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Jumping spiders of the genus *Phintelloides* from India, with the description of a new species (Araneae: Salticidae: Chrysillini)

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Abstract: *Phintelloides manipur* Caleb sp. nov. is diagnosed and described from north-eastern India. *Phintelloides versicolor* (C.L. Koch, 1846) is recorded for the first time from India and Myanmar. Two new combinations are proposed: *Phintelloides singhi* (Monga, Singh & Sadana, 1989) comb. nov. transferred from *Marpissa* C.L. Koch, 1846 and *Phintelloides undulata* (Caleb & Karthikeyani, 2015) comb. nov. transferred from *Cosmophasis* Simon, 1901. The distribution of the genus in India and Myanmar is mapped.

Keywords: Manipur - Myanmar - new combinations - new record - taxonomy.

INTRODUCTION

The chrysilline genus *Phintelloides* was recently established by Kanesharatnam & Benjamin in 2019, with *Chrysilla jesudasi* (Caleb & Mathai, 2014) as its type species. Currently, the genus is represented by seven valid species. The type species is the sole representative occurring in India, six species are known from Sri Lanka, and one species, *Phintelloides versicolor* (C.L. Koch, 1846) is widespread in East and Southeast Asia (Caleb, 2019; World Spider Catalog, 2020). This paper presents the description of a new species from northeastern India, along with the proposal of two new combinations for misplaced species and new distributional records for *P. versicolor*.

MATERIAL AND METHODS

Morphological examination and photography was performed under a Leica M205A stereomicroscope mounted with a Leica DFC500 HD camera enabled with Leica Application Suite (LAS) version 3.8. Leg measurements are given in the following manner: total (femur, patella, tibia, metatarsus, tarsus). Spine positions are as follows: prolateral, dorsal, retrolateral and ventral. Terminology follows Kanesharatnam & Benjamin (2019). All measurements are in millimetres. The studied specimens are kept in the National Zoological Collections, Zoological Survey of India, Kolkata (NZC-ZSI).

Abbreviations used in the text are as follows: AER = anterior eye row length; ALE = anterior lateral eye diameter; ALT = apical lobe of tegulum; AME = anterior median eye diameter; EFL = eye field length; PER = posterior eye row length; PLE = posterior lateral eye diameter; PME = posterior median eye diameter; RTA = retrolateral tibial apophysis; TB = tegular bump. Additional abbreviations are given in the legends of Figs 7-8.

TAXONOMY

Genus *Phintelloides* Kanesharatnam & Benjamin, 2019

Phintelloides manipur Caleb sp. nov.

Figs 1-8

Type material: NZC-ZSI 6944/18; male holotype; India, Manipur, exact locality and collector unknown (specimen found along with other spider specimens in the Manipur State survey collections without any specific label).

Etymology: The species is named after the Indian state of Manipur where the holotype was collected. The epithet is a noun in apposition.

Diagnosis: This species is similar to other congeners in its general morphology and color pattern but can be clearly distinguished by the morphology of its male copulatory organs: the palp with a shorter embolus

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(comparably shorter than in other congeners but longer than in *P. versicolor*) and an elongated ALT, reaching past the distal margin of the tegulum (Figs 5-8). The palp is similar to that of *P. brunne* Kanesharatnam & Benjamin, 2019 but can be differentiated by the presence of a TB and by the RTA tip being gently curved (TB absent and hook-shaped RTA in *P. brunne*).

Description: *Male holotype.* Total length 4.48; carapace 1.92 long, 1.56 wide; abdomen 2.56 long, 1.10 wide. Carapace brown, clothed with a small patch of whitish setae between and behind AMEs. Lateral margins of carapace each covered with a broad band of white hairs. Posterior eyes surrounded by black patches (Fig. 1). AMEs lined by dense short fringe of orange setae anteriorly; clypeus brownish, with a small patch of white scales in the middle (Fig. 2). Eye measurements: AME 0.45, ALE 0.22, PME 0.05, PLE 0.21, AER 1.31, PER 1.23, EFL 0.94. Clypeus height 0.18. Sternum yellowish. Chelicerae reddish brown, with two teeth on promargin and one tooth on retromargin; labium and maxillae yellowish brown (Fig. 3). Leg I more robust than other legs and dark brown. Legs II to IV brownish yellow (Fig. 1). Leg measurements: I 4.72 (1.37, 0.76, 1.07, 1.01, 0.51); II 3.60 (1.08, 0.57, 0.72, 0.83, 0.40); III 4.34 (1.32, 0.58, 0.87, 1.07, 0.50); IV 4.70 (1.45, 0.57, 0.99, 1.14, 0.55). Leg formula: 1432. Spination of legs: femora I 0700, II 0900, III 0900, IV 0700; patellae I-IV 0010; tibiae I 2036, II 2036, III 3034, IV 3034; metatarsi I 1014, II 2024, III 2024, IV 2024; tarsi I-IV 0000. Abdomen long and narrow, yellowish, with a brownish median band fading posteriorly; venter yellowish, with mid-longitudinal discontinuous brown band. Spinnerets brownish yellow (Fig. 1). Palps yellowish brown, covered with pale hairs. Embolus slender, medium-sized, wavy, bent at the tip and pointing retrolaterad; apical portion of bulbus extending beyond distal margin of tegulum. Bulbus longer than wide. Broad sperm duct visible in distal portion of tegulum. Tegulum with small posterior lobe and tegular bump. RTA broad at base, tapering toward tip, gently curving ventrad (Figs 4-8).
Female. Unknown.

Distribution: India (Manipur) (Fig. 9).

Phintelloides singhi (Monga, Singh & Sadana, 1989) comb. nov.

Marpissa singhi Monga, Singh & Sadana, 1989: 592, figs 1-2.

Remarks: This species was described from the female holotype from the Kalesar Reserve forest in the Haryana State. Though the authors mentioned that the type specimen will be deposited in NZC-ZSI, it has not yet arrived there and therefore is not yet available for re-examination. Since the original description and illustrations are poor, details of genital morphology remain unknown. The identity of this species thus remains unclear until further conspecific specimens are collected at the type locality. This species does not belong in *Marpissa* since no true *Marpissa* is yet reported in India. Therefore, a provisional placement in *Phintella* C.L. Koch, 1846, based on the general body form and genital morphology, was recently proposed by Prószyński & Caleb (2015). The species, however, more closely resembles members of the genus *Phintelloides*. The abdomen is devoid of any stripe or pattern like in *P. flavoviri* Kanesharatnam & Benjamin, 2019 and *P. orbisa* Kanesharatnam & Benjamin, 2019, and the epigyne moreover strongly resembles that of *P. orbisa* (Monga, Singh & Sadana, 1989: figs 1, 2 cf. Kanesharatnam & Benjamin, 2019: figs 12A, E, G, 13A). It is therefore reasonable to transfer the species to *Phintelloides*.

Phintelloides undulata (Caleb & Karthikeyani, 2015) comb. nov.

Cosmophasis undulata Caleb & Karthikeyani, 2015: 97, figs 1-10.

Remarks: This species was described from Maharashtra State, from the male holotype only. It was originally placed in *Cosmophasis* due to resemblance in palp morphology. However, the general body color pattern is clearly different, resembling that of a few members previously placed in *Phintella*. We propose to place this species in the recently erected genus *Phintelloides* since it shares a synapomorphic character, i.e. the presence of a short white moustache on the clypeus, along with other characters such as a pale white band behind the anterior eye row, abdomen with a yellowish brown median band and two lateral whitish bands, and the palp with a comparably longer, more slender embolus, the tegulum with a small posterior lobe and a tegular bump, the RTA broader at its base and narrowing apically, with a hook-shaped tip (see Caleb & Karthikeyani, 2015: figs 1, 3, 6, 9). Thus we are convinced that its transfer to *Phintelloides* is fully justified.

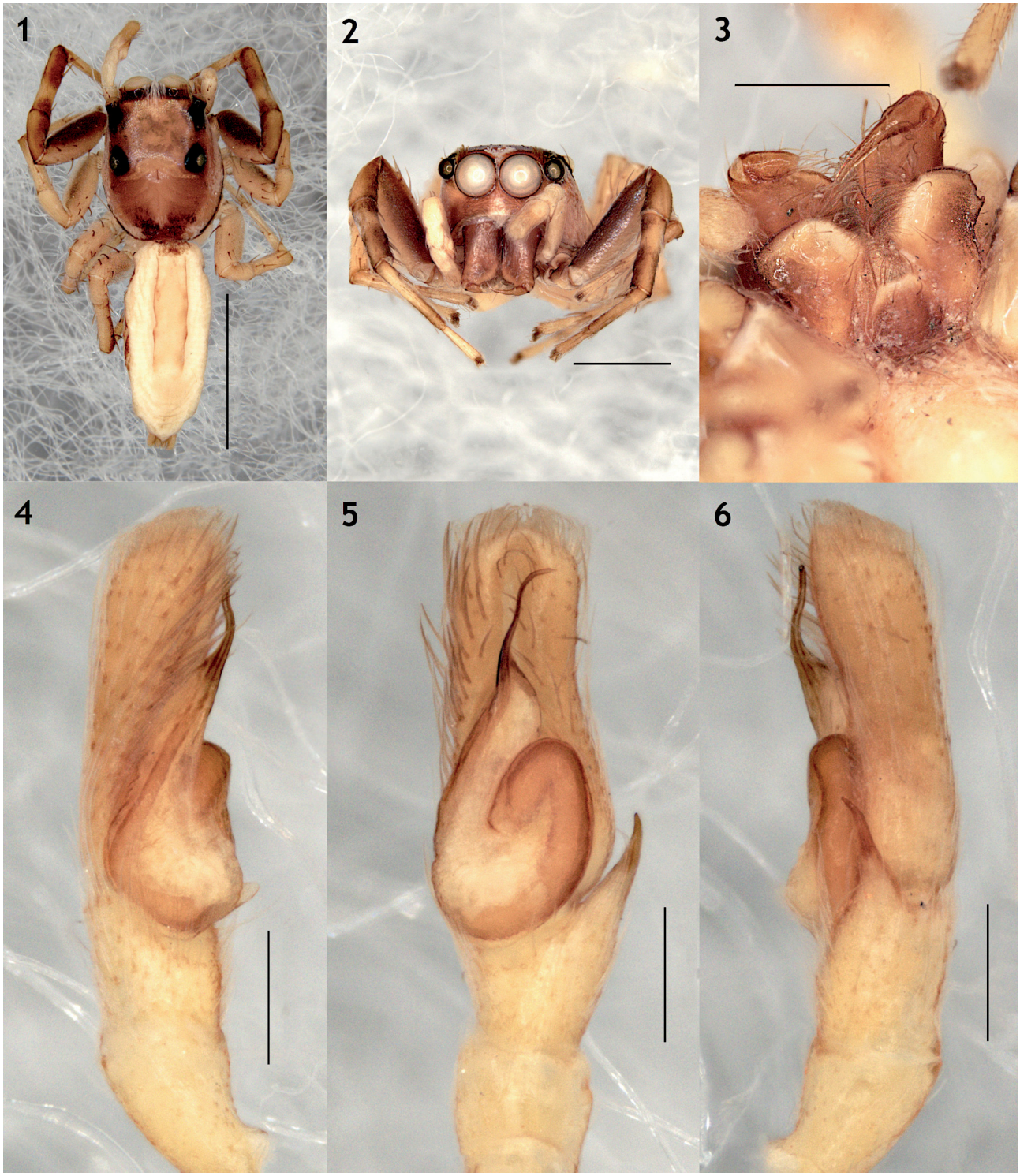
Phintelloides versicolor (C.L. Koch, 1846)

Plexippus versicolor C.L. Koch, 1846: 103, fig. 1165.
Chrysilla versicolor Prószyński, 1973: 98, figs 1-7; Żabka, 1985: 211, figs 83-96.
Phintelloides versicolor Kanesharatnam & Benjamin, 2019: 22.

For a complete list of taxonomic references see the World Spider Catalog (2020).

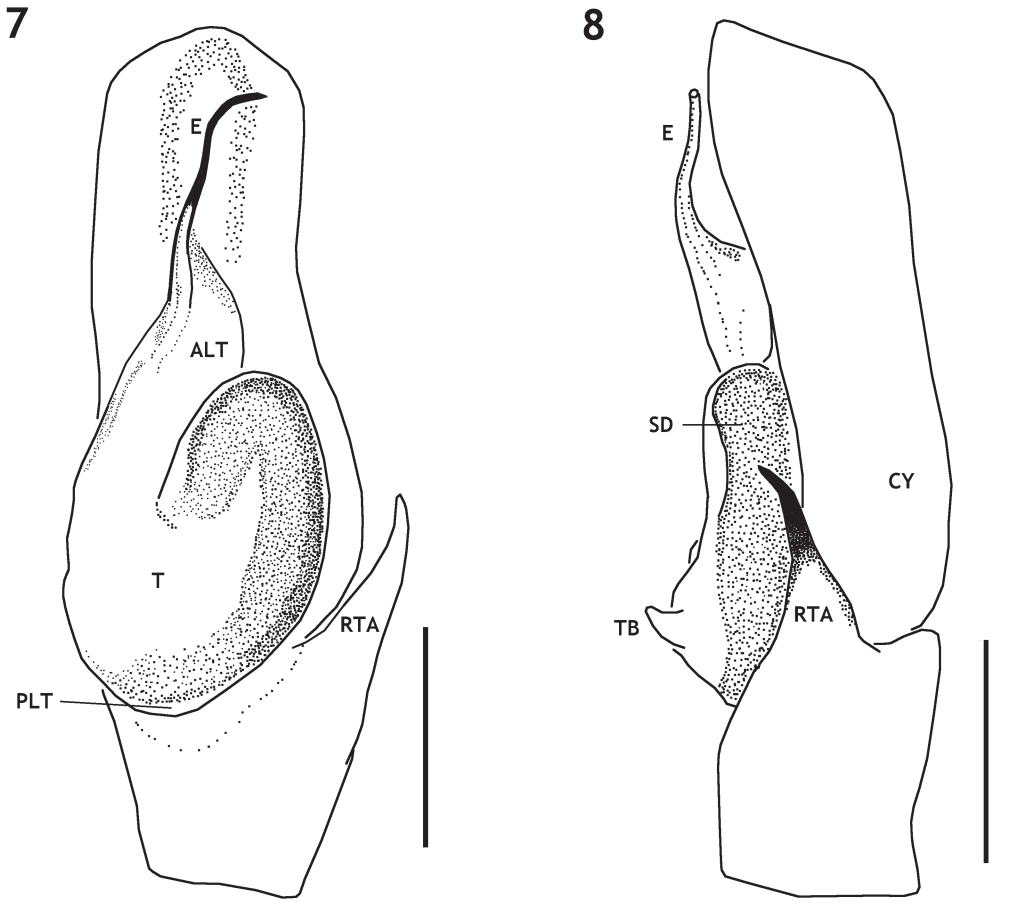
Specimens examined: NZC-ZSI 6945/18; 2 males, 2 females; west bank of Lacro River, 1525 m a.s.l., Moreh, Manipur, India; 13.IV.1992; leg. A.K. Hazra

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Figs 1-6. *Phintelloides manipur* Caleb sp. nov., male holotype. (1) Habitus, dorsal view. (2) Frontal view. (3) Chelicerae, maxillae and labium, ventral view. (4) Left male palp, prolateral view. (5) Same, ventral view. (6) Same, retrolateral view. Scale lines: 2 mm (1); 1 mm (2); 0.5 mm (3); 0.2 mm (4-6).

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Figs 7-8. *Phintelloides manipur* Caleb sp. nov., male holotype. (7) Left male palp, ventral view. (8) Same, retrolateral view. Abbreviations: ALT = apical lobe of tegulum; CY = cymbium; E = embolus; SD = sperm duct; PLT = proximal lobe of tegulum; RTA = retrolateral tibial apophysis; T = tegulum. Scale lines: 0.2 mm (7-8).

& party. – NZC-ZSI 7035/18; 1 female; Rain Forest Research Institute campus, 26.7824N, 94.2941E, 97 m a.s.l., Jorhat, Assam, India; 08.III.2019; leg. A. Rameshkumar. – NZC-ZSI 1542/17; 3 males, 2 females; Tharrawaddy, Myanmar (= Burma); leg. Oates; det. Thorell.

Distribution: India (new record), Myanmar (new record), China, Korea, Taiwan, Japan, Malaysia, Indonesia (Sumatra). Introduced to USA (Hawaii) (World Spider Catalog, 2020).

DISCUSSION

The Indian salticid fauna is currently represented by 257 species in 90 genera, and the tribe Chrysillini by 41 species in 12 genera (Maddison, 2015; Prószyński, 2016; Caleb, 2019). The following genera are included in the tribe Chrysillini, with the representative species numbers given in brackets: *Chrysilla* Thorell, 1887 (2); *Epocilla* Thorell, 1887 (4); *Heliophanus* C. L. Koch, 1833 (1); *Icius* Simon, 1876 (3); *Menemerus* Simon, 1868 (6); *Nandicius* Prószyński, 2016 (4); *Nepalicius* Prószyński, 2016 (1); *Okinwaicius* Prószyński, 2016 (2); *Phintella* Strand, in Bösenberg & Strand, 1906 (11); *Phintelloides* Kanesharatnam & Benjamin, 2019 (5); *Rudakius* Prószyński, 2016 (1); *Siler* Simon, 1889 (1).

With the present study the diversity of *Phintelloides* species in India increases from a single species to five. Two of these, *P. jesudasi* and *P. versicolor*, are known from both sexes and the remaining three are known from one sex only. The new species (*P. manipur* sp. nov.) is described based on the male sex, while another species (*P. singhi* comb. nov.) is known only from the female. At the moment of writing this text, the holotype of *P. singhi* comb. nov. had not yet been received by NZC-ZSI and therefore could not be re-examined, denying us the opportunity to better characterize the species and to rule out the possibility that the male of the new species is conspecific with the female of *P. singhi* comb. nov. However, we consider it highly unlikely that the type of the new species is conspecific with the type of *P. singhi* comb. nov. since the localities of both species lie 1700 km apart, in different biogeographic zones. *Phintelloides*

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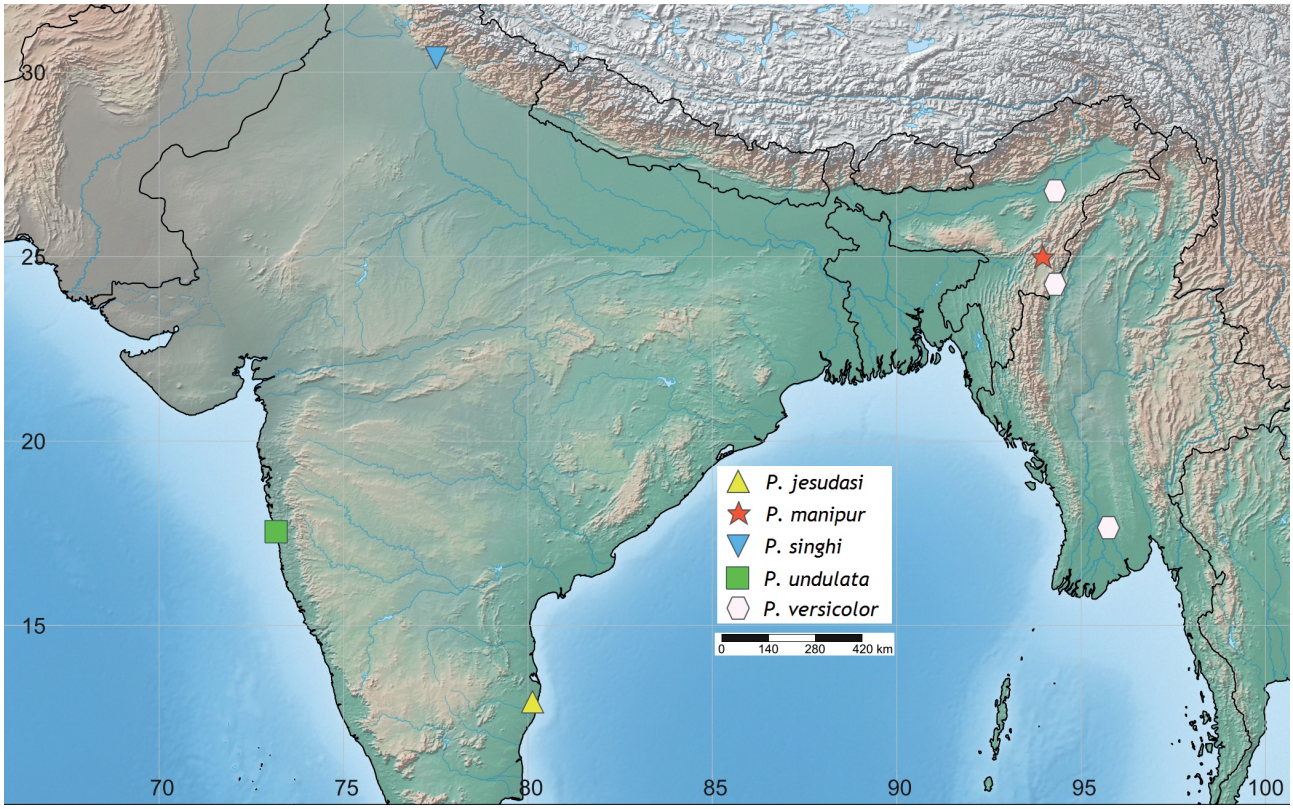


Fig. 9. Localities of *Phintelloides* species in India and Myanmar.

singhi comb. nov. occurs in the Shivalik foothills in the northwest Himalayan region and *P. manipur* sp. nov. in the northeastern hills of the Indo-Burma biodiversity hotspot (Fig. 9). Moreover, the actual diversity of *Phintelloides* in India may be underestimated due to inadequate sampling across the Indian subcontinent. Besides, the quite short embolus of the *P. manipur* sp. nov. holotype presumably corresponds with a relatively short insemination ducts in the conspecific female, as it can be seen in *P. brunne* (see Kanesharatnam & Benjamin, 2019: figs 10 G-H, 11A-D). The epigyne of *P. singhi* comb. nov. is similar to that of *P. orbisa,* which has longer ducts than *P. brunne,* and thus it can be expected that the *P. singhi* comb. nov. male has a longer embolus than that of *P. manipur* sp. nov. Therefore we have good reasons to believe that the male holotype of *P. manipur* sp. nov. and the female holotype of *P. singhi* comb. nov. are not conspecific. This assumption must, however, be confirmed by new specimens of both sexes from their respective type localities.

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