

New Species, New Combination and New Records of the Genus *Mallada* Navas (Neuroptera: Chrysopidae) from Western Himalaya, India

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***Mallada ectoflagellata*, a new species is described from Western Himalaya, India. New combination is established in the case of *Chrysopidia garhwalensis* Ghosh transferred to Genus *Mallada*. Three species viz. *Mallada obvia* Hölzel, *Mallada astur* (Banks) and *Mallada alcestes* (Banks) are new records from Western Himalaya, India.**

Mallada Navás is primarily an Old World genus and largest among the Chrysopidae in having 122 described species. The Indian subcontinent comprises 19 species of which 10 are from Western Himalaya.

In this paper a new species, *Mallada ectoflagellata* is described from Western Himalaya, which brings the total of 11 species now known and altogether 20 species from the Indian subcontinent. The species *Chrysopidia garhwalensis* Ghosh is transferred to genus *Mallada* Navas. *Mallada obvia* Hölzel is recorded for the first time from India, while *Mallada astur* (Banks) and *Mallada alcestes* (Banks) are recorded for the first time from Western Himalaya based on specimens studied.

1. *Mallada ectoflagellata* sp.nov. (Figs. 1-7)

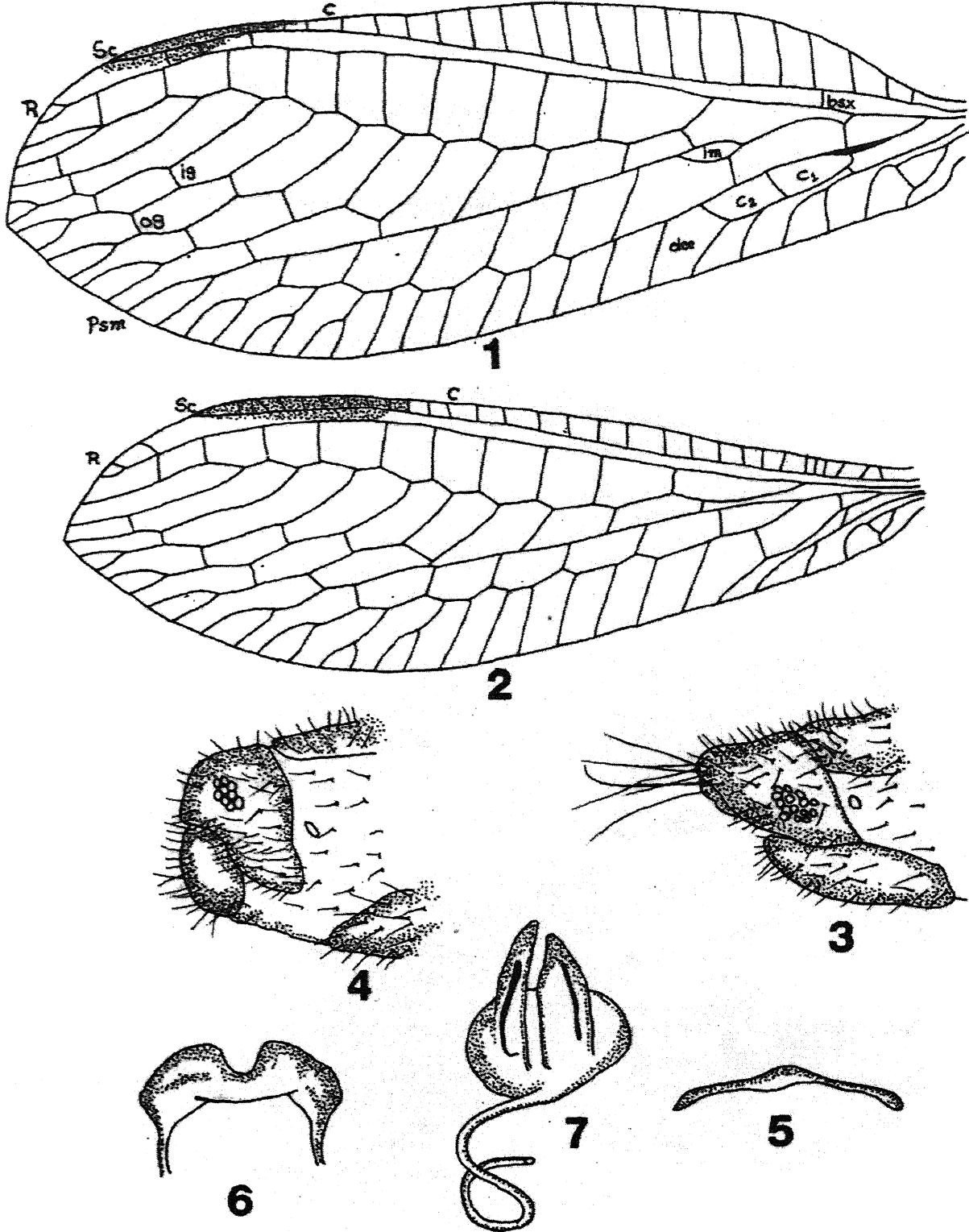
Description of Holotype ♂: Medium sized lacewing, about 8.91 mm long, forewing 10.92 mm long, hindwing 9.1 mm long, antenna 13.36 mm long, leg 2.94 mm long; ground colour pale green. Head greenish; eyes black, eye margin yellow; vertex yellow; clypeus light green; mandibles and maxillae dark brown; maxillary palp brownish black; labial palp dark brown; labrum

light brown; maxillary palp 4- segmented; labial palp three segmented. Antenna slightly longer than fore wing; 97- segmented; scape light green; pedicel light green; each general segment with four rows of setae. Prothorax light green with a black spot at the middle with whitish hairs. Legs straw coloured with basally dilated claws. Forewing elongated; membrane transparent; pterostigma distinct, pale brown; venation pale yellow; cross veins faintly dark; (Sc) and (R) close at base but wide at apex; 1st and 2nd inner gradate incomplete, inner gradate not meeting psm; (im) oval. Hindwing smaller than forewing; pterostigma distinct. Abdomen pale green, ectoproct with one or two long flagella like hairs.

Gonarcus arched; entoprocessus absent; arcessus long; paramere short with an arrow like head; tignum more or less straight at middle, with a median protuberance and very little curvature at both ends; gonosaccus protruding outside the genitalia; 7th sternite straight.

Description of female: Ground colour pale green, body covered with minute white hairs. Head light green; eye black, eye margin light brown; gena black; mandibles and maxillae dark brown; maxillary palp light brown. Antenna brown; scape light green; light brown shade dorsally; pedicel light brown. Thorax pale green; 2nd thoracic segment with a median triangular light

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Figures 1 to 7. *Mallada ectoflagellata* sp. nov. 1. Fore wing, 2. Hind wing, 3. Apex of male abdomen (lateral view), 4. Apex of female abdomen (lateral view), 5. Tignum, 6. Subgenitale, 7. Spermatheca.

brown spot. Legs pale green; tarsal segment pale brown; claws dark brown. Forewing membrane transparent; veins light brown, hairs dark brown; stigma not prominent; venation similar to male. Hindwing smaller than forewing but pterostigma indistinct; venation similar to male. Abdomen pale green, ectoproct small.

Subgenitale bilobed apically with two basal projections; praegenitale absent; spermatheca broad, ovoid, ventral impression deep with long duct.

Measurements of the Holotype: ♂ : Forewing 10.92 mm, hindwing 9.11 mm, antenna 13.36 mm, foreleg 2.94 mm.

Material examined: Holotype: 1♂: Paratypes: 1♂, 2♀: India, Western Himalaya, Uttaranchal, Dodital, 3307msl, 27. III. 1996. 1♂, 2♀: India, Western Himalaya, Uttaranchal, Ranikhet, 1830 msl, 03. VIII. 1996. (Coll. S. R. Dey). Types are deposited in the Department of Zoology, University of Kalyani, West Bengal, India.

Remarks: This species resembles *Mallada boninensis* (Okamoto) in wing venation and genitalic characters but in having gena and clypeus with different colouration (in *boninensis* black spot on gena and clypeus), flagella like hairs on ectoproct (in *boninensis* without flagella like hairs) and externally protruded gonosaccus (in *boninensis* not protruded) it differs from *M. boninensis* (Okamoto). The shape of tignum in the male and the shape of subgenitale in the female are also different in comparison to *M. boninensis* (Okamoto). The author considered it as a new species for the above reason.

Distribution: India: Western Himalaya: Uttaranchal.

2. *Mallada alcestes* (Banks)

Chrysopa alcestes Banks, 1911. Proc. Ent. Soc. Wash. 13: 102. Type: male, Bonin Island.

Chrysopa alcestes Adams, 1959, Insects of Micronesia 8(2): 32.

Anisochrysa alcestes Ghosh, 1990. Rec. Zool. Surv. India 86(2): 336.

Mallada alcestes : Brooks and Barnard, 1990. Bull. Br. Mus. Nat. Hist (Ent.) 59: 280.

Material examined: 1♂: India, Western Himalaya, Uttaranchal, Jangalchatti, 3300 msl, 20. VIII. 1996 (Coll. S. R. Dey).

Remarks: This species here is recorded for the first time from Western Himalaya, India. Ghosh (1990) provided a redescription of the species from India. However the present authors found that the specimen collected from Western Himalaya with red suffusion on the frontal suture uniquely marks it different from the description provided by Ghosh (*op. cit.*)

Biological note: Aphid body remnants were found

when gut content analysis was made.

Distribution: Bonin Island, India (West Bengal, Western Himalaya: Uttaranchal).

3. *Mallada astur* (Banks)

Chrysopa astur Banks, 1937. Philipp. J. Sci. 62: 283. Type: male, Ryukyu Island.

Chrysopa astur Adams, 1959. Insects of Micronesia 8(2): 31.

Mallada astur : Brooks and Barnard, 1990. Bull. Br. Mus. Nat. Hist. (Ent.) 59: 280.

Material examined: 1♀: India, Western Himalaya, Uttaranchal, Hardwar, 365 msl, 10. XI. 1997 (Coll. S. R. Dey).

Remarks: The species is reported for the first time from Western Himalaya, India.

Distribution: Philippines, India (Western Himalaya : Uttaranchal).

4. *Mallada obvia* (Hölzel)

Anisochrysa obvia Hölzel, 1973. Khumbu Himal 4(3): 339. Type: male, Nepal.

Mallada obvia: Brooks and Barnard, 1990. Bull. Br. Mus. Nat. Hist.(Ent.) 59: 280.

Material examined: 1♂: India, Western Himalaya, Uttaranchal, Joshimath, 1975 msl, 16. IV. 1994 (Coll. S. R. Dey).

Remarks: This species is recorded for the first time from Western Himalaya, India.

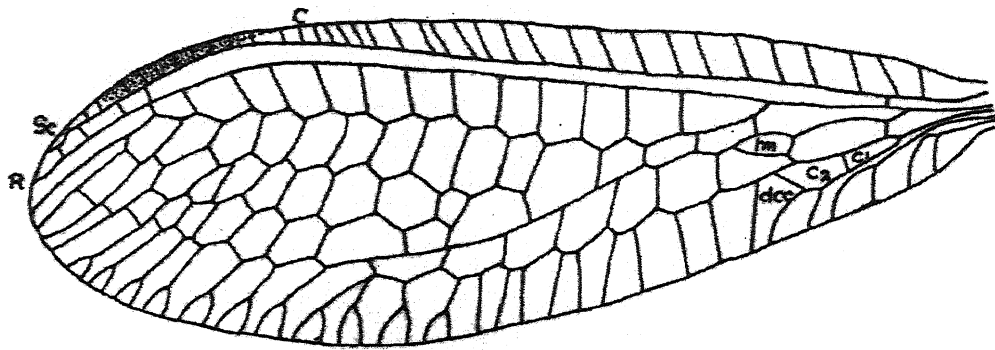
Distribution: India (Western Himalaya: Uttaranchal), Nepal.

5. *Mallada garhwalensis* (Ghosh) comb. nov. (Figs.8-12)

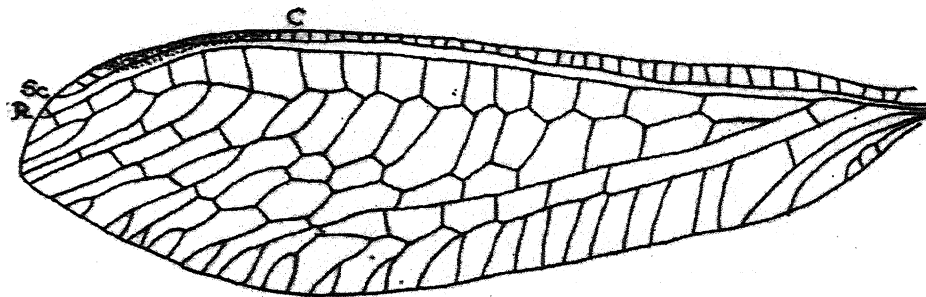
Chrysopidia garhwalensis Ghosh, 1985. Bull. Zool. Surv. India (2-30): 217.

Type: male, Gongotri.

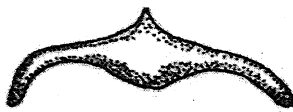
Redescription: Medium sized lacewing, about 11.39 mm long; forewing 18 mm long, hindwing 16 mm long; vertex yellow; labial palp brown with apex darker; maxillary palp brown with black apical segment; labrum, clypeus and frons yellow; gena with a black stripe. Pedicel and scape yellow; flagellum brownish. Thorax yellowish; pronotum with reddish shade laterally. Legs yellowish with whitish hairs; tarsal segment brown; claws dark brown. Forewing membrane hyaline and unmarked; longitudinal veins pale, greenish yellow; (bsx), costals before pterostigma, 1st radio-medial cross vein, 1st and 2nd series of gradate cross veins and the cross vein between 1st and 2nd cubital cells black; pterostigma



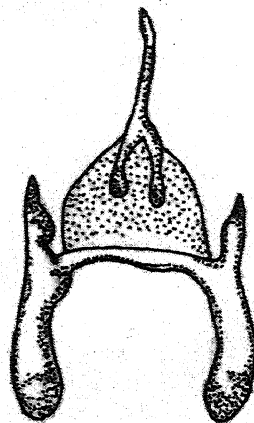
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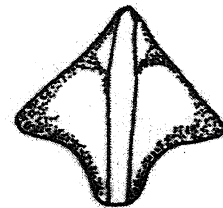
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Figures 8 to 12. *Mallada garhwalensis* (Ghosh) 8. Fore wing, 9. Hind wing, 10. Gonarcus with arcessus (dorsal view), 11. Gonapsis, 12. Tignum.

yellowish with a smoky patch at base; (im) cell elongate, large and its tip reaching beyond 1st radio-medial cross vein; inner gradates extended basally; number of gradates in 3 rows being 10:8:9; hairs on veins black and marginal fringes white. Hindwing costals black, all other cross veins mostly yellow; number of gradates 9:2:8; hairs mostly black. Abdomen brownish; 9th tergite and ectoproct rather short structure with rounded tip; 8th and 9th sternites elongate and its tip in lateral view rather narrow.

Genitalia ♂: Gonapsis large; tignum arcuate; arcessus narrow.

Material examined: 1♂: India, Western Himalaya, Uttaranchal, Gongotri, 3140 msl, 06. X. 1995 (Coll. S. R. Dey).

Remarks: Ghosh (1985) originally described the species under the genus *Chrysopidia* Navás from Western Himalaya. The present authors collected the specimen of the species also from Western Himalaya.

Though the forewing of the species has three gradate series like members of the genera *Chrysopidia* Navás and *Chrysoperla* Steinmann, the presence of gonapsis prevents the inclusion of the species in such genera where the gonapsis are absent (Brooks & Barnard 1990). In addition it also has arcuate tignum and arcessus. The present authors find it therefore more proper to include and transfer the species to the genus *Mallada* which is defined by these three characteristics.

Distribution: India (Western Himalaya: Uttaranchal).

Acknowledgement

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