

Article

Description of *Diacamma rugosum jerdoni* (Insecta: Hymenoptera) male along with two new additions to the myrmecofaunal diversity of Kerala, India

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Abstract

Ants are a diverse and ecologically important family of insects, found in various habitats across the globe. Their presence and interactions within ecosystems play crucial roles in nutrient cycling, soil aeration and as predators or prey in food webs. The study of ant species in specific regions provides insight into local biodiversity and ecological dynamics. Detailed documentation of ant species, including their distribution and behavior, aids in understanding their ecological roles and contributions to ecosystem health. Despite extensive research on ants globally, certain regions and habitats remain under-documented, leading to gaps in knowledge about the presence and diversity of specific ant species. Comprehensive surveys and studies are needed to fill these gaps and update species checklists. The male caste of *Diacamma rugosum jerdoni* Forel, 1903, is described in this study. *Diacamma rugosum jerdoni* which was proposed a potential synonym of *Diacamma rugosum sculptum* (Jerdon, 1851) by Emery in 1911, the type material of which was by then unknown. Hence, it is thought appropriate to abandon the name *Diacamma rugosum sculptum* (Jerdon, 1851) which is not identifiable with description and have no existing type material. Additionally, for the first time in Kerala, we report the presence of *Crematogaster dalyi* Forel, 1902, and *Leptogenys emiliae* Forel, 1902. We furthermore offer a checklist for the genera *Crematogaster* and *Leptogenys*. The documentation of these species highlights the rich ant diversity in the region and underscores the importance of continued research.

Key words: Western ghats, taxonomy, Hymenoptera, new records, ants

Introduction

Western Ghats, a globally renowned biodiversity hotspot, is recognized as one of the eight hottest hotspots in the world and a UNESCO World Heritage Site (Myers et al., 2000; Mittermeier et al., 2011). It is a series of mountains with the highest peak having an elevation of 2969 m above sea level (Venkataraman and Sivaperuman, 2018). The sixth mass extinction, driven largely by anthropogenic activities, is significantly impacting biodiversity across the globe, particularly within the invertebrate strata (Cowie et al., 2022). In response, there has been an intensified effort to make inventories of invertebrates to better understand and conserve these critical components of ecosystems. A notable contribution to the inventory of ants in Western Ghats comes from the study by Dad et al. (2019). They study documented ant species richness and their distribution along an altitudinal gradient across eight selected sites in the Western Ghats, recording 173 ant species belonging to 63 genera and 10 sub-families. Despite this significant contribution, the Western Ghats region still need more comprehensive and systematic surveys across various inaccessible habitats to fully elucidate the biodiversity of this rich region.

Kerala (a part of Western Ghats), a narrow coastal equatorial tract of India nestled between 8°17'–12°47'N and 74°52'–77°24'E, stands out for its unique identity within the southwest corner of the Indian

Peninsula (Nair, 2011). According to Bharti et al. (2016), Kerala hosts 268 ant species distributed across 63 genera. Since then, isolated studies have reported new species, new records and even a few new genera from the region (e.g., Akbar et al. 2021, 2023b, c). Even after these advancements, there is a notable absence of a comprehensive checklist for ants of Kerala.

The genus *Diacamma* Mayr, 1862 is well known for its distinctive reproductive strategies, most species form small to intermediate queenless colonies with a few hundred monomorphic workers. *Diacamma* workers are solitary foragers, they are generalist predators of arthropods and effectively predate on termites (Karpakakunjarum et al., 2003; Eguchi et al., 2004). Reproduction is carried out by mated and egg-laying workers called gamergates (Wheeler & Chapman, 1922; Peeters & Higashi, 1989). All the newly enclosed workers have a pair of tiny appendages called “gemmae”, on the thorax and only one individual (acting as gamergate) per colony retains the gemmae. The gamergate mutilates the gemmae of newly enclosed workers, preventing them from reproducing and maintaining reproductive dominance. Gemmae are covered with sensory hairs with a mechanoreceptive function and mutilation results in the degeneration of the neural connections to the central nervous system; (Gronenberg & Peeters, 1993; Tulloch, 1934; Peeters & Billen, 1991). Once mutilated, *Diacamma* workers are restricted to producing males in colonies without a gamergate (Peeters & Tsuji 1993; Tsuji et al., 1999; Cuvillier-Hot et al., 2002). Only gamergates with intact gemmae have fully developed reproductive organs, participate in mating and lay diploid eggs. (Peters and Higashi, 1989; Allard et al., 2005). New gamergates of *Diacamma* attract males using pheromones produced from the metatibial gland (Fukumoto et al., 1989; Nakata et al., 1998). Despite very rapid sperm transfer, copulation in *Diacamma* is exceptionally long, with males remaining attached to females for as long as two days; males are killed and forcibly removed by the gamergate and her nestmates (Allard et al., 2002, 2007). A teratological abnormality in the genus *Diacamma* was reported by Akbar et al. (2022) and was typified by a defect in antennal development.

The genus *Diacamma* Mayr, 1862 is distributed from India, south-eastern Asia all the way to Australia. The genus *Diacamma* has 44 valid species and 23 subspecies worldwide (Bolton, 2024); 12 valid species and subspecies have been recorded from India (Bharti et al., 2016). In India, the taxonomy of the *Diacamma* genus is confusing due to a number of infraspecific taxa that require confirmation, including the five subspecies of the species complex *Diacamma rugosum*.

Table 1. Subspecies of *Diacamma rugosum*

Sr. No.	Subspecies	Type material	Type locality	Type depository
1.	<i>Diacamma rugosum sculptum</i> (Jerdon, 1851)	Syntype workers (number not stated)	India: Malabar, sea level to top of the Neilgherries	No type-material is known to exist
2.	<i>Diacamma rugosum andamane</i> Chapman & Capco, 1951	Syntype worker(s), syntype male(s) (numbers not stated)	India: S Andaman Is, Kyd I.	MHNG
3.	<i>Diacamma rugosum jerdoni</i> Forel, 1903	Holotype(?) worker	Type-locality: India: (no further data)	MHNG
4.	<i>Diacamma rugosum rothneyi</i> Forel, 1900	Syntype workers (number not stated)	India: Cochin	MHNG
5.	<i>Diacamma rugosum doveri</i> Mukerjee, 1934	Holotype worker	India: Karnataka, Fraserpet (= Kushalanagar), COORG (= North Coorg Forest division)	Unknown (possibly in NZSI)

Diacamma rugosum jerdoni, an infraspecific taxon that Emery speculated in 1911 as a possible synonym of *Diacamma rugosum sculptum* (Jerdon, 1851), has an unknown type material. In absence of the type and adequate description the proposed synonymy can't be considered as valid and, it will be suitable to consider *Diacamma rugosum sculptum* (Jerdon, 1851) as a species inquirenda since it lacks type material and is currently unidentifiable with available limited description. Additionally, the validity of subspecies ranks within this complex may change as further research and revisions of the complex are conducted.

The ant genus *Crematogaster*, boasting over 524 species worldwide (Bolton, 2024), stands out for its remarkable hyperdiversity. Blaimer (2012) classified *Crematogaster* into two subgenera: *Crematogaster* and *Orthocrema*. In Kerala, ten species of *Crematogaster* have been documented till date (Akbar et al., 2023a). These ants typically inhabit forest, woodland and shrubby habitats, where they often form a dominant component of the fauna. While most tropical *Crematogaster* species nest arboreally, some tropical and temperate species nest in the ground (Hosoishi et al., 2010). Despite their ecological significance, the biology of *Crematogaster* remains poorly understood.

Leptogenys Roger, 1861, encompasses over 320 species and 14 subspecies, making it one of the most diverse and abundant ponerine groups in tropical and subtropical regions (Bolton, 2024). Kerala harbors 16 species and subspecies of *Leptogenys* (Bharti et al., 2016; Bolton, 2024). In India, *Crematogaster dalyi* Forel, 1902 has been previously recorded from Haryana, Karnataka, Tamil Nadu, and West Bengal (Akbar et al., 2023a), while *Leptogenys emiliae* Forel, 1902 was only known from Gujarat (Bharti et al., 2016). Our findings represent the first records of both species in Kerala, expanding their known distribution.

Materials and methods

Specimens were collected using forceps and preserved in absolute ethanol. Morphological Examinations were done by using a Nikon SMZ 1500 stereo zoom microscope with a maximum magnification of 1-12.5X. Digital images of the specimens were captured using an MP (Micro Publisher) digital camera and Auto Montage (syncroscopy, a division of Synoptics Ltd.) software. All images were subsequently cleaned and enhanced using Adobe Photoshop 2023. A map depicting the locations of newly documented records (Fig. 1) has been created by using the QGIS 3.34.0 software. Species identifications were done with the help of various available literatures like Bingham, 1903; Bharti et al., 2013; Schmidt & Shattuck, 2014; Hosoishi, 2015; Akbar et al., 2023. Additionally, images of the specimens were compared with type specimen images available on AntWeb (2024).

Institutional abbreviations

MHNG = Museum of Natural History, Geneva, Switzerland

ZSI = Zoological Survey of India

PUAC = Punjabi University Patiala Ant Collection, Punjab, India

Morphological measurements of *Diacamma rugosum jerdoni* were recorded in millimetres with an oculometer fitted on a Nikon SMZ 1500 stereo zoom microscope by following Laciny et al., 2015 for workers and Bharti and Wachkoo, 2013 and Wang et al., 2020 for male. The abbreviations used for measurements and indices are as follows:

HL	Maximum length of head in full-face view, measured in a straight line from the anteclypeus to the midpoint of the frontovertex margin.
HW	Maximum width of the head in full-face view including eyes.
ML	Straight line length of mandible from apex to visible basal end and measured in dorsal view.
CL:	Maximum length of median clypeal lobe measured in full-face view.
CW:	Maximum width of median clypeal lobe measured in full-face view.
EL:	Maximum length of eye as measured normally in oblique view of the head to show full surface of eye.

EW:	Maximum eye width perpendicular to EL.
SL:	Maximum length of the scape excluding the basal neck and condyle.
PW:	Maximum width of pronotum in dorsal view.
WL:	Weber's length of mesosoma, measured in lateral view from the anterior surface of the pronotum (excluding the collar) to the posterior margin of the propodeal lobes.
PL:	The length of the petiole from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation.
PH:	Height of the petiole measured in lateral view from the apex of the ventral (subpetiolar) process vertically to a line intersecting the dorsalmost point of the node.
PFL:	Maximum length of the profemur from its margin with the trochanter to its margin with the tibia.
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.
PFW:	Maximum width of the profemur.
MFL:	Maximum length of the midfemur from its margin with the trochanter to S1 margin with the tibia.
HFL:	Maximum length of the hindfemur from its margin with the trochanter to S1 margin with the tibia.
MTL:	Maximum length of the midtibia from its margin with the femur to its margin with the tarsus.
HTL:	Maximum length of the hindtibia from its margin with the femur to its margin with the tarsus.
GL:	The length of gaster in profile from the anterior-most point of the first gastral segment to the posterior-most point (excluding sting).
TL:	Total outstretched length of a specimen, from mandibular apex to gastral apex.

CI Cephalic index: $HW/HL \times 100$

MI Mandibular index: $ML/HW \times 100$

OI Ocular index: $EL/HW \times 100$

SI Scape index: $SL/HW \times 100$.

LPI Lateral petiole index: $PH/PL \times 100$

DPI Dorsal petiole index: $PDW/PL \times 100$

Depository

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

Results and discussion

During the fieldwork conducted in Silent Valley National Park on January 6, 2023, a carton nest of *Crematogaster* sp. was found in Mukali Village (11.078055 N 76.419166 E, 550 m). Similarly, on January 14, a nest fragment of *Diacamma* was found under a stone, including workers and a male ant (10.44083 N 76.53527 E, 83 m) and a *Leptogenys* sp. beneath the leaf litter (10.474444 N 76.48888 E, 248 m) in Chimmony Wildlife Sanctuary, Kerala. Specimens were collected for taxonomic analysis and subsequent microscopic examination confirmed the species as *Crematogaster dalyi*, *Diacamma rugosum jerdoni* and *Leptogenys emiliae* respectively. Following a thorough analysis of *C. dalyi* and *L. emiliae* distribution, it was found that these ant species had not been previously reported in Kerala and thus, claimed as the first record. The map shown in Fig. 1 indicates the locality of *C. dalyi* green, *D. rugosum jerdoni* blue and *L. emiliae* with a yellow mark.

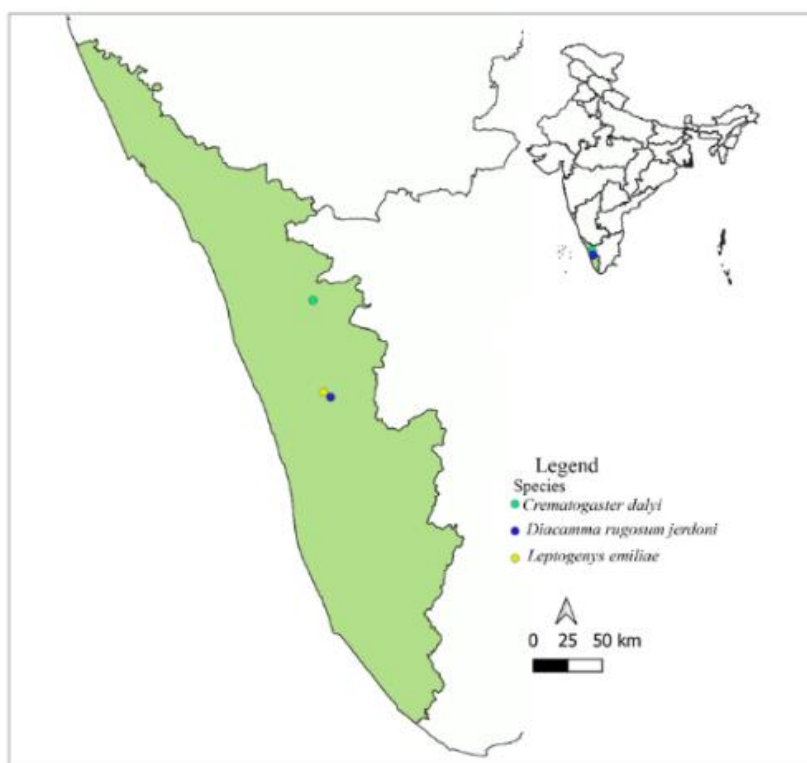


Figure 1- Map showing localities of *Crematogaster dalyi*, *Diacamma rugosum jerdoni* & *Leptogenys emiliae* in Kerala, India

Taxonomic accounts

Diacamma rugosum jerdoni Forel, 1903 (Figs 2-4)

Diacamma rugosum jerdoni Forel, 1903c: 401. Type locality: Sri Lanka [Ceylon] [Syntype: MHNG]. [Images of CASENT 0907222 syntype worker examined].

Redescription (Worker) (Fig. 2)

Workers measurements: TL 12.0-12.5; HW 2.17-2.21; HL 2.58-2.62; SL 2.87; WL 3.56-3.64; MTL 2.05-2.09; PH 1.43-1.47; PL 1.02-1.06; PW 1.23; SpD 0.48-0.57; SpL 0.28; EL 0.60-0.61; EW 0.41-0.43 (n=2). Indices: CI 84.10-84.35; SI 129.86-132.20; PI 69.38-74.12; SpDI 39.02-46.34; SpLI 22.76; EI 27.60-27.64.

Description: Head distinctly longer than broad (HL 2.58- 2.62; HW 2.17- 2.21); head oval in shape, occipital corners rounded, lateral sides convex; clypeus broad and convex, anterior clypeal margin with rounded lobe; eyes large slightly longer than wide (EL 0.60-0.61; EW 0.41-0.43), convex; mandibles triangular, masticatory margin with 7-teeth; antennae 12-segmented, scapes extending beyond the top of the head by one-third of its length; pedicel short.

In dorsal view, mesosoma broad anteriorly and narrow posteriorly; pro-mesonotal suture and metanotal groove distinct; pronotum broader than mesonotum and propodeum; mesonotum reduced, broader than long; propodeum longer than broad; propodeal declivity steep; petiolar node broader than long (PW 1.23; PL 1.02-1.06); dorsal surface of petiolar node armed with a pair of acute spines; gaster cylindrical. In lateral view, mesosoma do not form a single convexity; propodeal declivity convex and continuous with dorsal surface of propodeum; petiole rectangular in profile, anterodorsal margin convex, posteriodorsal margin truncated; node higher and broader than long (PH 1.43-1.47; PW 1.23; PL 1.02-1.06); gaster cylindrical, curved posteriorly, dorsal convex; gaster longer than mesosoma; sting long and curved upward. Dorsal surface of head longitudinally striated; clypeus and frontal area opaque and densely punctated; mandibles finely longitudinally striated; dorsal surface of pronotum with longitudinal concentric and circular rugae; laterally mesosoma obliquely striated; dorsal surface of propodeal declivity transversely striated; petiolar node with concentric striations; first gastral tergite with transverse concentric striations and rest of gastral segments smooth and shiny.

Pilosity and pubescence: Whole body surface covered with dense erect and sub-erect hairs; appressed pubescence dense all over the body surface.
Body blackish in colour; mandibles, antennae and appendages dark brownish in colour.



Figure 2- *Diacamma rugosum jerdoni* worker caste a) Head b) Profile c) Dorsum

Description (Male) (Fig. 3)

Male measurements: HL 0.96; HW 1.44; ML: 0.15; CW 0.69; CL 0.43; SL 0.34; EL 0.76; EW 0.43; WL 3.48; PH 0.88; PL 1.03; GL 4.40; PFL 1.94; PFW 0.26; MFL 1.3; MTL 2.29; HFL 2.46; HTL 2.29; PnW 1.72; PW 0.84; TL 10.02mm (n=1).

Indices: CI 150; MI 10; OI 52; SI 23; LPI 85; DPI 81.

Description: Body smaller than the workers; head in full-face view much broader than long (HL 0.96; HW 1.44;) including compound eye with roundly convex posterior margin; clypeus rectangular wider than long (CW 0.69; CL0.43); mandible reduced, feeble with apex rounded; eye large and elongated (EL 0.76; EW 0.43), with head in dorsal view bulging, breaking lateral (outer) margin of head; three ocelli large and very prominent; antennae 13- segmented; scape short, slightly wider and 1/3 shorter than flagellomere 1; pedicel slightly shorter than 1/2 of length of scape; flagellomeres long, narrow and cylindrical; pronotum with short dorsal plane, anteriorly convex, lateral face large, smooth shiny; mesoscutum large, almost as long as wide, with strongly convex anterior margin, mesoscutum separated from mesoscutellum by scutoscuteular sulcus; postscutellum and metanotum depressed; metanotal disc small, posteriorly narrow, well-demarcated from mesoscutellum by deep groove; metapleuron divided into upper and lower areas by shallow furrow; propodeum distinguished from metapleuron by shallow sulci, in dorsal view slightly longer than broad, spiracle located close to metapleuron; petiole nodiform, in lateral view (PH 0.88; PL 1.03) longer than high, in dorsal longer than broad, spine and denticulation absent; in dorsal view gastral segment I longer and narrow than segment II; legs somewhat long in proportion to mesosoma, femora longer than tibiae; meso- and meta-tibiae each with two apicoventral spurs; claws with small denticle apically.

Head smooth, generally shiny and never striate; clypeus coriarius-punctate; antennal scape and pedicel superficially rugulose; mesosoma striate and shiny; mesoscutellum and narrow median section of metapleuron shiny; scutoscuteular sulcus smooth; propodeum smooth; petiolar node smooth and shiny with superficial striations around apex. Gaster is smooth and shiny; coxae micro reticulated and less shiny.

Femora, tibiae and tarsi with dense short suberect hair; dorsum of the head densely covered with short suberect hairs; hairs sparsely present around ocelli; mandible basally and apically with suberect hairs; clypeus basally with short suberect hairs and apically with long erect hairs; pedicel and flagellum densely covered with short pubescence; mesosoma and petiole covered with short pubescence and suberect or erect hairs; legs almost completely covered with appressed pubescence; gastral tergites and sternites with pubescence and sparsely longer hairs that are slightly denser at posterior gastral sternite.

The entire body light yellowish brown; areas around the ocelli are slightly darker; tibiae and tarsi darker than coxae and femora.



Figure 3- *Diacamma rugosum jerdoni* male a) Head b) Profile c) Dorsum

Material examined: INDIA, Kerala, Chimmony Wildlife Sanctuary, 10.44083 N 76.53527 E, 83m, Hand picking, 14-1-2023, 2w, 1m, Rakeshwar Kapoor leg. (PUAC).

Natural History notes

The nests of *Diacamma rugosum jerdoni* were predominantly located beneath stones. When the stone covering a nest was turned, the nest became exposed, prompting a swift and organized response from the ants. A subset of workers immediately began searching for potential invaders, while the remainder focused on relocating the broods to deeper, more secure areas within the nest. Additionally, a male ant, which had started to move away, was quickly captured by the workers and transported to a safer location deeper in the nest (Fig. 4).

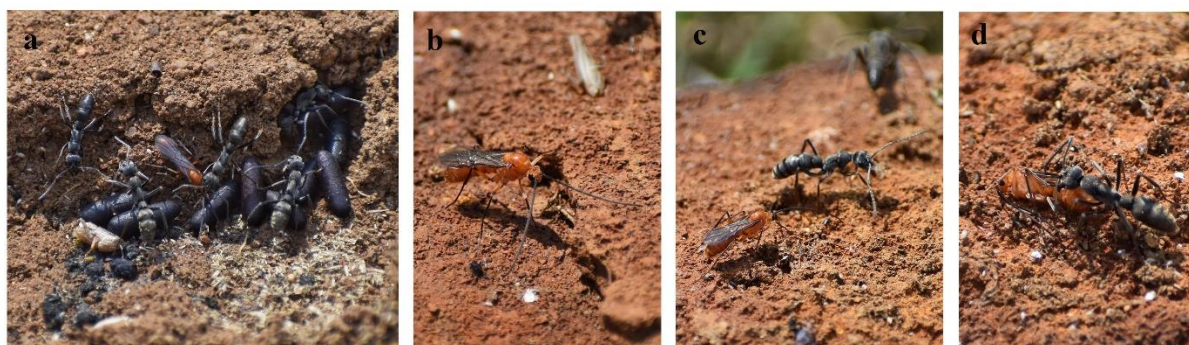


Figure 4- *Diacamma rugosum jerdoni* a) Exposed nest b) Single male c) Worker and Male (Worker transporting brood) d) Worker carrying male

Crematogaster dalyi Forel, 1902 (Fig. 5)

Crematogaster (Oxygyne) dalyi Forel, 1902: 201. Type locality: India (Tamil Nadu: Coonoor) [Lectotype: MHNG]. [Images of CASENT0907510 lectotype worker examined].

Worker diagnosis:

Crematogaster dalyi belongs to the *ranavalonae* group and can be distinguished from other groups by specific morphological characteristics, including a steeply raised pronotum, a smooth and shiny body surface, and short, appressed body setae. This group encompasses five species in India and *C. dalyi* is distinguishable by the following combination of features: abundant setae on the scape, in dorsal view markedly bilobed postpetiole that is more than twice as broad as it is long and short propodeal spines, the length of which is equal to or shorter than the diameter of propodeal spiracles. While *Crematogaster dalyi* looks quite similar to *C. sikkimensis*, a key distinguishing factor is the length of the propodeal spines—those of *C. dalyi* are considerably shorter.

Material examined: INDIA, Kerala, Silent Valley National Park, 11.078055 N 76.419166 E, 550m, Hand picking, 06-1-2023, 8w., Rakeshwar Kapoor leg. (PUAC).



Figure 5- *Crematogaster dalyi* a) Head b) Profile c) Dorsum

***Leptogenys emiliae* Forel, 1902 (Fig. 6)**

Leptogenys (Lobopelta) emiliae Forel, 1902: 294. Type locality: India (Gujarat [Guzerath]) [Syntype: MHNG]. [Images of CASENT0907374 lectotype worker examined].

Worker diagnosis:

The petiole of this species is nodiform and the head is smooth. The first gastral segment is predominantly smooth, exhibiting only widely spaced sparse piligerous punctulae. In dorsal view, the petiolar node is either broader than long or approximately as broad as it is long. The dorsum of the petiole is broadly rounded in lateral view. The cephalic dorsum is smooth and shining, with, at most, sparse piligerous punctulae. The pronotum is scrobiculate. This species bears a close resemblance to *Leptogenys lucidula*. However, a distinguishing feature is observed in the pronotum; in *L. lucidula*, the pronotum is smooth.

Material examined: INDIA, Kerala, Chimmony Wildlife Sanctuary 10.474444 N 76.48888 E, 248 m, Hand picking, 14-1-2023, 3w., Parvinder Singh Baidwan leg. (PUAC).



Figure 6- *Leptogenys emiliae* a) Head b) Profile c) Dorsum

The habitats of the documented species were primarily within mixed tropical rainforest ecosystems. The microhabitats for each species were as follows: *Diacamma rugosum jerdoni* was predominantly found beneath stones, *Crematogaster dalyi* exhibited arboreal nesting behavior and constructed carton nests and *Leptogenys emiliae* was located in decomposing wood. A view of each species habitat is provided in Fig. 7.



Figure 7- Habitats a) *Diacamma rugosum jerdoni* b) *Crematogaster dalyi* c) *Leptogenys emiliae*

The newly determined species contribute to Kerala's diverse ant fauna, now comprising eleven *Crematogaster* and seventeen *Leptogenys* species. A species list of these two genera is given in table 2. As a part of the Western Ghats biodiversity hotspot, Kerala's rich biodiversity holds promise for further discoveries through ongoing surveys, showcasing the need for continued exploration and conservation efforts.

Table 2. Species list of genera *Crematogaster* and *Leptogenys* found in Kerala

Sr. No.	Species	Documented during present study (+)
1.	<i>Crematogaster aberrans</i> Forel, 1892	
2.	<i>Crematogaster buddhae</i> Forel, 1902	
3.	<i>Crematogaster bonnieae</i> Akbar, Bharti & Wachkoo, 2023	
4.	<i>Crematogaster dohrni</i> Mayr, 1879	
5.	<i>Crematogaster ebenina</i> Forel, 1902	+
6.	<i>Crematogaster flava</i> Forel, 1886	
7.	<i>Crematogaster rogenhoferi</i> Mayr, 1879	+
8.	<i>Crematogaster rothneyi</i> Mayr, 1879	+
9.	<i>Crematogaster travancorensis</i> Forel, 1902	
10.	<i>Crematogaster wroughtonii</i> Forel, 1902	
11.	<i>Crematogaster dalyi</i> Forel, 1902	+
12.	<i>Leptogenys birmana</i> Forel, 1900	
13.	<i>Leptogenys carinata</i> Donisthorpe, 1943	
14.	<i>Leptogenys chinensis</i> (Mayr, 1870)	+
15.	<i>Leptogenys dalyi</i> Forel, 1900	
16.	<i>Leptogenys dentilobis</i> Forel, 1900	+
17.	<i>Leptogenys diminuta</i> (Smith, 1857)	+
18.	<i>Leptogenys falcigera</i> Roger, 1861	
19.	<i>Leptogenys kitteli</i> (Mayr, 1870)	
20.	<i>Leptogenys longiscapa</i> Donisthorpe, 1943	
21.	<i>Leptogenys peuqueti</i> (Andre, 1887)	+
22.	<i>Leptogenys processionalis</i> (Jerdon, 1851)	+
23.	<i>Leptogenys punctiventris</i> (Mayr, 1879)	
24.	<i>Leptogenys roberti coonoorensis</i> Forel, 1900	
25.	<i>Leptogenys stenocheilos</i> (Jerdon, 1851)	
26.	<i>Leptogenys yerburyi</i> Forel, 1900	+
27.	<i>Leptogenys emiliae</i> Forel, 1902	+
28.	<i>Leptogenys assamensis</i> , Forel, 1900	+

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