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Taxonomic notes on the ant genus *Diacamma* Mayr, 1862 (Hymenoptera: Formicidae), part 2

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Abstract

Taxonomic changes and notes on the ponerine ant genus *Diacamma* Mayr, 1862 are presented. The following four species are redescribed: *Diacamma ceylonense* Emery, 1897 from Sri Lanka and South India, *D. orbiculatum* Santschi, 1932, stat.n. = *D. ceylonense* var. *moicum* Santschi, 1932 syn.n. from Southeast Asia, *D. sikkimense* Forel, 1903 stat.n. from North India, and *D. timorense* Emery, 1887, stat.n. from Timor Island in Indonesia. A lectotype is designated for *D. sikkimense*. Eight species are described as new: *Diacamma gusenleitneri* sp.n. from Borneo, *D. jaitrongi* sp.n. from Thailand, and six species from the Philippines: *D. leyteense* sp.n. (from Leyte and Samar), *D. symposium* sp.n. (from Mindanao), *D. excellens* sp.n. (from Biliran), *D. reductostriatum* sp.n. (from Camiguin), *D. aureovestitum* sp.n. (from Mindanao), and *D. aequale* sp.n. (from Negros). Some faunistical notes on species treated in part 1 are added.

Key words: Formicidae, Ponerinae, *Diacamma*, ants, taxonomy, new species, new status, new synonymy, lectotype designation, morphometry, Asia, Oriental, Sri Lanka, India, Thailand, Laos, Indonesia, Philippines.

Zusammenfassung

Taxonomische Änderungen und Notizen über die Ameisengattung *Diacamma* Mayr, 1862 aus der Unterfamilie Ponerinae werden präsentiert. Die folgenden vier Arten werden wiederbeschrieben: *Diacamma ceylonense* Emery, 1897 von Sri Lanka und Südindien, *D. orbiculatum* Santschi, 1932, stat.n. = *D. ceylonense* var. *moicum* Santschi, 1932 syn.n. aus Südostasien, *D. sikkimense* Forel, 1903 stat.n. aus Nordindien und *D. timorense* Emery, 1887, stat.n. von der Insel Timor in Indonesien. Ein Lectotypus wird für *D. sikkimense* designiert. Acht Arten werden neu beschrieben: *Diacamma gusenleitneri* sp.n. von Borneo, *D. jaitrongi* sp.n. aus Thailand und sechs Arten von den Philippinen: *D. leyteense* sp.n. (von Leyte und Samar), *D. symposium* sp.n. (von Mindanao), *D. excellens* sp.n. (von Biliran), *D. reductostriatum* sp.n. (von Camiguin), *D. aureovestitum* sp.n. (von Mindanao) und *D. aequale* sp.n. (von Negros). Einige faunistische Ergänzungen werden zu den Arten, die im ersten Teil behandelt wurden, gemacht.

Introduction

The ponerine genus *Diacamma* Mayr, 1862 currently comprises 33 valid species and 21 subspecies (Bolton 2016) occurring from India to Australia. Perhaps its most striking

and well-studied property is its reproductive biology: An alate queen is entirely absent. Instead, a worker with intact gemmae (thoracic appendages), the so-called "gamergate", mates with the winged males and lays eggs. All other workers are infertile, due to removal of their gemmae by the gamergate (e.g., Peeters & Higashi 1989).

Most recently, six species and one subspecies were described as new by Laciny et al. (2015), along with additional taxonomic notes on several other species of the genus. During this study the need for a taxonomic revision of the genus and the large number of presumably undescribed species became evident. Previous descriptions were largely unreliable due to use of insufficient character-sets or lack of available material (see also Shattuck & Barnett 2006). The authors therefore chose a largely morphometry-based approach to species-delimitation and took advantage of the illustrations of type specimens provided by Antweb.org to compare species. This methodology is continued in the study at hand.

The species treated in this study are only known in the female sex. However, another study linking conspecific males and females in a small number of species is currently in preparation by the authors. Linking the sexes of *Diacamma* is especially difficult due to their entirely different morphology (Okada et al. 2006) and the significantly shorter lifespan of males: While workers and gamergates can live for approximately 200 and 580 days, respectively (Tsuji et al. 1996), males only live for a few weeks or die after suicidal copulation (Allard et al. 2002).

Material and methods

Specimens: This work is chiefly based on specimens from the California Academy of Sciences, the Thailand Natural History Museum, the Natural History Museum Vienna, and from the first author's collection. Additionally, a smaller number of specimens from other collections (see below) were examined as well. Regarding species of the Philippines, holotypes will be deposited in the Philippine National Museum, Manila. All specimens are either pinned or card-mounted. Only female individuals were considered in this study. We refer to all females as "workers" and indicate if they possess gemmae, because we do not know whether they were functional gamergates.

Material from the California Academy of Sciences contains numerous specimens from Thailand and the Philippines, each with almost unique label data. To save printing space, we present these data in a synoptic way, but exact label data can be obtained from an electronic supplement on the journal's web page: http://www.entomologie.at/zeitschrift/downloads.php

Acronyms of collections:

AMNH	American Museum of Natural History, NY, USA
CASC	California Academy of Sciences, San Francisco, CA, USA
CZW	Coll. H. Zettel, Vienna, Austria
MCSN	Museo Civico di Storia Naturale Giacomo Doria (main collection and Carlo Emery's collection), Genova, Italy
MHNG	Muséum d'Histoire Naturelle Genève (Forel Collection), Switzerland
NHMB	Natural History Museum Basle (Santschi Collection), Switzerland
NHMW	Natural History Museum Vienna, Austria

OÖLM Upper Austrian State Museum, Biology Centre, Linz, Austria

PNMM Philippine National Museum, Manila, the Philippines

THNHM Thailand Natural History Museum, National Science Museum, Technopolis, Pathum Thani, Thailand

Measurements of card-mounted or pinned specimens were taken at magnifications of up to 256× with a Nikon SMZ1500 binocular microscope. Measured specimens were labelled with an individual number on green paper. The complete data set of measurements is provided as an electronic supplement on the journal's web page: http://www.entomologie.at/zeitschrift/downloads.php

Acronyms of measurements and indices (in part after Shattuck & Barnett 2006):

TL Total length. The added lengths of head (including mandibles), alitrunk, petiole, and gaster (excluding sting).

HW Head width. Maximum width of head in full-face view including eyes.

HL Head length. Maximum length of head in full-face view, excluding mandibles, measured from anterior-most point of clypeus to posterior-most point of head vertex, parallel to midline.

SL Scape length. Maximum length of antennal scape in dorsal view excluding basal neck and condyle.

WL Weber's length. Mesosomal length measured laterally from anterior surface of pronotum proper (excluding collar) to posterior extension of propodeal lobes.

MTL Middle tibial length. Maximum length of second tibia, measured at extensor side.

PH Petiole height. Maximum height of petiole, measured laterally, from dorsal-most point of spines to ventral-most point of tergite (sternite not included in measurement).

PL Petiole length. Maximum length of main petiolar body (excluding spines) measured laterally, perpendicular to posterior face.

PW Petiole width. Maximum width of petiolar body, measured fronto-dorsally, perpendicular to midline.

SpD Spine distance. Distance of distal tips of petiolar spines, measured dorsally.

SpL Spine length. Length of petiolar spines, measured fronto-dorsally, from the midpoint of a line between spine-tips to the point of inflexion at base of spines.

EL Eye length. Maximum diameter of compound eye, measured laterally.

CI Cephalic index. HW / HL × 100

SI Scape index. SL / HW × 100

PI Petiolar index. PL / PH × 100

SpDI Spine distance index. SpD / PW × 100

SpLI Spine length index. SpL / PW × 100

EI Eye index. EL / HW × 100

Photographs of specimens were created with the help of Leica Application Suite v3.8, using a Leica DFC450 camera attached to a Leica Z16APO optics carrier. Images of labels were taken with a Nikon D60 camera with an AF-S Micro Nikkor 105 mm objective and an EM-140 DG macro ring flash. Images were processed using Adobe Photoshop 7.0. All illustrations featured in this publication are also available for download on ANTWEB (http://www.antweb.org/).

Taxonomy

Diacamma gusenleitneri sp.n. (Figs. 1–4)

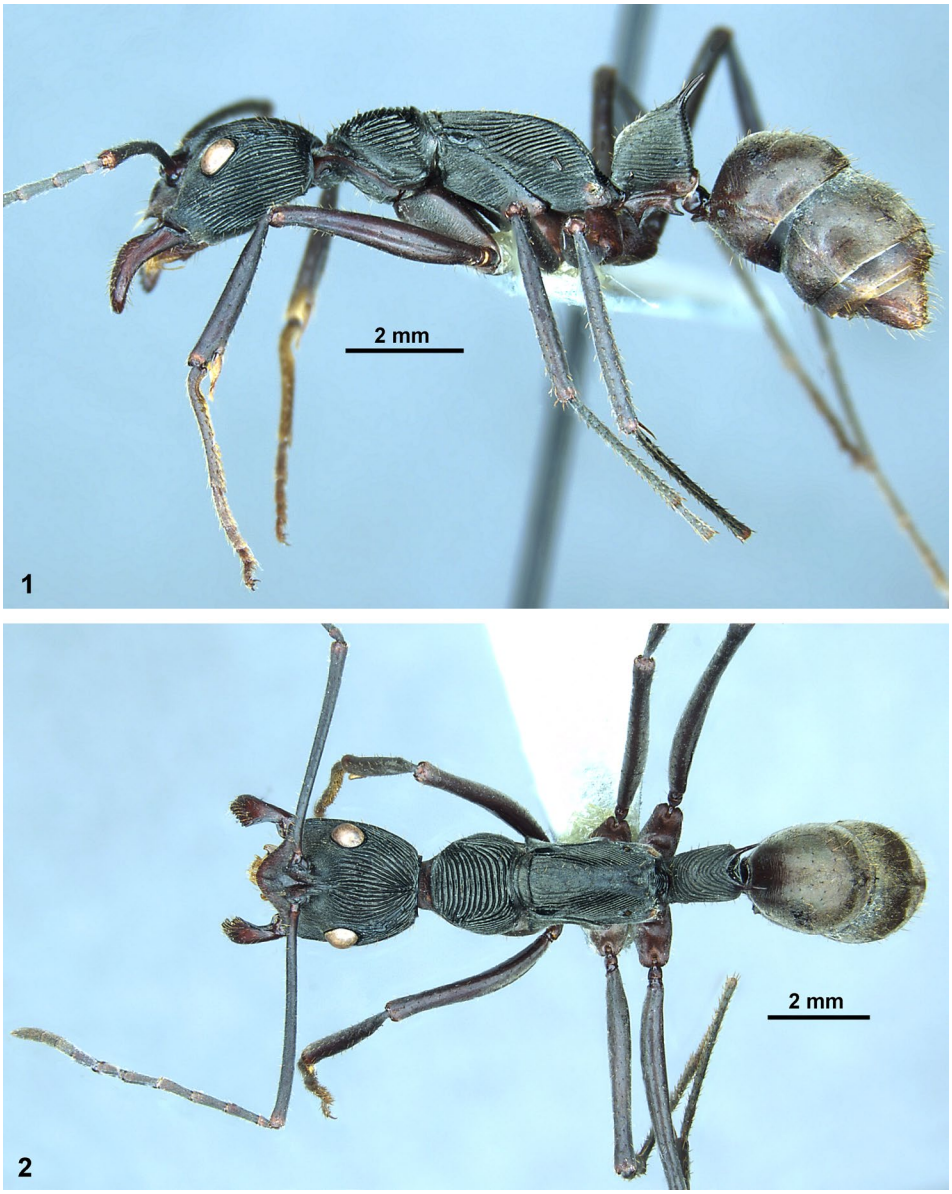
Etymology: This species is dedicated to Mag. Fritz Gusenleitner, hymenopterist and director of the Biology Centre of OÖLM in Linz, Upper Austria.

Type material: Holotype (worker, OÖLM, CASENT0916087), Indonesia, Borneo (Central East), [Kalimantan Timur, Berau Regency, Segah,] Gunung Sari [ca. N 2°01', E 117°02', 70 m a.s.l.], 17.VIII.1956, leg. H.H.F. Hamann (Wegner Expedition).

Diagnosis: Very large, slender species (TL 14.9 mm). Trunk predominantly black; anterior part of clypeus, subpetiolar process, gaster, mandibles, and legs dark brown. Standing setae short. Fine pilosity absent or reduced on various parts of head and mesosoma. Head (Fig. 3) elongated, sides posteriorly of eye strongly convex. Striation posteriorly of eyes characteristic: lateral striae reaching occipital margin, medial striae converging to a point at posterior end of midline; without paired loops. Occipital margin slightly broadened, ventrally terminating in short, blunt teeth. Eyes moderately large, protruding. Clypeus strongly convex, with very fine puncturation, anteromedially with very obtuse angle, almost broadly rounded. Mandible with very fine and dense striation. Striae on pronotum (Fig. 2) coarser than on remaining mesosoma, of characteristic arrangement: transverse anteriorly, concentric posteriorly, longitudinal at sides. Striation on mesosoma sides oblique (Fig. 1). Petiole (Figs. 1, 2) distinctly compressed, its teeth long, moderately diverging, and upright; subpetiolar process prominent, with deeply concave outline, both teeth long, posterior one curved posteriorly. Gaster tergite 1 (Figs. 1, 2) with reduced striation on disc, but with some faint striation on anterior declivent area.

Description: Measurements of holotype: TL 14.90; HW 2.58; HL 3.55; EL 0.80; SL 4.70; PH 1.52; PL 1.54; PW 1.21; SpD 0.96; SpL 0.85; WL 5.67; MTL 3.52. Indices: CI 73; SI 182; PI 101; SpDI 81; SpLI 71; EI 30.

Structures: Head (Fig. 3) elongated; sides long and parallel in front of eyes, strongly convex behind eyes. Eyes moderately large, slightly protruding. Striation on head very coarse, anteriorly fading. Posteriorly of eyes, lateral striae reaching occipital margin, medial striae converging to a point at posterior end of deeply engraved midline. Occipital margin comparatively wide, but narrower than in other species of the *D. intricatum* group, ventrally terminating in blunt teeth in lateral aspect (Fig. 1). Clypeus strongly convex at basal half, almost obtusely carinate medially, with very fine puncturation, almost matt; sockets of setae forming small protuberances; anterior margin broadly protruding medially, apex very obtuse, almost rounded. Mandible with very fine and dense striation. Striae on pronotum (Fig. 2) very coarse, on disc transverse anteriorly and concentric posteriorly; on sides with longitudinal striation. Gemmal pits large. Striation on mesospleura, metapleura and propodeum oblique (Fig. 1); mesopleura anteriorly with blunt, laterally curved corner. Carinae between posterior and lateral faces of propodeum indistinct. Forecoxa with distinct, fine striation. Petiole compressed (Fig. 2), high and narrow; striation curved in



Figs. 1–2: *Diacamma gusenleitneri* sp.n., holotype. (1) Habitus, lateral. (2) Habitus, dorsal. © A. Pal.

dorsal aspect; spines long, narrow, and moderately diverging. Subpetiolar process (Fig. 1) prominent, outline strongly concave; both teeth long, posterior one curved posteriorly; in ventral aspect narrow, lateral margins and median carina distinct only in anterior half. Gaster (Fig. 2) with very fine and dense microsculpture, reticulated on tergite 1, punctured on following tergites; sockets of setae forming small protuberances; a fine transverse striation reduced to anterior declivent face of tergite 1.

Figs. 3 – 4: *Diacamma gusenleitneri* sp.n., holotype. (3) Head, frontal. (4) Labels. © A. Pal.

Pilosity: Standing setae on trunk short, only a few on clypeus, underside of head, and abdominal apex longer; setae on scape and legs short. Short appressed pilosity of trunk mostly scarce, but dense on clypeus, genae, mesonotum, and gaster; moderately developed on sides of mesosoma, propodeum crest, and petiole.

Colour (Fig. 1 – 3): Trunk chiefly black, without metallic shimmer; anterior part of clypeus, subpetiolar process, gaster, and mandibles dark brown. Scape and antennomere 2 dark reddish brown, other segments more strongly infuscated; apex of antenna pale. Legs chiefly dark reddish brown; sides of forecoxa, tibiae and tarsi more strongly infuscated.

Notes: This is a peculiarly large and slender species with compressed petiole and strongly reduced striation of gaster. The structures of the petiole place *D. gusenleitneri* sp.n. in the *D. intricatum* group (see Laciny et al. 2015, p. 89, notes for *D. magdalenae* Laciny, Pal & Zettel, 2015), but the head striation of *D. gusenleitneri* sp.n. is different from all other taxa described in this group. In *D. intricatum* (Smith, 1857), *D. holosericeum* (Roger, 1860), and *D. magdalenae* the rugae are parted and form a pair of loops, whereas the most posterior striae are concentrically bowed and only the outer one reaches the head margin. In *D. gusenleitneri* sp.n., however, the dorsolateral striae reach the head margin and the dorsomedial striae are curved medially to meet at the posterior part of the midline.

Distribution: Indonesia: only known from the type locality in Kalimantan Timur.

Diacamma ceylonense Emery, 1897

Diacamma rugosum ceylonense Emery, 1897: 159.

Diacamma ceylonense: Bingham 1903: 79; Bolton 1995: 169; Schmidt & Shattuck 2014: 190.

Non-type material examined: 1 worker (NHMW), "INDIA: Madras St.: \ Lower camp. \ O. B. Chhotani \ Feb. 1969", „Diacamma \ ceylonense Em. \ det. R. N. Tewari" [This specimen originates from Tamil Nadu, Madurai, lower camp (see Tiwari 1999).]; 2 workers (CASC), from India, Karnataka, Bangalore, 9.VI.1950, leg. T.C. Lawrence; 1 worker (CASC), India, Tamil Nadu, Vellore, 200 m a.s.l., 27.II.1962, leg. E.S. Ross & D.Q. Cavagnaro; 2 workers (CASC), India, 1962, further data lost, leg. E.S. Ross & D.Q. Cavagnaro; 2 workers (CASC, NHMW), India, Karnataka, Mysuru ["Mysore"], 5 miles SW of Bangalore, 800 m a.s.l., 25.II.1962, leg. E.S. Ross & D.Q. Cavagnaro; 2 workers (CASC), India, Tamil Nadu, Chennai ["Madras"], 3 miles N of Toppur, 450 m a.s.l., 5.III.1962, leg. E.S. Ross & D.Q. Cavagnaro.

Illustrations examined: Syntype (worker, MCSN, CASENT0903871); non-type (worker, AMNH, ANTWEB1008516), both in Antweb (2016).

Diagnosis: Moderately large, slender species (TL 12.2–13.5 mm). Trunk blackish, matt; posterior margins of gaster tergites and sternites pale brown to yellowish. Erect setae abundant; short pilosity well developed. Trunk strongly striate from genae to petiole, finely striate on gaster tergites. Head moderately long, sides posteriorly of eye strongly convex. Posterior of head longitudinally striate until hind margin. Hind margin of head very narrow in middle, strongly broadened at sides. Eyes small. Clypeus entirely and very densely punctured; apex rounded or forming a very blunt angle. Mandible with fine striation. Pronotum with concentric rugae, only those at centre usually transverse. Striation on mesopleura and propodeum oblique, on metapleura vertical. Petiole stout; teeth relatively short and distant; subpetiolar process moderately concave, anterior tooth longer than posterior one. Gaster tergite 1 with fine, dense, elliptical striation; tergite 2 with fine, longitudinal striation on a major part of surface; following tergites often with similar striation in smaller areas.

Description: Measurements of non-type material (n = 8): TL 12.26–13.50; HW 2.05–2.22; HL 2.64–2.93; EL 0.54–0.62; SL 3.13–3.26; PH 1.54–1.67; PL 0.98–1.15; PW 1.04–1.20; SpD 0.53–0.62; SpL 0.28–0.32; WL 4.04–4.43; MTL 2.58–2.77. Indices: CI 76–78; SI 149–161; PI 63–71; SpDI 45–55; SpLI 23–28; EI 26–28.

Structures: Head elongate; sides strongly convex behind small eyes. Coarse rugae present from genae to petiole. Posteriorly of eyes, longitudinal rugae reaching occipital margin. Hind margin of head very narrow in middle, strongly broadened at sides, and terminating in a roundish lobe or very blunt teeth. Clypeus densely punctured; anterior margin medially rounded or forming a very obtuse angle. Mandibles usually with well-developed fine striation. Pronotum with concentric rugae, but centrally with some transverse rugae. Striation on mesopleura and propodeum oblique, on metapleura vertical. Lateral face of forecoxa with faint striation. Petiole stout; teeth relatively short and distant; subpetiolar process in lateral view moderately concave, with short pilosity, anterior tooth longer than the reduced posterior one, in ventral view anteriorly with high rim, posteriorly (and often extended forward) with well-developed median carina. Gaster with very fine puncturation. Gaster tergite 1 with fine and very dense elliptical (longer than wide) striation; tergite 2 with similar, but longitudinal striation on a major part of surface; tergites 3–4 often with similar striation in smaller areas, or these areas covered by preceding tergites.

Pilosity: Standing setae on trunk, scape, and legs numerous, those on ventral side of head, on petiole and gaster tergites longer than on other parts. Short silverish pilosity well developed, abundant.

Colour: Trunk blackish, without metallic shimmer; clypeus dark reddish brown; posterior margins of gaster tergites and sternites pale brown to yellowish. Mandibles reddish brown. Antennae, legs and mandibles dark reddish brown.

Notes: *Diacamma ceylonense* possesses several very peculiar characters which set this species apart from all congeners: (1) metapleura with vertical striation (not horizontal or oblique as in other species); (2) petiolar process posteriorly with reduced tooth; (3) gaster tergites 1 and 2 with fine and dense longitudinal striation. The species is presently known to us from Sri Lanka and southern India, only. In detail we have studied only specimens from India and compared them with illustration of a syntype from Sri Lanka. However, more material is required to confirm the conspecificity of these two populations. Records from Southeast Asia in the old literature refer to other species, mostly to *D. orbiculatum* (see notes below). Antweb (2016) illustrates a syntype of *D. ceylonense* from MCSN and a specimen from "Bangolo", India – the latter by numerous interesting SEM photographs.

Diacamma orbiculatum Santschi, 1932 stat.n. (Figs. 5–13)

Diacamma ceylonensis [sic!] var. *orbiculatum* Santschi, 1932: 14; Bolton 1995: 170.

Diacamma rugosum ssp. *ceylonense* var. *moica* Forel, 1911: 377; Bolton 1995: 170. Unavailable name.

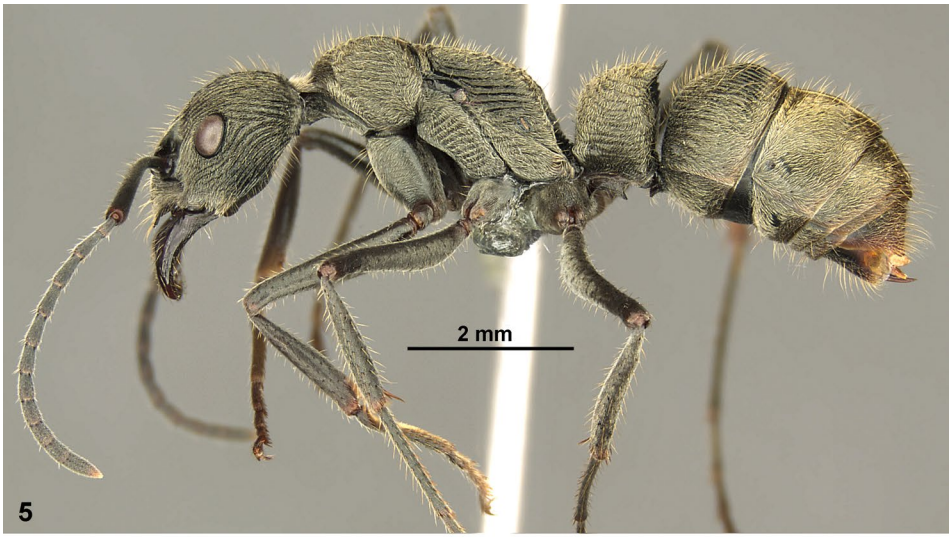
Diacamma ceylonensis [sic!] var. *moicum* Santschi, 1932: 14 (first available use of *Diacamma rugosum* ssp. *ceylonense* var. *moica* Forel, 1911). **Syn.n.**

Diacamma ceylonense orbiculatum: Schmidt & Shattuck 2014: 190.

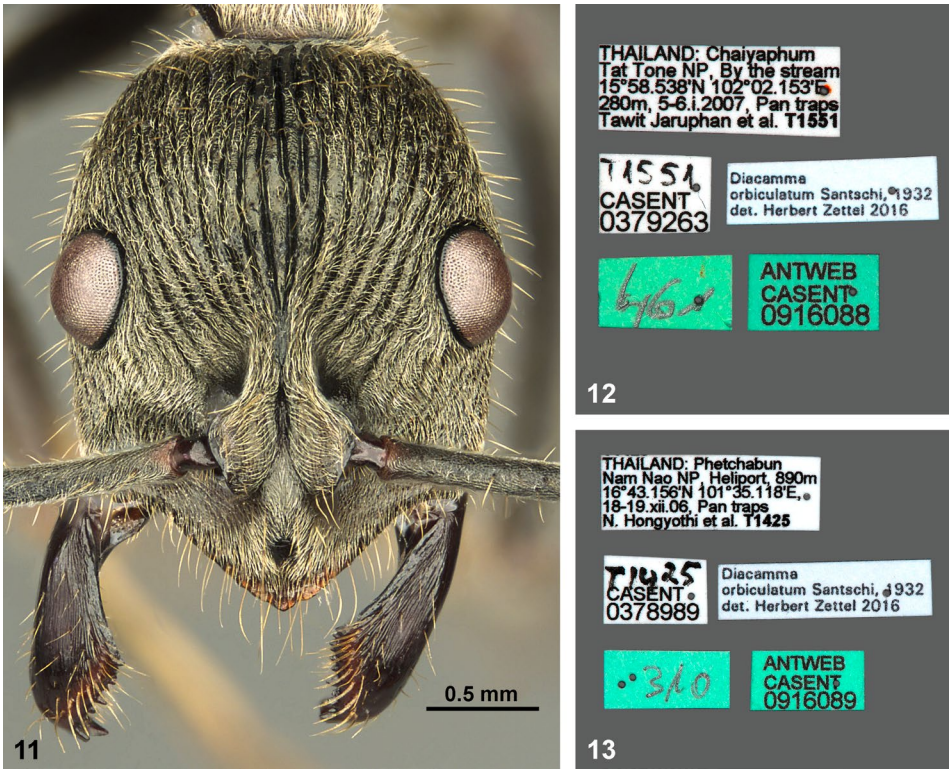
Type material examined: Holotype of *orbiculatum* (worker, NHMB, CASENT0915176), labelled "Type", "Laos \ Luang Prabang \ Salvaca", "Diacamma ☿ Type \ ceylonense Em \ v. orbiculatum Sant \ Dr. Santschi F. 1930 det.", "Sammlung \ Dr. F. Santschi \ Kairouan", "ANTWEB \ CASENT \ 0915176", "302", "Holotypus \ Diacamma ceylonensis \ var. orbiculatum Santschi, 1932 \ labelled by Zettel & al. 2016", "Diacamma \ orbiculatum Santschi, 1932 \ det. Zettel, Pal & Laciny 2016". Syntypes of *moicum* (2 workers on one pin, MHNG, CASENT0907225), labelled "V. moica Forel", "r. ceylonense Em.", "D. rugosum Le Guill \ r. ceylonense Em. \ v. moica Forel \ ☿ Type \ Pays de Moïs \ Cochinchine \ (Dugas)", "Coll. Forel", "Typus", "ANTWEB \ CASENT \ 0907225 \\ BOTTOM ☿", "330", "331", "Syntypi \ Diacamma ceylonensis \ var. moicum Santschi, 1932 \ labelled by Zettel & al. 2016", "Diacamma \ orbiculatum Santschi, 1932 \ det. Zettel, Pal & Laciny 2016".

Non-type material examined: Laos: 5 workers (THNHM), C. Laos, Vientiane, Pak Ngum District, Ban Phang Dang, 14.VI.2010, leg. W. Jaitrong (#WJT10-LAO153); 1 worker (THNHM), same locality and date, leg. Sk. Yamane (#LA10-SKY-123). – Thailand: 3 workers (CASC), Loei Province, Phu Kradueng National Park; 5 workers (CASC), Phetchabun Province, Khao Kho National Park; 18 workers (CASC), Phetchabun Province, Nam Nao National Park (incl. CASENT0916089); 33 workers (CASC, NHMW), Chaiyaphum Province, Tat Thone National Park (incl. CASENT0916088); 20 workers (CASC, NHMW), Chaiyaphum Province, Pha Hin Ngam National Park; 7 workers (CASC, NHMW), Sakon Nakhon Province, Phu Phan National Park; 4 workers (THNHM), Kalasin Province, Phusitan Wildlife Sanctuary, head quarter, dry dipterocarp forest, 2.IX.2007, leg. P. Kosonpanyapiwat; 4 workers (THNHM), same locality and date, leg. P. Kosonpanyapiwat (#PPK07-TH1); 6 workers (THNHM), same locality and date, honey baiting, leg. P. Kosonpanyapiwat (#P3, P35); 2 workers (THNHM), same locality and date, leg. W. Jaitrong (#P3, WJT07-TH2152); 5 workers (THNHM), same area, agriculture, honey baiting, 6.IX.2007, leg. P. Kosonpanyapiwat (#P8, P9, P10, P37, P39); 17 workers (THNHM), same area, night, honey baiting, 9.VI.2007, leg. P. Kosonpanyapiwat (#P3, P6, P7, P8, P16, P21, P22, P24, P25, P26, P28, P29, P30, P31, P32); 10 workers (THNHM), same area, 6-10.VI.2007, leg. W. Jaitrong (#WJT07-TH1013); 1 worker (THNHM), Kalasin Province, Phusitan Wildlife Sanctuary, Phu Meui,

Figs. 5–10: *Diacamma orbiculatum*, non-type specimens from Thailand. (5) Habitus, lateral. (6) Habitus, dorsal. (7, 9) Pronotum, dorsal. (8, 10) Petiole, dorsal. Scales for Figures 7 and 9 as for Figures 8 and 10, respectively. © A. Pal.



dry evergreen forest, 5.IX.2007, leg. W. Jaitrong; 3 workers (THNHM), Kalasin Province, Phusitan Wildlife Sanctuary, Kheang Chang Nam Station, mixed deciduous forest, honey baiting, 3.IX.2007, leg. P. Kosonpanyapiwat (#P6); 4 workers (THNHM), same data, except 4.IX.2007 and #P12, P19, P21; 3 workers (THNHM), Mukdahan Province, Phusitan Wildlife Sanctuary, Kheang Chang Neam Station, deciduous forest (P2), 3.IX.2007, leg. W. Jaitrong (#WJT07-TH1500); 2 workers (THNHM), same area, 8.VI.2007, leg. W. Jaitrong; 4 workers (THNHM), Mukdahan Province, Phusitan Wildlife Sanctuary, Khamcha-e District, mixed deciduous forest (P3), 3.IX.2007, leg. W. Jaitrong (#WJT07-TH1515); 5 workers (THNHM), same area, 6-10.VI.2007, leg. W. Jaitrong; 5 workers (THNHM), Mukdahan Province, Cham Cha-e District, Kheang Chang Nam village, mixed deciduous forest, 8.VI.2007; 48 workers (CASC, NHMW), Ubon Ratchathani Province, Pha Taem National Park; 2 workers (THNHM), Nakhon Ratchasima Province, Wang Nam Kheao District, Sakaerat Environmental Research Station, dry evergreen forest, 17.VIII.2009, leg. W. Jaitrong; 5 workers (THNHM), same area, Haui Nam Keam, 18.VIII.2009, leg. W. Jaitrong (#WJT09-TH2246); 2 workers (THNHM), Saraburi Province, Muang District, Sam Lan National Park, 16.XI.2012, leg. W. Jaitrong (#WJT161112-2); 1 worker (THNHM), same data, except #WJT161112-1; 2 workers (CASC), Nakhon Nayok Province, Khao Yai National Park; 7 workers (THNHM), Bangkok, Bang Khean, Wee's farm, garden area, 2.XI.2003, leg. W. Jaitrong (#WJT03-TH351); 1 worker (THNHM), same data, except 25.VII.2003; 1 worker (THNHM), Bangkok, Bang Khean District, residential area, 25.VIII.2003, leg. Sk. Yamane; 6 workers (THNHM), Chachoengsao Province, Khao Ang Reu Nei Wildlife Sanctuary, Sampran Station, 27.II.2003, leg. W. Jaitrong (#WJT270203-1); 1 worker (THNHM), same area, Phu Thai Station, 29.IV.2003, leg. W. Jaitrong; 1 worker (THNHM), same area, Lumchangwat, 26.IV.2003, leg. W. Jaitrong; 6 workers (THNHM), same area, Bo Tong Station, 30.XII.2002, leg. W. Jaitrong; 1 worker (THNHM), same data, except 28.XII.2002; 2 workers (THNHM), same data, except 27.IV.2003; 5 workers (THNHM), same area, Lumchangwat Station, 28.XII.2002, leg. W. Jaitrong; 1 worker (THNHM), same data, except 21.VIII.2003; 1 worker (THNHM), same area, Phu Thai Station, 29.IV.2003, leg. W. Jaitrong; 1 worker (THNHM), Sa Khaew Province, Khao Ang Reu Nai Wildlife Sanctuary, Khao Ta Krub Station, dry evergreen forest, 23.VI.2003, leg. W. Jaitrong (#WJT03-TH208); 10 workers (THNHM), Chonburi Province, Siracha District, Kasetsart Siracha University, dry evergreen forest, 18.X.2003, leg. W. Jaitrong (#WJT03-TH313); 11 workers (THNHM), Chonburi Province, Kasetsart Siracha University, agricultural land, 17.X.2003, leg. W. Jaitrong (#WJT03-TH304); 9 workers (THNHM), same data, except #WJT03-TH302; 1 worker (THNHM), Rayong Province, Klaeng District, Khao Chamaow – Khao Wong National Park, 20.V.2008, leg. W. Jaitrong (#WJT08-E210); 1 worker (THNHM), Rayong Province, Khao ang Reu Nei Wildlife Sanctuary, Siraman Station, dry evergreen forest, 5.IV.2004, leg. W. Jaitrong; 7 workers (THNHM), Chantaburi Province, Pong Nam Ron District, Khao Soi Dao Wildlife Sanctuary, Soi Dao, Waterfall, 13.V.2008, night time, leg. W. Jaitrong (#WJT08-E); 3 workers (THNHM), same area, head quarter, 17.V.2008, leg. W. Jaitrong (#WJT08-E); 6 workers (THNHM), same data, except 14.V.2008, and #WJT08-E071); 5 workers (THNHM), same data, except 16.V.2008, and #WJT08-E125; 3 workers (THNHM), same data, except #WJT08-E118; 1 worker (THNHM), same data, except #WJT08-E133; 2 workers (THNHM), same data, except 17.V.2008, and #WJT08-E165; 3 workers (THNHM), same data, except 18.I.2008, and #WJT08-TH; 6 workers (THNHM), same data, except 14.V.2008, and #WJT08-E079; 5 workers (THNHM), same data, except #WJT08-E073; 7 workers (THNHM), same data, except #WJT08-E056; 7 workers (THNHM), Chantaburi Province, Pong Nam Ron District, Khlong Tab Mak Waterfall, 18.V.2008, night time, leg. W. Jaitrong (#WJT08-E194); 1 worker (THNHM), Chantaburi Province, Pheao National Park, Pheao Waterfall, tropical rain forest, 22.XI.2003, leg. W. Jaitrong; 1 worker (THNHM), same area, Troknong Waterfall, tropical rain forest, 24.XI.2003, leg. W. Jaitrong; 8 workers (THNHM), Chantaburi Province, Khao Ang Reu Nei Wildlife Sanctuary, Khlong Ploy Station, 6.IV.2004, leg. W. Jaitrong (#WJT060404-1); 1 worker (THNHM), Chantaburi Province, Khao Soi Dao, teak plantation, 26.XI.2006, leg. S. Watana; 6 workers (NHMW), Trat Province, Kho Chang, west side, N 12°02 – 05', E 102°20', 20 – 200 m a.s.l., 1–24.XII.1999, leg. A Schultz & K. Vock (#305, 318).



Figs. 11–13: *Diacamma orbiculatum*, non-type specimens from Thailand. (11) Head frontal. (12, 13) Labels of specimens illustrated in (12) Figs. 5–8, 11, and (13) Figs. 9 and 10. © A. Pal.

Diagnosis: Stout, medium-sized species (TL 11.9–13.8 mm). Trunk black, without metallic shimmer. Erect setae abundant; pilosity often very dense. Trunk coarsely striate from genae to gaster tergite 1 (rarely to tergite 2). Head (Fig. 11) moderately long, sides posteriorly of eye strongly convex. Posterior of head longitudinally striate until narrowly truncated hind margin; occipital margin ventrally terminating in very short, blunt teeth (Fig. 5). Eyes small. Clypeus (Fig. 11) punctured; apex forming a distinct obtuse angle. Pronotum (Figs. 7, 9) with very coarse rugae of variable, but often horseshoe-shaped arrangement. Striation on propodeum horizontal (Fig. 5) or slightly oblique. Petiole (Figs. 6, 8, 10) very stout, its teeth short and moderately distant; subpetiolar process moderately concave, with acute teeth. Gaster tergite 1 (Fig. 6) with coarse semi-circular or semi-elliptical striation, frequently in a more longitudinal arrangement. Gaster tergite 2 rarely with some longitudinal striae.

Description: Measurements of holotype of *orbiculatum*: TL 13.37; HW 2.15; HL 2.67; EL 0.56; SL 2.93; PH 1.80; PL 1.04; PW 1.33; SpD 0.58; SpL 0.27; WL 4.11; MTL 2.22. Indices: CI 80; SI 136; PI 58; SpDI 44; SpLI 21; EI 25. Measurements of syntypes of *moicum* (n = 2): TL 12.78, 12.98; HW 2.25, 2.35; HL 2.80, 2.84; EL 0.60, 0.64; SL 3.00, 3.13; PH 1.80, 1.93; PL 1.14, 1.24; PW 1.40, 1.46; SpD 0.49, 0.59; SpL 0.25, 0.27; WL 4.30, 4.37; MTL 2.28, 2.35. Indices: CI 80, 83; SI 133; PI 63, 64; SpDI 35, 41; SpLI 17, 20; EI 26, 27. Measurements of non-type material (n = 21): TL 11.93–13.83; HW 2.05–2.32;

HL 2.54–2.87; EL 0.54–0.62; SL 2.87–3.26; PH 1.72–1.89; PL 0.98–1.22; PW 1.22–1.46; SpD 0.45–0.60; SpL 0.09–0.29; WL 3.78–4.30; MTL 2.05–2.45. Indices: CI 79–84; SI 132–144; PI 56–70; SpDI 35–48; SpLI 6–23; EI 25–28.

Structures: Head (Fig. 11) moderately elongate; sides strongly convex behind small eyes. Very coarse rugae present from genae to gaster tergite 1. Posteriorly of eyes, coarse rugae reaching narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (Fig. 5). Clypeus (Fig. 11) densely and finely punctured, except more sparsely along midline; anterior margin medially forming a distinct obtuse angle. Mandibles usually with well-developed fine striation. On pronotum rugae concentric, circular (Fig. 9) or, more often, arranged in a horseshoe-shaped pattern (Figs. 7), rarely with some transverse rugae in centre. Gemmal pits rather small, short-ovate. Striation on mesopleura oblique, on propodeum sides horizontal (Fig. 5) or slightly oblique, on forecoxa lacking or obliterated, hardly impressed. Posterior face of propodeum separated from sides by distinct carinae. Petiole (Figs. 5, 6, 8, 10) stout, in dorsal aspect usually roundish (Fig. 8), but in some specimens rather trapezoidal (Fig. 10); petiolar spines very short and moderately distant; one aberrant specimen with minute spines; subpetiolar process moderately concave, both teeth acute, posterior one usually slightly longer; outline with inconspicuous pilosity; in ventral view narrow, anteriorly with short, sharp lateral carinae and a very short, low median carina. Gaster tergite 1 with coarse rugae; in most specimens these rugae arranged in narrow bows that are often almost angular at mid-line (Fig. 6), in other specimens these bows are much wider, concentric, semi-elliptical or semi-circular. Hind margin of tergite 1 and the entire following tergites finely and densely punctured; puncturation often covered by dense pubescence. Gaster tergite 2 in rare cases with areas of longitudinal striation before hind margin.

Pilosity (Fig. 5): Standing setae abundant, pale and relatively long, longest on apex of gaster, relatively short on appendices. Pilosity usually well-developed, yellowish to golden, rarely tending to silverish-white. In some specimens short pilosity locally reduced, especially on posterior of head, pronotal disc (Fig. 9), or propodeum sides.

Colour (Figs. 5–10): Trunk black; clypeus often reddish or dark brown; subpetiolar process and hind margins of tergites medium brown. Appendices often black, in some specimens medium to dark brown.

Notes: *Diacamma orbiculatum* is a key species for the understanding of *Diacamma* taxonomy in continental Asia and commonly collected in Northeast and Central Thailand. It is a medium-sized species of the *D. rugosum* group s.str. Typical are a rich pilosity, a coarse rugosity until gaster tergite 1, and very short petiolar spines. A shallow striation on gaster tergite 2 is present in a few individuals only. In the most common form (Fig. 7) the rugae of the pronotum are arranged in a horseshoe-shaped pattern and those on gaster tergite 1 form narrow bows that are almost angular at mid-line (Fig. 6). However, variability of these characters is relatively strong, and we have also studied individuals with circular rugae on pronotum (Fig. 9) or with wider bows on tergite 1. The shape of the petiole (Figs. 8, 10), the length of petiolar teeth, and depth and length of tergite 1 striation is also slightly variable. However, at present we could not find a clear pattern of these characters which would allow a clear differentiation.

Diacamma orbiculatum was originally described from northern Laos (Luang Prabang) as a variety of *D. ceylonense*, but differs from this taxon strongly – among other characters – by very short petiolar spines and (usually) non-striate gaster tergites 2–3. The single specimen studied by Santschi (1932) is the holotype. The variation *moicum* was

described from the southern parts of French Indochina (Cochinchine: Pays de Moïs) as a quadrinomen (Forel 1911) and made available by Santschi (1932) when he compared it with *orbiculatum*. The differences given by Santschi (1932) and the areas of coarse striation on gaster tergites 2 in the two syntypes of *moicum* are considered as intraspecific variations and not of taxonomic value. See Antweb.org (CASENT0915176, CASENT0907225) for illustrations of the types.

Diacamma orbiculatum resembles *D. holzschuhi* Laciny, Pal & Zettel, 2015 by the coarse striation, but *D. holzschuhi* is smaller (TL 10.50–11.74 vs. 11.93–13.83 mm), has a slender body, a weak pilosity, longer petiolar spines (SpLI 29–34 vs. 6–23), and a more distinctly striate forecoxa. See also comparative notes of *D. jaitrongi* sp.n.

Distribution: Thailand, Laos, "Cochinchine" (Cambodia or Viet Nam).

***Diacamma jaitrongi* sp.n.** (Figs. 14–17)

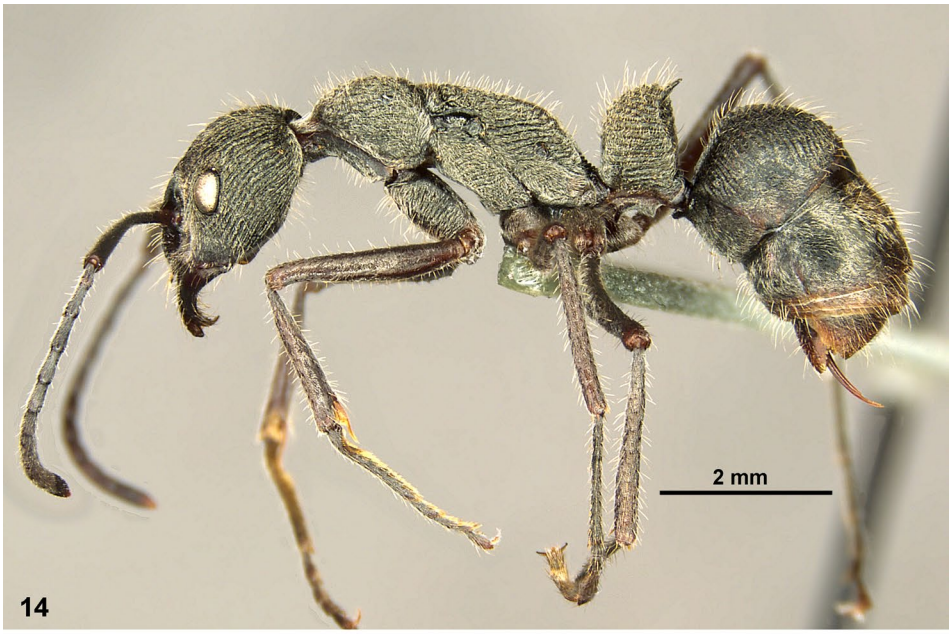
Etymology: The species epithet is cordially dedicated to Dr. Jaitrong Weeyawat from the Thailand Natural History Museum, an outstanding expert of Thai ants, who discovered this rarely collected species.

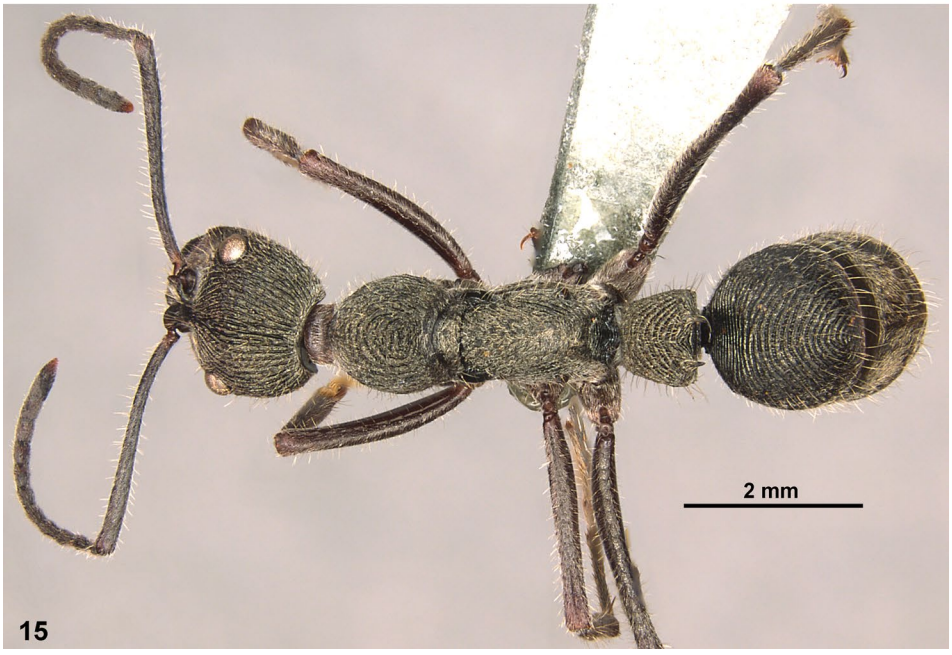
Type material: Holotype (worker, THNHM, CASENT0916090), Thailand, Chiang Mai Province, Fang District, Pha Hom Pok National Park, 29.V.2008, leg. W. Jaitrong (WJT08-N62). Paratypes: 6 workers (THNHM, CZW), same label data as holotype; 1 worker (THNHM), same locality, 27.V.2008, leg. W. Jaitrong; 7 workers (THNHM, NHMW), same locality, 28.V.2008, leg. W. Jaitrong (WJT08-N41).

Diagnosis: Moderately slender, medium-sized species (TL 10.6–11.5 mm). Trunk black, weakly shiny. Erect setae abundant. Trunk strongly striate from genae to gaster tergite 1. Head (Fig. 16) moderately long, sides posteriorly of small eyes strongly convex. Posterior of head longitudinally striate until narrowly truncated hind margin; occipital margin ventrally terminating in very short, blunt teeth (Fig. 14). Clypeus (Fig. 16) finely punctured. Mandible with fine striation. Pronotum (Fig. 15) with concentric, more or less circular rugae. Gemmal pits large. Striation on propodeum sides horizontal (Fig. 14). Forecoxa with deep striation on lateral face. Petiole (Figs. 14, 15) comparatively small, but stout, with short teeth; subpetiolar process moderately concave, posterior tooth low. Gaster tergite 1 (Fig. 15) with coarse, semi-circular striation; following tergites without striation.

Description: Measurements of holotype: TL 11.22; HW 2.05; HL 2.64; EL 0.56; SL 2.87; PH 1.50; PL 0.96; PW 1.20; SpD 0.53; SpL 0.27; WL 3.85; MTL 2.28. Indices: CI 78; SI 140; PI 64; SpDI 45; SpLI 23; EI 27. Measurements of paratypes (n = 9): TL 10.63–11.48; HW 1.99–2.09; HL 2.48–2.64; EL 0.54–0.58; SL 2.77–3.00; PH 1.46–1.65; PL 0.91–1.04; PW 1.17–1.33; SpD 0.47–0.58; SpL 0.18–0.27; WL 3.72–4.04; MTL 2.22–2.32. Indices: CI 79–82; SI 138–146; PI 60–65; SpDI 38–47; SpLI 15–23; EI 26–28.

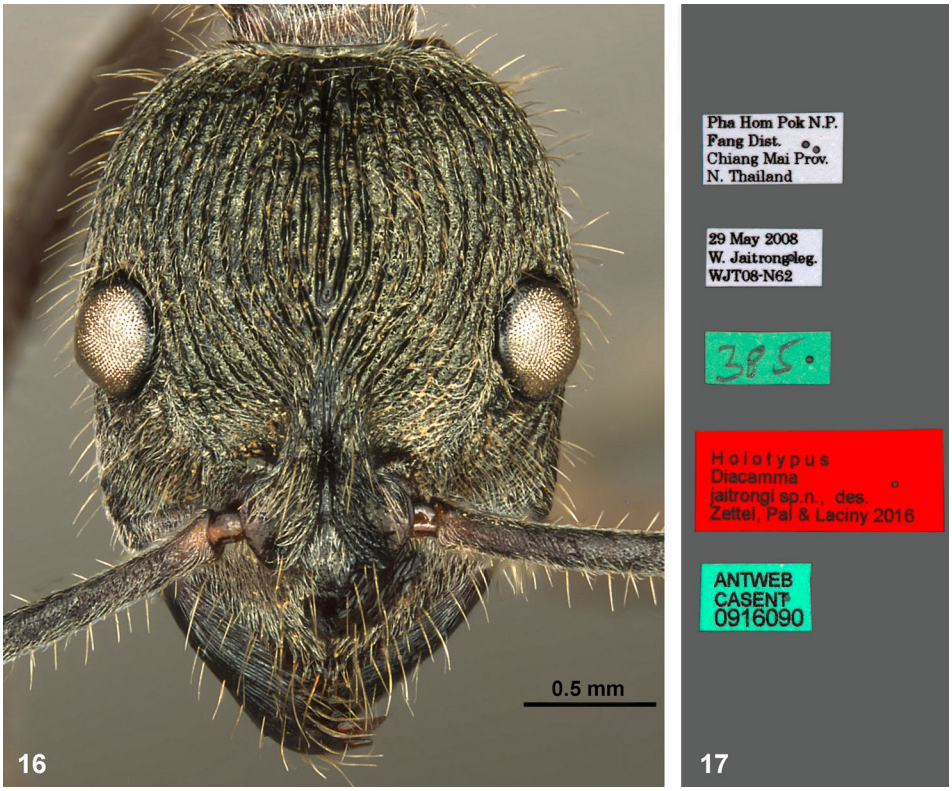
Structures: Head (Fig. 16) moderately elongate; sides strongly convex behind small, weakly protruding eyes. Very coarse rugae present from genae to gaster tergite 1. Posteriorly of eyes, longitudinal rugae reaching narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (Fig. 14). Clypeus (Fig. 16) with very fine, dense puncturation, slightly shiny; anterior margin medially forming a distinct, but obtuse angle. Mandibles usually with well-developed fine striation. Pronotum (Fig. 15) with concentric, more or less circular rugae, in some specimens the rugae posteriorly less rounded, almost straight. Gemmal pits large. Rugae on mesopleura slightly oblique, on propodeum sides horizontal, almost parallel with dorsal outline (Fig. 14). Dorsoposterior





Figs. 14 – 15: *Diacamma jaitrongi* sp.n., holotype. (14) Habitus, lateral. (15) Habitus, dorsal. © A. Pal.

outline of propodeum gently downcurved; posterior face of propodeum separated from sides by distinct carinae. Forecoxa on lateral face with extended area of sharp, deep striation (Fig. 14). Petiole (Figs. 14, 15) comparatively small, but stout; teeth short, straight, their



Figs. 16–17: *Diacamma jaitrongi* sp.n., holotype. (16) Head, frontal. (17) Labels. © A. Pal.

bases distant from each other; subpetiolar process in lateral view weakly concave, outline with rather short oblique pilosity; anterior tooth acute, longer than low posterior one; in ventral view narrow, anteriorly with high rim, posteriorly with well-developed median carina. Gaster tergite 1 (Fig. 15) with coarse, concentric, semi-circular or semi-elliptical rugae, matt; along posterior margin finely punctured. Gaster tergite 2 and following with fine puncturation, moderately shiny.

Pilosity (Fig. 14): Standing setae on trunk, antenna, and legs numerous, those on ventral side of head, on petiole and gaster tergites longer than on other parts. Short silverish pilosity well-developed, abundant.

Colour (Figs. 14–16): Trunk black; posterior margin of all gaster tergites and apex of gaster brown; antennae black; legs dark brown or black.

N o t e s : This species is similar to *D. orbiculatum*, but can be distinguished immediately by its coarsely striate forecoxa (non-striate or with faint indications of striae in *D. orbiculatum*, comp. Figs. 5 and 14). Other distinguishing characters of *D. jaitrongi* sp.n. are smaller size (TL 10.63–11.48 vs. 11.93–13.83 mm), obsolete occipital teeth, and a relatively small, short petiole with a short posterior subpetiolar tooth. *Diacamma holzschuhi* from Laos has similar size and striation of forecoxa, but a weak pilosity and longer petiolar spines (SpLI 29–34 vs. 15–23).

Distribution: Thailand: Chiang Mai (only known from the type locality in Fang District).

Diacamma sikkimense Forel, 1903 stat.n. (Figs. 18–21)

Diacamma rugosum var. *sikkimense* Forel, 1903: 401; Bolton 1995: 170.

Diacamma rugosum sikkimense: Schmidt & Shattuck 2014: 191.

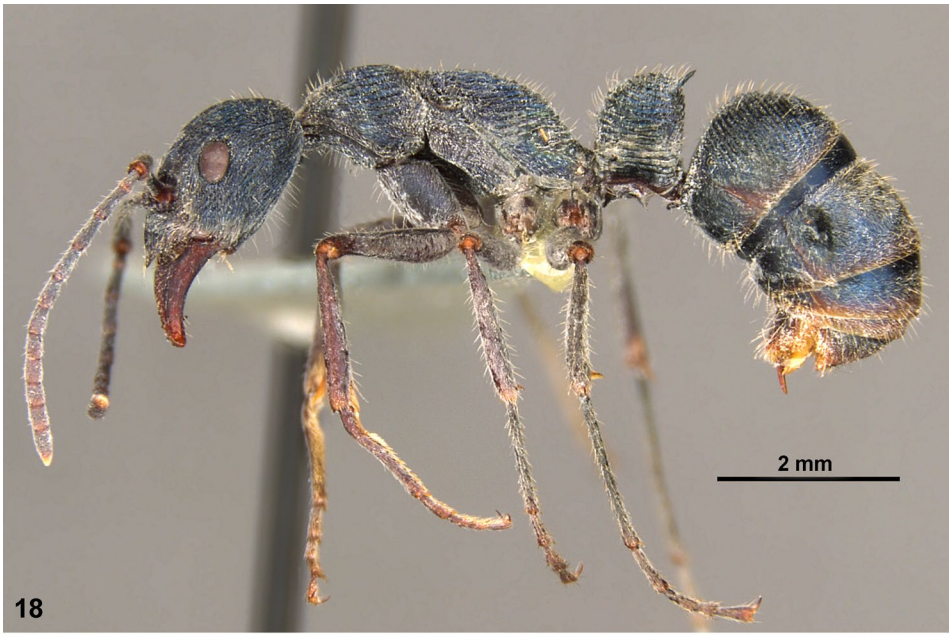
Type material examined: Lectotype (worker, MHNG, CASENT0907224, present designation) and two paralectotypes (workers, MHNG) on the same pin, labelled "Type", "Sikkim \ 4000 ft \ 11-02", "D. rugosum \ Le Guill \ ~~v.~~ ~~anceps~~ \ ☿ Sikkim 4000 ft. \ X.02 Bingham", "v. sikkimense \ Forel", "Coll. Forel", "sikkimensis Forel", "middle ☿ \\ ANTWEB \ CASENT \ 0907224", "324", "325", "326", "Lectotype \ Diacamma rugosum \ var. sikkimense Forel, 1903 \ design. Zettel & al. 2016 \ (specimen in middle)", "Diacamma \ sikkimense Forel, 1903 \ det. Zettel, Pal & Laciny 2016".

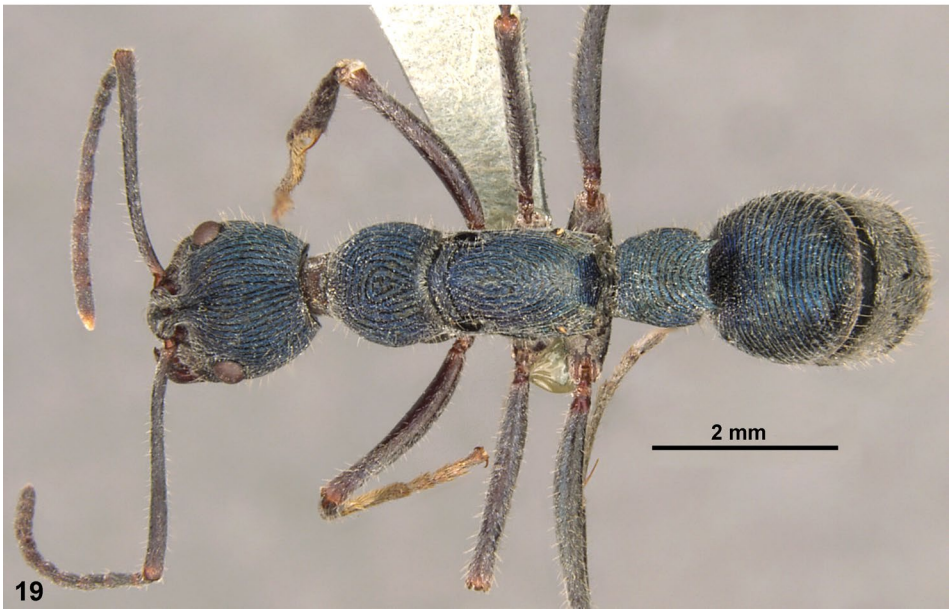
Non-type material examined: 2 workers (NHMW, incl. CASENT0916091), [India,] East Sikkim, [Pakyong Tehsil,] Losing ["Lossing", ca. N27°12', E88°36', 1100 m a.s.l.], 19.IV.1994, leg. Chattopadhyay & Ghosh, Hooker's Trail expedition.

Diagnosis: Rather small, slender species (TL 11.0–11.8 mm). Trunk black, occasionally with bluish shimmer, matt. Erect setae abundant, rather short; whitish pilosity dense. Trunk coarsely striate from genae to gaster tergite 1. Head (Fig. 20) moderately long, sides posteriorly of eyes strongly convex. Posterior of head longitudinally striate until extremely narrow hind margin; occipital margin ventrally terminating in short, blunt teeth (Fig. 18). Eyes rather small, but protruding. Apex of clypeus (Fig. 20) forming a distinct, obtuse angle. Mandible with fine striation. Pronotum (Fig. 19) with coarse concentric rugae of rather variable shape. Striation on propodeum sides almost horizontal (Fig. 18). Petiole (Figs. 18, 19) stout, its teeth rather short and distant; subpetiolar process weakly concave between short teeth. Gaster tergite 1 (Fig. 19) with coarse semi-circular striation. The following tergites without striation.

Description: Measurements of lectotype: TL 11.74; HW 1.92; HL 2.54; EL 0.56; SL 2.74; PH 1.48; PL 0.98; PW 1.09; SpD 0.76; SpL 0.19; WL 3.78; MTL 2.15. Indices: CI 76; SI 142; PI 66; SpDI 71; SpLI 18; EI 28. Measurements of paralectotypes (n = 2): TL 11.02, 11.74; HW 1.89, 1.92; HL 2.51, 2.54; EL 0.54, 0.55; SL 2.80; PH 1.43, 1.48; PL 0.98; PW 1.09; SpD 0.76; SpL 0.17; WL 3.72, 3.85; MTL 2.05, 2.12. Indices: CI 75, 76; SI 146, 148; PI 66, 68; SpDI 71; SpLI 16; EI 28, 29. Measurements of non-type material: (n = 2): TL 11.09, 11.67; HW 1.92, 1.96; HL 2.46, 2.54; EL 0.54, 0.56; SL 2.80, 2.87; PH 1.48; PL 0.93, 1.04; PW 1.07, 1.17; SpD 0.64, 0.81; SpL 0.24, 0.27; WL 3.59, 3.65; MTL 2.09, 2.12. Indices: CI 77, 78; SI 143, 149; PI 63, 71; SpDI 61, 71; SpLI 21, 26; EI 27, 29.

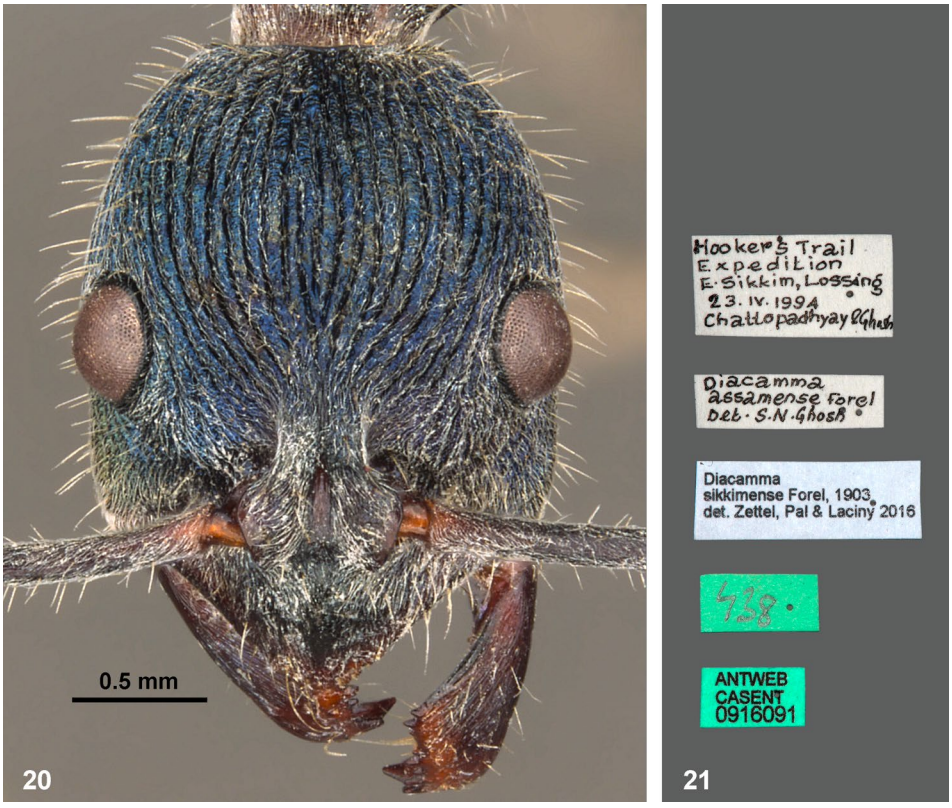
Structures: Entire trunk matt by a very dense puncturation. Head (Fig. 20) moderately elongate; sides strongly convex behind small eyes. Very coarse rugae present from genae to gaster tergite 1. Posteriorly of eyes, longitudinal rugae reaching the very narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (in non-type specimens, Fig. 18, more prominent than in types). Clypeus (Fig. 20) with very dense puncturation, in part appearing confluent to fine rugae, matt except on apex; anterior margin medially forming a distinct obtuse angle (or extreme apex slightly rounded). Mandibles with well-developed fine striation. Pronotum (Fig. 19) with coarse concentric rugae of varying arrangement; either circular (lectotype, one paralectotype), or with some transverse rugae in centre (one paralectotype), or horseshoe-shaped (non-type specimens). Gemmal pits medium-sized. Rugae on mesopleura oblique, on propodeum sides almost horizontal (Fig. 18). Posterior face of propodeum separated from sides by weakly developed





Figs. 18–19: *Diacamma sikkimense*, non-type specimen from Sikkim, North India. (18) Habitus, lateral. (19) Habitus, dorsal. © A. Pal.

carinae. Forecoxa without striation. Petiole (Figs. 18, 19) stout, with rather short and distant spines; subpetiolar process weakly concave, with extremely short, oblique pilosity; both teeth short and acute; in ventral view narrow, with low paired carinae anteriorly, and a low



Figs. 20–21: *Diacamma sikkimense*, non-type specimen from Sikkim, North India. (20) Head, frontal. (21) Labels. © A. Pal.

median carina posteriorly. Gaster tergite 1 (Fig. 19) with coarse, concentric, semi-circular rugae; posterior margin and following tergites with fine, dense puncturation.

Pilosity (Fig. 18): Standing setae on trunk comparatively short, only those on ventral side of head and apex of gaster longer; in types, mesosoma with reduced number of setae (probably rubbed off). Setae on antennae and legs abundant, but short. Short whitish pilosity densely developed.

Colour (Fig. 18–20): Trunk black, in one non-type specimen with distinct blue shimmer, in another one with weak bronze shimmer; clypeus dark brown to black; neck of pronotum brown or pale; subpetiolar process pale brown; gaster tergites with brown to yellowish lateral and posterior margins, apex of gaster pale yellowish brown. Mandibles reddish brown. Antennae and legs brown to black.

Notes: *Diacamma sikkimense* was described by Forel (1903) as a note in the description of *D. rugosum* var. *indicum*. There are strong similarities between *D. sikkimense* and *D. indicum* in general habitus, but also several good differences that distinguish *D. sikkimense* from the entire *Diacamma indicum* complex, namely the strong microsculpture and a dense pilosity over the entire trunk, the more longitudinally directed striation on head dorsum, relatively small eyes, and the short petiolar spines of *D. sikkimense*.

Diacamma orbiculatum, which has a similar coarse sculpture and a (usually) non-striate forecoxa, differs from *D. sikkimense*, among others by a sparsely punctured clypeus. Morphometrically *D. sikkimense* differs from *D. orbiculatum* by its slightly smaller size (TL 11.0–11.8 vs. 11.9–13.8 mm) and much more distant petiolar spines (SpDI 61–71 vs. 35–48).

According to the female morphology it seems that *D. sikkimense* takes a rather intermediate position between species of the *D. rugosum* and *D. indicum* groups, which are very distinct in male morphology (unpublished data). Detailed examinations of males are required to conclusively decide on the relationship of this species to its congeners.

Auguste Forel's collection in Geneva contains five syntypes of *sikkimense* on two pins (Bernard Landry, pers. comm.) of which we have studied three. As a lectotype we select the specimen which was illustrated by Antweb (CASENT0907224); it is located in the middle of the pin between two paralectotypes. In addition we were able to study two specimens of *D. sikkimense* in NHMW. One of them has a slight bluish shimmer (Figs. 18–20), which is regarded as an individual aberration.

Diacamma timorense Emery, 1887, stat.n. (Figs. 22–25)

Diacamma javanum r. *timorense* Emery, 1887: 436, 439.

Diacamma rugosum ssp. *timorense*: Emery, 1897: 158; Bolton 1995: 170; Schmidt & Shattuck 2014: 191.

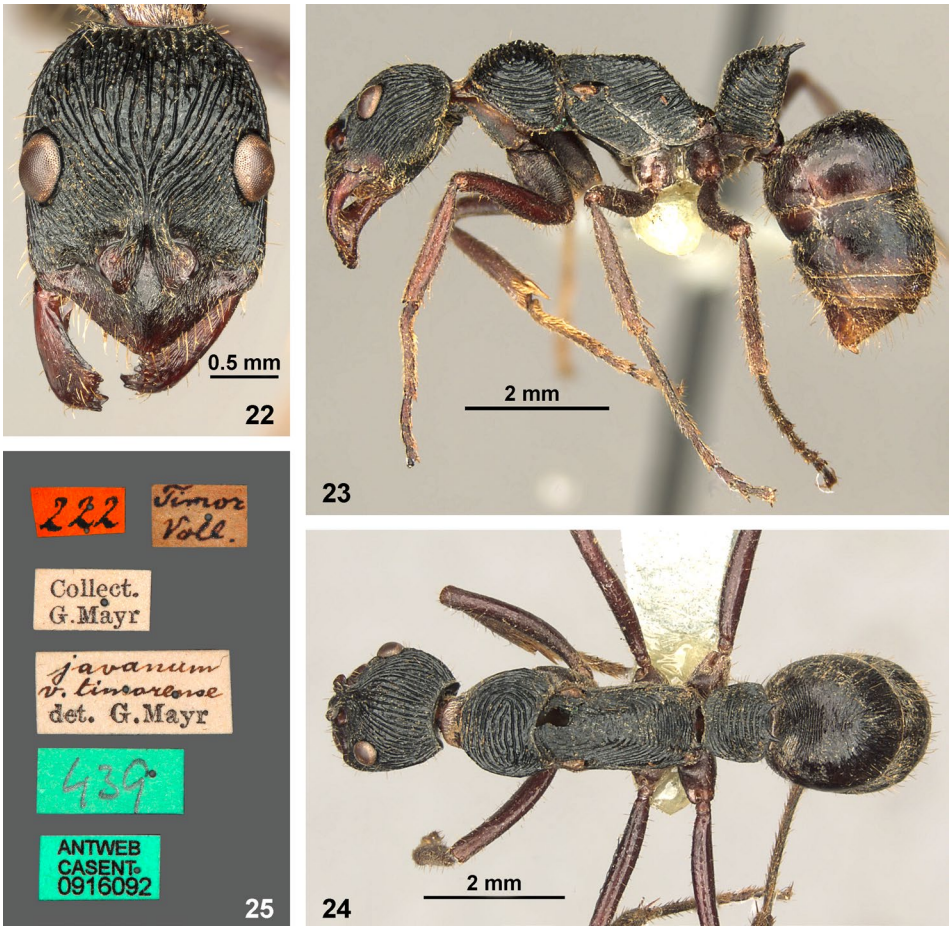
Non-type material examined: 2 workers (both with gemmae; NHMW, including CASENT0916092), Timor, leg. Vollenhoven.

Illustrations examined: Syntype (worker with gemmae, MCSN, CASENT0903869) in Antweb (2016).

Diagnosis: Rather small and slender species (TL 10.5–10.8 mm). Trunk black, shiny from head to gaster tergite 1. Erect setae numerous, short, brown. Striation of trunk from genae to petiole very coarse, much finer on gaster tergites 1 and 2. Head (Fig. 22) moderately long, sides posteriorly of eye moderately convex. Posterior of head with relatively few deeply engraved widely spaced striae reaching very narrow hind margin; occipital margin ventrally terminating in short, blunt teeth (Fig. 23). Eyes medium-sized. Frontal carinae wide. Clypeus (Fig. 22) with dense longitudinal striation; apex rounded. Mandible with fine striation. Pronotum (Fig. 24) with very coarse transverse-elliptical rugae. Gemmae medium-sized. Striation on mesopleura and propodeum sides oblique (Fig. 23). Forecoxa striate. Petiole (Figs. 23, 24) large, coarsely striate, stout; teeth moderately long and distant; subpetiolar process moderately concave. Gaster tergite 1 (Figs. 23, 24) with fine, dense striation anteriorly and on an elongated semi-elliptical area on disc; sides finely, sparsely punctured, shiny; hind margin of all tergites densely rugose, matt. Gaster tergite 2 with finely striate area near posterior margin, anterior and lateral areas shiny.

Description: Measurements of non-type material (n = 2): TL 10.50, 10.76; HW 1.97, 2.02; HL 2.54, 2.67; EL 0.59, 0.65; SL 2.80; PH 1.67, 1.70; PL 1.00, 1.02; PW 1.22, 1.24; SpD 0.60; SpL 0.29, 0.35; WL 3.91, 3.98; MTL 2.18. Indices: CI 76, 78; SI 139; PI 60; SpDI 49, 50; SpLI 25, 28; EI 29, 32.

Structures: Head (Fig. 22) moderately elongate; sides convex behind medium-sized eyes. Posterior of head with characteristic, deeply engraved and widely spaced striation until a very narrow hind margin; occipital margin ventrally terminating in short, blunt teeth



Figs. 22–25: *Diacamma timorense*, non-type specimen from Timor Island, Indonesia. (22) Head, frontal. (23) Habitus, lateral. (24) Habitus, dorsal. (25) Labels. © A. Pal.

(Fig. 23). Frontal carinae wide. On clypeus (Fig. 22) puncturation confluent to fine longitudinal striation; anterior margin medially rounded. Mandibles with well-developed fine striation. Mesosoma with very coarse striation. Pronotum (Fig. 24) with transverse-elliptical rugae. Gemmae medium-sized. Striation on mesopleura and propodeum sides slightly oblique (Fig. 23). Forecoxa striate. Posterior face of propodeum separated from sides by blunt edges. Petiole (Figs. 23, 24) stout, coarsely striate, with moderately long, straight, distant spines; subpetiolar process moderately concave, anterior tooth slightly longer than posterior one, apparently without pilosity in lateral view (possibly rubbed off); in ventral aspect paired anterior lateral carinae and posterior median carina low. Gaster tergite 1 (Figs. 23, 24) with fine, dense striation anteriorly and on an elongated semi-elliptical area on disc; sides finely, sparsely punctured, shiny; hind margin of all tergites densely rugose, matt. Gaster tergite 2 with finely striate area near posterior margin, anterior and lateral areas shiny.

Pilosity (Fig. 23): Standing setae on trunk abundant, short and brown; longer only on underside of head and apex of gaster. Standing setae on antennae and legs short, partly pale. Short pilosity reduced over a major part of trunk, but more dense anteriorly on head, on meso- and metapleura, and on dorsal areas of gaster starting with posterior margin of tergite 1.

Colour (Figs. 22–24): Trunk black, without metallic shimmer; anterior part of clypeus and frontal lobes reddish brown; subpetiolar process and gaster at apex and posterior and lateral margins of tergites pale brownish. Mandibles medium to dark brown, antennae and legs dark reddish brown, tarsi strongly infuscated.

Notes: *Diacamma timorense* has a very characteristic striation composed of deeply incised, widely spaced striae on head, mesosoma, and petiole, comparatively fine, medially longitudinal striae surrounded by elliptical bows of striae on disc of gaster tergite 1 (but leaving sides of tergite without striae), and a zone of longitudinal striae on tergite 2. Other important characters are numerous brown, stout, standing setae all over the body's dorsum, and relatively wide frontal carinae.

The specimens in NHMW agree perfectly with illustrations of a syntype in MCSN published by Antweb (CASENT0903869). Emery (1897) described a variation *nitidiventris*, also from Timor, which chiefly differs by a reduced striation on gaster tergites 1 and 2. This quadrinomen is not an available name. Without having studied the type of this form, we cannot confirm the conspecificity. It is noteworthy that all known specimens of *D. timorense* s.l. possess gemmae.

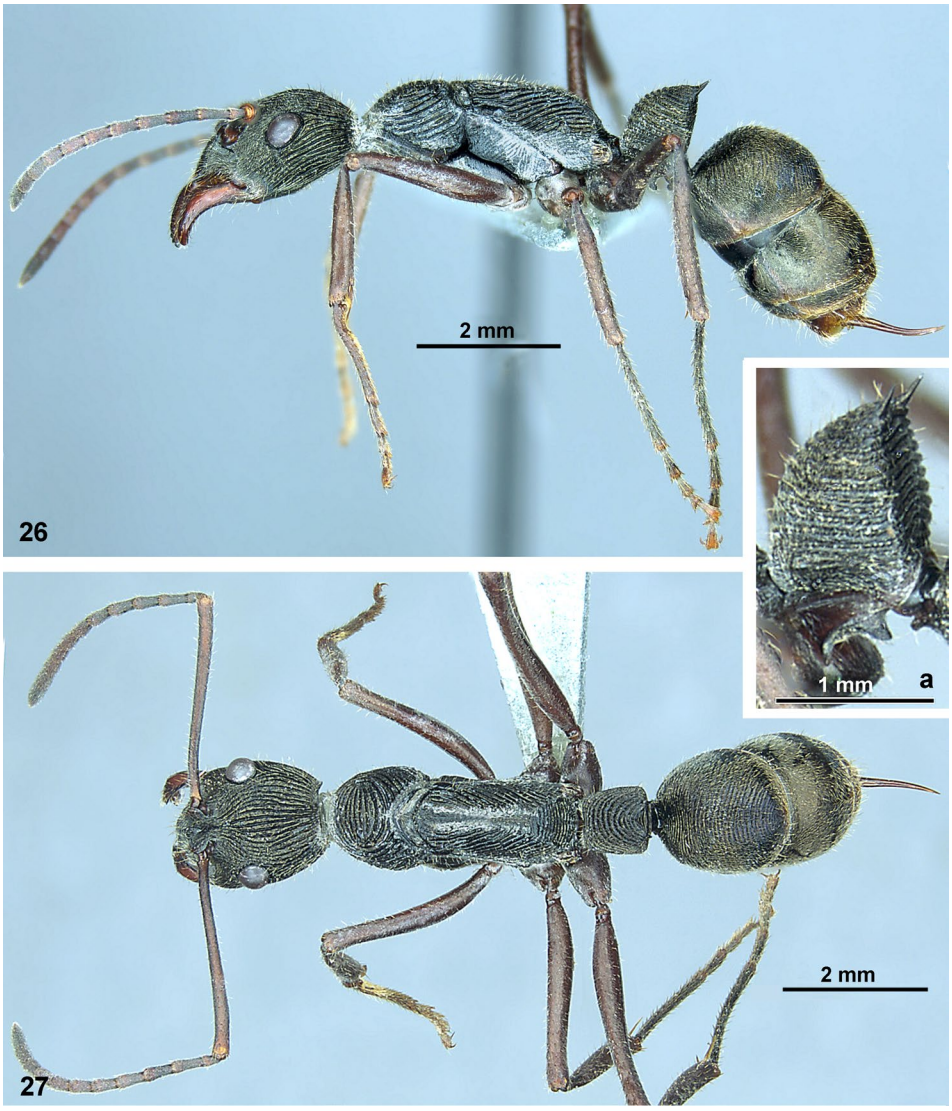
Distribution: Indonesia: Timor Island.

***Diacamma leyteense* sp.n.** (Figs. 26–29)

Etymology: This species is named after the Philippine island Leyte where the type locality lies.

Type material: Holotype (worker, NHMW, CASENT0916093), Philippines, Leyte Province, E of Ormoc, Lake Danao environment, 13.II.2000, leg. S. Schödl. Paratypes: 3 workers (NHMW) same label data; 2 workers (CZW), same locality, leg. H. Zettel; 1 worker (CZW), Leyte Province, Baybay, Mt. Pangasugan, Calbiga-a River, 50–200 m a.s.l., February 12th, leg. H. Zettel; 1 worker (CZW), Leyte Province, Baybay, Leyte State University, November 16th, leg. C. V. Pangantihon; 3 workers (CZW, PNMM), Southern Leyte Province, Ibarra, Divisoria, November 21st, leg. H. Zettel & C. V. Pangantihon (CZW); 3 workers (NHMW, THNHM), Western Samar Province, Basey, Sohoton National Park, 29.I.2000, leg. S. Schödl (#2); 3 workers (CZW), same locality.

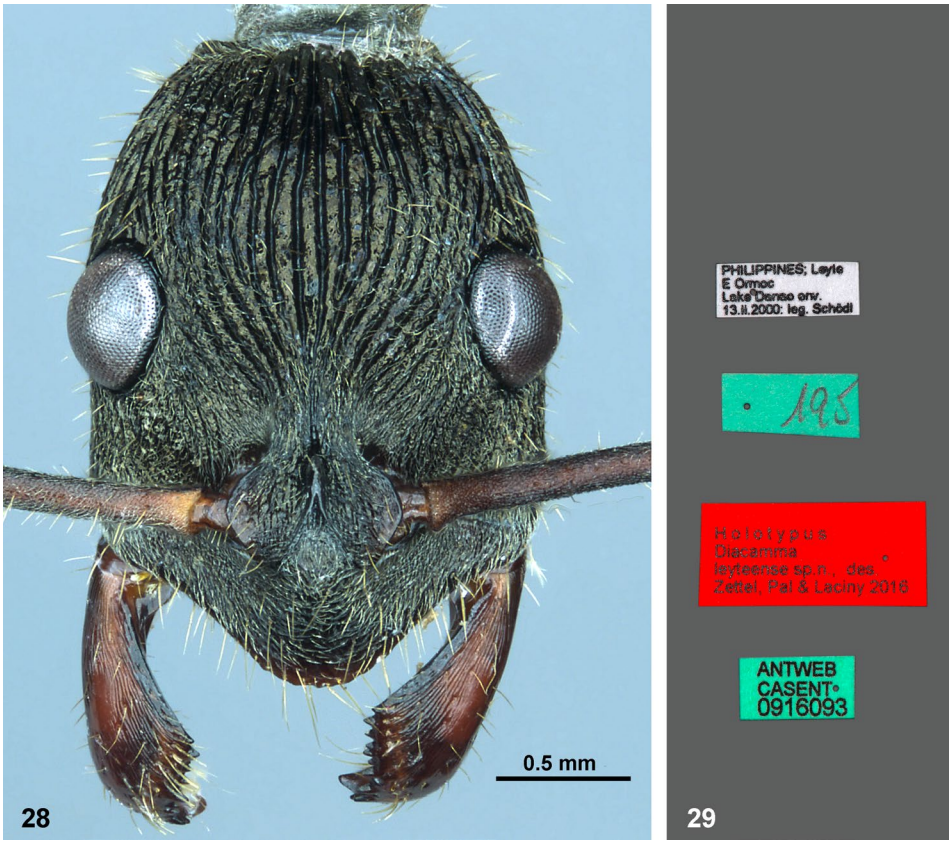
Diagnosis: Medium-sized, slender species (TL 11.1–13.2 mm). Trunk black, moderately shiny; legs reddish. Erect setae short and abundant; short pilosity well-developed on most parts of trunk. Trunk striate from genae to gaster tergite 1. Head (Fig. 28) elongated, sides posteriorly of eye moderately convex. Posterior of head with coarse striation until narrowly truncated hind margin; occipital margin ventrally with short, blunt teeth. Eyes medium-sized, bulging. Clypeus (Fig. 28) with dense puncturation at least basally confluent to a fine longitudinal striation, at centre of medial lobe with a flat shiny area; apex broadly rounded. Mandible with fine striation. Pronotum (Fig. 27) with concentric circular rugae. Gemmal pits slender. Striation on mesopleura and propodeum sides oblique (Fig. 26), on forecoxa reduced. Petiole (Figs. 26a, 27) high, short and narrow, with coarse striation; teeth of medium length, straight; subpetiolar process strongly concave. Gaster



Figs. 26–27: *Diacamma leyteense* sp.n., holotype. (26) Habitus, lateral (a: alternative view on petiole). (27) Habitus, dorsal. © A. Pal.

tergite 1 (Fig. 27) with comparatively fine, semi-elliptical striation, the following tergites without striation.

Measurements of holotype: TL 12.85; HW 1.99; HL 2.61; EL 0.62; SL 3.13; PH 1.59; PL 0.96; PW 1.00; SpD 0.54; SpL 0.31; WL 3.91; MTL 2.41. Indices: CI 76; SI 157; PI 60; SpDI 52; SpLI 31; EI 31. Measurements of paratypes (n = 16): TL 11.15–13.17; HW 1.89–2.12; HL 2.45–2.76; EL 0.63–0.69; SL 2.87–3.33; PH 1.39–1.61; PL 0.91–1.04; PW 0.93–1.09; SpD 0.49–0.67; SpL 0.23–0.36; WL 3.72–4.24; MTL 2.22–2.58. Indices: CI 75–79; SI 144–158; PI 59–69; SpDI 51–65; SpLI 25–34; EI 30–33.



Figs. 28–29: *Diacamma leyteense* sp.n., holotype. (28) Head, frontal. (29) Labels. © A. Pal.

Structures: Head (Fig. 28) moderately elongate; sides moderately convex behind medium-sized, bulging eyes. Rugae coarse from posterior of head to petiole, finer and denser on genae and gaster tergite 1. Posteriorly of eyes, longitudinal rugae strongly bowed, reaching narrow occipital margin. On ventral side of head occipital margin ending with very small, blunt teeth (Fig. 26). Clypeus (Fig. 28) densely punctured, at least basally, but often to a large extent punctures confluent to a very fine and dense striation; an anteromedial area of variable size flat, unsculptured and smooth; apex broadly rounded. Mandibles with well-developed fine striation. Pronotum (Fig. 27) centrally with some short transverse rugae that are surrounded by circular or slightly transverse-elliptical rugae. Gemmal pits slender. Rugae on mesopleura and propodeum sides oblique (Fig. 27). Propodeum with strongly curved outline in lateral view, posterior face separated from sides by distinct carinae. Striation on forecoxa absent or obsolete. Petiole (Fig. 26a, 27) high, short and narrow, coarsely rugose, with medium-sized and closely set spines; subpetiolar process concave, both teeth acute and of similar length, posterior tooth stouter than anterior one; outline with some short, oblique pilosity; in ventral view narrow, anteriorly with paired lateral carinae, median carina variable, usually indistinct. Gaster tergite 1 (Fig. 27) with relatively fine, concentric, semi-circular or semi-elliptical striation; along posterior margin

with fine, dense puncturation, matt. Following tergites with fine, moderately dense puncturation, slightly shiny.

Pilosity (Fig. 26): Standing setae on trunk and appendages abundant, short and pale; except those on apex of gaster longer. Short whitish pilosity well developed, but less dense on posterior part of head, pronotum, and sides of propodeum.

Colour (Figs. 26–28): Trunk black, in some specimens with slight bronze shimmer; anterior part of clypeus and subpetiolar process reddish brown; narrow posterior margins of tergites and apex of gaster medium to light brown. Mandibles reddish. Antennae and legs red or reddish brown, funicular segments and tarsi more or less infuscated.

Notes: *Diacamma leyteense* sp.n. and *Diacamma symposium* sp.n. described below resemble *D. baguiense* Wheeler & Chapman, 1925 from the mountains of northern Luzon (redescription in Laciny et al. 2015) by moderate body size, weak or almost absent metallic shimmer, slender head with large eyes, and a relatively fine but distinct striation of gaster tergite 1. Both species can be distinguished from *D. baguiense* by reddish or pale brownish (not black) legs, a relatively flat clypeus, a more convex outline of the propodeum, more strongly developed propodeal carinae, shorter petiolar spines, and most of all by more slender gemmae (or gemmal pits, respectively). Whereas *D. baguiense* is a montane species and usually found at elevations of 1000 m a.s.l. and above, *D. leyteense* sp.n. and *D. symposium* sp.n. were collected in lowlands or hilly areas below 700 m a.s.l. See also notes for *D. symposium* sp.n.

Distribution: Philippines: Leyte and most southwestern part of Samar.

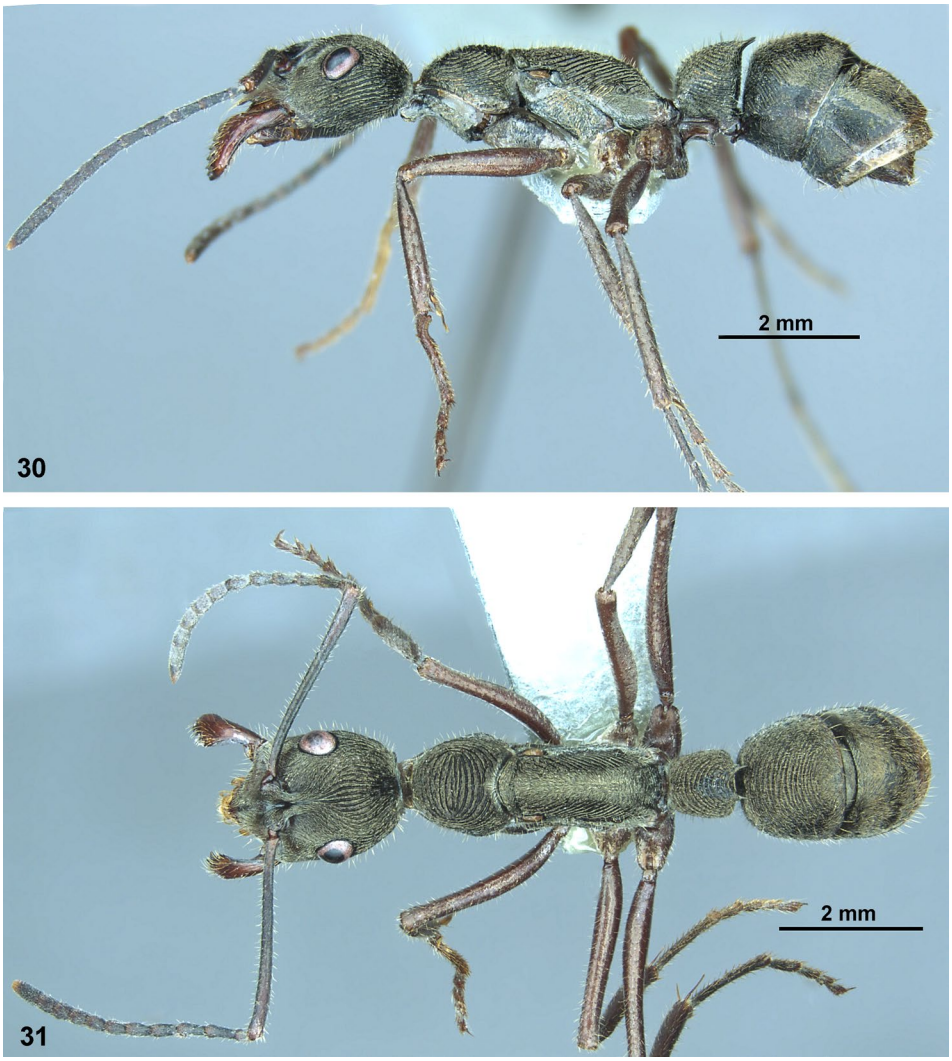
***Diacamma symposium* sp.n.** (Figs. 30–33)

Etymology: The species epithet "symposium" is a noun in apposition and used in the original Greek meaning of a drinking party. It refers to the type locality, the site Kaamulan, a term for an annual "gathering" of the regional ethnic groups.

Type material: Holotype (worker, with gemmae, PNMM, CASENT0916094), Philippines, Mindanao, Bukidnon, Malaybalay, Kaamulan, 650 m a.s.l., March 15th – 20th, leg. H. Zettel. Paratypes: 8 workers (6 with gemmae, CZW, NHMW), same data; 1 worker (with gemmae, CZW), same locality, March 15th – 16th, leg. H. Zettel.

Diagnosis: Medium-sized, slender species (TL 11.0–12.3 mm). Trunk black, moderately shiny; legs reddish. Erect setae short and abundant; short pilosity well developed on most parts of trunk. Trunk striate from genae to gaster tergite 1. Head (Fig. 32) elongated, sides posteriorly of eye moderately convex. Posterior of head with coarse striation until narrowly truncated hind margin; occipital margin ventrally with short, blunt teeth. Eyes medium-sized, bulging. Clypeus (Fig. 32) chiefly with moderately dense puncturation, only basolaterally denser and partly confluent to a fine longitudinal striation, at centre of medial lobe; apex with a small flat area, obtusely angular or narrowly rounded. Mandible with fine striation. Pronotum (Fig. 31) with concentric transverse-elliptical rugae. Gemmal pits slender. Striation on mesopleura and propodeum sides oblique (Fig. 30), on forecoxa absent. Petiole (Figs. 30, 31) high, short and narrow, with coarse striation; teeth of medium length, straight, closely set together; subpetiolar process strongly concave, both teeth acute. Gaster tergite 1 (Fig. 31) with comparatively fine, semi-elliptical striation, the following tergites without striation.

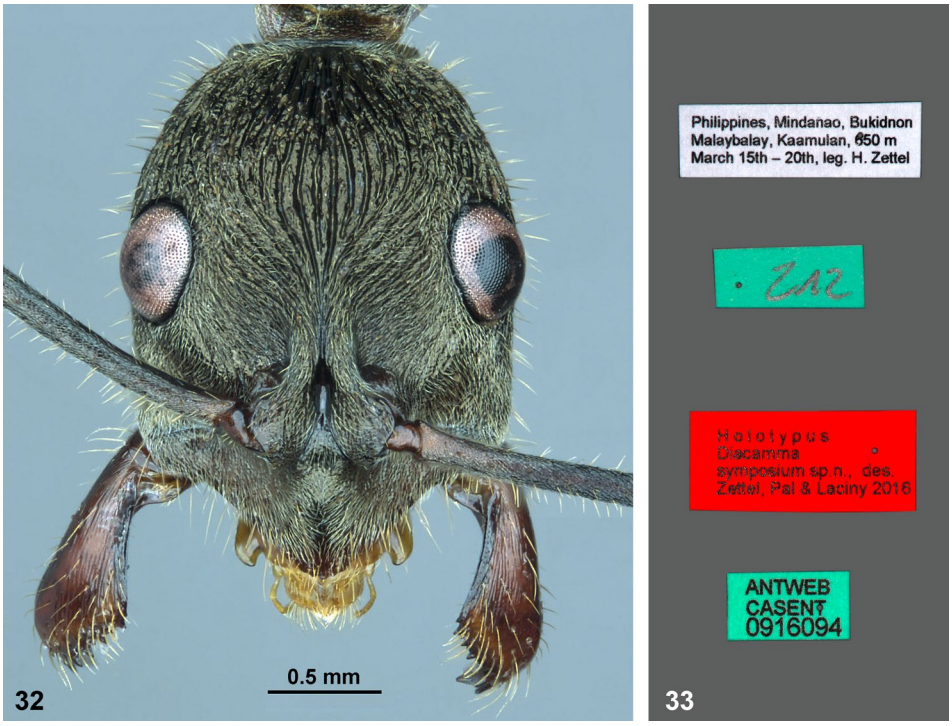
Description: Measurements of holotype: TL 11.02; HW 1.92; HL 2.58; EL 0.63; SL 3.00; PH 1.43; PL 0.91; PW 0.98; SpD 0.45; SpL 0.28; WL 3.78; MTL 2.35. Indices: CI 75;



Figs. 30–31: *Diacamma symposium* sp.n., holotype. (30) Habitus, lateral. (31) Habitus, dorsal. © A. Pal.

SI 156; PI 64; SpDI 47; SpLI 29; EI 32. Measurements of paratypes (n = 9): TL 11.09–12.33; HW 1.86–1.99; HL 2.51–2.69; EL 0.59–0.64; SL 2.93–3.20; PH 1.33–1.52; PL 0.87–0.93; PW 0.93–1.00; SpD 0.46–0.50; SpL 0.26–0.31; WL 3.59–4.04; MTL 2.32–2.48. Indices: CI 73–76; SI 153–161; PI 61–70; SpDI 48–52; SpLI 27–33; EI 31–32.

Structures: Head (Fig. 32) moderately elongate; sides moderately convex behind medium-sized, bulging eyes. Rugae coarse from posterior of head to petiole, finer and denser on genae and gaster tergite 1. Posteriorly of eyes, longitudinal rugae strongly bowed, reaching narrow occipital margin. On ventral side of head occipital margin ending with small, blunt teeth (Fig. 30). Clypeus (Fig. 32) relatively sparsely punctured along midline, more densely towards sides; basolaterally punctures confluent to a very fine striation; the area



Figs. 32–33: *Diacamma symposium* sp.n., holotype. (32) Head, frontal. (33) Labels. © A. Pal.

just before apex flat; apex usually forming an obtuse angle, rarely narrowly rounded. Mandibles with well-developed fine striation. Pronotum (Fig. 31) centrally with some short transverse rugae that are surrounded by transverse-elliptical rugae. Gemmae (or gemmal pits) slender. Rugae on mesopleura and propodeum sides oblique (Fig. 30). Propodeum with weakly curved outline in lateral view, posterior face separated from sides by fine carinae (in some specimens reduced). Striation on forecoxa absent. Petiole (Fig. 30, 31) high, short and narrow, coarsely rugose, with relatively short and closely set spines; subpetiolar process concave, both teeth acute and of similar length; outline with some short, oblique pilosity; in ventral view narrow, anteriorly with paired lateral carinae, median carina distinct. Gaster tergite 1 (Fig. 31) with relatively fine, semi-elliptical striation; along posterior margin with fine, dense puncturation, matt. Following tergites with fine, moderately dense puncturation, slightly shiny.

Pilosity (Fig. 30): Standing setae on trunk and appendages abundant, short and pale; except those on apex of gaster longer. Short whitish pilosity well developed, but less dense on posterior part of head, disc of pronotum, and sides of propodeum.

Colour (Figs. 30–32): Trunk black, in some specimens with slight bronze shimmer; anterior part of clypeus and subpetiolar process in some specimens reddish brown; narrow posterior margins of tergites and apex of gaster medium to light brown. Gemmae pale ochraceous. Mandibles reddish. Antennae and legs red or reddish brown, funicular segments and tarsi more or less infuscated.

Notes: This species is very similar to *D. leyteense* sp.n. but differs chiefly by a more angular clypeus apex, the clypeus puncturation that reaches the foremargin, a more slender posterior tooth of the subpetiolar process, and more closely set petiolar spines (SpDI 48–52 vs. 51–65). Differences with *D. baguiense* are described in the notes for *D. leyteense* sp.n.

Of the ten type specimens only two are without gemmae, five specimens possess both gemmae, and three specimens one gemma on the left (2) or right side (1).

Distribution: Philippines: Mindanao; only known from the type locality in Bukidnon.

Diacamma excellens **sp.n.** (Figs. 34–37)

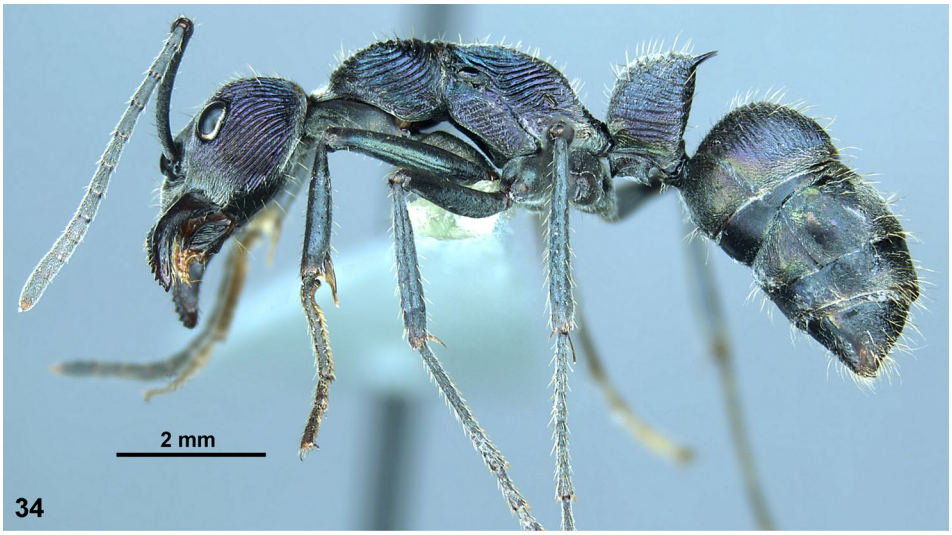
Etymology: The Latin adjective excellens means outstanding or excellent and refers to the brilliant colour of this species.

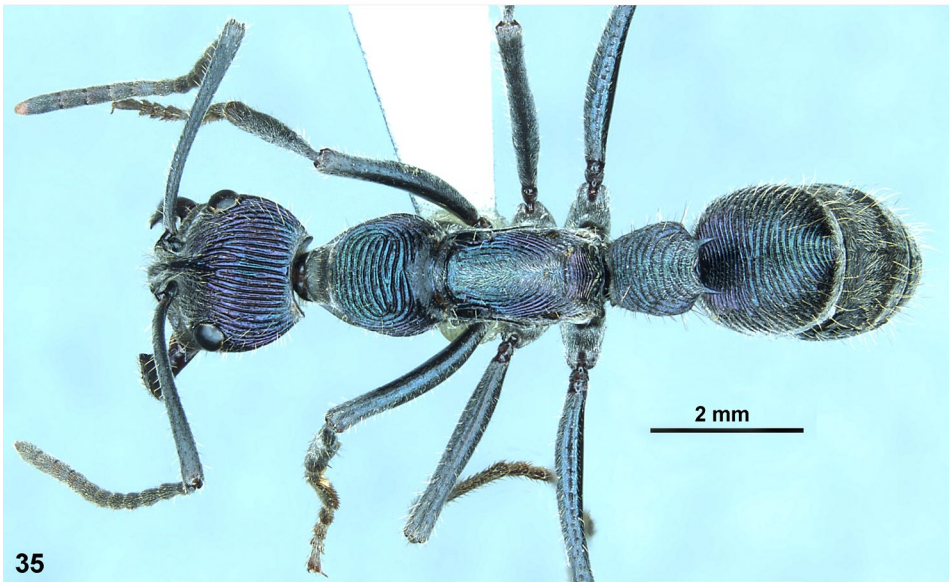
Type material: Holotype (worker, PNMM, CASENT0916095), Philippines, Biliran, Almeria, Ilihan, Nov. 13th, leg. C. V. Pangantihon. Paratypes: 17 workers (CZW, NHMW, THNHM), same locality data.

Diagnosis: Rather large, slender species (TL12.2–13.5 mm). Trunk with strong metallic, blue to purple shimmer. Erect setae abundant, short. Trunk coarsely striate from genae to gaster tergite 1. Head (Fig. 36) comparatively short, sides posteriorly of eye strongly convex. Posterior of head longitudinally striate until narrowly truncated hind margin; narrow occipital margin ventrally terminating in very low, blunt teeth (Fig. 34). Eyes small. Clypeus (Fig. 36) finely punctured; apex rounded or forming an obtuse angle. Mandibles with fine striation. Pronotum (Fig. 35) with concentric, elliptical rugae. Gemmal pits broad. Striation on mesopleura oblique, on propodeum sides upcurved (Fig. 34). Forecoxa with shallow striation. Petiole (Figs. 34, 35) stout, coarsely striate; teeth medium-sized and distant; subpetiolar process shallowly concave, with oblique pilosity. Gaster tergite 1 (Fig. 35) with coarse, semi-circular striation. Following tergites finely punctured, shiny.

Description: Measurements of holotype: TL 13.50; HW 2.27; HL 2.80; EL 0.63; SL 3.13; PH 1.83; PL 1.11; PW 1.30; SpD 0.74; SpL 0.41; WL 4.24; MTL 2.32. Indices: CI 81; SI 138; PI 61; SpDI 58; SpLI 32; EI 27. Measurements of paratypes (n = 17): TL 12.26–13.24; HW 2.18–2.32; HL 2.77–2.90; EL 0.62–0.67; SL 3.00–3.20; PH 1.78–1.85; PL 1.09–1.26; PW 1.26–1.33; SpD 0.67–0.77; SpL 0.37–0.46; WL 3.98–4.30; MTL 2.35–2.51. Indices: CI 77–80; SI 134–142; PI 60–69; SpDI 53–60; SpLI 29–37; EI 27–29.

Structures: Head (Fig. 36) moderately elongate; sides strongly convex behind small eyes. Very coarse rugae present from genae to gaster tergite 1. Posteriorly of eyes longitudinal rugae reaching narrow occipital margin. On ventral side of head occipital margin ending in very low, blunt teeth (Fig. 34). Clypeus finely punctured, shiny; punctures basolaterally confluent to fine longitudinal striation; apex rounded (Fig. 36) or forming a distinct obtuse angle. Mandibles usually with well-developed fine striation. Pronotum (Fig. 35) centrally with transverse rugae surrounded by transverse-elliptical rugae. Gemmal pits broad. Rugae on mesopleura and propodeum sides strongly oblique, on forecoxa shallow (Fig. 34). Posterior face of propodeum separated from sides by distinct carinae. Petiole (Figs. 34, 35) stout, with medium-sized, slightly diverging, distant spines; subpetiolar process weakly concave, both teeth acute, but weakly protruding; in lateral view, outline with rather short oblique pilosity; in ventral view narrow, carinae not very distinct. Gaster tergite 1 (Fig. 35) with concentric, semi-circular or semi-elliptical rugae; along posterior margin densely punctured. Following tergites with fine, relatively dense puncturation, moderately shiny.

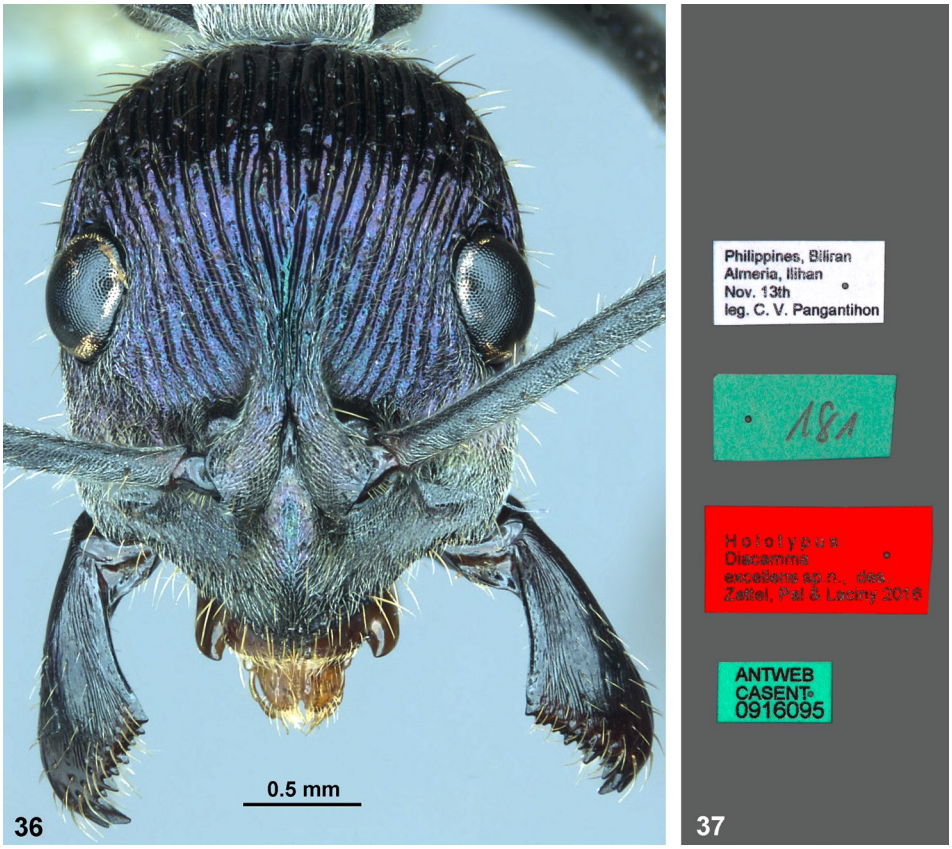




Figs. 34–35: *Diacamma excellens* sp.n., holotype. (34) Habitus, lateral. (35) Habitus, dorsal. © A. Pal.

Pilosity (Fig. 34): Standing setae abundant, pale to brownish, relatively short, slightly longer on petiole, tergites and apex of gaster, relatively shorter on scape and legs.

Colour (Figs. 34–36): Trunk black, strongly shimmering metallic blue (more dorsally) or purple (more laterally), the extent of these two colours varying between specimens. Clypeus in some specimens brownish black; apex of gaster pale brown. Antennae and legs black, tarsi sometimes brownish.



Figs. 36–37: *Diacamma excellens* sp.n., holotype. (36) Head, frontal. (37) Labels. © A. Pal.

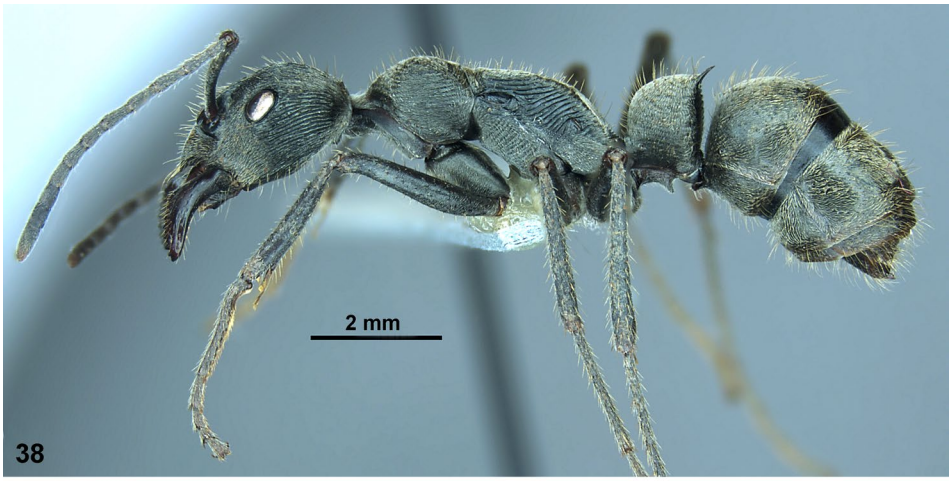
Notes: *Diacamma excellens* sp.n. belongs to the *D. rugosum* group in a narrow sense. This species has a strong, beautiful blue and purple shimmer and combines characters of *D. viridipurpureum* Emery, 1893 and *D. generali* Laciny, Pal & Zettel, 2015. Like in *D. viridipurpureum* the striation on propodeum sides is strongly upcurved, like in *D. generali* the clypeus is densely punctate. Morphometrically *D. excellens* differs from *D. generali* by larger eyes (EI 27–29 vs. 23–25) and from both *D. generali* and the two known subspecies of *D. viridipurpureum* by on average longer and more distant petiolar spines (SpLI 29–37 vs. 17– 33 in *D. v. viridipurpureum*, 29–33 in *D. v. quezonicum* and 15–27 in *D. generali*; SpDI 53–60 vs. 42– 49 in *D. v. viridipurpureum*, 46–53 in *D. v. quezonicum* and 40–52 in *D. generali*).

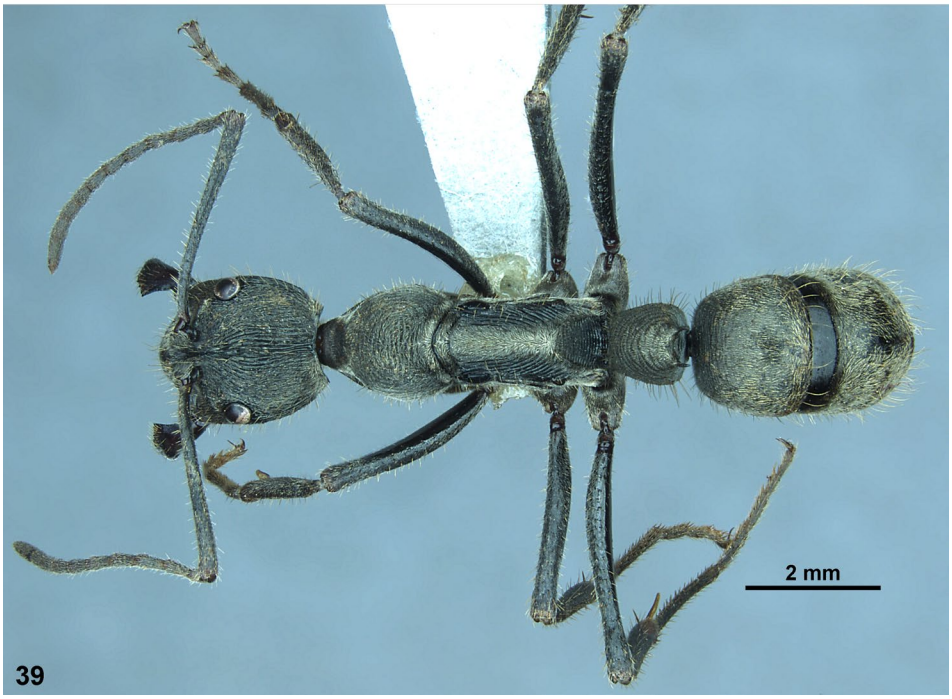
Distribution: Philippines: Biliran; only known from the type locality.

***Diacamma reductostriatum* sp.n.** (Figs. 38–41)

Etymology: The species epithet refers to the reduced striation on gaster tergite 1.

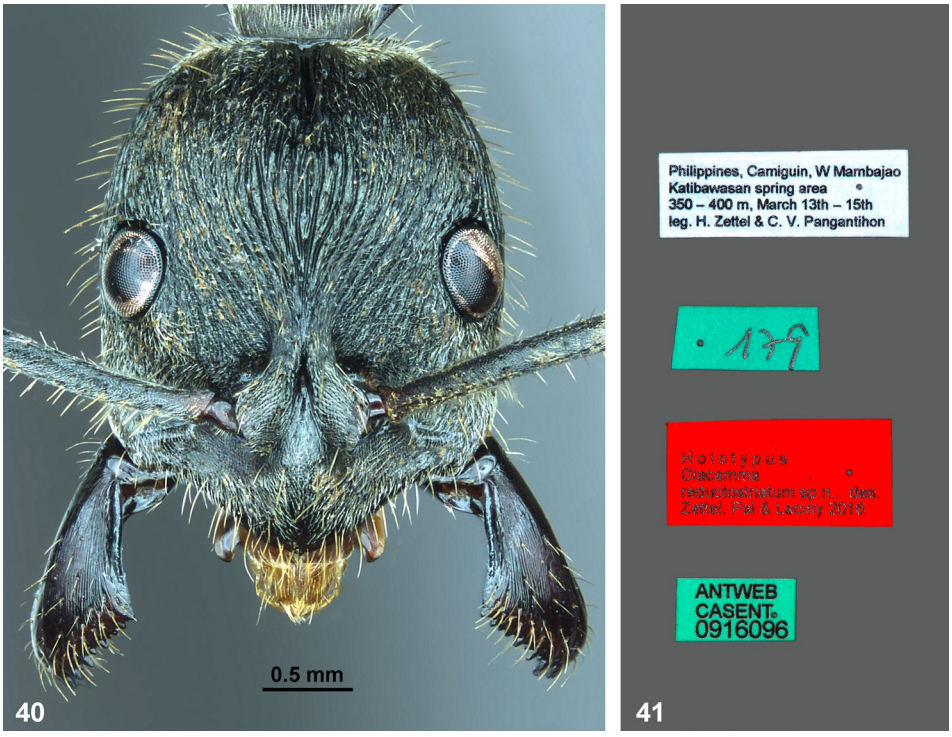
Type material: Holotype (worker, PNMM, CASENT0916096), Philippines, Camiguin, W of Mambajao, Katibawasan spring area, 350–400 m a.s.l., March 13th – 15th, leg. H. Zettel & C. V.





Figs. 38–39: *Diacamma reductostriatum* sp.n., holotype. (38) Habitus, lateral. (39) Habitus, dorsal. © A. Pal.

Pangantihon. Paratypes: 10 workers (CZW, NHMW, CASC, THNHM), same locality; 4 workers (CZW), Camiguin, Mambajao, Sudlon, slopes of Mt. Hibok-Hibok, 400 m a.s.l., February 14th, leg. H. Zettel; 4 workers (CZW), Camiguin, Catarman, Mainit, Tuasan Falls, October 23rd, leg. C. V. Pangantihon; 1 worker (CZW), same locality, 200–250 m a.s.l., February 11th, leg. H. Zettel; 1 worker (CZW), same locality, February 28th, leg. A. Luckeneder.



Figs. 40 – 41: *Diacamma reductostriatum* sp.n., holotype. (40) Head, frontal. (41) Labels. © A. Pal.

D i a g n o s i s : Rather large, moderately slender species (TL 12.5 – 14.8 mm). Body black, without metallic shimmer, surface rather dull. Erect setae abundant; short silverish pilosity on most parts of trunk relatively sparse. Trunk variably striate from genae to gaster tergite 1. Head (Fig. 40) moderately long, sides posteriorly of eye strongly convex. Posterior of head with fine, dense striation reaching very narrow hind margin; occipital margin ventrally terminating in very short, blunt teeth (Fig. 38). Eyes small. Clypeus (Fig. 40) medially strongly convex, finely punctured, apex forming a distinct, obtuse angle. Mandibles with reduced striation. Pronotum (Fig. 39) with concentric, elliptical rugae. Gemmal pits broad. Striation on propodeum upcurved. Forecoxa without striation. Petiole (Figs. 38, 39) stout; rugae wide, but shallow; spines moderately long and straight; subpetiolar process with long, oblique pilosity. Gaster tergite 1 (Fig. 39) with fine, concentric, shallow or obliterated striation on disc. Following tergites finely punctured.

D e s c r i p t i o n : Measurements of holotype: TL 12.59; HW 2.27; HL 2.84; EL 0.54; SL 3.20; PH 1.67; PL 0.96; PW 1.17; SpD 0.47; SpL 0.32; WL 4.11; MTL 2.48. Indices: CI 80; SI 141; PI 57; SpDI 41; SpLI 29; EI 24. Measurements of paratypes (n = 18): TL 12.98 – 14.74; HW 2.2 – 2.41; HL 2.82 – 3.07; EL 0.56 – 0.62; SL 3.26 – 3.52; PH 1.74 – 1.93; PL 1.02 – 1.17; PW 1.15 – 1.35; SpD 0.45 – 0.59; SpL 0.32 – 0.46; WL 4.37 – 4.63; MTL 2.48 – 2.77. Indices: CI 76 – 80; SI 140 – 151; PI 57 – 63; SpDI 37 – 47; SpLI 28 – 37; EI 24 – 26.

Structures: Head (Fig. 40) relatively short; sides strongly convex behind small eyes. Rugae present from genae to petiole. Head posteriorly of eyes with relatively fine and dense

longitudinal striation reaching very narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (Fig. 38). Clypeus (Fig. 40) with a strongly convex, broad-triangularly protruding middle part, with very fine punctures basolaterally confluent to longitudinal striation; anteriorly puncturation sparse; apex with distinct obtuse angle. Mandible striation reduced, chiefly at base of masticatory margin. Entire mesosoma with relatively coarse rugae, strongest on pronotum and propodeum sides. Pronotum (Fig. 39) centrally with transverse rugae which are surrounded by concentric, transverse-elliptical rugae. Gemmal pits broad. Striation of mesopleura strongly oblique. On propodeum, the dorsal striae horizontal, the lateral striae strongly upcurved (Fig. 38); posterior face separated from sides by distinct carinae. Forecoxa without striation. Petiole (Figs. 38, 39) stout; node almost cubic; rugae wide, but shallow, partly obscured by pilosity; spines moderately long and straight; subpetiolar process distinctly concave, both teeth acute, posterior tooth slightly longer than anterior one; in lateral view, outline with long, oblique pilosity; in ventral view narrow, with short anterior lateral, anteromedially with paired paramedian carinae, posteriorly with relatively short median carina. Gaster tergite 1 (Fig. 39) anteriorly on declivitous area with fine transverse striation, on disc with fine, shallow or obliterated, concentric, semi-circular striation. Following tergites with very fine, moderately dense puncturation.

Pilosity (Fig. 38): Whitish to pale brownish standing setae numerous on entire body, longest on dorsum of petiole, gaster tergites and apex of gaster, relatively short on scape and legs. Trunk with well-developed silverish pilosity, but very dense only on posterior margin of pronotum, mesonotum, and an elongate stripe dorsally on the propodeum, sparse on posterior part of head and on pronotum disc, absent from propodeum sides.

Colour (Figs. 38 – 40): Trunk black, without metallic shimmer; clypeus in some specimens blackish brown; narrow hind margins of gaster tergites and apex of gaster pale brownish. Antennae and legs black, in some specimens partly dark brownish.

Notes: *Diacamma reductostriatum* sp.n. belongs to the *D. rugosum* group in a broad sense, but has a strongly reduced striation on gaster tergite 1, which distinguishes it immediately from *D. carbonarium* Laciny, Pal & Zettel, 2015, another large black Philippine species that occurs on Luzon. *Diacamma reductostriatum* sp.n. differs from *D. carbonarium* also by the fine striation of the head, absence of striation on the forecoxa, direction of striae on propodeum sides, and a relatively higher petiole (PI 57 – 63 vs. 64 – 73). See also notes for *D. aureovestitum* sp.n.

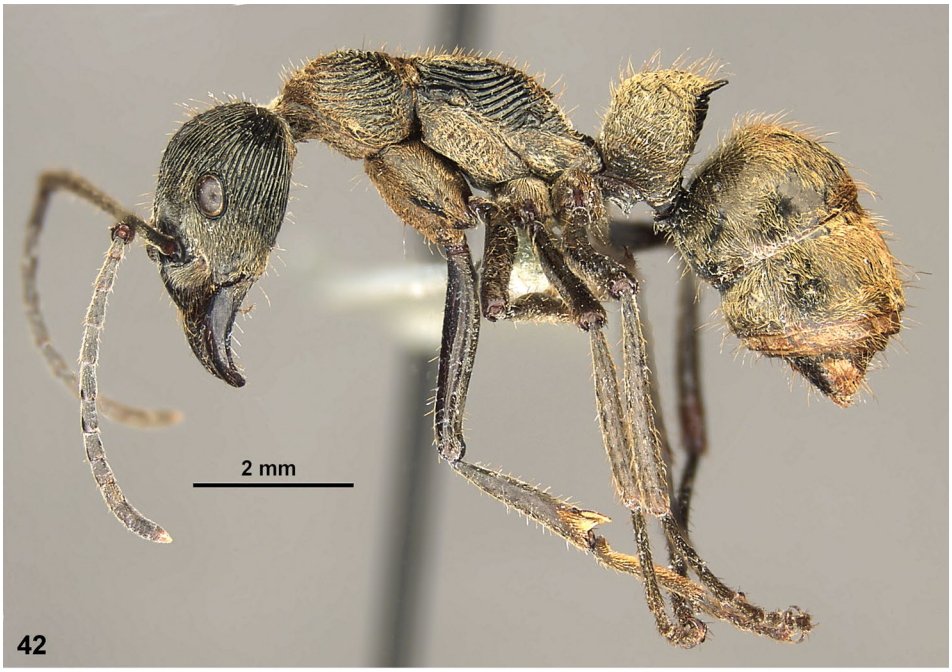
Distribution: Philippines: Camiguin.

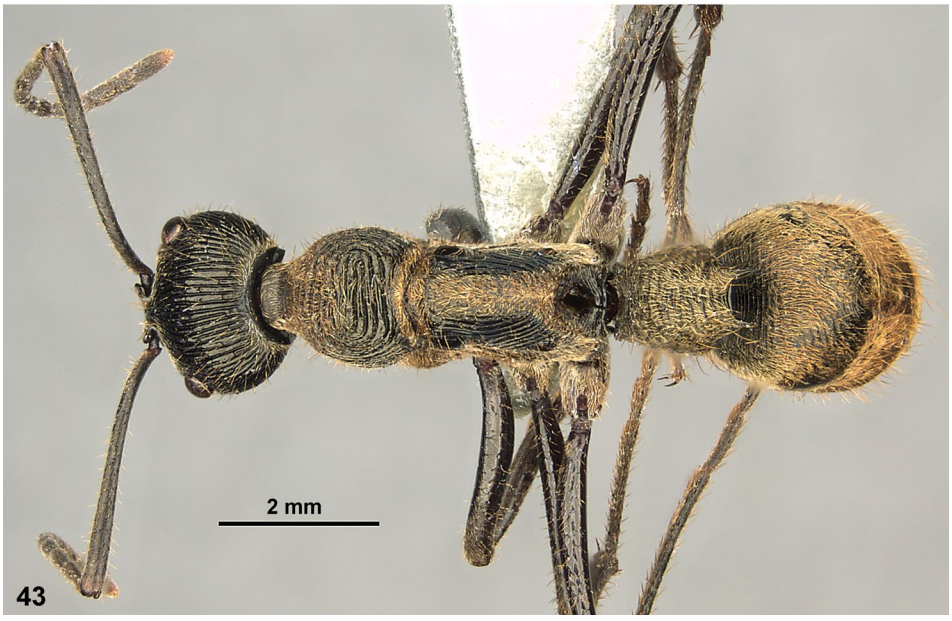
***Diacamma aureovestitum* sp.n.** (Figs. 42 – 45)

Etymology: The species epithet is a combination of the Latin words *aureus* (= golden) and *vestitus* (= clothed) and refers to the golden pubescence.

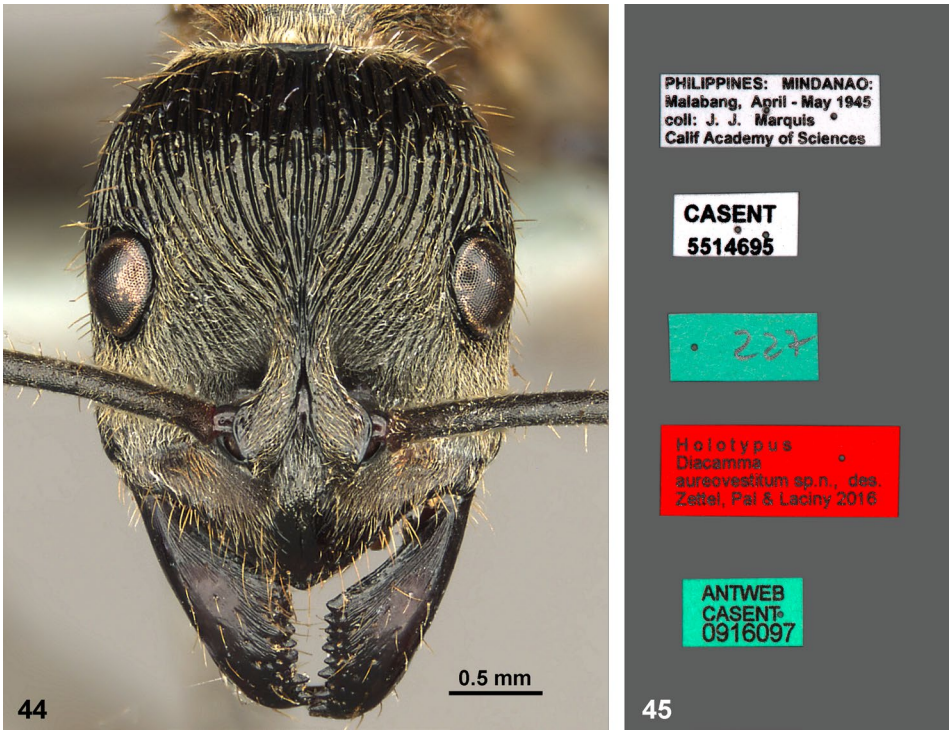
Type material: Holotype (worker, CASC, CASENT0916097), Philippines, Mindanao, Lanao del Sur Province, Malabang (ca. N 7°35', E 124°04', 20 m a.s.l.), IV – V.1945, leg. J.J. Marquis. Paratypes: 13 workers (CASC, NHMW, CZW), same locality data.

Diagnosis: Rather large, moderately slender species (TL 13.3 – 14.9 mm). Trunk black, without metallic shimmer, shiny only at bare surfaces. Erect setae abundant; a dense golden pilosity on most parts of trunk. Trunk coarsely striate from genae to petiole, on gaster tergite 1 with reduced striation. Head (Fig. 44) moderately long, sides posteriorly





Figs. 42 – 43: *Diacamma aureovestitum* sp.n., holotype. (42) Habitus, lateral. (43) Habitus, dorsal. © A. Pal.



Figs. 44 – 45: *Diacamma aureovestitum* sp.n., holotype. (44) Head, frontal. (45) Labels. © A. Pal.

of eye strongly convex. Posterior of head longitudinally striate until narrow hind margin; occipital margin ventrally terminating in very small, blunt teeth (Fig. 43). Eyes small. Clypeus (Fig. 44) medially sparsely, laterally densely and finely punctured; apex obtusely angled or rounded. Mandible striation reduced. Pronotum (Fig. 43) with concentric, elliptical rugae. Gemmal pits broad. Striation of mesopleura oblique, on propodeum sides upcurved (Fig. 42), on forecoxa lacking. Petiole (Figs. 42, 43) stout, with coarse rugae, in part obscured by dense pilosity; teeth medium sized and distant; subpetiolar process weakly concave, with oblique pilosity. Gaster tergite 1 (Fig. 43) with distinct transverse striation anteriorly on declivitous area, and with reduced concentric, semi-circular striation on disc. The very fine puncturation of the following tergites usually obscured by very dense pilosity.

Description: Measurements of holotype: TL 14.28; HW 2.49; HL 3.16; EL 0.63; SL 3.46; PH 2.04; PL 1.22; PW 1.52; SpD 0.71; SpL 0.40; WL 4.57; MTL 2.71. Indices: CI 79; SI 139; PI 60; SpDI 47; SpLI 27; EI 25. Measurements of paratypes (n = 13): TL 13.30 – 14.87; HW 2.35 – 2.51; HL 2.90 – 3.16; EL 0.60 – 0.64; SL 3.26 – 3.52; PH 1.96 – 2.15; PL 1.09 – 1.30; PW 1.30 – 1.61; SpD 0.60 – 0.69; SpL 0.35 – 0.51; WL 4.43 – 4.89; MTL 2.64 – 2.77. Indices: CI 77 – 81; SI 134 – 144; PI 53 – 63; SpDI 41 – 51; SpLI 22 – 35; EI 24 – 26.

Structures: Head (Fig. 44) moderately elongate; sides strongly convex behind small eyes. Very coarse rugae present from genae to petiole. Head posteriorly of eyes shiny, almost bare, with longitudinal rugae reaching narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (Fig. 42). Clypeus (Fig. 44) medially sparsely,

laterally densely and finely punctured; midline deeply impressed in several specimens; in some specimens puncturation tending to coalesce into a longitudinal striation; apex relatively variable, from obtusely angular to rounded. Mandible striation reduced, chiefly at base of masticatory margin. Entire mesosoma with very coarse rugae, strongest on pronotum and propodeum sides. Pronotum (Fig. 43) with concentric, elliptical rugae. Gemmal pits broad. Striation of mesopleura strongly oblique. On propodeum, the dorsal striae horizontal, the lateral striae strongly upcurved (Fig. 42); posterior face separated from sides by distinct carinae. Forecoxa without striation. Petiole (Figs. 42, 43) stout; node almost cubic; rugae wide, but shallow, partly obscured by pilosity; spines medium-sized, straight, and distant; subpetiolar process weakly concave, both teeth acute, but short; in lateral view, outline with oblique pilosity; in ventral view narrow, with short anterior lateral, anteromedially with paired paramedian carinae, posteriorly with relatively short median carina. Gaster tergite 1 (Fig. 43) anteriorly on declivitous area with broad and relatively distinct transverse striation, on disc with shallow, reduced concentric, semi-circular or semi-elliptical striation. Microsculpture on following tergites obscured by pilosity, underneath consisting of a very fine, moderately dense puncturation.

Pilosity (Fig. 42): Yellow or pale brown standing setae numerous on entire body, longest on dorsum of petiole, gaster tergites and apex of gaster, relatively short on scape and legs. Trunk with well-developed, dense golden pilosity, lacking only on posterior part of head and on propodeum sides.

Colour (Figs. 42 – 44): Trunk black, except very narrow margins of gaster tergites and apex of gaster brown. Mandibles, antennae and legs blackish to dark brown.

Notes: The eponymous golden pilosity of *D. aureovestitum* sp.n. is very characteristic and distinguishes this species immediately from Philippine congeners of similar size. Otherwise, *D. aureovestitum* sp.n. is similar to *D. reductostriatum* sp.n. by relatively large size, black integument (without metallic shimmer), and reduced striation on gaster tergite 1. However, in *D. aureovestitum* sp.n. the striation is relatively broad, but shallow and forms semi-circular or narrow elliptical bows, whereas in *D. reductostriatum* sp.n. the striation is very fine and arranged in wide bows. Other differences, compared with *D. reductostriatum* sp.n., are the broad and shiny ridges on head and propodeum sides, and a moderately acute posterior angle of the subpetiolar process.

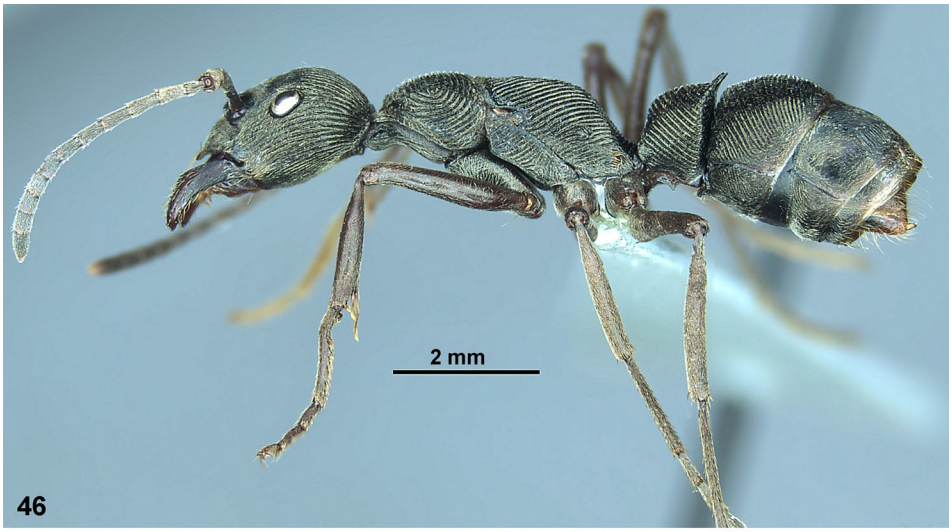
Distribution: Philippines: Mindanao: Lanao del Sur; only known from the type locality.

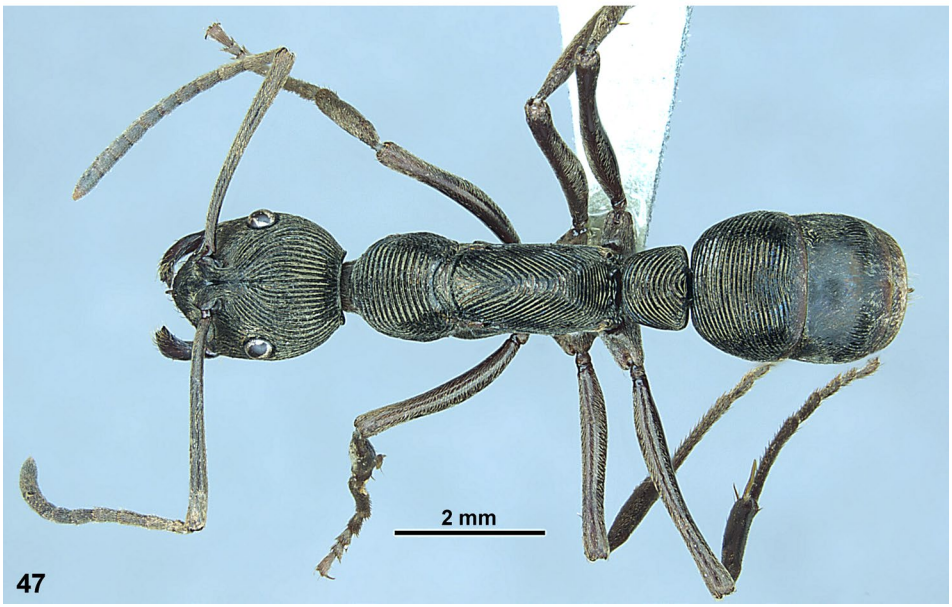
Diacamma aequale **sp.n.** (Figs. 46 – 49)

Etymology: The Latin adjective aequalis means regular or even and refers to the even striation of the mesosoma.

Type material: Holotype (worker with gemmae, PNMM, CASENT0916098), Philippines, Negros Oriental, Sibulan, Lake Balinsasayao – Lake Danao (Twin Lakes), October 28th – 30th, leg. C. V. Pangantihon. Paratypes: 3 workers (all with gemmae; CZW), same locality data.

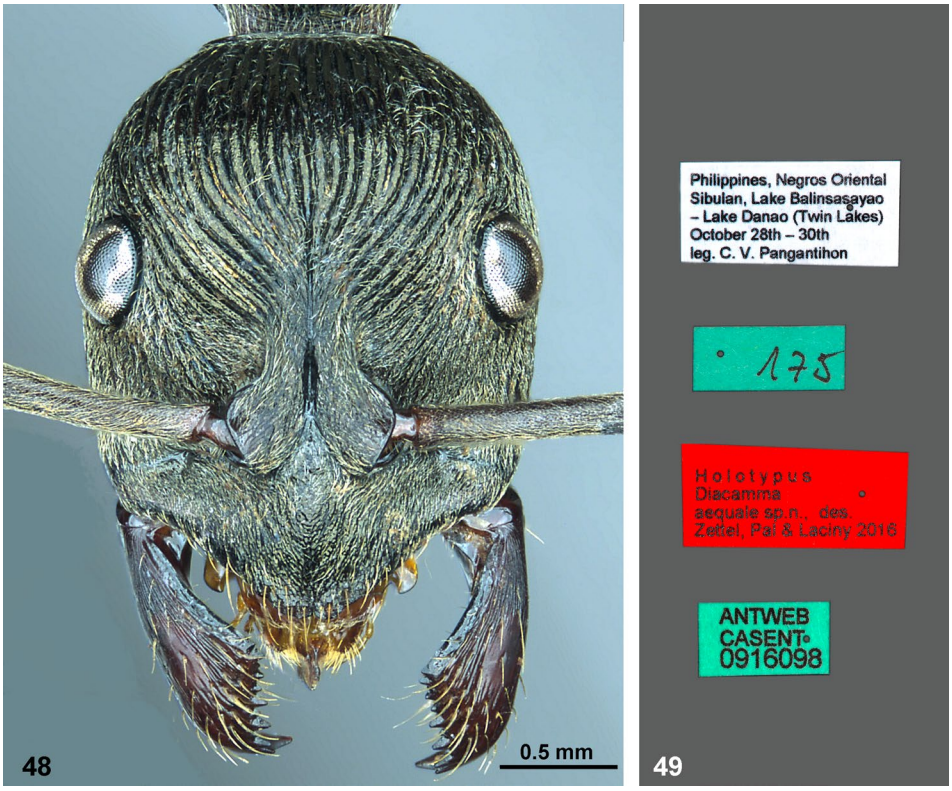
Diagnosis: Moderately large species (TL 11.4 – 12.4 mm). Trunk black, with weak, coppery to dark greenish metallic shimmer; gemmae, subpetiolar process and apex of gaster pale brown. Mandibles, antennae, and legs dark reddish brown. Erect setae absent from most body parts, only on apex of gaster starting from hind margin of tergite 3, and anterior margin of clypeus with long projecting setae. Fine pilosity from head behind eyes to disc of gaster tergite 1 very sparsely developed, resulting in an almost glabrous appearance; dense on gaster starting at hind margin of tergite 1. Trunk strongly and





Figs. 46 – 47: *Diacamma aequale* sp.n., holotype. (46) Habitus, lateral. (47) Habitus, dorsal. © A. Pal.

regularly striate from genae to gaster tergite 1; tergite 2 with longitudinal striation. Head (Fig. 48) moderately elongated, sides posteriorly of eye strongly convex. Posterior of head longitudinally striate until narrowly truncated hind margin; occipital margin ventrally terminating in very short, blunt teeth (Fig. 46). Eyes rather small. Clypeus (Fig. 48) very densely punctured, in some specimens with longitudinal rugae; apex strongly protruded and slightly truncated. Mandible with fine striation. Pronotum (Fig. 47) with concentric, transverse-elliptical rugae. Gemmae small, narrow. Striation on mesosoma and propodeum



Figs. 48–49: *Diacamma aequale* sp.n., holotype. (48) Head, frontal. (49) Labels. © A. Pal.

sides strongly oblique (Fig. 46). Forecoxa often without any striation. Petiole (Figs. 46, 47) stout, its teeth short and close together; subpetiolar process strongly concave between acute anterior and posterior corners. Gaster tergite 1 (Fig. 47) with coarse transverse, slightly curved striation.

Description: Measurements of holotype: TL 12.00; HW 2.18; HL 2.71; EL 0.51; SL 3.13; PH 1.74; PL 0.93; PW 1.22; SpD 0.37; SpL 0.26; WL 4.04; MTL 2.41. Indices: CI 81; SI 139; PI 54; SpDI 31; SpLI 21; EI 23. Measurements of paratypes (n = 3): TL 11.41–12.39; HW 2.02–2.18; HL 2.53–2.80; EL 0.49–0.54; SL 2.93–3.13; PH 1.74–1.76; PL 0.92–0.93; PW 1.15–1.28; SpD 0.37–0.44; SpL 0.26; WL 3.91–4.04; MTL 2.30–2.48. Indices: CI 78–80; SI 143–145; PI 53; SpDI 29–35; SpLI 21–23; EI 23–24.

Structures: Head (Fig. 48) moderately elongate; sides strongly convex behind small eyes. Very coarse rugae present from genae to gaster tergite 1. Gaster tergite 2 in distal half with paired areas of short longitudinal striation. Posteriorly of eyes, longitudinal rugae reaching narrow occipital margin. On ventral side of head occipital margin ending in small, blunt teeth (Fig. 46). Clypeus (Fig. 48) densely punctured, almost matt; anterior margin medially strongly produced; apex slightly rounded to truncated. Mandibles with weakly developed striation. Pronotum (Fig. 47) centrally with transverse rugae that are surrounded by transverse-elliptical rugae. Rugae on mesopleura and propodeum sides strongly oblique,

the latter dorsally connected between sides (Fig. 47); without carinae between posterior face of propodeum and sides. Forecoxa without striation or with a few faint striae near base. Petiole (Figs. 46, 47) moderately stout, trapezoidal in dorsal aspect; spines short and close to each other; ventral outline of subpetiolar process strongly concave, anterior tooth much longer than posterior one; pilosity reduced; in ventral view narrow, lanceolate; lateral carinae prominent, connected anteriorly and posteriorly; median carina low. Gaster tergite 1 (Fig. 47) with thick, transverse, slightly curved rugae; along posterior margin finely punctured. Gaster tergites 2 and 3 (Fig. 47) with fine reticulation, shiny; tergite 2 with paired areas of longitudinal striation occupying about one fourth of gaster length.

Pilosity (Fig. 46): Long standing setae strongly reduced, only numerous on posterior part of gaster starting with hind margin of tergite 3; completely absent from antennae and legs. Clypeus with long, anteriorly directed setae along anterior margin. Short decumbent setae scattered. Short whitish pilosity reduced on a major part of dorsal surface, from posterior eye margin to disc of tergite 1, most notably on middle part of propodeum, which is strongly pilose in related species. Anterior part of head and posterior part of gaster densely pilose. Body sides rather weakly pilose.

Colour (Figs. 46 – 48): Trunk blackish, with weak, coppery to dark greenish metallic shimmer; gemmae and subpetiolar process pale brown; hind margins of gaster tergites 1 – 4 and apex of gaster yellowish brown. Mandibles, antennae, and legs dark reddish brown, but bases of coxae strongly infuscated.

Notes: *Diacamma aequale* sp.n. is very distinctive by the absence of standing setae on most parts of the body and by the very regular striation from head to gaster tergite 1 that is uninterrupted at the dorsum of the propodeum, where most other species possess a more irregularly rugose, pilose area. In addition, *D. aequale* sp.n. has two areas of short longitudinal striae on gaster tergite 2, similar to *D. brevistriatum* Laciny, Pal & Zettel, 2015 from West Malaysia. The gamergates of *D. aequale* sp.n. have very small gemmae.

Distribution: Philippines: Negros Oriental.

Faunistical additions to part 1

The following additions are given in alphabetic order:

Diacamma brevistriatum Laciny, Pal & Zettel, 2015

Additional material examined: 1 worker (CASC), West Malaysia, Cameron Highlands, 4 miles northeast of Jor Camp, 800 m a.s.l., 20.VI.1962, leg. E.S. Ross & D.Q. Cavagnaro; 2 workers (OÖLM), West Malaysia, Pahang, Cameron Highlands, Tanak Rata, 2.IV.1997, leg. P. Cechovský; 1 worker (OÖLM), West Malaysia, Pahang, Tioman Island, Kampong Tekek, II.1998, leg. Tichy; 1 worker (OÖLM), West Malaysia, Perak, 25 km NE of Ipoh, Korbu Mountains, 15.I.1999, leg. P. Cechovský.

Diacamma generali Laciny, Pal & Zettel, 2015

Additional material examined: 1 worker (CASC, CASENT0217517), Zambales, Olongapo, [10 m E ?], 1200 ft, V.1907, leg. J.G. Thompson; 5 workers (CASC), Zambales / Bataan provinces border area, Subic Bay, Binictican – Water Tank Road, 1.X.1970, leg. J.E. Tobler I.; 9 workers (CASC), Laguna Province, Malaboo camp (PH0001, PH0003, PH0004); 5 workers (CASC), Laguna Province, UPLB campus, (PH0047, PH0048, PH0049). For more details see the electronic supplement at the journal's web page.

Etymology: *Diacamma generali* was cordially dedicated to David E.M. General, myrmecologist at University of the Philippines in Los Baños. The etymology was omitted from the original description by error.

Diacamma geometricum (Smith, 1857)

Additional material examined: 2 workers (CASC), Singapore, Seletar Reservoir, 25 ft a.s.l., 3.VI.1962, leg. E.S. Ross & D.Q. Cavagnaro.

Diacamma violaceum Forel, 1900

Additional material examined: 2 workers (CASC), Thailand, Chiang Mai Prov., near Chiang Mai, Mae Sa ["Mae Sae", sic!] Waterfall, 28.XI.1978, leg. E.S. Ross; 1 worker (CASC), Thailand, Chiang Mai Prov., slope of Doi Suthep ["Doi Sutep", sic!], 260 m a.s.l, 15.VII.1962, leg. E.S. Ross & D.Q. Cavagnaro; 1 worker (THNHM), Chiang Mai Prov., Doi Inthanon National Park, Hill Evergreen Forest, 8.X.2003, leg. N. Non-anan; 5 workers (THNHM), Chiang Mai Prov., Omkoi district, Dry Deciduous Forest, 900–1000 m a.s.l., 23.X.2014, leg. W. Jaitrong (#231014-18); 2 workers (THNHM), 1 male (THNHM), same locality and date, leg. W. Jaitrong (#231014-6); 2 workers (THNHM), Mae Hong Son Prov., Tham Lod Forest Park, 11.XI.2007, leg. T. Jeenthong.

Notes: *Diacamma violaceum* was described from Myanmar by Forel (1900) and recorded from Chiang Mai Province in Thailand by Laciny & al. (2015). First record from Mae Hong Son Province in Thailand.

Diacamma viridipurpureum quezonicum Laciny, Pal & Zettel, 2015

Additional material examined: 2 workers (CASC), Philippines, Quezon Prov., municipality of Lucban, PH008; 9 workers (CASC), Philippines, Quezon Prov., municipality of Lucban, P0010, P0011, P0013; 1 worker (CASC), Philippines, Quezon Prov., municipality of Lucban, PH0017; 1 worker (CASC), Laguna Province, municipality of Majayjay, PH0018. For more details see the electronic supplement at the journal's web page.

Notes: The additional material originates from different elevations (643–788 m a.s.l.) at the northern slopes of Mount Banahaw de Lucban, whereas the type locality is at ca. 250 m a.s.l.

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