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Two new species of trap-jaw ants of the genus *Anochetus* Mayr, 1861 (Hymenoptera: Formicidae: Ponerinae) from India, with a new country record

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Abstract. The ponerine ant genus *Anochetus* Mayr, 1861 is widely distributed across the Oriental region and comprises several morphologically complex species groups. Despite this diversity, the taxonomy and distribution of many groups remain insufficiently studied across parts of its range. The *A. risii* species group has not been previously documented from India, and members of the species of *A. graeffei* group are still poorly known in the country. During the present study, two new species are described: *Anochetus mizoramensis* Kapoor & Bharti sp. nov., belonging to the *A. graeffei* species group, and *Anochetus edentulus* Rilta & Bharti sp. nov., assigned to the *A. risii* species group. Besides, *Anochetus risii* Forel, 1900, a representative of the *risii* group, is recorded for the first time from India. The detailed diagnoses, updated distributional information on Indian *Anochetus* at both national and global levels, and an identification key to the Indian species are provided.

Keywords. Species delimitation, Indo-Burma hotspot, Oriental region.

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Introduction

Ants are among the most ubiquitous and ecologically important animal groups in terrestrial ecosystems, contributing substantially to soil turnover, nutrient cycling, seed dispersal, and predation networks (Hölldobler & Wilson 1990; Folgarait 1998; Fayle & Klimes 2022). Within the subfamily Ponerinae, trap-jaw ants of the genera *Anochetus* Mayr, 1861 and *Odontomachus* Latreille, 1804 are particularly notable for their highly specialized, fast-closing mandibles and the remarkable behavioral and ecological diversity associated with this adaptation (Lach *et al.* 2010; Larabee & Suarez 2014). *Anochetus* is a predominantly tropical genus characterized by linear to sublinear mandibles that close with a latch-mediated strike, which is used both for prey capture and, in some species, for locomotory behaviors such as rapid jumping (Larabee & Suarez 2014).

The first comprehensive worldwide treatment of the genus was provided by Brown (1978), who established several informal species groups based on mandibular dentition, sculpture, and petiolar morphology, including the morphologically complex *graeffei* and *risii* groups (Brown 1978), which were confirmed by the global phylogeny proposed by Fernandes *et al.* 2021. Subsequent regional revisions in Southeast and East Asia, along with targeted identification keys for local faunas, have further refined species boundaries within the genus (e.g., Terayama 1989; Wang 1993; Zhou 2001; Terayama 2009; Zettel 2012; Bharti & Wachkoo 2013; Chen *et al.* 2019). At present, 114 valid species of *Anochetus* are recognized globally (Bolton 2026), and in India, the genus is currently represented by twelve species (Bharti *et al.* 2016; Marathe & Priyadarsanan 2016).

India is one of the world's 17 megadiverse countries and harbours four global biodiversity hotspots within its borders, including the Indo-Burma and Eastern Himalaya hotspots (Myers 2000). Despite its rich and distinctive myrmecofauna, large areas of the country, particularly in the northeastern states, remain insufficiently surveyed for ants, and many lineages are still known only from scattered or historical records (Kapoor *et al.* 2026). The genus *Anochetus* is no exception. Recent faunal explorations in these regions have revealed previously unrecorded ponerine lineages and indicate that the diversity of trap-jaw ants in India remains poorly explored.

In the present study, two new species are described: *Anochetus mizoramensis* Kapoor & Bharti sp. nov., based on worker caste collected from Mizoram, and *Anochetus edentulus* Rilta & Bharti sp. nov., based on workers and a gyne from Sikkim. In addition, *A. risii* Forel, 1900 has been documented from Nagaland, representing the first record from India. For the treated taxa, detailed morphological descriptions supplemented with high-resolution images are provided, along with an updated distribution (Table 1). Furthermore, an identification key to the worker caste of Indian *Anochetus* have been provided.

Material and methods

The specimens were collected using hand-picking and pitfall trapping methods and were preserved in absolute ethanol. Later, sorted, cleaned and card-mounted for examination. Taxonomic analysis was conducted using Nikon SMZ 1500 stereo zoom microscope. Species identification is based on published standard taxonomic keys (Brown 1978; Bolton 1994; Bharti & Wachkoo 2013; Chen *et. al*. 2019), and further on comparison with holotype descriptions, holotype images on AntWeb 2026 and already authenticated material housed in PUAC. Digital images were captured in full-face, profile, and dorsal views using a Nikon D5600 DSLR camera equipped with a Laowa 25 mm ultra-macro lens mounted on a NiSi NM-200S macro focusing rail. Multiple focal-plane images were stacked to enhance depth of field, and final image processing was carried out using Adobe Photoshop 2022. A distributional map for the recorded species was prepared using QGIS ver. 3.44.6 (Fig. 1). The distribution of *Anochetus* species recorded from India was compiled from the published literature, and biogeographic realm assignments follow the classification adopted by AntWiki 2026.

Morphological terminology and standard measurements are based on Bharti & Wachkoo 2013; Chen *et. al*. 2019; Baidwan *et al.* 2024. Morphological terminology for measurements (given in millimeters) and indices include:

Abbreviations for morphological terms

CI = cephalic index = HW / HL × 100
ED = maximum diameter of eye
HL = straight-line length of head in perfect full-face view, measured from the mid-point of the anterior clypeal margin to the midpoint of the posterior margin. In species where one or both of these margins are concave, the measurement is taken from the mid-point of a transverse line that spans the apices of the projecting portions
HW = maximum width of head in full-face view, excluding the eyes
MdI = mandible index: ML / HL × 100
MdL = mandible length. Straight line length of the mandible from apex to the anterior clypeal margin
PnW = pronotum width. Maximum width of the pronotum in dorsal view
PtH = height of petiole measured in lateral view from the apex of the ventral (subpetiolar) process vertically to a line intersecting the dorsalmost point of the node
PtL = length of petiole measured in lateral view from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation
SI = scape index = SL / HW × 100
SL = straight-line length of the antennal scape, excluding the basal constriction or neck
TL = total outstretched length of the individual, from the mandibular apex to the gastral apex.
WL = diagonal length of the mesosoma in lateral view, measured from the point at which the pronotum meets the cervical shield to the posterior basal angle of the metapleuron

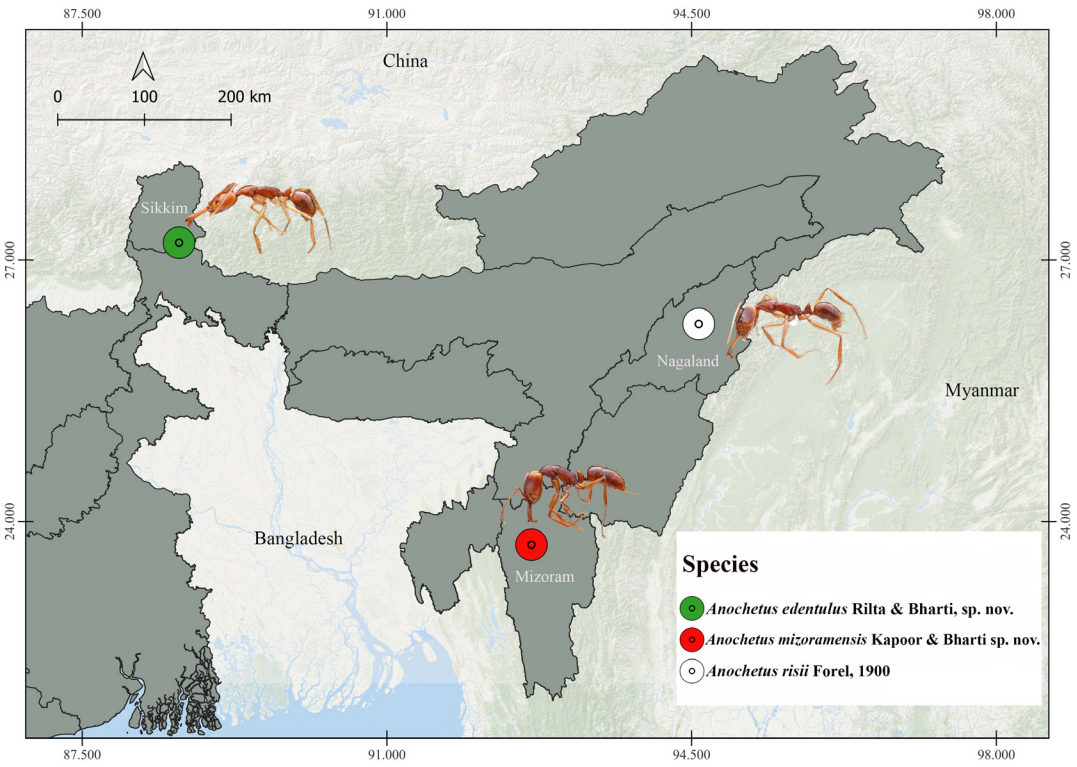


Fig. 1. Map showing the collection localities of the species of *Anochetus* Mayr, 1861 treated in this study.

Institutional abbreviations

MHNG = Muséum d'histoire naturelle de Genève, Geneva, Switzerland
PUAC = "Punjabi University Patiala Ant Collection" at Department of Zoology and Environmental Sciences, Punjabi University, Patiala, Punjab, India

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hymenoptera Linnaeus, 1758
Family Formicidae Latreille, 1809
Subfamily Myrmicinae Lepeletier de Saint-Fargeau, 1835
Genus *Anochetus* Mayr, 1861

Anochetus mizoramensis Kapoor & Bharti sp. nov.
urn:lsid:zoobank.org:act:784FD2B6-B6D5-45DC-9C83-F5B969CC173E
Figs 2–3, 7, 10, 17–18; Table 1

Diagnosis

Among the closely related species of the *Anochetus graeffei* species group, *A. mizoramensis* Kapoor & Bharti sp. nov. can be distinguished by a unique combination of morphological characters. It can be readily separated from *A. graeffei* by its considerably larger body size (TL 7.44–8.06 mm vs 4.40–4.91 mm), the presence of denticulation along the inner mandibular margin (vs inner mandibular margin without denticles), and a smooth and shiny metapleuron (vs rugose). It differs from *A. validus* by the absence of rugae around the eyes (vs present), proportionally smaller eyes (EI 10–11 vs EI 18), a subtriangular petiolar node with a slightly convex anterior margin and a distinctly convex posterior margin (vs a triangular petiolar node with nearly straight anterior and posterior margins), and a reddish-brown to chestnut-brown mesosoma and gaster (vs blackish-brown). It further differs from *A. yerburyi* in having stronger frontal sculpture and denticulation along the inner mandibular margin, whereas *A. yerburyi* lacks denticulation on the inner mandibular margin and possesses weaker frontal sculpture largely restricted to the level of the eyes. These combination of characters readily distinguishes *A. mizoramensis* from all other closely related members of the *A. graeffei* species group.

Etymology

The specific epithet refers to the Indian state of Mizoram, from where the type series was collected.

Type material

Holotype

INDIA • worker; Mizoram, Aizawl District, Tanhril village; 23.7320° N, 92.6603° E; 837 m a.s.l.; 24 May 2025; Rakeshwar Kapoor leg.; manual collection; PUAC, PUAC R813.

Paratypes

INDIA • 4 workers; same data as for holotype; PUAC, PUAC R814 to R817.

Description

Worker measurements. Holotype: HL: 1.65; HW: 1.53; ED: 0.16; MdL: 1.32; PnW: 0.88; WL: 2.10; SL: 1.53 PtL: 0.46; PtH: 0.66; TL: 8.06. Paratypes: HL: 1.62–1.65; HW: 1.50–1.59; ED: 0.16–0.18; MdL: 1.15–1.32; SL: 1.44–1.53; PnW: 0.88–0.91; WL: 2.04– 2.16; PtL: 0.46–0.57; PtH: 0.60–0.66; TL: 7.44–8.06. Indices: CI: 93–96; SI: 96; MdI: 71–80 (n = 4).

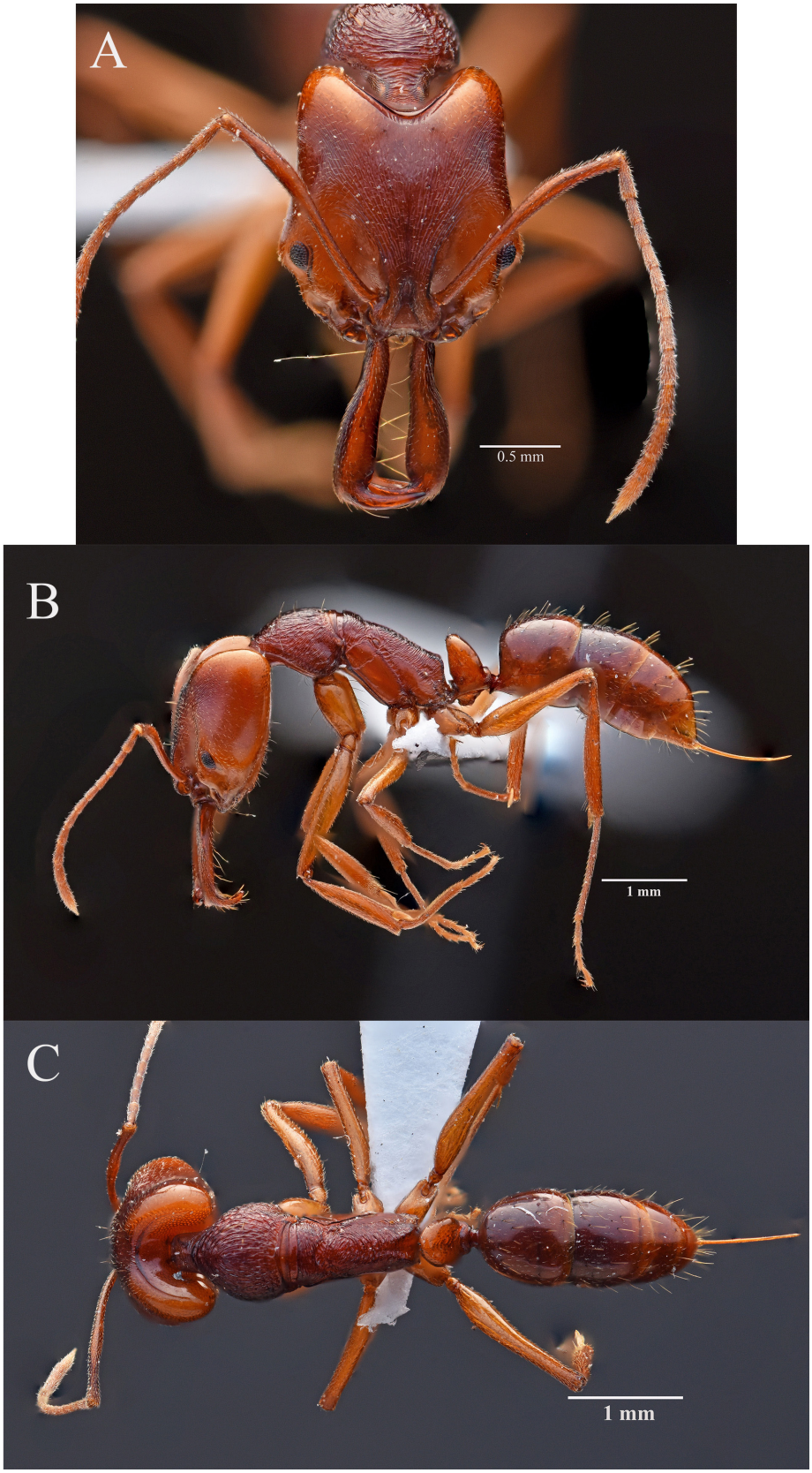


Fig. 2. *Anochetus mizoramensis* Kapoor & Bharti sp. nov., holotype, worker (PUAC R813). **A**. Head in full-face view. **B**. Body in profile view. **C**. Body in dorsal view.

Head. Subrectangular in full-face view, slightly longer than broad; lateral margins convex anteriorly (around the eyes), becoming slightly concave posteriorly, occipital margin of head deeply concave, occipital lobes broadly rounded (Fig. 2A). Eyes with 9–11 ommatidia across greatest diameter, occupying less than half the length of orbital fossae (Fig. 2A). Antennae 12-segmented; scape slender, slightly curved, gradually thickened distally, and extending almost to posterior margin of occipital lobe; flagellar segments gradually increasing in thickness toward apex (Fig. 2A). Mandibles robust, subtriangular in cross-section, with thickened external and thinner internal margins, broadened in the distal half (Fig. 2A); ventral margin dentate. In full-face view, with head held straight and mandibles closed, ventral denticles not visible dorsally; apical fork with two sharp apical teeth and single intercalary tooth arising near midlength of ventral apical tooth.

Mesosoma. Mesosoma convex in profile (Fig. 2B). Pronotum almost as broad as long in dorsal view, rounded anteriorly; promesonotal suture well defined; mesometanotal suture present but less distinct than promesonotal suture; metanotal groove shallow but distinct (Fig. 2B–C). Mesonotum convex, wider than long. In dorsal view, mesonotum, metanotum, and propodeum narrower than pronotum (Fig. 2C). Propodeum longer than broad; propodeal dorsum flat to slightly elevated posteriorly, with shallow median posterior groove; propodeal declivity steep; propodeal posterior angles dorsally divergent (Fig. 2B–C). Anepisternum, katepisternum, and metapleuron distinct (Fig. 2B).

Petiole. Petiolar node subtriangular, distinctly higher than long, anteroposteriorly compressed; anterior margin weakly convex, posterior margin strongly convex, dorsal margin rounded (Fig. 2B–C). Subpetiolar process subrectangular in lateral view (Fig. 2B).

Gaster. Cylindrical; weakly constricted between first two segments; base of cinctus of second gastral tergite with cross ribs (Fig. 2B–C).

Sculpture. Head sparsely punctate and predominantly smooth and shiny; frontal area with fine longitudinal striae diverging posterolaterally, extending posteriorly only to level of nuchal carina and medially not reaching posterior cephalic margin, laterally not reaching eye (Fig. 2A). Anterior margin of pronotal dorsum with arched rugae, laterally longitudinally rugose; mesonotal and propodeal dorsum transversely rugose; anepisternum, katepisternum and metapleuron smooth and shiny. Gaster smooth, shiny, sparsely punctulate (Fig. 2B–C).



Fig. 3. *Anochetus mizoramensis* Kapoor & Bharti sp. nov., worker (paratype), live habitus.

Pilosity. Sparse; hairs short and subdecumbent over most of body, with few erect hairs on mesosoma, petiole and gaster; appendages bearing dense appressed to decumbent pubescence (Fig. 2A–C).

Color. Head, mesosoma, petiole and gaster reddish-brown to chestnut brown; antennae and legs slightly lighter, yellowish- to orange-brown (Figs 2A–C, 3).

Distribution

India (known only from Tanhril village, Aizawl District, Mizoram State).

Ecology

The species was collected from two nests; one beneath a leaf litter and the other inside a rotten log. The microhabitat conditions were humid. The leaf-litter nest was situated close to a rivulet. The collection site was within a tropical wet evergreen to semi-evergreen forest (Champion & Seth1968).

Remarks

Anochetus mizoramensis Kapoor & Bharti sp. nov. represents the third species of the genus *Anochetus* recorded from Mizoram. The current understanding of the genus in this region remains limited, and comprehensive, systematic surveys are necessary to ascertain the actual species richness and distribution of *Anochetus* in Mizoram.

Anochetus edentulus Rilta & Bharti sp. nov.
urn:lsid:zoobank.org:act:69E70A33-D2EF-4E1A-8A7D-80119E8EFF45
Fig. 4–5, 8–9; Table 1

Diagnosis

Among the closely related species of the *Anochetus risii* species group, *A. edentulus* Rilta & Bharti sp. nov. can be distinguished by a unique combination of morphological characters. It can be readily separated from *A. risii* by the completely edentate inner mandibular margin, lacking both teeth and crenulae (vs distinct crenulae present), a completely smooth petiolar node (vs sculpture present at least basally), and a large, elongate subpetiolar process that is rounded anteroventrally and concave posteriorly (vs roughly triangular). It differs from *A. gracilis* by the dorsally and laterally smooth and shiny pronotum, lacking distinct thoracic striation and transverse wrinkling, and by the mesonotum being only weakly depressed in profile (vs strongly sunken). This combination of characters readily distinguishes *A. edentulus* from all other congeners of the *Anochetus risii* species group.

Etymology

The species epithet '*edentulus*' is derived from the Latin '*edentulus*' ('edentate', 'lacking teeth'), referring to the complete absence of denticulation on the inner margin of the mandibles, a key diagnostic character of this species.

Type material

Holotype

INDIA • worker; Sikkim, Pakyong District, Rorathang Town; 27.1992° N, 88.6119° E; 587 m a.s.l.; 9 Jun. 2012; Joginder Singh leg.; manual collection; PUAC, PUAC R818.

Paratypes

INDIA • 5 workers, 1 gyne; same data as for holotype; PUAC, PUAC R819 to R824.

Table 1. Distribution of species of *Anochetus* Mayr, 1861 recorded from India, including their global and Indian distributions (based on Bharti *et al.* 2016; Marathe & Priyadarsanan 2016; Harshana & Dey 2023; AntWiki 2026; present study). Biogeographic realm assignments follow AntWiki 2026.

Sr. no.	Species name	Global distribution	Distribution in India
	Anochetus cryptus Bharti & Wachkoo, 2013	endemic to India	Himachal Pradesh, Jammu & Kashmir
	Anochetus daedalus Marathe & Priyadarsanan, 2016	endemic to India	Karnataka
	Anochetus edentulus Rilta & Bharti sp. nov.	endemic to India	Sikkim
	Anochetus graeffei Mayr, 1870	Australasian Region: Australia, New Caledonia, New Guinea; Indomalaya Region: Bangladesh, Borneo, Cambodia, India (type locality), Indonesia (type locality), Krakatau Islands, Laos, Malaysia, Myanmar, Nicobar Island, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; Oceania Region: American Samoa, Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia (Federated States of), Northern Mariana Islands, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Wallis and Futuna Islands; Palaearctic Region: China	Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal
	Anochetus kanariensis Forel, 1900	endemic to India	Karnataka, Kerala, Tamil Nadu, West Bengal
	Anochetus madaraszi Mayr, 1897	Indomalaya Region: Bangladesh, India, Pakistan, Sri Lanka Palaearctic Region: China	Arunachal Pradesh, Assam, Jammu & Kashmir, Karnataka, Madhya Pradesh, Manipur, Mizoram, Orissa, Sikkim, Uttar Pradesh, West Bengal
	Anochetus mizoramensis Kapoor & Bharti sp. nov.	endemic to India	Mizoram
	Anochetus myops Emery, 1893	Indomalaya Region: Borneo, India, Indonesia, Malaysia, Thailand	Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand, West Bengal
	Anochetus obscurior Brown, 1978	Indomalaya Region: India, Sri Lanka.	Karnataka, Tamil Nadu
	Anochetus pupulatus Brown, 1978	endemic to India	Gujarat, Karnataka, Kerala, Maharashtra, Tamil Nadu
	Anochetus risii Forel, 1900	Indomalaya Region: Bhutan, Indonesia, Taiwan (type locality), Vietnam; Palaearctic Region: China	Nagaland (This study)
	Anochetus rufus (Jerdon, 1851)	endemic to India	Tamil Nadu, West Bengal
	Anochetus sedilloti Emery, 1884	Afrotropical Region: Chad, Eritrea, Kenya, Mali, Mauritania, Saudi Arabia, Senegal; Indomalaya Region: India. Palaearctic Region: Oman, Tunisia	Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu
	Anochetus validus Bharti & Wachkoo, 2013	endemic to India	Jammu & Kashmir
	Anochetus yerburyi Forel, 1900	Indomalaya Region: India, Sri Lanka	Bihar, Goa, Karnataka, Rajasthan

Description

Worker measurements. Holotype: HL: 1.26; HW: 1.20; ED: 0.24; MdL: 1.17; PnW: 0.70; WL: 2.10; SL: 1.44 PtL: 0.42; PtH: 0.54; TL: 6.57. Paratypes: HL: 1.20–1.32; HW: 1.20–1.26; ED: 0.24; MdL:1.14–1.17; PnW: 0.69–0.72; WL: 2.07–2.19; SL: 1.35–1.50; PtL: 042–0.45; PtH: 0.54–0.60; TL 6.36–6.69; Indices: CI: 95–100; SI: 113–119; MdI: 89–95 (n = 5).

Head. Subrectangular in full-face view, slightly longer than broad; lateral margins gently convex at level of eyes; occipital margin deeply concave medially; occipital lobes broadly rounded (Fig. 4A). Eyes large, strongly convex, situated below mid-length of head, maximum eye diameter 0.24 mm, exceeding basal width of mandible (Fig. 4A). Antennae 12-segmented; scapes surpassing posterior corners of head (Fig. 4A). Mandibles linear, gradually broadened apically; inner mandibular margin completely edentate (Fig. 4A–D). Apical portion with three distinct teeth; apical fork comprising large ventral apical tooth and dorsal preapical tooth.

Mesosoma. Pronotum slightly longer than broad in dorsal view, broader than mesonotum, metanotum, and propodeum (Fig. 4C). Promesonotal and mesometanotal sutures distinct. Mesonotum longer than broad. Propodeum longer than broad (Fig. 4B–C). In profile, pronotum distinctly convex, mesonotum weakly depressed, and propodeal dorsum nearly straight, gradually sloping posteriorly into steep declivity. Anepisternum, katepisternum, and metapleuron distinct, separated by well-defined sutures (Fig. 4B).

Petiole. Petiole longer than broad, cone-shaped, with pointed dorsal apex; anterior margin weakly convex, posterior margin almost straight (Fig. 4B–C). Subpetiolar process large and well developed, rounded anteroventrally and concave posteriorly.

Gaster. Large and cylindrical, with marked constriction between first two gastral segments (Fig. 4B–C).

Sculpture. Head smooth and shiny, with few longitudinal striations on frontal lobes and between frontal carinae reaching almost to level of eyes; vertex smooth (Fig. 4A). Pronotum dorsally and laterally smooth and shiny, with anterior margin transversely rugose near articulation with head. Mesonotal dorsum feebly rugulose. Dorsal surface of propodeum transversely rugulose, propodeal declivity bearing few transverse rugae. Petiole and gaster smooth and shiny (Fig. 4B–C).

Pilosity. Head, mesosoma, petiole and gaster covered with moderate erect and sub-erect hairs; mandibular base with pair of long hairs; pubescence sparse or wanting on head, mesosoma and gaster but abundant on antennae and appendages (Fig. 4A–D).

Body colour. Head light brownish; mesosoma and gaster dark brownish; mandibles, antennae and appendages pale yellowish in colour (Fig. 4A–C).

Description of gyne (Fig. 5A–C)

Measurements. HL: 1.41; HW: 1.35; ED: 0.30; MdL: 1.23; PnW: 0.84; WL: 2.28; SL: 1.53; PtL: 0.48; PtH: 0.69; TL: 7.23; CI 95; SI 113 (n = 1).

Gyne similar to worker with a few variations representing caste, including overall colour darker than worker; cephalic dorsum with three prominent ocelli; eyes large; Scape relatively shorter with respect to head length than in worker (Fig. 5A); mesosoma large; scutum large and rounded; mesoscutum roughly triangular (Fig. 5B–C); petiolar node slightly higher and more acutely pointed than worker; gaster large, and appendages pale yellowish in colour (Fig. 5B–C).

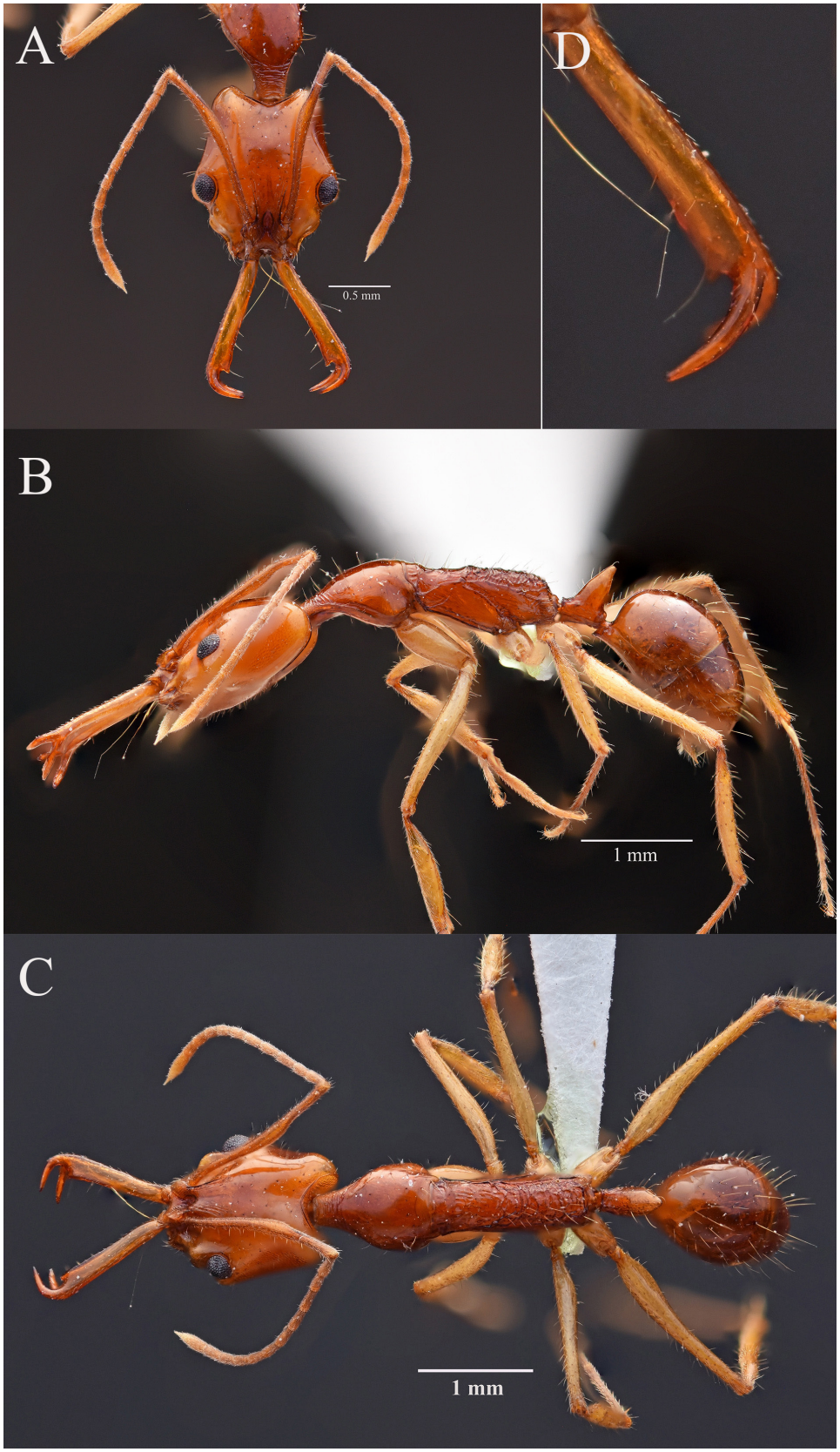


Fig. 4. *Anochetus edentulus* Rilta & Bharti sp. nov., holotype, worker (PUAC R818). **A**. Head in full-face view. **B**. Body in profile view. **C**. Body in dorsal view. **D**. Mandible.

Distribution

India (known only from Rorathang, Pakyong District, Sikkim State).

Ecology

In the present study, only a single nest of this species was collected from beneath a stone in an East Himalayan moist mixed deciduous forest habitat (Champion & Seth 1968).

Remarks

Anochetus edentulus Rilta & Bharti sp. nov. is currently known only from a single locality in Sikkim. Additional targeted surveys in comparable forest habitats are necessary to better understand its distribution, ecology, and conservation status.

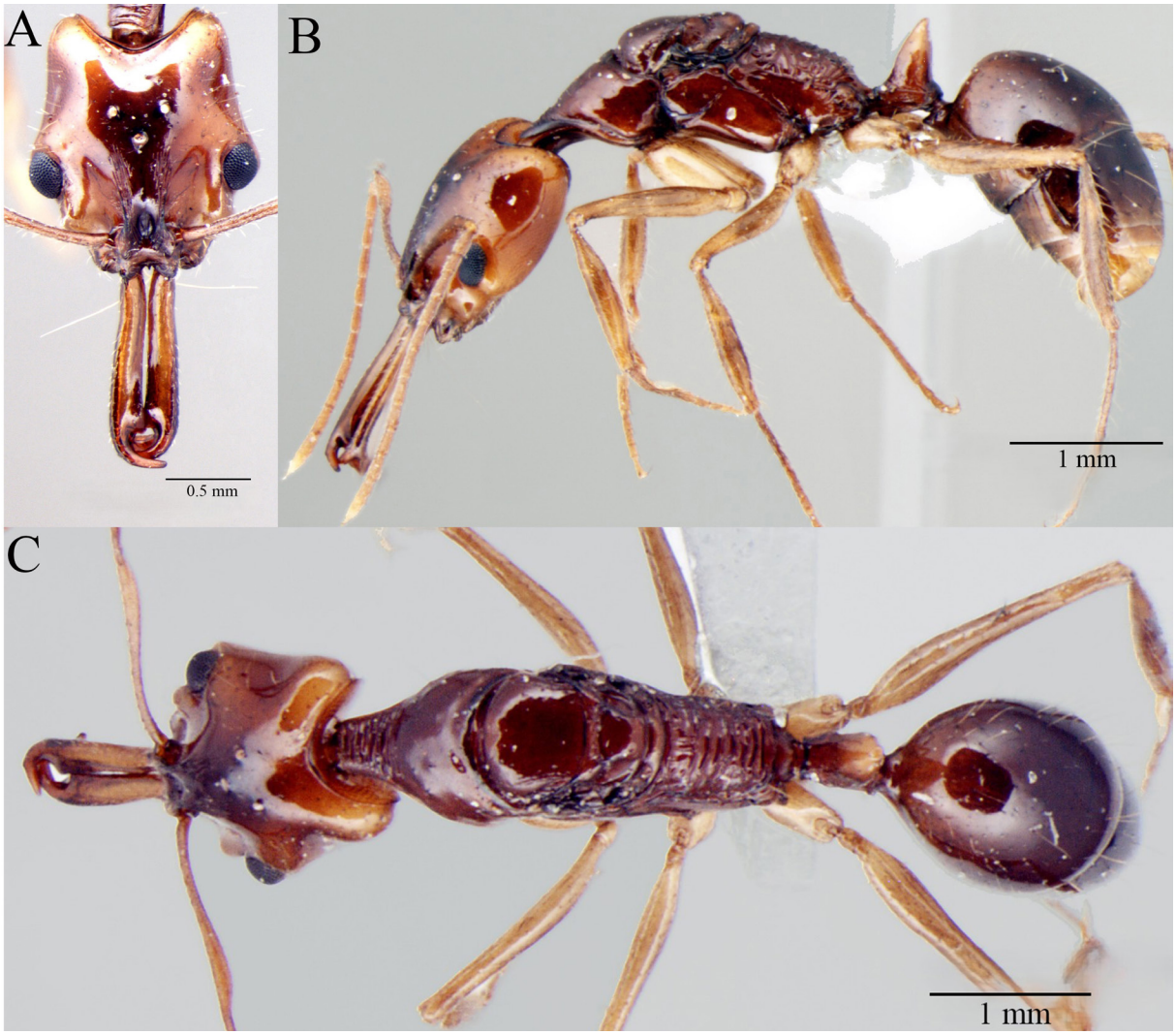


Fig. 5. *Anochetus edentulus* Rilta & Bharti sp. nov., gyne (PUAC R824). **A**. Head in full-face view. **B**. Body in profile view. **C**. Body in dorsal view.

Anochetus risii Forel, 1900
Fig. 6–7, 9

Anochetus risii Forel, 1900: 60 (w.), CHINA (Hong Kong). Indomalaya.

Primary type information: Type material: syntype workers (numbers not stated). Type locality: China: Hong Kong, Victoria Peak (F. Ris). Type depository: MHNG.

Material examined

INDIA • 3 workers; Nagaland State, Tuensang District, Chungliyimti Village; 26.2663 N, 94.5814 E; 894 m a.s.l.; 23 Aug. 2021; Khangpila Sangtam leg.; pitfall trap; PUAC, PUAC R825 to R827.

Description

Worker measurements. HL: 1.50–1.55; HW: 1.44–1.46; ED: 0.24–0.27; MdL: 1.44–1.47; SL: 1.56–1.59; PnW: 0.75–0.78; WL: 2.46– 2.50; PtL: 0.44–0.45; PtH: 0.60–0.64; TL: 7.20–7.44. Indices: CI: 94–96; SI: 108–109; MdI: 95–96 (n = 3).

Head. Eyes large, placed below mid-length of head, maximum diameter wider than basal width of mandibles (Fig. 6A). Antennae 12-segmented; scapes surpassing posterior corners of head, scape long and slightly curved at distal end (Fig. 6A). Mandible linear, gradually broadened apically; inner margin with distinct crenulae; apical portion with three distinct teeth, apical fork with large ventral apical and dorsal pre-apical tooth (Fig. 6A, D).

Mesosoma. Promesonotal suture distinct; mesometanotal suture weakly impressed. Pronotum rounded, broader than mesonotum and metanotum; mesonotum longer than broad (Fig. 6B–C). In lateral view pronotum convex, mesonotum slightly concave, metanotum nearly straight; propodeal dorsum sloping posteriorly; pronotum weakly sculptured (Fig. 6B–C).

Petiole. Petiole longer than broad, cone-shaped with pointed dorsal apex; anterior margin weakly convex, posterior margin almost straight. Petiole with sculpture at least at base. Subpetiolar process well developed, triangular in shape (Fig. 6B–C).

Gaster. Large and cylindrical, with constriction between first two gastral segments (Fig. 6B–C).

Sculpture. Dorsal surface of head smooth and shiny, with few longitudinal striations on frontal lobes and between frontal carinae reaching almost to level of eyes; vertex smooth (Fig. 6A). Pronotum dorsally and laterally smooth or weakly sculptured, with anterior margin transversely rugose near articulation with head. Mesonotal dorsum feebly rugulose. Dorsal surface of propodeum coarsely transversely rugulose, propodeal declivity with few transverse rugae (Fig. 6B–C). Petiole weakly sculptured basally; gaster smooth and shiny (Fig. 6B–C).

Pilosity. Head, mesosoma, petiole and gaster covered with moderately dense erect and sub-erect hairs; pubescence sparse or wanting on head, mesosoma and gaster but abundant on antennae and appendages (Fig. 6A–C).

Body colour. Head light brownish; mesosoma and gaster dark brownish; mandibles, antennae and appendages pale yellowish in colour (Fig. 6A–C).

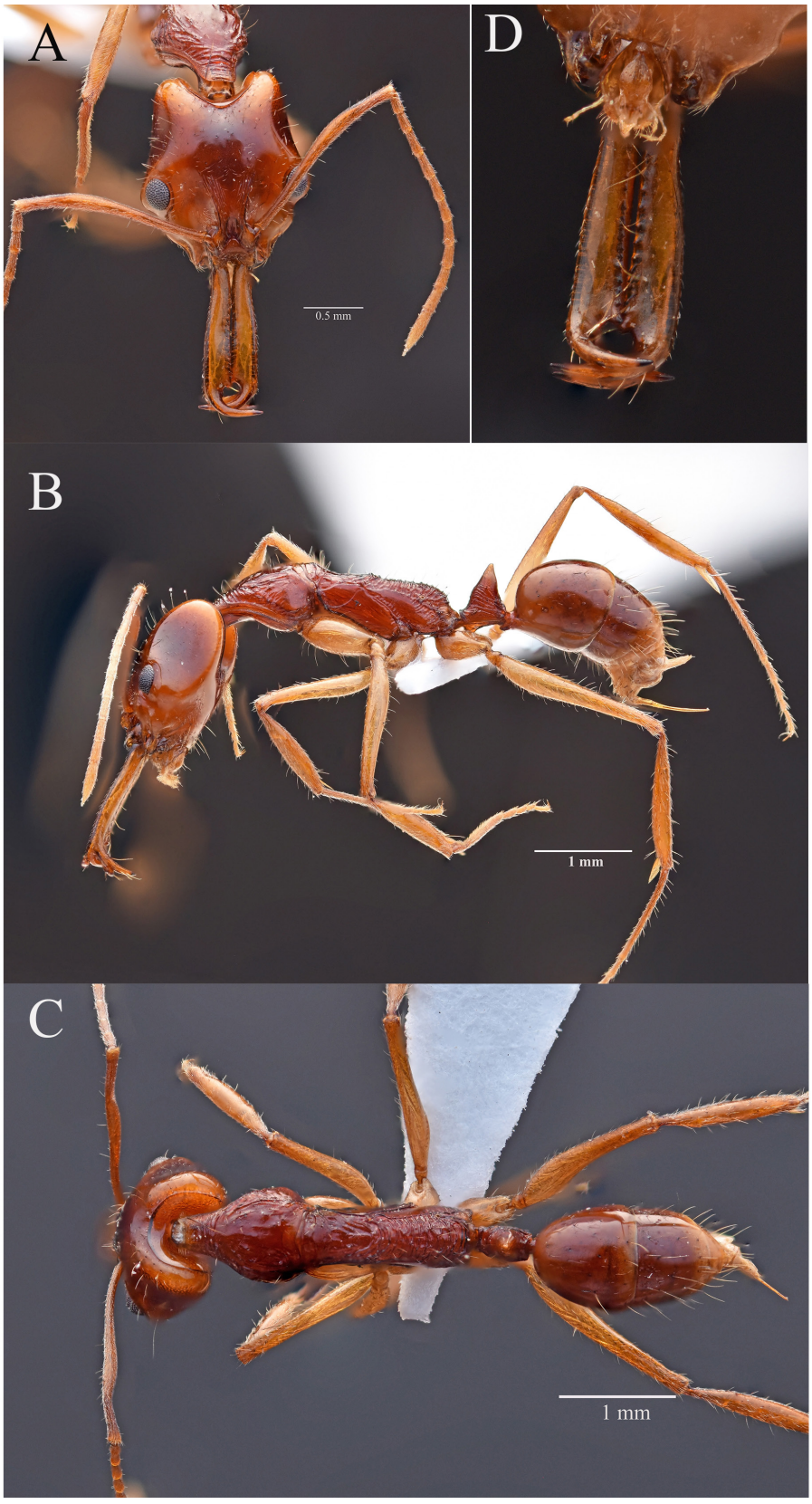


Fig. 6. *Anochetus risii* Forel, 1900, worker (PUAC R825). **A**. Head in full-face view. **B**. Body in profile view. **C**. Body in dorsal view. **D**. Mandible.

Distribution

Bhutan, China, Indonesia, Taiwan (type locality), Vietnam, India (Nagaland State, Tuensang District, Chungliyimti Village) and Java.

Ecology

Three individuals were collected in a pitfall trap set in a subtropical broad-leaved hill forest. The dominant surrounding vegetation comprised *Melia azedarach* L., *Castanopsis indica*, and *Quercus* spp.

Keys to Indian species of Anochetus Mayr, 1861 (workers) modified after Bharti & Wachkoo 2013 (see Figures)

1. Petiolar node distinctly coneshaped, tapering apically into a narrow, pinlike point (Fig. 7A) 2
– Petiolar node not conical; node subtriangular or nodiform, apex bluntly rounded or only weakly pointed, never drawn out into a pinlike tip (Fig. 7B–C) 4



Fig. 7. Petiole in profile view. **A**. *Anochetus risii* Forel, 1900. **B**. *Anochetus mizoramensis* Kapoor & Bharti sp. nov. **C**. *Anochetus kanariensis* Forel, 1900.

2. Inner mandibular margin bearing a series of distinct teeth that gradually decrease in size from subapical teeth toward the base of the mandible (Fig. 8A) .... ***Anochetus daedalus*** Marathe & Priyadarsanan, 2016

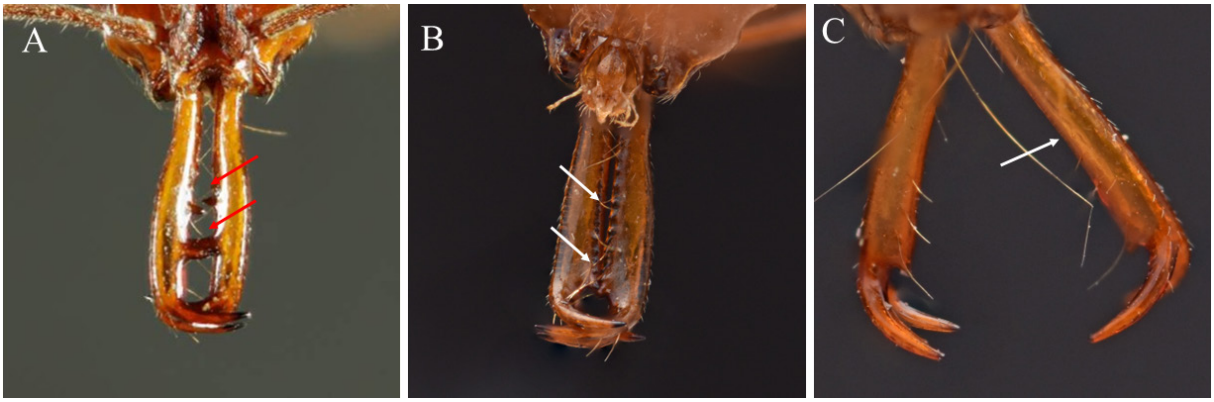


Fig. 8. Mandibles **A**. *Anochetus daedalus* Marathe & Priyadarsanan, 2016. **B**. *Anochetus risii* Forel, 1900. **C**. *Anochetus edentulus* Rilta & Bharti sp. nov.

– Inner mandibular margin without such a gradation in size; either crenulate or completely edentate (Fig. 8B–C) 3

3. Inner mandibular margin with distinct crenulae (Fig. 9A); petiole with sculpture at least at the base; pronotum variable, may be sculptured or smooth .....***Anochetus risii*** Forel, 1900
– Inner mandibular margin completely edentate, lacking both teeth and crenulae (Fig. 9B); petiole smooth; pronotum smooth .....***Anochetus edentulus*** Rilta & Bharti sp. nov.

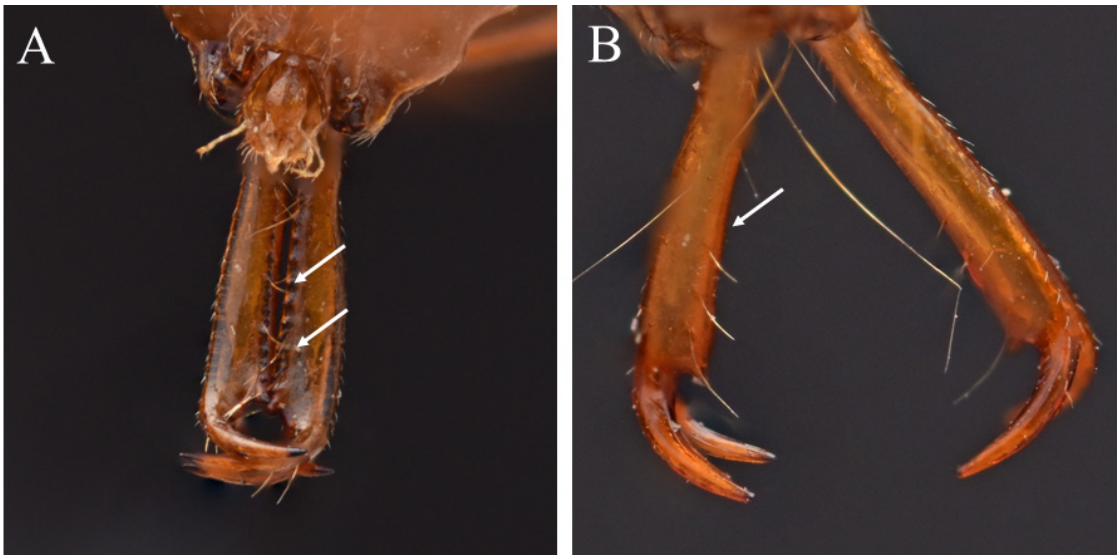


Fig. 9. Mandibles **A**. *Anochetus risii* Forel, 1900. **B**. *Anochetus edentulus* Rilta & Bharti sp. nov.

4. Pronotal disc (at least a broad central field) (Fig. 10A) and all of first gastral tergum smooth and shining when clean, with at most fine, spaced punctures 5
– Pronotal disc coarsely striate or punctaterugulose; smooth interspaces (Fig. 10B); first gastral tergum rugulose, striate or smooth, with or without coarse punctures.… 9

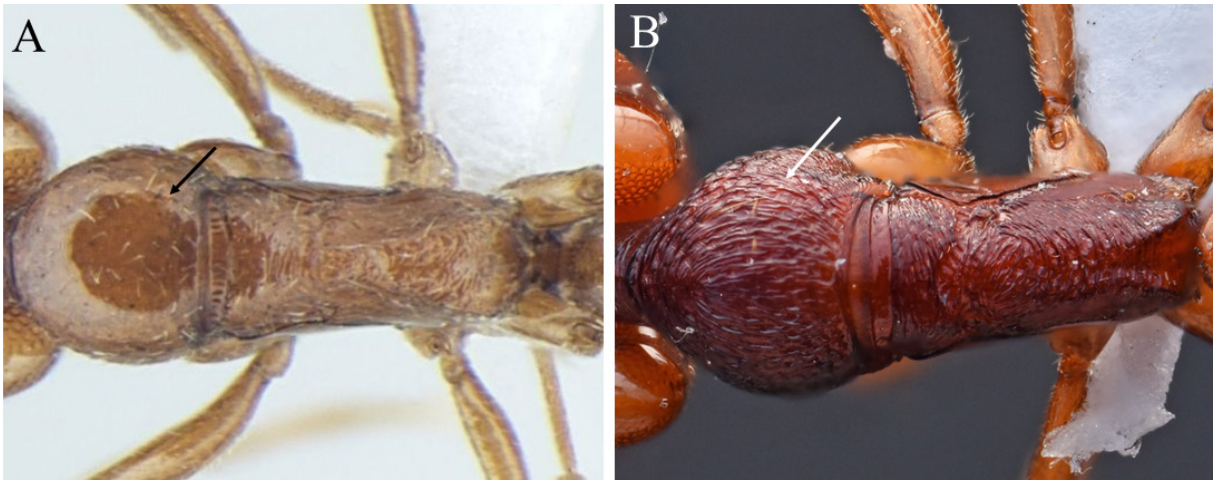


Fig. 10. Mesosoma in dorsal view. **A**. *Anochetus cryptus* Bharti & Wachkoo, 2013. **B**. *Anochetus mizoramensis* Kapoor & Bharti sp. nov.

5. Modest or small-sized, lightly pigmented species with reduced eyes (Fig. 11A): maximum measurable compound eye length < 0.15 mm, greatest eye diameter < maximum width of a mandible 6
– Large species with large eyes (Fig. 11B): maximum measurable eye length > 0.25 mm and > maximum width of a mandible 8

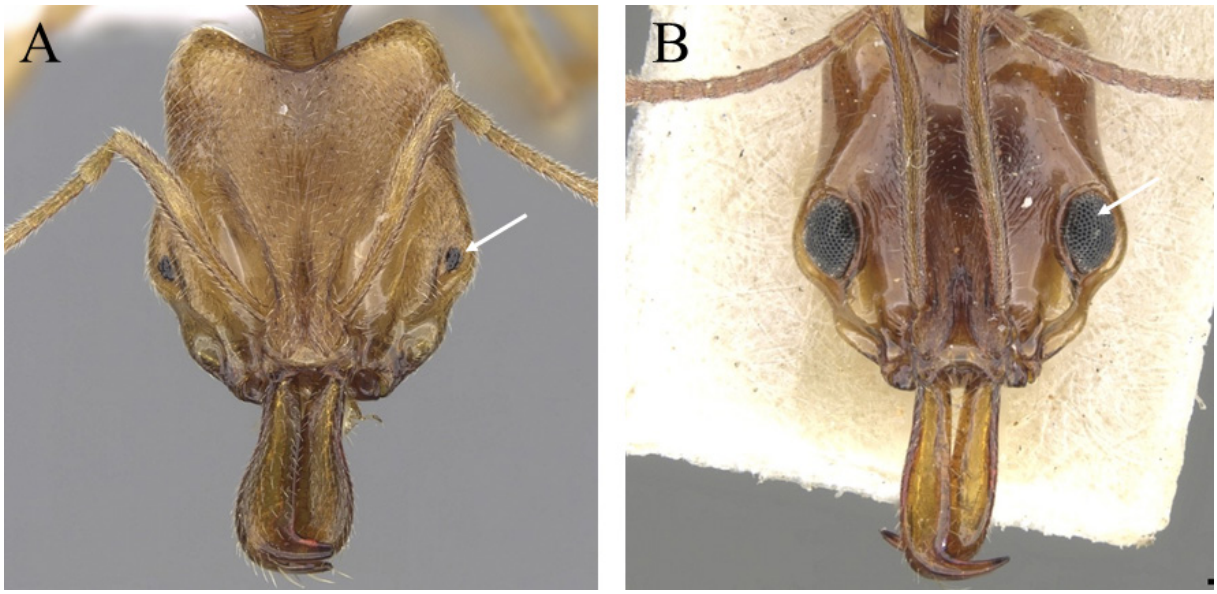


Fig. 11. Head in full-face view. **A**. *Anochetus myops* Emery, 1893. **B**. *Anochetus rufus* (Jerdon, 1851).

6. Propodeal angles produced as a pair of short teeth (Fig. 12A) 7
– Propodeal angles unarmed (Fig. 12B) .....***Anochetus cryptus*** Bharti & Wachkoo, 2013

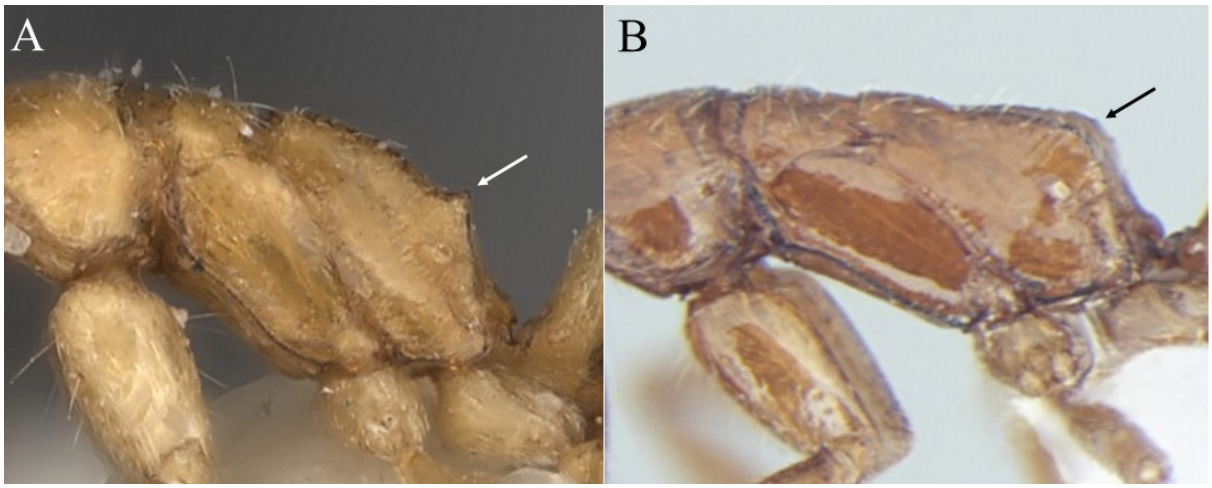


Fig. 12. Propodeum in profile view. **A**. *Anochetus pupulatus* Brown, 1978. **B**. *Anochetus cryptus* Bharti & Wachkoo, 2013.

7. Very small species; HL + ML < 1.25 mm (Fig. 13A) .....***Anochetus pupulatus*** Brown, 1978
– Relatively larger species; HL + ML > 1.55 mm (Fig. 13B) .....***Anochetus myops*** Emery, 1893

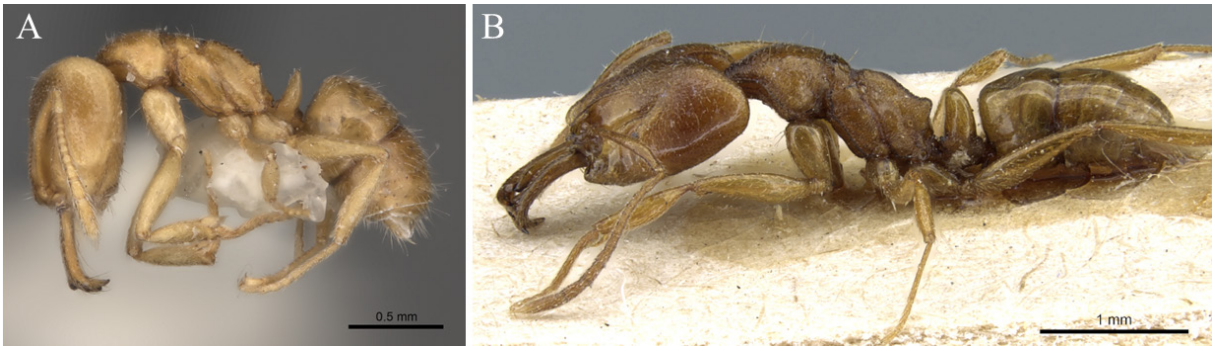


Fig. 13. Habitus in profile view. **A**. *Anochetus pupulatus* Brown, 1978. **B**. *Anochetus myops* Emery, 1893.

8. In full-face view, antennal scapes surpass posterior borders of occipital lobes by at least one apical scape width (Fig. 14A); petiolar node axially compressed above, anterior slope concave (Fig. 14B) .....***Anochetus rufus*** (Jerdon, 1851)
– In full-face view, antennal scapes do not reach, or do not distinctly surpass, posterior borders of occipital lobes (Fig. 14C); petiolar node thick, erect, barrel-shaped, anterior slope convex (Fig. 14D) .....***Anochetus sedilloti*** Emery, 1884

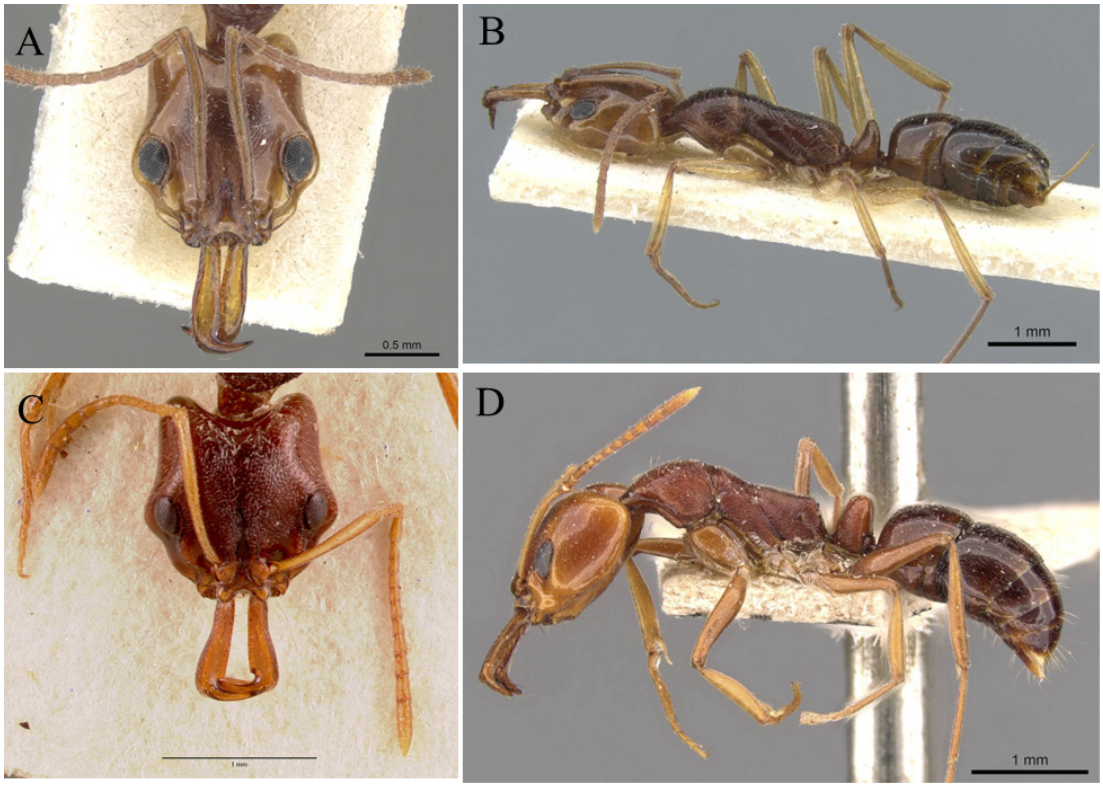


Fig. 14. Head in full-face view and habitus in profile view. **A–B**. *Anochetus rufus* (Jerdon, 1851). **C–D**. *Anochetus sedilloti* Emery, 1884.

9. Petiolar node in profile thin, scale-like, tapering to a narrowly rounded or acute apex (Fig. 15A) 10
– Petiolar node in profile thick, with a broadly rounded apex (Fig. 15B) 13

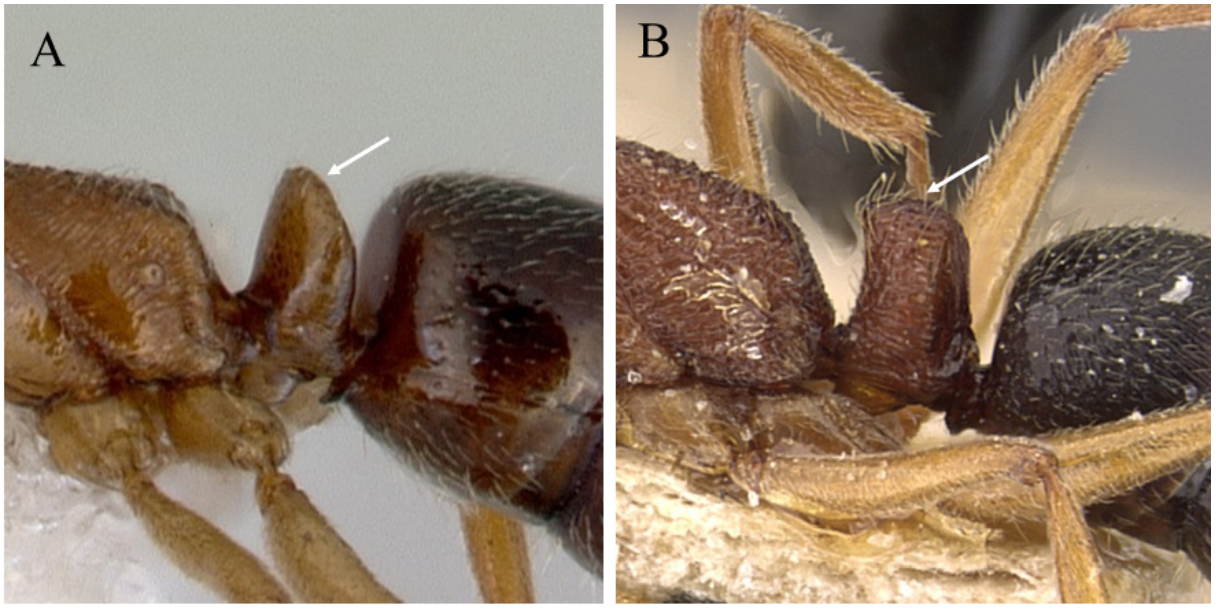


Fig. 15. Petiole in profile view. **A**. *Anochetus graeffei* Mayr, 1870. **B**. *Anochetus kanariensis* Forel, 1900.

10. HL + ML < 1.50 mm; maximum measurable eye length < 0.15 mm (Fig. 16. A) ....***Anochetus graeffei*** Mayr, 1870
– HL + ML > 1.50 mm; maximum measurable eye length > 0.15 mm (Fig. 16B) 11

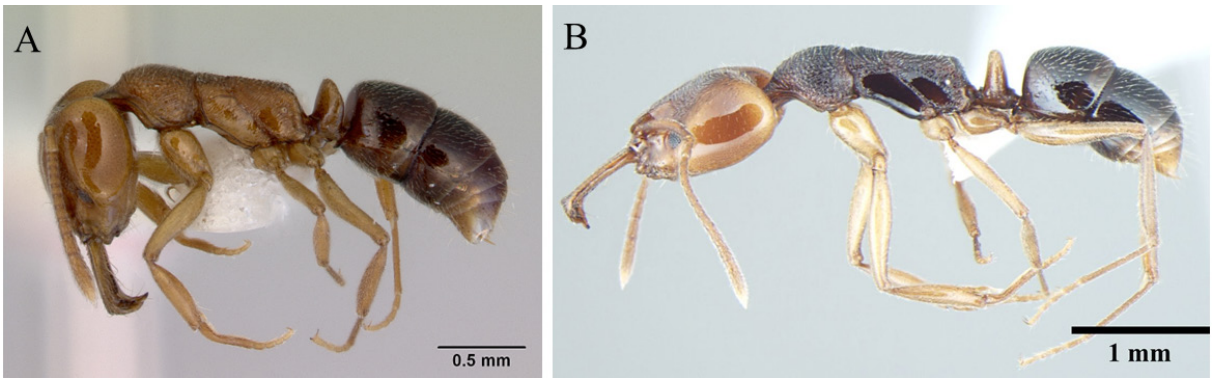


Fig. 16. Habitus in profile view. **A**. *Anochetus graeffei* Mayr, 1870. **B**. *Anochetus validus* Bharti & Wachkoo, 2013.

11. Frons smooth and shining, frontal striation extending only a short distance beyond level of eyes (Fig. 17A); body yellowish .....***Anochetus yerburyi*** Forel, 1900
– Frontal striation reaching all the way, or almost all the way, to the nuchal carina (Fig. 17. A); body redbrown 12

12. Rugae around eyes present (Fig. 18A); mesosoma and gaster blackish-brown (Fig. 18B) ....***Anochetus validus*** Bharti & Wachkoo, 2013
– Rugae around eyes absent (Fig. 18C); mesosoma and gaster reddish-brown to chestnut brown (Fig. 18D) .....***Anochetus mizoramensis*** Kapoor & Bharti sp. nov.

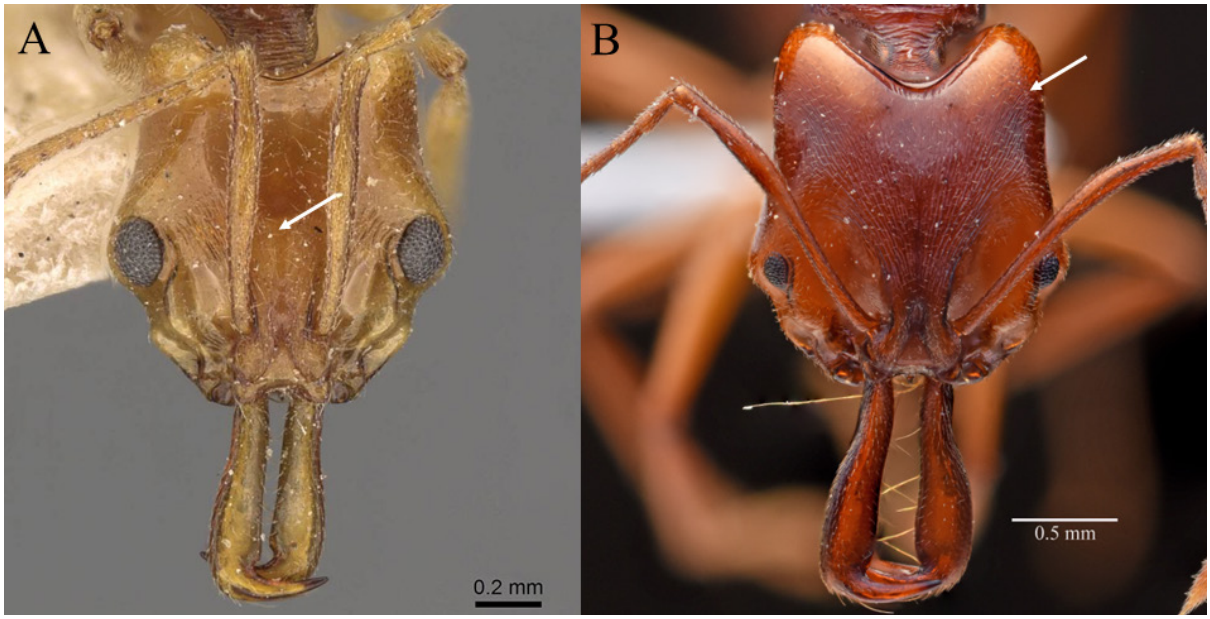


Fig. 17. Head in full-face view. **A**. *Anochetus yerburyi* Forel, 1900. **B**. *Anochetus mizoramensis* Kapoor & Bharti sp. nov.

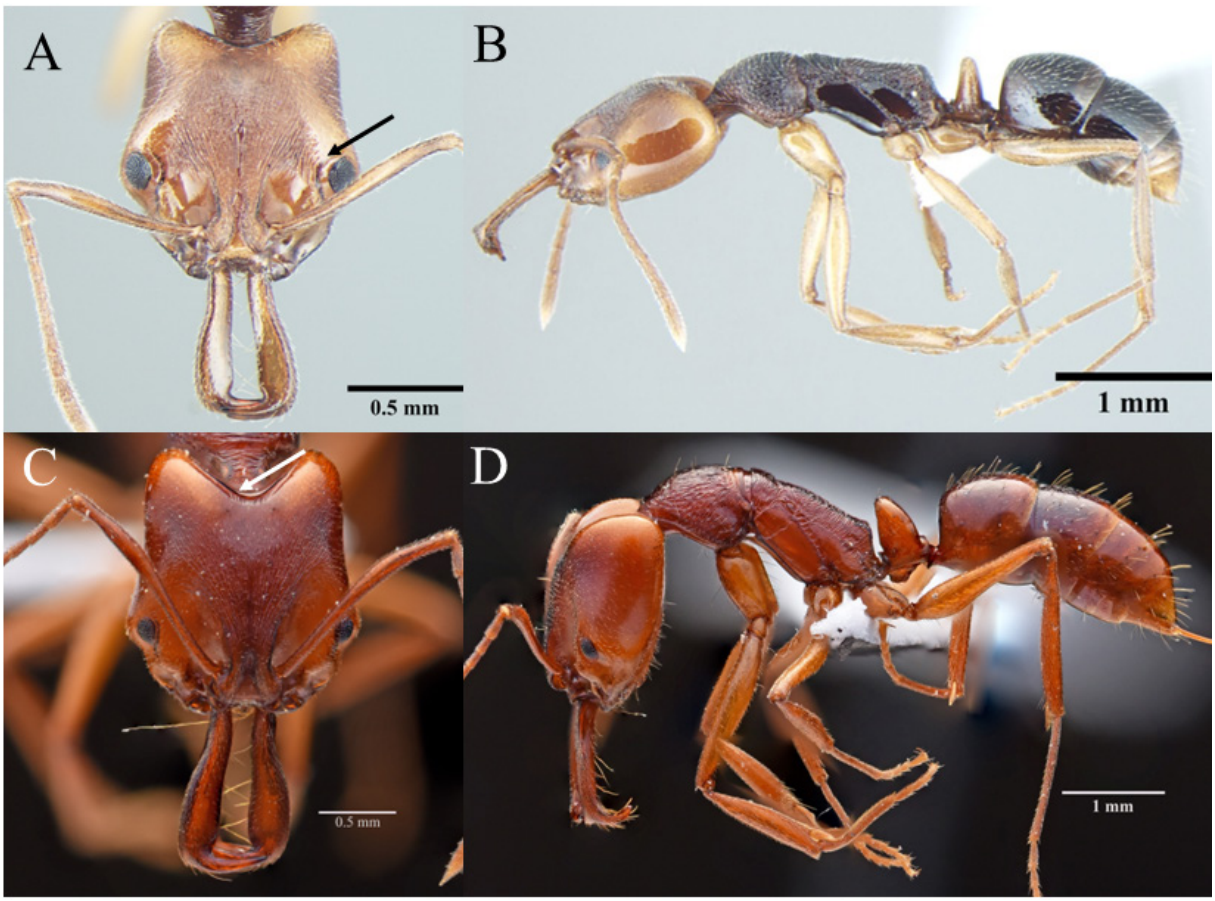


Fig. 18. Head (full-face view) and habitus (profile view). **A–B**. *Anochetus validus* Bharti & Wachkoo, 2013. **C–D**. *Anochetus mizoramensis* Kapoor & Bharti sp. nov.

13. First gastral tergum densely and more or less opaquely sculptured over at least the anterior half (Fig. 19A) 14
– First gastral tergum smooth and shining, with only scattered, fine piligerous punctures (Fig. 19B) .....***A. nochetus madaraszi*** Mayr, 1897



Fig. 19. First gastral tergum in dorsal view. **A**. *Anochetus obscurior* Brown, 1978. **B**. *Anochetus madaraszi* Mayr, 1897.

14. Anterodorsal margin of petiolar node slightly produced anteriad, overhanging the anterior slope, which tends to be concave (Fig. 20A) ..... ***Anochetus kanariensis*** Forel, 1900
– Anterodorsal margin of petiolar node broadly rounded, like posterodorsal margin; anterior slope of node convex or straight in profile (Fig. 20B) ..... ***Anochetus obscurior*** Brown, 1978

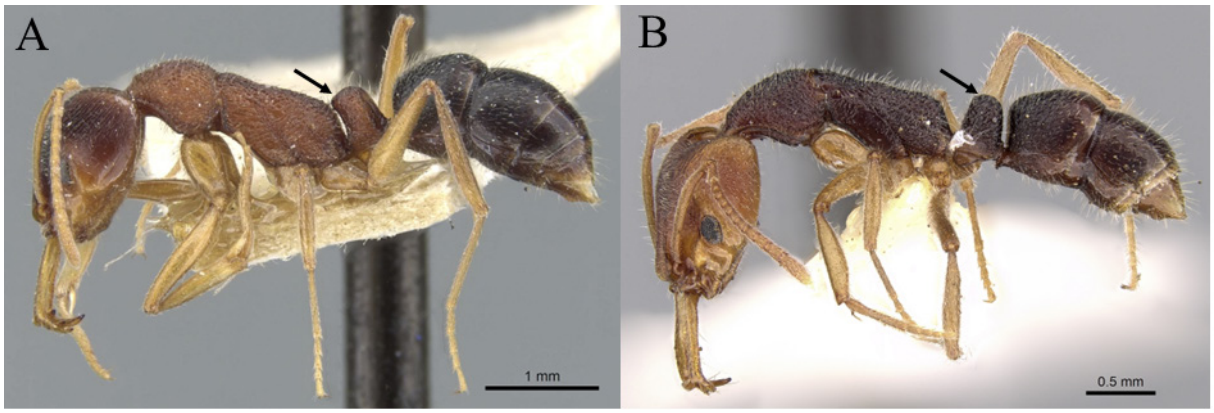


Fig. 20. Habitus in profile view. **A**. *Anochetus kanariensis* Forel, 1900. **B**. *Anochetus obscurior* Brown, 1978.

Discussion

The present study advances knowledge of Oriental trap-jaw ants by describing two new species of *Anochetus* from northeastern India, Eastern Himalaya, and documenting *Anochetus risii* for the first time in the country. Together with an updated distributional synthesis and an identification key, these contributions refine current understanding of species limits and regional diversity within the genus.

The updated synthesis indicates that the Indian fauna of *Anochetus* comprises both widely distributed Indomalayan taxa and geographically restricted endemics (Bharti *et al.* 2016). Species such as *A. graeffei* and *A. madaraszi* exhibit broad Oriental distributions, whereas several congeners appear to be narrowly distributed and currently known only from single states or specific ecoregions. This pattern highlights the continued importance of targeted surveys in underexplored regions, which are increasingly revealing previously undocumented elements of fauna, consistent with recent findings in ant genera from the Indian subcontinent (e.g., Dhadwal & Bharti 2023; Rilta & Bharti 2025; Sharma *et al.* 2026).

From a biogeographic perspective, the discovery of new taxa and the first Indian record of *A. risii* underscore the significance of northeastern India – encompassing the Indo-Burmese and Eastern Himalaya biodiversity hotspots – as a transition zone between Indian and Southeast Asian faunas (Myers *et al.* 2000). The occurrence of *A. risii*, previously known from Bhutan, China, Taiwan, Vietnam, and Indonesia, represents the first confirmed record from India and reinforces the biogeographic affinity of the ant fauna of northeastern India with that of the eastern Himalaya and Southeast Asia.

Despite these advances, the diversity of *Anochetus* in India remains incompletely resolved. Many species are represented by limited collections or restricted locality records, and molecular data are lacking for most taxa. This constrains robust inference of phylogenetic relationships, historical biogeography, and potential cryptic diversity. Future studies should prioritize extensive sampling across elevational gradients and habitat types, particularly in underexplored regions, and adopt integrative approaches combining molecular phylogenetics, detailed morphometrics, and behavioral observations to better resolve species boundaries and elucidate the evolutionary history of trap-jaw ants in the Indian subcontinent.

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