



## First record of the genus *Tigidia* Simon, 1892 (Araneae: Barychelidae) from India with description of three new species from the Western Ghats, India

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**Abstract:** Prior to this study the genus *Tigidia* Simon, 1892 of the Brush-footed Spider family Barychelidae was represented by eight species endemic to Madagascar and Mauritius Islands. The first occurrence of *Tigidia* in India is reported here with the description of three new species from the Western Ghats, *T. sahyadri* sp. nov. from Uttara Kannada District, Karnataka; *T. nilgiriensis* sp. nov. from Kotagiri, Nilgiri District, Tamil Nadu and *T. rutilofronis* sp. nov. from Maruthamalai, Coimbatore District, Tamil Nadu. This genus is probably a Gondwana relict. Natural history information is provided for all the species.

**Keywords:** Araneae, Barychelidae, Gondwana relict, new species, *Tigidia*, Western Ghats.

## INTRODUCTION

The Brush-footed Spider family Barychelidae is represented worldwide by 44 genera and 303 species (Platnick 2011). Thirteen of these genera have only a single pair of spinnerets (Raven 1994; Dippenaar-Schoeman 2002). Another important generic character of the barychelids is the size of the paired claws, of the 13 two spinneret barychelid genera, there are only three genera having paired tarsal claws I and II very reduced compared

**Abbreviations:** ALE - anterior lateral eye; AME - anterior median eye; MOQ - median ocular quadrate; MS - Manju Siliwal; NG - Neha Gupta; PLE - posterior lateral eye; PME - posterior median eye; PLS - posterior lateral spinnerets; PMS - posterior median spinnerets; RR - Robert Raven; RS - Rajesh Sanap; STC - Superior or paired tarsal claws; WILD - Wildlife Information Liaison Development Society; ZM - Zeeshan Mirza. Abbreviations used for hairs and spines count are: d - dorsal; fe - femur; mt - metatarsus; p - prolateral; pa - patella; r - retrolateral; ta - tarsus; ti - tibia; v - ventral.



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to claws on legs III and IV viz., *Diplothele* O. P.-Cambridge 1890, *Synothele* Simon, 1908 and *Tigidia* Simon, 1892 (Raven 1985). Of these, only *Diplothele* represented by three species was previously known from India (Siliwal et al. 2009; Platnick 2011). The most closely related genus to *Diplothele* is considered to be *Tigidia*.

The genus *Tigidia* was thought to be endemic to Madagascar and Mauritius Islands where it is represented by eight species (Platnick 2011). All the species of this genus were described a century ago and are known only from their type locality. The genus was established with the description of *T. mauriciana* by Simon (1892) from Mauritius. *Tigidia* remained monotypic until Benoit (1965) added two genera, *Forsythula* Pocock, 1903 and *Tructicus* Strand, 1907, to its synonymy. Further, Raven (1985) also synonymised three more genera (*Acropholius* Simon, 1902; *Cestotrema* Simon, 1902; *Nossibea* Strand, 1907) from Madagascar with *Tigidia*.

The Western Ghats is known for its rich and endemic fauna being a biodiversity hotspot (Myers et al. 2000). However, the present knowledge of its invertebrate fauna is meager and the region likely supports a wealth of invertebrate fauna which is still unknown (Daniels 2003; Mirza & Sanap 2010). During surveys in the central Western Ghats of Karnataka, authors (NG and MS) collected a barychelid that had two spinnerets. Initially, it was considered to belong to the Indian genus *Diplothele*. *Diplothele* and *Tigidia* are very close allied genera but Raven (1985) listed two distinct characters to distinguish between them, namely, ocular area wider behind than in front and the presence of preening comb on metatarsi (Image 1). On examination of the specimen under the stereomicroscope it was found that the species had a preening comb and an ocular area wider at the back than in front, indicating the specimens collected from Uttara Kannada belong to the genus *Tigidia*. Later, two more species were collected from the southern Western Ghats of Tamil Nadu by RS and ZM, which were distinctly different from the specimens from Karnataka. It is possible that this genus occurs throughout the Western Ghats but remained unnoticed due to its vertical trapdoor burrows.

Based on the new distribution pattern *Tigidia* is probably a Gondwanan relict. Morphologically, the closest genus to *Tigidia* is an African genus *Pisenor*,



**Image 1. Preening comb on metatarsi, a distinguishing character of the genus *Tigidia*.**

which has a similar combination of characters than the Indian genera *Diplothele* and *Tigidia* but differs in that *Pisenor* retains the putatively plesiomorphic character that all paired claws of the legs are the same size; in *Tigidia* and *Diplothele*, the paired claws of legs I and II are very small, relatively about half the size of the claws on legs III, IV (Table 1). The 13 barychelid genera with two spinnerets are known from Australia, South Asia and the African subcontinent (Raven 1985; Platnick 2011) seem to be an ideal group to study evolutionary lineage and also to test the Gondwana theory (Datta-Roy & Karanth 2009; Kunte in press). Based on the present finding, the following hypotheses are proposed: (i) *Pisenor* is the sister genus of *Diplothele* and *Tigidia*; (ii) The genus *Tigidia* evolved after the Indo-Madagascar plate separated from Africa 160 million years ago; and (iii) *Diplothele* evolved between 50 to 80 million years ago after the Indian plate separated from Madagascar and collided with the Eurasian plate. Phylogenetic studies will be carried out on *Tigidia* and other closely allied genera to test and justify the aforesaid theories and hypothesis and those will be published separately.

In the present paper, we report on the occurrence of the genus *Tigidia* in India, a new addition to the generic spider list for the Indian subcontinent and adding to the list of species, which are common between the African and Indian subcontinents (Gondwanan relicts). We describe three new species, based only on female specimens as no males were sampled during the study (September 2009 to May 2010) and provide notes on the natural history for all the new species.

**Table 1.** List of characters distinguishing the three genera *Pisenor*, *Tigidia* and *Diplothele*.

	Characters	<i>Pisenor</i>	<i>Tigidia</i>	<i>Diplothele</i>
1	Ocular width front vs. behind	Wider behind than front	Wider behind than front	Behind as wide as in front
2	Fovea	Straight	Procurved	Procurved
3	Rastellum	Absent	Present	Present
4	Preening comb on metatarsi	Absent	Present	Absent
5	Paired claw sizes leg I-II vs. III-IV	Similar	Much smaller	Much smaller
6	Teeth on claws	Present	Absent	Absent
7	Abdomen pattern	Mottled	Mottled	Mottled
8	Spinnerets	Two	Two	Two

## METHODS

All specimens are deposited at the Wildlife Information Liaison Development Society (WILD) Museum, Coimbatore, Tamil Nadu, India. Measurements of body parts except for the eyes were taken with a Mitutoyo™ vernier caliper. Eye measurements were done with a calibrated ocular micrometer. All measurements are in millimeters. Spermathecae were dissected and cleared in concentrated lactic acid in a 100°C water bath for 15–20 minutes. Total length excludes chelicerae. All illustrations were prepared with the help of a camera lucida attached to a MOTIC™ and Labomed™ CSM2 stereomicroscopes by MS & NG for *T. sahyadri* sp. nov. and RS for rest of the species. The taxonomic description style is after Siliwal et al. (2009).

## TAXONOMY

### *Tigidia* Simon, 1892

*Forsythula* Pocock, 1903: 244; Benoit 1965: 28.

*Tructicus* Strand, 1907: 550; Benoit 1965: 30.

*Cestotrema* Simon, 1902: 551; Raven 1985: 112.

*Nossibeia* Strand, 1907: 550; Raven 1985: 113.

*Acropholius* Simon, 1902: 598; Raven 1985: 112.

**Type species:** *Tigidia mauriciana* Simon, 1892, based on a female specimen. The holotype is deposited at Muséum national d'Histoire Naturelle de Paris. Type examined by RR.

**Diagnosis:** The genus *Tigidia* resembles the genus *Diplothele* in having two spinnerets, STC of legs I and II clearly smaller than on legs III and IV (Simon 1892; Raven 1985) and bilobed spermathecae. *Tigidia* can be distinguished from *Diplothele* by ocular group clearly

wider behind than in front (in *Diplothele*, the ocular group is almost as wide in front as behind); rastellum on low mound consisting of long, thick spines (in *Diplothele*, the rastellum is on low mound consisting of long, thick curved spines); preening comb present on metatarsi III–IV (in *Diplothele*, preening comb absent) (Simon 1892; Raven 1985); cephalic and thoracic width almost same, cephalothorax almost as wide as long (difference between length and width is less than 1.0mm), whereas in *Diplothele*, the cephalothorax is clearly longer than wide; legs banded (in *Diplothele*, legs uniformly brown); main lobe of the spermathecae short (in *Diplothele*, main lobe of the spermathecae longer and filiform).

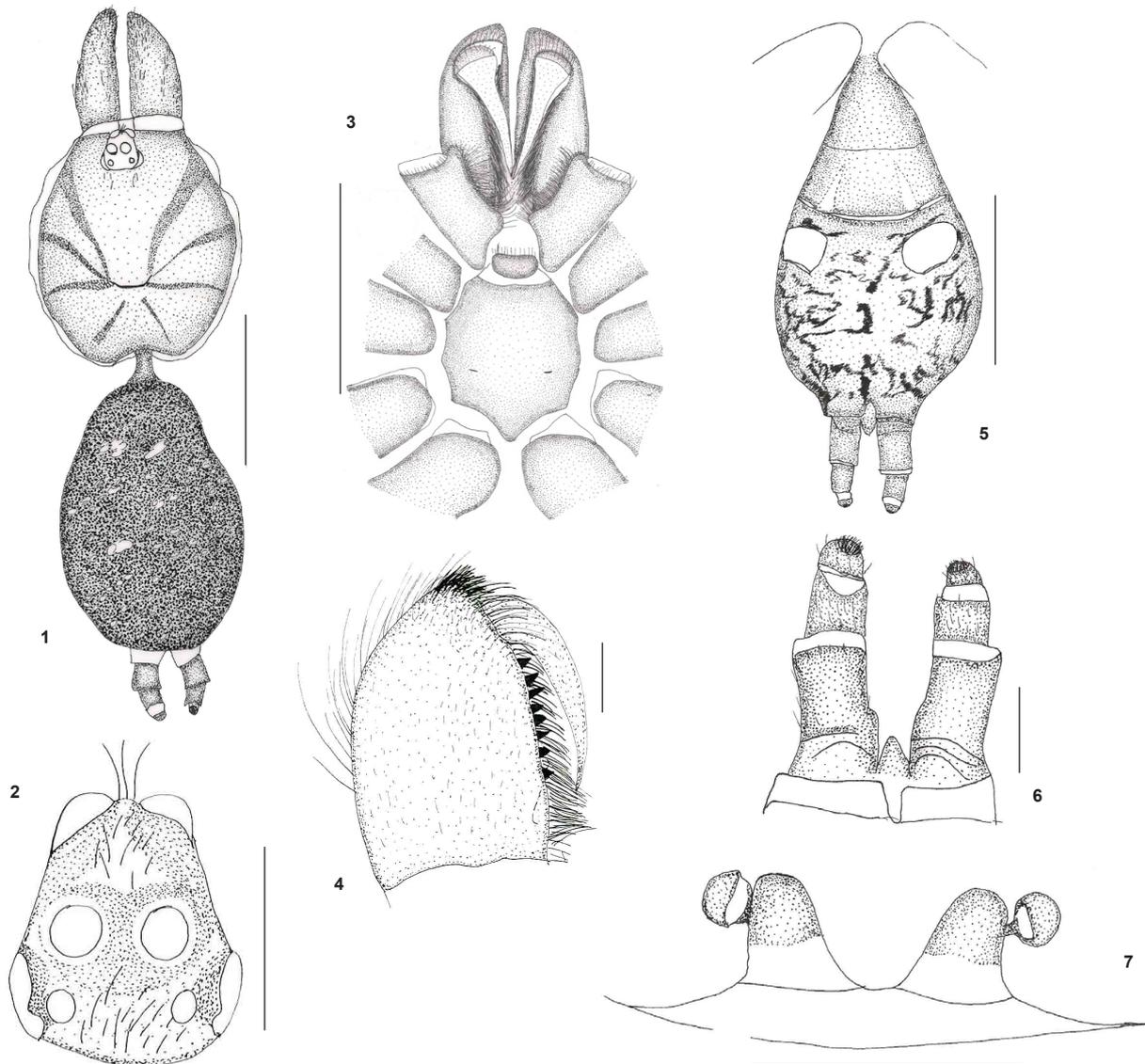
**Distribution:** India, Madagascar and Mauritius Islands.

### *Tigidia sahyadri* sp. nov. Siliwal, Gupta & Raven (Image 2; Figs. 1-7; Table 2)

#### Type material:

Holotype: female, 3.iv.2010, 15.1243°N & 74.40022°E, 587m, Kumbharwada, Uttara Kannada, Karnataka, India, coll. N. Gupta, S. Chauhan and Ramesh, WILD-10-ARA-876.

Paratypes: One female, 24.iii.2010, 15.16938°N & 74.63309°E, 534m, Kulgi, Dandeli WLS, Uttara Kannada, Karnataka, India, coll. N. Gupta, S. Chauhan and Ramesh, WILD-10-ARA-785. Two females, 12.iv.2010, 15.164°N & 74.47497°E, 616m, teak plantation, Joida, Uttara Kannada, Karnataka, India, coll. N. Gupta, S. Chauhan and Ramesh, WILD-10-ARA-910, WILD-10-ARA-911, two female (WILD-10-ARA-1010, WILD-10-ARA-1011), one juvenile (WILD-10-ARA-1012), 19.iv.2010, 15.16373°N &



Figures 1–7. *Tigidia sahyadri* sp. nov. female holotype (WILD-10-ARA-876)

1 - Cephalothorax and abdomen, dorsal view (scale=5.0mm); 2 - Eyes (scale=1.0mm); 3 - Sternum, labium, maxillae and chelicerae, (scale=5.0mm); 4 - Chelicerae, prolateral view (scale=1.0mm); 5 - Abdomen, ventral view (scale=5.0mm); 6 - Spinnerets, ventral view (scale=1.0mm); 7 - Spermathecae (scale=1.0mm)

74.47442°E, 613m, mixed forest near forest guest house, Nagoda, near Joida, Uttara Kannada, Karnataka, India, coll. N. Gupta, M. Siliwal and S. Chauhan.

**Diagnosis (female):** Female differs from other species by the presence of 2–3 cuspules on the maxillae (*T. majori* have ca. 10 cuspules), the rastellum consists of numerous spines (cf. *T. majori* with only a single spine, and *T. mauritiana* with two spines); main lobe of spermathecae, short and broader at the base, slightly narrowing down at the apex forming a curve; lateral lobe sickle-shaped, emerging almost near the apex 3/4<sup>th</sup> of the main lobe with a distinct constriction at

the base.

#### Etymology

The species name is a noun in apposition from Sahyadri, another name for the Western Ghats.

#### Description of holotype female

Total length 16.44. Carapace 7.82 long, 6.77 wide. Abdomen 8.62 long, 5.92 wide. Spinnerets: PLS, total length 2.24 (1.31 basal, 0.67 middle, 0.26 apical; midwidths 0.86, 0.59, 0.32 respectively), 0.43 apart. Legs and palp morphometry is provided in Table 2.

**Table 2. Morphometry of legs and palp of *Tigidia sahyadri* sp. nov., holotype female, WILD-10-ARA-785. Ranges and mean include all mature specimens (holotype and paratypes) collected from Uttara Kannada. Measurements in mm. ( $\pm 0.02$ mm).**

	Leg I			Leg II			Leg III			Leg IV			Palp		
	WILD-785	Range (n = 5)	Mean $\pm$ SD	WILD-785	Range (n = 5)	Mean $\pm$ SD	WILD-785	Range (n = 5)	Mean $\pm$ SD	WILD-785	Range (n = 5)	Mean $\pm$ SD	WILD-785	Range (n = 5)	Mean $\pm$ SD
Femur	4.64	3.09-4.64	3.94 $\pm$ 0.58	4.27	2.92-4.27	3.72 $\pm$ 0.56	3.74	2.58-3.74	3.29 $\pm$ 0.46	5.16	3.91-5.17	4.708 $\pm$ 0.55	3.43	2.42-3.49	3.09 $\pm$ 0.45
Patella	3.18	2.44-3.38	2.94 $\pm$ 0.39	3.27	2.1-3.27	2.78 $\pm$ 0.47	2.53	1.72-2.53	2.20 $\pm$ 0.33	3.36	2.21-3.36	2.89 $\pm$ 0.45	2.47	1.72-2.47	2.18 $\pm$ 0.32
Tibia	3.01	1.98-3.01	2.58 $\pm$ 0.39	2.76	1.75-2.76	2.43 $\pm$ 0.43	1.89	1.32-1.89	1.71 $\pm$ 0.23	3.89	2.81-3.89	3.44 $\pm$ 0.44	1.65	1.34-1.88	1.59 $\pm$ 0.24
Metatarsus	2.16	1.32-2.16	1.83 $\pm$ 0.35	2.01	1.2-2.05	1.77 $\pm$ 0.37	2.37	1.67-2.37	2.07 $\pm$ 0.29	4.0	3.26-4.22	3.82 $\pm$ 0.40	-	-	-
Tarsus	1.50	1.13-1.52	1.41 $\pm$ 0.16	1.47	1.13-1.68	1.45 $\pm$ 0.20	1.44	1.09-1.54	1.34 $\pm$ 0.19	1.73	1.41-1.83	1.66 $\pm$ 0.17	2.49	1.31-2.49	2.14 $\pm$ 0.48
Total	14.49	9.96-14.49	12.68 $\pm$ 1.83	13.78	9.1-13.78	12.15 $\pm$ 1.99	11.97	8.38-11.97	10.61 $\pm$ 1.45	18.14	13.75-18.14	16.51 $\pm$ 1.91	10.04	6.79-10.21	8.99 $\pm$ 1.40
<b>Midwidth</b>															
Femur	1.51	1.11-1.51	1.33 $\pm$ 0.17	1.68	1.06-1.68	1.46 $\pm$ 0.25	1.85	1.3-1.85	1.63 $\pm$ 0.23	1.7	1.26-1.7	1.42 $\pm$ 0.17	1.08	0.68-1.08	0.95 $\pm$ 0.18
Tibia	1.51	1.17-1.59	1.40 $\pm$ 0.16	1.46	1.11-1.46	1.30 $\pm$ 0.14	1.46	1.1-1.46	1.28 $\pm$ 0.16	1.36	1.1-1.36	1.24 $\pm$ 0.12	1.31	1.07-1.98	1.37 $\pm$ 0.36

**Image 2. *Tigidia sahyadri* sp. nov.**

Colour in life (Image 2): Carapace blackish-brown; legs and palp light brown with complete blackish-brown annulations/bands on proximal half of tibia and  $\frac{3}{4}$  of femur, metatarsi and tarsi. Abdomen light brown with blackish-brown mottled marking on dorsal to lateral sides. Ventral side, light brown, mottled with small black spots between spinnerets and book lungs. Colour in alcohol paler than fresh specimen.

Carapace covered with blackish-brown and short golden curved hairs; hairs more concentrated along interstitial ridges, intermixed with few black bristles

on caput. Bristles: nine long on caput in mid-dorsal line; four long, four short anteromedially; eight long, several short between PME; two long, one short on clypeus edge. Fovea deep, slightly procurved (Fig. 1). Two glabrous bands emerging from fovea and passing on either side of caput.

Eyes (Fig. 2): Group occupies 0.27 of head-width; ocular group: front width, midwidth, back width, and total length, 0.71, 1.03, 1.23, 1.30 respectively. Anterior row strongly procurved, posterior row straight; posterior eyes opaque, rest transparent. MOQ square, width 0.75, length 0.70. Diameter of AME 0.25, ALE 0.29, PME 0.11, PLE 0.35. Eye interspaces: AME-AME 0.11, AME-ALE 0.09, ALE-ALE 0.07, PME-PLE adjacent, PME-PME 0.49, ALE-PLE 0.47.

Chelicerae (Figs. 3-4): 4.34 long. Prolateral face glabrous, yellowish-orange with few short hairs; eight promarginal cheliceral teeth and 18 basomesal teeth in 2-3 parallel lines; rastellum on low mound, consists of ca. 50 short thick curved spines, with 37 on mound and 12 in anterior line, several normal pointed thin spines on dorsal, and vertical face and up; dorsally with two glabrous longitudinal bands.

Labium (Fig. 3): 0.86 wide, 0.52 long; labiosternal groove broad with two sigilla joined medially. Cuspules absent.

Maxillae (Fig. 3): 2.24 long in front, 2.95 long in

back, 1.47 wide; 2–3 cuspules on inner angle. Posterior heel slightly produced, anterior lobe distinct.

Sternum (Fig. 3): 3.76 long, 3.22 wide. Covered with hairs and bristles. Sigilla indistinct.

Legs: Brown, moderately hairy; femora III and tibiae I thicker than rest; all legs of similar thickness; preening comb on ventrolateral metatarsi III and IV; coxae IV widest; two longitudinal glabrous bands on femora, patellae and tibiae (very prominent on patellae); leg formula 4123.

Spines: Leg III: pa, p=2; ti, p=1; mt, p=2, d=1, v=8. Leg IV: mt, p=2, d=1, v=8.

Scopula: Ta: I–II, full, thick, lateroventral, divided with thin long hairs for length, many normal hairs intermixed with scopulae at base; III–IV, full, lateroventrally divided with 6–7 rows of spines over length. Mt III: well developed scopulae on distal half; III–IV, few scopuliform hairs intermixed with bristles on distal ¼.

Trichobothria: ta: I, 9–13 clavate, 10–12 long, six short filiform; II, 5–10 clavate, 8–9 long, six short filiform; III, eight clavate, six each long and short filiform; IV, 7 clavate, eight long and six short filiform; palp, 10–12 clavate, 9–11 long, six short filiform. Mt: I, eight long and short; II, 10 long and short; III, 14 long and short; IV, 18 long and short; palp, 11 long and short. Clavate trichobothria confined to proximal half of ta. Short filiform confined to mid-dorsal distal half in a single row, long filiform in V-shaped pattern confined to distal half on ta. Mt, only filiform in curved single row in 2/3 length.

Claws: Claw tufts on all legs and palp. All claws edentate, claws of legs I and II clearly smaller than on legs III and IV.

Abdomen (Figs. 1, 5): Yellowish-cream with heavily mottled (brown patches) on dorsal and lateral, uniformly covered with short brown hairs intermixed with a few black bristles; ventral side, yellowish-cream with brown spots scattered all over, uniformly covered with long and short brown hairs.

Spinnerets (Fig. 6): PMS absent. PLS, apical segment dome-shaped. Covered with golden brown hairs.

Spermathecae (Fig. 7): Paired, bilobed. Main lobe, short and broader at the base, slightly narrowing down at the curving apex; lateral lobe sickle-shaped, emerging almost near apex 3/4<sup>th</sup> of main lobe with a distinct constriction at base.

## Variations

Total length: 10.64–16.44 (14.53 ± 2.49). Carapace: 5.57–7.82 (6.81 ± 0.89) long, 4.71–6.77 (5.94 ± 0.85) wide; Chelicerae: 2.66–4.34 (3.45 ± 0.77) long, 7–8 promarginal and 15–20 basomesal teeth in 2–3 lines, 16–38 rastellum spines on mound, 12–34 in anterior line total ca. 50. Bristles: 9–14 mid-dorsal and 4–6 anteromedial bristles on caput. 4–8 long, several short bristles between PME. Two long, 1–2 short bristles on clypeus edge. Eyes interspaces: AME diameter 0.18–0.27 (0.22 ± 0.04), ALE diameter 0.21–0.31 (0.27 ± 0.04), PME diameter 0.1–0.11 (0.11 ± 0.01), PLE diameter 0.3–0.45 (0.35 ± 0.06). AME–AME distance: 0.05–0.7 (0.22 ± 0.27), AME–ALE distance: 0.09–0.29 (0.17 ± 0.09), ALE–ALE distance: 0.06–0.4 (0.17 ± 0.14), PME–PLE adjacent, PME–PME: 0.33–0.49 (0.44 ± 0.07), ALE–PLE: 0.24–0.47 (0.35 ± 0.09).

Eyes: Head-width occupied 0.27–0.28 (0.27 ± 0.00). Eye width: 0.95–1.25 (1.14 ± 0.13), head-width 3.46–4.63 (4.18 ± 0.48). Ocular group: 1.05–1.3 (1.19 ± 0.10) long, front width 0.57–0.84 (0.72 ± 0.11), midwidth 0.71–1.03 (0.89 ± 0.14), back width 0.95–1.25 (1.14 ± 0.13). Difference between front width and back width: 0.38–0.52 (0.42 ± 0.06). MOQ: 0.51–0.7 (0.58 ± 0.08) long, front width 0.57–0.75 (0.70 ± 0.08), back width 0.57–0.75 (0.70 ± 0.08). Labium: 0.47–0.6 (0.54 ± 0.06) long, 0.85–1.01 (0.90 ± 0.07) wide. Sternum: 2.66–3.76 (3.30 ± 0.50) long, 2.31–3.22 (2.77 ± 0.41) wide. Maxillae: 1.65–2.24 (1.89 ± 0.27) long in front, 2.22–2.95 (2.61 ± 0.30) long in back, 1.03–1.56 (1.29 ± 0.22) wide; cuspules 2–4. Spines: mt IV p=2–3, v=4–8. Trichobothria: Leg I: 8–13 clavate, 6–8 short, 9–12 long in three rows on ta; leg II: 5–12 clavate, 6–8 short, 8–9 long in three rows on ta; leg III: 6–8 clavate, 5–7 short, 6–9 long in three rows on ta; leg IV: 7–8 clavate, 6–7 long, 6–9 long in three rows on ta; palp: 8–12 clavate, 5–7 short, 8–11 long in 3 rows. Abdomen: 5.07–8.95 (7.73 ± 1.66) long, 3.68–6.7 (5.35 ± 1.16) wide. Spinnerets: PLS, 0.87–1.78 (1.33 ± 0.32) basal, 0.45–0.67 (0.55 ± 0.11) middle, 0.16–0.4 (0.25 ± 0.09) apical; midwidths, 0.62–0.86 (0.73 ± 0.11), 0.48–0.62 (0.53 ± 0.07), 0.23–0.41 (0.30 ± 0.07) respectively; 1.59–2.85 (2.13 ± 0.47) total length. Distance between PLS–PLS, 0.17–0.43 (0.26 ± 0.10).

### Natural History

The burrows of *Tigidia sahyadri* sp. nov. were found in areas with open canopy (less than 40%) and fairly good amount of leaf litter (50–80%), in different habitats including teak plantations, semi-evergreen, mixed and deciduous forests. Most of the burrows found were in closed canopy/shaded area, covered with leaf litter and usually were near or at the base of tree trunk/shrubs, where the soil was a little soft because of the roots. All the burrows found occurred on vertical flat or gentle slopes (less than 15°) of forest floors and were located only while clearing the leaf litter with the help of a broom. The distribution of burrows shows no pattern. Burrows were located in March and April, during which all females were found with 10–14 spiderlings. No males were found during this period.

Burrows of *T. sahyadri* sp. nov. were simple, short, silken tube-like chambers, slightly wider at the base bulb-shaped. The entrance of the burrow was closed with a wafer-thin, circular, hinged trapdoor. The hinged door was lined with a thin layer of silk on the under surface; the outer surface was covered with dry leaf litter and soil particles, making it well camouflaged and unnoticeable when the door was closed. These trapdoors were continuous with the tube for nearly one-third of its circumference; it seems that the spider cuts the door from a silken tube rather than constructing it separately and attaching it to the entrance of the burrow. Most of the burrows found during the survey had only a single entrance, except for one. In that one, a Y-shaped or forked burrow was noticed, where two chambers with separate entrances led to a common chamber. Both the entrances of the burrow had a hinged door and these two doors were separated by a distance of almost double the door diameter.

The mean diameter of the trapdoors of the burrows (n=6) excavated was 15mm (range: 8–22 mm). Like most of the barychelid burrows known (Raven 1994), burrows of *Tigidia sahyadri* sp. nov. were not very deep. The mean depth of burrows was 68 mm (range: 50–80 mm). The burrow with two entrances had each individual chamber 25mm long, which was nearly one-third of the total length of the burrow (75mm).

When a burrow was disturbed, the spider hid deep inside the burrow and remained there until the burrow was fully excavated. This behaviour could be related

to parental care as all the females were with spiderlings and probably remained in the burrow to guard their offspring. Moreover, this behavior is also reported in many species of barychelids and idiopids (Raven 1994) but it is not mentioned whether such behaviour is correlated with nesting of young spiders.

### *Tigidia nilgiriensis* sp. nov. Sanap, Mirza & Siliwal (Image 3; Figs. 8–12; Table 3)

#### Type specimens

Holotype: female, 28.i.2011, 11°27'1.56"N, & 76°56'34.38"E, 1737m, Kotagiri, Nilgiri District, Tamil Nadu, India coll. Rajesh Sanap, WILD-11-ARA-1110.

#### Diagnosis (female)

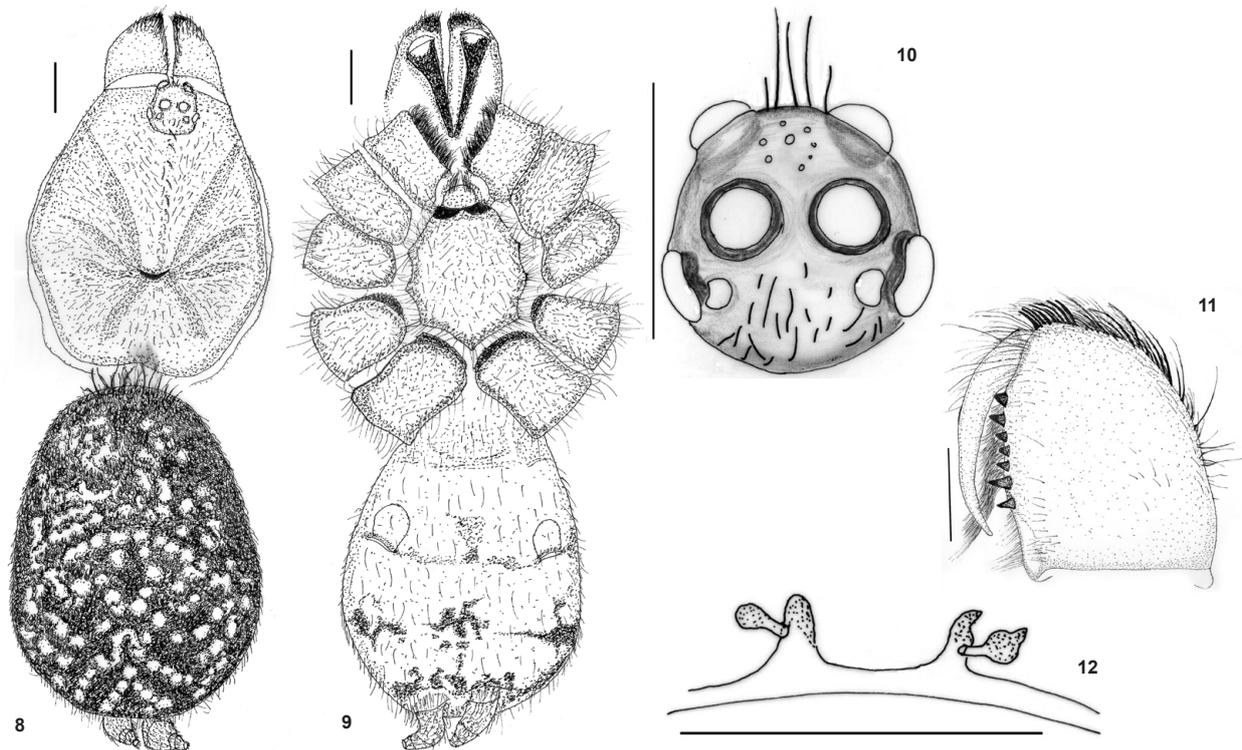
The female resembles those of *T. sahyadri* sp. nov. in the number of cuspules on the maxillae, and the rastellum consists of numerous spines but it differs from *T. majori* by having only two cuspules on the maxillae (*T. majori* have ca. 10 cuspules), a rastellum consists of numerous spines (cf. *T. majori* with a single spine and *T. mauritiana* with two spines); it differs from *T. sahyadri* sp. nov. by the lateral lobe of the spermathecae being balloon-like at 2/3 distal end with constriction at base (in *T. sahyadri* sp. nov., lateral lobe sickle-shape, emerging almost near the apex/ 3/4<sup>th</sup> of the main lobe with a distinct constriction at the base).

#### Etymology

The species name refers to the Nilgiri Hills within



Image 3. *Tigidia nilgiriensis* sp. nov.



Figures 8–12. *Tigidia nilgiriensis* sp. nov. female holotype (WILD-11-ARA-1110)  
 8 - Carapace and abdomen, dorsal view (scale=1.0mm); 9 - Sternum, labium, maxilla and abdomen, ventral view (scale=1.0mm);  
 10 - Eyes (scale=1.0mm); 11 - Chelicerae, prolateral view (scale=1.0mm); 12 - Spermathecae (scale=1.0mm)

Table 3. Morphometry of legs and palp of *T. nilgiriensis* sp. nov. holotype female (WILD-11-ARA-1110) and *T. rutilifrons* sp. nov. holotype female (WILD-11-ARA-1111) and paratype female (WILD-11-ARA-1112). Measurements in mm. ( $\pm 0.02$ mm).

	Leg I			Leg II			Leg III			Leg IV			Palp		
	WILD-1110	WILD-1111	WILD-1112												
Femur	2.44	5.52	1.18	2.58	1.52	1.22	2.44	1.44	1.20	3.34	2.42	1.42	2.12	1.98	1.68
Patella	2.10	3.08	1.52	2.04	2.20	1.32	1.58	2.32	1.42	1.90	5.30	2.98	1.42	1.68	1.04
Tibia	1.72	3.40	2.06	1.68	2.84	1.72	1.30	2.38	1.18	2.30	4.20	2.86	1.14	2.34	1.34
Metatarsus	1.04	2.52	2.02	1.12	3.72	1.94	1.34	2.68	1.54	2.24	3.58	1.92	-	-	-
Tarsus	0.78	1.52	3.30	1.00	5.06	2.86	1.04	4.06	2.46	1.28	6.22	3.86	1.32	3.74	2.44
Total	8.08	16.04	10.08	8.42	15.34	9.06	7.7	12.88	7.8	11.06	21.72	13.04	6	9.74	6.5
Midwidth															
Femur	0.92	1.82	1.08	1.00	1.98	1.26	1.12	2.10	1.28	1.02	1.96	1.28	0.70	1.36	0.78
Tibia	0.92	1.62	1.00	0.94	1.38	0.90	0.92	1.52	0.86	0.98	1.42	0.92	0.80	1.40	0.92

which the type locality is located.

**Description**

Total length 9.86. Carapace 4.32 long, 3.46 wide. Abdomen 5.54 long, 3.82 wide. Spinnerets: PLS, total length 1.06 (0.62 basal, 0.30 middle, 0.14 apical;

midwidths 0.38, 0.26, 0.18 respectively), 0.42 apart. Legs and palp morphometry is provided in Table 3.

Colour in life (Image 3): Carapace dark brown. Abdomen dark brown with faint yellow spots on dorsal and lateral sides (Fig. 8); ventral side yellowish-brown with sparsely mottled (dark brown) on mid-ventral and

highly mottled towards posterior end near spinnerets (Fig. 9). Colour in alcohol paler and abdominal markings distinct and more visible on dorsal and lateral abdomen.

Carapace covered with blackish-brown curved hairs; hairs more concentrated along interstitial ridges, intermixed with black short and long bristles on caput. Bristles: two foveal; 10 long on caput in mid-dorsal line, six between anterior eyes, five long and short on clypeus edge; 19 between posterior eyes. Fovea deep, procurved with curved ends. Several hairs between PME and ALE. Glabrous bands radiating from fovea, very prominent along sides of caput.

Eyes (Fig. 10): Ocular group front width 0.54, midwidth 0.50, back width 0.70, length 0.70. Anterior row strongly procurved, posterior row straight, PME opaque, rest transparent. MOQ front width 0.28, back width 0.32, length 0.22. Diameter of AME 0.12, ALE 0.12, PME 0.04, PLE 0.14. Eye interspaces: AME–AME 0.08, AME–ALE 0.14, ALE–ALE 0.08, PME–PLE adjacent, PME–PME 0.18, ALE–PLE 0.16.

Chelicerae (Fig. 11): 2.40 long. Prolateral face glabrous, yellowish-orange with few small hairs; seven promarginal teeth and 12 basomesal teeth in two curved lines; rastellum on low mound, consists of 28–30 short thick spines, several normal pointed thin spines on dorsal and vertical face and upward.

Labium (Fig. 9): 0.34 wide, 0.20 long. Labiosternal groove shallow, broad with two indistinct sigilla on either side. Cuspules absent.

Maxillae (Fig. 9): 0.98 long in front, 1.24 long in back, 0.72 wide; two equal-sized cuspules on inner angle. Posterior heel slightly produced, anterior lobe distinct, anterior angle curved, posterior edge clear.

Sternum (Fig. 9): 2.02 long, 1.46 wide, covered with bristles and hairs. Sigilla, three pairs, all marginal.

Legs: Uniformly reddish-brown, moderately covered with bristles and hairs; femora III thicker than rest; all legs of similar thickness; preening comb on retroventral metatarsi III and IV; coxae IV widest; two longitudinal glabrous bands on femora, patellae and tibiae (very prominent on patellae); leg formula 4123.

Spines: Leg III: mt, p 2, v 6, r 2, d 1; pa, p 2; leg IV: ti, v 4; mt, p 2, r 2, v 5. Elsewhere absent.

Scopula: mt I, 2/3 distal with few bristles dividing at base; ta I, full, division with two rows of hairs in distal half; mt II, 1/3, division with two rows of setae; ta II, full divided with two rows of hairs in distal

half, basal half with hairless band; mt III, 2/3 distal, rudimentary, divided with 3–4 rows of spines; ta III, full, divided with 5–7 rows of small setae; mt IV, 1/4 few scopuliform hairs distally, divided by 3–4 rows of setae; ta IV, full, divided with 5–8 rows of setae.

Trichobothria: ta: I, six clavate, 9–10 long and short filiform in two rows in distal half; II, five clavate, 10 long and short filiform in two rows distal half; III, six clavate, 9–10 long filiform in distal half in two rows; IV, 5 clavate, 9–10 long filiform in distal half in two rows. Clavate trichobothria confined to basal 1/4 of ta.

Claws: Claw tufts present on all legs and palp. Paired edentate claws on all legs, claws of legs I, II clearly smaller than on legs III, IV.

Abdomen (Figs. 8, 9): Dorsally dark brown with faint cream spots/blotches running from dorsal to lateral, uniformly covered with short brown hairs intermixed with few black bristles; ventral side, uniformly dull cream, covered with short and long brown hairs.

Spermathecae (Fig. 12): Two stalks, each stalk with a pair of balloon-like structures of similar length at 2/3 distal end, outer lobe balloon-shaped with constriction at base (Fig. 5). Outer lobe extends well above stalk.

Spinnerets: PMS absent. PLS, apical segment dome-shaped. Covered with golden brown hairs.

### Natural history

Only a single female was found under a small shrub along a tarred road bordering a tea estate in Kotagiri, Nilgiri District, Tamil Nadu. Another empty burrow was found about 5mm from the female holotype's burrow. The soil was loose without rocks. The burrow had a single entrance with a diameter of 10.98mm at the entrance and was ca. 65mm deep. The diameter of the door was 10.14 and 1.14 mm thick. The base of the burrow was bulb-like. The female was found with an empty egg sac from which spiderlings had hatched and dispersed. Despite rigorous attempts, only two burrows and a single specimen were found.

***Tigidia rutilofronis* sp. nov. Sanap, Mirza & Siliwal  
(Image 4; Figs. 13–17; Table 3)**

**Type specimens**

Holotype: Female, 30.i.2011, 11°1'6.24"N, & 76°52'29.10"E, 420m, Marudhamalai, Coimbatore District, Tamil Nadu, India, coll. Rajesh Sanap and Zeeshan Mirza, WILD-11-ARA-1111.

Paratype: One female (WILD-11-ARA-1112), same data as holotype.

**Diagnosis (female)**

Females resemble those of *T. sahyadri* sp. nov. and *T. nilgiriensis* sp. nov. in the number of cuspules on the maxillae and the rastellum consists of numerous spines but differs from *T. majori* by having only two cuspules on the maxillae (*T. majori* has ca. 10 cuspules), the rastellum consists of numerous spines (cf. *T. majori* with a single spine and *T. mauritiana* with only two spines); it differs from other *T. sahyadri* sp. nov. and *T. nilgiriensis* sp. nov. in having the balloon-like lateral lobe emerging at the base about  $\frac{1}{4}$  on the main lobe (in *T. sahyadri* sp. nov. lateral lobe sickle shape, emerging almost near the apex  $\frac{3}{4}$ <sup>th</sup> of the main lobe with a

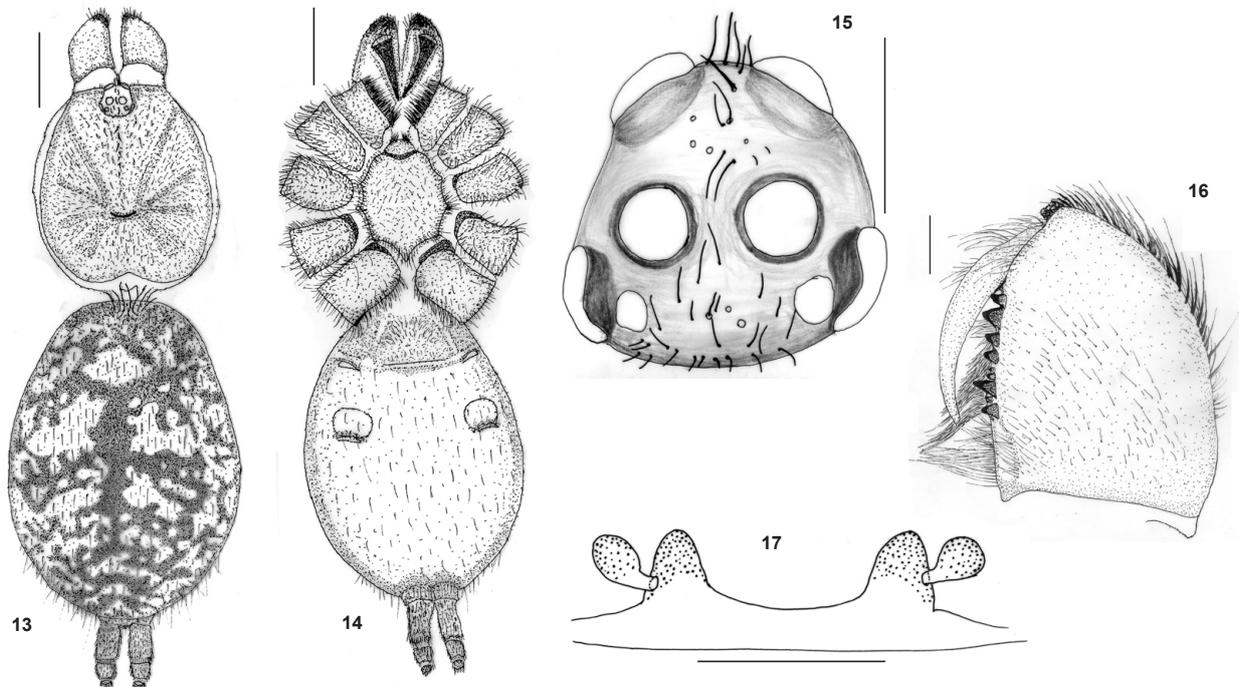


**Image 4. *Tigidia rutilofronis* sp. nov.**

distinct constriction at the base; in *T. nilgiriensis* sp. nov. lateral lobe of spermathecae, balloon-shaped at  $\frac{2}{3}$  distal end with constriction at base).

**Etymology**

The species name is a combination of two latin words, 'rutilus' meaning golden and 'frons' meaning brown referring to the golden brown colouration of the spider in life.



**Figures 13–17. *Tigidia rutilofronis* sp. nov. female holotype (WILD-11-ARA-1111)**

1 - Carapace and abdomen, dorsal view (scale=5.0mm); 2 - Sternum, labium, maxilla and abdomen, ventral view (scale=5.0mm); 3 - Eyes (scale=1.0mm); 4 - Chelicerae, prolateral view (scale=1.0mm); 5 - Spermathecae (scale=1.0mm)

### Description of holotype female

Total length 22.76. Carapace 8.44 long, 7.06 wide. Abdomen 14.32 long, 9.54 wide. Spinnerets: PLS, total length 2.60 (1.50 basal, 0.72 middle, 0.38 apical; midwidths 0.96, 0.70, 0.42 respectively), 0.40 apart. Legs and palp morphometry is provided in Table 3.

Colour in life (Image 4): Carapace, legs and palp yellowish-brown. Abdomen yellowish-brown with faint brown chevron markings extending dorsally to laterally giving a lustrous golden sheen (Fig. 13). Venter uniformly yellowish-brown without any pattern (Fig. 14). Colour in alcohol paler than fresh specimen and chevron markings more distinct dorsally and laterally on abdomen.

Carapace covered with golden-brown curved hairs; hairs more concentrated along interstitial ridges intermixed with black short and long bristles on caput. Bristles: two foveal; 17 on caput in mid-dorsal line; seven long, 12 short between posterior eyes; five long, nine short between anterior eyes; four long and short on clypeus edge. Fovea deep, procurved with curved ends.

Eyes (Fig. 15): Ocular group front width 0.96, midwidth 0.94, back width 1.32, length 1.32. Anterior row strongly procurved, posterior row straight, PME opaque, rest transparent. MOQ front width 0.66, back width 0.72, length 0.60. Diameter of AME 0.18, ALE 0.24, PME 0.08, PLE 0.24. Eye interspaces: AME–AME 0.18, AME–ALE 0.28, ALE–ALE 0.22, PME–PLE adjacent, PME–PME 0.46, ALE–PLE 0.36.

Chelicerae (Fig. 16): 4.84 long. Retrolateral face glabrous, prolateral face yellowish-orange with few short hairs; nine promarginal teeth and 22 basomesal teeth in four curved lines; rastellum on low mound, consists of 27–29 short, thick spines, several normal pointed thin spines on dorsal and vertical face and upward.

Labium (Fig. 14): 1.12 wide, 0.62 long. Labiosternal groove shallow, broad with two sternal sigilla on either side. Cuspules absent.

Maxillae (Fig. 14): 2.02 long in front, 2.70 long in back, 1.38 wide; two cuspules on inner angle. Posterior heel slightly produced, anterior lobe distinct, posterior edge distinct, anterior edge straight.

Sternum (Fig. 14): 4.08 long, 3.06 wide, covered with bristles. Sigilla, three marginal pairs.

Legs: Uniformly yellowish-brown, moderately covered with bristles and hairs; femora III thicker

than rest; all legs of similar thickness; preening comb spines on metatarsi III and IV; coxae IV widest; 2 longitudinal glabrous bands on femora, patellae and tibiae (very prominent on patellae); leg formula 4123.

Spines: Leg III: mt, p 2 + 1 broken, v 2 + 1 broken, r 1, d 1; ti, p 2, r 1, v 3 + 1 broken pa, p 2; leg IV: ti, p 2 + 1 broken, r 2, v 4; mt, p 3 + 1 broken, r 1, v 5, d 1. Elsewhere absent.

Scopula: Mt I,  $\frac{3}{4}$  distal with few bristles dividing at base; ta I, full, division with 1 row of hairs in distal half; mt II,  $\frac{3}{4}$ , divided with bristles; ta II, full divided with one row of hairs in distal half, basal half with hairless band; mt III,  $\frac{1}{2}$  distal, divided with 6–7 rows of spines; ta III, full, divided with 6–7 rows of small setae; mt IV,  $\frac{1}{4}$  distally, divided by 3–4 rows of setae; ta IV, full, divided with 6–7 rows of setae.

Trichobothria: ta I: 10–11 clavate, 13–14 long and short filiform in two rows in distal half; II: 8–9 clavate, 15–16 long and short filiform in two rows distal half; III: six clavate, 12–13 long filiform in distal half in two rows; IV: eight clavate, 13–14 long filiform in distal half in two rows. Clavate trichobothria confined to basal  $\frac{1}{4}$  of tarsi.

Claws: Claw tufts on all legs and palp. Paired edentate claws on all legs, claws of legs I and II clearly smaller than on legs III and IV.

Abdomen (Figs. 13, 14): Golden-yellow with brown chevron mark dorsolaterally, uniformly covered with short, brown hairs intermixed with few black bristles; venter yellowish-cream, uniformly covered with short and long brown hairs.

Spermathecae (Fig. 17): Two lobes, main lobe short, slightly broader at base, with lateral balloon-like lobe emerging at base about  $\frac{1}{4}$  on main lobe, lateral lobe with distinct constriction at base.

Spinnerets: PMS absent. PLS, apical segment dome-shaped. Covered with golden brown hairs.

### Morphometry of female paratype

Total length 11.36. Carapace 5.12 long, 4.12 wide, chelicerae 3.30 long. Sternum, 1.86 long, 1.78 wide. Labium 0.30 long, 0.62 wide. Maxillae 1.26 back length, 1.04 front length, 0.80 wide, 4 cuspules in anterior corner. Abdomen 6.24 long, 4.06 wide. Spinnerets: PMS, absent; PLS, 0.90 basal, 0.40 middle, 0.20 distal, 1.50 total length, midwidths 0.48, 0.42, 0.18, respectively, 0.44 apart.

### Natural history

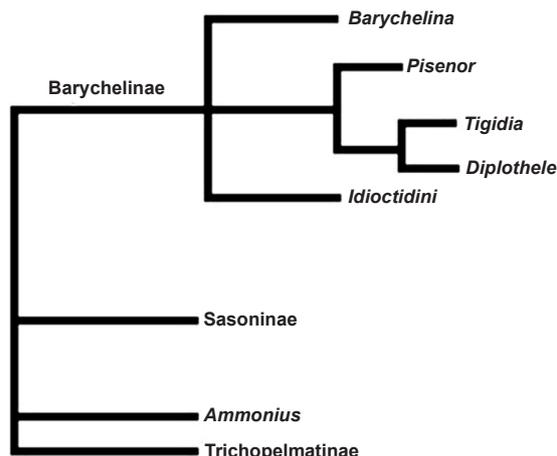
*Tigidia rutilofronis* sp. nov. was found along a dry rivulet on the sloping bunds bordering the water course near Marudhamalai hills, Coimbatore District in Tamil Nadu. Their distribution was patchy and they were sampled from under trees or in the tree's root system. The diameter of the burrow entrance of the holotype female was 15mm and the burrow was ca. 200mm deep, as found in other species of this genus and other barychelids in general. The burrow had a single trapdoor entrance similar to trapdoors of the genus *Idiops* and the burrow end was bulb-like. The soil was sandy and soft at the collection site. The silk-lining of the burrow was not as thick as observed in other trapdoor families but was similar to that of the theraphosid spider *Haploclastus validus* Pocock, 1899 as seen at ZM and RS (personal observation). The spiders hid in the burrow until the entire burrow was excavated. The type locality is heavily disturbed and is under severe threat from sand mining.

### DISCUSSION

The preening comb is considered an important generic character to distinguish *Tigidia* from *Diplothele*. However, Siliwal et al. (2009) reported a preening comb in *Diplothele* (*D. graveleyi* Siliwal et al., 2009; *D. tenebrosus* Siliwal et al., 2009 and *D. walshi* O. Pickard-Cambridge, 1890). After examining the preening comb on the *Tigidia* specimens from the present study, it was very clear that the report of preening combs in *Diplothele* spiders from Orissa by Siliwal et al. 2009 was erroneous. This also supports the generic character that the preening comb is absent in *Diplothele* (Raven 1985).

The genus *Tigidia* presumably evolved in isolation after the breakup of the Indo-Madagascar plate from Africa and during the northward drift gained preening combs which were lost in *Diplothele* after the breakup of India from Madagascar during the Cretaceous era. Based on preliminary cladistic analysis with reference to characters discussed in Table 1, it is hypothesized that the genus *Pisenor* is ancestral to the genera *Diplothele* and *Tigidia* (Fig. 18).

This report of the genus *Tigidia* in India adds another member to the list of Gondwanan relics. The present discovery also strongly indicates that though



**Figure 18.** Cladogram showing relative position of the *Pisenor*, *Tigidia* and *Diplothele* in the family Barychelidae

the Western Ghats have been well studied as far as large-bodied spiders like theraphosids are concerned, there is a large scope for finding other new and interesting spiders from this area.

### REFERENCES

- Benoit, P.L.G. (1965).** Les Barychelidae-Diplotheleinae africains et malgaches (Araneae-Orthognatha). *Revue de Zoologie et de Botanique Africaines* 72: 25–40.
- Daniels, R. (2003).** Biodiversity of the Western Ghats: An Overview, pp. 25–40. In: Gupta, A.K., A. Kumar & V. Ramakantha (ed.). *ENVIS Bulletin: Wildlife and Protected Areas, Conservation of Rainforests in India*. Wildlife Institute of India, Dehradun.
- Datta-Roy, A. & P.K. Karanth (2009).** The Out-of-India hypothesis: What do molecules suggest? *Journal of Biosciences* 34(5): 687–697.
- Dippenaar-Schoeman, A.S. (2002).** *Baboon and Trapdoor Spiders of Southern Africa: An Introduction Manual*. Plant Protection Research Institute Handbook No. 13.
- Kunte, K. (in press).** Biogeographic origins and habitat use of the butterflies of the Western Ghats, south-western India. *Invertebrates in the Western Ghats - Diversity and Conservation*. D.R. Priyadarshan, K.A. Subramanian, M. S. Devy and N.A. Aravind. Bengaluru, Ashoka Trust for Research in Ecology and the Environment.
- Mirza, Z. & R. Sanap (2010).** Description of a new species of scorpion of the genus *Lychas* CL Koch, 1845 (Scorpiones: Buthidae) from Maharashtra, India. *Journal of Threatened Taxa* 2(4): 789–796.
- Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. Da Fonseca & J. Kent (2000).** Biodiversity hotspot for conservation priorities. *Nature* 403: 853–858.
- Platnick, N.I. (2011).** The World Spider Catalog, Version 12.0.

American Museum of Natural History, online at <http://research.amnh.org/iz/spiders/catalog>. Downloaded on 28 July 2011.

- Raven, R.J. (1985).** The spider infraorder Mygalomorphae (Araneae): cladistics and systematics. *Bulletin of the American Museum of Natural History (USA)*, 1–180pp.
- Raven, R.J. (1994).** Mygalomorph spiders of the Barychelidae in Australia and the Western Pacific. *Memoirs of the Queensland Museum* 35(2): 291–706.
- Siliwal, M., S. Molur & R. Raven (2009).** Two new species of the genus *Diplothele* (Araneae, Barychelidae) from Orissa, India with notes on *D. walshi*. *Journal of Arachnology* 37(2): 178–187.
- Simon, E. (1892).** Etudes arachnologiques. 24e Mémoire. XXXIX. Descriptions d'espèces et de genres nouveaux de la famille des Aviculariidae (suite). *Annales de la Société entomologique de France* 61: 271–284.



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#### Author Details and Contribution:

MANJU SILIWAL has been working on spiders since 1997. She has specialized on taxonomy of primitive spiders (mygalomorphs including tarantulas) and has described many new species from India. Her main interest lies in taxonomy, ecology and conservation of Indian spiders. Her contribution to this paper is in identifying the species and preparing the manuscript including taxonomy of first species and refining descriptions of other two species.

NEHA GUPTA is MSc in biodiversity and conservation and is very much interested in ecology and conservation of Indian spiders. For her M.Sc. dissertation, she worked on the ecology of trapdoor spiders of the family Idiopidae in Uttara Kannada, Karnataka. She found the first specimen of *Tigidia* from the Western Ghats. She also assisted in finalizing illustrations and text.

RAJESH SANAP is a graduate student interested in the study of mygalomorphs spiders and scorpions. He has described new species of scorpions and trapdoor spiders. His contribution in this paper is in finding the two species of *Tigidia* from the Western Ghats. He also contributed to this paper in morphometry, preparing illustrations of the latter two species.

ZEESHAN MIRZA is a student of Bhavan's College, Mumbai currently pursuing his Bachelors degree in Zoology. He is interested in the study of herpetofauna of the Western Ghats, scorpions and mygalomorph spiders. His contribution to this paper is in the description of latter two species and finalizing the text.

ROBERT RAVEN is world renowned expert on primitive spiders (mygalomorphs) and has experience of about 40 years in spider taxonomy. He has described 42 genera and 351 species till date from different parts of the world, predominantly from Australia. His contribution to this paper was in finalizing the text, working on language of the paper, reviewing the taxonomy of the species and providing critical inputs on various genera of barychelids including *Tigidia*.