



Taxonomic studies on a collection of Chalcidoidea (Hymenoptera) from India with new distribution records

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During surveys for the collection of Chalcidoidea in different parts of India, several taxa were collected and recorded. One species of Eulophidae is recorded for the first time from India. Nine species of Pteromalidae, two species of Encyrtidae, four species of Eulophidae, two species of Trichogrammatidae and one species of Torymidae, are new records from Karnataka. One species of Eulophidae is a new record from Jammu & Kashmir. One species of Chalcididae is a new record from Andhra Pradesh. The details of the species are discussed here in brief. The specimens of the present study are deposited in the collections of Project Directorate of Biological Control (PDBC), Bangalore and Aligarh Muslim University (AMU), Aligarh.

Methods

Specimen collection was done by using a sweep net and aspirator. Along with these, various parasitized pupae, scale infested leaves, parasitized larvae, gall formed leaves, etc. were collected and kept in jars for emergence of parasitoids. Syrphid puparia, pupae of *Exelastis atomosa* (Walsingham), *Saissetia* sp. infested leaves, leaves infested with leaf miners, parasitized larvae of *Chilo partellus* (Swinhoe), gall infested leaves of *Eucalyptus* sp., pods of *Crotolaria* sp. and ootheca of praying mantid were also collected and reared in the laboratory. The collected specimens were then dry mounted and labelled according to the standard procedure provided by Noyes 1982.

The specimens were identified in the Biosystematics and

Introduction Division of Project Directorate of Biological control, Bangalore, using Leica S8APO Stereo zoom microscope and with the aid of recent literature as well as the Universal Chalcidoidea database (Noyes 2003).

I. Family Pteromalidae

1. *Acroclisoides maculatus* Sureshan & Narendran

Acroclisoides maculatus Sureshan & Narendran, 2002a: 128. Holotype F: India, Kerala.

Diagnosis: Forewing with a broad brown spot beneath stigmal vein; gaster long, 0.8x as long as head plus mesosoma combined; antennal flagellum dark brown.

Material studied: 1 female, 10.x.06, Resting on indet. tree, M.G. Road, Bangalore, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/121- PDBC).

Distribution: India: Karnataka (new record), Kerala and Tamil Nadu.

2. *Callitula keralensis* Sureshan

Callitula keralensis Sureshan, 2002: 23. Holotype F: India, Kerala.

Diagnosis: Gaster with metallic blue reflection on first tergite dorsally, distinctly longer than mesosoma, not collapsing; forewing with basal cell open below, speculum broad; antenna with pedicel shorter than first funicular segment; pronotal collar not margined anteriorly.

Material studied: 1 female, 9.v.07, Resting on Maize, Gubihosahalli, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/122- PDBC).

Distribution: India: Karnataka (new record) and Kerala.

3. *Cryptoprymna elongata* Sureshan & Narendran

Cryptoprymna elongata Sureshan & Narendran, 2000: 403. Holotype F: India, Kerala.

Diagnosis: Antenna slender with first funicular segment as long as second, scape little longer than eye; clava 2x as long as wide; gastral petiole slender.

Material studied: 1 female, 16.viii.06, General vegetation, Nagara, Udipi, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/123- PDBC).

Distribution: India: Karnataka (new record) and Kerala.

4. *Halticopterella burwelli* Sureshan

Halticopterella burwelli Sureshan, 2001: 33. Holotype F: India, Kerala.

Diagnosis: Head and mesosoma black; propodeum with nucha long, adpetiolar margin moderately reticulate and gaster strongly sclerotized.

Material studied: 1 female, 14.ix.2006, ex: Flower of *Tabernaemontana divaricata* L. (Cape Jasmine), Brahmavara, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/124- PDBC).

Distribution: India: Karnataka (new record) and Kerala.

5. *Mesopolobus keralensis* Sureshan & Narendran

Mesopolobus keralensis Sureshan & Narendran, 2002b: 81. Holotype F: India, Kerala.

Diagnosis: Antennae long, combined length of pedicel plus flagellum as long as head width; Funicular segments 1-3 longer than wide; propodeum long; plicae sharp and complete; gaster

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little shorter than head plus mesosoma combined; all legs except coxae yellow.

Material studied: 1 female, 1 male, 14.ix.2006, Sweep net collection on *Crotolaria juncea* L., Malpe beach, Udipi, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/125- PDBC) & (Reg. No. 2009/Ptr/126- PDBC) respectively.

Distribution: India: Karnataka (new record) and Kerala.

6. *Panstenon collaris* Boucek

Panstenon collaris Boucek, 1976: 39(1):17-18. Holotype F: Zimbabwe.

Panstenon collare Boucek, 2000: 34: 301-303.

Diagnosis: Pronotal collar not margined; antennal scape exceeding vertex by almost half its length; base of forewing densely hairy; gaster about 2x as long as broad.

Material studied: 1 female, 15.x.06, Sweeping in grasses on bunds of Paddy, Mastikatte, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/127- PDBC).

Distribution: India: Karnataka (new record) and Sri Lanka.

7. *Pachyneuron leucopiscida* Mani

Pachyneuron leucopiscida Mani, 1939a: 86, M, F = M. India, Coimbatore.

Pachyneuron cremifaniae Delucchi, 1953: 8-12.

Diagnosis: Body dark metallic blue; forewing with marginal vein shorter than stigmal vein; gaster brownish black; scape pale brown, remainder of antenna dark brown; head finely reticulate, anterior margin of clypeus weakly emarginated. Mesoscutum with notauli deep and incomplete. Gaster fusiform; first gastral tergite occupying nearly half length of gaster; petiole longer than hind coxa.

Material studied: 1 female, 21.ix.2006, ? ex: Pupa of *Acletoxenus indicus* Malloch (Diptera: Drosophilidae), Hebbal, Karnataka, coll. Ankita. (Reg.No. 2009/Ptr/128- PDBC).

Distribution: India: Karnataka (new record), Kerala, Bihar: Pusa, Tamil Nadu: Coimbatore, Delhi. Europe.

8. *Systasis dasyneurae* Mani

Systasis dasyneurae Mani, 1939b: 535. Holotype ? F: India.

Semiotellus dasyneurae (Mani, 1989): 541-543.

Diagnosis: Pedicel slightly longer than first funicular segment; funicular segments subequal; left mandible tridentate, right with an additional tooth between second and third.

Material studied: 4 females; 5 males, 20.vi.06, Resting on flower of *Jasminum* sp., Malur, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/129, 130, 131, 132- PDBC) & (Reg.No. 2009/Ptr/133, 134, 135, 136, 137- PDBC) respectively.

Distribution: India: Karnataka (new record), Bihar, Haryana, Madhya Pradesh, Maharashtra and Uttar Pradesh.

9. *Trichomalopsis neelagastra* Sureshan & Narendran

Trichomalopsis neelagastra Sureshan & Narendran, 2001: 404. Holotype F: India, Kerala.

Diagnosis: First gastral tergite occupying little beyond middle with bright metallic blue reflection dorsally; nucha more convex in profile, scape as long as eye.

Material studied: 2 females, 15.ix.06, Sweeping in paddy field, Kamalashile, Karnataka, coll. Ankita (Reg.No. 2009/Ptr/138, 139- PDBC).

Distribution: India: Karnataka (new record) and Kerala.

II. Family Encyrtidae

1. *Encyrtus infelix* (Embleton)

Comys infelix Embleton, 1902: 223. Lectotype F (designated by Graham, 1969:308) Cambridge.-Embleton, 1904: 231-254. *Encyrtus infelix*: Peck, 1963: 356-357.

Diagnosis: Funicular segments robust, somewhat flattened distally, funicular segment 1 subequal in length to pedicel; hind basitarsus basally dark brown, distal two-thirds and segments 2-5 whitish.

Material studied: 2 females, 26.i.07, ex: *Saissetia* sp. on palm leaf, Hebbal, Karnataka, coll. Ankita, (Both deposited at AMU, Aligarh).

Distribution: India: Karnataka (new record), Assam and West Bengal.

2. *Ooencyrtus corbetti* Ferriere

Ooencyrtus corbetti Ferriere, 1931: 284. Lectotype F (designated by Huang and Noyes, 1994: 29) Malaysia-peninsular.

Diagnosis: Funicular segments increasing in length distad towards club, segments 1-2 shorter than 3-6; mandible with two teeth and a broad truncation; frontovertex about 0.25x of head width.

Material studied: 4 females, 9.iv.07, ex: ?Syrphid puparia, Malur, Karnataka, coll. Ankita (Reg.No. 2009/Enc/142, 143, 144 & 145- PDBC).

Distribution: India: Karnataka (new record), Assam and Malaysia.

III. Family Eulophidae

1. *Aprostocetus versicolor* (Ranaweera)

Tetrastichus versicolor Ranaweera, (1947); 9(1): 7 F: Indian Agricultural Research Institute, Pusa, New Delhi.

Aprostocetus versicolor (Ranaweera), Narendran (in Hayat *et al.*, 2003) 323.

Aprostocetus versicolor (Ranaweera), Narendran, 2007: 104. This species, originally described from Sri Lanka, is recorded for the first time from India. The detailed description is provided by Ranaweera (1947).

Diagnosis: Malar sulcus distinct; antennae dark brown, scape testaceous, pedicel short, distinctly longer than wide, 2 anelli present, funicular segments 1-3 subequal in size, club almost as long as preceding two segments combined.

Material studied: 1 female, 6.vii.06, Sweeping in *Cyperus rotundus* L., Shivagange, Karnataka, coll. Ankita (Reg.No. 2009/Eul/146- PDBC).

Distribution: India (new record) and Sri Lanka.

2. *Closterocerus indica* (Khan et al.)

Neochrysocharis indica Khan et al., 2005: 109-110. Holotype F: India, Uttaranchal.

Closterocerus indica: Gumovsky, 2001: 132 (synonymy).

Diagnosis: Forewings with infumation at stigmal vein, antennae with one anellus, malar sulcus distinct.

Material studied: 1 female, 7.iv.06, ex: *Liriomyza trifolii* (Burgess) on *Lycopersicon esculentum* Mill., Bangalore, Karnataka, coll. Ankita (Reg.No. 2009/Eul/147- PDBC).

Distribution: India: Karnataka (new record) and Uttaranchal.

Notes: This species is listed as *C. indica* in the Universal Chalcidoidea database, but Fisher & La Salle (2005) state that



Images 1-9. *Leptocybe invasa*

1-5. Life stages: 1 – Larva inside gall; 2 – Pupa inside gall; 3 – Adult female; 4 – Adult male; 5 – Male, lateral view; 6-9. Symptoms of damage: 6 – Gall on petiole; 7-8 – Galls on leaf midrib; 9 – Adult emergence holes

the synonymy of *Neochrysocharis* with *Closterocerus* requires further investigation and disregard the synonymy of *Neochrysocharis* with *Closterocerus* without any supporting evidence.

3. *Euplectrus coimbatorensis* Ferrière

Euplectrus coimbatorensis Ferrière, 1941: 33. India.

Diagnosis: Gaster yellow above, slightly more orange yellow at tip, only two lines on the sides at base and the petiole black; antennae orange yellow, brown towards tip, scape light yellow; pronotum very short, mesoscutum with irregular transverse striae; scutellum finely reticulate.

Material studied: 4 females, 2.iii.2007, ex: Larvae of *Chilo*

partellus (Swinhoe), Srinagar, Jammu & Kashmir, coll. Ahmad (Reg.No. 2009/Eup/148, 149, 150 & 151- PDBC).

Distribution: India: Jammu & Kashmir (new record) and Tamil Nadu.

4. *Leptocybe invasa* Fisher & La Salle

Leptocybe invasa Fisher & La Salle, in Mendel *et al.*, 2004:103. Holotype F: Israel, Bet Shean .

This is the eucalyptus gall wasp (Images 1-9), a pest recently introduced in India. It has been spreading rapidly and has assumed serious proportions on *Eucalyptus* spp. in parts of Karnataka, Kerala, Andhra Pradesh, and Tamil Nadu in southern India. Specimens were also collected from New Delhi

and Aligarh (Uttar Pradesh).

Diagnosis: Mendel *et al.* (2004) provided a detailed description of the genus and species. The genus is presently monotypic and females (Image 3) can be identified by the following combination of characters: Antenna with four anelli, 3 funicular segments, 3 club segments. Scape expanded ventrally. Funicular segments all roughly quadrate. Mid lobe of mesoscutum without median line. Scutellum with submedian and sublateral line. Propodeum with a raised lobe of callus that partly overhangs the outer rim of spiracle; spiracular depression open to anterior margin of propodeum. Males (Images 4,5) similar to females in general appearance and coloration; antennal formula 11343 with scape having a narrow and elongate sensory organ on lateral margin, anelli three-segmented, funicle four-segmented with long latero-terminal bristles and less stout than in female, club three-segmented; abdomen somewhat tubular.

Material studied: Several specimens from Karnataka, Tamil Nadu, Andhra Pradesh, New Delhi, Uttar Pradesh and Kerala. All the specimens are deposited in PDBC.

Distribution: India: Andhra Pradesh, New Delhi, Karnataka, Kerala, Tamil Nadu and Uttar Pradesh.

5. *Tetrastichus niger* Ranaweera

Tetrastichus niger Ranaweera, (1947): 9:12-14. Holotype F: Indian Agricultural Research Institute, Pusa, New Delhi.

Tetrastichus niger Ranaweera, Narendran, 2007: 278.

This species is originally described from Sri Lanka. The detailed description is provided by Ranaweera, 1947.

Diagnosis: Antennae dark brown with yellowish brown scape and pedicel, 3 anelli present; legs testaceous except coxae and femora dark brown.

Material studied: 1 female, 10.vii.06, General vegetation, Hebbal, Karnataka, coll. Ankita (Reg.No. 2009/Eul/152-PDBC).

Distribution: India, Sri Lanka and Russia.

6. *Aprostocetus fasciatus* Ashmead

Tetrastichus fasciatus Ashmead, 1894: 25: 187, M, F West Indies: St.Vincent. Lectotype F (La Salle & Schauff, 1992).

Tetrastichus shencottensis Saraswat, 1975: 4: 24. F, M. syn. Narendran 2007:57.

Aprostocetus fasciatus (Ashmead), Noyes, 2003. Universal Chalcidoidea Database. www.nhm.uk/entomology/Chalcidoids.

Aprostocetus fasciatus Ashmead, Narendran, 2007: 57.

Diagnosis: Body non-metallic brown; head with shallow scattered punctuations on vertex and face; antennae dark brown except scape yellowish brown; legs pale brown.

Material studied: 5 females, 6.x.06, Sweeping on unidentified weed, Mandya, Karnataka, coll. Ankita (Reg.No. 2009/Eul/153, 154, 155, 156 & 157- PDBC).

Distribution: India: Karnataka (new record) and Tamil Nadu.

IV. Family Trichogrammatidae

1. *Aphelinoidea longiclavata* Yousuf & Shafee

Aphelinoidea longiclavata Yousuf & Shafee, 1988a: 105-106. Holotype F: India, Uttar Pradesh.

Diagnosis: Forewing slightly more than two times as long as wide, infuscated beneath marginal vein, stigmal vein developed; antennae with pedicel two and a half times as long

as wide, club four times as long as wide.

Material studied: 1 female, 6.vii.06, Sweeping on *Parthenium* sp., Bangalore, Karnataka, coll. Ankita (Reg.No. 2009/Tri/158- PDBC).

Distribution: India: Karnataka (new record) and Uttar Pradesh.

2. *Ufens magniclavata* (Khan & Shafee)

Mirufens magniclavata Khan & Shafee, 1977: 32-34. Holotype F: India, Uttar Pradesh.

Mirufens magniclavata: Neto and Pintureau, (1997): 41-148.

Ufens magniclavata: Yousuf and Shafee, 1988b: 55-200.

Diagnosis: Antennae with first funicular segment more than one-half the length of second, club less than three times as long as wide; forewing with basal vein track with 1 seta.

Material studied: 5 females, 5 males, 6.vii.06, ex: Pods of *Crotalaria mucronata* Desv., Shivagange, Karnataka, coll. Ankita. (Reg.No. 2009/Tri/159, 160, 161, 162, 163- PDBC & Reg.No. 2009/Tri/164, 165, 166, 167, 168- PDBC).

Distribution: India: Karnataka (new record) and Uttar Pradesh.

V. Family Chalcididae

1. *Tropimeris monodon* Boucek

Tropimeris monodon Boucek, 1958: 481. Holotype F: India, Mumbai.

Diagnosis: Each hind femur has one sharp dent and funicle segments two to seven distinctly transverse.

Material studied: 2 females, ex: Pupae of *Exelastis atomosa* Boucek, Tirupathi, Andhra Pradesh, coll. Ramani (Reg.No. 2009/Cha/169, 170- PDBC).

Distribution: India: Andhra Pradesh (new record), Maharashtra, Indonesia and Sri Lanka.

VI. Family Torymidae

1. *Podagrion opisthacanthum* Masi

Podagrion opisthacanthum, Masi, 1926:14. Syntypes, Taiwan.

Podagrion opisthacanthum: Mani & Kaul, 1972: 317.

Diagnosis: Body metallic green with golden reflection; funicle yellowish brown; hind coxa and tip of tibia yellow; femora metallic green; gastral tergites 2-4 brown; antennal club length equal to preceding 4-5 segments combined; hind femur with six teeth.

Material studied: 1 female, 2 males, 25.iv.07, ex: Ootheca of indet. praying mantid, Mandya, Karnataka, coll. Ankita (Reg.No. 2009/Tor/171, 172, 173- PDBC).

Distribution: India: Karnataka (new record), Kerala, Tamil Nadu and Taiwan.

Discussion

In total, 21 species, including nine species of Pteromalidae, two species of Encyrtidae, six species of Eulophidae, two species of Trichogrammatidae, one species of Chalcididae and one species of Torymidae are recorded from different parts of India. *Leptocybe invasa* has been spreading rapidly and has assumed serious proportions on *Eucalyptus* spp. in parts of Karnataka, Kerala, Andhra Pradesh, and Tamil Nadu in southern India. *Aprostocetus versicolor* is reported for the first time from India.

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