

A NEW SPECIES OF *PODAGRION* SPINOLA (HYMENOPTERA: TORYMIDAE) FROM INDIA WITH A CHECKLIST OF SPECIES OF INDIA AND ADJACENT COUNTRIES

T. C. NARENDRAN * AND S. SHEELA**

*All India Coordinated Project on Taxonomy and Capacity Building
C/o Western Ghat Regional Centre, Zoological Survey of India, Jaferkhan Colony
Eranjipalam P.O., Kozhikode, 673 006, Kerala, India

** Zoological Survey of India, 535, M. Block, New Alipore, Kolkata, 700 053, India
E-mail: sheelazsi@gmail.com

INTRODUCTION

The genus *Podagrion* was erected by Spinola (1811) from Caucasia based on the type species *Podagrion splendens* Spinola. Later several authors like Walker (1833), Westwood (1847), Costa (1856), Holmgren (1869), Saussure (1890), Schulz (1906), Girault (1913) and Gahan and Fagan (1923) redescribed or treated it under various junior synonyms. In the recent past Narendran (1994) revised the Indian species of *Podagrion* and gave a key to species in his revision of Torymidae and Eurytomidae of Indian subcontinent. Grissell (1995) treated *Podagrion* in his world revision of Toryminae. The genus *Podagrionis* distributed all over the world, comprising 101 species; of which 37 species present in Oriental region and 25 species (including the new species described hereunder) in the Indian subcontinent. The genus is reported so far only from oothecae of praying mantids (Mantodea).

Abbreviations used: AOL = Distance between front ocellus and hind ocellus; CC = Costal cell; EH = Eye height; EL = Eye Length; F1 to F7 = Funicular segments 1 to 7; L = Length; MV = Marginal vein; MS = Malar space; OOL = Ocellular distance; OPS = Ovipositor sheath; PMV = Postmarginal vein; POL = Post ocellar length; PSGA = Parastigma; SLG = Sublateral groove(s) of scutellum; SMV = Submarginal vein; STV = Stigmal vein.

The Holotype of the new species described here is deposited in the National collection of Zoological Survey of India, Kolkata (NZC, ZSI).

Keywords: Hymenoptera, Torymidae, *Podagrion*, New species, Checklist, India & adjacent countries.

Podagrion moradabadense sp. nov.
(Figs. 1-5)

Female (Holotype): Length: 2.6 mm (excluding ovipositor sheath). Body metallic green except the following: eyes dark gray; ocelli pale reflecting yellow; scape pale brownish yellow; pedicel and funicle pale yellowish brown; clava black, refringence brighter on frons; apices of coxae, bases and apices of femora yellow; fore and mid tibiae and fore and mid tarsi yellow; fore and mid femora infuscated at middle; hind femora dark metallic green medially; hind tibia pale yellowish brown with middle part darker; fourth hind tarsal segment and all pretarsi brown; tegulae pale brown; gaster metallic green with basoventral part brownish yellow; ventral side of last tergite and hypopygium pale brown; ovipositor sheath black.

Head: Width in anterior view 1.17x its height (27:23); width in dorsal view 1.6x its length (27:17); POL 3x OOL (6:2); AOL equal to OOL; minimum width between eyes on vertex 2.5x POL (15:6); vertex and frons with distinct raised reticulation. EH 1.7x EL (10:6); MS 0.4x EH (4:10);

occipital carina reaching down temple margin. Antenna inserted a little above lower ocular line (distance between toruli and lower ocular line $0.33 \times EH$); antennal formula 11173; scape almost reaching anterior ocellus, not reaching level of vertex; relative L:W of antennal segments: scape = 9:2; pedicel = 4:2; F1 = 3:2; F2 = 4:3; F3 = 3:3; F4 = 3:3; F5 = 2.75:3; F6 = 2:4; F7 = 2:4; clava = 13:5.

Mesosoma: Pronotum 2.8x as broad as long (14:5); mesoscutum longer than pronotum (8:5), 1.88x as wide as its length (15:8); scutellum as long as mesoscutum, a little wider than long (9:8); pronotum, mesoscutum and scutellum with raised reticulations; propodeum shorter than scutellum (6:8) with an inverted "V" shaped carina (with no basal median carina or stalk); area inside arms of carina irregularly carinate and reticulate, outside carina with distinct raised reticulations; spiracle oval, separated from posterior margin of metanotum by a distance equal to its length; prepectus slightly bulged upwards.

Forewing 2.7x as long as broad; CC with several minute setae on ventral side; relative length of SMV = 28; PSGA = 6; MV = 22; PMV = 4; STV = 2.

Hind coxa shorter than hind femur (10:14); hind femur 2x as long as wide; ventral margin with 7 teeth, second, fourth and fifth smaller than remaining teeth, seventh largest.

Metasoma: Excluding ovipositor sheath, a little longer than mesosoma (13:12); ovipositor sheath longer than head, mesosoma and metasoma combined (38:29), 2.92x as long as metasoma; hypopygium almost reaching near apex of gaster; tergites smooth and shiny.

Male: Unknown.

Host: Unknown.

Etymology: Named after collection locality Moradabad.

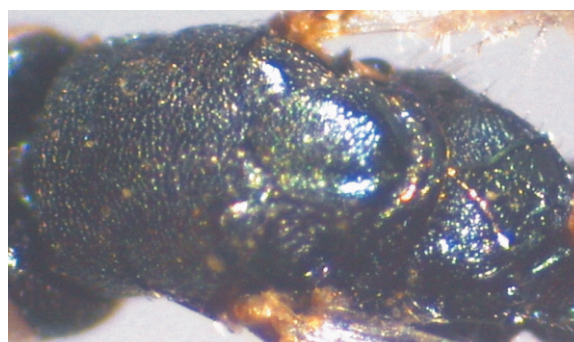
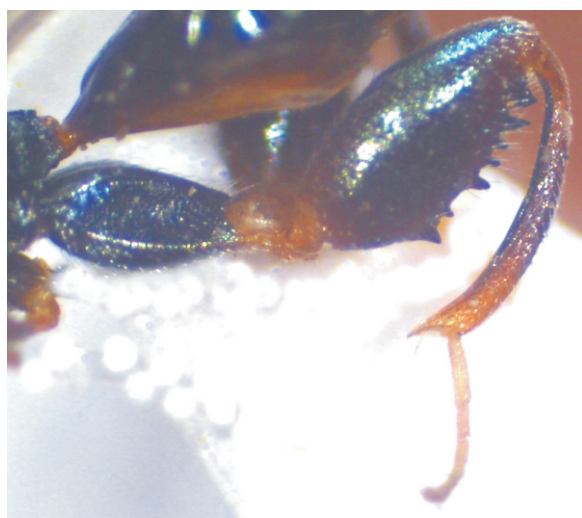
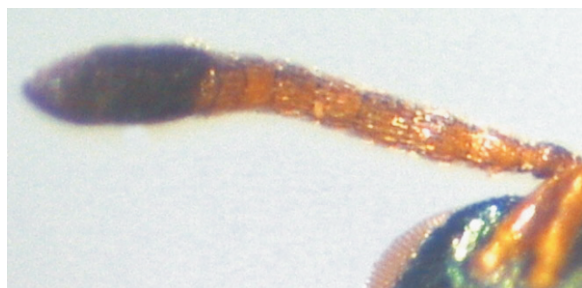
Material examined: Holotype Female, INDIA, Uttar Pradesh, Moradabad, 26.iii.2007. S. Sheela (NZC, ZSI).

Remarks: This new species comes near *Podagrion mantisiphagum* (Mani, 1936) in the key to species by Narendran (1994).

However it differs from *P. mantisiphagum* in having: 1) Clava longer (13:10) than combined length of 4 preceding segments (in *P. mantisiphagum* clava as long as combined length of four preceding segments); 2) propodeum with an inverted "V" shaped carina (in *P. mantisiphagum* propodeum with an inverted "Y" shaped carina); 3) MV 5.5x as long as PMV (in *P. mantisiphagum* MV 3.7x as long as PMV); 4) ventral teeth of hind femur with first, third, sixth and seventh larger than others (in *P. mantisiphagum* ventral teeth of hind femur with first, third, fourth, and seventh larger than others); 5) ovipositor sheath 1.3x as long as length of body (in *P. mantisiphagum* ovipositor sheath 2.7x length of body); 6) hind femur dark metallic green with extreme base and extreme apex pale (in *P. mantisiphagum* hind femur pale yellowish brown with slight metallic green refringence); and 7) funicular segments 3 to 7 quadrate (in *P. mantisiphagum* funicular segments longer than wide).

CHARACTER STATES

- A. Colour of Head & Mesosoma: 1) Dark metallic 2) Bright metallic 3) Without metallic refringence.
- B. Colour of Gaster: 1) With strong metallic refringence 2) weak metallic refringence ; 3) No metallic refringence
- C. Colour of Hind Coxa: 1) Concolorous with mesosoma; 2) Dark or black but not concolorous with mesosoma; 3) Brown or yellow or red or yellowish brown or brownish yellow.
- D. Colour of Hind Femur: 1) Black or dark brown with metallic refringence; 2) Dark without metallic refringence; 3) yellow or brown or yellowish brown.
- E. Length of Clava: 1) As long as or subequal to or shorter than 3 preceding segments combined; 2) Longer than 3 preceding segments combined but not longer than 4 preceding segments combined; 3) Longer than 4-7 funicle segments combined.
- F. Length of MV: 1) 3x or shorter than 3x length of PMV; 2) Longer than 3x but not reaching 4x



Figs. : 1-4. *Podagrion moradabadense* Narendran & Sheela sp. nov.

Female: 1. Body profile, 2. Head anterior view; 3. Antenna; 4. Scutellum and propodeum; 5. Hind leg.

- as long as PMV; 3) As long as 4x or longer than 4x PMV.
- G. Number of teeth on ventral margin of hind femur: 1) 10; 2) 9; 3) 8; 4) 7; 5) 6. 6) 5.
- H. Length of Ovipositor sheath: 1) Shorter than body; 2) Longer than body; 3) As long as body.
- I. Median carina of Propodeum: 1) Inverted "Y" shaped; 2) Inverted "V" shaped.
- J. Length of Pedicel: 1) Shorter than F1; 2) Equal to F1; 3) Longer than F1
- Note: [0 = unknown]
- Character state matrix
- CHECKLIST OF *PODAGRION* SPECIES OF INDIA AND ADJACENT COUNTRIES**
(Valid names are in roman letters.
Invalid names are in italics)
- ahlongi Mani and Kaul, 1972.....Myanmar (Burma)

Character state matrix

Species	A	B	C	D	E	F	G	H	I	J
<i>P. ahlonei</i>	3	3	2	2	4	3	1	3	1	2
<i>P. aligharhensis</i>	1	1	1	1	4	3	3	1	1	1
<i>P. calopeplum</i>	2	1	1	2	1	1	3	3	1	1
<i>P. charybdis</i>	2	0	2	3	3	0	0	2	2	2
<i>P. chatterjeei</i>	2	2	2	3	2	1	4	2	2	1
<i>P. chichawatnensis</i>	1	3	1	3	2	2	6	0	1	1
<i>P. dalbergium</i>	1	2	1	1	2	1	4	2	2	3
<i>P. dineni</i>	2	1	1	1	3	3	5	2	1	2
<i>P. epibulum</i>	2	3	1	3	2	1	4	2	1	3
<i>P. fulvipes</i>	1	3	1	3	2	2	2	2	1	2
<i>P. hayati</i>	2	1	3	3	1	1	2	3	1	3
<i>P. indiensis</i>	1	3	3	3	1	1	3	1	1	2
<i>P. judas</i>	2	1	2	2	3	0	5	2	2	2
<i>P. keralensis</i>	1	2	1	1	3	3	3	2	1	1
<i>P. malabarensis</i>	1	1	1	3	2	3	5	1	1	1
<i>P. manii</i>	2	1	1	1	3	2	5	1	1	1
<i>P. mantisiphagum</i>	1	0	1	1	2	2	4	2	1	1
<i>P. micans</i>	1	2	3	3	0	0	0	2	0	0
<i>P. moradabadense</i>	2	1	1	1	3	3	4	2	2	2
<i>P. noyesi</i>	1	1	1	1	3	1	5	2	2	2
<i>P. opisthacanthum</i>	1	1	1	1	3	3	5	2	1	3
<i>P. pachymerum</i>	1	1	1	2	0	0	4-5	1	0	0
<i>P. prionomerum</i>	1	2	1	1	3	2	2	1	2	2
<i>P. repens</i>	1	1	1	1	3	3	3	3	1	3
<i>P. scylla</i>	1	3	2	2	2	0	5	2	2	3

Note: This character matrix is indented only to compare the different features of Podagrion species existing in the region at a glance. It is not indented for cladistics analysis in this paper

- aligharhensis Narendran, 1994.....India (Uttar Pradesh)
calopeplum Mani and Kaul, 1972..India (Uttar Pradesh)
charybdis Fernando, 1957.....Sri Lanka (Gammaduwa)
chatterjeei Mani and Kaul, 1972..India (Uttar Pradesh)
chichawatnensis Mani and Kaul, 1972....India (Punjab)
dalbergium Mani and Kaul, 1972.....India (Punjab)
dineni Narendran, 1994.....India (Kerala)
epibulum Masi, 1926.....Taiwan (Masi,1926),
Sri Lanka (Narendran,1994)
fulvipes (Holmgren) 1869.....People's Republic of
China (Holmgren, 1869)
India (Kerala,Tamil Nadu & Assam.. (Narendran, 1994)
hayati Narendran, 1994.....India (Uttar Pradesh)
indicum Girault.....in Ramakrishna Ayyar, 1919
Nomennudum (Grissell. 1994)
indiensis Narendran, 1994.....India (Kerala)
judas Fernando, 1957.....Sri Lanka
keralensis Narendran, 1994.....India (Kerala)
malabarensis Narendran, 1994.....India (Kerala)
manii Narendran, 1994.....India (Kerala)
mantisiphagum (Mani)1936.....India (Kolkatta
Mani, 1936; Orissa, Delhi, Narendran : 1994)
micans Strand, 1911.....Sri Lanka
moradabadensis Narendran & Sheelasp. nov.....India
(Uttar Pradesh)
noyesi Narendran, 1994India (Kerala)
opisthacanthum Masi,1926.....Taiwan (Masi, 1926),
India (Tamil Nadu, Mani
& Kaul, 1972; Kerala,
Narendran: 1994).
pachymerumpachymerum (Walker), 1833..... France
(Walker:1833;
Caucasus and Western
Europe: Nikolskaya and Zerova, 1978;
Tamil Nadu: Mani, 1938)
prionomerum Masi, 1926.....Taiwan (Masi, 1926)
India (Kerala, Karnataka: Narendran, 1994)
repens (Motschulsky) 1859Sri Lanka
ylla Fernando, 1957.....Sri Lanka (Ratnapura)

SUMMARY

A new species of *Podagrion* is described with an up to date checklist of species of India and adjacent countries.

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