

Description of a new species of *Lasiochalcidia* Masi (Chalcidoidea: Chalcididae) from India with a key to Oriental species

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Abstract

Lasiochalcidia Masi, 1929 (Hymenoptera: Chalcididae) is one of the rarest chalcid genera to have been recorded from the world. Association with antlions and the peculiar mode of oviposition makes the genus more interesting. Here we describe and illustrate a new species of *Lasiochalcidia* Masi with a key to Oriental species.

Keywords: Chalcididae; *Lasiochalcidia* Masi; New Species; India; Oriental Region.

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Introduction

Lasiochalcidia Masi, 1929 is one of the least common genera of hybothoracine (Haltichellinae: Hybothoracini) tribe to occur in any collection from the tropics. Presently constituting of 23 species worldwide, the species is mostly associated as parasitoids of antlion larvae (Neuroptera: Myrmeleontidae) (Nikol'skaya, 1978; Bouček 1988; Noyes, 2019). The genus is represented by seven species from the Oriental region of which only two species are recorded from the Indian subcontinent viz., *L. dargelasii* (Latreille, 1805) and *L. pilosella* (Cameron, 1904).

Host association and the mode of parasitisation of species in *Lasiochalcidia* have been of much interest. Bouček (1956) reported Lepidopteran pupae as hosts for *Lasiochalcidia* species, but this is very doubtful as *Lasiochalcidia* is commonly regarded as a potential parasitoid of much voracious predators, the ant-lion larvae (Lotfalizadeh *et al.*, 2012). The peculiarity in oviposition is described by many as a spectacle to watch.

Stefan (1958, 1959, 1961, 1966) studied the ovipositional behaviour of several species of *Lasiochalcidia* and found their

innate ability to discover hidden hosts by perceiving the movements on loose soil made by the antlion larva, using the specialised mechanoreceptors on the antennae. The female parasitoid provokes the antlion larva to attack its hindlegs with the powerful and deadly mandibles of antlion larva. When the antlion grabs on, the toothed mandibles get held on by the rugate basal teeth of the hindlegs of the parasitoid. Now, parasitoid stretches the antlion's jaws apart using its muscular legs making the predator helpless and expose its most vulnerable and least chitinous part of its body, the ventral side of its neck. The parasitoid takes its time and carefully oviposits an egg through the antlion's exposed throat not harming any of its vital organs. The task when completed, the parasitoid releases the helpless antlion larva from its hold and flies off. The antlion larva is thus left to rot while the parasitoid lives within its body and the adult wasp emerges off the pits build by antlion larva when they fully mature.

Materials and Methods

The specimens for the present study was retrieved employing both sweeping from

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an abandoned vegetable field in Edakkara and by passive yellow pan trap collections from Jafferkhan colony, Kozhikode district and near D. B. College, Shasthamkotta in Kollam district of Kerala, India. The specimens were preserved in 70% ethyl alcohol and later card mounted for microscopic observation. The parasitoids were examined under a stereoscopic binocular microscope of model LEICA M205 and the images were captured with the camera model LEICA DFC 500. Measurements were obtained using Leica LAS (Leica Application Suite V3.80) microsystems by Leica (Heerburg, Switzerland). Images at varying depth were stacked using Leica Auto montage Software V3.80 and the final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® CS5 (Version 12.0 x64) software. The type specimens are deposited in the National Zoological collections of Zoological Survey of India, Western Ghat Regional Centre, Kozhikode (ZSIK).

Terms and measurements: The terminology used is mainly that of Narendran (1989) and Narendran & van Achterberg (2016). The nomenclature for cuticular sculpturing follows Harris (1979). The general abbreviations of the terms are as follows:

F1–F7: First to seventh funicular segments

MV: Marginal vein

OD: Diameter of median ocellus

OOL: Minimum distance between posterior ocelli and compound eye

PMV: Postmarginal vein

POL: Distance between two posterior ocelli

STV: Stigmal vein

T1–T6: Abdominal tergites one to six

Results and Discussion

Genus *Lasiochalcidia* Masi, 1929

Anoplochalcidia Steffan, 1951: 2. Type species: *Anoplochalcidia guineensis* Steffan, original designation and monotypy

Dromochalcidia Masi, 1929: 185. Type species: *Dromochalcidia moluccensis* Masi, by monotypy

Lasiochalcidia Masi, 1929: 209-220. Type species: *Euchalcis rubripes* Kieffer, by subsequent designation of Nikol'skaya, M. (1952).

Lasiochalcidia (*Anoplochalcidia*) Steffan, 1953: 34. New status for *Anoplochalcidia* Steffan (page 34)

Oxycoryphus Cameron, 1904: 109. Type species: *Oxycoryphus pilosellus* Cameron, by monotypy

Oxycoryphiscus Ghesquiere, 1946: 368. Replacement name for *Oxycoryphus* Cameron, 1904 nec Fischer, 1853.

Diagnosis: Temples almost lacking in profile, vertex above in antero-posterior view very thin; frons and gena covered with thick silvery bristles; posterior margin of pronotum with a border of minute bristles; scutellum apically often bidentate, propodeum sloping steeply onto gaster; scape in males often with prominent horn like dent below.

Hosts: Most species of the genus are parasites on antlion larvae (Neuroptera: Myrmeleonidae) (Bouček, 1988; Noyes, 2019).

Distribution: This genus is distributed in Africa, Europe and Asia (Noyes, 2019).

Key to Oriental species of *Lasiochalcidia* Masi

(Modified from Narendran, 1989)

1. Females.....2
– Males.....6
2. Hind femora less than 2× as long as wide; distal half not narrower than proximal (equal to subequal) half; scrobal striations narrow, slightly convex.....3
– Hind femora distinctly more than 2× as long as wide; distal half a trifle narrower than proximal half; other characters partly or completely different.....4
3. Hind femora distinctly much less than 2× as long as wide; scrobal striae strong and narrowed; apex of scutellum well emarginate; T1 smooth and shiny.....
.....*L. pilosella* (Cam.)
- Hind femora less than or equal to 2× as long as wide; scrobal striae weak and wider than in alternate; apex of scutellum weakly emarginate to rounded; T1 shagreened*L. narendrani* Binoy and Sureshan sp.n.
4. Apex of scutellum prominently bilobate; hind femora black; propodeum with median area with several longitudinal carinae.....*L. moluccensis* (Masi)

- Apex of scutellum weakly emarginate; hind femora usually red, propodeum without longitudinal carinae5
- 5. Striations of scrobe almost straight; apex of scutellum produced in the form of a flange; propodeum with lateral teeth weak; antennae and legs completely rufous.....*L. thresiae* Narendran
- Striations of scrobe convex; apex of scutellum bidentate; propodeum with prominent lateral teeth; antennae, fore and mid femora and hind tibiae usually blackish..... *L. dargelasii* (Lat.)
- 6. Antenna with scape without a prominent dent below.....*L. narendrani* Binoy and Sureshan sp.n.
- Antenna with scape having a prominent dent below.....7
- 7. Apex of scutellum deeply or well incised and bilobate.....8
- Apex of scutellum hardly emarginate, almost entire.....*L. dargelasii* (Lat.)
- 8. Hind leg black.....*L. birmanus* (M.&D.)
- Hind leg red.....*L. pilosella* (Cam.)

***Lasiochalcidia narendrani* Binoy and Sureshan sp.n.**

(Figures 1–7)

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Diagnosis: The new species comes close to *L. pilosella* in general morphology in the key to Oriental species of *Lasiochalcidia* (Narendran, 1989) in having the hind leg less than a trifle of 2× as long as wide and both proximal and distal ends of same width; but differs from the same in having scrobal striations wider and weak (in *L. pilosella*, scrobal striation strong and narrow), apex weakly emarginate (in *L. pilosella*, scutellum apically well emarginate); T1 shagreened (in *L. pilosella*, T1 smooth and shiny); hind femur with a prominent lobe at apical end (in *L. pilosella* lobe indistinct or weak); scape in male without a dent below (in all other reported specimen, males with a distinct dent below).

Description: Female: Length 3.45–3.68 mm. Body black with the following parts as follows: head black with variation in pubescence, upper frons with golden yellow thin setae changing into thick silvery hairs on lower face and along genal margin; scape liver

brownish to black, pedicel brown, F1 and F2 brownish black, remaining flagellar segments brownish black with apices brown, clava basally liver brownish, remaining portion brownish black; fore and mid femur and tibia reddish brown, fore and mid coxa black, all tarsi testaceous; hind coxa dorsally shiny black with fine setose punctures ventrally, hind femora reddish brown with black tooth at ventral margin and scattered pits on the disc arising from which are thin silvery white long hairs, hind tibia reddish brown dorsally, ventrally black, carinate, surface with scattered thin white hairs; gaster black with dense golden yellow pubescence laterally on T2 to T5; T6 completely covered with rows of golden yellow pubescence; pubescence on the body golden.

Head (Fig. 1–3): Head a trifle wider than width of thorax (excluding tegula), 1.86× as high as wide in lateral view, moderately punctate with thin golden yellow pubescence on the upper face extending to the occiput; lower face moderately punctate with dense silvery white pubescence extending to the gena; POL 3.25× OOL, median ocellus slightly larger than lateral ocelli, ocelli reddish brown forming a more or less obtuse isosceles triangle; scrobe shallow with narrow reticulations; eyes glabrous 1.43× as wide as long in lateral; antenna with scape longer than F2 to F6 combined, pedicel 1.56× as long as F1, clava more than twice as long as the preceding funicular; interocular space 2× as wide as scrobal; pre and postorbital carinae absent, gena wider than long, temples lacking.

Mesosoma (Figs. 4 & 5): Pronotum shiny black with umbilicate scattered pits with golden yellow setae and wide alutaceous interstices, posterior margin with a row of thick small golden yellow bristles; mesoscutum punctate with thin golden yellow pubescence and wide shiny to alutaceous interstices, scapula with an impunctate area in dorsal half; scutellum 1.04× as wide as long, anteriorly with small pits and smooth interstices, posteriorly size of the pits increases, reducing the size of shiny interstices, pubescence golden yellow; wings hyaline, sparse pilosity and deep brown veins, MV curving into a short STV, PMV absent; fore and mid legs reddish brown with coxae black, hind coxa black with ventro-apical reddish spot; hind femora reddish brown with sparse punctures and thin long silvery white



Figures 1-7. *Lasiochalcidia narendrani* Binoy and Sureshan **sp.n.:** **1.** ♀ Habitus; **2.** ♂ Habitus; **3.** ♂ Head and antenna in profile; **4.** ♀ Thorax dorsal view; **5.** ♀ Hind leg in profile; **6.** ♀ Gaster in dorsal view; **7.** ♂ Gaster in dorsal view.

pubescence on inner and outer disc, inner disc smooth with very few punctures and setae, a prominent ventral tooth at basal third formed of several rugae followed by a long comb of minute black teeth terminating as a small lobe apically; hind tibia reddish brown with black carinate ventral portion; metapleura punctate with dense silvery white setae; propodeum subparallel to scutellum, slightly declining to

metanotum with median areola, well defined submedian and sublateral carinae, lateral teeth prominent, callus with patch of thick silvery white setae.

Metasoma (Figs. 6 & 7): Sessile, a trifle shorter than mesosoma in profile, black, subacuminate apically with pubescence ventrolaterally along T2 to T5, T6 most pubescent, T1 with posterior margin convex, shagreened

anteriorly, posteriorly with a short smooth band, T2 longest, T2 to T6 posterior margin concave, T2 shagreened with scattered small setigerous pits, laterally moderately high pubescence; T3 to T5 smooth, shiny with short area just above the posterior margins shagreened with scattered pits, pubescence pale golden yellow; T6 with 5 rows of thick bristles, surface not visible due to pubescence; epipygium short with a pair of long setae; ovipositor sheath black, slightly visible dorsally; hypopygium with a pair of long white setae apically.

Male (Figs. 2, 3 & 7): Length 2.91–3.02 mm, stouter black specimen with compressed antennae, similar to ♀ in other features.

Host: Unknown

Material examined: Holotype: ♀, INDIA: KERALA, Jafferkhan colony, Kozhikode district (11°15'50.1"N & 75°11.5"E), Yellow pan trap, 14. iii. 2018. Coll. P. Girish Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/12561.

Paratypes: 3♀, 3♂ INDIA: KERALA, Edakkara abandoned vegetable field, Kozhikode district (11°22'33.5"N & 75°47'02.8"E) Sweep net, 07. v. 2019. Coll. P.M. Sureshan and party, ZSIK Regd. No. ZSI/WGRC/IR/INV/12562–12567; 1♂ INDIA: KERALA, near D. B. College, Shasthamkotta, Kollam district (9°02'25.8" N & 76°38'04.1" E), Yellow pan trap, 22.viii.2016. Coll. K.G. Emiliyamma and party, ZSIK Regd. No. ZSI/WGRC/IR/INV/12568.

Distribution: India: Kerala.

Etymology: Named in honour of Late Dr. (Prof.) T.C. Narendran for his great contributions to the knowledge of Oriental Hymenoptera.

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