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**SPECIES OF THE GENUS *MEOTIPA* SIMON, 1895
WITH DESCRIPTIONS OF TWO NEW SPECIES FROM
SRI LANKA AND ONE FROM CHINA
(ARANEAE: THERIDIIDAE)**

Suresh. P. Benjamin & Mathura Tharmarajan

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Species of the genus *Meotipa* Simon, 1895 with descriptions of two new species from Sri Lanka and one from China (Araneae: Theridiidae)

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Suresh. P. Benjamin^{1*} & Mathura Tharmarajan²

National Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka.

¹Suresh P. Benjamin - email: suresh.benjamin@gmail.com

<https://orcid.org/0000-0003-4666-0330>

²Mathura Tharmarajan - email: mawva9@gmail.com

*Corresponding author

ABSTRACT

Long-legged Theridiidae of the genus *Meotipa* Simon, 1895, characterized by distinctive flattened black spines on the abdomen and legs, are commonly found in the foliage of tropical rainforests across the Oriental region, including Sri Lanka and China. In this work, we describe three new species: *Meotipa sujii* Benjamin & Tharmarajan **sp. nov.** (♂♀), *Meotipa kudawaensis* Benjamin & Tharmarajan **sp. nov.** (♀), both endemic to Sri Lanka, and *Meotipa wuzhishanensis* Benjamin **sp. nov.** (♂♀) found only in China. These species align with the diagnostic characters provided by Deeleman-Reinhold (2009), supporting the distinct status of *Meotipa* from *Chryso* O. Pickard-Cambridge, 1882. Notably, the *spiniventris*-group, marked by black spines on the abdomen and/or legs, appears morphologically distinct from larger-bodied *Meotipa* species, with potential differentiation in genital structures.

Keywords: Arachnida, biodiversity, Ceylon, cobweb spiders, endemics, Indian subcontinent, systematics, taxonomy.

INTRODUCTION

Spiders of the family Theridiidae Sundevall, 1833, commonly known as comb-footed spiders, are the fourth largest in number of species within Araneae Clerck, 1757 comprising 2579 species classified in 129 genera (World Spider Catalog, 2024). Theridiids are small to medium-sized spiders. They possess a ventral comb on the fourth tarsus for throwing silk blobs (hence the common name) to subdue prey (Benjamin & Zschokke, 2003; Foelix, 2011; Wheeler *et al.*, 2017). Few studies have explored the theridiid of Sri Lanka: currently, only 47 nominal species are recorded for the island (World Spider Catalog, 2024). Most of these records are historical taxonomic descriptions. However, as a recent study on comb-footed spiders demonstrated, many new species remain to be discovered (Tharmarajan & Benjamin, 2021, 2022).

The genus *Meotipa* Simon, 1895 includes long-legged spiders characterised by prominent, flattened black spines on their abdomen and legs, often found sheltering under broad leaves (Deeleman-Reinhold, 2009; Deng *et al.*, 2022). *Meotipa* was originally synonymized under *Chryso* O.P.-Cambridge, 1882 by Levi & Levi (1962) but was reinstated by Deeleman-Reinhold (2009), who redescribed its type species, *M. picturata* Simon, 1895. This species, with its type locality in Kodai Kanal, India, is widespread across Southeast Asia and is now documented in Sri Lanka. It should be noted that *Meotipa* is considered sister to *Chryso* within Theridiinae

(Kulkarni *et al.* 2017). Currently, *Meotipa* comprises 20 species distributed throughout the Oriental region (World Spider Catalog, 2024). A detailed systematic review of the genus is provided by Kulkarni *et al.* (2017).

In this study, we primarily examine the diversity of Sri Lankan *Meotipa* species based on recent collections, describing two new species from Sri Lanka and one additional new species from China.

MATERIALS AND METHODS

Sampling was done by beating vegetation and hand collection. Specimens were preserved in 70% ethanol and were examined using a Leica S9E binocular stereomicroscope (Leica Microsystems Limited, Wetzlar, Germany). Male palps (usually the left) were dissected and immersed in Kaiser's glycerol gelatin (Merck KGaA, Darmstadt, Germany), slide mounted, observed, and illustrated with the aid of a Leica DM3000 LED stereo microscope with an attached drawing tube. The female epigastric region was dissected and digested in a pancreatin solution for about 3–7 days (Álvarez-Padilla & Hormiga 2008), slide-mounted, and illustrated as described in Tharmarajan & Benjamin (2022). Digital images of the specimens were taken with a Leica MC170 HD camera mounted on a Leica M205C stereomicroscope using the software package Leica application suite, LAS version 4.6.2. Acquired image stacks of different depths (20–50 images per stack) were assembled using Helicon Focus (version 6, Helicon Soft Ltd) to create a single image with the entire specimen in focus. Final images were edited using Adobe Photoshop Version CS6. Body length was considered as total length of prosoma + total length of opisthosoma (excluding spinnerets). A description of morphological terminology follows Agnarsson (2004). All measurements are in millimetres. Types and other specimens of the new species described herein are currently in the National Institute of Fundamental Studies (NIFS) and will be deposited in the National Museum of Sri Lanka, Colombo.

Abbreviations. ALE, anterior lateral eyes; AME, anterior median eyes; C, conductor; CD, copulatory duct; CO, copulatory opening; Cy, cymbium; E, embolus; ET, epigynum tooth; FD, fertilization duct; Fm, femur, MA, median apophysis; Mt, metatarsus, PLE, posterior lateral eyes; PME, posterior median eyes; Pt, patella, S, spermathecae; SC, sub conductor; ST, subtegulum, T, tegulum; Ta, tarsus; Ti, tibia; TTA, theridiid tegular apophysis.

RESULTS

Taxonomy

Class Arachnida Cuvier, 1812

Order Araneae Clerck, 1757

Family Theridiidae Sundevall, 1833

***Meotipa* Simon, 1895**

Type species. *Meotipa picturata* Simon, 1895 by original designation.

Diagnosis. See Deeleman-Reinhold (2009).

Composition. 23 species, including the three new species described here. *M. andamanensis* (Tikader, 1977), *M. argyrodiformis* (Yaginuma, 1952), *M. bituberculata* Deeleman-Reinhold, 2009, *M. capacifaba* Li, Liu, Xu & Yin, 2020, *M. impatiens* Deeleman-Reinhold, 2009, *M.*

kudawaensis sp. nov., *M. luoqiae* Lin & Li, 2021, *M. makiling* (Barrion-Dupo & Barrion, 2015), *M. menglun* Lin & Li, 2021, *M. multuma* Murthappa, Malamel, Prajapati, Sebastian & Venkateshwarlu, 2017, *M. pallida* Deeleman-Reinhold, 2009, *M. picturata* Simon, 1895, *M. pseudopicturata* Deng, Agnarsson, Chen & Liu, 2022, *M. pulcherrima* (Mello-Leitão, 1917), *M. sahyadri* Kulkarni, Vartak, Deshpande & Halali, 2017, *M. spiniventris* (O. Pickard-Cambridge, 1869), *M. striata* Deng, Agnarsson, Chen & Liu, 2022, ***M. sujii* sp. nov.**, *M. thalerorum* Deeleman-Reinhold, 2009, *M. ultapani* Basumatary & Brahma, 2019, *M. vesiculosa* Simon, 1895, *M. zhengguoi* Lin & Li, 2021 and ***M. wuzhishanensis* Benjamin sp. nov.**

Distribution. Primarily the oriental region was introduced worldwide through the ornamental plants trade.

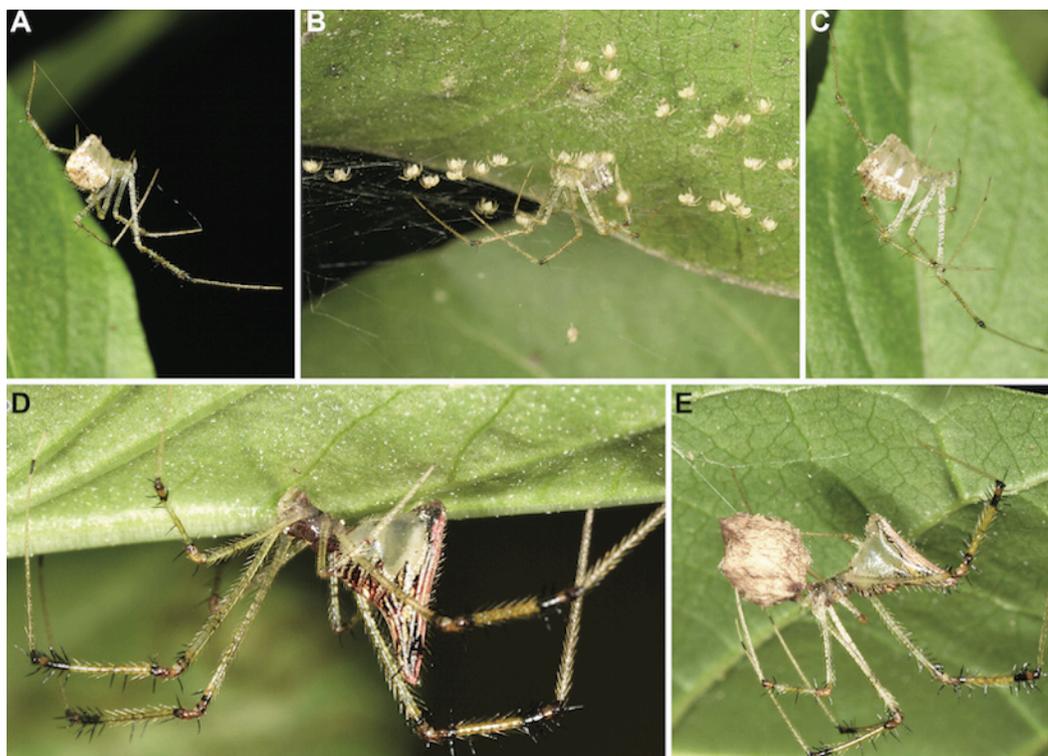


Figure 1. *Meotipa* species of Sri Lanka in life. A–C *Meotipa multuma*, female from Labugama FR. D–E *Meotipa picturata*, female from Nawalapitiya. Photos by Suresh P. Benjamin.

***Meotipa kudawaensis* sp. nov. (Figs 2A–J, 3A–B)**

LSID: urn:lsid:zoobank.org:act:6DB665EC-511E-4556-BB84-8B2EE097AFB4

Type material: Holotype: female. SRI LANKA: Sabaragamuwa Province: Rathnapura District, Sinharaja Forest Reserve, Kudawa, secondary forest, 06°26'26"N, 80°25'25"E, 367m, 6 March 2019, beating, S.P. Benjamin (IFS_THE_131).

Etymology: The specific epithet refers to the type locality.

Diagnosis: Distinguished from *M. picturata* by the pointed ET and from other species described here by the short CD (Figs 3A, B). Distinguished from other congeners by the following: posterior tip of abdomen (sickle-like, curved backward) (Figs 2A–B). Epigynum with deep, round, pit-like atrium, anterior boarder with a prominent tooth (Figs 3A–B).

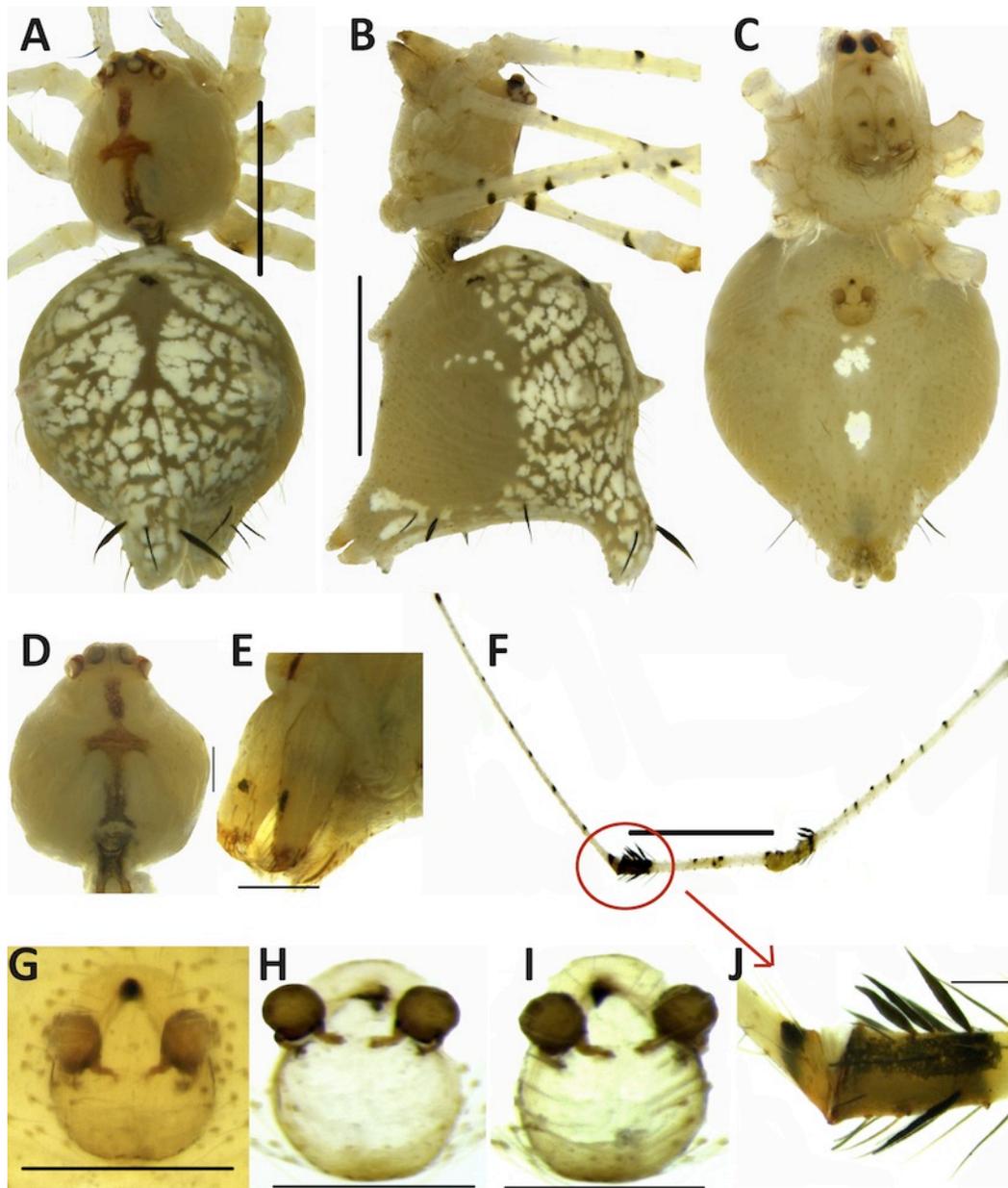


Figure 2. *Meotipa kudawaensis* sp. nov. A dorsal view. B lateral view. C ventral view. D prosoma with characteristic marking, lateral view. E chelicera, lateral view. F, J leg I with flattened black-coloured setae on femur and tibia. G ventral view (not cleared). H same, dorsal view (cleared). I same, ventral view (cleared). Scale bars = 0.1mm (G), 0.2 (D–F, H–I) =, 1mm (A–C).

Description of holotype female: Since we only have one damaged specimen, no measurements were taken. Prosoma, ventral abdomen, sternum, labium, pedipalp, chelicera and legs uniform pale yellow in colour (Figs 2A–C). Prosoma; longer than wide, hinder part widened, eye region tapered to form two rows of eyes, median thoracic segment of dorsal prosoma with characteristic brown-orange cross mark (Fig. 2A). Almost all eyes similar in size, anterior medians black and others pearl white with reddish brown outline. Sternum; triangular, wider at 1st coxae and tapered towards 4th coxae to form a blunt end. Chelicera; longer than endites. Opisthosoma;

rounded, dorsal opisthosoma fully marked with white patches, posterior upper end of opisthosoma with hook-like projection facing downward. Spinnerets; angularly placed at lower end of opisthosoma, lateral and dorsal sides of posterior opisthosoma tip supplied with lanceolate spiny setae. Legs; longer, yellow with black dots, joints yellow-orange shaded with 5–6 spiny-setae (Figs 2F, J). Epigynum: opening relatively large, anterior boarder with a prominent tooth (scape?), CD and Ed short, small rounded S (Fig. 3A).

Male: Unknown.

Natural History: The holotype was collected by beating foliage up to a height of 2 metres.

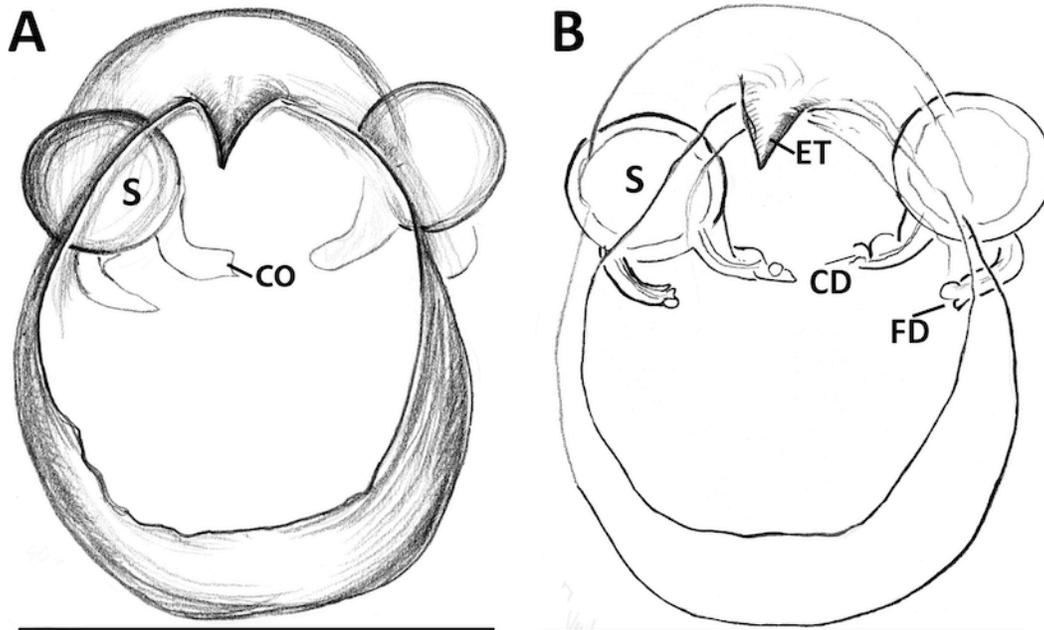


Figure 3. Genital morphology of *Meotipa kudawaensis* sp. nov. A, epigynum, ventral view. B vulva, ventral view. Scale bars = 0.2mm (A–B).

***Meotipa multuma* Murthappa, Malamel, Prajapati, Sebastian & Venkateshwarlu, 2017 (Figs 1A–C, 4A–I, 5A–H, 6A–C)**

Meotipa multuma Murthappa *et al.*, 2017: 592, figs 3A–E, 4E–F.

M. multuma Sekhar & Sunil Jose, 2021: 81, figs 1–8.

Material examined: SRI LANKA: Central province: 1♀, Matale District, Bowatenna, 07.66°N, 80.69°E, 252m, beating, 15 February 2007, N. Athukorala *et al.* (IFS_THE_146); 3♀, same locality, 10 February 2016, S.P. Benjamin *et al.* (IFS_THE_141–143); 1♀, Nuwara Eliya District, Agarabobath FR, 06.84°N, 80.68°E, 1660–1880m, hand collection, 10–21 February 2007, Z. Jaleel (IFS_THE_129); 2♀, Kandy District, Kandy, Deltota, Loolcondera estate, 07.15°N, 80.70°E, 1480m, beating, 23 March 2010, S.P. Benjamin and N. Athukorala (IFS_THE_180–181); 3♀, same locality, hand collection, 13 July 2010, S.P. Benjamin and S. Batuwita (IFS_THE_174–176); 1♂, same locality, hand collection, 25 January 2011, S.P. Benjamin and S. Batuwita (IFS_THE_172); 2♀, same locality, 11 October 2018, S.P. Benjamin



Figure 4. *Meotipa multuma*, male. A dorsal view. B lateral view. C ventral view. D leg I without brush-like setae. E prosoma. F chelicera. G palp, prolateral view. H same, ventral view. I retrolateral view. Scale bars = 0.2mm (F, G–I), 0.5mm (A–C), 2mm (D).

et al. (IFS_THE_173, 178); 1♀, Kandy District, Corbett's Gap, Knuckles range, 07.36°N, 80.83°E, hand collecting, 12 August 2010, S.P. Benjamin and S. Batuwita (IFS_THE_823); 1♀, Nuwara Eliya District, Upcot, 06.77°N, 80.60°E, 14 February 2012, 1850m, beating, S.P. Benjamin and N. Athukorala *et al.* (IFS_THE_167); 2♀, Kandy District, Hantane, 07.25°N, 80.61°E, 200m, beating, 18 December 2013, N. Athukorala *et al.* (IFS_THE_138–139); 1♀, Kandy District, Udawattakelle FR, 07.30°N, 80.64°E, 580m, litter, 24 April 2015, N. Athukorala (IFS_THE_140); 1♀, same locality, beating, N. Athukorala *et al.* (IFS_THE_132); 1♀, Matale District, IFS arboretum, 07.87°N, 80.68°E, 184m, beating, 16–18 February 2019, N. Athukorala

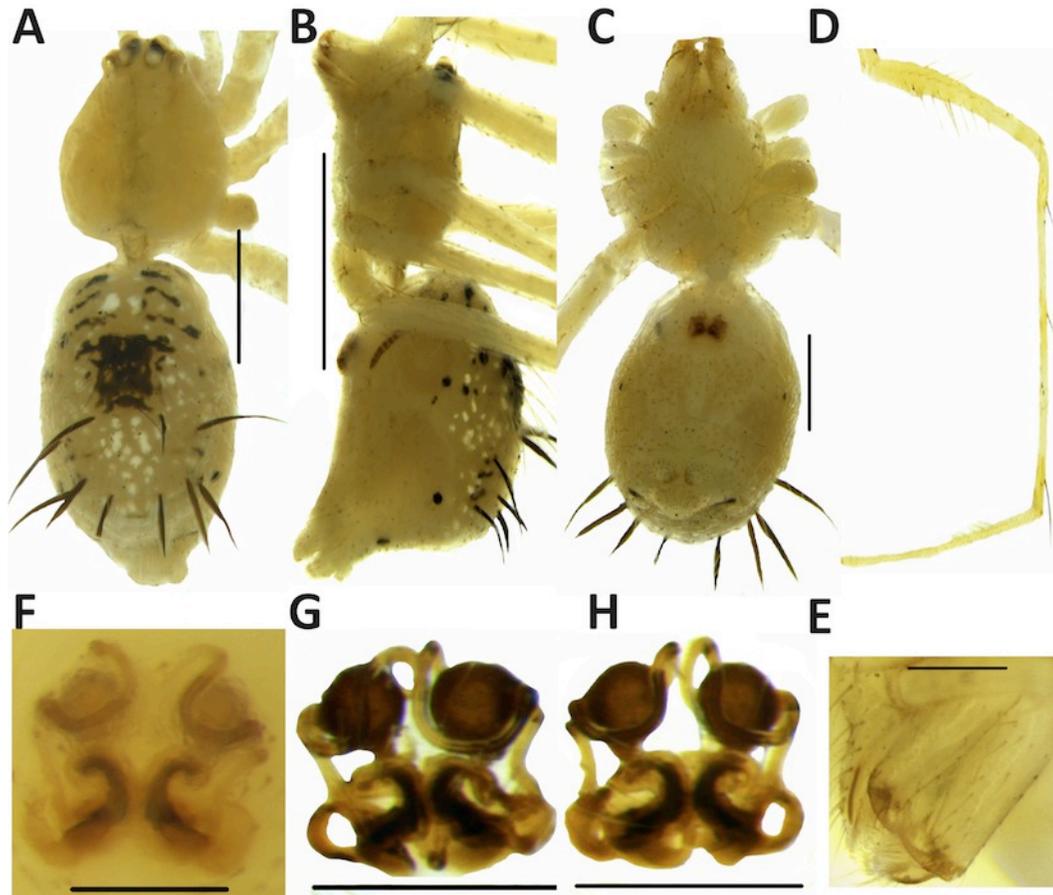


Figure 5. *Meotipa multuma*, female. A dorsal view. B lateral view. C ventral view. D leg without brush-like setae. E chelicera. F epigynum, ventral view (not cleared). G vulva, dorsal view (cleared). H same, ventral view. Scale bars = 0.2 mm (E–H), 0.5 (A–C), 2 mm (D).

et al. (IFS_THE_133); 1♂, Kandy District, Nawalapitiya, Malanda, Side of B506, 07.01°N 80.52°E, 585m, Beating, S.P. Benjamin and N. Athukorala (IFS_THE_907); 1♀, same locality 07 July 2022, Benjamin S.P. and N. Athukorala. Uva province: 1♂, Badulla District, Ohiya, 06.84°N, 80.88°E, 1280m, beating, 7 December 2011, S.P. Benjamin and N. Athukorala (IFS_THE_179); 2♀, 1♂, same locality, beating, 26 May 2012, S.P. Benjamin *et al.* (IFS_THE_183–185), 1♂, same locality, 1280m, beating, 26 May 2012, S.P. Benjamin *et al.* (IFS_THE_821); 1♂, Badulla District, Namunukula peak, along Passara-Ella road, 06.86°N, 81.10°E, 1012m, beating, 27 July 2012, S.P. Benjamin and N. Athukorala (IFS_THE_177); 1♀, Moneragala District, Nilgala FR, 07.19°N, 81.41°E, 122m, beating, 23 January 2018, S.P. Benjamin *et al.* (IFS_THE_168). North Western Province: 1♂, Kurunegala District, Kurunegala, Nikarawaratiya, hand collection, 1–13 February 2007, Z. Jaleel (IFS_THE_147); 1♀, same locality and collection data (IFS_THE_162); 3♂, Ethagala mountains, 07.49°N, 80.37°E, 300m, hand collecting, 1–28 February 2007, Z. Jaleel (IFS_THE_135–137); 3♂, same locality and collection data (IFS_THE_159–161); 1♂ (IFS_THE_134): same locality, hand collecting, 24 November 2009, S.P. Benjamin and Z. Jaleel; 2♂, 1♀, same locality, hand collecting, 13 May 2012, Z. Jaleel (IFS_THE_169–171); 1♂, same locality, 07.49°N, 80.37°E, 190m, beating, 8

April 2015, S.P. Benjamin *et al.* (IFS_THE_153). Sabaragamuwa province: 4♂, Rathnapura District, Sinharaja FR Morning Side, hand collecting, 23 November 2007, S.P. Benjamin and Z. Jaleel (IFS_THE_163–166); 3♀, same locality, beating, 23 November 2007, S.P. Benjamin and Z. Jaleel (IFS_THE_156–158); 1♀, Rathnapura District, Sinharaja FR, Kudawa, Secondary FR, 06.44°N, 80.42°E, 367m, beating, 6 March 2019, S.P. Benjamin *et al.* (IFS_THE_822). Western province: 5♀, Kaluthara District, Ingiriya, Bodinagala FR, 06.73°N, 80.16°E, 102m, hand collection, 10 February 2007, S.P. Benjamin and Z. Jaleel (IFS_THE_148–152); 1♀, Colombo District, Labugama FR, 06.85°N, 80.28°E, beating, 21 April 2015, S.P. Benjamin and N Athukorala (IFS_THE_190).

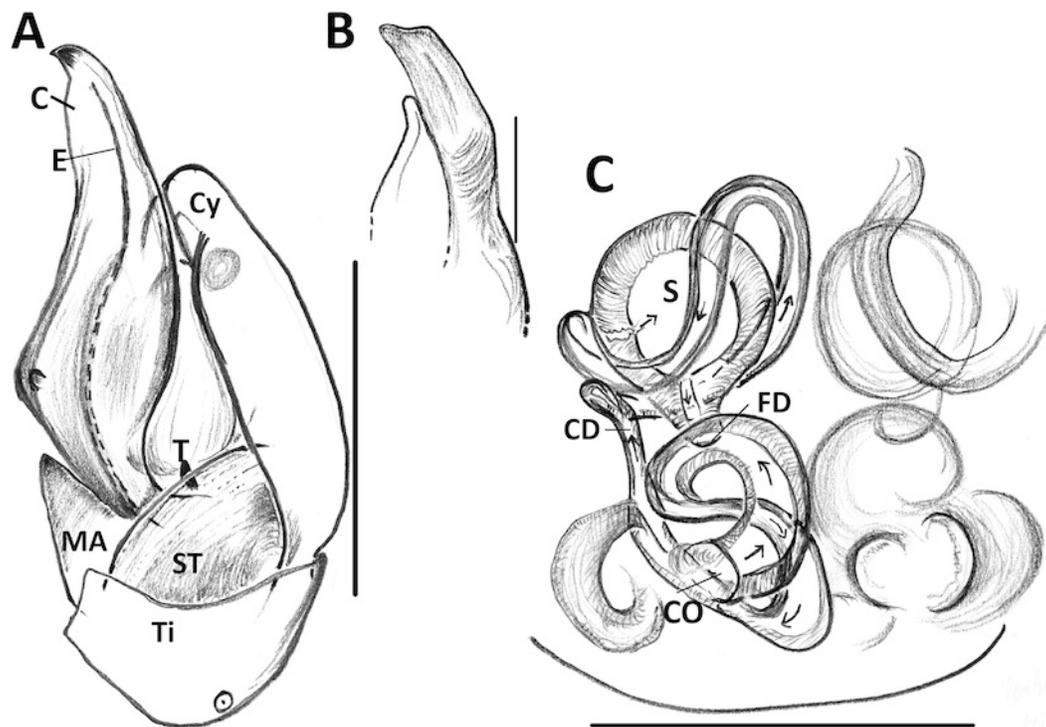


Figure 6. A–C: *Meotipa multuma*. A male palp, lateral view. B, tip of conductor, lateral view. C. vulva/epigynum, ventral view. Scale bars = 0.2mm.

Diagnosis: Distinguished from *M. picturata* and *M. kudawaensis* **sp. nov.** by the absence of ET and longer CD (Fig. 6C), from *M. spiniventris* by the rounded CO and *M. sujii* **sp. nov.** by the anterior sclerotized margin of the epigynum (Figs 17B, C). Distinguished from other congeners by the following: shape of the C (large, widest at the midpoint, concave tip) (Figs 10A, B). Epigynum without deep pit-like atrium, copulatory openings separate, CD long, revolves around S (Fig. 6C). Dorsal prosoma with a faint black midline, characteristic concentrated larger black patch on mid-dorsal opisthosoma; 3–4 bilateral horizontal black narrow lines on anterior dorsal opisthosoma (Figs 4A, E, 5A, B).

Description of non-type male: Total length 2.6. Prosoma; yellow, light median black-brown narrow line, wider, circular, length 1.15, width 0.84. Chelicera, endites, labium, sternum, prosoma, legs and ventral opisthosoma pale yellow (Figs 4A–C). Ocular area; narrow, not projected beyond clypeus, in lateral view, eye region slightly projected. Eyes; relatively similar

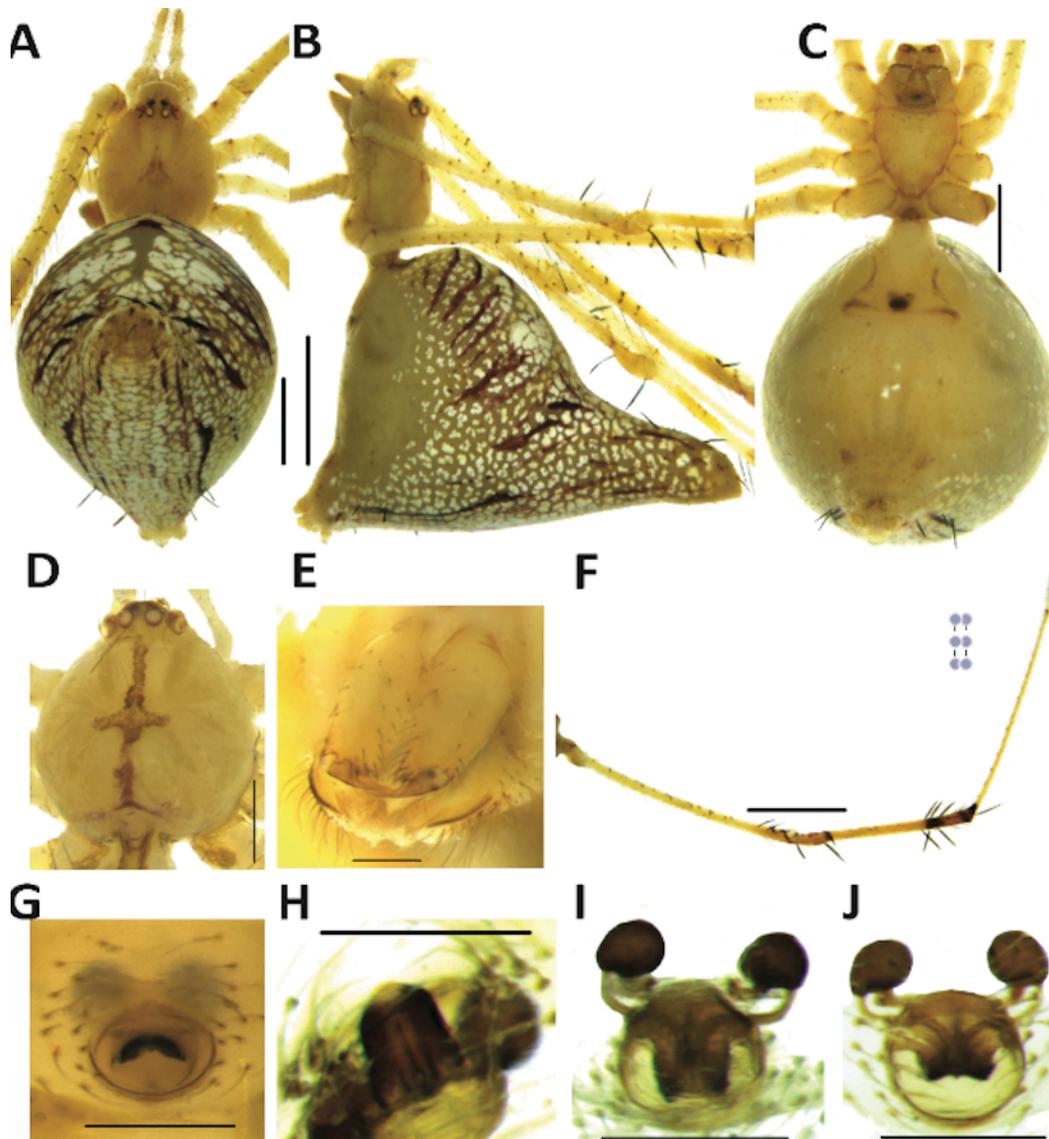


Figure 7. A–J. *Meotipa picturata*, female. A dorsal view. B, lateral view. C ventral view. D, prosoma with characteristic marking. E chelicera. F leg I with flattened black-coloured setae on femur and tibia. G, epigynum, ventral view (not cleared). H, same, (cleared) atrium with copulatory opening, ventral view. I, same, dorsal view (cleared). J, same, ventral view (cleared). Scale bars = 0.2 mm (G–J), 0.5 (D–E), 1 mm (A–C), 2 mm (F).

in size, arranged in two rows, posterior AMEs, others silver-white with reddish-brown outline, formation of medians square, laterals fused not very far from medians, between eyes narrow long black-brown 2–3 setae, eye measurements: AME 0.1, ALE 0.1, PME 0.1, PLE 0.1, PME–PME 0.06, PLE–PLE 0.34, ALE–PME 0.1, ALE–PLE 0 (Fig. 4E). Clypeus; flat. Labium; short, separated from sternum by a visible seam. Chelicera; smooth, as long as endites, fangs cylindrical and transparent. Sternum; longer than wide, heart shaped, length 0.95, sternum width 0.57. Pedicel inserted closer to the anterior apex of opisthosoma. Opisthosoma; narrow, pale yellow, dorsally black and white small patches or lines, dorsal anterior opisthosoma with 3–4 pair of black horizontal stripes on both sides, lines constricted in mid-way, Mid-dorsal region with characteristic large black patch, approximately similar length to prosoma, for lateral view square shape excluding spinnerets, dorsal posterior opisthosoma end (corner above spinnerets)

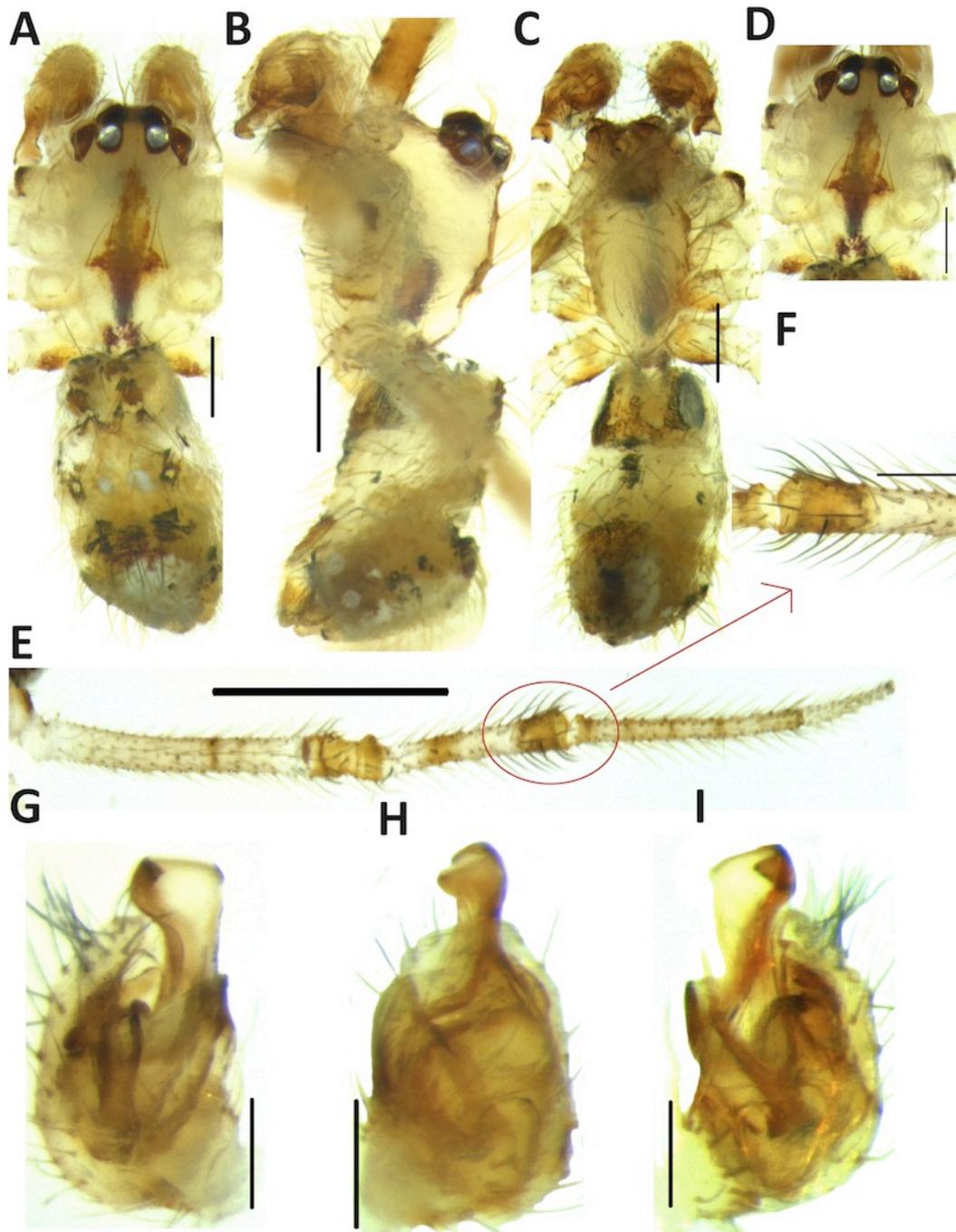


Figure 8. A–I. *Meotipa picturata*, male. A–D habitus. E, F left leg I with flattened, black-coloured setae. G–I left palp. A, D dorsal view. B, E, F, G, I lateral view. C, H ventral view. Scale bars = 0.2 mm (A–B).

distributed with black-brown 8–10 bunch of long, strong lanceolate spines, length 1.45, width 0.84. Spinnerets; uniform pale yellow, angularly located at ventral lower posterior opisthosoma end. Legs; pale yellow with lighter brown bands, longer, patella with 1–2 long, lanceolate black spines, leg measurements: leg I: Fm 2.8, Pt 0.5, Ti 2.35, Mt 3.15, Ta 0.8; leg II: Fm 2.0, Pt 0.5, Ti 1.35, Mt 1.95, Ta 0.6; leg III: Fm 1.25, Pt 0.6, Ti 1.0, Mt 1.05, Ta 0.5; leg IV: Fm 1.95, Pt 0.5, Ti 1.25, Mt 1.5, Ta 0.5 (Fig. 7D). Palpal tibia; short, broaden and tapered towards patella. Tibial

rim; concaved. Cymbium; entire and very shorter than conductor with a vague cymbial hook. Lightly sclerotized conductor, widest at md point, covers whole length of embolus, concave tip. Embolus; not visible outside. TTA not visible (Figs 4G–I, 5A, B).

Description of non-type female: Most morphology as in male, but differs as below: Total length 2.43, Prosoma length 0.93, width 0.81, opisthosoma length 1.44, width 0.93, eye measurements: AME 0.12, ALE 0.1, PME 0.1, PLE 0.1, PME-PME 0.1, PLE-PLE 0.1, ALE-PME 0.08, ALE-PLE 0, leg measurements: leg I and leg II missing, leg III: Fm 1.35, Pt 0.3, Ti 0.75, Mt 0.95, Ta 0.5; leg IV: Fm 2.5, Pt 0.5, Ti 1.5, Mt 2.0, Ta 0.75, length of pedicel 0.06, length of pedipalp 0.9, sternum length 0.73, sternum width 0.60. Female pedipalp with 2–3 spines. Epigynum without deep pit-like atrium, copulatory openings separate, CD long, revolves around S (Figs 5A–C, 6C).

Distribution: India, Sri Lanka (new record).

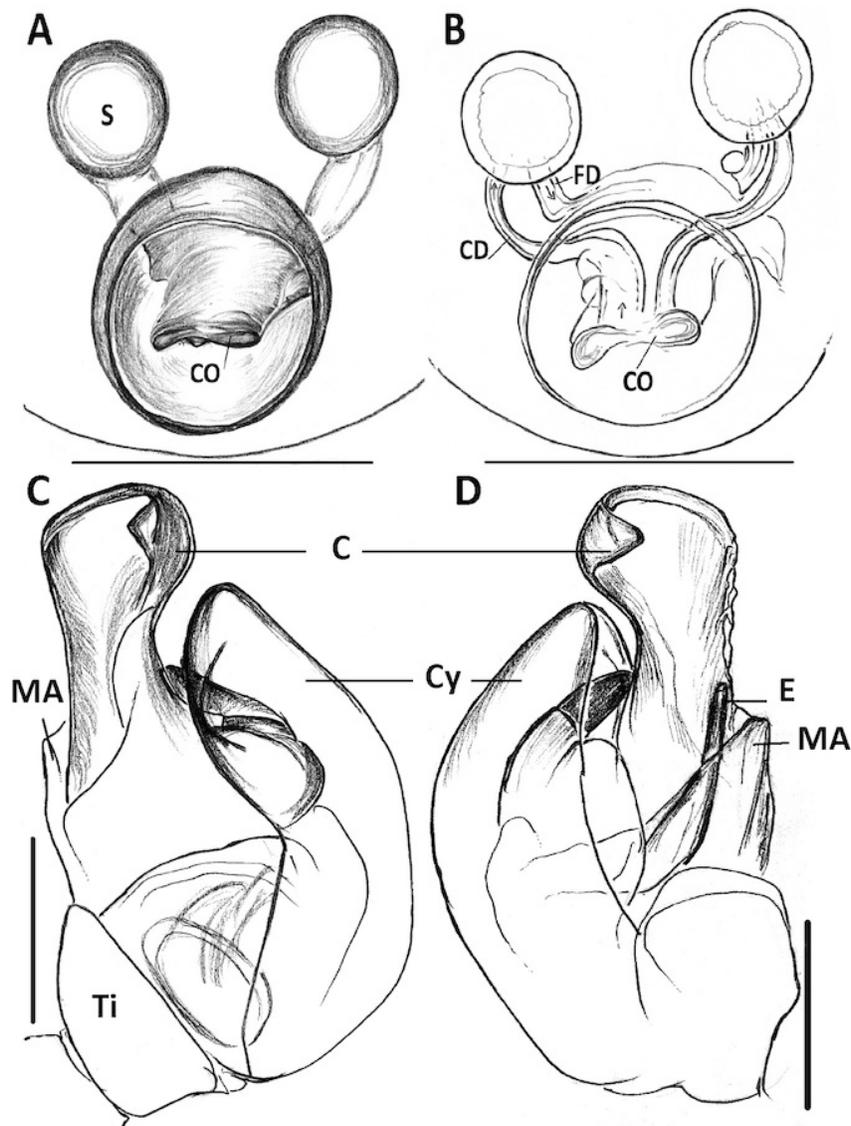


Figure 9. A–D. Genital morphology of *Meotipa picturata*. A female epigynum, ventral view. B vulva, ventral view. C–D, left palp. C, retrolateral view. D, prolateral view. Scale bars = 0.2mm (A–D).

Meotipa picturata* Simon, 1895 (Figs 1D–E, 7A–I, 8A–J, 9A–D)Meotipa picturata* Simon, 1895: fig. 133.*M. picturata* Levi & Levi, 1962: 47, figs 112–113.*M. picturata* Deeleman-Reinhold, 2009: 410, figs 1–3.*M. picturata* Kulkarni *et al.*, 2017: 515, f. 39–44.*M. picturata* Murthappa *et al.*, 2017: 590, figs 1A–J, 2A–F, 4A–D.*M. picturata* Deng *et al.*, 2022: 161, figs 3A–H, 9A.

Type material: Female, in MNHN (AR 2009) (Deeleman-Reinhold, 2009). Not examined. Originally described using specimens from Kodai Kanal, India. Redescribed by Deeleman-Reinhold (2009). See also Kulkarni *et al.* (2017).

Material examined: SRI LANKA: Central province: 3♀, Meemure, 07.43°N, 80.85°E, 890m, hand collection, 20 April 2010, S. Batuwitta (IFS_THE_73–75); 1♀, Matale District, IFS Arboretum, 07° 51' 34" N, 80° 40' 28" E, 180m, hand Collecting, 27 April 2010, S.P. Benjamin and S. Batuwitta (IFS_THE_125); 1♀, same locality, 07.86°N, 80.67°E, 180m, hand collection, 24 August 2010, S.P. Benjamin and S. Batuwitta (IFS_THE_79); 1♀, Kandy District, Knuckles range, 07.44°N, 80.78°E, 1446m, beating, 19 February 2015, N. Athukorala *et al.* (IFS_THE_077); 1♀, Matale District, IFS arboretum, 07.86°N, 80.67°E, 184m, beating, 19 October 2015, N. Athukorala *et al.* (IFS_THE_97); 1♀, same locality and collection data (IFS_THE_127); 1♀, same locality, 20 January 2016, S.P. Benjamin *et al.*; (IFS_THE_912); ♀, forest surrounding Bowatenna reservoir, 07.66°N, 80.69°E, 252m, litter, 10 February 2016, S.P. Benjamin *et al.* (IFS_THE_89–90); 25♀, Matale District, IFS arboretum, 07.86°N, 80.67°E, 184m, beating, 21 August 2018, N. Athukorala *et al.* (IFS_THE_100–124); 1♀, same locality, beating, 16–18 February 2019, N. Athukorala *et al.* (IFS_THE_98); 1♂, same locality, hand collection, 9–10 December 2021, M. Tharmarajan and A. Satkunanathan (IFS_THE_842); 1♀, same locality and collection data (IFS_THE_88); 5♀, same locality and collection data (IFS_THE_82–86); 5♀, same locality and collection data (IFS_THE_92–96). 1♀, Kandy District, Nawalapitiya, Malanda, 7.007403N 80.523618E, ca. 585m, 07 July 2022, S.P. Benjamin and N. Athukorala. North Central Province: 1♀, Anuradhapura District, Kodigala summit, 08.11°N, 80.65°E, 716m, hand collection, 28 June 2011, S.P. Benjamin and S. Batuwitta (IFS_THE_78); 2♀, same locality and collection data (IFS_THE_71–72). North Western Province: 1♀, Kurunegala District, Kurunegala, Ethagala mountains, 07.49°N, 80.37°E, 190m, litter, 8 April 2015, S.P. Benjamin *et al.* (IFS_THE_81); 1♀, same locality, beating, 8 April 2015, S.P. Benjamin *et al.* (IFS_THE_99). Sabaragamuwa Province: 1♀, Rathnapura District, Sinharaja FR, Kudawa, secondary forest, 06.44°N, 80.42°E, 367m, beating, 6 March 2019, S.P. Benjamin *et al.* (IFS_THE_76); 1♀, same locality, 11–13 October 2016, N. Athukorala *et al.* (IFS_THE_87). Western Province: 1♀, Kalutara District, Ingiriya, Bodinagala FR, 06.73°N, 80.16°E, 102m, beating, 10 February 2007, S.P. Benjamin and Z. Jaleel (IFS_THE_80).

Diagnosis: Distinguished from *M. kudawaensis* **sp. nov.** by the pointed ET and from other species described here by short CD (Figs 3A, B). Distinguished from other congeners by the following: shape of the C (large, concave, pointed lateral edge) (Figs 7G–I, 9C, D). Epigynum with deep, round, pit-like atrium, with prominent, dorsoventrally flattened scape, CO originating from lateral sides of the scape (Figs 8G–J. 9A, B). Opisthosoma, posterior projection is

characteristic. Females of *Meotipa sahyadri* Kulkarni, Vartak, Deshpande & Halali, 2017 possess a thin, taller opisthosoma projection. The palps of this species and that of *M. picturata* are identical, except for the length of E which is longer in *M. sahyadri*.

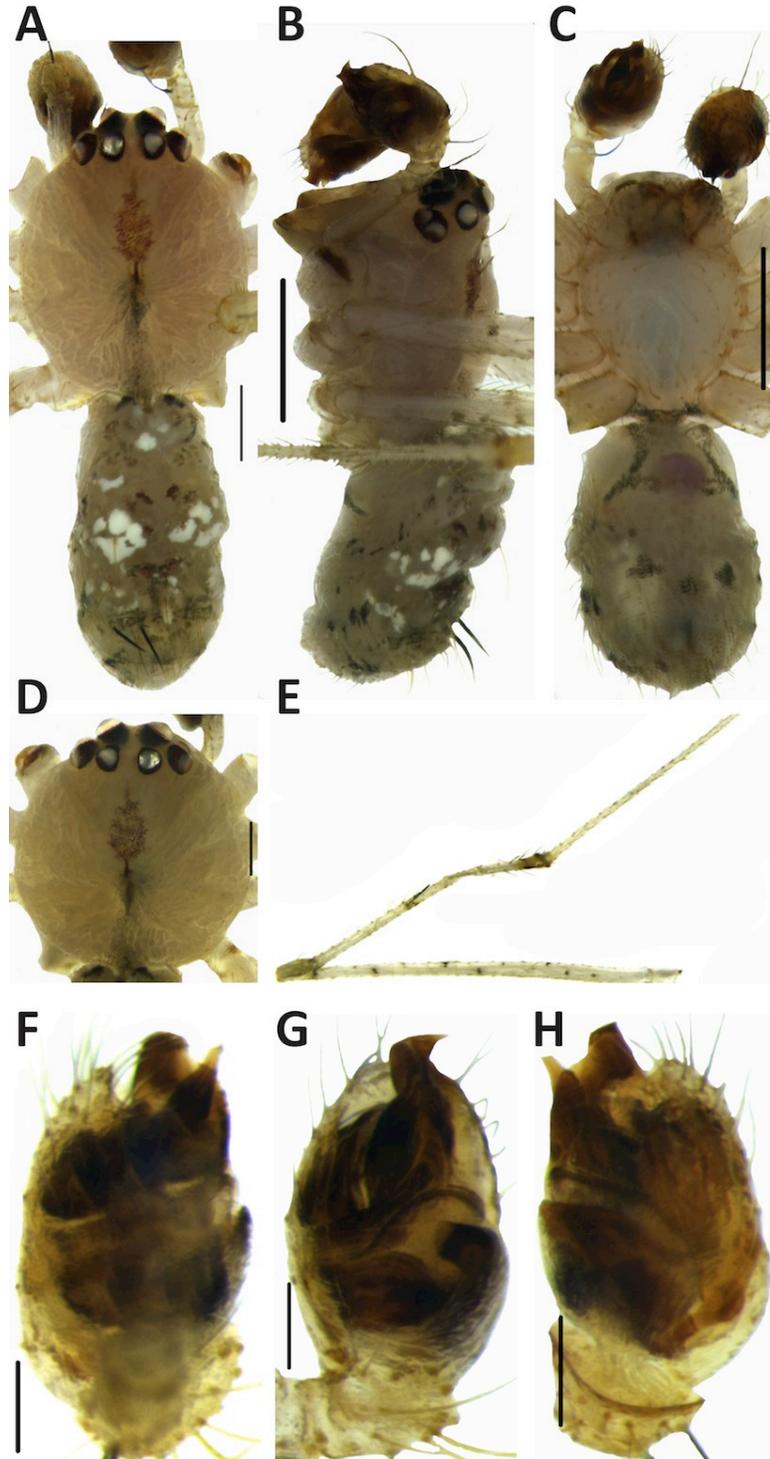


Figure 10. *Meotipa spiniventris*, male. A–D habitus. E left leg I. F–H, left palp. A, D dorsal view. B, E lateral view. C ventral view. F prolateral view. G ventral view; H retrolateral view. Scale bars = 0.1mm (F–H), 0.2mm (D, E), 0.5 (A–C), 1mm.

Description of non-type male: Total length 1.4, prosoma length 0.64, prosoma width 0.46, opisthosoma length 0.72, opisthosoma width 0.4. Similar to female except for the followings; very smaller than female, pale yellow colour. Opisthosoma; narrow, not with setae as in females, with small red, white and patches, no red lanceolate markings as in female. Eye measurements: AME 0.1, ALE 0.08, PME 0.1, PLE 0.08, PME-PME 0.06, PLE-PLE 0.4, ALE-PME 0.08, ALE-PLE 0. Leg measurements: leg I: Fm 1.4, Pt 0.2, Ti 0.94, Mt 1.3, Ta 0.5; leg II: missing; leg III: Fm 0.68, Pt 0.18, Ti 0.4, Mt 0.4, Ta 0.26; leg IV: Fm 1.3, Pt 0.2, Ti 0.9, Mt 1.1, Ta 0.4. Palp very transparent and creamy colour. Tibia short. Palpal tibial rim asymmetrically protruding, protruding rim faces palpal bulb, tibial rim with regular row of long strong transparent setae, tibia with 4–5 retrolateral trichobothria. Cybium; very transparent, membranous-like, not sclerotized, entire, with a small distal apophysis containing cymbial hood. Cymbial hood; broad and interacts with bulb through median apophysis. Tegulum small, less than half of cymbial cavity (Figs 9C, D). Conductor; long, straight, tube-like, longer than embolus, embolus tip associated conductor base, conductor distal portion enlarged, curved. Median apophysis; tip blunt hook-like associated with cymbial hood (Figs 9C, D). TTA; membranous, shorter than conductor, closely associated with conductor, longer than embolus, narrow, unbranched. Embolus, short, straight, sclerotized, not branched, not spiraling (Figs 7G–I, 9C, D).

Description of non-type female: Total length 4.5. Prosoma; uniform light yellow, median line ridged with longitudinal reddish-brown cross line, long, narrowed anterior region and widened posterior, with a median notch, length 1.55, width 1.25. Ocular area; normal, not projected beyond clypeus. Eyes similar in size, juxtaposed lateral eyes, median eyes flushed with prosoma, group of medians form square, black anterior medians, others silver-white with reddish brown outline, medians and laterals not far separated, eye region distributed with 2-3 long setae, eye measurements: AME 0.1, ALE 0.1, PME 0.1, PLE 0.1, PME–PME 0.08, PLE–PLE 0.4, ALE–PME 0.06, ALE–PLE 0. Clypeus; similar to prosoma in colouration, slightly concaved, slanted. Labium; distal margin not rebordered. Labium and sternum separated with a visible distinct seam. Sternum; pale yellow, shield-like, elongated, Sternum length 0.99, sternum width 0.63. Chelicera; reached up to the length of endites, smooth with small brown setae, anterior base evenly rounded, anterior and posterior cheliceral margins toothed, fangs cylindrical. Length of chelicera 0.57. Pedipalp length 0.2. Pedicel length 0.2. Opisthosoma; anterior opisthosoma (pedicel inserted region–spinnerets) swollen to form a sack-like profile, posterior opisthosoma (spinnerets–tip of opisthosoma) considerably elevated and tapered to form a conical shape with pointed tip, the midline of anterior opisthosoma perpendicular to posterior, opisthosoma pale yellow, fully suffused (except ventral side anterior opisthosoma) with mesh-like white patches or dots and rusted reddish brown streaks of lines, length 3.0, width 2.4. Legs; much longer, pale yellow, dark black-brown markings on joints and characteristically with 4-5 black-brown strong, thick and long setae, leg measurements: leg I: Fm 5.3, Pt 0.7, Ti 3.2, Mt 5.4, Ta 0.8; leg II: Fm 3.55, Pt 0.55, Ti 1.95, Mt 3.1, Ta 0.8; leg III: Fm 2.25, Pt 0.5, Ti 1.1, Mt 1.65, Ta 0.5; leg IV: Fm 5.0, Pt 0.75, Ti 3.0, Mt 4.5, Ta 0.8. Epigynum; with large and more rounded S, larger CO at base of atrium, longer CD, FD short, placed back of spermathecae and face each other (Figs 8G–J, 9A, B).

Distribution: China, India, Indonesia, Laos, Sri Lanka, Thailand (World Spider Catalog, 2024).

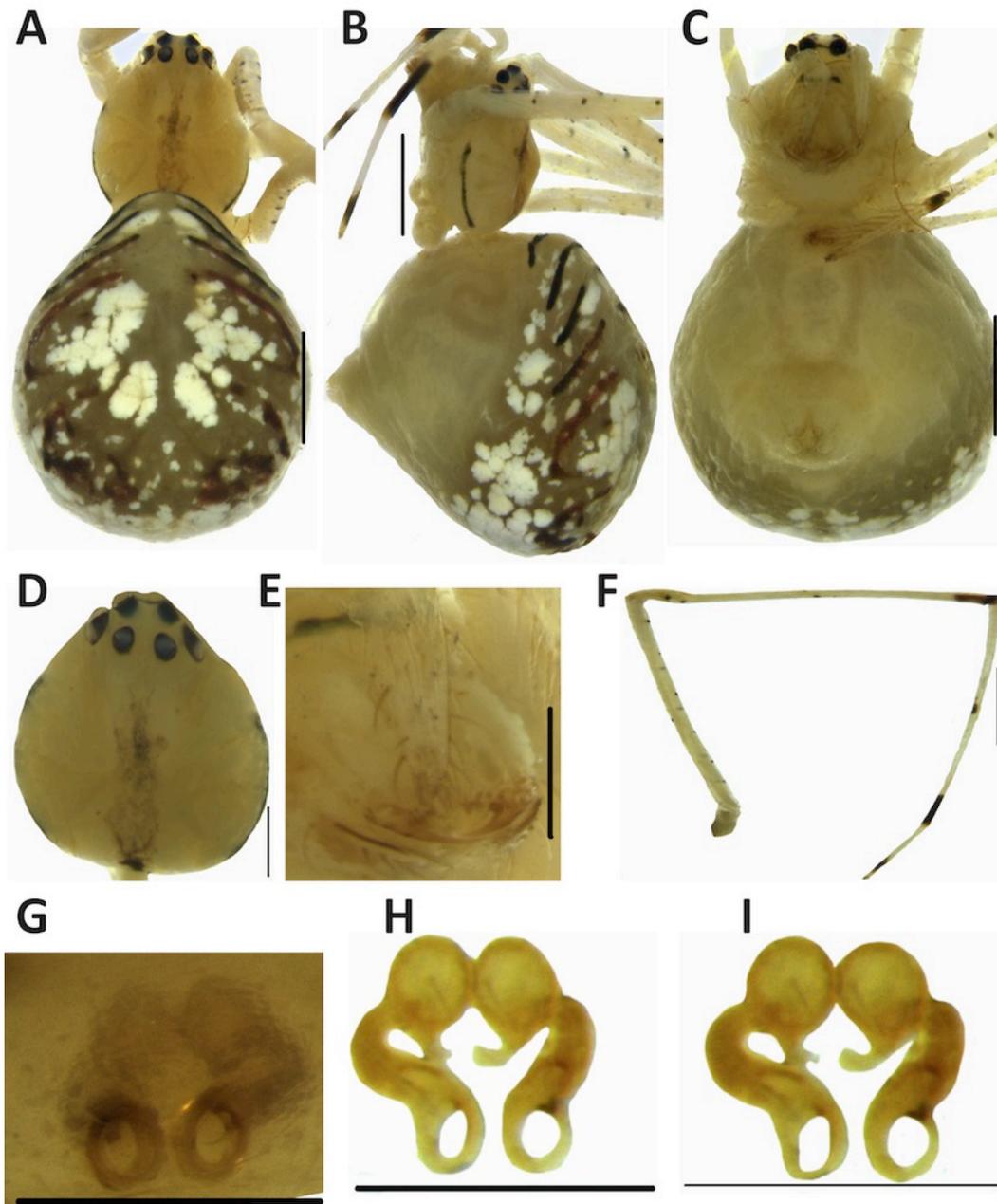


Figure 11. *Meotipa spiniventris*, female. A, B habitus, lateral; C same, ventral; D prosoma, dorsal; E chelicera, lateral; F left leg; G, epigynum, ventral view (not cleared); H vulva, dorsal view (cleared); I same, ventral view. Scale bars = 0.2mm (D, E–I), 0.5mm (A–C), 1mm (F).

***Meotipa spiniventris* (O. Pickard-Cambridge, 1869) (Figs 10A–H, 11A–I, 12A, B)**

Theridion spiniventre O. Pickard-Cambridge, 1869: 384, plate 12, figs 52–56.

Theridion buitenzorgi Strand, 1907: 412.

Theridion spiniventre Roewer, 1942: 483.

Theridion spiniventre van der Hammen, 1949: 76, figs 1–3.

Theridion spiniventre Yoshida, 1977: 9, figs 1–4.

Chryso spiniventre Yaginuma, 1986: 46, fig. 24.5.

Theridion spiniventre Song, 1987: 128, fig. 89.

Chryso spiniventris Zhu, 1998: 66, figs 38A–D.

Chryso spiniventris Song, Zhu & Chen, 1999: 107, f. 50E–L.

Chryso spiniventris Yoshida, 2003: 130, figs 346–350.

Meotipa spiniventris Yoshida, 2009: 378, figs 214–216.

Meotipa spiniventris Deng *et al.*, 2022: 163, figs 4A–H, 5A–H, 9B.

Type material: Holotype male, probably in the Oxford University Museum of Natural History (OUMNH). Not examined.

Material examined: SRI LANKA: Central province: 1♀, Kandy District, Deltota, Loolcondra Estate, 07.15°N, 80.70°E, 1480m, 13 July 2010, beating, S.P. Benjamin *et al.* (IFS_THE_834); 1♀, Kandy District, Gannoruwa Forest, 07.29° N 80.60° E, 575m, Beating, 25 November 2013, N. Athukorala *et al.* (IFS_THE_910); 1♀, Kandy District, Nawalapitiya, Dekinda, Wewagama Rd, 07.01° N 80.52° E, 800m, Beating, 09 February 2022, S.P. Benjamin and N. Athukorala, (IFS_THE_912). 1♂, Matale District, Pitawala Pathana, 07.47°N, 08.77°E, 813m, beating, 14–15 October 2019, S.P. Benjamin *et al.* (IFS_THE_734); 1♀, Nuwara Eliya District, Sita Eliya, 06.93° N, 80.81° E, 1743.3m, hand collection, 20–22 November 2019, S.P. Benjamin *et al.* (IFS_THE_914). Eastern province: 1♀, Ampara District, Nilgala FR, 07.26°N, 81.37°E, 341m, hand collection, 22 January 2013, S.P. Benjamin *et al.* (IFS_THE_913).

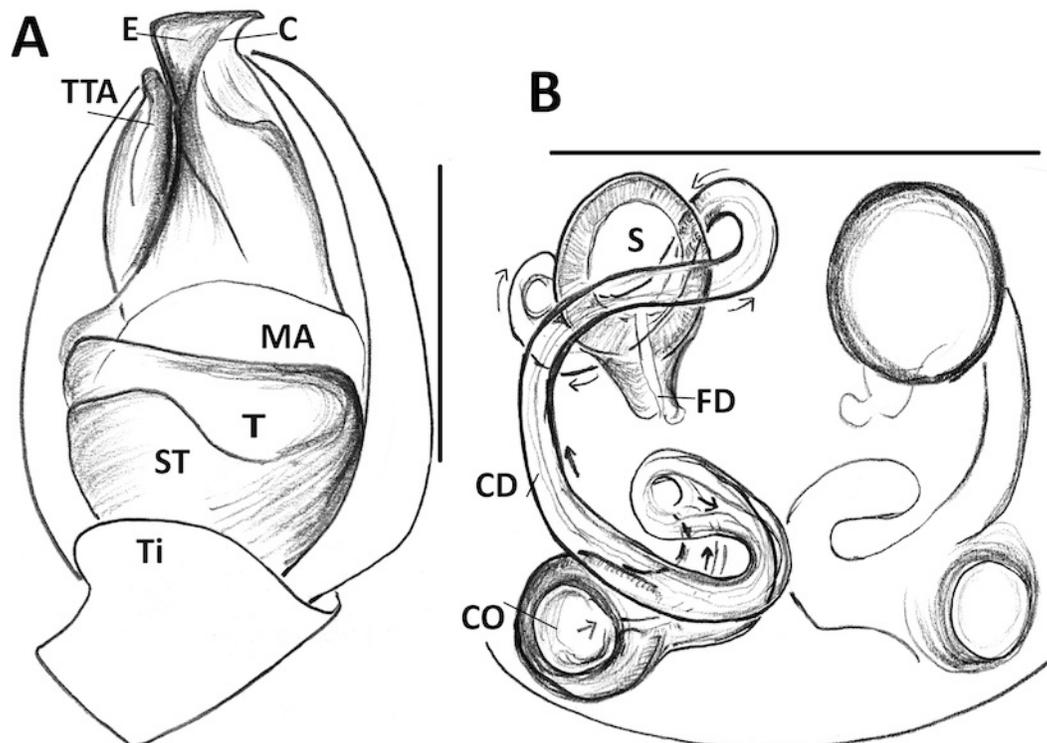


Figure 12. Genital morphology of *Meotipa spiniventris*. A male palp, ventral view; B vulva/epigynum, ventral view. Scale bars = 0.2mm (A, B).

Diagnosis: Distinguished from *M. picturata* and *M. kudawaensis* **sp. nov.** by the absence of ET and longer CD (Fig. 6C) from *M. sujii* **sp. nov.** by the anterior sclerotized margin of the

epigynum (Figs 17B, C) and from *M. multuma* by the longer CD in *M. multuma* (Fig 6C). Distinguished from other congeners by the following: shape of the C (short, widest at the base, tip wide, terminus flattened) (Fig. 12A). Epigynum without deep pit-like atrium, copulatory openings separate, CD long, revolves around S (Figs 11G, 12B). Prosoma with longitudinal midline. Opisthosoma is balloon-like, higher behind than fore part with 7–8 obliquely transverse strong black and red lines. Back of abdomen with 2–3 long black spines (Figs 10A, B).

Description of non-type male: Total length 2.0. Prosoma, ventral opisthosoma, sternum, labium, legs, chelicera, palp pale yellow. Characteristic markings on dorsal prosoma and opisthosoma as in Figs (10A–C). Prosoma; flat, rounded, slightly grooved from middle to outer edge, eye region slightly narrowed, midline of thoracic segment marked with characteristic reddish-brown longitudinal line patch. Prosoma length 1.0, width 0.9. Eyes arranged in two rows, anterior eyes black and others shiny silver-white outlined with reddish brown ring, almost all eyes similar size, laterals fused, eye measurements: AME 0.1, ALE 0.08, PME 0.1, PLE 0.08, PME–PME 0.1, PLE–PLE 0.3, ALE–PME 0.04. Chelicera as long as endites. Sternum; round to oval, wider at 1st coxae and tapered at 4th coxae with blunt tip, sternum length 0.64, sternum width 0.54. Opisthosoma; ventral side with small ash coloured patches, cylindrical, narrower than prosoma, longer than wide, dorsal opisthosoma with small humps, with ash, white and reddish-brown patches, posterior region bearing 1–2 spiny-setae, opisthosoma length 1.04, width 0.56. Legs; long, yellow with brown-orange bands on joints, patella with a long spiny-setae, leg measurements: legs I, II missing, leg III: Fm 1.26, Pt 0.32, Ti 0.78, Mt 1.02, Ta 0.5; leg IV: Fm 1.77, Pt 0.3, Ti 0.75, Mt 1.59, Ta 0.03 (Fig. 17E). Palpal tibia; short and tibial rim scooped to one side. Cymbium; entire without visible cymbial hood or hook and shorter than tip of conductor. Conductor; sclerotized, shortened, tip blunt ended, broad. Embolus covered with conductor. TTA closely associated with conductor, membranous or slightly sclerotized with a narrow blunt tip (Fig. 12A).

Description of non-type female: Total length 2.49. Prosoma, ventral opisthosoma, sternum, legs, pedipalp, chelicera uniform pale yellow in colour (Figs 11A–C). Prosoma; wider than long, rounded, characteristically outlined with black border, eye region tapered, two rows of eyes, dorsal thoracic segment with median notch, dorsal prosoma with reddish-brown median band, posterior end wide and divided into two lateral humps separated by median line, prosoma length 0.84, width 0.75. All eyes more or less similar in size, anterior medians black, others pearl white outlined with black-brown ring, laterals fused (Fig. 11D). Eye measurements: AME 0.08, ALE 0.08, PME 0.08, PLE 0.08, PME–PME 0.06, PLE–PLE 0.26, ALE–PME 0.04. Chelicera; as long as endites (Fig. 11E). Sternum; wider than long, more or less “half-oval” shape, sternum and labium separated by a visible seam, sternum length 0.45, sternum width 0.39. Opisthosoma; much bigger and globular compare to prosoma, dorsal opisthosoma suffused with circular white patches with characteristic horizontal black and reddish-brown bilateral lines, line not continuous medially constricted, anterior three lines black and rest reddish brown, opisthosoma length 1.71, width 1.47. Legs; long, pale yellow with small black dots, except for patella other joints with black-red wider bands, leg measurements: leg I: Fm 0.09, Pt 0.42, Ti 2.04, Mt 2.85, Ta 0.81; leg II: missing; leg III: Fm 1.0, Pt 0.30, Ti 0.62, Mt 0.35, Ta 0.35; leg IV: Fm 2.1, Pt 0.4, Ti 1.37, Mt 1.87, Ta 0.57 (Fig. 18). Epigynum (Figs 11G–I); not well sclerotized, larger copulatory openings, a pair of spermathecae round shaped and larger, copulatory duct long and encircled (Fig. 12B).

Distribution: China, Japan, Netherlands and Sri Lanka to Taiwan (World Spider Catalog, 2024).

Natural History: Specimens from Sri Lanka were collected by beating foliage up to a height of 2 metres. Found in all natural and disturbed habitats in the central and eastern province the island.

Remarks: The holotype male was not examined. However, the description of the type by Pickard-Cambridge (1869) unambiguously matches the examined male specimens. Strand's (1907) record of *M. spiniventris* is doubtful as the described specimen is a subadult (Hammen, 1949). Several other species described as "*Chryssos*" *spiniventris* and listed above are probably distinct species.

***Meotipa sujii* sp. nov. (Figs 13A–G, 14A–H, 15A–H, 16A–I, 17A–C)**

LSID:urn:lsid:zoobank.org:act:3D56F0C8-4454-4909-9DDA-1A295F370D8E

Type material. *Holotype:* male. SRI LANKA: Central province: Nuwara Eliya District, Sita Eliya FR, 06° 93'10''N, 80° 81'31''E, 1743m, 20–22 November 2019, hand collection, S.P. Benjamin *et al.* (IFS_THE_761).

Additional material examined. SRI LANKA: Central province: 1♀, Nuwara Eliya District, Horton plains national park, 06.80°N, 80.81°E, 2000m, hand collection, 20–21 February 2007, S.P. Benjamin & Z. Jaleel (IFS_THE_187); 2♀, same locality and collection data (IFS_THE_191–192); 5♂, 1♀, same locality, hand collection, 20–21 February 2007, S.P. Benjamin (IFS_THE_826–830); 1♀, Hakgala, 06.92°N 80.77°E, 1727m, Beating, 27 January 2015, S.P. Benjamin *et al.* (IFS_THE_911); 2♀, same locality and collection data. (IFS_THE_911); 1♀, Nuwara Eliya District, Kande Ela, 07.19°N, 81.29°E, 1895.2m, hand collection, 20–22 November 2019, S.P. Benjamin *et al.* (IFS_THE_735). 1♀, Matale District, Riverstone, Knuckles range, 07.52°N, 80.73°E, 1220m, hand collecting, 02 February 2010, S. Batuwitta & P.M.H. Sandamali (IFS_THE_824); 1♂, 1♀, Kandy District, Kandy, Deltota, Loolcondera estate, 07.15°N, 80.70°E, 1480m, hand collecting, 25 January 2011, S.P. Benjamin & S. Batuwita (IFS_THE_188–189); 2♀, Kandy District, Kandy, Deltota, Loolcondera estate, 07.15°N, 80.70°E, 1497m, beating, 11 October 2018, S.P. Benjamin *et al.* (IFS_THE_193–194, IFS_THE_194 is not preserved in our collection and used for dissection, IFS_THE_193 was used for description). Uva Province: 1♂, 2♀, Badulla District, Ohiya, 06.84°N, 80.88°E, 1280m, beating, 16 October 2011, S.P. Benjamin (IFS_THE_831–833, IFS_THE_833 used for dissection, not for description). North Western Province: 1♀, Kurunegala District, Nikawaratiya, 07.75°N, 80.13°E, hand collection, 21 January 2008, Z. Jaleel (IFS_THE_128).

Etymology. The specific epithet is in honour of the first author's husband, Mahendram Sujinthan.

Diagnosis. Distinguished from *M. picturata* and *M. kudawaensis* **sp. nov.** by the absences of ET (Fig. 17B), from *M. spiniventris* and *M. multuma* by the anterior sclerotized margin of the epigynum in *M. sujii* **sp. nov.** (Figs 17B, C). Distinguished from other congeners by the following: shape of the C (short, widest at the tip, tip curved backwards). Epigynum without

deep pit-like atrium, anterior boarder, copulatory openings separate, CD short, does not encircle S (Fig. 16A–C).

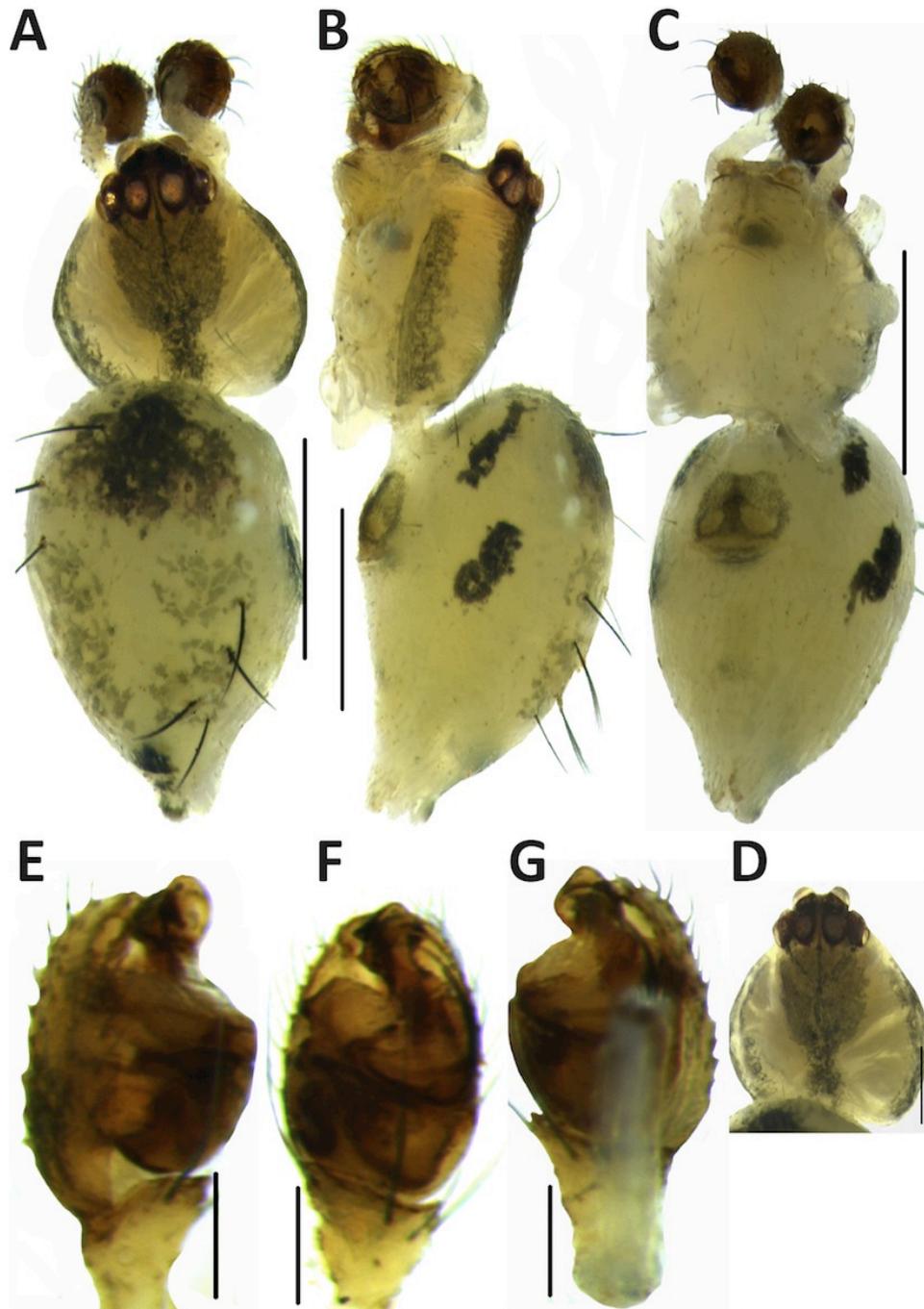


Figure 13. *Meotipa sujii* sp. nov., male. A dorsal view; B lateral view; C ventral view; D prosoma, dorsal view; E palp, prolateral view; F same, ventral view; G same, retrolateral view. Scale bars = 0.1mm (E–G), 0.2mm (D), 0.5mm (A–C).



Figure 14. *Meotipa sujii* sp. nov., male. A dorsal view; B lateral view; C ventral view; D left leg I, without brush-like setae; E chelicera, front view; F palp, prolateral view; G same, ventral view; H same, retrolateral view. Scale bars = 0.1mm (F–H), 0.2mm (E), 0.5 (A–D).

Description of holotype male. Pale yellow with grey patches (Fig 13 A–C). Prosoma; pale yellow, wider than long, heart-shaped, wider than opisthosoma, dorsally outlined with grey borders, prosoma length 1.7, width 0.64. Eye region; slightly elevated; narrowed. Eyes; bigger, black anterior medians, others pearl white outlined and shaded with reddish-brown, laterals fused, eye measurements: AME 0.1, ALE 0.1, PME 0.1, PLE 0.1, PME–PME 0.04, PLE–PLE 0.24, ALE–PME 0.06. Opisthosoma; oval, anterior to middle region slightly higher and wider, middle to posterior region tapered towards posterior end, dorsal and lateral sides with dark grey

dots. Anterior prosoma with characteristic larger gray patches. Dorsal side of posterior opisthosoma with few black, long setae. Sternum, wider than long, sternum length 0.46, sternum width 0.4. Legs not measured. Palpal tibia, short, flat rim, cymbium; entire, broad, paracymbium not visible. Conductor closely associated with embolus tip, slightly sclerotized, broad, tip of embolus not visible and probably covered by conductor. TTA not visible (Fig. 17A).

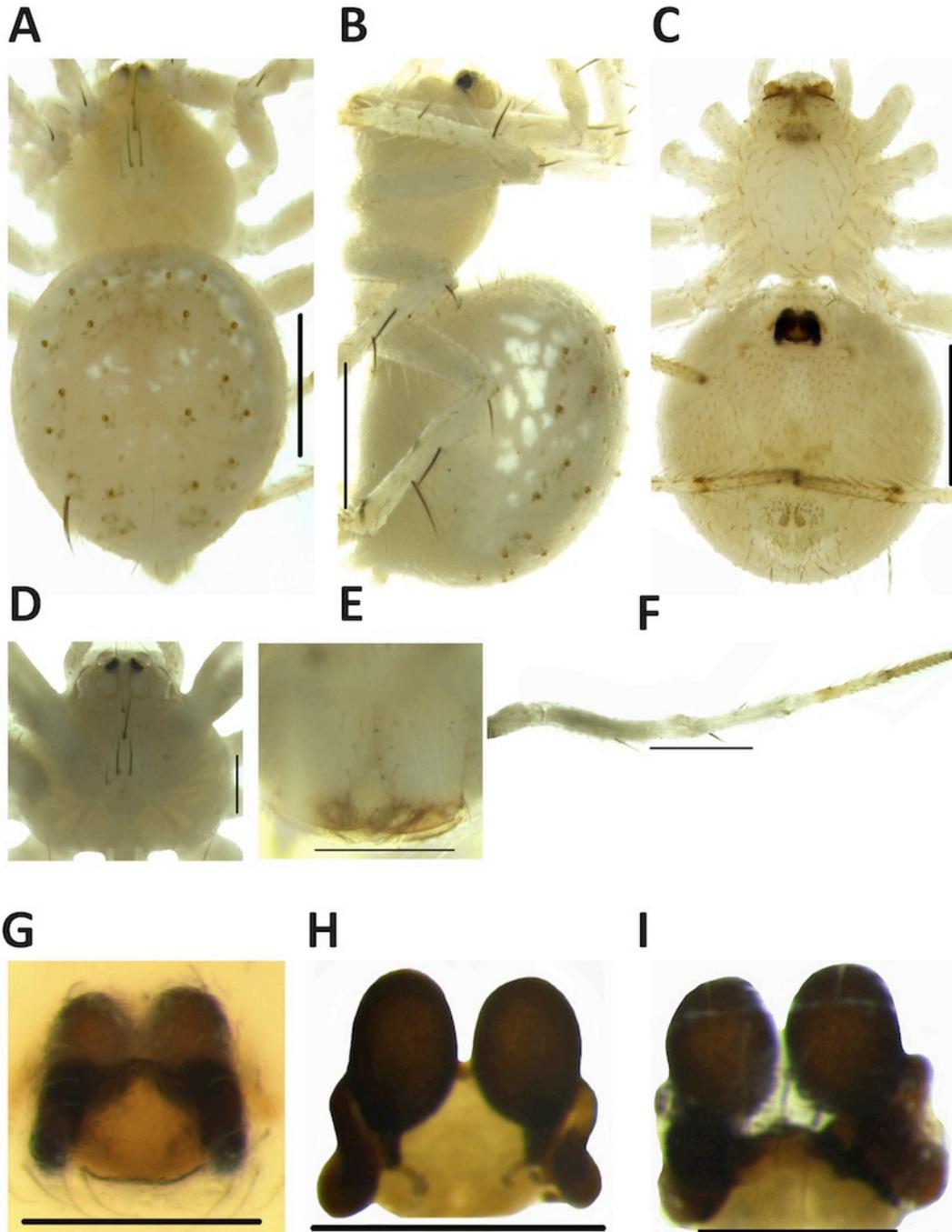


Figure 15. *Meotipa sujii* sp. nov., female. A dorsal view; B lateral view; C ventral view; D left leg I; E, epigynum, ventral view (not cleared); F vulva, dorsal view (cleared); G same, ventral view; H chelicera, front view. Scale bars: A–C = 1mm, D = 0.5mm, E = 0.2mm, F = 1mm, G–I = 0.2mm.

Description of female. Prosoma; pale yellow, paler than male. All characters as in male, except the following: Total length 2.1. Prosoma, legs, sternum, labium, chelicera, pedipalp, ventral opisthosoma pale white (Fig. 15A–C). Prosoma; wider at 4th coxae, narrowed at 1st coxae to form constricted anterior eye region. Prosoma length 1.17, width 0.75, eye measurements: AME 0.08, ALE 0.08, PME 0.08, PLE 0.08, PME–PME 0.04, PLE–PLE 0.22, ALE–PME 0.44. Sternum length 0.54, sternum width 0.6. Opisthosoma; bigger, pale white, whole dorsal area covered with characteristic grey and white patches with densely arranged 20–30 setae, opisthosoma length 1.17, width 1.12, Leg measurements: leg I: Fm 0.75, Pt 0.27, Ti 0.5, Mt 0.55, Ta 0.47; leg II: Fm 0.8, Pt 0.27, Ti 0.47, Mt 0.5, Ta 0.47; leg III: Fm 0.75, Pt 0.27, Ti 0.37, Mt 0.37, Ta 0.5; leg IV: Fm 0.75, Pt 0.25, Ti 0.5, Mt 0.57, Ta 0.45. Epigyne; spermathecae larger and round, FD and CD short and not surrounding S (Figs 15E, F, 17B–C).

Variation. Some of the specimens differ by the markings of the opisthosoma as well as minor details of the genitalia. These differences might be due to the presence of cryptic species or intraspecific variation.

***Meotipa wuzhishanensis* Benjamin sp. nov. (Deng *et al.* 2022: figs 4a–h, 5a–h. 9, 10)**

LSID: urn:lsid:zoobank.org:act:8F7CDDBD-3614-4FDF-A705AEF526871B78

Remarks: Misidentified as *M. spiniventris* due to the lack of drawings of specimens of *M. spiniventris* from the type locality.

Meotipa spiniventris O. Pickard-Cambridge, 1869. Misidentification.

Type material: Holotype: male. CHINA: Hainan Province: Wuzhishan City, Shuiman Township, Wuzhishan (18.88°N, 109.66°E, 140m), 15 April 2018, F.X. Liu & Z.C. Li leg. Centre for Behavioural Ecology and Evolution, College of Life Sciences, Hubei University, Wuhan, China (CBEE). Not examined.

Diagnosis: Distinguished from other congeners by the following. shape of the C (tip strongly sclerotized and twisted. Epigynum without deep pit-like atrium, copulatory openings separate, copulatory ducts short, extending to the lateral part of spermathecae, but not revolving around S. See Deng *et al.*, (2022) for a detailed diagnosis.

Etymology: Named after the type locality.

Description: See Deng *et al.*, (2022).

Distribution: See Deng *et al.*, (2022).

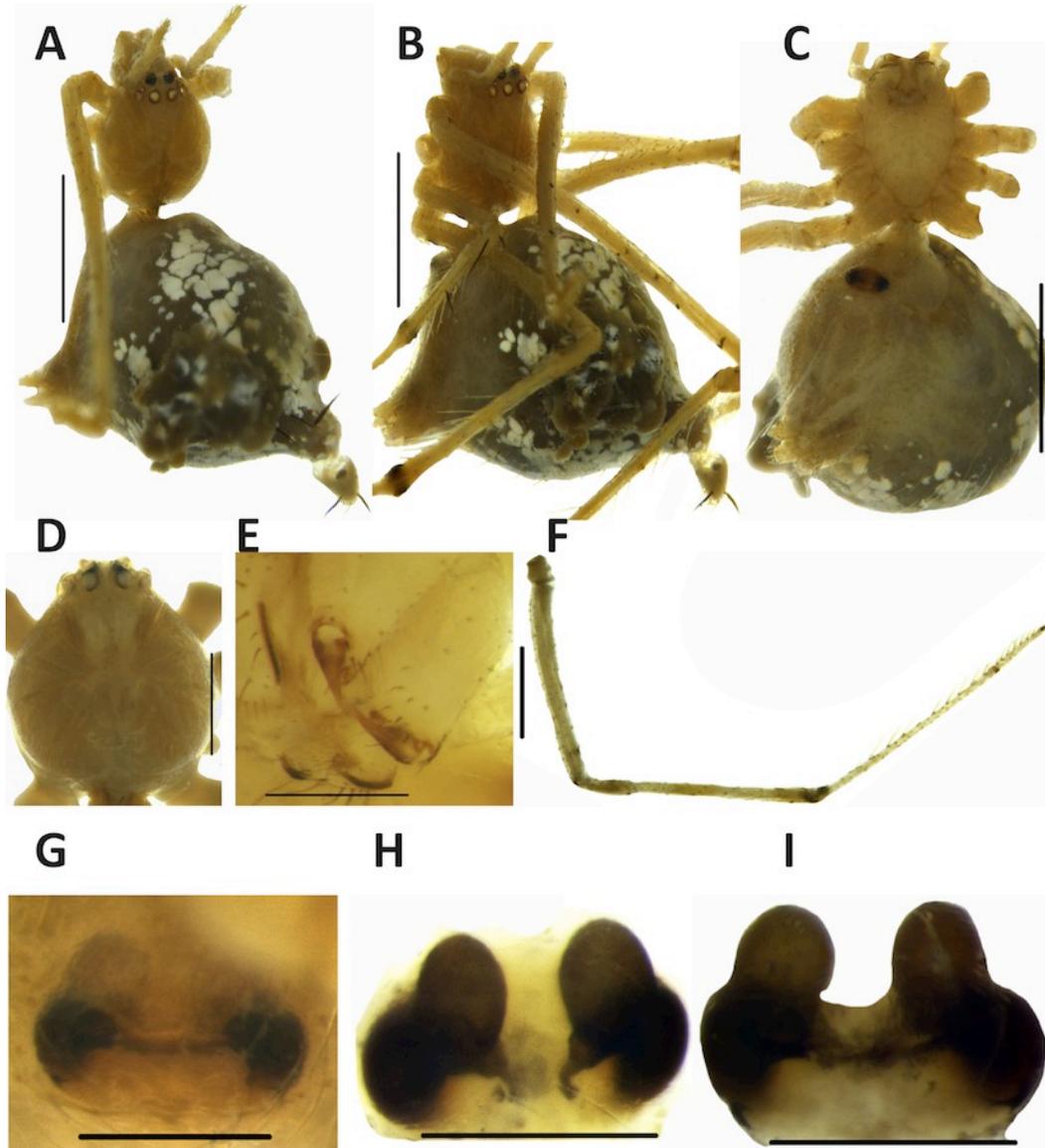


Figure 16. *Meotipa sujii* sp. nov., female. A, dorsal view. B lateral view. C ventral view. D prosoma. E, chelicera, front view. F, left leg I. G, epigynum, ventral view (not cleared); H vulva, dorsal view (cleared); I same, ventral view. Scale bars: A–C = 1mm, D = 0.5mm, E = 0.2mm, F = 1mm, G–I = 0.2mm.

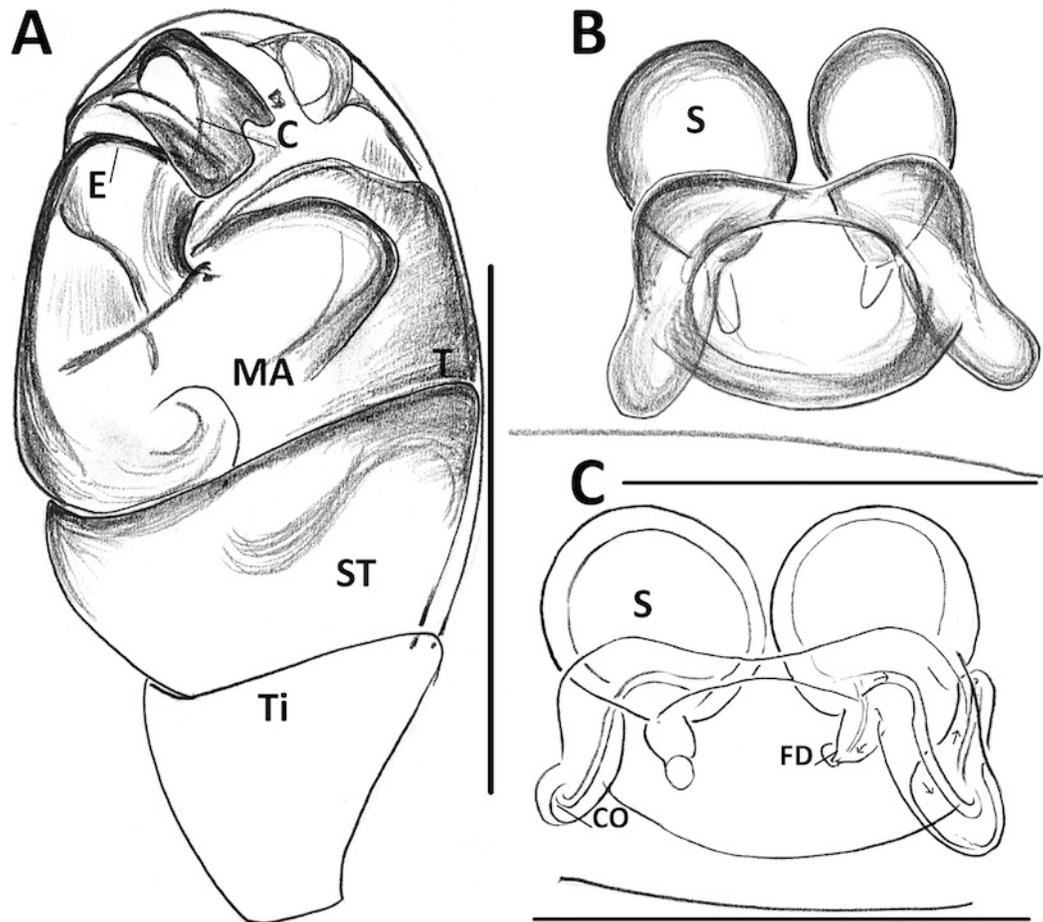


Figure 17. Genital morphology of *Meotipa sujii* sp. nov. A male palp, dorsal view; B epigynum, ventral view; C vulva, ventral view. Scale bars: A–C = 0.2mm.

DISCUSSION

Deeleman-Reinhold (2009) reclassified *Meotipa* as distinct from *Chryso*, based on several diagnostic characters outlined in her genus diagnosis. The species examined in this study conform to the morphological traits described by Deeleman-Reinhold (2009). Currently, the genus *Meotipa* comprises 23 species, including the three newly described species. The distribution of *Meotipa* spans Sri Lanka to Papua New Guinea, with species also recorded in China and Japan (Deeleman-Reinhold, 2009; World Spider Catalog, 2024). It is worth noting that the *spiniventris*-group, consisting of Oriental species with black spines on the abdomen and/or legs, seems morphologically distinct from the larger-bodied species within the genus. These species share many similarities with *M. spiniventris*, and their differentiation may be confined to genital structures.

In *M. spiniventris* and the type species of the genus, *M. picturata*, the male palp's cymbium is truncated and barely extends beyond the alveolus. The conductor projects beyond the cymbium edge, with a spoon-like shape that widens distally (Figs 9C–D, 12A). The epigyne features a deep, pit-like atrium or plate housing the copulatory pores, and the copulatory ducts include a wide basal part that narrows abruptly into a tubular distal portion (Figs 9A, B, 12B; Deeleman-

Reinhold, 2009). Based on these characteristics, *M. kudawaensis* sp. nov. also belongs to this group (Figs 3A, B).

In contrast, the second new species from Sri Lanka, *M. sujii* sp. nov., has an oval cymbium that does not extend beyond the alveolus, and its conductor remains below the cymbium edge. The epigyne lacks a plate housing the copulatory pores, and both the copulatory and fertilization ducts are short (Figs 17A–C). Additionally, this species lacks the distinctive prominent, flattened black spines on its abdomen and legs (Figs 14D, 15D).

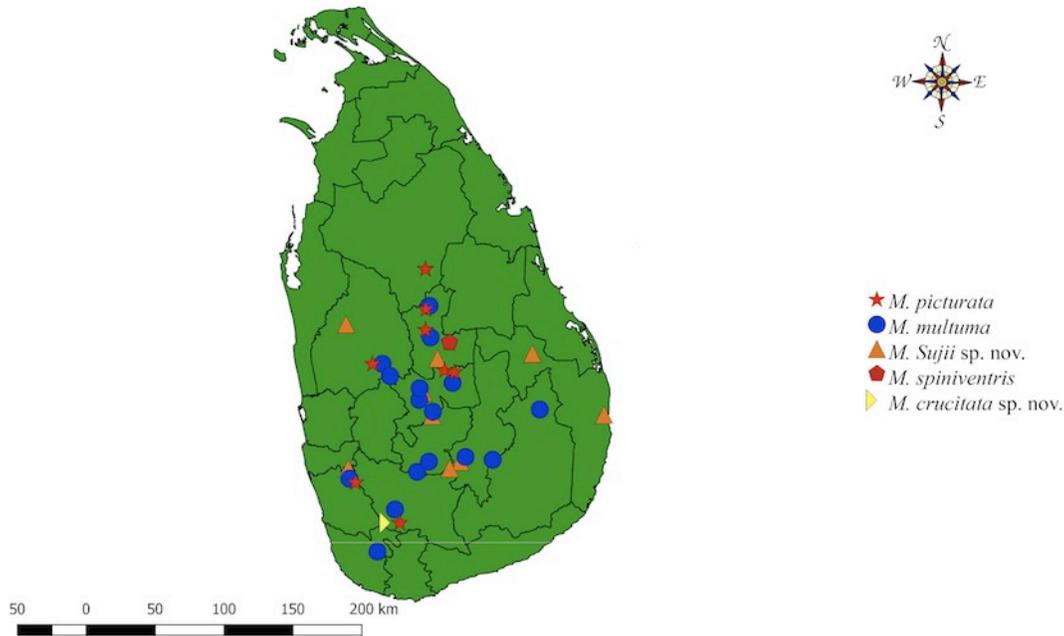


Figure 18. Distribution map of *Meotipa* spp of Sri Lanka.

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