

Taxonomic review of the ant genus *Lordomyrma* Emery, 1897 (Hymenoptera, Formicidae) from China, with description of two new species and an identification key to the known species of the world

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ABSTRACT. China is a large country encompassing a wide range of climate zones and bioregions, and hosting several of the world's biodiversity hotspots. However, even though the country possesses such rich biota, many taxa still remain to be discovered and formally described. In this study we review the myrmicine ant genus *Lordomyrma* Emery, 1897 from China. We recognize four species for the country, of which we describe two as new: *L. bhutanensis* (Baroni Urbani, 1977), *L. idianale* Taylor, 2012, *L. jingpo* sp. nov., and *L. nima* sp. nov. In addition, we propose *L. sinensis* (Ma *et al.*, 2007) syn. nov. as a junior synonym of *L. bhutanensis*. These nomenclatorial acts raise the global count for the genus to 35 species.

Both new species, *Lordomyrma jingpo* sp. nov. and *Lordomyrma nima* sp. nov. as well as the queen of *L. bhutanensis*, which is described for the first time, were collected in Southwestern China. Furthermore, in order to facilitate identification within the genus, we provide an updated key to known species of *Lordomyrma* in the world.

Keywords Myrmicinae, Southwest China, Taxonomy, Tibet, Yunnan

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INTRODUCTION

The myrmicine ant genus *Lordomyrma* Emery is a moderately small group with currently 34 valid extant species (Bolton 2021) that are distributed throughout the Indomalayan, Australasian, Ocea-

nian and part of the Palearctic realms, including countries and islands such as India, Nepal, Vietnam, Japan, Philippines, Malaysia, Indonesia, New Guinea, Australia, Fiji and New Caledonia (André 1889; Emery 1897, 1914; Stitz 1912; Mann 1919, 1921, 1925; Menozzi 1923; Donis-

thorpe 1940, 1941; Sarnat 2006; Lucky & Sarnat 2008; Taylor 2009, 2012; Sarnat & Economo 2012; Bharti & Ali 2013; Janicki et al. 2016). The genus probably originated in mainland Asia with subsequent colonization of other regions (Lucky & Sarnat 2010; Bharti & Ali 2013). However, the highest species richness and morphological diversity of *Lordomyrma* are encountered in New Caledonia, New Guinea and adjacent islands. Over 20 *Lordomyrma* species are known from New Guinea and adjacent islands, but only 9 have been named (Taylor 2009). The ANIC, Institut de Recherche pour le Développement (Noumea) and Queensland Museum collections contain over 25 *Lordomyrma* species from New Caledonia, but only 3 have been scientifically named (Taylor 2009). *Lordomyrma* is also moderately diverse in Fiji with 11 species, which also represents the eastern-most range limit of the genus (Lucky & Sarnat 2008, 2010; Sarnat & Economo 2012). The genus is relatively species-poor in the remainder of its distribution range (Wheeler 1919; Ma et al. 2007; Taylor 2009, 2012; Bharti & Ali 2013; Janicki et al. 2016). Furthermore, most species have rather restricted distributions suggesting limited dispersal capacity (Lucky & Sarnat 2010; Taylor 2012).

Recent phylogenomic studies of myrmicines place *Lordomyrma* robustly within the tribe Crematogastrini in close relationship with *Ancyridris* Wheeler, *Lasiomyrma* Terayama & Yamane, and *Propodilobus* Branstetter (Ward et al. 2015; Blaimer et al. 2018). However, in its current definition *Lordomyrma* is not monophyletic and genus boundaries to the genera mentioned above require additional phylogenomic work (Blaimer et al. 2018). As a result, assigning species to *Lordomyrma* in its current definition remains difficult since it is likely that the genus might get split into several genera, but also because numerous taxa related to *Lordomyrma* await re-examination and recombination (Branstetter 2009, Taylor 2009, 2012; Lucky & Sarnat 2010; Bharti & Ali 2013).

Morphologically, *Lordomyrma* is characterized by 12-segmented antennae, a simple sting with a 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.

However, this morphological description does not apply to all described species within the genus and will very likely have to be modified in the future (Bolton 1994; Taylor 2009, 2012; Lucky & Sarnat 2010; Bharti & Ali 2013).

Currently, three valid species are known from China: *L. bhutanensis* (Baroni Urbani, 1977), *L. sinensis* (Ma et al., 2007) and *L. idianale* Taylor, 2012 (Ma et al., 2007; Branstetter, 2009; Liu et al., 2015, 2020). *L. bhutanensis* (Baroni Urbani, 1977) and *L. sinensis* (Ma et al., 2007) were both originally described as *Stenamma* Westwood and later transferred to *Lordomyrma* by Branstetter (2009) on the basis of molecular evidence. However, they seem to be significantly different from other species of *Lordomyrma* based on morphological data (Taylor 2012) and their generic assignment might change with future phylogenetic studies.

In this study, we provide a review of the genus *Lordomyrma* for China based on qualitative morphological examination of the worker caste, in which we recognize 4 Chinese species. We describe two new species that were recently collected in southwestern China: *Lordomyrma jingpo* sp. nov. from valley lowland rainforest and *L. nima* sp. nov. from *Alnus nepalensis* forest. Moreover, after examination of all Chinese type and non-type material, we propose *L. sinensis* as a junior synonym of *L. bhutanensis*. These nomenclatorial acts raise the global count for the genus to 35 species. In order to facilitate species identification we also provide an updated identification key based on the worker caste of all known species of the world.

MATERIAL AND METHODS

All available material of the Chinese species of *Lordomyrma* was examined for this study. Our results are based on 5 paratype workers of *Lordomyrma sinensis* (Ma et al., 2007), a long series of specimens of *L. bhutanensis* (Baroni Urbani, 1977) from southwestern China and holotype specimen images of *L. bhutanensis* from Ant-Web. *Lordomyrma* specimens from southwestern China were collected through plot-sampling and searching methods (Xu 2002; Xu et al. 2011) and observed under a Jiangnan XTB-1 stereo micro-

scope with a micrometer. Images of the *Lordomyrma jingpo* sp. nov. and *L. nima* sp. nov. were produced using a Liyang Super Resolution System LY-WN-YH. All specimens examined were deposited in the Insect Collection, Southwest Forestry University (SWFU), Kunming, Yunnan Province, China, except for two paratype workers of *L. jingpo* sp. nov. and *L. nima* sp. nov. that will be deposited in the Insect Collection, Guangxi Normal University (GXNU), Guilin, China. Images and specimen data of other species were downloaded from AntWeb (2021).

Standard measurements and indices used follow Bolton (1987) and DuBois (1998). All measurements are expressed in millimeters. In addition, AL (alitrunk length) is replaced by WL (Weber's Length). The measurements and indices used are defined as follows:

- 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.

Synoptic list of Chinese species of *Lordomyrma*

- L. bhutanensis* (Baroni Urbani, 1977)
= *L. sinensis* (Ma *et al.*, 2007) syn. nov.
L. idianale Taylor, 2012
L. jingpo sp. nov.
L. nima sp. nov.

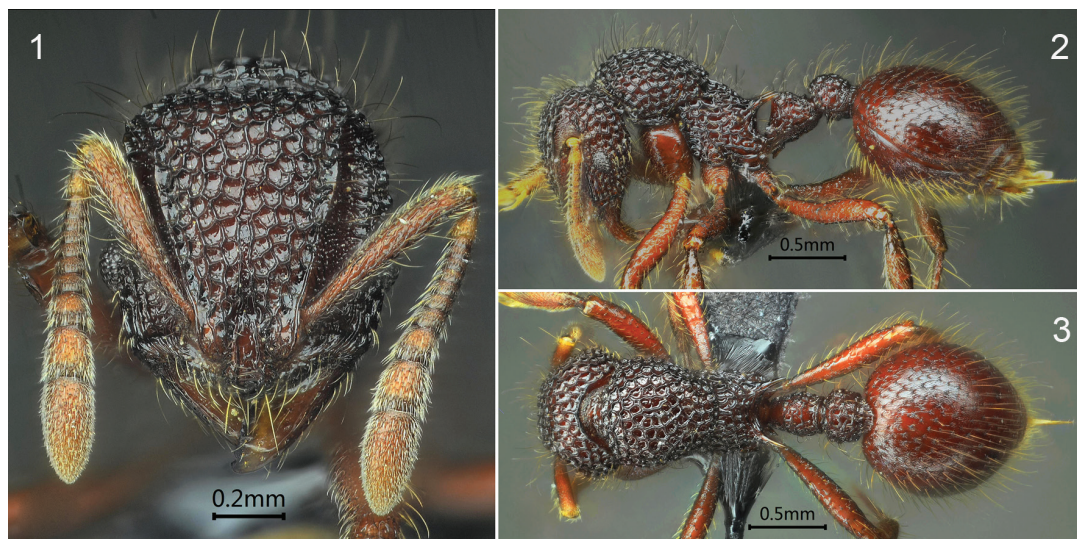
Description of the new species

Lordomyrma jingpo sp. nov.

(Figs. 1-7)

Type material. Holotype worker: China, Yunnan Province, Yingjiang County, Nabang Town, Palan Village, 24.6831°N, 97.5858 °E, 590 m, collected from a nest in soil in valley lowland rainforest, 22. III. 2015, Ying Zheng leg., No. A15-381. **Paratypes:** 11 workers, 1 queen and 3 winged females, from the same nest of holotype worker and with the same data.

Description of holotype worker (Figs. 1-3): TL 4.1, HL 0.90, HW 0.83, CI 92, SL 0.63, SI 76, ED 0.16, PW 0.70, WL 1.25, PL 0.40, PH 0.35, DPW 0.29, PI 88, PPL 0.25, PPH 0.33, PPW 0.35, PPI 130.



Figs. 1 – 3. *Lordomyrma jingpo* sp. nov., holotype worker. (1) Head in full-face view; (2) body in profile view; (3) body in dorsal view. Photographs by Zhenghui Xu.

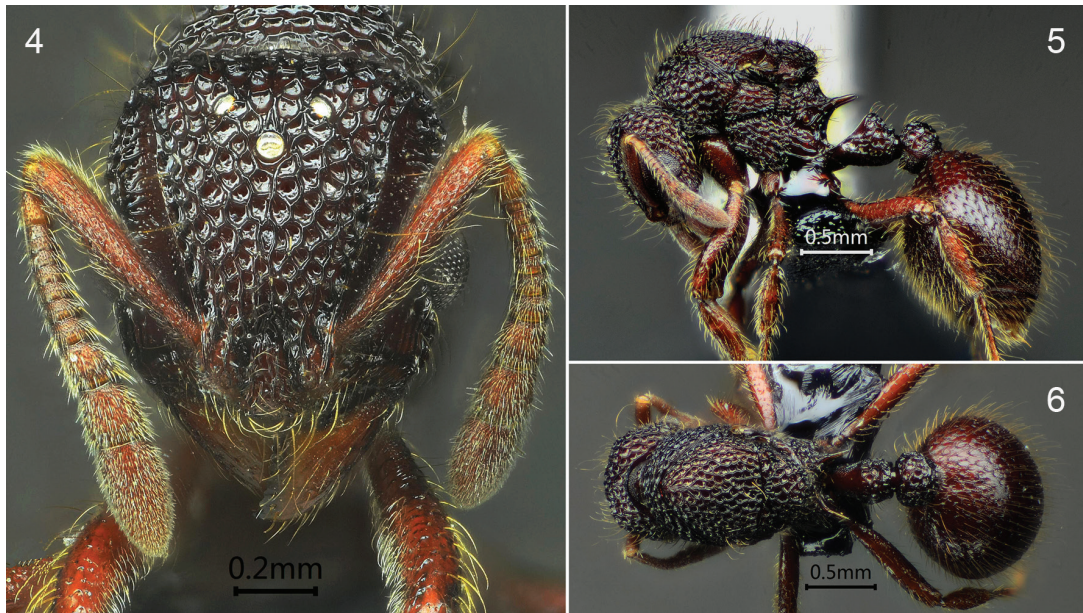
In full-face view head roughly rectangular, longer than broad, posterior margin weakly convex, posterior corners narrowly rounded, lateral margins convex. Mandibles elongate triangular, masticatory margin with about 10 indistinct crenate denticles. Clypeus with a pair of anteriorly divergent carinae which are located close to each other, anterior margin roundly convex. Frontal lobes well developed with concealed antennal sockets. Antennae 12-segmented, apices of scapes just reaching to posterior head corners, antennal clubs consisted of the apical three segments; antennal scrobes well developed, deeply concave. Eyes small, located before midpoints of head sides.

In profile view promesonotum strongly convex, roundly arched and sloping posteriorly. Promesonotal suture absent. Metanotal groove moderately notched. Propodeal dorsum slightly convex and sloping posteriorly, slightly longer than declivity; propodeal spines long and sharp, weakly curving down posteriorly; declivity moderately concave. Propodeal lobes triangular, acutely toothed apically, about 1/3 length of propodeal spines. Petiolar node triangular, anterior margin weakly concave, posterior margin weakly convex, apex angled to right, anterior peduncle indistinct; subpetiolar process narrow and cuneiform, anteroventrally pointed, with concavity after the process. Postpetiolar node weakly inclined

anteriorly, dorsum roundly convex, anterodorsal corner narrowly rounded; ventral margin with two notches, anteroventral corner acutely toothed. Gaster ovate, first segment very large and occupying 4/5 of the gaster, sting extruding.

In dorsal view, promesonotum roughly trapezoidal and narrowing posteriorly, lateral margins moderately convex, humeral corners rightly angled, promesonotal suture absent. Metanotal groove impressed. Propodeum short and broad, lateral margins almost straight, propodeal spines straight and lateroposteriorly pointed. Petiole longer than broad, weakly widening posteriorly, sides of the node weakly convex. Postpetiole broader than long, and broader than petiole, narrowing posteriorly, anterior margin straight, sides weakly convex. Anterior margin of gaster deeply concave.

Mandibles smooth and shining, with very sparse elongate punctures. Head, mesosoma, petiole and postpetiole coarsely uniformly reticulate, clypeus finely reticulate. Gaster with sparse piliferous punctures, interface microreticulate and relatively shining. Body dorsum with abundant erect to suberect long hairs and abundant subdecumbent short pubescence, pubescence on gaster relatively denser; scapes and tibiae with sparse suberect hairs and dense decumbent pubescence. Body color blackish brown; mandibles, antennae, legs and gaster reddish brown; eyes grey.



Figs. 4 – 6. *Lordomyrma jingpo* sp. nov., paratype queen. (4) Head in full-face view; (5) body in profile view; (6) body in dorsal view. Photographs by Zhenghui Xu.

Description of paratype workers (n=10): TL 4.1-4.3, HL 0.85-0.90, HW 0.80-0.83, CI 92-94, SL 0.65-0.68, SI 79-82, ED 0.15-0.18, PW 0.68-0.70, WL 1.20-1.28, PL 0.35-0.40, PH 0.33-0.35, DPW 0.28-0.30, PI 88-93, PPL 0.23-0.25, PPH 0.33-0.34, PPW 0.33-0.35, PPI 130-144. Like holotype worker, but sometimes body color reddish brown with antennae and legs yellowish brown.

Description of paratype queen (n=1) (Figs. 4-6): TL 4.7, HL 0.95, HW 0.88, CI 92, SL 0.68, SI 77, ED 0.25, PW 0.93, WL 1.45, PL 0.50, PH 0.40, DPW 0.35, PI 80, PPL 0.33, PPH 0.39, PPW 0.40, PPI 119.

Like holotype worker, but body much larger and with reproductive queen characteristics. Eyes relatively larger, vertex with three white ocelli. In lateral view dorsum of pronotum almost straight and steeply sloping anteriorly. Promesonotal suture present. Mesonotum massive, dorsum moderately convex anteriorly and gently sloping posteriorly, mesonotal groove narrowly weakly impressed; dorsum of scutellum weakly convex, apex narrowly rounded; tegulae present, mesopleuron with an oblique furrow. Metascutum narrow and oblique, overhang by

scutellum. Propodeal dorsum weakly concave and steeply sloping posteriorly, shorter than declivity, propodeal spines straight and posterodorsally pointed. In dorsal view posterior margin of pronotum deeply roundly concave, humeral corners bluntly angled. Mesonotum massive and broadest; scutum large without longitudinal furrows, posterior margin weakly convex. Lateral scutum small and elongate triangular. Anterior margin of scutellum very bluntly angled, posterior margin roundly convex. Sculpture, pilosity and body color like that of holotype worker, but metapleura obliquely rugose.

Description of paratype females (n=3) (Fig. 7): TL 4.5-4.9, HL 0.93-0.95, HW 0.88-0.90, CI 92-95, SL 0.68-0.70, SI 77-78, ED 0.23, PW 0.93-0.95, WL 1.38-1.45, PL 0.45-0.53, PH 0.38, DPW 0.33-0.35, PI 71-83, PPL 0.30, PPH 0.38, PPW 0.40-0.43, PPI 125.

Like paratype queen, but mesosoma winged. Fore wing with distinct and blackish stigma, basal cell large, with one marginal cell, two submarginal cells and two distal cells, the second submarginal cell and the second distal cell opening. Veins of hind wing very simple, only the basal cell enclosed.



Fig. 7. Wing of *Lordomyrma jingpo* sp. nov., paratype female. Photograph by Zhenghui Xu.

Comparative notes: The new species is closest to *L. reticulata* Lucky & Sarnat 2008 (Figs. 25, 108), but its first gastral segment smooth and shiny, with sparse piliferous small punctures; body bicolored, head, mesosoma and waist blackish brown, gaster reddish brown; forecoxae lateral side smooth and shiny. The new species is also similar to *L. idianale* Taylor, 2012 (Figs. 106-107), but propodeal spines down-curved in profile view; head dorsum coarsely uniformly reticulate, without incorporated traces of longitudinal striae between the antennal scrobes.

Etymology: The species is named after a minority nationality called “Jingpo”, residing in the type specimen locality, Yingjiang County, Yunnan Province, China. The species epithet is a noun in apposition and thus invariant.

Distribution and ecology: China (Yunnan). All individuals known from this originated from a single nest containing 12 workers, 1 queen and 3 winged females found within soil, classified as latosol. The site was within a fragmented valley lowland rainforest.

***Lordomyrma nima* sp. nov.**

(Figs. 8-14)

Type material: *Holotype worker:* China, Tibet Autonomous Region, Medog County, Dagmo Town, 62K, 29.7096°N, 95.5823°E, 2620 m, collected from a nest under stone in *Alnus nep-*

alensis forest, 13.V.2008, Zheng-Hui Xu leg., No. A08-325. **Paratypes:** 7 workers and 1 queen, from the same nest of holotype worker and with the same data; 9 workers, China: Tibet Autonomous Region, Medog County, Dagmo Town, 70K, 29.7041°N, 95.5222°E, 2750 m, from a nest in soil in *Abies* forest, 22.VII.2011, Cheng-Lin Zhang leg., No. A11-4196; 2 workers, with same data as No. A11-4196, but No. A11-4190 and No. A11-4197 respectively; 9 workers, China: Tibet Autonomous Region, Nyingchi County, Pelung Town, Zaqu Village, 29.9292°N, 95.1561°E, 2720 m, from a nest under stone in broadleaf forest, 27.IX.2007, Zheng-Hui Xu leg., No. A07-532.

Description of holotype worker (Figs. 8-11): TL 3.8, HL 0.83, HW 0.73, CI 88, SL 0.60, SI 83, ED 0.13, PW 0.50, WL 1.13, PL 0.45, PH 0.33, DPW 0.20, PI 72, PPL 0.25, PPH 0.25, PPW 0.25, PPI 100.

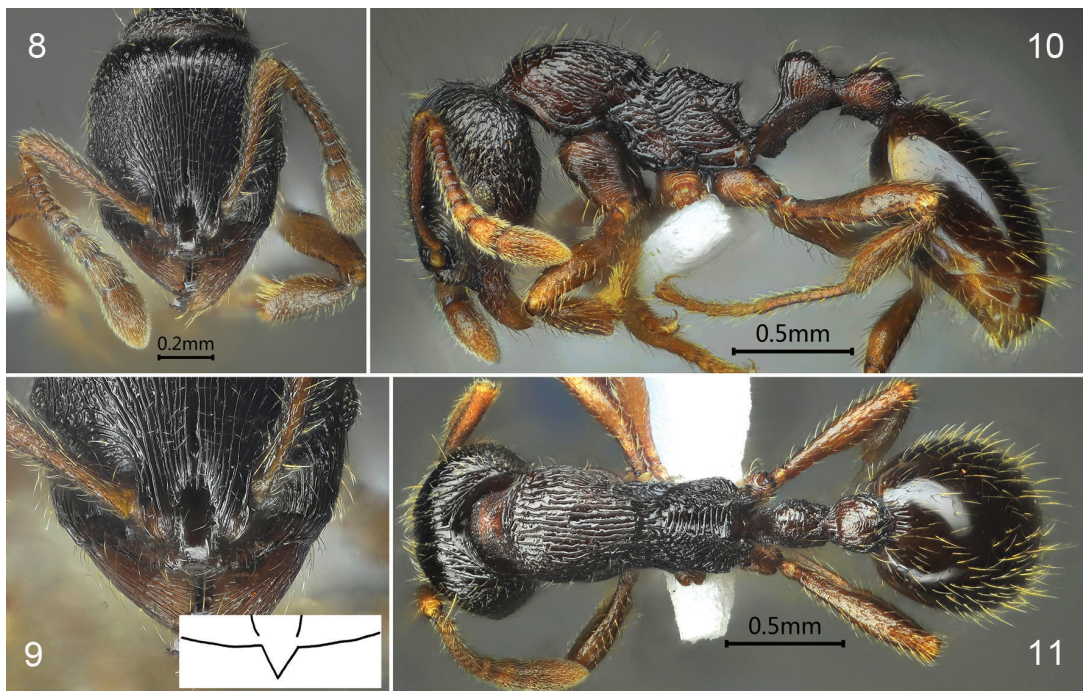
In full-face view head roughly rectangular, longer than broad, slightly narrowed anteriorly, posterior margin slightly convex laterally and slightly concave medially, posterior corners rounded, lateral margins weakly convex. Mandibles elongate triangular, masticatory margin with 8 teeth, basal margin with 5 minute teeth. Clypeus with pair of anteriorly diverging carinae, anterior margin roundly convex with tiny tooth medially. Antennae 12-segmented, apices of scapes reaching to 9/10 of distance from antennal socket to

posterior head corner, antennal clubs consisting of apical 3 antennomeres. Eyes small, located before midpoint of head, with 6 ommatidia in maximum diameter.

In profile view promesonotum moderately convex and sloping posteriorly. Promesonotal suture absent. Mesopleuron with an oblique furrow. Metanotal groove deeply notched. Propodeal dorsum straight and sloping posteriorly, propodeal spines acutely toothed, declivity weakly concave, propodeal lobes triangular and shorter than propodeal spines. Petiolar node thick, roughly trapezoidal and narrowed dorsally, with roundly convex dorsum; anterior peduncle relatively longer, about as long as the node, anteroventral corner protruding as a cuneiform ridge with bluntly angled corner. Postpetiolar node weakly inclined posteriorly, with roundly convex dorsum; ventral margin weakly concave, anteroventral corner acutely toothed. Gaster elongate oval, sting extruding.

In dorsal view pronotum broadest, lateral margins moderately convex, humeral corners narrowly rounded. Promesonotal suture absent. Mesonotum narrowest, lateral margins slightly convex. Metanotal groove deeply impressed. Propodeum widened posteriorly, lateral margins almost straight. Anterior peduncle of petiole widened posteriorly, petiolar node roughly elliptical, slightly broader than long. Postpetiole widened posteriorly, lateral margins moderately convex, broader than petiolar node.

Mandibles longitudinally striate. Head dorsum with dense posteriorly divergent rugae, the rugae become reticulate-rugose on the sides. Clypeus relatively smooth and shining. Mesosoma longitudinally rugose; sides of pronotum obliquely rugose; mesopleura reticulate-rugose; propodeal dorsum and declivity transversely rugose, propodeal sides obliquely rugose. Petiolar node and postpetiolar node finely transversely rugose, sides of petiolar node obliquely rugose, lower portions of petiole and postpetiole densely punctured. Gaster smooth and shining.



Figs. 8 – 11. *Lordomyrma nima* sp. nov., holotype worker. (8) Head in full-face view; (9) anterior margin of clypeus in full face view; (10) body in profile view; (11) body in dorsal view. Photographs by Zhenghui Xu.

Body dorsum with abundant erect to suberect hairs and abundant decumbent pubescence, hairs on head dorsum relatively shorter and denser. Scapes with dense subdecumbent hairs and decumbent pubescence, tibiae with dense decumbent pubescence. Body color blackish brown; petiole, postpetiole and gaster reddish brown; mandibles, antennae and legs yellowish brown.

Description of paratype workers (n=10): TL 3.4-4.3, HL 0.75-0.93, HW 0.68-0.80, CI 85-91, SL 0.53-0.65, SI 78-86, ED 0.11-0.18, PW 0.48-0.56, WL 0.78-1.25, PL 0.40-0.48, PH 0.28-0.33, DPW 0.19-0.20, PI 58-75, PPL 0.20-0.28, PPH 0.20-0.26, PPW 0.24-0.28, PPI 90-105. Like holotype worker, but anteroventral corner of petiole variable, either cuneiform convexity, blunt angle or ventrally pointed acute tooth. Body color yellowish brown, reddish brown or blackish brown. Head length varies between 0.75 mm to 0.93 mm.

Description of paratype queen (n=1) (Figs. 12-14): TL 5.2, HL 1.00, HW 0.90, CI 90, SL 0.70, SI 78, ED 0.25, PW 0.80, WL 1.58, PL 0.53, PH 0.38, DPW 0.28, PI 71, PPL 0.25, PPH 0.38, PPW 0.38, PPI 150.

Like holotype worker, but body much larger and with reproductive queen characteristics. Eyes relatively larger, vertex with 3 ocelli. In lateral view mesonotum massive, dorsum moderately convex anteriorly and sloping posteriorly, mesonotal groove narrowly weakly impressed, apex of scutellum rounded, tegulae present, mesopleuron with an oblique furrow. Metascutum narrow and oblique, overhang by scutellum. Propodeal dorsum steeply sloping posteriorly, about as long as declivity, propodeal spines acutely toothed, longer than propodeal lobes. Anteroventral corner of petiole narrowly rounded.

In dorsal view posterior margin of pronotum deeply roundly concave, humeral corners narrowly rounded. Mesonotum massive and broadest. Scutum large without longitudinal furrows, posterior margin roundly convex. Lateral scutum small and elongate triangular. Anterior margin of scutellum very bluntly angled, posterior margin roundly convex. Sculpture similar to that of holotype worker, but mesopleura longitudinally rugose. Body dorsum with abundant erect to suberect hairs and dense subdecumbent to decumbent pubescence.



Figs. 12 – 14. *Lordomyrma nima* sp. nov., paratype queen. (12) Head in full-face view; (13) body in profile view; (14) body in dorsal view. Photographs by Zhenghui Xu.

Comparative notes: The new species is similar to *L. bhutanensis* (Baroni Urbani, 1977) (Figs. 15-17), but dorsum of promesonotum longitudinally rugose; head dorsum with dense posteriorly divergent rugae; in lateral view petiolar node thick, roughly trapezoidal and narrowed dorsally, with roundly convex dorsum; anterior peduncle of petiole relatively longer, about as long as the node; head length relatively longer, varies between 0.75 mm to 0.93 mm.

Etymology: The specific epithet refers to “Nima”, a common male name widely used in Tibet and Qinghai. The species epithet is a noun in apposition and thus invariant.

Distribution and ecology: China (Tibet). The specimens were collected from Medong and Nyingchi Counties, southeastern Tibet, China. Most individuals were found in undisturbed broadleaf forest and coniferous forest, with small inconspicuous colonies encountered under stone or in soil. The colonies were on sunny slope.

TAXONOMIC CHANGES

Lordomyrma bhutanensis (Baroni Urbani, 1977)
(Figs. 15-20)

Stenamma bhutanense Baroni Urbani, 1977: 420. Bhutan. Combination in *Lordomyrma*: Branstetter, 2009: 48. Holotype worker images, non-type workers and queens from southwestern China examined (deposited in SWFU).

Stenamma sinensis Ma, Xu, Makio & DuBois, 2007: 372. China, Shaanxi Province. Combination in *Lordomyrma*: Branstetter, 2009: 49. Five paratype workers examined (deposited in SWFU). **Syn. nov.**

Description of workers (n=32) (Figs.15-17): TL 2.9-3.6, HL 0.68-0.87, HW 0.61-0.70, CI 76-90, SL 0.47-0.58, SI 74-85, ED 0.10-0.15, PW 0.41-0.50, WL 0.83-1.05, PL 0.33-0.45, PH 0.21-0.30, DPW 0.16-0.24, PI 59-69, PPL 0.18-0.28, PPH 0.18-0.28, PPW 0.21-0.28, PPI 91-113.

In full-face view, head roughly square, slightly longer than broad. Posterior margin almost straight, slightly convex laterally and slightly concave in the middle, posterior corners rounded, lateral margins weakly convex. Mandibles subtriangular, masticatory margin with 7-8 teeth. Clypeus longitudinally depressed in the middle, with a pair of anteriorly divergent carinae on the sides of the depression; anterior margin moderately convex, with a tiny median tooth. Antennae 12-segmented, relatively shorter, apices of scapes reach to 9/10 of the distance from antennal sockets to posterior head corners; antennal clubs consist of the apical 3 segments which incrassate apically. Eyes small, located before mid-length of the head sides, with 5 ommatidia on the maximum diameter.



Figs.15 – 17. *Lordomyrma bhutanensis*, holotype worker. (15) Head in full-face view; (16) body in profile view; (17) body in dorsal view. From AntWeb 2021, CASENT0171178, photographs by Michael Branstetter.

In lateral view dorsal outline of mesosoma sloping posteriorly. Promesonotum moderately convex, promesonotal suture absent. Metanotal groove moderately impressed. Propodeal dorsum nearly straight, rounded anteriorly, posterodorsal corner usually triangularly toothed, sometimes bluntly angled or acutely toothed. Propodeal lobes triangular, with apices acute to blunt. Petiolar node roughly triangular, longer than anterior peduncle, anterior margin almost straight, posterior margin moderately convex, narrowly rounded at apex; anteroventral corner usually bluntly angled, sometimes ventrally toothed or longitudinally prominent as a narrow strip. Postpetiolar dorsum strongly convex and weakly inclined posteriorly, ventral margin straight, anteroventral corner rightly angled. Gaster ovate, sting extruding.

In dorsal view pronotum broadest, lateral margins strongly convex. Promesonotal suture absent. Mesonotum narrowest, lateral margins weakly convex. Metanotal groove impressed. Propodeum widened posteriorly, strongly convex posterolaterally. Petiolar node transverse, about

as broad as long, lateral margins weakly convex. Postpetiolar node broader than long, lateral margins strongly convex, broader than petiolar node.

Mandibles longitudinally striate. Head dorsum loosely rugose and divergent posteriorly, posterior margin and sides reticulate-rugose, clypeus relatively smooth. Dorsum of mesosoma reticulate-rugose, longitudinally rugose or irregularly rugose; mesopleuron reticulate-rugose, metapleuron and propodeal sides longitudinally rugose, propodeal declivity transversely rugose. Petiole and postpetiole finely reticulate-rugose, sides of petiole node finely obliquely rugose, sometimes sternites of petiole and postpetiole densely punctured. Gaster smooth and shining. Body dorsum with abundant erect to suberect hairs and abundant subdecumbent to decumbent pubescence, hairs on head dorsum relatively denser and shorter. Scapes and tibiae with dense subdecumbent to decumbent pubescence. Body color usually reddish brown, sometimes yellowish brown or blackish brown, legs brownish yellow.



Figs. 18 – 20. *Lordomyrma bhutanensis*, paratype queen. (18) Head in full-face view; (19) body in profile view; (20) body in dorsal view. Photographs by Zhenghui Xu.

Description of queens (n=12) (Figs. 18-20): TL 4.0-4.6, HL 0.78-0.85, HW 0.68-0.75, CI 84-91, SL 0.53-0.58, SI 73-78, ED 0.18-0.21, PW 0.53-0.70, WL 1.08-1.30, PL 0.38-0.50, PH 0.29-0.30, DPW 0.20-0.24, PI 60-80, PPL 0.20-0.28, PPH 0.29-0.33, PPW 0.30-0.33, PPI 109-150.

Like workers, but body relatively larger. Eyes relatively larger, vertex with 3 ocelli, rarely ocelli absent. In lateral view mesonotum massive, dorsum horizontal and roughly straight, moderately convex anteriorly, apex of scutellum rounded, tegulae present, mesopleuron with an oblique furrow. Metascutum narrow and oblique, overhung by scutellum. Propodeal dorsum sloping and steep, shorter than declivity, posterodorsal corner triangular toothed or shortly spined, as long as or longer than propodeal lobes. In dorsal view posterior margin of pronotum deeply roundly concave, humeral corners broadly rounded. Mesonotum massive and broadest. Scutum large without longitudinal furrows, posterior margin roundly convex. Lateral scutum small and triangular. Anterior margin of scutellum bluntly angled, posterior margin roundly convex. Sculpture like that of workers, but mesosoma longitudinally rugose, pronotum, propodeal dorsum and declivity transversely rugose. Body dorsum with abundant erect to suberect hairs and dense subdecumbent to decumbent pubescence. Body color reddish brown; head black; mandibles, antennae and legs yellowish brown.

Comparison: In full-face view, the paratype worker of *Lordomyrma sinensis* (Fig. 21) has a similarly shaped head capsule, mandibles, clypeus, antennae, and eyes to the holotype worker of *L. bhutanensis* (Fig. 15). The head is roughly square with almost straight posterior margin and rounded posterior corners. Clypeus has a pair of anteriorly divergent carinae, anterior margin has a tiny tooth in the center. Mandibles subtriangular, masticatory margin with 7 teeth. Antennal club consisting of the apical 3 segments, apex of scape not reaching posterior head corner. Eyes small, located before midpoint of lateral head margins.

In lateral view, the paratype worker of *L. sinensis* (Fig. 22) also has a similarly shaped mesosoma, petiole and postpetiole to the holotype worker of *L. bhutanensis* (Fig. 16). The dorsal outline of the mesosoma is sloping posteriorly, promesonotum moderately convex, promesonotal suture absent. Mesonotum raised up posteriorly, metanotal groove moderately impressed. Propodeal dorsum nearly straight, rounded anteriorly, posterodorsal corners shortly dentate and roughly triangular. Propodeal lobes triangular, about as long as propodeal teeth. Petiolar node roughly triangular and weakly inclined posteriorly, anterior margin nearly straight, posterior margin strongly convex, dorsal apex bluntly angled, the node longer than anterior peduncle. Postpetiolar node inclined posteriorly, dorsum roundly convex.



Figs. 21 – 23. *Lordomyrma sinensis*, paratype worker. (21) Head in full-face view; (22) body in profile view; (23) body in dorsal view. Photographs by Zhenghui Xu.

In dorsal view, the paratype worker of *L. sinensis* (Fig. 23) shows similar shape in mesosoma, petiole and postpetiole to the holotype worker of *L. bhutanensis* (Fig. 17). Pronotum broadest with strongly convex lateral margins, promesonotal suture absent. Mesonotum narrowest with roughly straight lateral margins, metanotal groove impressed. Propodeum widened posteriorly with moderately convex lateral margins. Petiolar node roughly square with weakly convex sides. Postpetiolar node broader than petiolar node, with strongly convex sides.

Conclusion: After the above comparison, we could not find any significant phenotypical differences between the two taxa and therefore consider *L. sinensis* as a junior synonym of *L. bhutanensis*.

The paratype worker of *Lordomyrma sinensis* shows similar characters in body surface sculpture, pilosity, color, measurements and indices to the holotype worker of *L. bhutanensis*. Head dorsum has posteriorly divergent loose rugae which become reticulate-rugose on posterior margin and sides. Clypeus smooth and shining. Mandibles longitudinally striate. Mesosoma reticulate-rugose, metapleuron and propodeal sides longitudinally rugose. Petiole finely obliquely rugose. Postpetiole finely reticulate-rugose. Gaster smooth and shining. Body dorsum with abundant erect to suberect hairs and abundant subdecumbent to decumbent pubescence, head dorsum with relatively denser and shorter hairs. Scapes and tibiae with dense subdecumbent to decumbent pubescence. Body color reddish brown, legs brownish yellow. Both *Lordomyrma bhutanensis* and *L. sinensis* have similar ranges in terms of their measurements and indices. Total length ranges between 2.9 mm to 3.4 mm.

Variation: Based on observation of a long series of specimens identified to *L. bhutanensis* from southwestern China from the year 1999 to 2020, we find that the species shows obvious variation in metanotal groove width, propodeal dorsum, propodeal spines, propodeal lobes, subpetiolar process, sculpture, color and size. Metanotal groove may vary from narrowly to widely impressed. Propodeal dorsum may vary from longer than declivity to as long as declivity. Propodeal spines may vary from bluntly angled, triangularly dentate, to acutely toothed. Propode-

al lobes may vary from acutely toothed to bluntly toothed. Subpetiolar process may vary from right-angled, triangularly toothed, to narrowly prominent as a longitudinal strip. Reticulate-rugose sculpture on mesosomal dorsum sometimes may be irregular or mainly longitudinal, oblique rugae on sides of petiolar node may be strong or relatively weaker. Body color varies from yellowish brown, reddish brown to blackish brown. Total length varies from 2.9 mm to 3.4 mm. Beside the above mentioned variation, the main characters of the species are reliable, including squared head with posteriorly divergent loose rugae on the dorsum, bicarinated clypeus with a tiny central tooth on the anterior margin, relatively shorter antennae with 3-segmented clubs, posteriorly sloping mesosomal dorsum with moderately impressed metanotal groove, roughly triangular petiolar node with relatively shorter anterior peduncle, and distinct rugae on mesosoma and postpetiole.

Geographical range: On the basis of the above assessment, we conclude that *L. bhutanensis* is a common alpine species widely distributed in the Himalayas, Mt. Hengduanshan, and Mt. Qinling, basically occurring from Bhutan, east to Tibet, Yunnan, Sichuan and Shaanxi in China. The species has an altitudinal range of 1500 m to 3760 m.

Specimens examined: 9 workers: China, Tibet Autonomous Region, Nyingchi County, Lunang Town, Dongjug Village, 29.8859°N, 94.7866°E, 2750 m, collected from a nest inside topsoil in conifer-broadleaf mixed forest, 13.VII.2009, Xueyun Ma leg., No. A09-1600;

9 workers: China, Tibet Autonomous Region, Nyingchi County, Pelung Town, Zaqu Village, 29.9114°N, 95.1463°E, 2510 m, collected from a nest inside decayed wood in broadleaf forest, 25.IX.2007, Zhenghui Xu leg., No. A07-434;

9 workers: China, Tibet Autonomous Region, Bomi County, Zhamo Town, Zhamo Village, 29.8679°N, 95.7272°E, 2960 m, collected from a nest in soil in *Pinus densata* forest, 24.VII.2011, Nana Yu leg., No. A11-4295;

9 workers: China, Tibet Autonomous Region, Medog County, Dagmo Town, 70K, 29.7037°N, 95.5224°E, 2750 m, collected from a nest in soil in Abis forest, 27.VII.2011, Chenglin Zhang leg., No. A11-4193;

9 workers: China, Tibet Autonomous Region, Zayu County, Goyu Town, Bolo Village, 28.9947°N, 97.4006°E, 3000 m, collected from a nest inside litter in conifer-broadleaf mixed forest, 01.IX.2010, Nana Yu leg., No. A10-3623;

9 workers: China, Tibet Autonomous Region, Zayu County, Zhouwagoin Town, Cibagou, 28.7073°N, 97.0430°E, 2610m, collected from a nest inside decayed wood in conifer-broadleaf mixed forest, 10.X.2007, Zhenghui Xu leg., No. A07-1141;

9 workers: China, Tibet Autonomous Region, Zayu County, Zhouwagoin Town, Cibagou, 28.7073°N, 97.0430°E, 2550 m, collected from a nest inside decayed wood in conifer-broadleaf mixed forest, 10.X.2007, Zhenghui Xu leg., No. A07-1133;

9 workers: China, Tibet Autonomous Region, Zayu County, Zhouwagoin Town, Zayu River side, 28.6032°N, 97.2198°E, 1870 m, collected from a nest under stone in shrub, 7.X.2007, Zhenghui Xu leg., No. A07-1241;

8 workers: China, Yunnan Province, Lushui County, Pianma Town, Pianma Yakou, 25.9779°N, 98.6975°E, 3000 m, collected from a soil sample in shrub, 27.IV.1999, Zhenghui Xu leg., No. A99-3;

8 workers, 1 queen: China, Yunnan Province, Lushui County, Pianma Town, Pianma Village, 25.9938°N, 98.6608°E, 2500 m, collected from a nest in soil in subalpine moist broadleaf forest, 25.IV.1999, Zhenghui Xu leg., No. A99-28;

3 workers: China, Yunnan Province, Tengchong County, Jietou Town, Er'naozi, 25.6447°N, 98.7354°E, 2500 m, collected from a soil sample in subalpine moist broadleaf forest, 1.V.1999, Zhenghui Xu leg., No. A99-189;

8 workers, 1 queen: China, Yunnan Province, Deqen County, Yunling Town, Mingyong Village, 28.4594°N, 98.7701°E, 2750 m, collected from a nest in soil in conifer-broadleaf mixed forest, 9.X.2004, Zhenghui Xu leg., No. A04-525;

8 workers, 1 queen: China, Yunnan Province, Deqen County, Yanmen Town, Tuola Village, 28.0762°N, 98.7526°E, 3030 m, collected from a nest in soil in conifer-broad leaf mixed forest, 17.X.2003, Zhenghui Xu leg., No. A3970;

9 workers: China, Yunnan Province, Weixi County, Tuozhi Town, Tuozhi Village, 27.1490°N, 99.4010°E, 3000 m, collected from a nest in soil in conifer-broadleaf mixed forest, 12.X.2003, Meizhao Fu leg., No. A3435;

6 workers: China, Yunnan Province, Lanping County, Lajing Town, Lajing Village, 26.4577°N, 99.3048°E, 3000 m, collected from a soil sample in conifer-broadleaf mixed forest, 8.X.2003, Zhenghui Xu leg., No. A3211;

8 workers: China, Yunnan Province, Jiachuan County, Diannan Town, Shangguandian Village, 26.3892°N, 99.9392°E, 3000 m, collected from a nest in soil in *Pinus yunnanensis* forest, 1.XI.2005, Shengli Shi leg., No. A05-1357;

1 worker: China, Yunnan Province, Dali City, Dali Town, Mt. Cangshan, 25.6842°N, 100.1071°E, 3250 m, collected from a ground sample in conifer-broadleaf mixed forest, 29.X.2005, Xiao Guo leg., No. A05-978.

3 workers: China, Yunnan Province, Yulong County, Shitou Town, Mount Jinsishan, 26.8325°N, 99.6272°E, 3250 m, collected from a soil sample in conifer-broadleaf mixed forest, 19.X.2004, Xiao Guo leg., No. A04-1137;

9 workers: China, Yunnan Province, Yulong County, Baisha Town, Yulong Snow Mountain, 27.1349°N, 100.2598°E, 3000 m, collected from a nest in soil in *Pinus yunnanensis* forest, 20.X.2004, Zhenghui Xu leg., No. A04-1208;

5 workers: China, Sichuan Province, Danba County, Dongkor Town, Kuiyong, 30.5172°N, 101.7858°E, 3380 m, collected on the ground in *Quercus* forest, 24.VIII.2005, Zhenghui Xu leg., No. A05-522;

9 workers: China, Sichuan Province, Muli County, Ke'er Town, Cunduohai, 28.1251°N, 101.1613°E, 3760 m, collected from a nest in soil in *Quercus* shrub, 29.VII.2018, Xinmin Zhang leg., No. C18-1257;

9 workers: China, Sichuan Province, Muli County, Ke'er Town, Zhongniuchang, 28.1026°N, 101.1477°E, 3250 m, collected from a nest in soil in *Quercus* forest, 29.VII.2018, Xinmin Zhang leg., No. C18-1349;

9 workers: China, Sichuan Province, Muli County, Liziping Town, Mahuanggou, 28.0875°N, 101.1726°E, 3040 m, collected from a nest in soil in *Pinus yunnanensis* forest, 30.VII.2018, Yucheng He leg., No. C18-1386;

4 workers: China, Sichuan Province, Muli County, Xiamaidi Town, Mianbuyakou, 27.6873°N, 101.2211°E, 3280 m, collected from a soil sample in alpine conifer forest, 26.VII.2018, Zhao Huang leg., No. C18-796;

9 workers: China, Sichuan Province, Yanyuan County, Mianya Town, Mianya Village, 27.6352°N, 101.2508°E, 2800 m, collected from a nest in soil in conifer-broadleaf mixed forest, 26.VII.2018, Zhao Huang leg., No. C18-706;

2 workers: China, Sichuan Province, Chongzhou City, Jiguanshan Town, Maliugou, 30.7974°N, 103.2277°E, 1600 m, collected under a decayed wood in broadleaf forest, 18.VI.2016, Zhenghui Xu leg., No. A16-337;

2 workers: China, Sichuan Province, Chongzhou City, Jiguanshan Town, Maliugou, 30.7974°N, 103.2277°E, 1500 m, collected on the ground in broadleaf forest, 18.VI.2016, Zhenghui Xu leg., No. A16-304;

1 worker: China, Sichuan Province, Pingwu County, Baima Town, Suoguxiu Village, 32.7345°N, 104.3459°E, 2050 m, collected from a soil sample in conifer-broadleaf mixed forest, 25.VII.2017, Biao Qi leg., No. A17-998;

9 workers: China, Sichuan Province, Pingwu County, Muzuo Town, Muzuo Village, 32.7118°N, 104.3902°E, 1770 m, collected from a nest under stone in semi-evergreen broadleaf forest, 26.VII.2017, Biao Qi leg., No. A17-1103;

5 paratype workers of *Lordomyrma sinensis*: China, Shaanxi Province, Mt. Qinling, 33.6500°N, 107.8000°E, 1580-1640 m, collected from litter in forest land, 07-18.IX.2005, Libin Ma leg.

Distribution and ecology: China (Tibet, Yunnan, Sichuan, Shaanxi (Type locality of *L. sinensis*)), Bhutan (type locality of *L. bhutanense*), Nepal. The species uses various habitats, such as semi-evergreen broadleaf forest, subalpine moist broadleaf forest, conifer-broadleaf mixed forest, alpine conifer forest and shrublands, often nesting in soil, decayed wood, leaf litter or under stone. Most individuals forage on the ground or in leaf litter and tend to be shy when disturbed.

Key to the known species of *Lordomyrma* based on worker caste

The following identification key is novel and constitutes the first such key for the genus.

1 In full-face view, from center of frons to posterior margin of head smooth and shining (Fig.24)2
 - In full-face view, from center of frons to posterior margin of head coarsely rugose or reticulate (Figs. 25-26)17

2(1) Promesonotum strongly convex and subglobose (Fig. 27); propodeal spines very long, equal to or longer than propodeal dorsum, strongly diverging and out-curved (Fig. 28)3
 - Promesonotum not so strongly convex as above (Fig. 29); propodeal spines shorter than propodeal dorsum, straight or curved, not so strongly diverging and out-curved (Fig. 30)4



Figs. 24 – 26. Head in full-face view. (24) *Lordomyrma furcifera* (CASENT0922236, photograph by Michele Esposito); (25) *L. reticulata* (CASENT0012197, photograph by April Nobile); (26) *L. azumai* (CASENT0172483, photograph by April Nobile). From AntWeb 2021.



Figs. 27 – 30. Mesosoma in profile (27, 29) and dorsal view (28, 30). (27-28) *Lordomyrma crawleyi* (CASENT0006154, photographs by April Nobile); (29-30) *L. nigra* (CASENT0900967, photographs by Will Ericson). From AntWeb 2021.



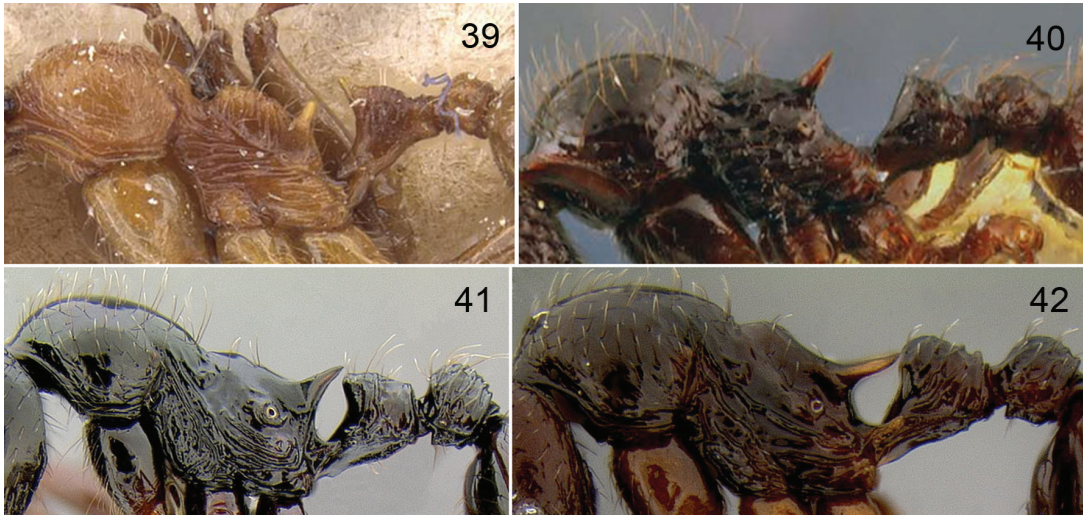
Figs. 31 – 32. Body in profile view. (31) *Lordomyrma crawleyi*, type worker (CASENT0006154, photograph by April Nobile); (32) *L. furcifera*, holotype worker (CASENT0922236, photograph by Michele Esposito). From AntWeb 2021.



Figs. 33 – 34. Mesosoma in profile view. (33) *Lordomyrma accuminata* (focol1996, photograph by Christiana Kingenberg); (34) *L. sukuna* (CASENT0171006, photograph by Eli M. Sarnat). From AntWeb 2021.



Figs. 35 – 38. Head in full-face view (35, 37) and body in profile view (36, 38). (35-36) *Lordomyrma nigra*, syntype worker (CASENT0900967, photographs by Will Ericson); (37-38) *L. accuminata*, holotype worker (focol1966, photographs by Christiana Kingenberg). From AntWeb 2021.



Figs. 39 – 42. Mesosoma and waist in profile view. (39) *Lordomyrma caledonica* (CASENT0915402, photograph by Will Ericson); (40) *L. diwata* (Taylor 2012: fig 22); (41) *L. vuda* (CASENT0171018, photograph by Eli M. Sarnat); (42) *L. polita* (CASENT0171007, photograph by Eli M. Sarnat). From AntWeb 2021.



Figs. 43 – 46. Head in full-face view (43, 45) and body in profile view (44, 46). (43-44) *Lordomyrma caledonica*, syntype worker (CASENT0915402); (45-46) *L. infundibuli*, syntype worker (CASENT0900966). From AntWeb 2021, photographs by Will Ericson.



Figs. 47 – 49. Head in full-face view. (47) *L. cryptocera*, (CASENT0922237, photograph by Michele Esposito); (48) *L. curvata* (CASENT0171008, photograph by Eli M. Sarnat); (49) *L. vuda* (CASENT0171018, photograph by Eli M. Sarnat). From AntWeb 2021.

3(2) In profile view, apex of propodeal spine up-curved; top of postpetiole with short acute spine (Fig. 31) (New Guinea).....

.....*L. crawleyi* Menozzi, 1923

- In profile view, apex of propodeal spine straight; top of postpetiole rightly angled, without acute spine (Fig.32) (New Guinea, New Caledonia).....

.....*L. furcifera* Emery, 1897

4(2) In profile view, metanotal groove absent (Fig. 33)

- In profile view, metanotal groove distinctly impressed (Fig. 34)

5(4) Head square, as broad as long (Fig. 35); sides of head longitudinally striate; in profile view, top of postpetiole bluntly angled (Fig. 36) (New Guinea).....

.....*L. nigra* Donisthorpe, 1941
- Head rectangular, distinctly longer than broad (Fig. 37); sides of head smooth; in profile view, top of postpetiole roundly convex (Fig. 38) (New Guinea).....

.....*L. accuminata* Stitz, 1912

6(4) In profile view, top of petiolar node with a sharp spine (Fig. 39)

- In profile view, top of petiolar node without a sharp spine, at most acutely angled (Figs. 40-42)

.....

7(6) Head trapezoidal, as broad as long; apex of scape distinctly surpassed posterior head corner (Fig. 43); in profile view, anterodorsal corner of propodeal dorsum narrowly rounded (Fig. 44) (New Caledonia).....

.....*L. caledonica* André, 1889

- Head rectangular, longer than broad; apex of scape failed to reach posterior head corner (Fig. 45); in profile view, anterodorsal corner of propodeal dorsum acutely toothed (Fig. 46);(New Guinea).....

.....*L. infundibuli* Donisthorpe, 1940

8(6) Antennal scrobes deep, with clearly defined inner and outer margins (Fig. 47); in profile view, top of petiolar node rightly angled with an acute summit (Fig. 40).....

.....9
- Antennal scrobes shallow, at least without clearly defined inner and outer margins (Figs. 48-49); in profile view, top of petiolar node rightly prominent or narrowly rounded, but always with a blunt summit (Figs. 41-42).....

.....10

9(8) In profile view, sides of head densely foveolate, propodeal spines straight, dorsum of postpetiole moderately convex, hairs on body dorsal dense and long (Fig. 50); in dorsal view, propodeal spines straight (Fig. 51) (Philippines)

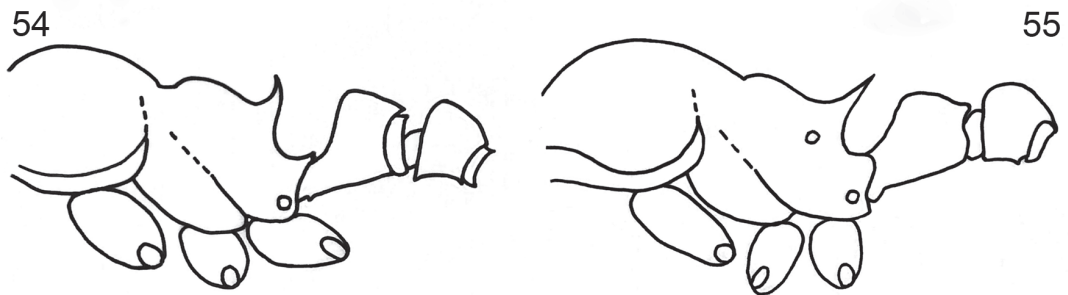
.....*L. diwata* Taylor, 2012

- In profile view, sides of head longitudinally rugose, propodeal spines down-curved, dorsum of postpetiole strongly convex, hairs on body dorsal abundant and short (Fig. 52); in dorsal view, propodeal spines in-curved (Fig. 53) (New Guinea).

.....*L. cryptocera* Emery, 1897



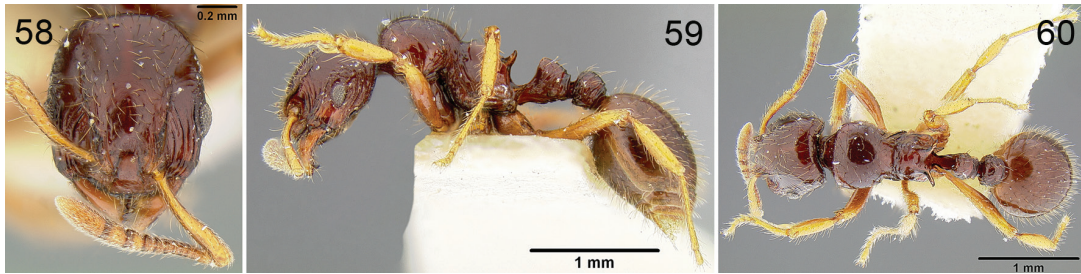
Figs. 50 – 53. Body in profile (50, 52) and in dorsal view (51, 53). (50-51) *Lordomyrma diwata*, holotype worker (Taylor 2012: figs 22-23); (52-53) *L. cryptocera*, holotype worker (from AntWeb 2021, CASENT0922237, photographs by Michele Esposito).



Figs. 54 – 55. Mesosoma and waist in profile view. (54) *Lordomyrma stoneri*; (55) *L. desupra*.



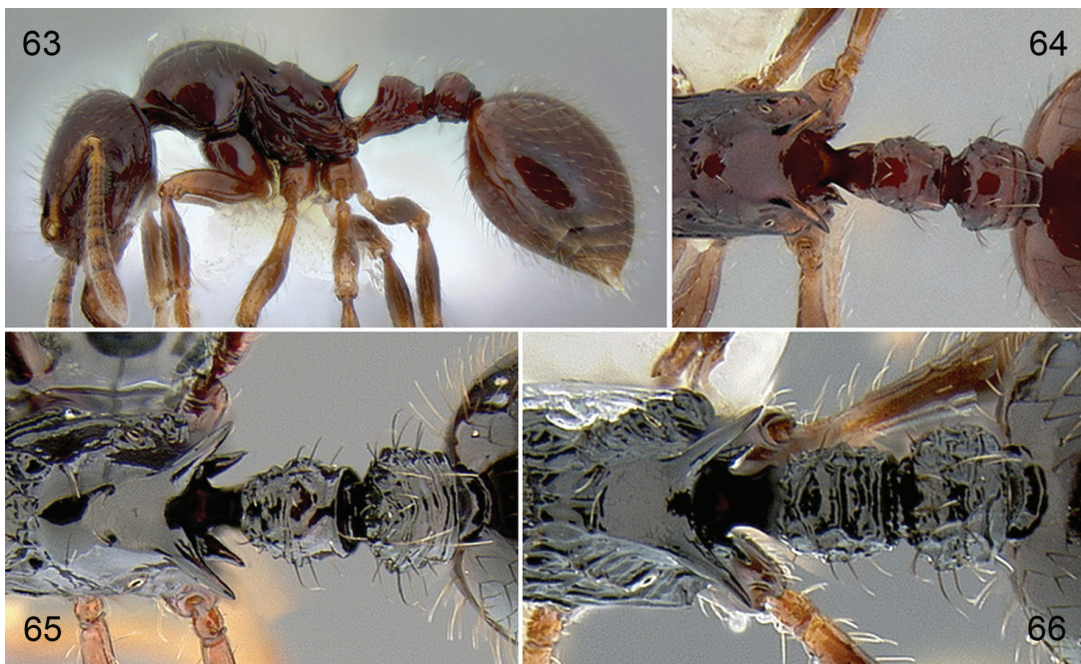
Figs. 56 – 57. *Lordomyrma curvata*, holotype worker. (56) Body in profile view; (57) body in dorsal view (from AntWeb 2021, CASENT0171008, photographs by Eli M. Sarnat).



Figs. 58 – 60. *Lordomyrma stoneri*, type worker. (58) Head in full-face view; (59) body in profile view; (60) body in dorsal view (from AntWeb 2021, CASENT0171014, photographs by Eli M. Sarnat).



Figs. 61 – 62. *Lordomyrma tortuosa*, syntype worker. (61) Head in full-face view; (62) body in profile view (from AntWeb 2021, CASENT0171013, photographs by Eli M. Sarnat).



Figs. 63 – 66. Body in profile view (63) and waist in dorsal view (64-66). (63-64) *Lordomyrma desupra*, type worker (CASENT0106145, photographs by Michael Branstetter); (65) *L. vuda* (CASENT0171018, photograph by Eli M. Sarnat); (66) *L. sukuna* (CASENT0171006, photograph by Eli M. Sarnat). From AntWeb 2021.



Figs. 67 – 70. Head in full-face view (67, 69) and body in profile view (68, 70). (67-68) *Lordomyrma vuda*, type worker (CASENT0171018); (69-70) *L. sukuna*, type worker (CASENT0171006). From AntWeb 2021, photographs by Eli M. Sarnat.

10(8) In profile view, top of petiolar node rightly prominent with very narrow summit, petiolar node roughly triangle and inclined forward (Fig. 41)11
 - In profile view, top of petiolar node narrowly rounded with broader summit, petiolar node roughly conical and erect (Fig. 42)16

11(10) In profile view, propodeal spines up-curved (Fig. 54).....12
 - In profile view, propodeal spines straight (Fig. 55) or down-curved.....13

12(11) Posterior head margin broad, almost straight (Fig. 48); in profile view, propodeal spines long and weakly up-curved, body dorsum with dense hairs (Fig. 56); in dorsal view, propodeal spines weakly out-curved (Fig.57) (Fiji)
 ***L. curvata* Sarnat, 2006**
 - Posterior head margin narrow, weakly convex (Fig. 58); in profile view, propodeal spines short

and strongly up-curved, body dorsum with abundant hairs (Fig. 59); in dorsal view, propodeal spines strongly out-curved (Fig. 60) (Fiji).....
 ***L. stoneri* (Mann, 1925)**

13(11) In profile view, sides of head behind eyes archly rugose (Figs. 61-62) (Fiji).....
 ***L. tortuosa* (Mann, 1921)**
 - In profile view, sides of head behind eyes smooth and shiny (Fig. 63)14

14(13) In profile view, propodeal spines straight; postpetiole symmetrical, roundly convex (Fig. 63), dorsum smooth and shiny (Fig. 64); body color reddish brown (Fiji)
 ***L. desupra* Sarnat, 2006**
 - In profile view, propodeal spines slightly curved posteriorly; postpetiole asymmetrical, with prominent anterodorsal corner dorsum rugose (Figs. 65-66); body color black15



Figs. 71 – 74. Head in full-face view (71, 73) and body in profile view (72, 74). (71-72) *Lordomyrma polita*, type worker (CASENT0171007); (73-74) *L. levifrons*, holotype worker (CASENT0171004). From AntWeb 2021, photographs by Eli M. Sarnat.

15(14) Anterior margin of clypeus moderately convex (Fig. 67); in profile view, sides of propodeum smooth and shiny; anterior margin of petiolar node almost vertical, forming an almost right angle with dorsum of peduncle (Fig.68) (Fiji)
*L. vuda* Sarnat, 2006

- Anterior margin of clypeus strongly convex (Fig. 69); in profile view, sides of propodeum longitudinally rugose; anterior margin of petiolar node steeply sloping, forming a very blunt angle with dorsum of peduncle (Fig. 70) (Fiji)
 *L. sukuna* Sarnat, 2006

16(10) In full-face view, head weakly narrowing posteriorly with broader posterior margin (Fig.71); in profile view, side of head behind eye smooth and shiny; propodeal spines pointing posteriorly; top of petiolar node broadly rounded; postpetiole erect (Fig.72) (Fiji)
*L. polita* (Mann, 1921)

- In full-face view, head strongly narrowing posteriorly with narrower posterior margin (Fig.73); in profile view, side of head behind eye archly ru-

gose; propodeal spines pointing posterodorsally; top of petiolar node narrowly rounded; postpetiole weakly inclined anteriorly (Fig. 74) (Fiji)
*L. levifrons* (Mann, 1921)

17(1) In profile view, top of petiolar node narrowly rounded or bluntly angled, with a blunt summit (Figs. 75-80).....18

- In profile view, top of petiolar node acutely or rightly angled, with a sharp, acute or very narrow summit (Figs. 81-82).....23

18(17) In profile view, propodeal spines very short, only slightly longer than propodeal lobes (Figs. 75-78).....19

- In profile view, propodeal spines very long, distinctly longer than propodeal lobes (Figs. 79-80)22

19(18) In full-face view, anterior margin of clypeus with a tiny tooth medially (Fig. 9).....20

- In full-face view, anterior margin of clypeus without a tiny tooth medially (Fig.1)21



Figs. 75 – 82. Mesosoma and waist in profile view. (75) *Lordomyrma bhutanensis* (CASENT 0171178); (76) *L. nima* sp. nov. (77) *L. epinotalis* (CASENT0219728); (78) *L. leae* (CASENT0172480); (79) *L. rugosa* (CASENT0171009); (80) *L. lakshmi* (Taylor 2012: fig10); (81) *L. vanua* (CASENT0171051); (82) *L. emarginata* (Taylor 2012: fig 26).

20(19) In profile view, petiolar node roughly triangular, node dorsum blunt rounded (Fig.75); in dorsal view, promesonotum irregularly rugose (Fig. 17) (Bhutan, China).....
 ***L. bhutanensis* (Baroni Urbani, 1977)**
 -In profile view, petiolar node roughly trapezoidal, node dorsum roundly convex(Fig. 76); in dorsal view, promesonotum longitudinally rugose (Fig. 11) (China)***L. nima* sp. nov.**

21(19) Posterior head margin broad and almost straight, antennal scrobes absent, head dorsum reticulate (Fig. 83); in profile view, metanotal

groove absent, petiole node higher and roughly trapezoidal, body dorsum with dense hairs (Fig. 77); dorsum of promesonotum smooth but punctate posteriorly (Fig. 84) (Solomon Islands).....
 ***L. epinotalis* (Mann, 1919)**
 - Posterior head margin narrow and weakly convex, antennal scrobes distinctly impressed, head dorsum longitudinally rugose (Fig. 85); in profile view, metanotal groove deeply notched, petiolar node lower and roughly conical, body dorsum with abundant hairs (Fig. 78); dorsum of pronotum transversely rugose (Fig.86) (Australia, Lord Howe Island).....***L. leae* Wheeler, 1919**



Figs. 83 – 86. Head in full-face view (83, 85) and body in dorsal view (84, 86). (83-84) *Lordomyrma epinotalis*, type worker (CASENT0219728, photographs by Will Ericson); (85-86) *L. leae*, type worker (CASENT0172480, photographs by April Nobile). From AntWeb 2021.

22(18) Posterior head margin narrow and slightly convex, antennal scrobes very shallow, head dorsum longitudinally rugose (Fig. 87); in profile view, metanotal groove deeply impressed, petiolar node roughly conical and inclined anteriorly, body dorsum with abundant hairs; body color black (Fig. 88) (Fiji).....***L. rugosa* (Mann, 1921)**
 - Posterior head margin broad and straight, antennal scrobes deep, head dorsum coarsely reticulate (Fig. 89); in profile view, metanotal groove absent, petiolar node roughly trapezoidal and inclined posteriorly, body dorsum with dense hairs. Body color reddish brown (Fig. 90) (India).....
***L. lakshmi* Taylor, 2012**

23(17) Antennal scrobes absent or very shallow, without clear outer boundary (Fig. 91)24
 - Antennal scrobes present and deeply impressed, with clear outer boundary (Fig.92)26

24(23) In profile view, posterodorsal corner of mesonotum highly raised up and rightly angled, forming a step-like reduction between mesonotum and propodeum (Figs. 93-94) (New Caledonia)***L. rouxi* (Emery, 1914)**
 - In profile view, posterodorsal corner of mesonotum at most very lowly raised up and narrowly rounded, not forming a step-like reduction between mesonotum and propodeum (Fig. 95) ...25

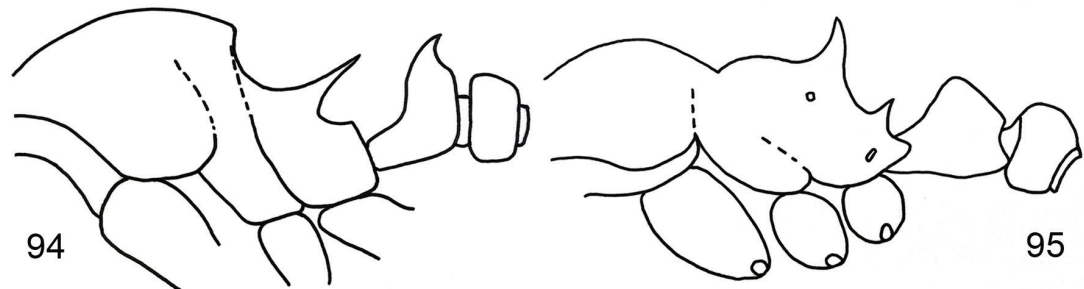
25(24) Posterior head margin weakly convex, posterior corners broadly rounded (Fig. 96); in profile view, promesonotum strongly convex and arched; propodeal spines up-curved; body dorsum with abundant hairs (Fig. 97); in dorsal view, propodeal spines curved and pointed laterally (Fig. 98); body color black (Fiji)
***L. vanua* Lucky & Sarnat, 2008**



Figs. 87 – 90. Head in full-face view (87, 89) and body in profile view (88, 90). (87-88) *Lordomyrma rugosa*, syntype worker (from AntWeb 2021, CASENT0171009, photographs by Eli M. Sarnat); (89-90) *L. lakshmi*, holotype worker (Taylor 2012: figs 9-10).



Figs. 91 – 92. Head in full-face view. (91) *Lordomyrma rouxi* (from AntWeb 2021, CASENT0904676, photograph by Zach Lieberman); (92) *L. emarginata* (Taylor 2012: fig 25).



Figs. 93 – 95. Body (93) and mesosoma (94-95) in profile view. (93) *Lordomyrma rouxi*, syntype worker (from AntWeb 2021, CASENT0904676, photograph by Zach Lieberman); (94) *L. rouxi* (Emery 1914: fig 8^o); (95) *L. vanua*.



Figs. 96 – 98. *Lordomyrma vanua*, syntype worker. (96) Head in full-face view; (97) body in profile view; (98) body in dorsal view. From AntWeb 2021, CASENT0171051, photographs by Eli M. Sarnat.

- Posterior head margin almost straight, posterior corners narrowly rounded (Fig. 99); in profile view, dorsum of promesonotum almost straight; propodeal spines slightly down-curved (Fig. 100); body dorsum with dense hairs; in dorsal view, propodeal spines curved medially and pointed lateroposteriorly (Fig.101); body color reddish brown (New Caledonia)
 *L. sarasini* (Emery, 1914)

26(23) In profile view, propodeal spines very short, approximately as long as propodeal lobes; petiolar node regularly triangular, as high as long, the top elongated and acutely angled, with straight anterior and posterior margins (Fig. 102) (Philippines)..... *L. emarginata* Taylor, 2012
 - In profile view, propodeal spines long, distinctly longer than propodeal lobes; petiolar node roughly triangular, but lower than long, the top not elongated and rightly angled, at least posterior margin convex (Fig. 103).....27



Figs. 99 – 101. *Lordomyrma sarasini*, syntype worker. (99) Head in full-face view; (100) body in profile view; (101) body in dorsal view. From AntWeb 2021, CASENT0904675, photographs by Zach Lieberman.



Figs. 102 – 103. Body in profile view. (102) *Lordomyrma emarginata*, holotype worker (Taylor 2012: fig 26); (103) *L. punctiventris*, type worker (Taylor 2009: fig 4).

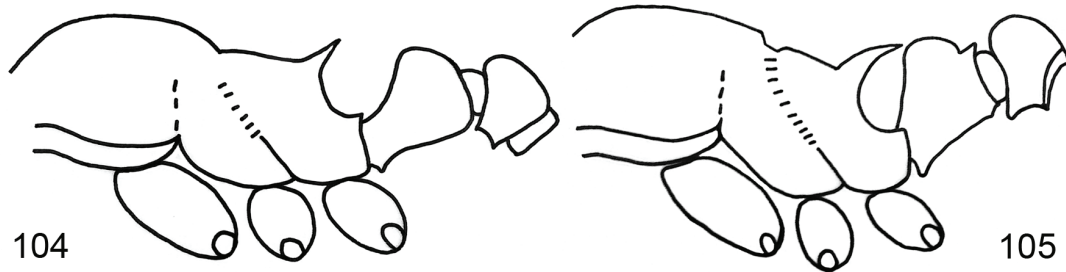
27(26) In profile view, propodeal spines up-curved (Fig.103) (Australia)
***L. punctiventris* Wheeler, 1919**
 - In profile view, propodeal spines down-curved or straight (Figs. 104-105)28

28(27) Anterior 2/3 of head dorsum coarsely reticulate (Fig.25).....29
 -Anterior 2/3 of head dorsum longitudinally rugose (Fig. 26)31

29(28) Posterior head margin narrow and moderately convex, with broadly rounded posterior cor-

ners (Fig.106); in profile view, propodeal spines straight (Fig.107) (Philippines).....
***L. idianale* Taylor, 2012**
 - Posterior head margin broad and slightly convex, with narrowly rounded posterior corners (Fig. 1, 25); in profile view, propodeal spines weakly down-curved (Fig.108).....30

30(29) Forecoxa delicately rugoreticulate, body color uniformly reddish brown (Fig. 108); first gastral segment with shallow regular reticulating sculpture (Fig. 109) (Borneo)
***L. reticulata* Lucky & Sarnat, 2008**



Figs. 104 – 105. Mesosoma and waist in profile view. (104) *Lordomyrma idianale*; (105) *L. reticulata*.



Figs. 106 – 107. *Lordomyrma idianale*, holotype worker. (106) Head in full-face view; (107) body in profile view (Taylor 2012: figs 29-30).



Figs. 108 – 110. Body in profile (108) and gaster in dorsal view (109-110). (108-109) *Lordomyrma reticulata*, type worker (from AntWeb 2021, CASENT0012197, photographs by April Nobile); (110) *L. jingpo* sp. nov., photograph by Zhenghui Xu.

- Forecoxae lateral side smooth and shiny (Fig. 2), body bicolored, head, mesosoma, petiole, and postpetiole blackish brown, gaster reddish brown (Figs. 1-3); first gastral segment smooth and shiny, with sparse piliferous small punctures (Fig. 110); (China: Yunnan)***L. jingpo* sp. nov.**

31(28) In profile view, metanotal groove narrowly shallowly notched (Fig. 111); first gastral seg-

ment strongly reticulate-rugose (Fig. 112); body color black (India).....

.....***L. taylori* Bharti & Ali, 2013**

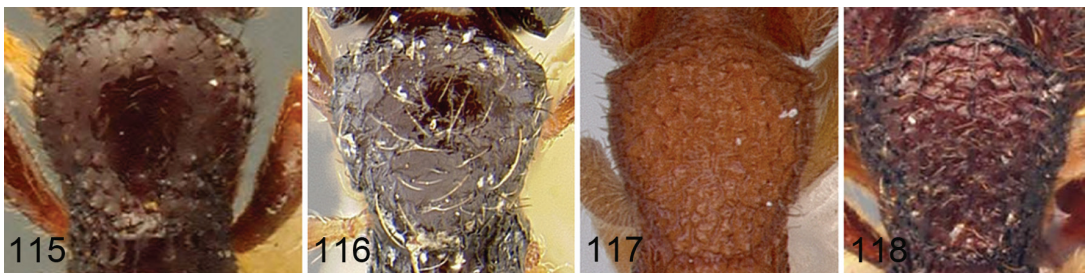
- In profile view, metanotal groove widely deeply impressed (Fig. 113); first gastral segment smooth and shiny, at most with sparse piliferous punctures (Fig. 114); body color reddish brown to blackish brown.....32



Figs. 111 – 112. *Lordomyrma taylori*, holotype worker. (111) Body in profile view; (112) gaster in dorsal view. From AntWeb 2021, ANTWEB1008009, photographs by H. Bharti.



Figs. 113 – 114. Mesosoma in profile view (113) and gaster in dorsal view (114). (113) *Lordomyrma azumai* (from AntWeb 2021, CASENT0172483, photograph by April Nobile); (114) *L. limatula* (Taylor 2012: fig 36).



Figs. 115 – 118. Dorsum of promesonotum. (115) *Lordomyrma limatula* (Taylor 2012, fig 35); (116) *L. striatella* (CASENT0171016, photograph by Eli M. Sarnat); (117) *L. azumai* (CASENT0172484, photograph by April Nobile); (118) *L. hmong* (Taylor 2012, fig 15).



Figs. 119 – 121. *Lordomyrma limatula*, holotype worker. (119) Head in full-face view; (120) body in profile view; (121) body in dorsal view (from Taylor 2012: figs 33-35).



Figs. 122 – 124. *Lordomyrma striatella*, syntype worker. (122) Head in full-face view; (123) body in profile view; (124) body in dorsal view (from AntWeb 2021, CASENT0171016, photographs by Eli M. Samat).

32(31) Dorsum of pronotum smooth and shiny, at most with sparse piliferous punctures (Figs. 115-116)33
 - Dorsum of pronotum densely reticulate (Figs.117-118).....34

33(32) Head dorsum sparsely longitudinally rugose (Fig. 119); in profile view, propodeal dorsum weakly convex, propodeal spines weakly down-curved (Fig. 120); in dorsal view, propode-

al spines weakly divergent posteriorly (Fig. 121); body color reddish brown (Philippines)
*L. limatula* Taylor, 2012
 - Head dorsum densely longitudinally rugose (Fig. 122); in profile view, propodeal dorsum weakly concave, propodeal spines straight (Fig. 123); in dorsal view, propodeal spines strongly divergent posteriorly (Fig. 124); body color blackish brown (Fiji).....
*L. striatella* (Mann, 1921)



Figs. 125 – 128. Body in profile view (125, 127) and gaster in dorsal view (126, 128). (125-126) *Lordomyrma azumai*, non-type worker (from AntWeb 2021, CASENT0172484, photographs by April Nobile); (127-128) *L. hmong*, holotype worker (Taylor 2012: figs 14, 16).

34(32) In profile view, petiolar node erect with straight anterior margin (Fig.125); first gastral segment abundantly punctate (Fig. 126); body dorsum with dense straight hairs and pubescence; body color generally medium reddish brown (Japan)*L. azumai* (Santschi, 1941)
-In profile view, petiolar node inclined anteriorly with weakly concave anterior margin (Fig. 127); first gastral segment smooth and shiny (Fig. 128). Body dorsum with dense curved hairs and pubescence; body bicolor, head, mesosoma, petiole and postpetiole reddish brown, gaster black (Vietnam)*L. hmong* Taylor, 2012

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