

# Rediscovery of the scorpion tailed orb-weaver, *Arachnura melanura* Simon 1867 (Araneae: Araneidae) from India

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## Abstract

The orb-weaving spider *Arachnura melanura* Simon, 1867 is recorded from Neyyar Wildlife Sanctuary, Western Ghats, Kerala after 78 years since it was first reported from India from Neyyar Wildlife Sanctuary, Western Ghats, Kerala. The female of *Arachnura melanura* Simon is diagnosed, described and illustrated. Distribution of the Indian *Arachnura* Vinson, 1863 species is also mapped.

**Keywords:** *Arachnura*, Australasian, Neyyar Wildlife Sanctuary, Taxonomy, Western Ghats

## Introduction

*Arachnura* Vinson, 1863 is mostly an Australasian genus with 12 species except for its type species *Arachnura scorpionoides* Vinson 1863, which was described from Madagascar (World Spider Catalog 2020). Two of its representatives are occurring in India, viz. *A. melanura* Simon 1867 and *A. angura* Tikader 1970 (World Spider Catalog 2020; Sebastian & Peter 2009). *Arachnura angura* has subsequently been reported by Kulkarni and Deshpande (2012) and Sen *et al.* (2015) from other localities in India. *Arachnura melanura* has never been reported from any part of India since it was recorded by Roewer (1942), but reported from other countries like Indonesia, Taiwan, China, Japan, and Australia (World Spider Catalog 2020). Simon (1867) in his original description did not mention the type locality of the species (Chrysanthus 1961), but according to Castanheira *et al.* (2019) it was likely from Malaysia and the type species was deposited in MNHN, Paris.

We came across *A. melanura* specimens during survey in Kerala part of Western Ghats. Review of literature revealed certain morphological variations among the specimens of *A. melanura* reported from different counties in its range. Therefore, the aim of this study is to provide

detailed description and illustrations of *A. melanura* with modern taxonomic treatment.

## Material and Methods

The spiders were examined under a LEICA M205C stereo zoom binocular microscope and images captured with a LEICA DFC500 camera and processed using extended focus montage LAS software (version 3.8.0). The female genitalia were cleared in 10% KOH. The measurements indicated in the text are in millimeters. Leg measurements are shown as: total length (femur, patella, tibia, metatarsus, and tarsus). The terminology used in the text mainly follows Castanheira *et al.*, 2019 and Framenau *et al.*, 2010.

**Abbreviations used:** CL = Cephalothorax Length, CW = Cephalothorax Width, AL = Abdomen Length, AW = Abdomen Width, TL = Total Length, AME = Anterior Median Eye, ALE = Anterior Lateral Eye, PME = Posterior Median Eye, PLE = Posterior Lateral Eye, MNHN = Muséum National d'Histoire Naturelle, Paris, France, ZSI = Zoological Survey of India, WGRC = Western Ghat Regional Centre.

The studied specimens are deposited in the National Zoological Collections of Zoological Survey of India, Western Ghat Regional Centre, Kozhikode, India.

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## Results

### Taxonomic Account

Class ARACHNIDA

Order ARANEAE

Family ARANEIDAE

Genus *Arachnura* Vinson, 1863

**Type species** *Arachnura scorpionoides* Vinson, 1863

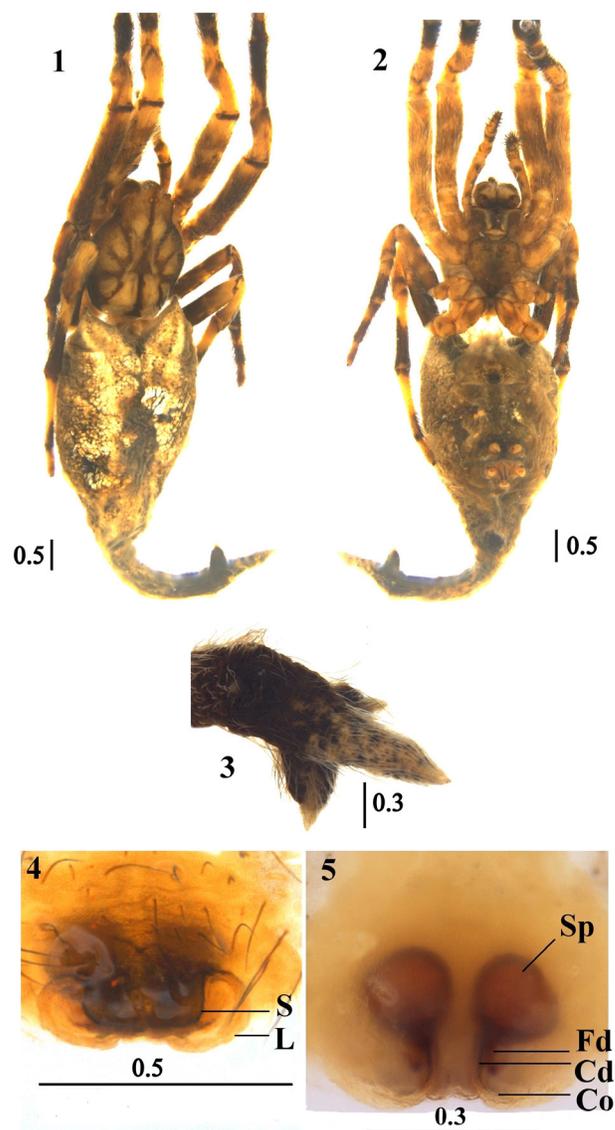
*Arachnura melanura* Simon, 1867

1867. *Arachnura melanura* Simon, *Revue et Magasin de Zoologie Pure et Appliquée*, **19**(2): 17.

**Materials examined:** 2♀ (ZSI/WGRC/IR.INV/12483 and 12484), India: Kerala, Valavattay, Neyyar Wildlife Sanctuary (08°31'58"N & 77°08'48"E, 87m), 17.i.2019, coll. Jafer Palot.

**Diagnosis:** Females of *Arachnura melanura* Simon resemble *A. angura* Tikader but differ distinctly by the shape of the epigynum, which is wider than long with sclerotized epigynal scape, and distinct lateral lobes (Figure 4), but nearly subquardrate epigynal scape without lateral lobes in *A. angura*. Further, spermatheca of *A. melanura* is nearly spherical with long outwardly curved copulatory ducts and distinct fertilization ducts (Figure 5), but spermatheca globular with short inwardly curved copulatory ducts and indistinct fertilization ducts in *A. angura*.

**Description:** Female: TL 12.38, CL 3.13, CW 2.25, AL 9.25, AW 3.21. Cephalothorax (Figure 1) longer than wide and narrowing in front, yellowish brown with a distinct grey median strip and grey patches as flank, cervical groove grey. Eyes small, transparent, ringed with black, anterior row more recurved than posterior, laterals and anteromedians on tubercles, MOA longer than wide, interocular distance: AME-AME 0.31, ALE-AME 0.40, PME-PME 0.07, PLE-PME 0.45, ALE-PLE 0.19, AME-PME 0.27, ALE-ALE 0.87, PLE-PLE 0.95. Sternum nearly heart-shaped, yellowish brown with a light greyish patch on middle. Labium yellowish brown, wider than long, apical margin narrowed, pale and scopulate. Maxillae longer than wide with pale inner margin, scopulate (Figure 2). Chelicerae yellow, longer than wide; fangs yellowish brown, weak; teeth small yellow brown, promargin with 4 and retromargin with 3 teeth. Leg segments with varying



**Figures 1–5.** *Arachnura melanura* Simon, female: 1. Habitus, dorsal view, 2. Same, ventral view, 3. Tip of abdominal tail, 4. Epigynum, ventral view, 5. Internal genitalia, dorsal view. Scale bars= (1, 2, 4) 0.5 mm, (3, 5) 0.3 mm. Abbreviations: S = Scape, L = Lateral lobe, Sp = Spermatheca, Cd = Copulatory duct, Fd = Fertilization duct, Co = Copulatory opening.

shades of brown; tarsi, tibia and metatarsus I-IV with distinct black band, such band light in tarsi IV, femora dorsally with black shades; tibia, metatarsus and tarsus clothed with macrosetae. Leg measurements: I 6.61 (2.24, 0.78, 1.87, 1.27, 0.45); II 7.12 (2.39, 0.82, 1.92, 1.43, 0.56); III 4.47 (1.44, 0.76, 0.98, 0.90, 0.39); IV 6.51 (1.74, 1.17, 1.42, 1.46, 0.72). Leg formula 2 1 4 3.

Abdomen yellowish brown, elongated, with a anterior deep central bifurcation forming two pointed shoulder humps, posteriorly forms a tail like process which extends beyond the spinnerets with 3 protuberance, median one longer than laterals, each with a conspicuous white tip; sigilla 2 pairs, light grey, small, inconspicuous (Figures 1&3); venter greyish brown with few scattered yellowish spots near epigastric furrow, tail yellowish brown with grey shades. Spinnerets apically brown, basally dark brown (Figure 2).

Epigynum-internal genitalia: epigynal scape wider than long (broadly U-shaped), sclerotized, rebordered posteriorly, with distinct lateral lobes (Figure 4); spermatheca dark brown, nearly spherical and sclerotized, copulatory ducts long, thick, outwardly curved, outer margin rebordered, fertilization ducts distinct, thin, half the size of copulatory ducts (Figure 5).

*Distribution:* India (Roewer, 1942; present paper), China (Song, Zhu & Chen, 1999; Yin *et al.*, 2012), Malaysia (Roewer, 1942; Uyemura, 1976b), Indonesia (Roewer, 1942; Chrysanthus, 1961), Taiwan (Uyemura, 1976a), Japan (Tanikawa, 1991, 2007); Australia (Castanheira *et al.*, 2019) and Papua New Guinea (World Spider Catalog, 2020).

## Discussion

The original description of *A. melanura* by Simon (1867) was based on female specimens only. The male of *A. melanura* was first described by Tanikawa (1991). The internal structures of the female genitalia of currently examined specimens show more resemblance with the illustrations by Tanikawa (1991), Song *et al.* (1999) and Yin *et al.* (2012). Ventral view of epigynum (Figure 4) has some similarities with the illustrations of Castanheira *et al.* (2019) and Chrysanthus (1961). Positions of the ducts are much clear in the present illustrations (Figure 5). Tail end of the Indian specimen (Figure 3) is with conspicuous protuberance as shown by Yin *et al.* (2012) and Chrysanthus (1961), but it is less conspicuous in the illustrations of Tanikawa (1991) and Castanheira *et al.* (2019). Although there are some variations in coloration pattern of the abdomen, leg segments, number as well as size of protuberance on tail, thorough study of genital structures can help determine the status of species under question. Distributional records of two representatives of the genus *Arachnura*, *A. melanura* and *A. angura*, in India has been given in the map (Figure 6) for clarity of understanding.



**Figure 6.** Distribution map for *Arachnura* species in India.

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