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A new species of the ant genus *Lordomyrma* (Hymenoptera: Formicidae: Myrmicinae) from India

Himender BHARTI & Shahid ALI

Abstract

Lordomyrma taylori sp.n. is described from Silent Valley National Park, Kerala in southwestern India. This is the second species of the genus known from India, with *Lordomyrma lakshmi* TAYLOR, 2012 reported earlier. This new species resembles most the Bornean *Lordomyrma reticulata* LUCKY & SARNAT, 2008 from which it can be separated by the less reticulated cephalic sculpture, larger and more upcurved propodeal spines and denser sculpture of gaster.

Key words: Ants, Myrmicinae, new species, *Lordomyrma*, Silent Valley, Kerala, India.

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Himender Bharti (contact author) & Shahid Ali, Department of Zoology & Environmental Sciences, Punjabi University, Patiala-147002, Punjab, India. E-mail: himenderbharti@gmail.com; shahidali@antdiversityindia.com

Introduction

The genus *Lordomyrma* which probably originated in mainland Asia with subsequent colonization of other regions is currently represented by 33 valid species (TAYLOR 2009, 2012, LUCKY & SARNAT 2010). These species are reported from India, Bhutan, China, Viet Nam, Japan, Philippines, Malaysia, Indonesia, New Guinea, Fiji, New Caledonia, and Australia (TAYLOR 2009, 2012, LUCKY & SARNAT 2010). It has also been postulated that the above cited regions harbor some additional undescribed species as well (BRANSTETTER 2009, TAYLOR 2009, 2012, LUCKY & SARNAT 2010). Based on the data available hitherto, most of the *Lordomyrma* species have restricted distribution owing to their limited dispersal capacity (LUCKY & SARNAT 2010).

Morphologically, the genus is characterized by 12-merous antennae, a simple sting with straight apex, 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. All known Asian species and most others have well-defined antennal foveae also (BOLTON 1994, TAYLOR 2009, 2012, LUCKY & SARNAT 2010). This morphological interpretation, however, does not apply to all of the described species within the genus, nor does it exclude taxa which belong to morphologically similar genera. Consequently, assigning species to *Lordomyrma* is problematic, and probably a number of taxa related to *Lordomyrma* await shuffling (SHATTUCK 1999, BRANSTETTER 2009, TAYLOR 2009, 2012, LUCKY & SARNAT 2010).

Recent noteworthy contributions to this genus include SARNAT (2006), SHATTUCK (1999), TAYLOR (1987, 2009, 2012), BRANSTETTER (2009), and LUCKY & SARNAT (2008, 2010). From India, TAYLOR (2012) recorded *Lordomyrma* for the first time from the southwestern region of the country.

Materials and methods

Two specimens of this species were collected from a leaf litter sample using winkler sacs. The taxonomic analysis was conducted on a Nikon SMZ 1500 stereo zoom microscope. For digital imaging an MP Evolution digital camera was used on the same microscope with Auto-montage (Syncroscopy, Division of Synoptics, Ltd.) software. Later, images were cleaned as per requirements with Adobe Photoshop CS5. Morphological definitions for measurements (accurate to 0.01 mm) and indices follow TAYLOR (2012), and include: TL = aggregate total length (aggregate of: head and mandibles + mesosoma (or mesosoma + waist nodes) + gaster (or mesosoma + waist nodes + gaster) measured in lateral view); HW = maximum head width, frontal view (across the eyes if protrusive, otherwise at widest point behind the eyes); HL = head length at midline, frontal view; CI = cephalic index (HW × 100 / HL); EL = maximum dimension of eye in perpendicular view; OI = ocular index (EL × 100 / HW); SL = maximum chord length of scape excluding the articular condyle; SI = scape index (SL × 100 / HW); PTL = maximum length of petiole measured in lateral view; PpL = maximum length of postpetiole measured in lateral view; PH = maximum height of petiole measured from base to summit of node at right angles to the petiole length in lateral view; PW = maximum width of pronotum, dorsal view (including humeral tubercles when protrusive); WL = mesosomal length (Weber's length), lateral view; DPW = maximum width of petiole, dorsal view; FCW = forecoxa (procoxa) width, maximum width of forecoxa measured parallel to basal margin; DPpW = maximum width of postpetiole, dorsal view; GL = maximum length of gaster measured in lateral view; GW = maximum width of gaster, dorsal view; RELI = relative eye length index (EL × 100 / HL); PSL = propodeal

spine length, maximum length of propodeal spine measured from the middle of propodeal spiracle to the tip of the spine; PSLI = propodeal spine length index (PSL × 100 / FCW); MFL = metafemur length, length of metafemur measured along its long axis in dorsal view; MFLI = metafemur length index (MFL × 100 / HW); DPWI = dorsal petiole width index (PW × 100 / FCW).

Acronyms of depositories

ANIC Australian National Insect Collection, Canberra, ACT, Australia.

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

***Lordomyrma taylori* sp.n.** (Figs. 1 - 3)

Type material: Holotype and one paratype (worker): India, Kerala, Indira Gandhi National Park (Silent Valley National park), 22 km W of Mukkali (coordinates for Mukkali: 11° 03' 31.33" N, 76° 32' 25.12" E), 1100 m a.s.l., 24.X. 2011, winkler method (coll. Shahid Ali); leg. H. Bharti. Holotype in PUAC and paratype in ANIC.

Description:

Measurements (holotype followed by paratype worker): TL 4.23, 4.07; HW 0.89, 0.87; HL 0.92, 0.91; CI 97, 95; EL 0.20, 0.18; OI 22, 21; SL 0.62, 0.62; SI 70, 71; PTL 0.31, 0.31; PpL 0.27, 0.25; PH 0.31, 0.31; PW 0.69, 0.64; WL 1.24, 1.17; DPW 0.31, 0.29; FCW 0.25, 0.25; DPpW 0.39, 0.38; GL 1.25, 1.20; GW 1.07, 1.00; RELI 22, 20; PSL 0.39, 0.39; PSLI 156, 156; MFL 0.88, 0.84; MFLI 99, 97; DPWI 276, 256.

Head longer than wide, subquadrate; sides gradually curving to the posterior margin, with posterolateral corners gently rounded. Occipital collar sculptured and with fine shagreened margin. Clypeus moderately shining, with one pair of strong carinae that converge centrally and diverge anteriorly and posteriorly, forming an hourglass shape. Eyes prominent, convex, placed slightly below midlength of head. Frontal carinae strongly produced, extending beyond the posterior level of eyes. Antennal funiculus clavate but without delineation of a distinct, segmentally defined club. Mandibles triangular elongate; masticatory margin with nine prominent teeth decreasing in size from apex to base. Antennae long, with scape slender, shining and roughly micropunctate, not extending beyond posterior border of head.

Mesosoma hunched in profile, with promesonotal humeri in dorsal view rounded and lacking nodules; promesonotal suture indistinct. Mesometanotal groove slightly impressed. Propodeal declivity concave, with dorsal surface slightly convex. Propodeal spines long, straight and acute, slightly upcurved. Petiolar node robustly built, in lateral view anterior face of node weakly concave and gently sloped and posterior face almost convex. Postpetiole with anterior and posterior faces evenly convex, node higher than petiole in profile with ventral side possessing two transverse ridges. Legs long, slender with longitudinal concavities.

Gaster ovate, pointed at apex.

Head longitudinally rugose with inter-rugal spaces punctured. Sides of head sculptured like frons. Scrobes finely shagreened, with few carinae near antennal insertions. Head ventrally striate. Mandibles shiny, with few scattered punctures. Mesosoma rugoreticulate, with the rugae more prominent on sides. Declivity of propodeum generally smooth, shining, with dorsal section shagreened. Anterior coxae finely sculptured, other coxae with effaced traces of sculpture. Petiole and postpetiole sculptured like mesosoma. Gaster strongly sculptured, with rugoreticulation somewhat obscure while comparing with mesosoma.

All body surfaces clothed with long, dense, acuminate, yellowish hairs. Hair curved, tapering, flexuous and roughly longer than the length of eye.

Body dull black, with dark reddish appendages.

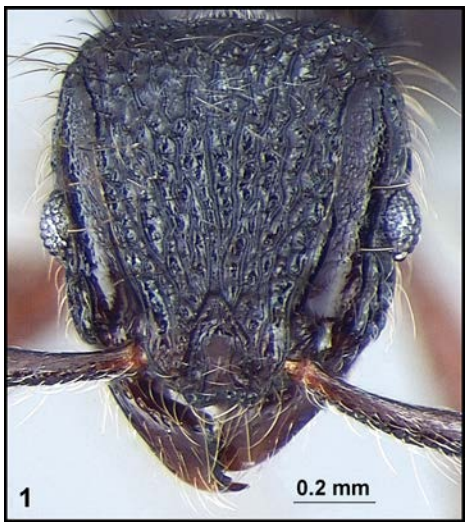
Etymology: The species is named after Dr. Robert W. Taylor for his significant contribution to the genus.

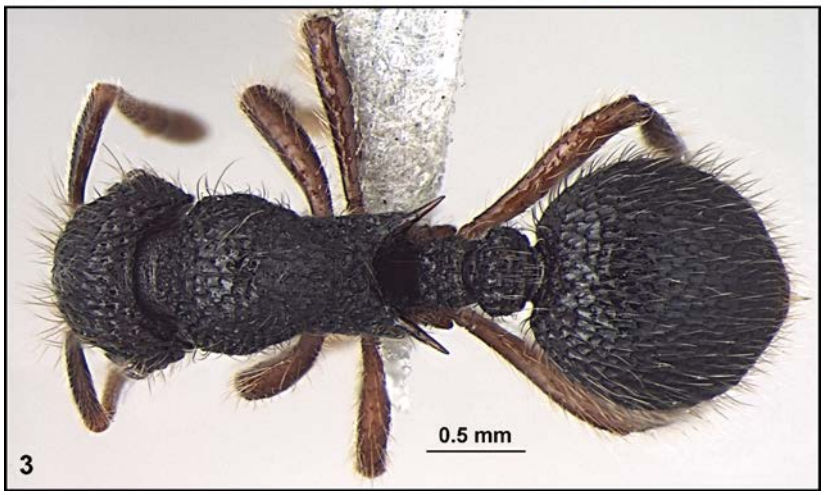
Differential diagnosis: *Lordomyrma taylori* sp.n. can be recognized by dense longitudinally rugulose sculpture of head, large spine size, dark body coloration, and heavily sculptured gaster. However, it is somewhat allied to Bornean *Lordomyrma reticulata* LUCKY & SARNAT, 2008 and another Indian species, *Lordomyrma lakshmi* TAYLOR, 2012. From *L. reticulata*, it can be easily separated by the following combination of characters: In *L. reticulata* head and mesosoma rugoreticulate, with honeycomb-like regularity, metanotal groove strongly impressed, propodeal spines shorter (PSLI 114 - 136), straight, slightly downcurved in profile and petiole comparatively less wide (DPWI 100 - 113). In contrast, in *L. taylori* sp.n. head longitudinally rugose, mesosoma irregularly rugoreticulate, metanotal groove slightly impressed, propodeal spines much longer (PSLI 156), slightly upcurved posteriad in profile, and petiole wider (DPWI 256 - 276). Moreover, the gaster of *L. taylori* sp.n. is heavily sculptured as compared to *L. reticulata*. The configuration of the cephalic sculpture brings *L. taylori* sp.n. close to *L. lakshmi*, from which it can be separated by following combination of characters: In *L. lakshmi* body colour medium-dark reddish 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, propodeal spines much shorter; in *L. taylori* sp.n. body colour 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 and longer propodeal spines. Both species differ considerably in morphometrics as well; in *L. taylori* sp.n., CI 95 - 97, EL 0.18 - 0.20, OI 21 - 22, WL 1.17 - 1.24, PSL 0.39, PSLI 156; while in *L. lakshmi*, CI 97 - 103, EL 0.15 - 0.18, OI 17 - 21, WL 1.04 - 1.13, PSL 0.30 - 0.37, PSLI 130 - 132.

Ecology: The specimens were collected from leaf litter approximately of 2 cm thickness. The study area is situated at an altitude of 1100 meters above mean sea level. It is a shady place exposed to limited sunlight. Mean annual temperature of the region is 20.2°C with average annual rainfall 6,066 mm and 95% relative humidity. It is a primary undisturbed tropical moist evergreen forest. The species seems to be rare as it was encountered only once during the repeated intensive surveys conducted to the region.

Key to Indian species of *Lordomyrma*

1 Body colour medium-dark reddish brown with appendages lighter orange brown; clypeus smooth, without hourglass shape; occipital collar shining





Figs. 1 - 3: *Lordomyrma taylori* sp.n., worker: (1) Head, full-face view. (2) Body, lateral view. (3) Body, dorsal view.

medially, with a very finely shagreened margin; head ventrally smooth and shiny; mesosomal profile lacking a metanotal indentation; propodeal spines much shorter; CI 97 - 103; EL 0.15 - 0.18; OI 17 - 21; WL 1.04 - 1.13; PSL 0.30 - 0.37; PSLI 130 - 132. ..... *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 and longer propodeal spines; CI 95 - 97; EL 0.18 - 0.20; OI 21 - 22; WL 1.17 - 1.24; PSL 0.39; PSLI 156. ..... *L. taylori* sp.n.

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