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Cover: *Geodorum laxiflorum* Griff.—inflorescence (Orchidaceae) © Ashish Ravindra Bhowar.



First record of *Prosoponoides* Millidge & Russell-Smith, 1992 (Araneae: Linyphiidae) from India, with the description of a new species

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Abstract: The genus *Prosoponoides* Millidge & Russell-Smith, 1992, is reported for the first time from India. A new species, *Prosoponoides idukkienensis* sp. nov., is described from the Western Ghats of Kerala. Distally pointed paracymbium, the structure of parmpula, arrangement of coils of copulatory duct, and position of spermatheca are the features that differentiate *P. idukkienensis* sp. nov. from its congeners. Description, illustrations, and distribution map are provided.

Keywords: Distribution, Kerala, Idukki, taxonomy, Western Ghats.

Abbreviations: ALE—anterior lateral eye | AME—anterior median eye | DMCKL—Deva Matha College Kuravilangad Linyphiidae | DSA—distal supraregular apophysis | PLE—posterior lateral eye | PME—posterior median eye.

A total of 94 linyphiid species belonging to 39 genera have been reported in India so far (Sharma et al. 2020). Millidge & Russell-Smith established *Prosoponoides* in 1992 under the subfamily Linyphiinae Blackwall, 1859 with the type species, *Prosoponoides hamatum* Millidge & Russell-Smith, 1992. *Prosoponoides* comprises of six species, namely: *P. hamatum* Millidge & Russell-Smith, 1992, *P. kaharianum* Millidge & Russell-Smith, 1992, *P. simile* Millidge & Russell-Smith, 1992, *P. sinense* Chen, 1991, *P. jambi* Tanasevitch, 2017, and *P. youyiensis* Liu & Chen, 2020 (WSC 2022). The genus is endemic to Asia,

with its distribution in China, Thailand, Vietnam and Indonesia (WSC 2022). The current study deals with the report of *Prosoponoides* from India with the discovery of a new species.

MATERIALS AND METHODS

A study on linyphiids in central Kerala was conducted from January 2020 to October 2021. Specimens were hand collected from various sites and were preserved in 70% ethyl alcohol. The specimens were examined using a compound microscope and a Leica SAPO Automontage stereozoom microscope. Microphotographs were captured with Flexacam-C1 and processed with Leica Application Suite X (Las X) software. Leg and palp measurements are given in the following order: total (femur, patella, tibia, metatarsus (except palp), and tarsus). Female epigyne was cleared by boiling in 10% KOH for five minutes. All measurements are in millimeters. The distribution map was prepared using an online tool available at <https://mapmaker.nationalgeographic.org/>. The type specimens are deposited in the Arachnology Lab, Deva Matha College, Kuravilangad, Kottayam, Kerala. The terminology used follows Liu et al. (2020).

ZooBank: urn:lsid:zoobank.org:pub:3D42B1EC-2F4B-4156-ABBE-824163BB3F10

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TAXONOMY

Family Linyphiidae Blackwall, 1859

Genus *Prosoponoides* Millidge & Russell-Smith, 1992

Type species: *Prosoponoides hamatum* Millidge & Russell-Smith, 1992

Diagnosis: Males of *Prosoponoides* have a small paracymbium, filiform embolus and also a second membrane which is situated on the lamella. Female epigynum possess atrium with a septum, a highly cuticularized parmpula (Li et al. 2018) and a bold projecting scape/socket posteriorly (Millidge & Russell-Smith 1992).

Prosoponoides idukkienensis sp. nov.

(Images 1–11; Figures 1–4)

urn:lsid:zoobank.org:act:FAE465EB-B07F-4A8C-8D8A-6EDF419052ED

Material examined: Holotype: DMCKL1N023, male, 20.xi.2020, Munnar (10.085°N, 77.058°E), Idukki, Kerala, India, coll. A. Domichan.

Paratypes: DMCKL1N003, female, 30.i.2020, Idukki (9.909°N, 76.918°E), Kerala, India, coll. A. Domichan; DMCKL1N080, male & DMCKL1N027, female, 24.iv.2021, Cherthala (9.652°N, 76.318°E), Alappuzha, Kerala, India, coll. A. Domichan; (DMCKL1N084, male & DMCKL1N018, female, 20.vii.2021, Mailadumpara (9.889°N, 77.155°E), Idukki, Kerala, India, coll. A. Domichan; DMCKL1N079, DMCKL1N082, DMCKL1N085, 3 males, 03.x.2021, Ponkunnam (9.575°N, 76.760°E), Kottayam, Kerala, India, coll. A. Domichan.

Etymology: The species is named after the district 'Idukki' in Kerala, which is the type locality.

Diagnosis: The males of *P. idukkienensis* sp. nov. can be distinguished by the distally pointed paracymbium, anterior part of paracymbium which is positioned upward and posterior tip which is not arched (arched in *P. hamatum* Millidge & Russell-Smith, 1992 and *P. youyiensis* Liu & Chen, 2020 (Liu & Chen 2020)); suprategular apophysis not curved (curved in *P. hamatum*). The structure of tegulum and subtegulum is similar to that of *P. youyiensis* but is different in the shape of the lamella; lateral side of lamella narrow (broad in *P. hamatum* and *P. youyiensis*); the U-shaped curve between lateral and anterior ends of lamella found in *P. hamatum*, *P. simile* Millidge & Russell-Smith, 1992, *P. sinense* Chen, 1991, and *P. youyiensis* is absent in *P. idukkienensis* sp. nov.

The females of *P. idukkienensis* sp. nov. possess copulatory ducts with one and a half coils as in *P. hamatum* and *P. youyiensis* (*P. sinense* has two-and-a-half coils); parmpula with a shallow depression at the

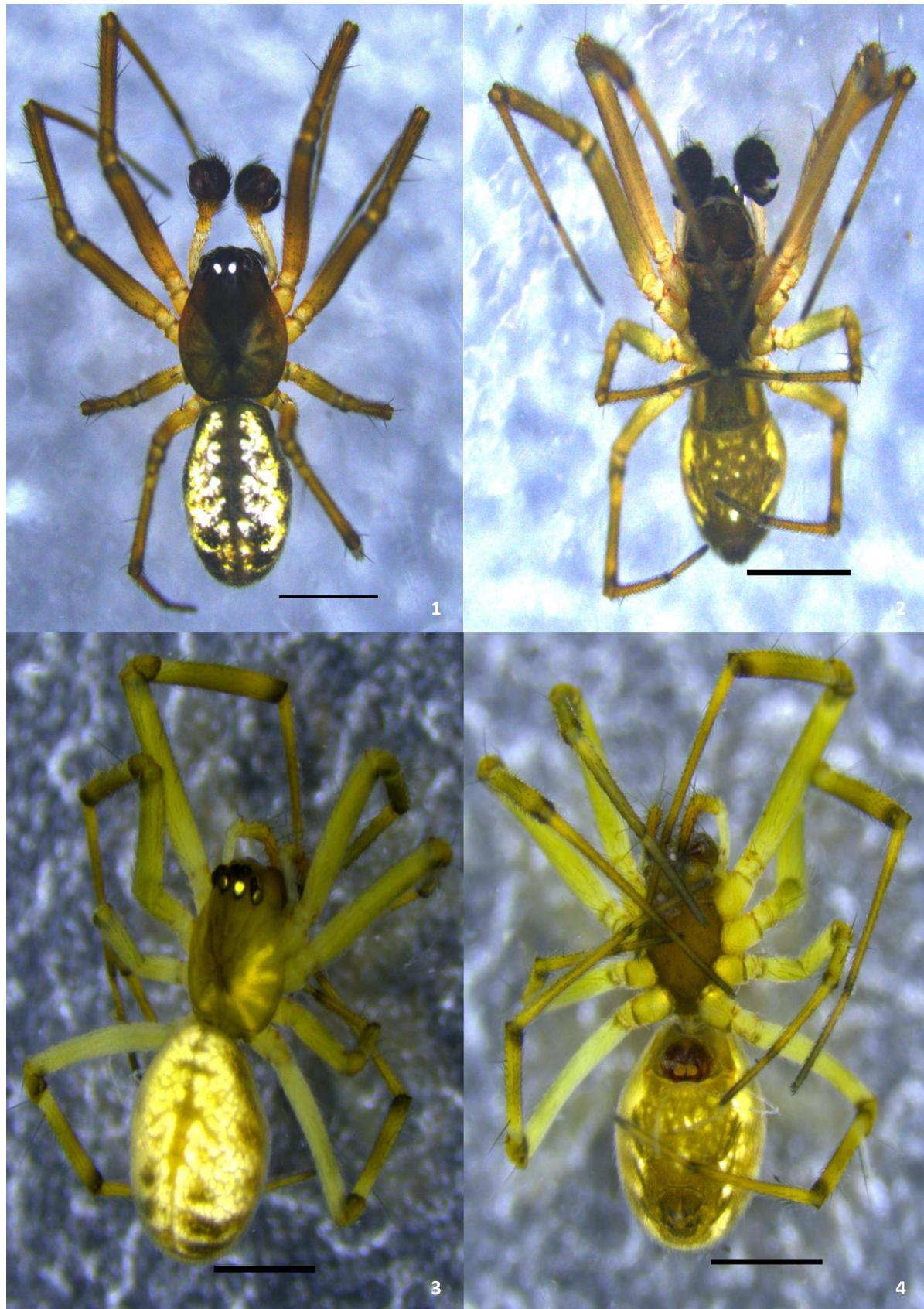
centre (deep in *P. hamatum*), the depression wider than long and semicircular as in *P. sinense* (tongue-shaped in *P. hamatum* and as wide as long in *P. youyiensis*); spermathecae located medially as in *P. youyiensis* (lateral in *P. hamatum*).

Description: Male: total length: 2.38. Cephalothorax length: 1.08, width: 0.71. Abdomen length: 1.29, width: 0.82. Chelicerae length 0.52. Eye interdistances: AME–ALE 0.05, AME–AME 0.03, PME–PLE 0.10, PME–PME 0.04. Eye diameter (PME) 0.08. Measurements of legs and palp: I 4.88 (0.93 + 0.17 + 0.87 + 0.68 + 0.23), II 4.38 (1.24 + 0.26 + 1.06 + 1.32 + 0.5), III 1.75 (0.64 + 0.14 + 0.34 + 0.43 + 0.2), IV 4.04 (1.17 + 0.27 + 0.86 + 1.29 + 0.45), palp 1.53 (0.45 + 0.35 + 0.39 + 0.34).

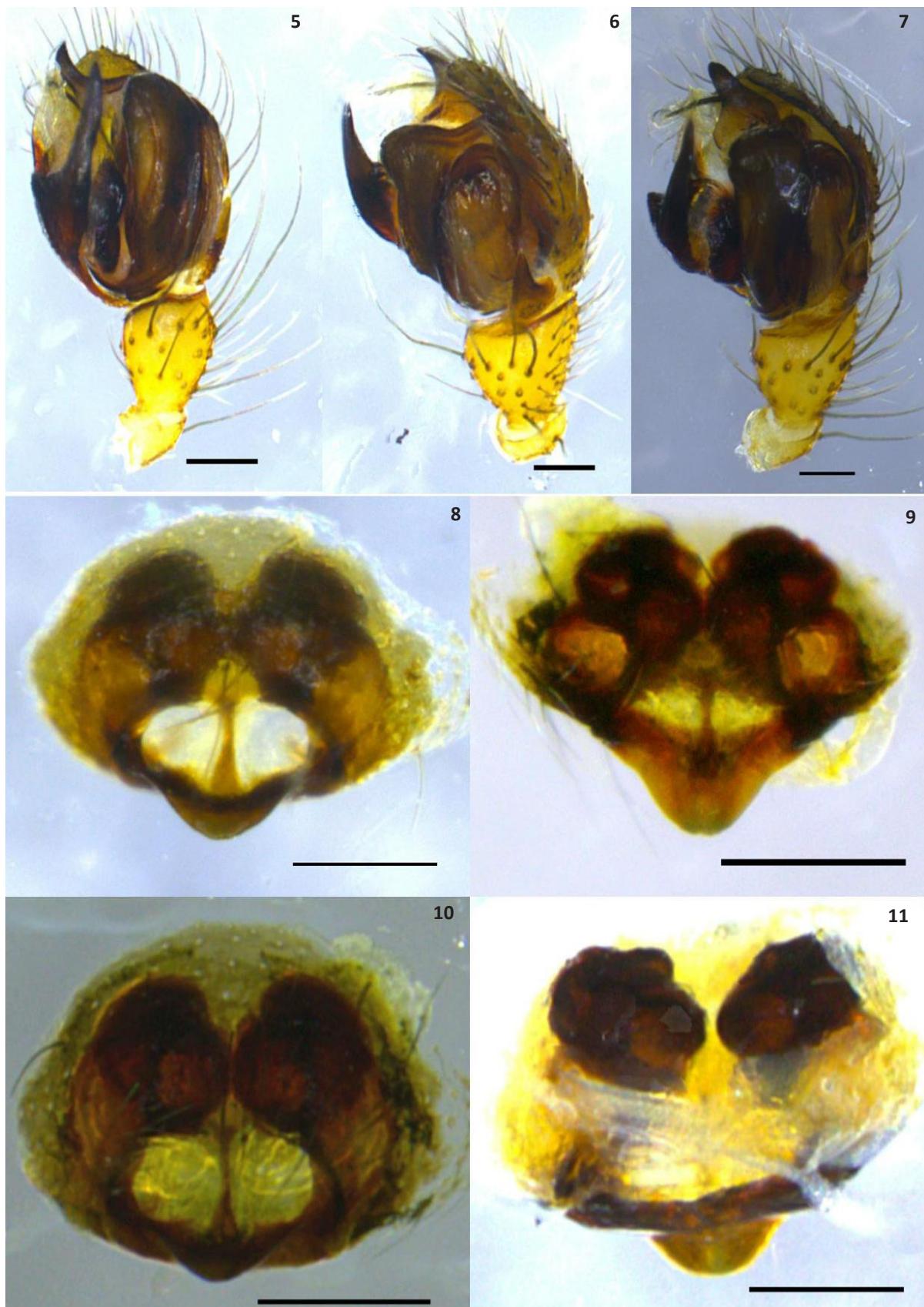
Cephalothorax yellowish-brown. Ocular area raised with long hairs. Eyes heterogeneous. White eyes placed in black rings; ALEs and PLEs juxtaposed. Stridulatory ridges not visible on lateral sides of chelicerae. Chelicerae with three promarginal teeth and two retromarginal teeth. Legs yellowish-brown with spines and short hairs. Leg formula 1243. Sternum blackish, heart-shaped (Image 2). Abdomen elongated oval, with white dorsal portion and black medial portion, postero-lateral half with pairs of dark brown spots (Image 1). Palp: anterior tip of paracymbium pointed, directed upwards; embolus and DSA elevated above cymbium; embolus long, originating near base of cymbium; pointed tip of DSA extends upwards; tegulum wide, bulges medially on ventral side; subtegulum bulges medially, with a pointed thin tip that curves anteriad; radix small, gradually narrows medially, like a minor constriction; lamella well-developed, thin and narrow, lateral side projecting apically with pointed tip, anterior portion small without projection, posterior portion narrow and pointed (Images 5–7, Figures 1–2).

Female: total length: 2.55. Cephalothorax length: 1.2, width: 0.84. Abdomen length: 1.33, width: 0.91. Chelicerae length 0.46. Eye interdistances: AME–ALE 0.05, AME–AME 0.04, PME–PLE 0.05, PME–PME 0.06. Eye diameter (PME): 0.04. Measurements of legs and palp: I 2.69 (0.99 + 0.24 + 0.93 + 0.28 + 0.25), II 2.31 (1.06 + 0.19 + 0.42 + 0.38 + 0.26), III 1.35 (0.43 + 0.16 + 0.36 + 0.23 + 0.17), IV 2.06 (1 + 0.22 + 0.25 + 0.36 + 0.23), palp 0.75 (0.29 + 0.13 + 0.19 + 0.14).

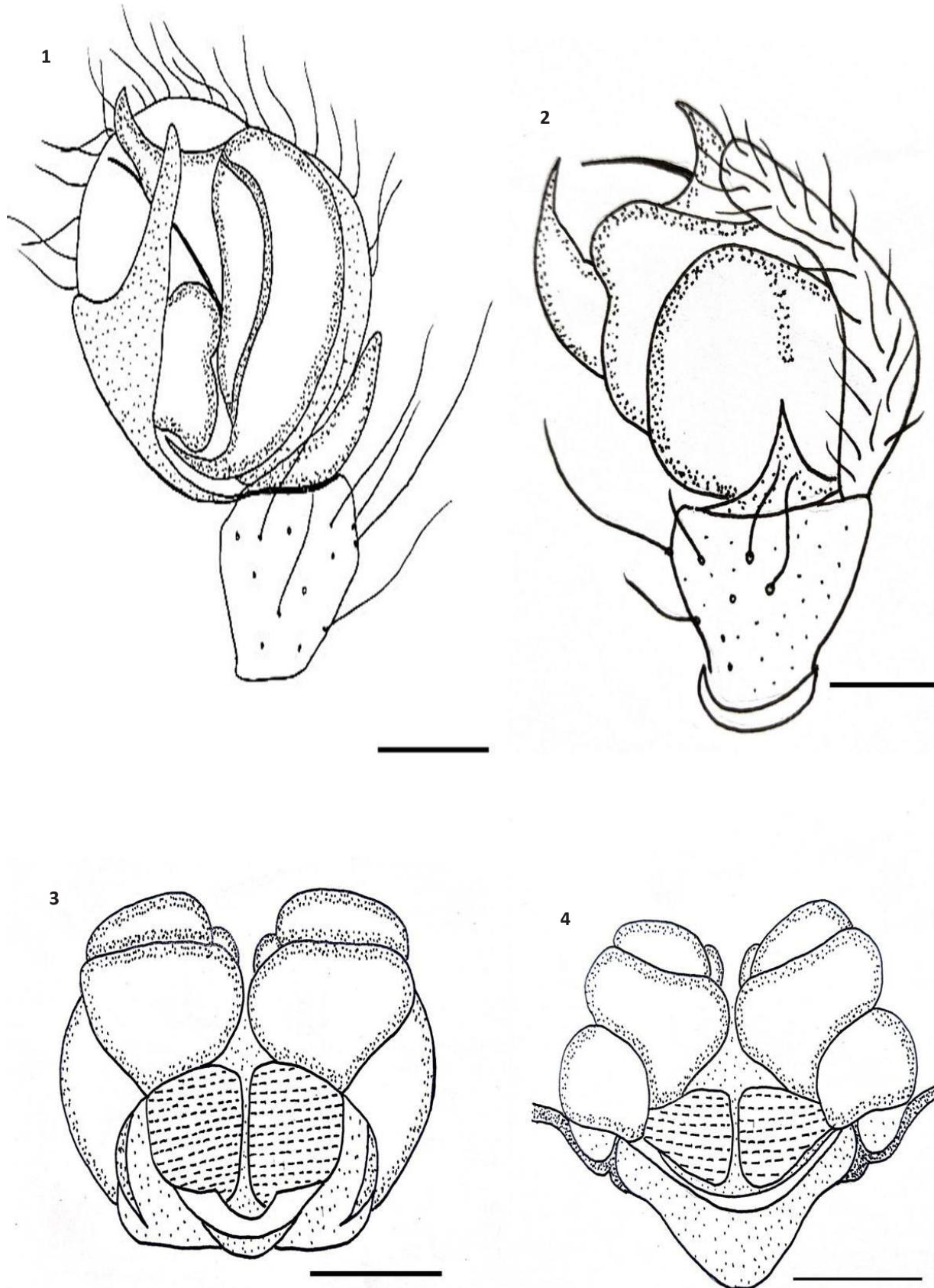
Cephalothorax brownish. Ocular region dark brown, V-shaped. Eyes heterogenous; anterior row recurved and posterior row procurved. ALEs and PLEs juxtaposed. Legs yellowish-brown. Leg formula 1243. Tarsus of palp orangish with many long black spines. Sternum dark brownish, heart-shaped (Image 4). Chelicerae dark brownish with three promarginal teeth and two retromarginal teeth. Abdomen brownish with white



Images 1–4. *Prosoponoides idukkensis* sp. nov.: 1—male habitus, dorsal view | 2—same, ventral view | 3—female habitus, dorsal view | 4—same, ventral view. Scale: 1–4, 1mm.



Images 5–11. *Prosoponoides idukkensis* sp. nov.: 5—male palp, ventral view | 6—male palp, retrolateral view | 7—male palp, ventro-lateral view | 8–10—epigyne, ventral view | 11—vulva, dorsal view. Scale: 5–11, 0.1mm.



Figures 1–4. *Prosoponoides idukkensis* sp. nov.: 1—male palp, ventral view | 2—same, retrolateral view | 3—female epigyne, ventral view | 4—vulva, dorsal view. Scale: 1–4 = 0.1mm.

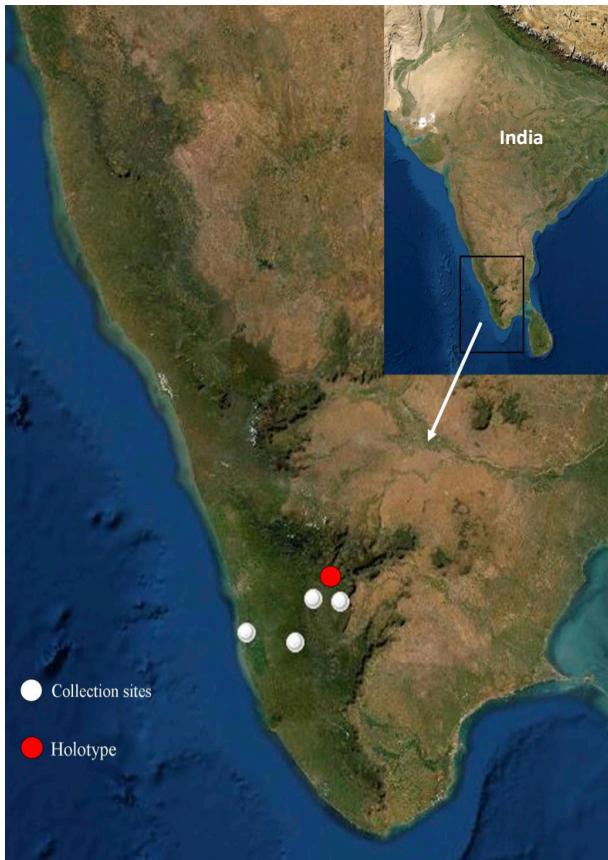


Image 12. Distribution map showing collection sites of *Prosoponoides idukkensis* sp. nov. in central Kerala, India.

markings; brown patches present on either side postero-medially (Image 3). Epigynal atrium semi-elliptical, separated by a short septum, arises from dorsal wall; parmula semicircular, wider than long, with a shallow, wide depression at centre; scape shallow; copulatory ducts starts from the openings of atrium with one and a half coils; fertilisation ducts run downwards from spermathecae (Images 8–11, Figures 3–4).

Distribution: India (Kerala) (Image 12).

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