

Lordomyrma mewasinghi, a new species of the ant genus *Lordomyrma* (Hymenoptera: Formicidae) from India

TARUN DHADWAL¹ AND HIMENDER BHARTI^{1*}

¹Department of Zoology and Environmental Sciences, Punjabi University, Patiala

*Corresponding author: himenderbharti@gmail.com

ABSTRACT. *Lordomyrma mewasinghi* sp. nov. is described from the Western Ghats of India. The species is well distinguished from all its known congeners based on qualitative morphology. An identification key to the known Indian species based on the worker caste is also provided.

Keywords Myrmicinae, taxonomy, Key and Western Ghats

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INTRODUCTION

Lordomyrma Emery, 1897 is currently represented by 35 species worldwide (Bolton 2022). The significant contributions to the taxonomy of the genus *Lordomyrma* include (Forel, 1917) (Wheeler 1919), (Emery 1897, 1924), (Donisthorpe 1940, 1941), (Taylor 2009, 2012) (Bolton 1994), (Kugler 1997), (Sarnat 2006), (Lucky & Sarnat 2008), (Sarnat & Economo 2012), (Bharti & Ali 2013) and (Liu et al. 2021).

Historically, the genus was placed in different tribes, Myrmicini (Wheeler 1910), Myrmecini (Emery 1912, 1914, 1917; Wheeler 1922), Pheidolini (Dlussky & Fedoseeva 1988; Hölldobler & Wilson 1990), and Stenammini (Bolton 1994). Based on recent phylogenomic analyses, *Lordomyrma* seems to belong in Crematogastrini and is non-monophyletic (Ward et al. 2015; Blaimer et al. 2018). However, to define boundaries of the above mentioned genera and to test monophyly of *Lordomyrma* additional phylogenomic work is required and outside the scope of this study.

The significant morphological characters of *Lordomyrma* include 12-segmented antennae, a straight sting, triangular mandibles with seven or more teeth decreasing in size from apex to base, well-developed propodeal spines, a bicarinate clypeus, and elongate frontal carinae (Bolton 1994; Taylor 2009, 2012; Lucky & Sarnat 2010; Bharti & Ali 2013).

In India, the genus is currently represented by two endemic species known from Kerala: *L. lakshmi* Taylor, 2012 and *L. taylori* Bharti & Ali, 2013 (Bharti et al. 2016). Herein, we report a new species from the Western Ghats viz. *Lordomyrma mewasinghi* sp. nov. An identification key to the known Indian species based on worker caste is also provided.

MATERIALS AND METHODS

Taxonomic analysis was conducted on a Nikon SMZ 1500 stereo zoom microscope with a maximum magnification of 112.5X. Digital images of the specimens were prepared using a Nikon SMZ

1500 stereomicroscope fitted with an MP (Micro Publisher) digital camera and Auto Montage (syn-roscope, a division of Synoptics Ltd.) software. All the images were cleaned with Adobe Photoshop CS5 and Helicon Filter 5. Morphological measurements were recorded in millimeters on a Nikon SMZ 1500 stereomicroscope.

Automontage images of specimens were provided by <http://www.antweb.org/> and <https://www.antwiki.org/>.

Morphological terminology and standard measurements follow Liu et al. (2021).

CI Cephalic Index = $HW \times 100 / HL$.

DPW Dorsal petiole width: Maximum width of petiole, measured across node in dorsal view.

ED Eye Diameter: Maximum diameter of eye.

HL Head Length: Length of the head proper, excluding mandibles, measured in a straight line from mid-point of anterior clypeal margin to mid-point of posterior margin, in full-face view. In species where the posterior margin or the clypeal margin is concave, the measurement is taken from the mid-point of a transverse line spanning the anteriormost or posteriormost projecting points, respectively.

HW Head Width: Maximum width of head in full face view, excluding eyes.

PH Petiole height: The perpendicularly maximum height of the petiole, measured from apex of the node to venter of petiole.

PI Petiole index = $PH \times 100 / PL$.

PL Petiole length: Maximum length of petiole, measured from the juncture with propodeum to the juncture with postpetiole.

PPH Postpetiole height: The perpendicularly maximum height of the postpetiole, measured from the apex of the postpetiolar node to the venter of postpetiole.

PPI Postpetiole index = $PPH \times 100 / PPL$.

PPL Postpetiole length: Maximum length of postpetiole, measured from the juncture with petiole to the juncture with gaster.

PPW Postpetiole width: Maximum width of postpetiole, measured across the postpetiolar node in dorsal view.

PW Pronotal Width: Maximum width of pronotum in dorsal view.

SI Scape Index = $SL \times 100 / HW$.

SL Scape Length: Maximum straight line length of antennal scape excluding basal constriction or neck close to condylar bulb.

TL Total Length: Total outstretched length of ant from mandibular apex to gastral apex.

WL Mesosoma Length (Weber's Length): Diagonal length of mesosoma in profile view from the point at which the pronotum meets the cervical shield to posterior base of metapleuron.

Depositories:

PUAC "Punjabi University Patiala Ant Collection" at Department of Zoology and Environmental Sciences, Punjabi University, Patiala, Punjab, India.

RESULTS

Lordomyrma mewasinghi sp. nov.

Fig. 1-3

Type material. Holotype worker: India, Kerala, Pampadum shola National Park, 10.1266°N, 77.2582°E, Winkler extraction, 1300m, 25.i.2017, Tarun Dhadwal leg. [PUAC-T04].

Paratypes: 7 workers with same data as holotype [PUAC]; 2 workers, Kerala, Karian shola National Park, 10.3833°N, 77.0833°E, Winkler extraction, 650m, 1.ii.2017, Tarun Dhadwal Leg.

Measurements: Holotype: TL 1.74, HL 0.76, HW 0.64, CI 84.21, SL 0.50, SI 78.12, ED 0.10, PW 0.44, WL 0.88, PL 0.34, PH 0.22, DPW 0.20, PI, PPL 0.20, PPH 0.22, PPW 0.26, PPI 110.

Paratype: TL 1.72-1.78, HL 0.72-0.77, HW 0.62-0.66, CI 86.11-85.71, SL 0.48-0.58, SI 77.41-87.87, ED 0.10-0.13, PW 0.44-0.48, WL 0.84-0.90, PL 0.34-0.38, PH 0.20-0.22, DPW 0.22-0.26, PI, PPL 0.20-0.22, PPH 0.22-0.24, PPW 0.22-0.26, PPI 110-118 (9).

Description:

In full view, the head is longer than broad. The Head is wide posteriorly and narrows in the front. In the middle, the posterior edge is slightly concave. The lateral margins are convex. Occipital corners are rounded. Mandibles elongate, triangular with 7 teeth.



Fig. 1. *Lordomyrma mewasinghi* sp. nov. Head in full face view



Fig. 2. *Lordomyrma mewasinghi* sp. nov. Body in profile view



Fig. 3. *Lordomyrma mewasinghi* sp. nov. Body in dorsal view

In profile view, promesonotum fairly convex. Mesometanotum suture weakly impressed. The propodeal dorsum not straight, generating downward sloping curve. Propodeal declivity concave, and propodeal lobes triangular and longer than propodeal spine. Petiolar node convex dorsally. Petiolar node is thick and trapezoidal with roundly convex dorsum; the anterior peduncle significantly shorter than length of node, with small ridge extending from anteroventral corner. Postpetiolar node with roundly convex dorsum with nearly straight ventral edge, and sharply toothed anteroventral corner.

In dorsal view, pronotum wider than remainder of mesosoma, lateral margins strongly convex, humeral corners rounded. Promesonotal suture absent. Mesonotum narrowest, lateral margins slightly convex. Metanotal groove weakly impressed. Propodeum widened posteriorly, lateral margins almost straight. Anterior peduncle of petiole widened posteriorly, petiolar node roughly rounded, as broad as long. Postpetiole widened posteriorly, lateral margins moderately convex, broader than petiole node.

Mandibles smooth. Cephalic dorsum with dense posteriorly divergent rugae, rugae becoming reticulate-rugose laterally. Clypeus relatively smooth and shining. Mesosoma reticulate rugose; sides of pronotum reticulate rugose; mesopleura obliquely-rugose; propodeal dorsum and declivity transversely rugose, propodeal sides transversely rugose. Petiole and postpetiole densely punctate laterally, dorsum smooth except for few scattered punctures. Gaster smooth and shining.

Body dorsum with few erect to suberect hairs, pubescence sparse, hairs on cephalic dorsum short and dense. Antennal scapes with dense subdecumbent hairs and decumbent pubescence, tibiae with dense decumbent pubescence.

Body-color blackish brown; mandibles, antennae, and legs reddish-brown.

Remarks:

Lordomyrma mewasinghi sp. nov. shows resemblance to *L. bhutanensis* (Baroni Urbani, 1977) and *L. nima* Liu, Xu & Hita Garcia, 2021. However, it can be distinguished from *L. nima* based on the following combination of characters: pronotum retic-

ulate rugose, metanotal suture weakly impressed, petiole and postpetiole densely punctate laterally, dorsum smooth except for few scattered punctures, and smooth mandibles. But in *L. nima*, the pronotum is longitudinally rugose, the metanotal groove is strongly impressed, the petiole and postpetiole laterally transversely rugose with dorsum reticulate rugose. Mandibles are longitudinally striated.

Lordomyrma mewasinghi sp. nov. differs from *L. bhutanensis* (Baroni Urbani, 1977) by the following characteristics: petiolar node is thick, generally trapezoidal, and narrowed dorsally, with a roundly convex dorsum, postpetiolar node with a sharply toothed anteroventral corner, mesopleuron obliquely-rugose, petiole and postpetiole densely punctate and dorsally smooth with surrounding punctures and smooth mandibles. Whereas in *L. bhutanensis*, the petiolar node is broadly triangular, longer than the anterior peduncle, the anterior border is almost straight, and the postpetiole has a properly angled anteroventral corner. Mesopleuron reticulate-rugose, finely reticulate-rugose petiole and postpetiole, sides of petiolar node finely obliquely rugose, and mandibles are striated. Densely decumbent or subdecumbent hairs are present on the body.

Furthermore *L. mewasinghi* sp. nov. is less pilose and pubescent compared to both the above-mentioned allied species.

Queen. Unknown.

Male. Unknown

Bionomics. The worker specimens were collected from Pampadum Shola National Park and Karian Shola National Park by the Winkler extraction method. The National parks are located between elevations of 600 m to 1800 m with a daily temperature of 35°C. The forest has a dense canopy and leaf litter on the ground providing ideal moisture conditions for the ant species.

Etymology:

The species is named in honor of Professor Mewa Singh, who has worked extensively on the behaviour of primates from India.

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Identification key to the known species of the genus *Lordomyrma* from India based on the worker caste (modified after Bharti & Ali, 2013).

1. In profile view, propodeal spines very long, distinctly longer than propodeal lobes (Figs: A)2
- In profile view, propodeal spines very short, only slightly longer than propodeal lobes (Figs: B).....
.....*L. mewasinghi* sp. nov.

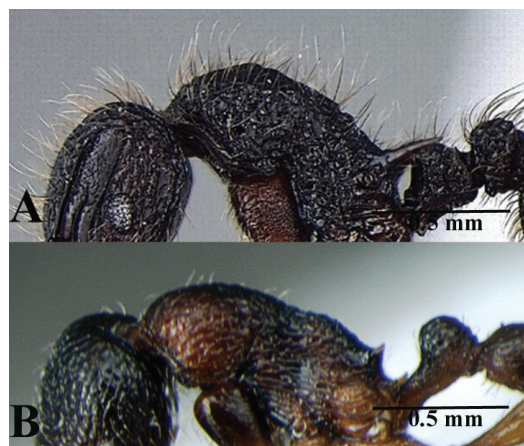


Fig. 4. Body in profile view. **A.** *L. taylori* Bharti & Ali, 2013 (ANTWEB1008009); **B.** *L. mewasinghi* sp. nov.

2. Body colour medium-dark reddish brown with appendages lighter orange brown; clypeus smooth, without hourglass shape; occipital collar shining medially, with a very finely shagreened margin; head ventrally smooth and shiny; mesosomal profile lacking a metanotal indentation (Fig: A, B)....
.....*L. lakshmi* Taylor, 2012

– Body colour dull black with appendages light reddish black; clypeus sculptured, moderately shiny with a pair of strong carinae that converge centrally and diverge anteriorly and posteriorly, forming an hourglass shape; occipital collar sculptured and with fine shagreened margin; head ventrally striate; mesosomal profile with a metanotal indentation (Figs: C, D) ***L. taylori* Bharti & Ali, 2013**

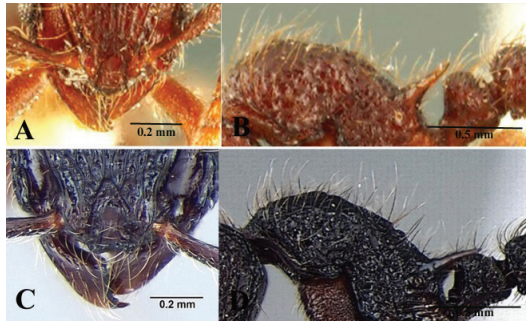


Fig. 5. **A.** Clypeus of *L. Lakshmi* Taylor, 2012 (From Antwikki- Taylor 2012-7L.lakshmi hef.jpg). **B.** Body in profile view of *L. Lakshmi* Taylor, 2012 (from Antwikki- Taylor 2012-7L.lakshmi hal.jpg); **C.** Clypeus of *L. taylori* Bharti & Ali, 2013. (ANTWEB1008009). **D.** Body in lateral view of *L. taylori* Bharti & Ali, 2013. (ANTWEB1008009)

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