

## Research article

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# Revision of Indian Ischnothelidae (Arachnida: Araneae) and descriptions of two new species of *Indothele* Coyle, 1995

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<sup>4</sup>[urn:lsid:zoobank.org:author:22D93D1B-0626-4B93-9FDA-B5B2ADDFDC7D](https://zoobank.org/author:22D93D1B-0626-4B93-9FDA-B5B2ADDFDC7D)

**Abstract.** Two new species of *Indothele* Coyle, 1995 are described from the Western Ghats of India: *I. amboli* Kadam, Tripathi & Sherwood sp. nov. (♂♀) from Amboli in Maharashtra, and *I. silentvalley* Tripathi, Kadam & Sherwood sp. nov. (♂♀) from Silent Valley National Park in Kerala. Images of the type material of *I. dumicola* (Pocock, 1900), the type species, are presented to complement its identification. Additionally, the male of *I. mala* Coyle, 1995 is described for the first time. We transfer the misplaced *Ischnothele indicola* Tikader, 1969 to the genus *Macrothele* Ausserer, 1871 (Macrothelidae), creating the new combination *Macrothele indicola* comb. nov. A catalogue of Indian Ischnothelidae and their currently known distribution is mapped.

**Keywords.** Funnel-web mygalomorph, Indian spider, taxonomy, type material, Western Ghats.

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## Introduction

*Indothele* Coyle, 1995 is an ischnothelid genus with distinctive opisthosomal patterning, which derives its generic name from the Indian subcontinent, reflecting its distribution in India and Sri Lanka. Raven (1985) and Coyle (1995) conducted comprehensive morphological revisions of various now-

ischnothelid genera, whilst these genera were assigned to the family Dipluridae Simon, 1889. Several genera formerly included in Dipluridae underwent a significant revision by Opatova *et al.* (2020). Amongst other subfamilies, this study elevated the subfamily Ischnothelinae F.O. Pickard-Cambridge, 1897 to the rank of family Ischnothelidae based on molecular analyses.

Coyle (1995) created the new genus *Indothele* Coyle, 1995 to accommodate *Ischnothele dunicola* Pocock, 1900 (the generotype) from India. Additionally, he described three new species within this genus: one from Sri Lanka: *I. lanka* Coyle, 1995, and two from India: *I. mala* Coyle, 1995 and *I. rothi* Coyle, 1995.

In this work, we describe the male of *I. mala* for the first time. Additionally, we transfer the misplaced *Ischnothele indicola* Tikader, 1969 to macrothelid genus *Macrothele* Ausserer, 1871, presenting images of the types for the first time. We also describe two new species of *Indothele* and provide a catalogue and distribution map of Indian Ischnothelidae.

## Material and methods

All measurements are in millimetres (mm). Lengths of palp and leg segments are given as: total (femur, patella, tibia, metatarsus, tarsus). Images were taken with a Leica DMC4500 digital camera attached to a Leica M205A stereo microscope with the software package Leica Application Suite (LAS, ver. 3.8) by RT or a Canon EOS 6D Mark II attached to a Leica MZ12.5 stereo microscope, with images stacked using Helicon Focus software by DS. Photographs of live specimens were taken using a Canon 5D Mark II camera equipped with a 100 mm macro lens. The terminology for genitalia mostly follows Coyle (1995). The type material of *I. amboli* sp. nov. and *I. silentvalley* sp. nov. is deposited at NRC-AA (NCBS Research Collection, National Centre for Biological Sciences, Bangalore, India).

## Abbreviations used for morphology

ALE = anterior lateral eye  
AME = anterior median eye  
do = dorsal  
HT = holotype  
pl = prolateral  
pld = prolateral dorsal  
PLE = posterior lateral eye  
PME = posterior median eye  
PLS = posterior lateral spinnerets  
plv = prolateral ventral  
PMS = posterior median spinnerets  
PT = paratype  
rl = retrolateral  
rld = retrolateral dorsal  
rlv = retrolateral ventral  
I–IV = 1<sup>st</sup> to 4<sup>th</sup> leg

## Acronyms of repositories

AMNH = American Museum of Natural History, New York, USA  
BMNH = Natural History Museum, London, United Kingdom  
CAS = California Academy of Sciences, USA  
NCBS = National Centre for Biological Sciences, Bengaluru, Karnataka, India  
NZC-ZSI = National Zoological Collections, Zoological Survey of India, Kolkata, India

## Results

### *New species*

Class Arachnida Lamarck, 1801  
Order Araneae Clerck, 1757  
Family Ischnothelidae F.O. Pickard-Cambridge, 1897  
Subfamily Ischnothelinae F.O. Pickard-Cambridge, 1897  
  
Genus *Indothele* Coyle, 1995

### Type species

*Ischnothele dumicola* Pocock, 1900, by original designation (Coyle 1995).

### Diagnosis

For genus description and diagnosis, see Coyle (1995).

### Distribution

India and Sri Lanka (World Spider Catalog 2024).

*Indothele amboli* Kadam, Tripathi & Sherwood sp. nov.

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Figs 1–4, 14, Table 1

### Diagnosis

Males of *Indothele amboli* sp. nov. resemble those of *I. mala* by the very long and slender embolus curving gently upward (Fig. 4A–B); metatarsus I ventral apophysis situated medially and consisting of a low retrolateral ridge (Fig. 2F), and distal end of metatarsus I with tiny protuberance situated basally, but can be distinguished by the following characteristics: (1) the embolus is much slender and the embolic tip longer (vs slightly broad and shorter tip in *I. mala*); (2) the tibial apophysis is elongate and narrow (vs short and broad in *I. mala*), and (3) the palpal tibia is incrassate (vs. unmodified in *I. mala*) (cf. Fig. 4A–C vs Fig. 12A–E). Females of *Indothele amboli* resemble those of *I. rothi* Coyle, 1995 by the weakly sclerotized spermathecal lobes, with each (opposing) median receptacle longer than lateral one, and with a correspondingly larger lobe on the median receptacle(s). However, they can be distinguished by the uniform size and shape of the receptacles (vs receptacles elongated in *I. rothi*) (cf. Fig. 4E vs Coyle 1995: figs 347–354).

### Etymology

The specific epithet is a noun in apposition derived from the type locality.

### Type material

#### Holotype

INDIA • ♂; Maharashtra, Sindhudurg, Sawantwadi, Amboli village; 15°57'34" N, 73°59'50" E; 746 m; 20 Aug. 2023; G. Kadam and R. Tripathi leg.; from ground burrow, by hand; NCBS, NRC-AA-9037.

#### Paratype

INDIA • 1 ♀; same data as for holotype; NCBS, NRC-AA-9038.

## Description

### Male (holotype, Figs 2, 4A–C)

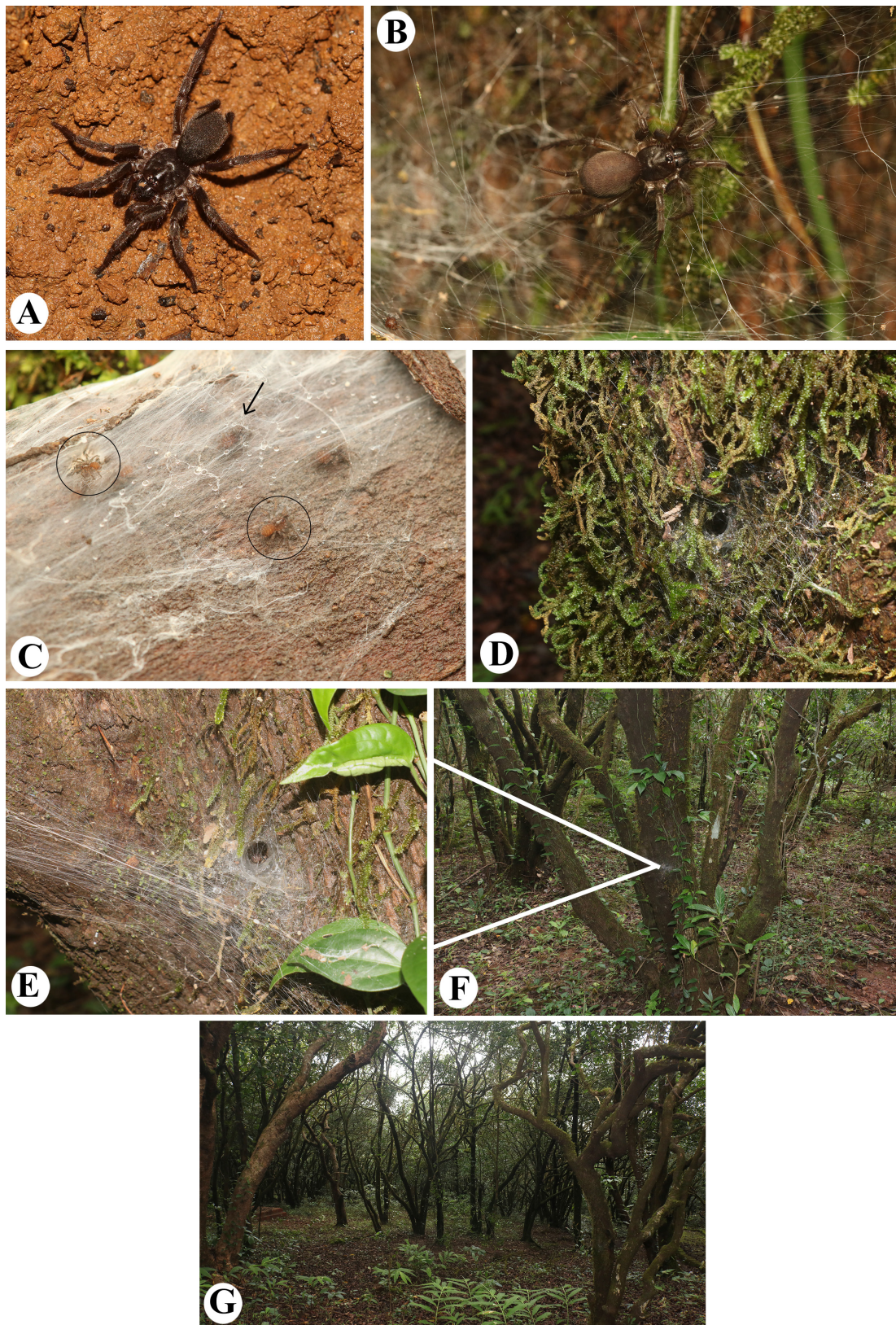
Measurements: total length including chelicerae: 6.72. Carapace: length 3.36, width 2.93. Caput: slightly raised. Ocular tubercle: raised, length 0.45, width 0.87. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 2B). Clypeus: narrow; clypeal fringe: short. Fovea: deep, transverse. Chelicerae: length 1.49, width 0.85. Abdomen: length 3.36, width 2.21. Maxilla with 42–45 cuspules. Labium: length 0.23, width 0.62, lacking cuspules. Labio-sternal mounds: separate. Sternum: length 1.85, width 1.59. Lengths of legs and palpal segments: see Table 1, legs 4,3,2,1. Spination: palp: femur pld 1 do 5, patella pld 2 do 3 rld 2, tibia pld 2 pl 1 plv 3 do 4 rld 2, tarsus/cymbium plv 3 rlv 2; legs: femora I–II pld 1 do 5, III–IV pld 1 do 5 rld 1; patella I pld 3 rld 3, II pld 3 do 1 rld 3, III–IV pld 3 do 1 rld 3; tibia I pld 2 do 1 rld 2 rlv 1, II pld 1 pl 2 plv 4 rl 2 rlv 4, III pld 2 pl 3 plv 4 do 2 rld 3 rl 2 rlv 4, IV pld 2 pl 2 plv 4 rld 1 rl 2 rlv 4; metatarsus I pld 1 pl 2 rlv 1, II pld 2 pl 2 plv 3 rld 1 rl 2 rlv 3, III pld 2 pl 2 plv 3 rld 2 rl 2 rlv 3, IV pld 3 pl 3 plv 3 do 2 rld 2 rl 2 rlv 2; tarsi I–III spineless, IV plv 3 rlv 2. Tibia I retrolaterally with subterminal apophysis; long, slender and pointed (Fig. 2F–H). Metatarsus I: metatarsal protuberance present and situated ventroretrolaterally (Fig. 2F). Spinnerets: four; PLS with three segments basal 1.28, medial 1.05, digitiform 2.52 longest, segmented and flexible; PMS with one segment (Fig. 2K). Palpal tibia: slightly increassate. Palpal cymbium: elongate, tarsus-like. Palp bulb elongate, with slender embolus curving gently upward; sperm duct long and moderately wide (Fig. 4A–C). Embolus 1.38 long, 0.27 wide. Colour: carapace, clypeus, leg segments, spinnerets orange to brown with black shade; eye region dark; chelicerae, labium, maxillae, sternum pale whitish orange; opisthosoma black (Fig. 2A). Carapace densely covered with thin appressed hairs, with brownish streaks starting from fovea; thoracic margin with black band. Pars cephalica slightly elevated (Fig. 2C). One pair of foveal bristles. Eyes on low tubercles, encircled with black pigment (Fig. 2B). Chelicerae dorsally with band of setae, ventrally with two rows of teeth on margin; promargin with 11 teeth and retromargin with 10 teeth, and 6 tiny teeth within fang furrow (Fig. 2I–J).

### Female (paratype, Figs 3, 4D–E)

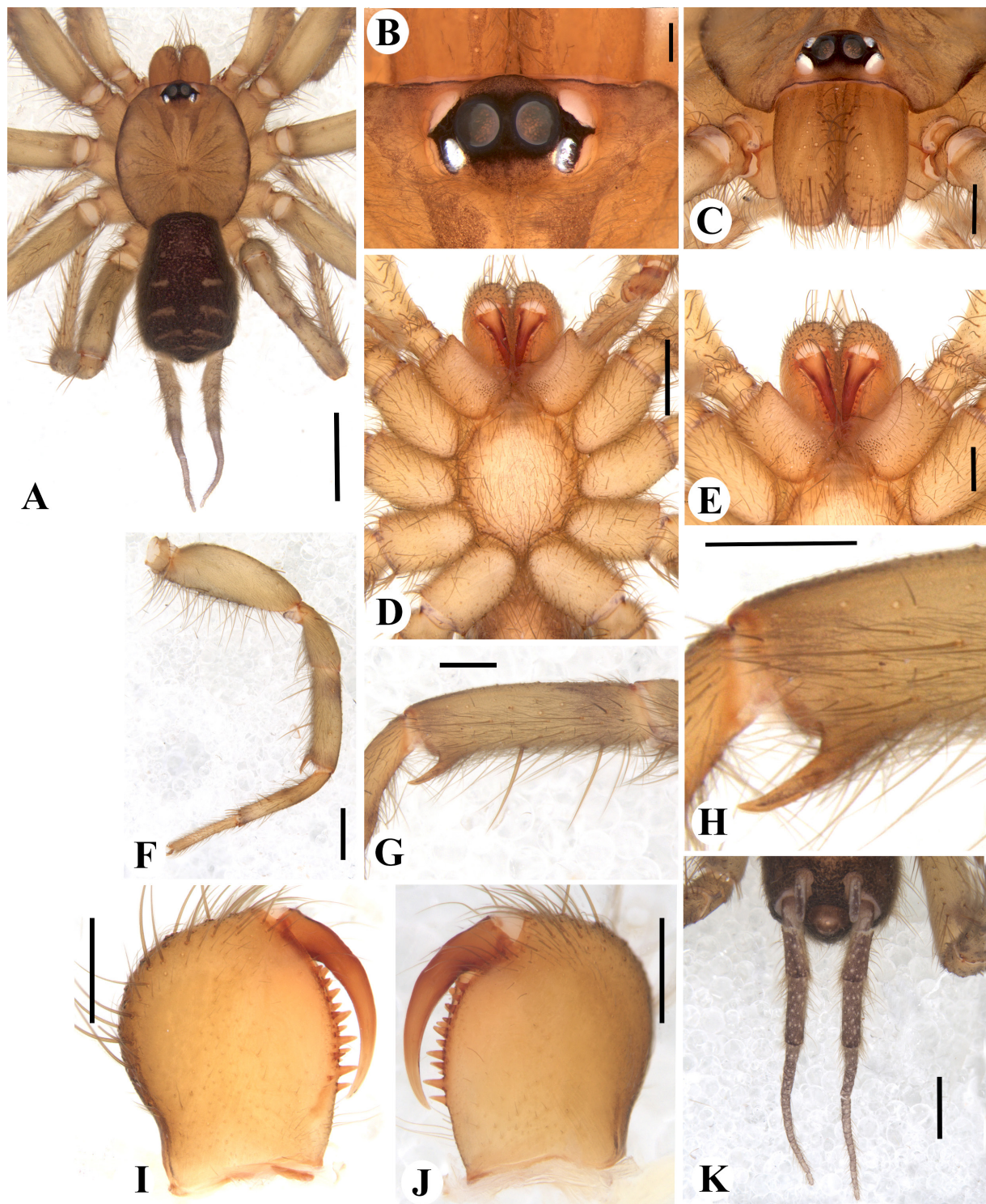
Measurements: total length including chelicerae: 9.93. Carapace: length 4.35, width 3.85. Caput: slightly raised. Ocular tubercle: raised, length 0.34, width 0.72. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 3B). Clypeus: narrow; clypeal fringe: short (Fig. 3C). Fovea: deep, transverse. Chelicerae: length 2.10, width 0.51. Abdomen: length 5.58, width 3.85. Maxilla with 85–90 cuspules. Labium: length 0.17, width 0.43, lacking cuspules. Labio-sternal mounds: separate. Sternum: length 2.55, width 2.11 (Fig. 3D). Lengths of legs and palpal segments: see Table 1, legs 4,3,2,1. Spination: palp: femur pld 1 do 8, patella pld 2 do 2 rld 3 rl 1, tibia pld 2 pl 1 plv 2 rld 3 rl 2 rlv 1, tarsus plv 2 rlv 2; legs: femora I–II & IV pld 1 do 8 rld 1, III do 8 rld 1; patella I pld 2 do 1 rld 3, II pld 2 do 3 rld 2, III pld 3 do 3 rld 3, IV pld 3 do 2 rld 3; tibia I pld 2 plv 3 rld 3 rlv 3, II pld 2 pl 2 plv 2 do 2 rld 1 rlv 3, III pld 3 plv 3 do 2 rl 2 rlv 3, IV pld 3 do 2 rl 2 rlv 3; metatarsus I pld 1 plv 1 rlv 2, II plv 3 rlv 2, III pld 2 pl 2 plv 3 rl 2 rlv 3, IV pld 3 plv 3 do 2 rld 2 rlv 3; tarsi I–III spineless, IV plv 2 rlv 3. General aspects essentially as in male except: body colour darker (Fig. 3A), chelicerae promargin with 10 teeth and retromargin with 9 teeth, and 9 tiny teeth within fang furrow (Fig. 3F–G). Spinnerets: PLS with three segments, basal 1.83, median 1.75, digitiform apical 3.33. PMS with one segment (Fig. 3H). Spermathecae with two receptacles, each branching into two lobes; base of receptacles wider, taper of lateral lobes more abrupt than medial lobes, lobes asymmetrical (Fig. 4E).

## Distribution

Known only from the type locality, Amboli, Maharashtra, India (Fig. 14).



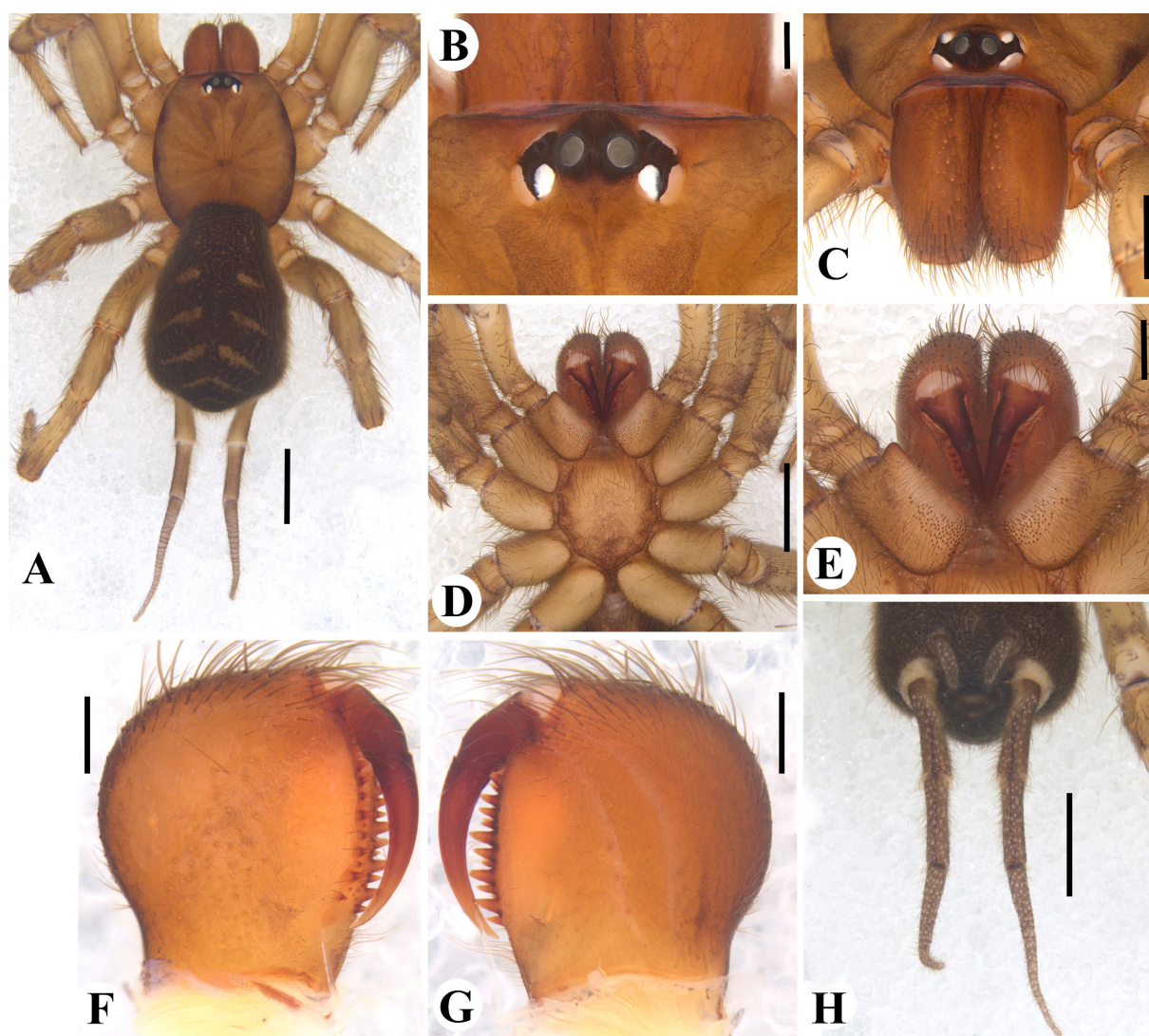
**Fig. 1.** Field photographs of *Indothele amboli* Kadam, Tripathi & Sherwood sp. nov. **A.** Male. **B.** Female. **C.** Juveniles. **D–E.** Web, showing retreat entrance. **F–G.** General view of habitat at the collecting site. Photographs by Tejas Sawant.

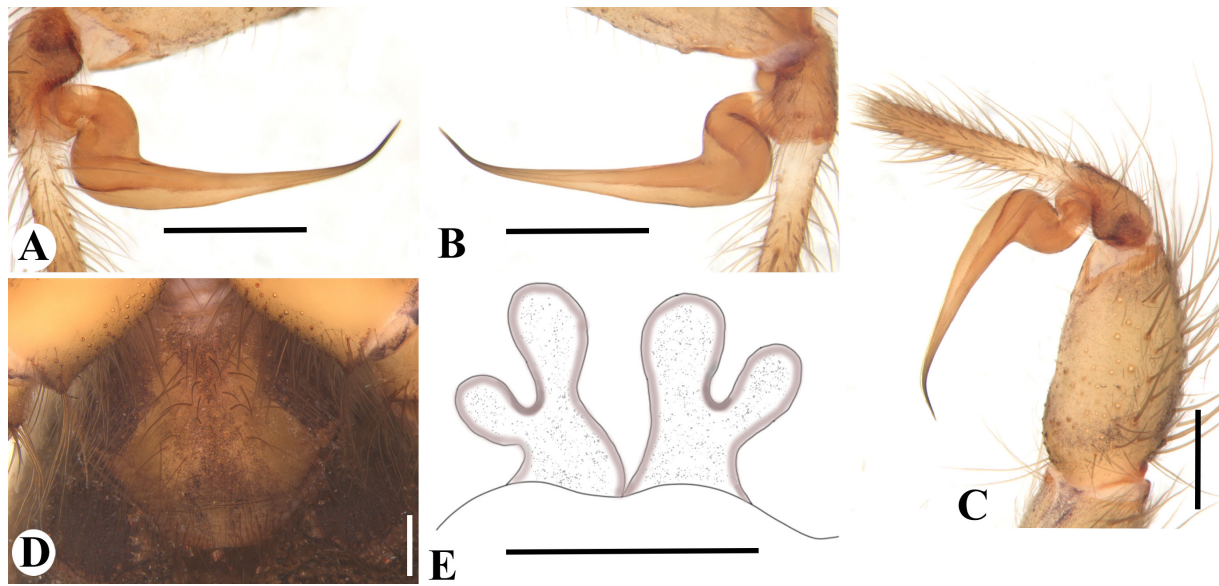


**Fig. 2.** *Indothele amboli* Kadam, Tripathi & Sherwood sp. nov., holotype, ♂ (NCBS, NRC-AA-9037). A. Habitus, dorsal view. B. Ocular area, dorsal view. C. Head, frontal view D. Labium, maxillae and sternum, ventral view. E. Close-up of labium and maxillae, ventral view. F. Leg I, retrolateral view. G. Same, tibia, retrolateral view. H. Same, tibia I apophysis close-up, retrolateral view. I. Left chelicera, prolateral view. J. Same, retrolateral view. K. Spinnerets, ventral view. Scale bars: A = 2 mm; B = 0.2 mm; C, E, G–J = 0.5 mm; D, F, K = 1 mm.

**Table 1.** Morphometry of legs and palp of *Indothele amboli* Kadam, Tripathi & Sherwood sp. nov., holotype, ♂ (HT; NRC-AA-9037) and paratype ♀ (PT; NRC-AA-9038).

	Leg I		Leg II		Leg III		Leg IV		Palp	
	HT	PT	HT	PT	HT	PT	HT	PT	HT	PT
<b>Femur</b>	2.68	2.64	2.70	2.87	2.78	2.98	3.01	3.62	1.66	2.18
<b>Patella</b>	1.38	1.42	1.25	1.31	1.12	1.32	1.29	1.56	0.81	1.09
<b>Tibia</b>	1.99	2.04	1.93	1.98	1.88	2.08	2.39	2.69	1.11	1.45
<b>Metatarsus</b>	1.95	1.84	2.29	1.88	2.61	2.71	3.55	3.30	–	–
<b>Tarsus</b>	1.36	1.21	1.52	1.35	1.68	1.64	1.77	1.86	1.53	1.62
<b>Total</b>	9.36	9.15	9.69	9.39	10.07	10.73	11.01	13.03	5.11	6.34

**Fig. 3.** *Indothele amboli* Kadam, Tripathi & Sherwood sp. nov., paratype, ♀ (NCBS, NRC-AA-9038). A. Habitus, dorsal view. B. Ocular area, dorsal view. C. Head, frontal view. D. Labium, maxillae and sternum, ventral view. E. Close-up of labium and maxillae, ventral view. F. Left chelicera, prolateral view. G. Same, retrolateral view. H. Spinnerets, ventral view. Scale bars: A, D, H = 2 mm; B, E–G = 0.5 mm; C = 1 mm.



**Fig. 4.** *Indothele amboli* Kadam, Tripathi & Sherwood sp. nov., genitalia of holotype, ♂ (NCBS, NRC-AA-9037, A–C) and paratype, ♀ (NRC-AA-9038, D–E). **A.** Left palpal bulb, retrolateral view. **B.** Same, prolateral view. **C.** Left palp with palpal bulb, retrolateral view. **D.** Female genital plate, undissected ventral view. **E.** Spermathecae, dorsal view. Scale bars: A–B = 0.2 mm; C–E = 0.5 mm.

*Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov.

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Figs 5–8, 14, Table 2

### Diagnosis

Males of *Indothele silentvalley* sp. nov. resemble those of *I. dumicola* (Pocock, 1900) by the moderately long embolus, the aspinose tibial apophysis, and the cymbial apophysis with two prolateral and two retrolateral spines. However, *I. silentvalley* can be distinguished by the following characteristics: (1) the embolus curving sharply upward at the tip (vs gentle curve in *I. dumicola*); (2) the unmodified palpal tibia (vs incrassate in *I. dumicola*), and the tibia I nearly straight (vs gradually tapering to a narrow tip in *I. dumicola*) (cf. Figs 6F–H, 8A–C vs Coyle 1995: figs 347–354). Females of the new species can be readily distinguished from all known female congeners by their distinctive spermathecal morphology, with elongate and thin receptacles and regularly rounded spermathecal lobes (cf. Fig. 8E vs Coyle 1995: figs 343–346, 355–359, 362–366, 369–370).

### Etymology

The specific epithet is a noun in apposition in reference to the type locality.

### Type material

#### Holotype

INDIA • ♂; Kerala, Palakkad, Silent Valley National Park, Sairandhri Range; 11°05'38.0" N, 76°26'44.4" E; 1024 m; 14 Aug. 2024; R. Tripathi and G. Kadam leg.; from dead tree log, by hand; NCBS, NRC-AA-9039.

#### Paratype

INDIA • 1 ♀; same data as for holotype; NCBS, NRC-AA-9040.

## Description

### Male (holotype, Figs 6, 8A–C)

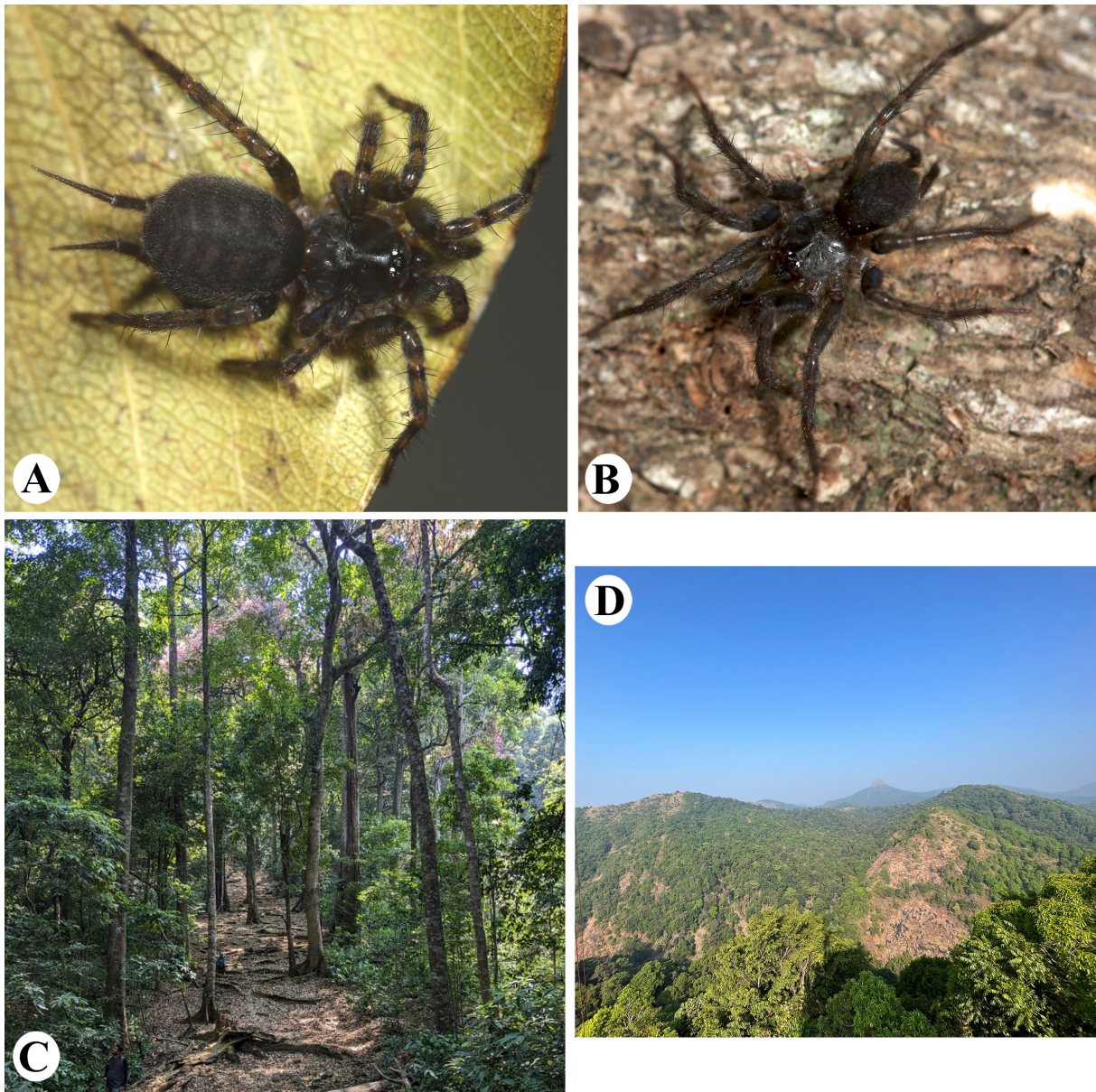
Measurements: total length including chelicerae: 5.78. Carapace: length 2.71, width 2.36. Caput: slightly raised. Ocular tubercle: raised, length 0.43, width 0.80. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 6B). Clypeus: narrow; clypeal fringe and short (Fig. 6C). Fovea: deep, transverse. Chelicerae: length 1.08, width 0.73. Abdomen: length 3.07, width 2.08. Maxilla with 22–25 cuspules. Labium: length 0.22, width 0.56, lacking cuspules. Labio-sternal mounds: separate. Sternum: length 1.48, width 1.36. Lengths of legs and palpal segments: see Table 2, legs 4,3,2,1. Spination: palp: femur plv 5 do 4 rlv 5, patella pld 2 do 2 rlv 2, tibia pl 1 pld 1 plv 3 rl 2 rld 2 rlv 3, tarsus/cymbium pld 3 rld 2; legs: femora I–II pld 1 plv 7 do 6 rlv 7, III plv 6 do 6 rld 2 rlv 6, IV plv 6 do 5 rlv 6; patellae I pld 2 rld 2, II–IV pld 2 do 3 rld 2; tibia I pld 2 rld 2, II–IV pld 2 do 3 rld 2; tibia I pl 2 pld 1 rl 2 rld 1 rlv 2, II pl 1 pld 1 plv 1 rl 2 rld 2 rlv 2, III–IV pl 2 pld 2 plv 2 rl 2 rld 2 rlv 2; metatarsus I plv 1 rlv 1 v1, II pl 2 pld 2 plv 2 rl 2 rld 2 rlv 3 v 1, III–IV pl 1 pld 2 plv 3 rl 1 rld 2 rlv 3; tarsi I–IV spineless. Tibia I with subterminal thorn shape retrolateral apophysis (Fig. 6F–H). Sternum hirsute; nearly circular and with three pairs of sigillae: anterior pair at height of rl coxa I, largest; medial pair at height of rl coxa II; posterior pair at height of rl coxa III, smallest; all marginal (Fig. 6D). PLS with three segments, basal 0.97, median 0.89, digitiform apical 1.48. PMS with one segment (Fig. 6K). Palpal bulb moderately long and nearly straight, embolus strongly curved at apex. Cymbial apophysis with two prolateral and two retrolateral spines. Palpal bulb thick and nearly straight, with sperm duct prominently wide at base and narrowing after the midpoint (Fig. 8A–C). Embolus 0.72 long, 0.25 wide. Colour: carapace, clypeus, leg segments, spinnerets greyish white; eye region dark; chelicerae, labium, maxillae, sternum pale whitish orange; opisthosoma black with purple shade (Fig. 6A). Carapace densely covered with thin hairs, with brownish streaks; thoracic margin with semi erect setae and dark coloured. Pars cephalica slightly elevated. Eyes on low tubercles, encircled with black pigment (Fig. 6B). Cheliceral promargin with 10 teeth and retromargin with 10 teeth, and 8 tiny teeth within fang furrow (Fig. 6I–J).

### Female (paratype, Figs 7, 8D–E)

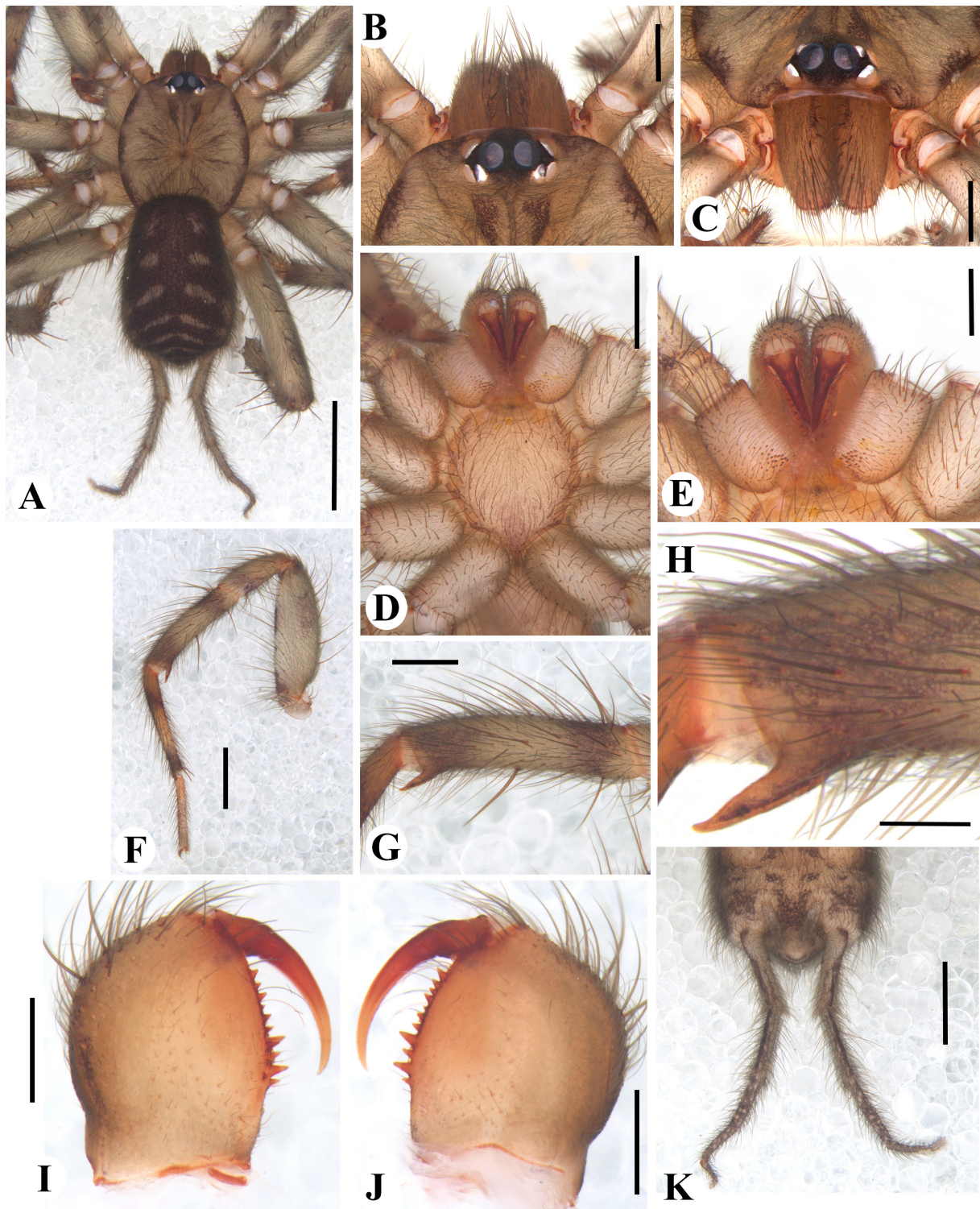
Measurements: total length including chelicerae: 6.78. Carapace: length 2.65, width 2.41. Caput: slightly raised. Ocular tubercle: raised, length 0.32, width 0.61. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 7B). Clypeus: narrow; clypeal fringe and short (Fig. 7C). Fovea: deep, transverse. Chelicerae: length 1.14, width 0.69. Abdomen: length 4.13, width 3.29. Maxilla with 27–28 cuspules. Labium: length 0.17, width 0.42, lacking cuspules. Labio-sternal mounds, separate. Sternum: length 1.55, width 1.43. Lengths of legs and palpal segments: see Table 2, legs 4,3,2,1. Spination: palp: femur plv 3 do 4 rlv 3; patella pld 1 do 1 rld 1; tibia pld 2 pl 2 plv 3 rld 2 rl 2 rlv 3; tarsus/cymbium pld 2 pl 2 plv 2 rld 1 rl 2 rlv 2; legs: femur I plv 4 do 3 rlv 4, II–IV plv 4 do 4 rld 1 rlv 4; patellae I–IV pld 2 do 2 rld 2; tibia I pl 1 plv 1 rl 1 rld 1, II pld 1 pl 1 plv 2 rld 2 rl 1 rlv 2, III–IV pl 2 pld 2 plv 3 rl 2 rld 1 rlv 3; metatarsi I pl 1 plv 3 rld 1 rlv 3, II pld 1 pl 2 plv 3 rld 1 rl 2 rlv 3, III–IV pld 1 pl 2 plv 2 rl 2 rld 1 rlv 3; tarsus I–IV spineless. General aspects essentially as in male except: body colour darker (Fig. 7A), cheliceral promargin with 10 teeth and retromargin with 11 teeth, and 12 tiny teeth within fang furrow (Fig. 7F–G). Spinnerets PMS (length 0.63); PLS (total 4.25): proximal (length 1.27); medial (length 0.88) shortest; distal (length 2.10). Spermathecae with four receptacles, each extremely thin and elongate, ending with a large and conspicuously rounded lobe; base of receptacles fused to a weakly W-shaped membrane (Fig. 8E).

## Distribution

Known only from the type locality, Silent Valley National Park, Kerala, India (Fig. 14).



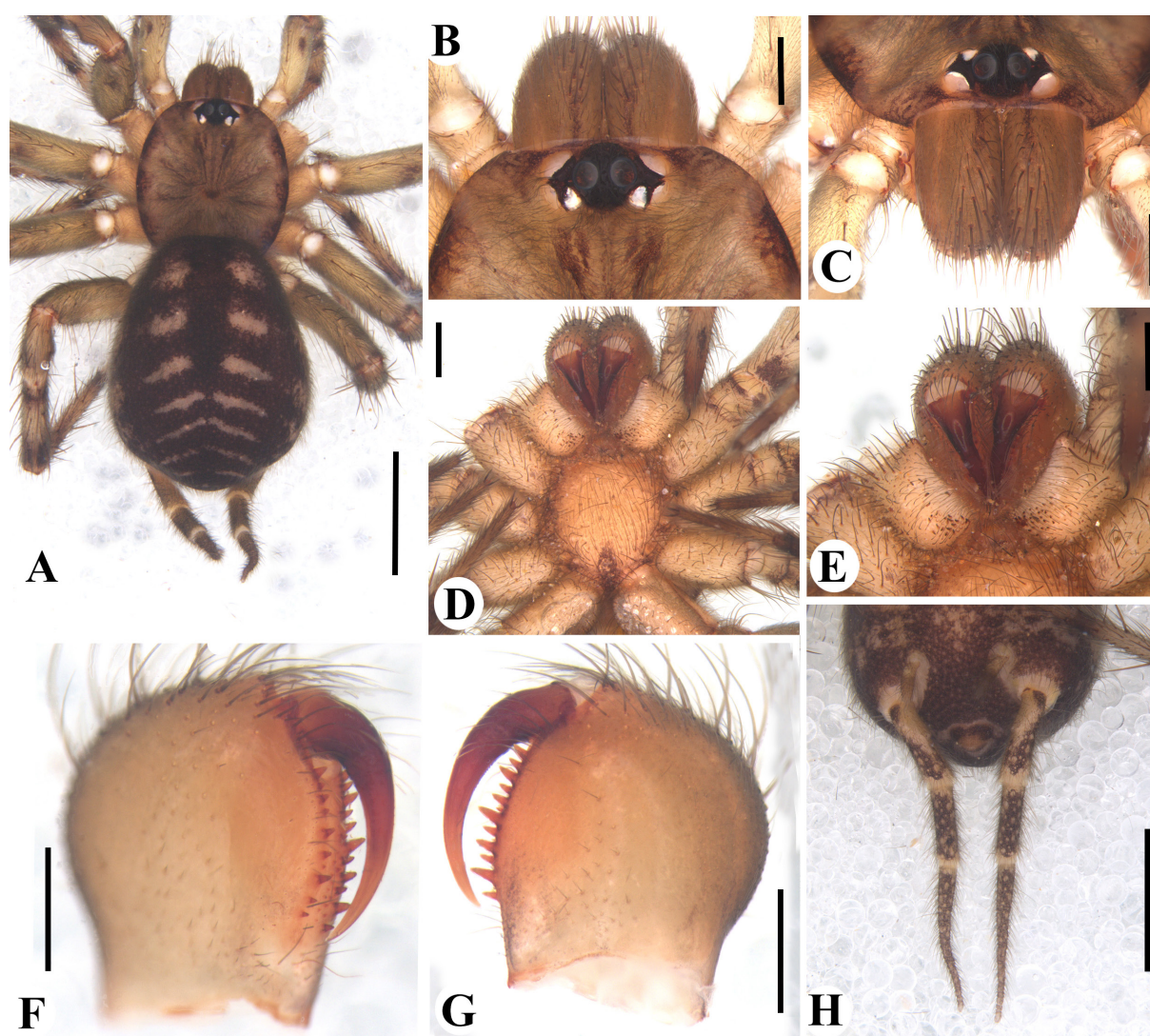
**Fig. 5.** Field photographs of *Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov. **A.** Female. **B.** Male. **C.** Habitat of type locality. **D.** General habitat. Photographs by Rishikesh Tripathi (A–B), Thangalazhi Balakrishnan Suryanarayanan (C) and Jose Athira (D).



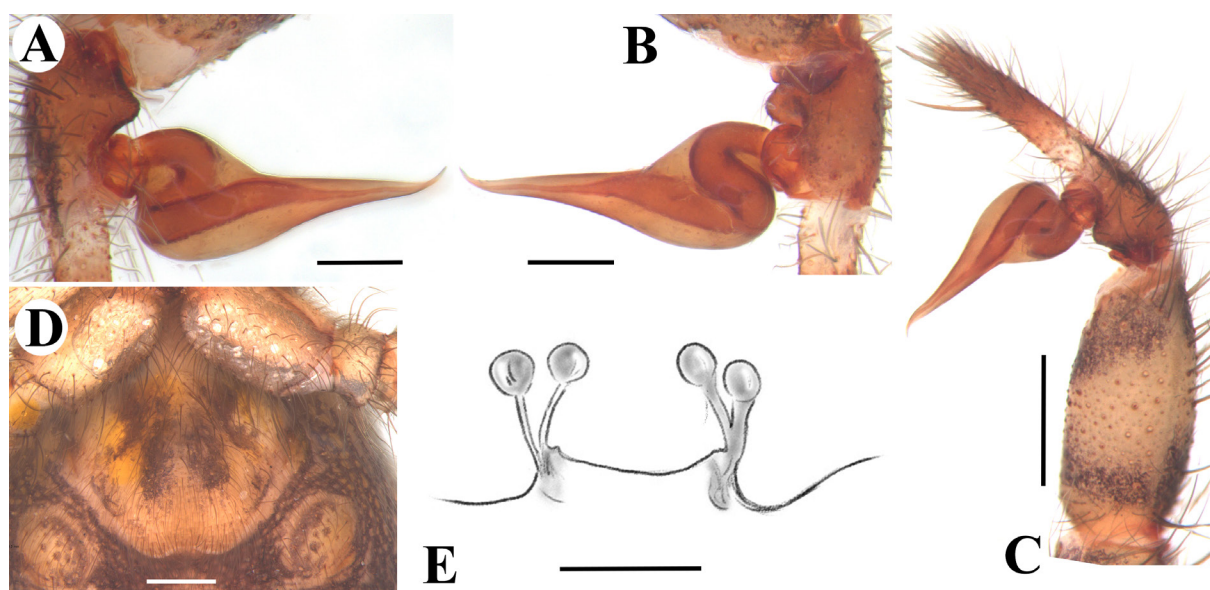
**Fig. 6.** *Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov., holotype, ♂ (NCBS, NRC-AA-9039). **A.** Habitus, dorsal view. **B.** Ocular area, dorsal view. **C.** Head, frontal view. **D.** Labium, maxillae and sternum, ventral view. **E.** Close-up of labium and maxillae, ventral view. **F.** Leg I, retrolateral view. **G.** Same, tibia I, retrolateral view. **H.** Same, tibia I apophysis close-up, retrolateral view. **I.** Left chelicera, retrolateral view. **J.** Same, prolateral view. **K.** Spinnerets, ventral view. Scale bars: A = 2 mm; B–C, E, G, I–J = 0.5 mm; D, F, K = 1 mm; H = 0.2 mm.

**Table 2.** Morphometry of legs and palp of *Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov., holotype, ♂ (HT; NRC-AA-9039) and paratype, ♀ (PT; NRC-AA-9040).

	Leg I		Leg II		Leg III		Leg IV		Palp	
	HT	PT	HT	PT	HT	PT	HT	PT	HT	PT
<b>Femur</b>	2.24	1.85	2.35	1.83	2.54	1.98	2.80	2.17	1.44	1.16
<b>Patella</b>	0.98	0.73	1.02	0.78	0.93	0.65	1.07	1.01	0.72	0.65
<b>Tibia</b>	1.81	1.24	1.77	1.36	1.91	1.73	2.08	1.79	0.78	0.85
<b>Metatarsus</b>	1.78	1.26	2.29	1.19	2.75	1.53	3.36	2.07	–	–
<b>Tarsus</b>	1.18	0.85	1.43	0.79	1.44	1.19	1.75	1.19	1.05	1.02
<b>Total</b>	7.99	5.93	8.86	5.95	9.57	7.08	11.06	8.23	3.99	3.68



**Fig. 7.** *Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov., paratype, ♀ (NCBS, NRC-AA-9040). A. Habitus, dorsal view. B. Ocular area, dorsal view. C. Head, frontal view. D. Labium, maxillae and sternum, ventral view. E. Close-up of labium and maxillae, ventral view. F. Left chelicera, prolateral view. G. Same, retrolateral view. H. Spinnerets, ventral view. Scale bars: A = 2 mm; B–H = 0.5 mm.



**Fig. 8.** *Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov., genitalia of holotype, ♂ (NCBS, NRC-AA-9039, A–C) and paratype, ♀ (NRC-AA-9040, D–E). **A.** Left palp with palpal bulb retrolateral view. **B.** Same, prolateral view. **C.** Distant of left palp, retrolateral view. **D.** Female genitalic plate, undissected ventral view. **E.** Spermathecae, dorsal view. Scale bars: A–B, E = 0.2 mm; C–D = 0.5 mm.

### *Catalogue of Indian Ischnothelidae*

Following this study, the Ischnothelidae of India now comprise five described species belonging to one genus, all are described from mainland India.

Genus *Indothele* Coyle, 1995

*Indothele amboli* Kadam, Tripathi & Sherwood sp. nov.

#### **Type locality**

Amboli, Sindhudurg, Maharashtra, India.

#### **Type repository**

NCBS.

#### **Records from India**

Maharashtra.

#### **Distribution**

Known only from India (Fig. 14).

*Indothele dumicola* (Pocock, 1900)

Figs 9–10, 14

*Ischnothele dumicola* Pocock, 1900: 171, fig. 55 (♂♀).

*Indothele dumicola* – Coyle 1995: 111, figs 347–361 (transfer ♂♀ from *Ischnothele*).

'*Indothele dumicola*' – Sen *et al.* 2015: 18, plate 12, fig. 15–22 (♀) (misidentification = *Macrothele* sp.).

### Type material examined

#### Lectotype

INDIA • ♂; Poona (=Pune), Maharashtra; 21 Nov. 1899; Wroughton leg.; in tube 1 together with 2 female lectotypes; BMNH.

#### Paralectotypes

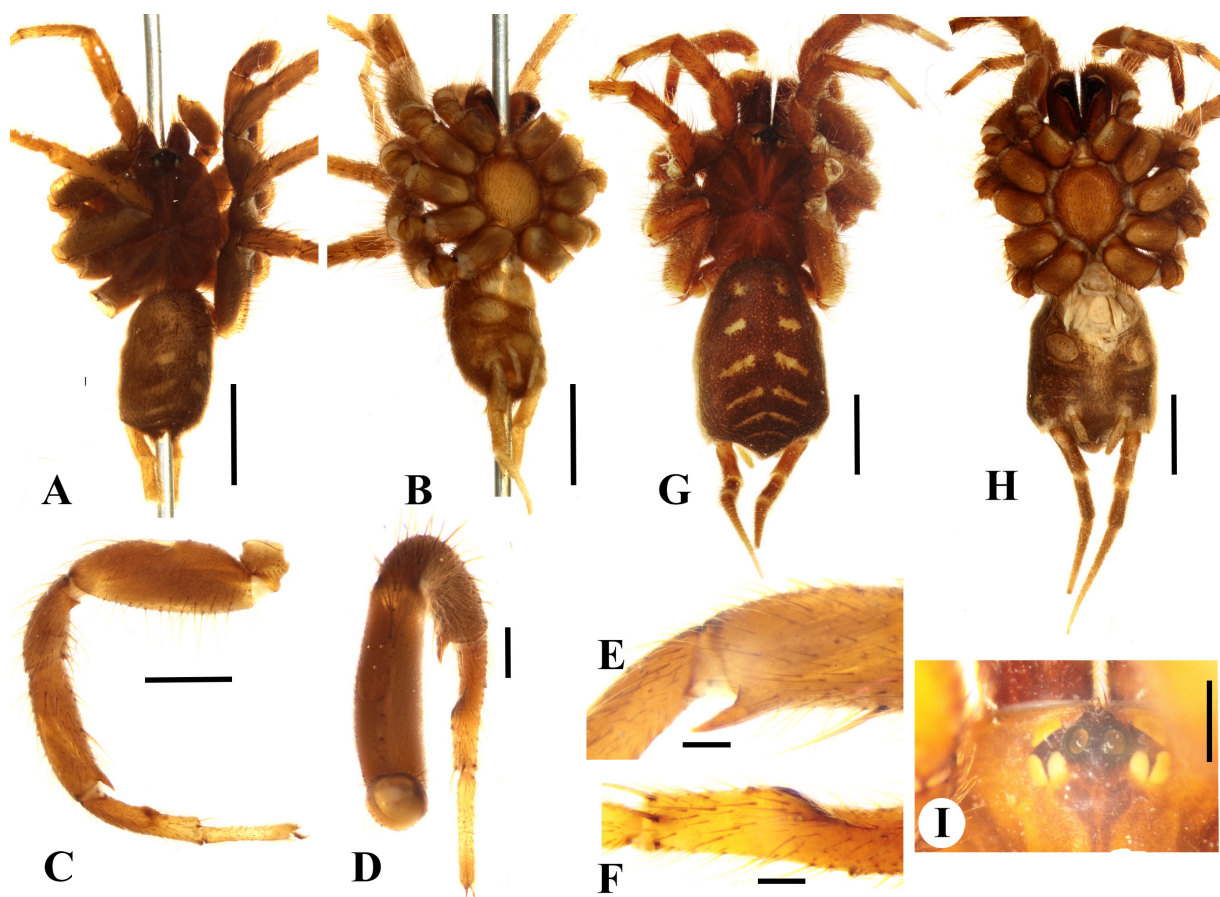
INDIA • 2 ♀♀; same data as for lectotype; one spermathecae dissected; in tube 1 with the male lectotype; BMNH • 2 ♀♀; same data as for lectotype; both spermathecae dissected; tube 2; BMNH • 36 ♀♀; same data as for lectotype, undissected; tube 3; BMNH.

### Records from India

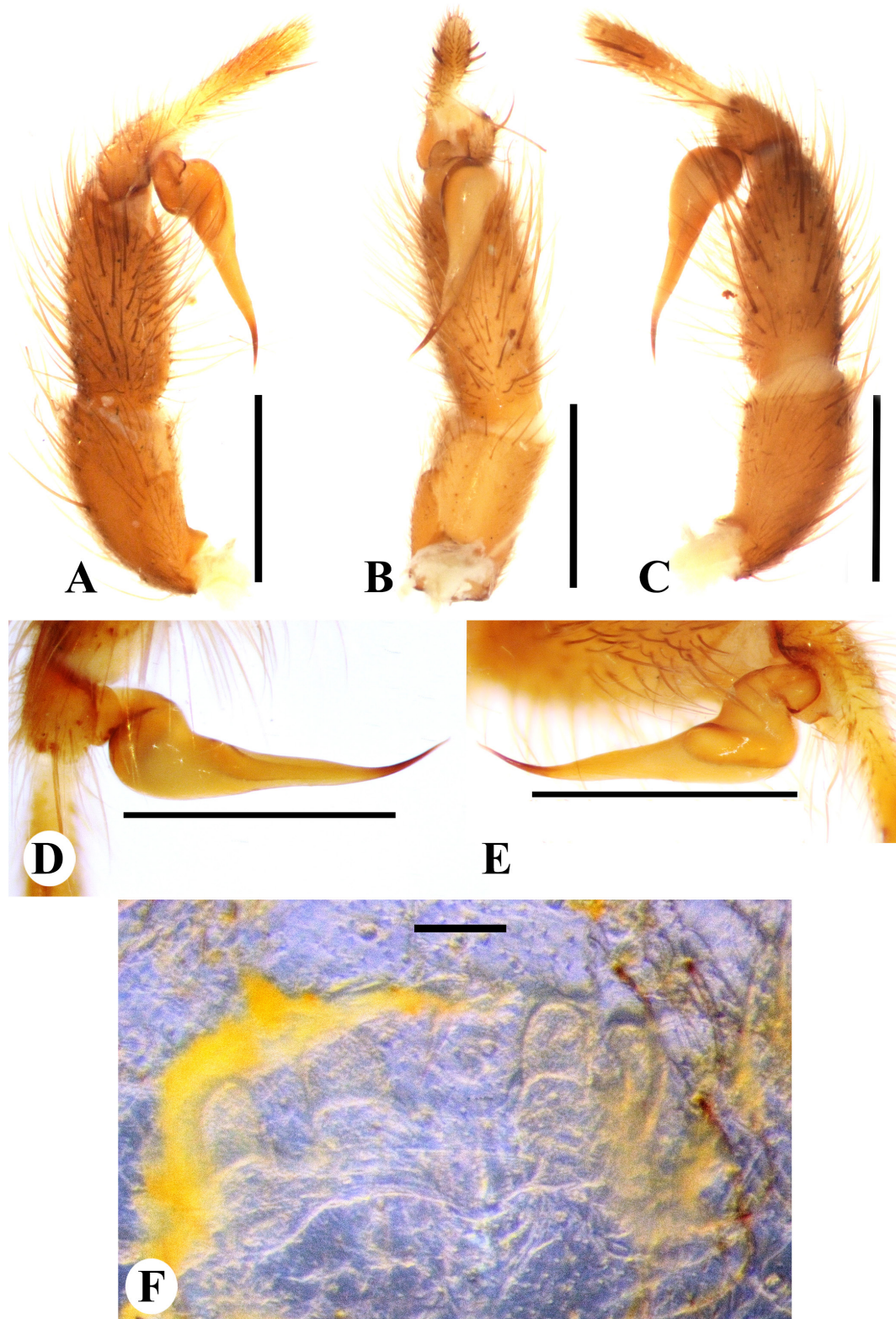
Maharashtra (Coyle 1995; this work: Fig. 14).

### Distribution

Known only from India (World Spider Catalog 2024).



**Fig. 9.** *Indothele dumicola* (Pocock, 1900), lectotype, ♂ (BMNH, A–F) and paralectotype, ♀ (BMNH, G–I). **A.** Habitus, dorsal view. **B.** Same, ventral view. **C.** Leg I, retrolateral view. **D.** Same, ventral view. **E.** Same, tibia I apophysis close-up, retrolateral view. **F.** Metatarsus I, ventral view. **G.** Habitus, dorsal view. **H.** Same, ventral view. **I.** Ocular area, dorsal view. Scale bars: A–B, G–H = 2 mm; C–D, I = 1 mm; E–F = 0.2 mm.



**Fig. 10.** *Indothele dumicola* (Pocock, 1900), genitalia of syntype, ♂ (BMNH, A–E) and ♀ (BMNH, F). **A.** Left palp, prolateral view. **B.** Same, ventral view. **C.** Same, retrolateral view. **D.** Palpal bulb close-up, retrolateral view. **E.** Same, prolateral view. **F.** Spermathecae, dorsal view. Scale bars: A–C = 1 mm; D–F = 0.5 mm.

**Table 3.** Morphometry of legs and palp of non-type male of *Indothele mala* Coyle, 1995 (BMNH).

	Leg I	Leg II	Leg III	Leg IV	Palp
<b>Femur</b>	2.74	2.53	2.55	3.04	1.47
<b>Patella</b>	1.39	1.47	1.08	1.29	1.13
<b>Tibia</b>	1.77	1.48	1.58	2.18	1.20
<b>Metatarsus</b>	1.75	1.88	2.55	3.11	–
<b>Tarsus</b>	1.28	1.45	1.78	1.90	1.24
<b>Total</b>	8.93	8.81	9.54	11.52	5.04

### Remarks

This species was adequately redescribed by Coyle (1995), we present the first photomicrographs of the species (Figs 9–10). The specimen depicted by Sen *et al.* (2015) is clearly a specimen of *Macrothele*.

### *Indothele mala* Coyle, 1995

Figs 11–12, 14, Table 3

*Indothele mala* Coyle, 1995: 114, figs 369–370 (♀).

*Indothele mala* – this work: Figs 11A–H, 12A–E (♂).

### Type locality

Tirumala, Andhra Pradesh, India (Coyle 1995).

### Type repository

CAS (Coyle 1995).

### Material examined

INDIA • 1 ♂; Karnataka, Kolar; 12°45' to 13°35' N, 77°50' to 78°35" E; 2–4. Apr. 1902–1912; G.P. Staunton leg.; BMNH • 1 ♀; same data as for preceding; BMNH (Fig. 11L).

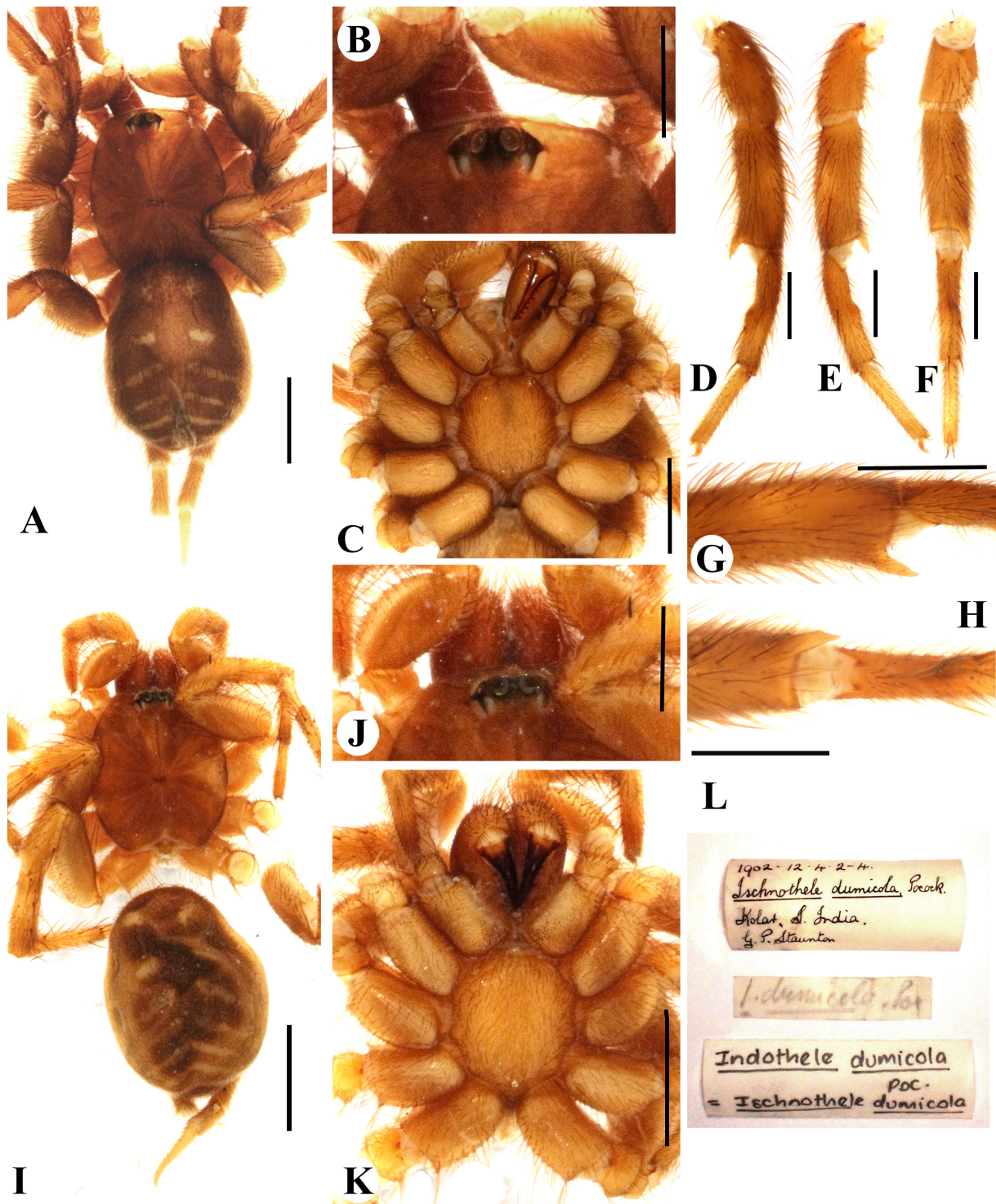
### Diagnosis

Males of *Indothele mala* resemble those of *I. amboli* sp. nov., by the very long and slender embolus curving gently upward; the metatarsus I ventral apophysis situated medially and consisting of a low retrolateral ridge, and the distal end of the metatarsus with a tiny protuberance situated basally. However, it can be distinguished by the following characters: (1) the embolus slightly broad with short tip (vs much slender and embolic tip longer in *I. amboli*), and (2) the tibial apophysis short and broad (vs elongate and narrow in *I. amboli*) (cf. Fig. 11A–E vs Figs 2, 4A–C).

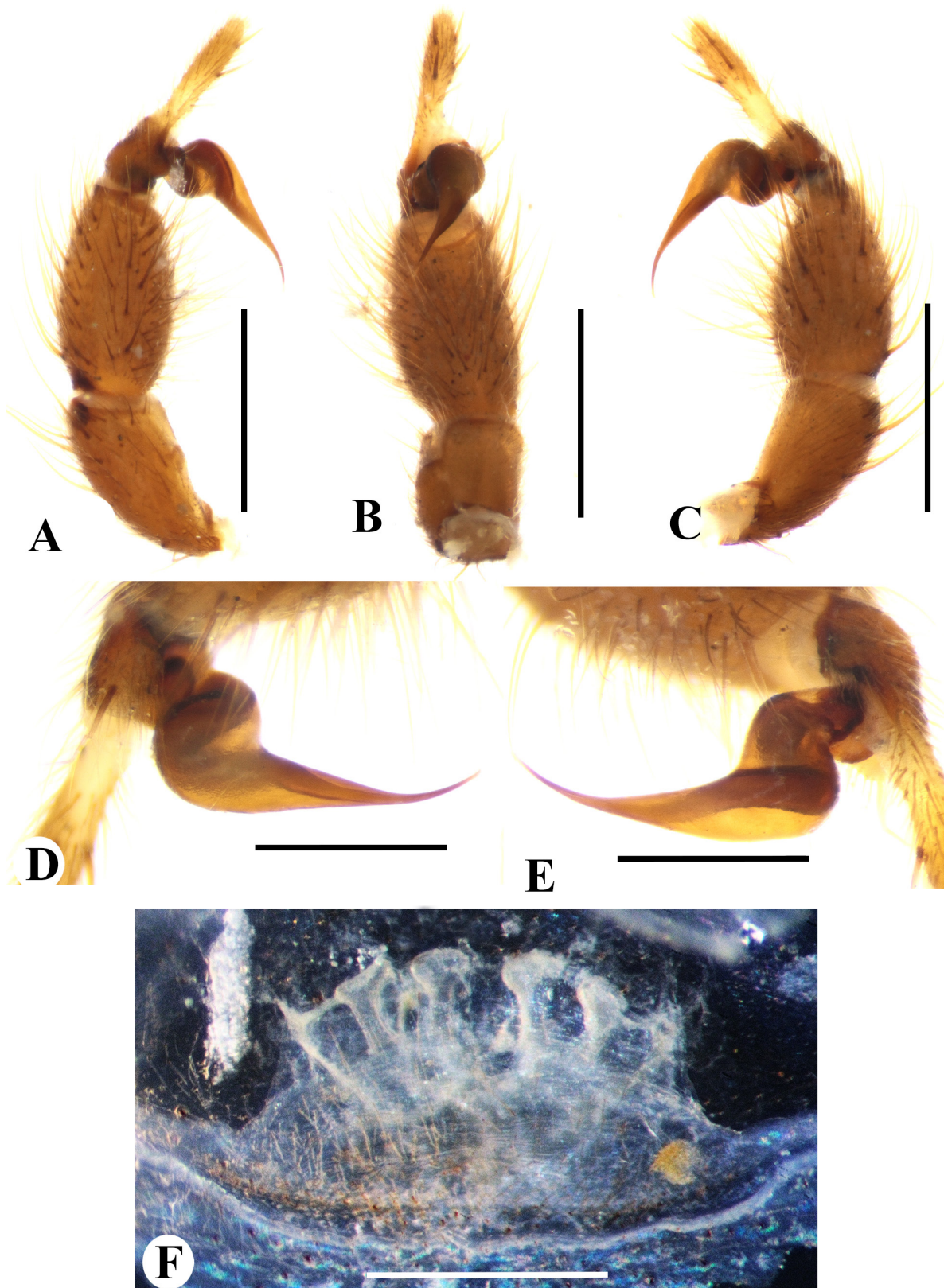
### Description

#### Male (Figs 11A–H, 12A–E)

Measurements: total length including chelicerae: 8.80. Carapace: length 3.83, width 3.08. Caput: slightly raised. Ocular tubercle: raised, length 0.46, width 0.90. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 11B). Clypeus: narrow; clypeal fringe and short. Fovea: deep, transverse. Chelicerae: length 1.22, width 0.85. Abdomen: length 4.45, width 3.40. Maxilla with 20–25 cuspules covering approximately 49% of the proximal edge. Labium: length 0.25, width 0.66, lacking cuspules. Labio-sternal mounds: separate. Sternum: length 2.14, width



**Fig. 11.** *Indothele mala* Coyle, 1995, ♂ (BMNH, A–H) and ♀ (BMNH, I–K). A. Habitus, dorsal view. B. Ocular area, dorsal view. C. Labium, maxillae and sternum, ventral view. D. leg I, retrolateral view. E. Same, prolateral view. F. Same, ventral view. G. Same, tibia I apophysis close-up, retrolateral view. H. Same, tibia I apophysis close-up, ventral view. I. Habitus, dorsal view. J. Ocular area, dorsal view. K. Labium, maxillae and sternum, ventral view. L. Data labels. Scale bars: A, C, I, K = 2 mm; B, D–H, J = 1 mm.



**Fig. 12.** *Indothele mala* Coyle, 1995 genitalia of ♂ (BMNH, A–E) and ♀ (BMNH, F). **A.** Left palp, retrolateral view. **B.** Same, ventral view. **C.** Same, prolateral view. **D.** Same, palpal bulb, retrolateral view. **E.** Same, prolateral view. **F.** Spermathecae, dorsal view. Scale bars: A–E = 1 mm; F = 0.1 mm.

1.79. Lengths of legs and palpal segments: see Table 3, legs 4,3,2,1. Tibia I with triangular retrolateral apophysis (Fig. 11D–H). Femur III: unmodified. Palpal tibia: unmodified. Palpal cymbium: elongate, tarsus-like (Fig. 12A–C). Metatarsus I: metatarsal protuberance present and situated ventroretrolaterally. PLS with three segments, basal 1.20, median 1.06, digitiform apical 1.32, rigid. PMS with one segment. Palpal bulb with embolus 3 times longer than base of bulb, slight dorsal curve at apex, sperm duct wide (Fig. 12A–E). Colour: overall brown, carapace darker than legs, opisthosoma dark brown with beige chevrons dorsally (Fig. 11A).

#### **Female** (Figs 11I–K, 12F)

Measurements: total length including chelicerae: 8.36. Carapace: length 2.98, width 2.69. Caput: slightly raised. Ocular tubercle: raised, length 0.39, width 0.78. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row slightly procurved, posterior row recurved (Fig. 11J). Clypeus: narrow; clypeal fringe: short. Fovea: deep, transverse. Chelicerae: length 0.80, width 0.49. Abdomen: (detached) length 4.14, width 3.15. Maxilla with 30–35 cuspules covering approximately 43% of the proximal edge. Labium: length 0.19, width 0.49, lacking cuspules. Labio-sternal mounds: separate. Sternum: length 1.85, width 1.53. Lengths of legs and spination not scored due to fragility (curatorial decision), legs 4,3,2,1. PLS with three segments, basal 1.07, median 0.73, digitiform apical 1.41, rigid. PMS with one segment. Spermathecae with four receptacles, paired on respective sides, lobes at apexes indistinguishable from receptacle neck, each rounded and unilobar (Fig. 12F). Colour: as in male (Fig. 11I).

#### **Records from India**

Andhra Pradesh and Karnataka (Coyle 1995; present work: Fig. 14).

#### **Distribution**

Known only from India (World Spider Catalog 2024).

#### **Remarks**

The male is described for the first time in this work. The BMNH material of *I. mala* was historically misidentified as *I. dumicola* (Figs 11–12).

#### ***Indothele rothi* Coyle, 1995**

*Indothele rothi* Coyle, 1995: 114, figs 362–368 (♀).

#### **Type locality**

Kodaikanal, Tamil Nadu, India (Coyle 1995).

#### **Type repository**

AMNH (Coyle 1995).

#### **Records from India**

Tamil Nadu (Coyle 1995; this work: Fig. 14).

#### **Distribution**

Known only from India (World Spider Catalog 2024).

*Indothele silentvalley* Tripathi, Kadam & Sherwood sp. nov.

**Type locality**

Silent Valley National Park, Palakkad, Kerala, India.

**Type repository**

NCBS.

**Records from India**

Kerala.

**Distribution**

Known only from India (Fig. 14).

**Misplaced species**

Macrothelidae Simon, 1892

*Macrothele* Ausserer, 1871

*Macrothele indicola* (Tikader, 1969) comb. nov.

Fig. 13

*Ischnothele indicola* Tikader, 1969: 160, figs 25–29 (♂♀).

**Type material examined**

**Holotype**

INDIA • ♂; Meghalaya; Shillong (previously located in the state of Assam, as mentioned in original description, now the capital of the state of Meghalaya), Kench's trace; 3 Aug. 1966; S. Biswas leg.; NZC-ZSI 3833/18.

**Paratype**

INDIA • 1 ♀, same data as for holotype; NZC-ZSI 3835/18.

**Allotype**

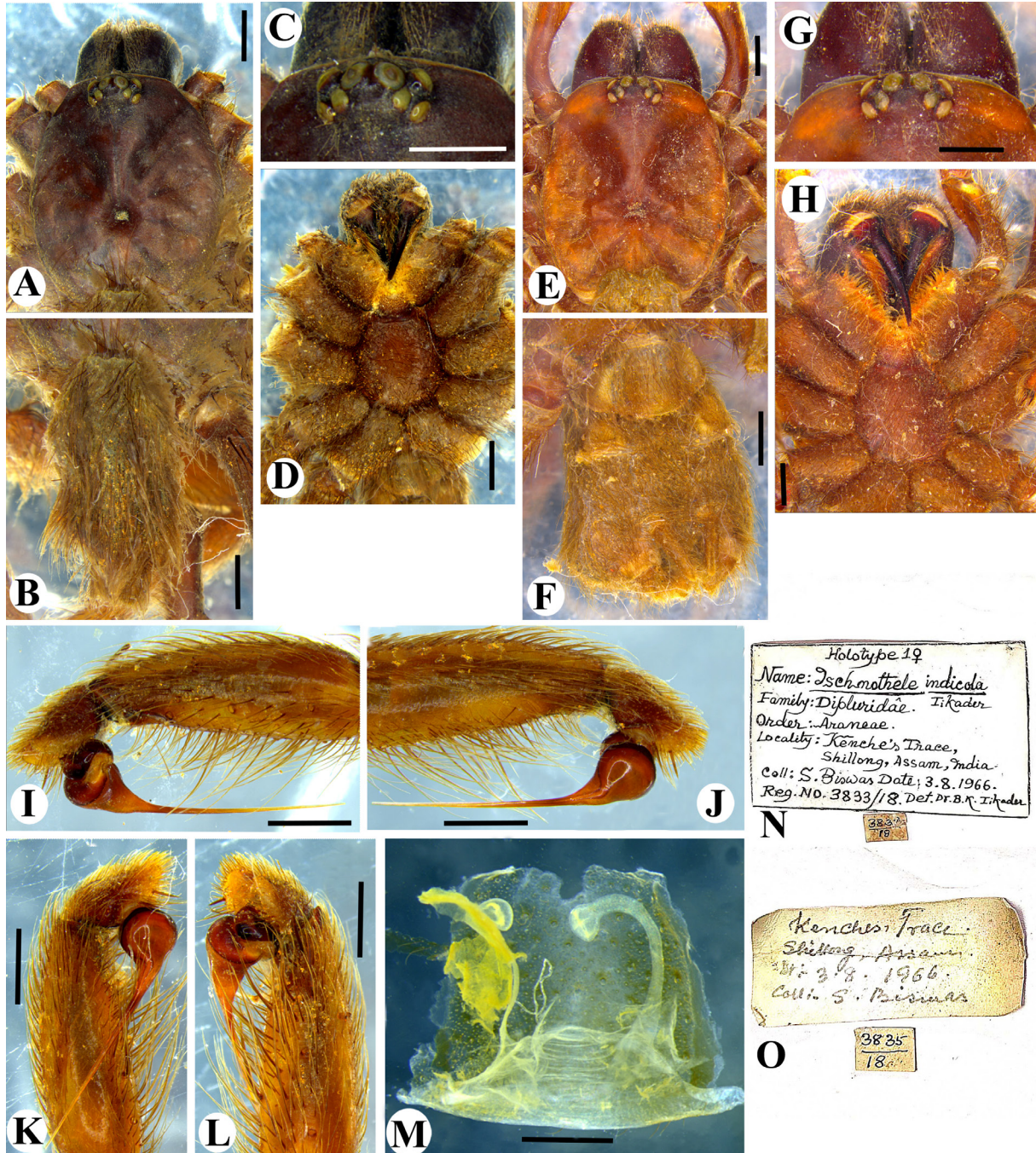
INDIA • 1 ♂, same data as for holotype; NZC-ZSI 3835/18.

**Rationale for transferral**

Tikader (1969) described this species based on specimens of both sexes, collected from Shillong, Meghalaya. Detailed examination of the type images of *Ischnothele indicola* shows that it has diagnostic features of *Macrothele* Ausserer, 1871, including the male palpal bulb with a long and slender embolus, and the female spermathecae with long receptacles and globular apical lobes, as well as the labium of both sexes bearing several cuspules (Fig. 13D, H) (see also Shimojana & Haupt 1998; Xu & Yin 2001; Xu *et al.* 2002). Therefore, based on the above characters, we transfer *Ischnothele indicola* to the genus *Macrothele*, creating the new combination *Macrothele indicola* comb. nov.

**Remarks**

The specimen is in bad condition and fragile, with broken legs and palp, the abdomen shows noticeable shrinking from probable historic desiccation.



**Fig. 13.** *Macrothele indicola* (Tikader, 1969) comb. nov., holotype, ♂ (NZC-ZSI 3833/18, A–D, I–L) and paratype, ♀ (NZC-ZSI 3835/18, E–H, M). A. Carapace, dorsal view. B. Abdomen, dorsal view. C. Ocular area, dorsal view. D. Labium, maxillae and sternum, ventral view. E. Carapace, dorsal view. F. Abdomen, ventral view. G. Ocular area, dorsal view. H. Labium, maxillae and sternum, ventral view. I. Left palpal bulb, retrolateral view. J. Same, prolateral view. K. Same, oblique view. L. Same, oblique view. M. Spermathecae, dorsal view. N. Label from type tubes. O. Same, from paratype tube. Scale bars: A–M = 2 mm. Photographs by, and courtesy of, Souvik Sen (Zoological Survey of India, Kolkata).

## Discussion

Ischnothelidae is a widespread family found across tropical regions of the New World, Africa, Madagascar, India, and Sri Lanka (Coyle 1995). In India, the only known genus of the family Ischnothelidae is *Indothele*, which is primarily distributed in southern India and comprises five species in India and one in Sri Lanka. Due to the similarity in opisthosomal patterns, *Indothele* is often confused with other genera such as *Macrothele*, as misplaced by Sen *et al.* (2015), and in some cases, it has also been misidentified as *Ischnothele*, as noted in Coyle (1995).

Coyle (1995) suggested that *Indothele lanka*, from Sri Lanka (Fig. 14), is an island endemic, distinctly different in its spermathecal form compared to its sister group on the Indian mainland. Kerala, being the nearest mainland state to Sri Lanka, provides an interesting biogeographical link. In this study, we describe a new species, *I. silentvalley* sp. nov., which exhibits a similar spermathecal structure to *I. lanka*, though with noticeable interspecific differences. All current species of *Indothele* are endemic, making them an excellent model organism for studying evolutionary patterns. Additionally, it is likely that many more undescribed species remain undiscovered, highlighting the need for further research and exploration of this genus.

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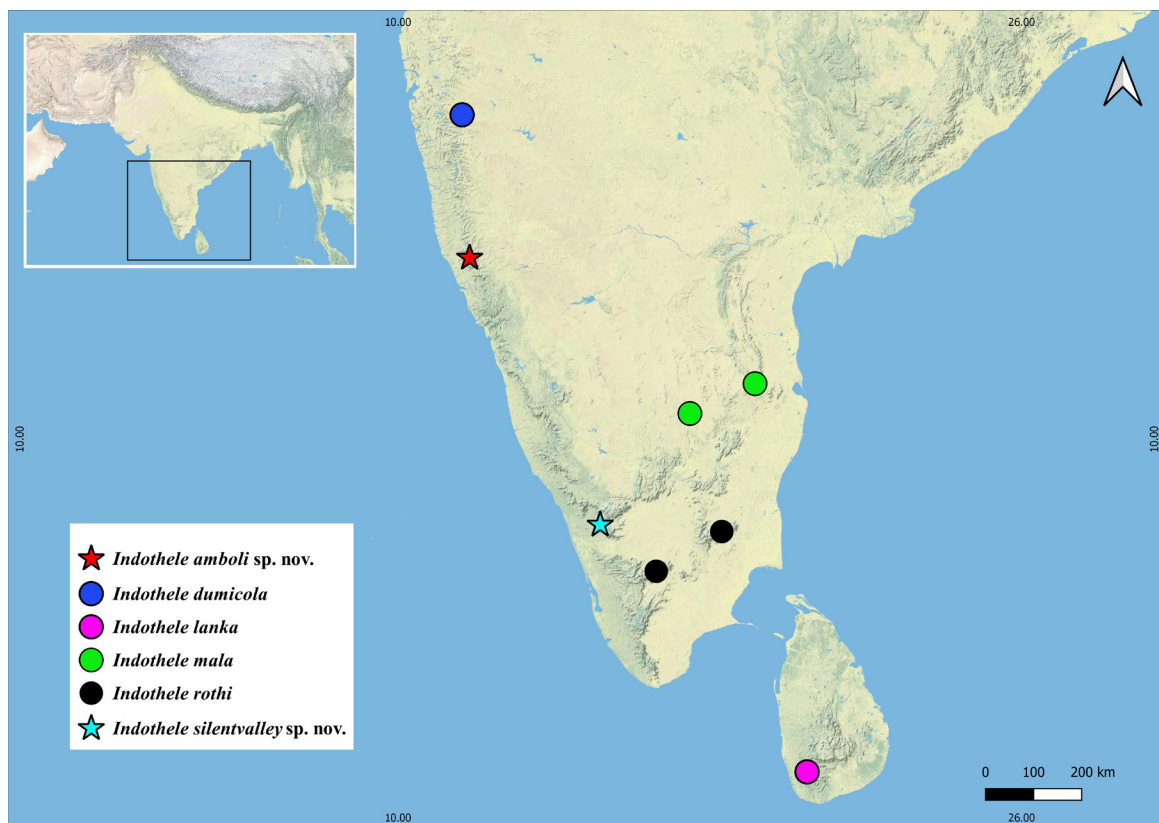


Fig. 14. Distribution of the genus *Indothele* Coyle, 1995.

for granting the collection permit. RT gratefully acknowledges the Joint CSIR-UGC for the research fellowship. We are deeply thankful to Dr Souvik Sen (ZSI, Kolkata, India) who provided DS with the type images of *Macrothele indicola*, to Tejas Sawant (Maharashtra, India) for providing us with remarkable live images of *Indothele amboli* and its habitat, and to Thangalazhi Balakrishnan Suryanarayanan (Kerala, India) for contributing habitat images from Silent Valley. Special thanks are due to Athira Jose (Kerala, India) for accompanying RT during fieldwork at Silent Valley National Park. DS extends her gratitude to Jan Beccaloni (BMNH) for general support and to Dana Perry (BMNH) for the use of the Light Microscopy Facility.

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