaischnopsis biharensis* (Narendran) including the two new species described in this paper, viz., *Zaischnopsis keralensis* Narendran sp. nov. and *Zaischnopsis bathericus* Narendran sp. nov. Comparative accounts of the two new species and the diagnostic features of *Z. biharensis* (Narendran) are given. A key to the Oriental species of *Zaischnopsis* is also included.

KEYWORDS

Chalcidoidea, Eupelmidae, key, new species, oriental region, taxonomy, *Zaischnopsis bathericus* Narendran sp. nov., *Zaischnopsis keralensis* Narendran sp. nov.

ABBREVIATIONS

DZUC - Department of Zoology, University of Calicut; F1-F8 - Funicular segments 1 to 8 [anellus is considered here as F1]; MV - Marginal vein; OOL - Ocellocular distance; PMV - Postmarginal vein; POL - Postocellar distance; SMV - Submarginal vein; STV - Stigmal vein; T1-T6 - Gastral tergites 1 to 6; ZSIK - Western Ghats Regional Station, Zoological Survey of India, Kozhikode.

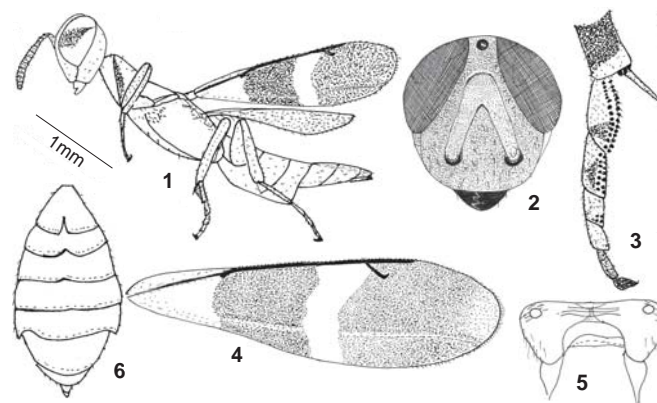
The genus *Zaischnopsis* was erected by Ashmead (1986) under the name *Ischnopsis* with type species *Ischnopsis ophthalmica* Ashmead. Since the name *Ischnopsis* was already preoccupied by *Ischnopsis* Walsingham (Walsingham, 1881), Ashmead (1904) later provided a replacement name *Zaischnopsis* for *Ischnopsis* Ashmead. Bouček (1988) synonymized *Zaischnopsis* with *Anastatus* Motschulsky. Gibson (1995) reestablished the generic status of *Zaischnopsis* Ashmead. He also synonymised *Eupelmoïdes* Masi (1917) with *Zaischnopsis*. The genus *Zaischnopsis* contains 25 species in the world and six species in the Oriental region (Gibson, 2005; Girault, 1915, 1919; Walker, 1852, 1862). From India so far only one species is reported (Narendran *et al.*, 2004; Gibson, 2005). In this paper, two new species viz. *Zaischnopsis keralensis* Narendran sp. nov. and *Zaischnopsis bathericus* Narendran sp. nov. are described, with a review of the Indian species. A key to separate Oriental species of *Zaischnopsis* is also provided. The holotype of the new species described here are deposited in the DZUC, but eventually will be transferred to ZSIK at a later stage. (The type of *Zaischnopsis biharensis* (Narendran) already deposited in the DZUC will also be transferred to ZSIK).

ZAISCHNOPHIS KERALENSIS Narendran sp. nov.

(Figs. 1-6)

Material examined

Holotype: Female, 10.i.2004, Cheruthoni (9°51'N-76°58'E), Idukki District, Kerala, coll. T.C. Narendran & Party, DZUC



Figures 1-6. *Zaischnopsis keralensis* Narendran sp. nov. (Female); 1 - Body profile; 2 - Head front view; 3 - Apex of midtibia with tarsi; 4 - Forewing; 5 - Propodeum; 6 - Gaster dorsal view

Reg. No. MoEF 339.

Distribution

Known only from Idukki District of Kerala state, India.

Etymology

The species epithet is after the name of the state Kerala from where it is collected.

Description

Female: Length including ovipositor sheath 3.6mm. Head slightly dark with metallic green lustre. Palpi dark brown. Mandible dark brown with base slightly paler. Antenna black with metallic green lustre on scape, pedicel, anellus and F1. Mesosoma dark with metallic green lustre on dorsum and sides of pronotum. Legs black with following yellowish to white: metatarsi and following three tarsi of mid and hind legs with apical pegs of midtibia and tarsi black. Forewing infusate beyond base of parastigma except for a hyaline cross band extending from MV to posterior margin, infuscation slightly lighter at apical part of forewing. Gaster black without any metallic lustre.

Head: Scrobal depression with distinct dorsal margin separated from anterior ocellus by a distance equal to 2x diameter of front ocellus (Fig. 2); channel and scrobes strongly reticulate to transversely reticulate strigose; frons strongly reticulate, interantennal region strongly reticulate, with sparse setae. Lower parascrobal region with scattered white setae not differentiated from other setae on face. Frontoververtex strongly

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reticulate from scrobal channel to posterior ocelli, without distinct setae. Vertex angled relative to comparatively flat and extensive occiput at level of anterior margin of posterior ocelli and both vertex and occiput coriaceous-reticulate with short pale white setae. Gena posterior to malar sulcus strongly and longitudinally striate-reticulate with conspicuous white lanceolate scattered setae. Antenna (Fig. 1) with scape strongly reticulate-strigose on outer and inner sides; flagellum elongate, increasing width towards clava with apical three funicular segments transverse.

Mesosoma: Pronotum with median furrow deep; mesoscutum entirely striate-reticulate, sparsely setose; setae white and lanceolate (without any dark hair-like setae). Scutellar-axillar complex punctate-reticulate. Acropleuron anteriorly with white lanceolate setae in triangular region. Metacoxa with dense, lanceolate white setae ventrolaterally and dorsally (without clear cut bare median longitudinal area). Propodeum (Fig. 5) with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense white setae postero-laterally. Forewing 3.33x as long as wide; relative lengths of veins: SMV=46; MV=58; PMV=20; STV=10.

Gaster: A little longer than mesosoma (59: 54), syntergum mostly covered by preceding tergum. Ovipositor sheath exerted only very slightly beyond syntergal flange.

Remarks

Biology unknown. This new species differs from the other Indian species *Z. biharensis* Narendran by the differences mentioned under the species *Z. biharensis* in this paper below. There are four species known from South East Asia and one from Hong Kong, China. They differ from this new species in the following characters:

Z. cooki (Girault) differs from this new species in having: (i) F6 and clava white; (ii) PMV longer than MV; (iii) All of dorsum of mesosoma except sides narrowly of scutellum black.

Z. magniscapus (Girault) differs in having: (i) Scape foliaceously dilated; (ii) Gaster completely metallic; (iii) F2 and F4 equal in size; and (iv) F1 quadrate.

Z. locustae (Girault) differs in having: (i) F2 to F4 equal in size; (ii) Longest funicular segment 3x longer than F1; (iii) F8 nearly square; and (iv) Middle tibial spur metallic.

Z. fascipennis (Walker) differs in having: (i) MV a little shorter than SMV; and (ii) Gaster metallic copper red varied with green.

Z. tubatius (Walker) differs in having: (i) Midtibial spur black; and (ii) Gaster purple coloured.

ZAISCHNOPSIS BIHARENSIS (Narendran)

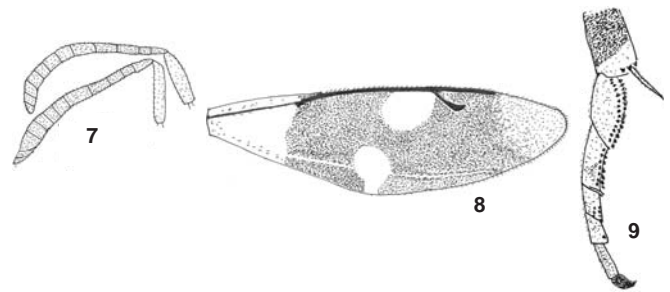
(Figs. 7-9)

Anastatus biharensis Narendran, Narendran *et al.* 2004: 16-18, Female, India (DZUC Reg. No. Eu 337).

Zaischnopsis biharensis (Narendran), Gibson, 2005: 109.

Diagnosis

This species differs from *Z. keralensis* Narendran sp. nov. in having: (i) Forewing with two hyaline spots or patches instead



Figures 7-9. *Zaischnopsis biharensis* (Narendran)
7 - Antenna; 8 - Apex of midtibia; 9 - Forewing

of a single continuous median band (Fig. 9); (ii) Front ocellus separated from scrobe by its own diameter; and (iii) Different proportion of antennal segments.

Z. cooki (Girault) differs from *Z. biharensis* (Narendran) in having: (i) F6 and clava white; (ii) PMV longer than MV; and (iii) All of dorsum of mesosoma except sides of scutellum narrowly black.

Z. magniscapus differs in having: (i) Different proportion of antennal segments; (ii) Mesoscutum without a raised median area; and (iii) Middle tibial spur black.

Z. locustae (Girault) differs from *Z. biharensis* in having: (i) F2 to F4 equal in length; (ii) Longest funicular segment 3x longer than F1; (iii) Pedicel as long as F3; and (iv) Middle tibial spur metallic.

Z. fascipennis (Walker) differs in having: 1) MV a little shorter than SMV; 2) Gaster metallic copper red, varied with green.

Z. tubatius (Walker) differs in having: 1) Midtibial spur black; 2) Legs copper colour and 3) Forewing as in *Z. keralensis*.

In the original description, it is wrongly stated that T2 is longer than T3 in *Z. biharensis* which is actually vice versa (T3 is longer than T2). The same is corrected here.

ZAISCHNOPSIS BATHERICUS Narendran sp. nov.

(Figs. 10-13)

Material examined

Holotype: Female, 6.v.2000, Sultan's Battery (11°40'N-76°17'E), Wyanad district, Kerala, coll. T.C. Narendran & Party, DZUC Reg. No. Moef. 1637.

Distribution

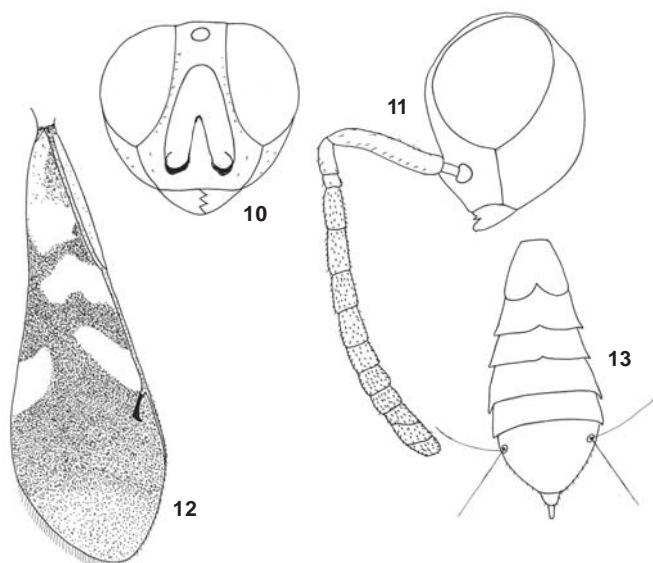
Known only from Sultan's Battery in Wyanad district, Kerala

Etymology

The species epithet is after the popular name of the collection locality Sulthan Batheri originally named Sultan's Battery.

Description

Female: Length including ovipositor sheath 3.1mm. Head dark with metallic green lustre. Palpi dark brown. Mandibles brown with teeth black. Antenna black with metallic green lustre on scape, pedicel, anellus and F1. Mesosoma dark with



Figures 10-13. *Zaischnopsis bathericus* Narendran sp.nov. (Female)
 10 - Head front view; 11 - Head and antenna side view;
 12 - Forewing; 13 - Gaster dorsal view

metallic green lustres on dorsum and sides of pronotum; anterior part of prosomal median furrow pale yellow. Legs black with following parts yellowish-white: apex of mid tibia, apex of hind coxa, hind trochanter, base of hind femur; basal half and apical one third of hind tibia (with a black band in between) and all tarsi of all legs (except black pegs of apex of tibia and of tarsi). Forewing infusate beyond base of

parastigma except for hyaline patches attached to MV and one below anterior patch attached to MV (Fig. 12), hyaline patch attached to base of MV with brown pilosity; pilosity on rest of distal two patches white. Gaster black.

Head: Scrobal depression with distinct dorsal margin separated from anterior ocellus by 1.5x diameter of front ocellus; scrobe strongly reticulate to transversely reticulate-strigose; frons strongly reticulate, interantennal region strongly reticulate with sparse setae on side margins. Lower parascrobal region with sparse setae. Gena posterior to malar sulcus strongly and longitudinally striate reticulate with scattered pale setae. Antenna (Fig. 11) with scape strongly reticulate-strigose on outer and inner side; flagellum elongate, increasing in width towards clava.

Mesosoma: Pronotum with deep median furrow; mesoscutum entirely reticulate - striate, moderately setose, setae white and lanceolate. Scutellar axillar complex punctate-reticulate, Acropleuron anteriorly without white lanceolate setae in a triangular region as in *Z. keralensis*. Metacoxa with dense, lanceolate, white setae ventro-laterally and dorsally with a clear cut median longitudinal concave cross reticulate area. Propodeum with callus broadly bare posterior to spiracle, but densely setose in posterolateral part. Forewing 2.9x as long as wide; relative lengths of veins: SMV = 48; MV = 44; PMV = 24; STV = 9.

Gaster: (Fig. 13) 1.3x as long as mesosoma in dorsal view (20:26); syntergum covered by preceding tergum, each cerci with two relatively long setae; ovipositor sheath exerted a little beyond syntergal flange.

Key to Oriental species of *Zaischnopsis* Ashmead

1. F6 and clava white; F3 to F5 brown; PMV longer than MV which is "punctiform"; STV longer than PMV; dorsum of mesosoma except sides narrowly of scutellum black *Z. cooki* (Girault)
- Characters not as above; partly or completely different 2
2. Scape foliaceously dilated; gaster completely metallic; F2 - F4 equal in size, 2x longer than wide; F1 quadrate; mesoscutum without a raised median area but with a median carina; middle tibial spur black, atleast at base *Z. magniscapus* (Girault)
- Characters not as in above combination; partly or completely different 3
3. F2 to F4 equal, longest funicular segment 3x longer than F1 which is subquadrate; F5 and F6 longer than wide; F8 nearly square; pedicel as long as F3; PMV 2x as long as STV; middle tibial spur metallic; raised triangle of 'cephalic' scutum (= mesoscutum) about one-third surface, with a nearly complete median carina from it; coxae, femora and most of tibiae with metallic lustre; host: eggs of locusts *Z. locustae* (Girault)
- Characters not as above, partly or completely different 4
4. Gaster cupreous, lanceolate, varied with green; head black with bluish green reflection on lower part; hind femur completely dark brown (hind tibia similar to *bathericus*); MV a little shorter than SMV, *Z. fascipennis* (Walker) (= *Z. bifasciatus* (Walker))
- Characters partly or completely different from above alternate 5
5. Midtibial spur black; legs copper coloured; (Forewing as in *Z. keralensis*) *Z. tubatius* (Walker)
- Midtibial spur yellow or pale yellow or whitish yellow 6
6. Forewing with two hyaline spots in the middle (Fig. 9, 12) 7
- Forewing with single hyaline cross band in the middle (Fig.4) ***Z. keralensis* Narendran sp. nov**
7. Forewing with an opaque hyaline spot near base of MV; F6 wider than long; clava longer than combined length of F6+F7+F8, India (Kerala) ***Z. bathericus* Narendran sp. nov.**
- Forewing without an opaque hyaline spot near base of MV; middle hyaline spot not as above; F6 longer than wide; clava shorter than combined length of F6 + F7 + F8, India (Bihar) *Z. biharensis* (Narendran)

[The above key is mainly based on literature except for the Indian species]

Remarks

Biology unknown. This new species resembles *Z. keralensis* Narendran sp. nov. in general appearance but differs from it in having: (i) MV shorter than SMV; (ii) Hind tibia with yellow with a black band between an apical half; (iii) Forewing with an opaque hyaline patch near base of MV; (iv) Middle hyaline patches obliquely directed; and (v) Acropleuron without white patch of setae in a triangular region on anterior side.

This species differs from *Z. biharensis* Narendran in having: (i) MV shorter than SMV; (ii) F6 broader than long; (iii) Forewing with opaque hyaline spots in middle; (iv) MV with an opaque hyaline patch near its base; and (v) Front ocellus separated from scrobe by 1.5x diameter of front ocellus.

This new species differs from *Z. fascipennis* (Walker) in having: (i) Gaster not cupreous; (ii) Hind femur black with base yellow (whereas in *fascipennis* hind femur completely dark brown. This species resembles *Z. fascipennis* in having: MV shorter than SMV and in similar colouration of hind tibia.

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