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Goblin spiders from India: description of new species of the genera *Paramolotra* Tong & Li, and *Aprusia* Simon, and the female of *Aprusia kerala* Grismado & Deeleman (Araneae: Oonopidae)

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Abstract: The study of some museum collections with materials collected in India resulted in the descriptions of a new species of the genus *Paramolotra* Tong & Li from West Bengal (the genus was previously known only from China), as well as a new species of *Aprusia* Simon, and also the female of *Aprusia kerala* Grismado & Deeleman, from the Western Ghats biodiversity hotspot. *A. kerala* had been described based on of two male specimens, it shows a remarkably genital configuration for the genus and for the whole family.

Key words: Taxonomy, genital morphology, Oonopidae, new species, India.

Resumen: El estudio de algunas colecciones de museos con materiales recolectados en India dio como resultado las descripciones de una nueva especie del género *Paramolotra* de Bengala Occidental (género conocido anteriormente solo de China), así como una nueva especie de *Aprusia* Simon y también la hembra de *Aprusia kerala*, de la region crítica de biodiversidad de los Ghats Occidentales. *Aprusia kerala* había sido descrito sobre la base de dos especímenes machos ymuestra una sorprendente configuración genital para el género y para la familia.

Palabras clave: Taxonomía, morfología genital, Oonopidae, nuevas especies, India.

INTRODUCTION

The Oonopid fauna of India currently comprises 52 species (more than half endemic) in 15 genera (Tiwari *et al.*, 2021), of which *Brignolia* Dumitrescu & Georgescu, 1983 is the most diverse, with 16 species (WSC, 2023). The known diversity in this country is the product of revisionary work carried out in recent decades in the frame of the Goblin Spider PBI Project (*e.g.*, Baehr & Ubick, 2010; Platnick *et al.* 2011, 2012; Grismado *et al.*, 2014). However, the territorial extension of India and the numerous regions that have not been surveyed suggest a more extensive diversity. In addition, some taxonomic entities require to be reassessed in systematic studies (Tiwari *et al.*, 2021: 8341).

In the Goblin Spider PBI Project context, I examined some museums collections and found new species herein proposed. They belong to the oonopid genera *Paramolotra* Tong & Li (from West Bengal) and *Aprusia* Simon (from Tamil Nadu).

Paramolotra, which had recently been described on base of two species from Tibet, in China (Cheng *et al.*, 2021), is a genus of hard-bodied oonopids recognizable by the conical protrusions on the basal anterior face of chelicerae, by the large bulb fused with the cymbium, and the complex elements at the embolar region (Cheng *et al.,* 2021:56).

The genus *Aprusia* is a group whose most remarkable diversity (seven out of eight species) is known from Sri Lanka (Ranasinghe & Benjamin, 2018). The known distribution of this genus appears as fitting in the Western Ghats-Sri Lanka hotspot of biodiversity, where it seems to be endemic. Nevertheless, the unity of the two components of that region (southwest of mainland India and Sri Lanka) has recently been questioned (Bossuyt *et al.*, 2004; Gunawardene *et al.*, 2007).

Aprusia comprises goblin spiders with abdominal scutae, similar to *Ischnothyreus* Simon and *Camptoscaphiella* Caporiacco, although less sclerotized (see, for example, Baehr & Ubick, 2010; Edward & Harvey, 2014). They also differ

in the genitalia, particulary the male palps, with the bulb fused to the cymbium and a tiny, slightly sclerotized embolus.

When I studied specimens housed in the California Academy of Sciences, San Francisco, I found two morphospecies in a same vial labeled as the same species. One of them was assigned to the species *A. kerala* Grismado & Deeleman, 2011, previously known from males collected in neighboring Kerala, and a new morphospecies that I present in this work.

Ranasinghe & Benjamin (2018) presented an identification key and a cladistic analysis of the genus *Aprusia*. These authors propose three unambiguous synapomorphies for this genus: smooth male endites, two prolateral spines on the femur I, and copulatory opening inconspicuous, located in the epigastric furrow. All know females for this genus have a narrow anterior receptacle, apparently without lumen, connected with muscle bunches, for what presumably serves as sites for muscle attachment (as apodemes) rather than sperm storage. The female specimens studied here showed some unique features compared with the previously known species, *e.g.*, paired seminal receptacles present in *A. kerala*, and the absence of scutal ridges in the new morphospecies. On the other hand, *Paramolotra* and *Aprusia* have the basal article of the anterior lateral spinnerets entire (not crossed by a diagonal membranous area), and the males have the sperm pore exposed; then, both genera could be included in the "higher gamasomorphines" *sensu* Grismado *et al.* (2014: 7).

In the present contribution, I describe two new species belong to *Paramolotra* and *Aprusia* genera, describe for the first time the female of *Aprusia kerala*, and increase the knowledge of Indian goblin spider fauna.

MATERIAL AND METHODS

Specimens are deposited in the following collections: Museum d'histoire naturelle de la Ville de Geneve (MHNG, Peter Schwendinger) and California Academy of Sciences (CAS, Lauren Esposito). The descriptions were generated automatically from the Species Descriptive Database of the oonopid Planetary Biodiversity Inventory project. Concerning the terminology of the male genitalic structures, I reinterpreted them in light of my own observations, as explained below (see the taxonomic section). Because the right palp of the *Paramolotra* specimen was accidentally separated, the images were generated on it and then digitally inverted to facilitate comparison with the other species. Female genitalia were observed in clove oil. Drawings were made with a camera lucida mounted on an Olympus BH-2 compound microscope. Photographs of the preserved specimens were taken with a Leica DFC 290 digital camera mounted on a Leica M165 C stereoscopic microscope, and the focal planes were aligned with Helicon Focus 4.62.2. All measurements are in millimeters. Due to the scarcity of museum specimens, I avoided using irreversible techniques—such as scanning electron microscope—to document the animals' anatomy fully. When descriptions of new species are made through a single specimen (holotype), to preserve it, genitalia dissection was not performed. In some cases, I provide approximate coordinates (denoted by "ca.") calculated with Google Earth (http://earth.google.com) from label data.

Abbreviations: ar, anterior receptacle; bp, basal protrusion; co, copulatory opening; e, embolus; la, lateral apodeme; pp, posterior protrusion; r, ridge; sr, seminal receptacles.

TAXONOMY

Family Oonopidae Simon, 1890
Genus *Paramolotra* Tong & Li, 2021

Paramolotra Tong & Li, 2021 in Cheng *et al.*, 2021: 56, (type species *Paramolotra pome* Tong & Li, by original designation).

Remarks. The authors of the genus labeled the structures of the male embolar region naming them by unspecific positional criteria: for example, "basal protrusion", "anterior protrusion", "posterior protrusion", "dorsal protrusion", "anterior membrane", and "posterior membrane" (Cheng *et al.*: figs. 2, 5). However, in the cleared preparation of *P. bengalensis* (Fig. 1), I located the ejaculatory opening in the structure that seems to be equivalent to the «anterior protrusion» (at least in *P. metok*, see Chen *et al.,* 2021: fig. 5 C, E–F). Then, I interpret this sclerite as the embolus, and for the remaining closer structures, I follow the terminology of Chen *et al.* (2021) only for easier comparisons.

Paramolotra bengalensis, new species
LSID: urn:lsid:zoobank.org:act:AADBB1E4-96-D1-41F9-AD4E-33B4BD2B128E
(Figs. 1–3, 7)

Diagnosis. The male of *P. bengalensis* is distin-

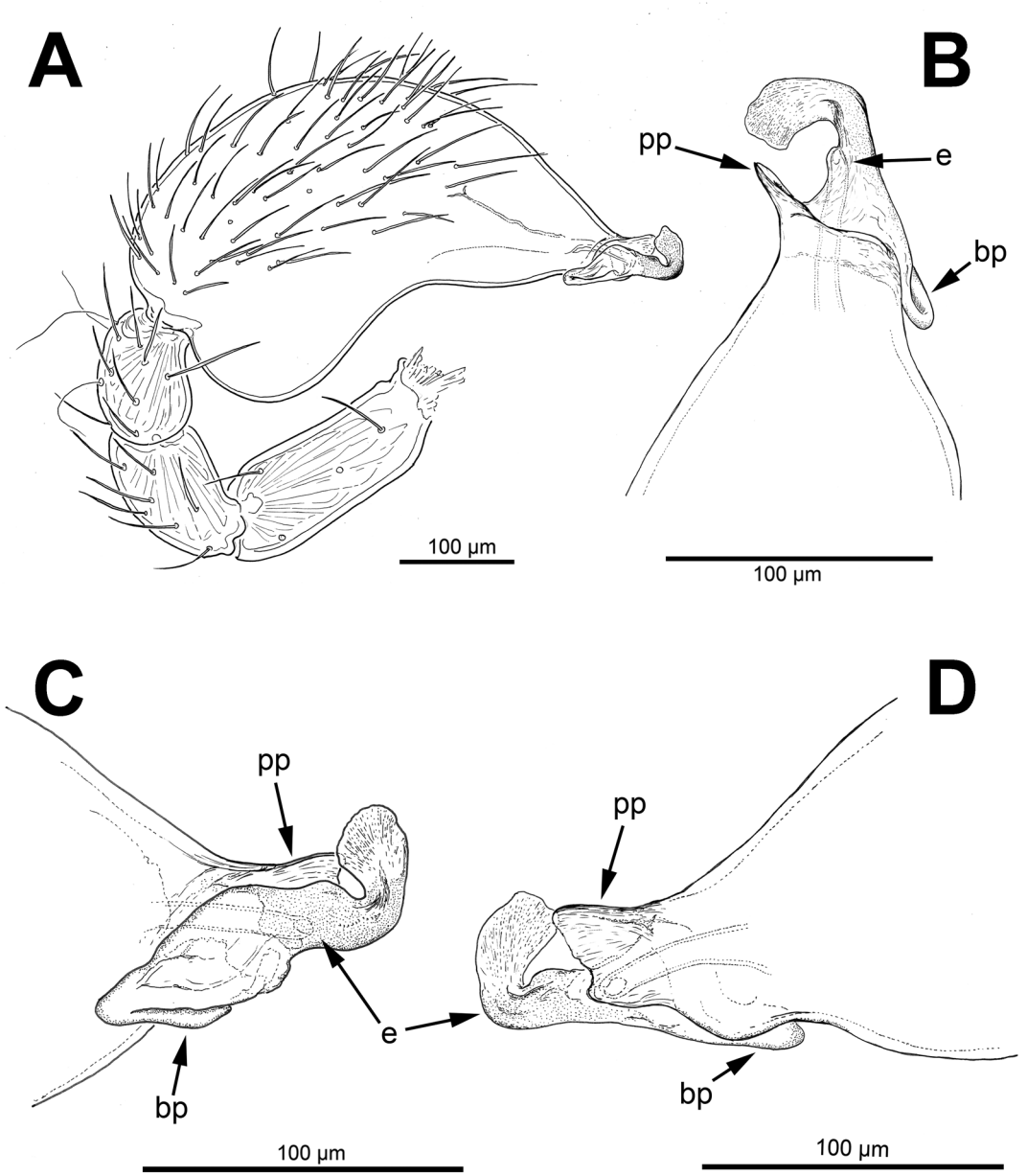

Fig. 1. *Paramolotra bengalensis*, new species, holotype male. (A) right palp, cleared (inverted), prolateral; (B) detail of the embolar region, dorsal; (C) same prolateral; (D) same retrolateral. Abbreviations: bp, basal protrusion; e, embolus; pp, posterior protrusion.

guished by the orange color of the sclerotized parts integuments (Fig. 2A–F), brown or yellow brown in the Chinese congeners *P. pome* Tong & Li and *P. metok* Tong & Li, (Cheng *et al*. 2021: figs. 1, 3–4, 6), and by the details of the embolar region: *P. bengalensis* has the posterior protrusion located retrolaterally. In addition, the embolus is slender, with a flattened and expanded tip curved backwardly, and the ejaculatory opening on its prolateral side (Figs. 1B–D).

Description. Male (holotype). Total length 1.88. *Cephalothorax:* Carapace orange, without any pattern, pyriform in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed more or less 0.5 times its maximum width, with rounded posterolateral corners, pos-

Fig. 2. *Paramolotra bengalensis*, new species, holotype male. (A) habitus dorsal; (B) same, ventral; (C) same lateral; (D) carapace, dorsal view; (E) same, ventral; (F) same, lateral.

terior margin not bulging below posterior rim, anterolateral corners without extension or projections, posterolateral surface without spikes, surface of carapace smooth, thorax without depressions, fovea absent; lateral margin straight, rebordered, without denticles; setae absent, the grabrous carapace is probably due by the loss of the setae, because some few bases are visible on the pars cephalica, clypeus and margins. Clypeus margin unmodified, sinuous in front view, vertical in lateral view, high, ALE separated from edge of carapace by more than their diameter. Chilum absent. Eyes six, well developed, all subequal, all eyes circular; posterior eye row straight from above, procurved from front; ALE separated by less than their radius, ALE-PLE separated by less than ALE radius, PME touching for less than half their length, PLE-PME separated by less than PME radius. Sternum orange, longer than wide, uniform, not fused to carapace, with radial furrows between coxae I-II, II-III, III-IV (furrows consisting in aligned large pits), sternum covered with small round pits, microsculpture covering entire surface, anterior margin unmodified, posterior margin not extending posteriorly of coxae IV, anterior corner unmodified, distance between coxae approximately equal; setae sparse, light, needle-like, evenly scattered, originating from surface. Mouthparts: chelicerae straight, with prominent, small, basal process; fangs without tooth-like projections, directed medially, tip unmodified; setae light, needle-like; paturon inner margin with pairs of enlarged setae, distal region abruptly narrowed. Labium triangular, not fused to sternum, anterior margin indented at middle, same as sternum in sclero-

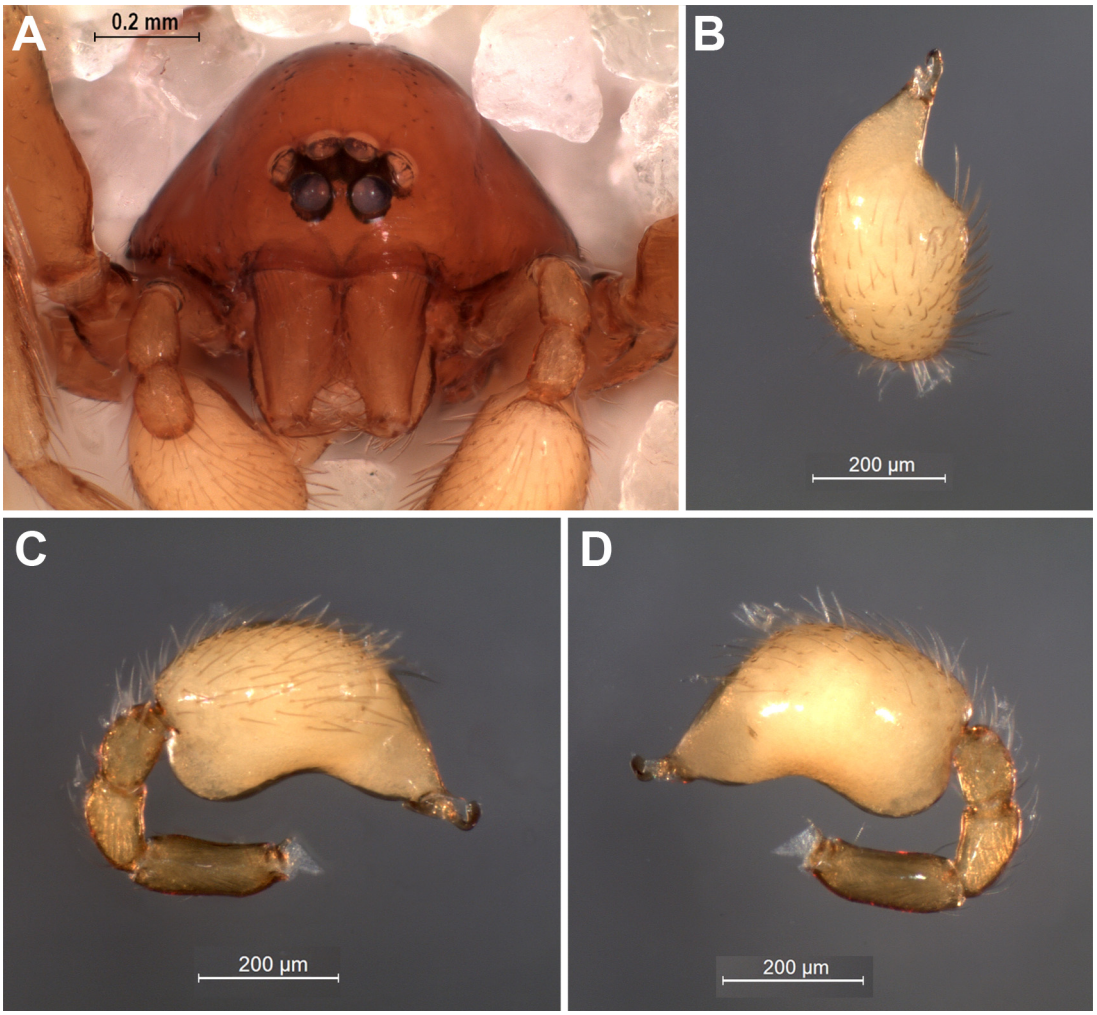

Fig. 3. *Paramolotra bengalensis*, new species, holotype male. (A) carapace anterior; (B) right palp (inverted) dorsal; (C) same prolateral; (D) same retrolateral.

tization, chelicerae, endites and labium orange. Endites distally not excavated, unmodified, same as sternum in sclerotization, with serrula present in single row. *Abdomen:* ovoid, rounded posteriorly. Book lung covers large, elliptical, without setae, anterolateral edge unmodified. Posterior spiracles not connected by groove. Pedicel tube medium, ribbed, scutum extending far dorsal of pedicel. Dorsal scutum strongly sclerotized, orange, without color pattern, covering full length of abdomen, no soft tissue visible from above, not fused to epigastric scutum, surface smooth. Epigastric scutum strongly sclerotized, orange, surrounding pedicel, not protruding. Postepigastric scutum strongly sclerotized, orange, almost semicircular, covering about 2/3 of abdominal length, fused to epigastric scutum, anterior margin unmodified. Spinneret scutum absent. Dorsum setae present, light, needle-like. Epigastric area setae uniform, light, needle-like. Postepigastric area setae light, needle-like. Basal article of the ALS entire (not crossed by a diagonal membranous area). Colulus absent. *Legs:* pale orange, without color pattern; femur IV not thickened, same size as femora I-III, patella plus tibia I shorter than carapace, tibia I unmodified. Leg spination (only surfaces bearing spines listed): leg I: tibia: v2-2-2-2-0, metatarsus: v2-2, leg II: tibia: v2-2-2-2-0, metatarsus: v2-2. Tarsus I to IV without inferior claw. *Genitalia:* Epigastric region with sperm pore small, circular, situated between anterior and posterior spiracles. Palp (Figs. 3B–D) very large, not strongly sclerotized, yellowish, proximal segments pale orange; tro-

chanter normal size, unmodified; femur normal size, one to two times as long as trochanter, attaching to patella basally; patella shorter than femur, not enlarged; bulb nearly reniform, but tapering apically, cymbium completely fused with bulb, no seam visible, but discernible by their numerose setae; embolus with apical origin, flattened, and upwardly curved, with the ejaculatory opening on its prolateral side (Fig. 1B); at the distal part, there are two paraembolic elements, the prolateral one ("posterior protrusion") is flattened, the retrolateral one ("basal protrusion") looks hyaline, bearing a ventral furrow and with a rounded posterior tip pointing to backwards (Fig. 1B–D).

Female unknown.

Type material. Male holotype from India: West Bengal: Darjeeling: 13km north of Ghoom (way to Bijanbari), ca. N 27° 3'56", E 88°15'29.83", leaf litter, 1500m, Oct. 15, 1978, Besuchet, C. and Löbl, I., PBI_OON 15680, deposited at MHNG.

Etymology. The specific epithet refers to the Indian state where the type specimen was collected.

Distribution. Only known from the type locality.

Genus *Aprusia* Simon, 1893

Aprusia Simon, 1893a: 295, (type species, by monotypy *Aprusia strenuus* Simon).

Aprusia kerala Grismado & Deeleman, 2011 (Figs. 4, 6A–E, 7)

Aprusia kerala Grismado & Deeleman, 2011, *in* Grismado *et al.*, 2011: 18. Male holotype and male paratype from India: Kerala: Cardamom Hills, Muttapatti near Munnar, ca. N 9°52′, E 77°09′, 1700 m, Nov. 24, 1972, C. Besuchet and I. Löbl (deposited in MHNG, PBI_OON 12360, not reexamined).

Diagnosis. Female is recognizable by the remarkable presence of paired seminal receptacles (Figs. 4G, 6A–D).

Remarks. The two females were not collected with the males. Still, they are matched by geographical proximity (ca. 56 km apart) and similar morphology: the holotype male's low clypeus, the ocular configuration, and spine patterns (Grismado *et al.*, 2011: figs. 46–52) fit with these two females rather than the other sympatric species. Thus, the other female is proposed to belong to a different new species (*A. rothorum*, see below).

Description. Female (CASENT 9038464, voucher CJG-1964). Total length 2.68. *Cephalothorax:* Carapace pale orange, without any pattern, broadly oval in dorsal view, pars cephalica strongly elevated in lateral view, anteriorly narrowed less to 0.50 times its maximum width, with rounded posterolateral corners, surface of elevated portion of pars cephalica smooth, sides finely reticulate, fovea absent; lateral margin straight, smooth, non-marginal pars cephalica setae mostly lost (bases remain); non-marginal pars thoracica setae mostly located on the posterior slope; marginal setae light, needle-like. Clypeus margin unmodified, curved downwards in front view, vertical in lateral view, low, ALE separated from edge of carapace by less than their radius, median projection absent; setae present, light, needle-like. Chilum absent. Eyes six, on dark pigment, well developed, all subequal, all eyes oval; posterior eye row straight from above, procurved from front; ALE separated by less than their radius, ALE-PLE separated by less than ALE radius, PME touching for less than half their length, PLE-PME separated by less than PME radius. Sternum longer than wide, pale orange, uniform, not fused to carapace, without radial furrows between coxae, surface smooth, without pits, anterior margin unmodified, posterior margin extending posteriorly beyond anterior edges of coxae IV as single extension, anterior corner unmodified, distance between coxae approximately equal, extensions of pre-coxal triangles present, lateral margins with narrow extensions between coxae; setae sparse, light, needle-like, evenly scattered, originating from surface. Mouthparts: Chelicerae, endites and labium pale orange. Chelicerae straight, anterior face unmodified; without teeth on both promargin and retromargin; fangs without tooth-like projections, directed posteriorly, without prominent basal process; setae light, needle-like, evenly scattered; paturon inner margin with pairs of enlarged setae. Labium wide, not fused to sternum, anterior margin indented at middle, same as sternum in sclerotization; subdistal portion with two needlelike setae. Endites relatively short, anteriorly directed, parallel, same as sternum in sclerotization. Female palp claws absent; spines absent; tarsus unmodified. *Abdomen:* ovoid, rounded posteriorly; dorsum soft portions white, without color pattern. Book lung covers large, elliptical, without setae. Posterior spiracles not connected by groove. Pedicel tube short, unmodified, scuto-pedicel region unmodified, scutum extending far dorsal of pedicel. Dorsal scutum weakly sclerotized, pale

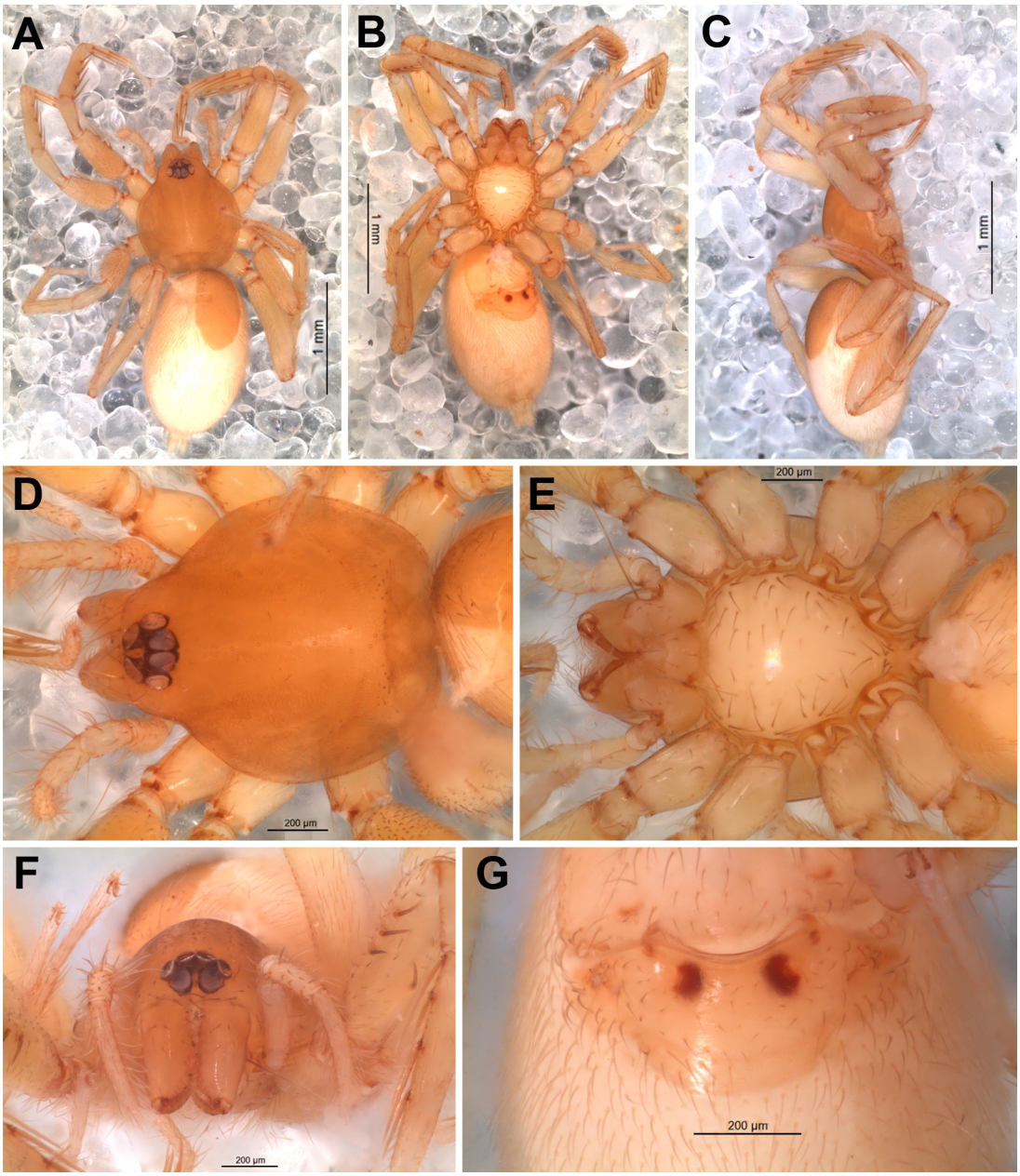

Fig. 4. *Aprusia kerala*, Grismado & Deeleman, female CASENT 9038464 (vch CJG-1964). (A) habitus dorsal; (B) same ventral; (C) same lateral; (D) carapace, dorsal view; (E) same ventral; (F) same anterior; (G) epigastric region ventral.

orange, without color pattern, covering less than 1/2 of abdomen length, more than 1/2 to most of abdomen width, fused to epigastric scutum, surface smooth. Epigastric scutum weakly sclerotized, surrounding pedicel, not protruding. Postepigastric scutum slightly more sclerotized, pale orange, larger than in congeners, semicircular, covering about 1/4 of abdominal length, fused to epigastric scutum, anterior margin unmodified. Spinneret scutum absent. Abdominal setae, light, needle-like. Basal article of the ALS entire (not crossed by a diagonal membranous area). Colulus represented only by setae. *Legs:* pale orange, without color pattern; femur IV

not thickened, same size as femora I-III, patella plus tibia I near as long as carapace. Leg spination (only surfaces bearing spines listed,): leg I: femur: pv0-0-1-1-1-0, rv0-0-1-0-1-0, tibia: pv1-1-1-1-1-0, rv0-0-1-1-1-1-0, metatarsus: v2-2-0, leg II: femur: pv0-0-1-1-0-0, rv0-0-1-0-1-0, tibia: pv1-1-1-1-1-0, rv0-0-1-1-1-1-0, metatarsus: v2-2-0, leg III: tibia: dp1-1, dr1-1, vp0-1-1, metatarsus: dp1-1, dr1-1,pv0-1-1,v0-1-0, leg IV: patella: d0-2, tibia: pd1-0, p0-1, v1-0-1, metatarsus dp1-1, dr1-0, v0-1-2. Tarsi III and IV with a pair of claw-like setae. *Genitalia:* Epigastric scutum with two short, transversal ridges; epigastric furrow very narrow compared with the other known species of the genus; anterior receptacle very thin and short, arising from a short transversal sclerite; lateral apodemes thick, parallel, and posteriorly directed; two rounded seminal receptacles deep orange (Figs. 4G, 6A–D), surrounded by membranous tissue (Fig. 6D), two very small and narrow slits (hardly visible with light microscope) in the postepigastric scutum, at the level to the seminal receptacles, apparently related to the darkened regions, that are interpreted as a invaginations or orifices for sperm ingression (co ? in Fig. 6A–C, E).

Material examined. India: Tamil Nadu: Kodaikanal, native cloud forest by falls. 10° 15´N, 77° 31´E. 2 January 1990. V. & B. Roth colls. (two females, CASENT 9038464 [APRUS DU 138], PBI_OON 00036125, vouchers vch CJG-1964 and CJG-1983).

Distribution. Southwestern India (Kerala and Tamil Nadu states).

Comments. The double receptacular condition is, of course, very surprising. It is a feature not observed in all the superfamily Dysderoidea. However, since the posterior receptacle of all *Aprusia* species is fragile and is usually destroyed despite extreme care during dissection (see Grismado *et al.,* 2011: figs. 44 and 45), I cannot discard that the two rounded, dark receptacular elements found in *A. kerala* could be internal elements of a more inclusive, unpaired, thin walled, posterior receptacle, presumably broken during preparation. But the presence of two narrow slits apparently connected with the seminal receptacles is suggestive, and forces to consider the possibility that they could be paired copulatory orifices. A comparation of size of the male embolus with the presumably copulatory openings (Fig. 6E) suggest that this is a reasonably interpretation. Unfortunately, the scarcity of specimens avoids trying addicional explorations, as SEM (one female was dissected, and the other one was only observed clearing the entire abdomen; Fig. 6A). The only other possible interpretation of this unusual paired structure is that they could be extreme modifications of internal apodemes or other unique structures related with the semicircular sclerotizations of other congeneric species. Again, we need to find additional specimens for more exhaustive study.

If the receptacular invaginations are, in fact, orifices for sperm ingression, this would be a drastic morphological change, which would make them functional entelegyne spiders. It is undoubtedly a promising genus to study in greater detail in the future because it may be a case of radical reorganization of the genitalia not only for Oonopidae, but also for the entire superfamily Dysderoidea.

Aprusia rothorum, new species
LSID: urn:lsid:zoobank.org:act:FEC3EB88-94-DC-487A-B67A-4C9D8F652BDF
(Figs. 5, 6F, 7)

Diagnosis. Female of *A. rothorum* resembles to those of *A. veddah*, *A. kataragama*, and *A. koslandensis* (Grismado *et al.*, 2011: figs. 44–45; Ranasinghe & Benjamin, 2018: fig. 2c) in having the anterior receptacle shorter than the lateral apodemes, but it is clearly distinguishable by the apodemes, more separated, and by lacking epigastric ridges (Figs. 5G, 6F).

Description. Female (holotype). Total length 3.16. *Cephalothorax:* Carapace pale orange, without any pattern, broadly oval in dorsal view, pars cephalica slightly elevated in lateral view, anteriorly narrowed to less than 0.50 times its maximum width, with rounded posterolateral corners, surface smooth, fovea absent, lateral margin straight, smooth; setae light, needle-like. Clypeus margin straight in front view, vertical in lateral view, high, ALE separated from edge of carapace by more than their radius, median projection absent, cuticle traslucent, cheliceral bases visible, setae absent. Chilum absent. Eyes six, well developed, ALE-ALE and PLE-PME almost touching. All eyes on dark pigment, ALE largest, circular, PME circular, PLE oval; posterior eye row procurved from front; ALE-PLE separated by less than ALE radius, PME touching throughout most of their length. Sternum longer than wide, pale orange, uniform, not fused to carapace, surface smooth, without pits, anterior margin unmodified, posterior margin extending posteriorly beyond anterior edges of coxae IV, distance between coxae approximately equal, extensions

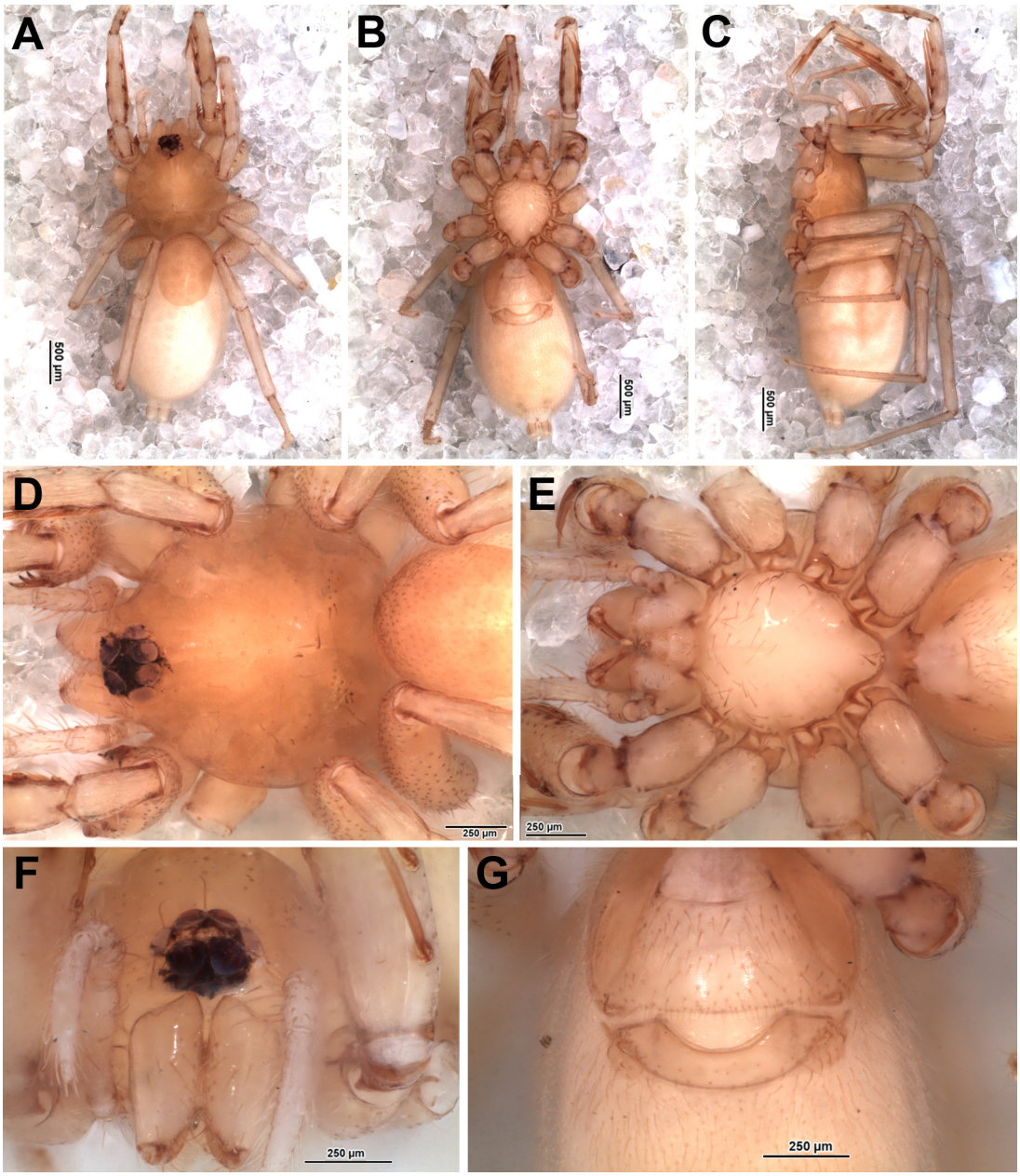

Fig. 5. *Aprusia rothorum*, new species, female holotype. (A) habitus dorsal; (B) same ventral; (C) same lateral; (D) carapace, dorsal view; (E) same ventral; (F) same, anterior; (G) epigastric region, ventral.

of pre-coxal triangles present, setae sparse, light, needle-like, evenly scattered, originating from surface. Mouthparts: Chelicerae, endites and labium pale orange. Chelicerae straight, anterior face unmodified; without teeth on both promargin and retromargin; fangs directed posteriorly; setae light, needle-like, evenly scattered; paturon inner margin with pairs of enlarged setae. Labium rectangular, not fused to sternum, anterior margin indented at middle, with many setae on anterior margin. Endites: serrula present in single row, anteromedian tip unmodified. Female palp claw absent; spines absent. *Abdomen:* ovoid, rounded posteriorly; dorsum soft portions white, without color pattern. Book lung covers large, elliptical, without setae. Posterior spiracles con-

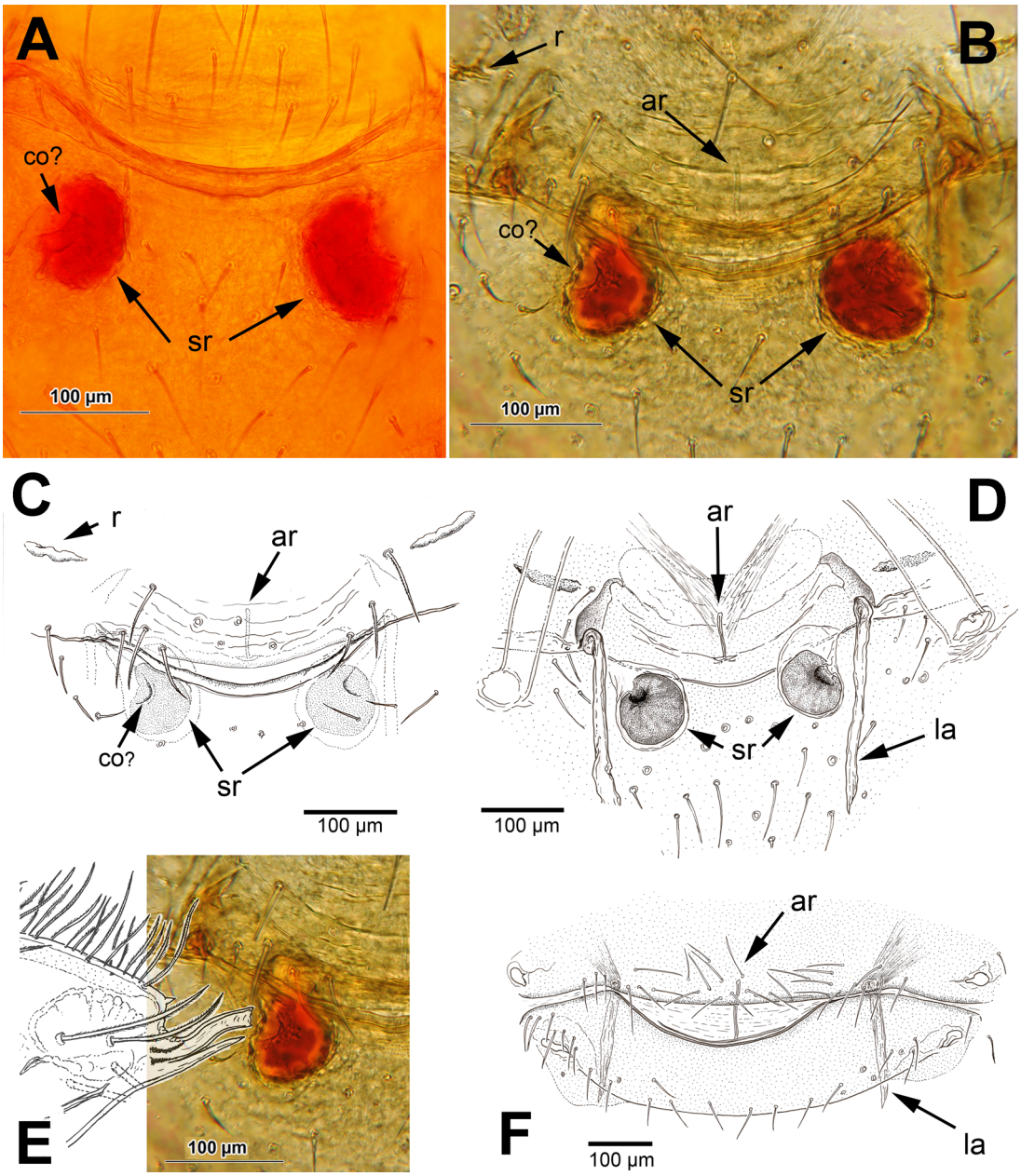

Fig. 6. *Aprusia* spp. female genitalia; (A–E) *A. kerala* Grismado & Deeleman CASENT 9038464 (A) vch CJG-1964; (B–E) vch CJG-1983; (F) *A. rothorum*, new species, holotype. (A–C, E–F), cleared, ventral view; (D), cleared, dorsal view; (E) detail of right half of the fig. B compared at the same scale with the embolus of the male holotype (taken from Grismado *et al.*, 2011). Abbreviations: ar, anterior receptacle; co?, copulatory opening; la, lateral apodeme; r, ridge; sr, seminal receptacles.

nected by groove. Pedicel tube short, unmodified, scutum extending far dorsal of pedicel. Dorsal scutum weakly sclerotized, pale orange, without color pattern, covering less than 1/2 of abdomen, more than 1/2 to most of abdomen width, not fused to epigastric scutum, surface smooth. Epigastric scutum weakly sclerotized, not surrounding pedicel, without lateral joints and without ridges. Postepigastric scutum weakly sclerotized, pale orange, short, only around epi-

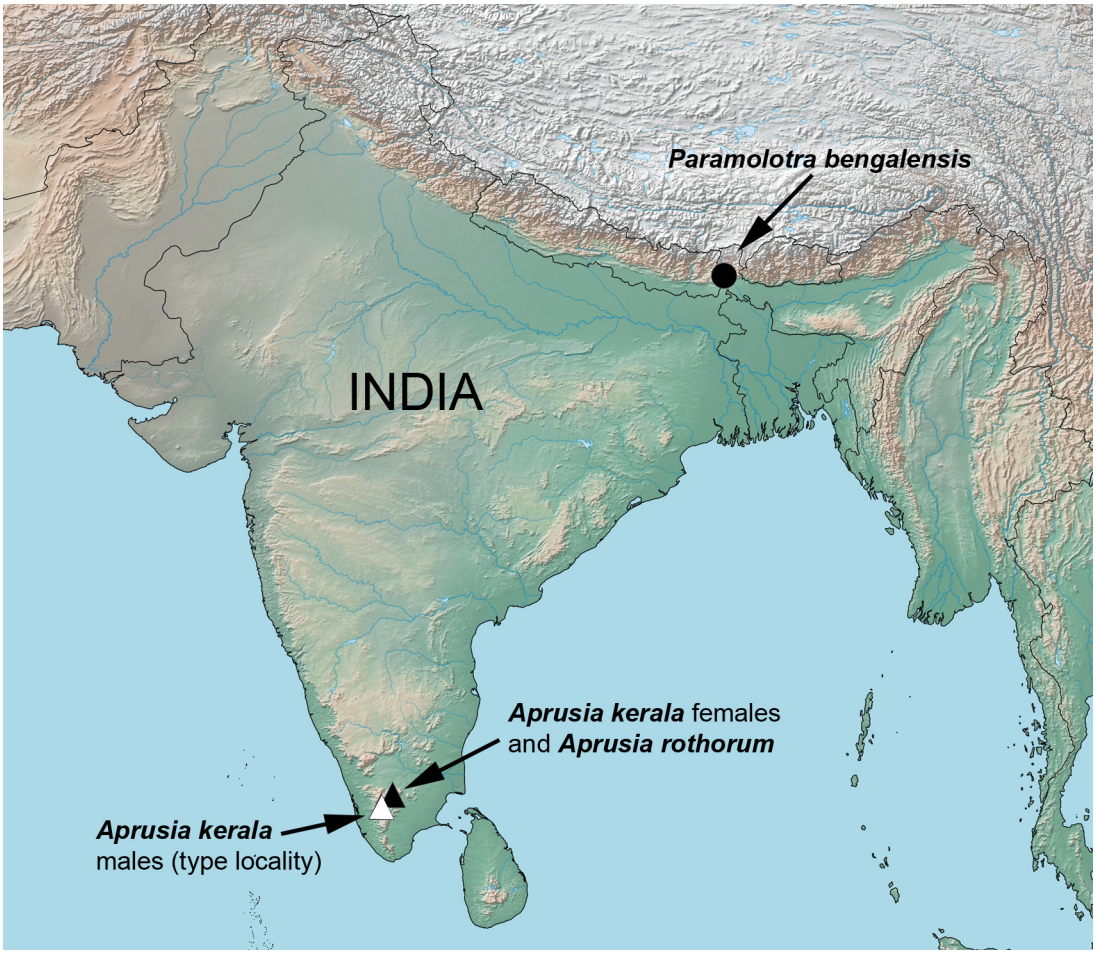

Fig. 7. Distribution of the species here studied: *Paramolotra bengalensis*, new species (circle); *Aprusia* spp. (triangles).

gastric furrow, not fused to epigastric scutum, anterior margin amply procurved. Spinneret scutum absent. Abdominal setae light, needle-like. Basal article of the ALS entire (not crossed by a diagonal membranous area). Colulus represented only by setae. *Legs:* pale orange, without color pattern; patella plus tibia I near as long as carapace. Leg spination (only surfaces bearing spines listed): leg I: femur: pv0-0-1-1-1-1, rv0-0-1-1-1-0, tibia: V2-2-2-2-0, metatarsus: V2-2 (the retrolateral row slightly displaced to distal), leg II: femur: pv0-0-0-1-1-0, rv1-1-1-0-1-0, tibia: V2-2-2-2-0, metatarsus: V2-2 (the retrolateral row slightly displaced to distal), leg III: tibia: dp1-1/0, dr1-0, pv0-0-1, rv0-0-1, metatarsus: d2-2/0, leg IV: patella: d2, tibia: d1(very small)/0-0-0, dp1-1, dr1-1, pv0-0-1, rv0-0-1, metatarsus: dp1-0-1, dr1-0-0, v0-0-2. Tarsi I to IV without inferior claw. *Genitalia:* epigastric region semicircular, widely open (Figs. 5G, 6F): anterior receptaculum very narrow, posteriorly arising from a thin semicircular transverse sclerite, and barely surpassing the anterior margin of the epigastric furrow; two lateral, relatively short apodemes reaching to the level of the posterior border of the postepigastric scutum; there is no evidence of any additional receptacle (Fig. 6F).

Male unknown.

Type material. Female holotype from India: Tamil Nadu: Kodaikanal, native cloud forest by falls. 10° 15´N, 77° 31´E. 2 January 1990. V. & B. Roth colls. (CAS TYPE 20372, voucher CJG-1965).

Etymology. The specific epithet is a patronymic in honor of Vincent and Barbara Roth, collectors of the holotype.

Distribution. Only known from the type locality.

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