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Discovery of a new species of the genus *Cephalotilla* Bischoff, 1920 (Hymenoptera: Mutillidae) from India

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Abstract

A new species, *Cephalotilla manikandani* Terine, Lelej & Girish Kumar, **sp. nov.,** is described based on female specimens from Southern India. A key to the Oriental species of *Cephalotilla* Bischoff, 1920 is given.

Key words: velvet ant, Mutillinae, Ctenotillini, Kerala, Oriental Region

Introduction

The genus *Cephalotilla* Bischoff, 1920 (Hymenoptera: Mutillidae) includes 55 species worldwide, only one of these species is recorded from the Oriental Region and the remaining 54 species are recorded from the Afrotropical Region alone. According to Waldren *et al*. (2023) the genus *Cephalotilla* (including subgenera *Bidentotilla* Nonveiller, 1979 and *Taeniotilla* Nonveiller, 1979) belongs to the tribe Ctenotillini Brothers & Lelej, 2017, which includes five other genera (*Arcuatotilla* Nonveiller, 1998, *Chaetomutilla* Nonveiller, 1979, *Ctenotilla* Bischoff, 1920, *Lehritilla* Lelej, 2005 and *Mimecomutilla* Ashmead, 1903, including the subgenus *Mimecotilla* Nonveiller, 1998). Two recently described genera, *Denistilla* Lelej, 2023 and *Williamstilla* Lelej, 2023, have been described; currently, the tribe Ctenotillini numbers eight genera with 87 species (four genera with six species in the Oriental Region).

The genus *Cephalotilla* is closely related to *Ctenotilla*: the females differ by having the T1 width much narrower than propodeum width and the postgenal carina anterad with a dent in *Cephtalotilla* (T1 width more or less equal propodeum width and postgenal carina anterad without dent in *Ctenotilla*). The males of *Cephalotilla* differ by having S8 without a subbasal lateral tubercle, S7 with a lateral tubercle, S2 invaginated sublaterally with a distinct lateral longitudinal carina and medial longitudinal carina, and the mesopleuron beneath transversally striated without a precoxal tubercle (S8 with subbasal lateral tubercle, S7 without lateral tubercle, S2 not invaginated laterally, basally with weak medial longitudinal carina, and mesopleuron beneath strongly punctured with a precoxal tubercle in *Ctenotilla*).

Here, we describe a new species of *Cephalotilla* from India, the second for the Oriental Region. In addition, a key to the Oriental species in the genus *Cephalotilla* is given.

Materials and methods

This study is based on specimens collected during extensive faunal surveys carried out in different parts of Kerala, India in the course of 2020 to 2023.

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The specimens were studied using a Labomed CZM6 stereomicroscope. Photographs were taken with a Leica DFC 450 camera attached to a Leica M205 A stereomicroscope and images were stacked using Leica V3.80. The images were post-processed only to improve contrast and brightness using Adobe® Photoshop® CS6 software. The types are deposited in the National Zoological Collections at the Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (ZSIK).

The terminology mostly follows the Hymenoptera Anatomy Ontology (2013). We used the abbreviations T1, T2, T3, etc. to denote the first, second, third, etc., metasomal terga, S1, S2, S3 etc., to denote the first, second, third, etc., metasomal sterna, and F1, F2, F3, etc., to denote the first, second, third, etc., flagellomeres.

Taxonomic results

Subfamily Mutillinae Latreille, 1802

Tribe Ctenotillini Brothers & Lelej, 2017

Genus *Cephalotilla* Bischoff, 1920

Cephalotilla Bischoff 1920: 24; 1921, 86(4): 509, ♂, ♀; Nonveiller 1979: 81, ♂, ♀; Lelej & Brothers 2008: 14, ♂, ♀; Brothers & Lelej 2017: 95, ♂, ♀; Pagliano *et al*. 2020: 157; Lelej 2023: 6, ♂, ♀.
Ctenotilla: Brothers 1975: 592.

Type species: *Cephalotilla kamogana* Bischoff, 1921, ♂, by subsequent designation of Bischoff 1921: 509 [Afrotropical].

Diagnosis. *Female*. Mandibular inner border devoid of subbasal denticle. Pygidial plate granulose or microreticulate. T2 without two subbasal white spots disposed transversally. T2 apically and T3 with band of yellowish or white setae, band on T2 widened medially. Propodeum width much more than T1 width. Postgenal carina anterad with dent. *Male*. T4–6 with medial longitudinal carina. S8 medially with deep concavity bordered by lateral tuft of setae, without subbasal lateral tubercle. S7 with lateral tubercle. S2 invaginated sublaterally with distinct lateral longitudinal carina and medial longitudinal carina.

Species included. The genus currently includes two valid Oriental species: *Cephalotilla* (*Cephalotilla*) *porcella* (Turner, 1911), ♂, ♀ (Sri Lanka) and *Cephalotilla* (*Cephalotilla*) *manikandani* Terine, Lelej & Girish Kumar, **sp. nov**., ♀ (India). The other 54 species are from the Afrotropical Region.

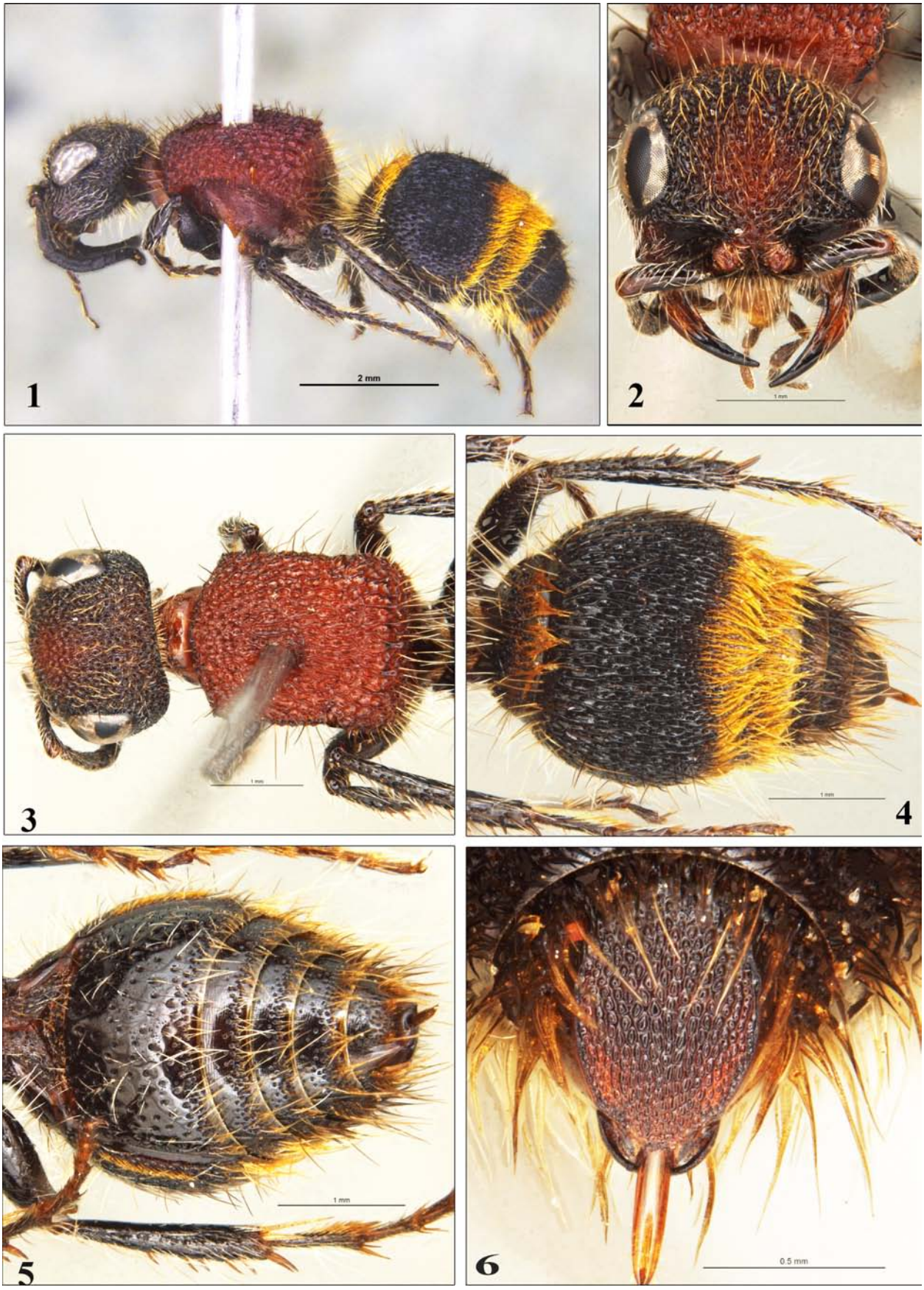
Distribution. Afrotropical and Oriental Regions (Lelej 2023).

Cephalotilla (*Cephalotilla*) *manikandani* Terine, Lelej & Girish Kumar, sp. nov.

(Figs 1–6)

Diagnosis. Head predominantly black, frons ferruginous. Antenna and legs black. Clypeus fully ferruginous. T2 apically and T3 with band of golden setae. Pygidial plate black, apically and apico-laterally ferruginous.

Description. FEMALE. Body length 7.35–7.84 mm. *Coloration and setation*. Head predominantly black, frons ferruginous. Mesosoma ferruginous. Legs black. Antenna black, except scape apically ferruginous. Antennal tubercle ferruginous. Mandible basally ferruginous, apically black. Clypeus fully ferruginous. Metasoma black, except for dark brown S1. Frons, vertex, antennal tubercle and mandible with sparse erect golden setae. Gena and scape with sparse recumbent white setae. Clypeus with tuft of golden setae. Flagellomeres with short golden setae. Mesosoma dorsally with sparse erect dark brown setae, laterally with erect golden setae and propodeal posterior face with denser golden setae. Mesopleuron and metapleuron with short sparse golden setae. Metasoma laterally with sparse golden setae. Anterior face of T1 with erect golden setae, T1 apically with fringe of golden setae. T2 with lateral golden felt line. T2 apically with band of golden setae medially widened. T3 wholly with band of golden setae. T6 with lateral tuft of golden setae. S1 and S2 with sparse white setae. S2–6 with fringe of golden setae. Legs with mixed white and sparse golden setae. Tibial spur golden.



FIGURES 1–6. *Cephalotilla manikandani* **sp. nov.**, holotype, ♀. 1. Habitus, lateral view; 2. Head, frontal view; 3. Head and mesosoma, dorsal view; 4. Metasoma, dorsal view; 5. Metasoma, ventral view; 6. Pygidial plate.

Structure and sculpture. Head. Oval in frontal view, slightly conical at vertex, slightly elongated behind eyes (dorsal view), longitudinal eye diameter 0.73 × minimal distance between eyes; eye not emarginated on the inner margin. Hypostomal carina developed. Head punctate-reticulate. Mandible apically acuminated, without any denticle. Clypeus medially depressed. Ratio of pedicel length and F1–3 0.135: 0.321: 0.154: 0.235.

Mesosoma. Maximal mesosomal width 0.87 × maximal head width. Scutellar scale absent. Mesosoma dorsally rugosopunctate. Posterior propodeal face dorsally with a row of eight spines, middle spines largest. Mesopleuron and metapleuron with fine transverse rugae.

Legs. Mid and hind tibia with two rows of spines, four in each row.

Metasoma. T1 sessile, much narrower than T2 and propodeum. T2 maximal width 1.58 × T1 maximal width, T2 rugosopunctate. T6 with elongate pygidial plate, granulate. S1 with medial longitudinal ridge connecting with posterior triangular carinae. S2–6 punctate, punctures on S2 apically larger than basally.

Variation. Paratype ♀. Similar to holotype except golden setae on head denser. Pygidial plate dark brown.

MALE. Unknown.

Material examined. Holotype ♀, INDIA, Kerala, Malappuram district, Nilambur, Punchakolly, 11.383400° N, 76.377311° E, 117 m, 22.IV.2022, Terine J.B., ZSI/WGRC/IR/INV. 24790 [ZSIK]; **Paratypes**: 2♀, same data as that of holotype, ZSI/WGRC/IR/INV. 24791, 24792. 1♀, INDIA, Kerala, Kozhikode district, Elathur, 76.377311° N, 75.743244°E, 28 m, 27.XII.2020, C. Binoy, ZSI/WGRC/IR/INV. 24793 [ZSIK].

Distribution. India (Kerala).

Etymology. This species is named in honor of Mr. V. Manikandan Nair, Western Ghat Regional Centre (WGRC), Zoological Survey of India (ZSI), Kozhikode for his years of service in WGRC, ZSI, Kozhikode which includes his great efforts to collect various faunal samples.

Remarks. The new species *Cephalotilla* (*Cephalotilla*) *manikandani* **sp. nov.** is related to the Oriental *C.* (*C.*) *porcella* (Turner, 1911), but differs by having T2 apically and T3 with band of golden setae (band of yellow setae in *C. porcella*); head, scape and legs black (ferruginous in *C. porcella*); pygidial plate mostly black (ferruginous in *C. porcella*); body length 7.35–7.84 mm (6.0–7.2 mm in *C. porcella*).

Key to the Oriental females of *Cephalotilla*

1. T2 apically and T3 with band of golden setae. Head, scape and legs black. Pygidial plate mostly black or dark brown. 7.35–7.84 mm. India . . . . . ***C. manikandani* Terine, Lelej & Girish Kumar, sp. nov.** (Fig. 1–6)
– T2 apically and T3 with band of yellow setae. Head, scape and legs ferruginous. Pygidial plate ferruginous. 6.0–7.2 mm. Sri Lanka . . . . . ***C. porcella* (Turner, 1911)** (See Lelej, 2023: pg. 7; Fig. 4–6)

Discussion

The discovery of *Cephalotilla manikandani* **sp. nov.** stands as a noteworthy augmentation to the sparsely known genus *Cephalotilla* from the Oriental Region. This genus is abundant in the Afrotropical region with 54 species, but taking into account the biodiversity of the Oriental region, especially the Western Ghats, there is high probability to discover additional *Cephalotilla* species.

The males of *Cephalotilla* can be separated from similar genera by having T4–6 with medial longitudinal carina, S8 medially without a subbasal lateral tubercle and has a deep concavity, S7 with a lateral tubercle, and S2 sublaterally invaginated with distinct lateral and medial longitudinal carina (Lelej, 2023).

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