



## New distributional record of *Argyrodes bonadea* Karsch, 1881 and *Argyrodes nephilae* Taczanowski, 1873 (Araneae, Theridiidae) from Kerala, India

Reshmi Sekhar<sup>1\*</sup> and K. Sunil Jose<sup>2</sup>

<sup>1</sup>Department of Zoology, Sacred Heart College, Thevara 682013, Kochi, Kerala, India.

<sup>2</sup>Department of Zoology, Deva Matha College, Kuravilangad 686633, Kottayam, Kerala, India.

Email: reshmishkhr@gmail.com; sunil32@gmail.com

**ABSTRACT:** *Argyrodes* Simon, 1864 is one of the rich genera of Theridiidae. For the first time *A. bonadea* Karsch, 1881 and *A. nephilae* Taczanowski, 1873 were reported from Kerala. Digital photographs are used to redescribe the species. © 2022 Association for Advancement of Entomology

**KEYWORDS:** Kleptoparasitic, Theridiidae, comb-footed, Neyyar Wild life sanctuary, Kumarakom bird sanctuary

Comb-footed spiders are one of the most well-known spider families, with 2542 species divided into 125 genera (World spider catalog, 2022). The family is diverse not only in the terms of number of species but also in terms of web styles, behavior, ecology and morphology. Even though India is a country of varying diversity, studies about Family Theridiidae Sundevall, 1833 in Indian region is lacking (Siliwal, 2009). The genus *Argyrodes* Simon, 1864 contains 98 species with a cosmopolitan distribution. About 15 species of the genus *Argyrodes* have been reported from India so far. Some members are kleptoparasitic, a reciprocal interaction in which one individual takes advantage from the foraging investments of another. During our study two kleptoparasitic species *A. bonadea* Karsch, 1881 and *A. nephilae* Taczanowski, 1873 were recorded.

The specimens were studied under a LEICA SAP0

and Luxeo 6Z stereomicroscope. All measurements are in millimeters (mm). Leg measurements are given as: Total, Femur, Patella, Tibia, Metatarsus (except palp) and Tarsus. The microphotographic images were taken by digital camera attached with Luxeo 6z stereomicroscope and Leica FLEXACAM C1 digital camera attached to a Leica LEICA SAP0 stereomicroscope with the software package Leica Application Suite X (LAS X). The specimens are deposited in a reference collection housed at the Department of Arachnology, Department of Zoology, Deva Matha College, Kuravilangadu, Kottayam, Kerala, India (DMCK).

Abbreviations used in the text: ALE-anterior lateral eye, AME-anterior median eye, PLE-posterior lateral eye, PME-posterior median eye, L-Length, W-Width, DMCK TH- Deva Matha Colege Kuravilangadu Theridiidae

\* Author for correspondence

## Taxonomy

**Family:** Theridiidae Sundevall, 1833; **Genus:** *Argyrodes* Simon, 1864

**Diagnosis:** Kleptoparasitic spiders with varying abdominal shape and colour. Reduced number of combs when compared with other Theridiid spiders. Cephalothorax flat, eye region elevated. Cheliceral teeth present. Long slender legs, usually first leg is longer. Colulus large.

*Argyrodes bonadea* Karsch, 1881 (Figs. 1-2)

**Material examined:** 3 ♀ (DMCK TH-007), Kumarakom bird sanctuary, Kottayam district, Kerala State, India (9°37'38.028"N; 76°25'42.996"E), 20 January 2020, Coll. Reshmi Sekhar.

**Diagnosis:** *Argyrodes bonadea* (Karsch, 1881) shows similarity with *Rhomphaea labiata* (Zhu and Song, 1991) by the structure of legs, eyes, fertilization ducts that bent and arise from the posterior margin of spermathecae and can be distinguished by the nature of spermathecae. It is found to be closely touching each other in *A. bonadea* while it is separated by half of its diameter in *Rhomphaea labiata*. There is a sclerotized postero-lateral arch that touches the spermathecae is found in *R. labiata* while it is absent in *A. bonadea*.

**Description: Female.** Overall, in a shade of reddish-brown. Silver patterns at both laterals of the abdomen join at the posterior end, ventral, dark brownish (Fig. 1A). Colourless faded in preservative. Cephalothorax longer than wide without any patterns. Ocular region elevated. Well defined transverse fovea. Total length 4.99 mm; Carapace 1.98 L; 3.01 W; Abdomen 0.63 L, 2.08 W. Eyes arranged in two rows. Ocular quadrangle wider anteriorly. PME white, prominent. ALE smaller than others. Distance between the eyes: PME-PME= PME-AME, 0.10; AME-AME, 0.14; PLE-ALE, closely placed (Fig. 2A). Sternum longer than wide, reddish-brown, heart-shaped, wider near first coxae (Fig.1B). Long, slender legs. Light yellowish shade except first. Clothed with fine hairs. Measurements of palp and legs (Femur, patella, tibia, metatarsus (except palp) and tarsus):

Palp 0.57 [0.33, 0.04, 0.12, 0.08]; Leg I 9.54 [3.31, 0.41, 2.44, 2.06, 1.32], II 3.41 [1.07, 0.28, 0.95, 0.70, 0.41], III 1.96 [0.74, 0.16, 0.49, 0.33, 0.24], IV 2.96 [1.24, 0.28, 0.66, 0.45, 0.33]. Leg formula; 1243. Abdomen slightly oval, extending beyond the spinnerets. Dorsal region with fine hairs. Ventrally reddish brown. A total of 5 spots is seen around spinnerets, three are white, and 2 are light orange in the shade. Well developed between spinnerets. Colulus present. Epigyne covered with reddish-brown chitinous plate centrally. Spermathecae, slightly oval, found close to each other. Copulatory duct short and slightly bending. Fertilization duct pointed (Fig. 2B).

**Habitat:** Collected from the web of a large spider.

**Distribution:** China, India (Delhi), Japan, Korea, Philippines, Taiwan.

*Argyrodes nephilae* Taczanowski, 1873 (Figs. 3-4)

**Material examined:** 2 ♀ (DMCK TH-032, DMCK TH-033), Neyyar wildlife sanctuary, Trivandrum District, Kerala State, India (8°32'59.99" N; 77°12'30.00" E), 17 October 2019, Coll. Reshmi Sekhar.

**Diagnosis:** *Argyrodes nephilae* (Taczanowski, 1873) shows similarity with closely related species *A. rostratus* (Blackwall, 1877) and can be separated each other by cone shaped and silvery in colour in the abdomen of *A. rostratus* (Blackwall, 1877).

**Description: Female.** Brownish and golden in shade. Cephalothorax brownish, abdomen golden with golden patches (Fig. 3A). Colour not much faded in preservative. Cephalothorax longer than wide, brownish shade. Ocular region elevated. Fovea absent. Total length 4.98mm; Carapace 2.52 L; 1.43 W; Abdomen 2.47 L, 1.69 W. Eyes heterogeneous, eight in number arranged in two rows. Except for PME all are black. Distance between the eyes: PME-PME 1.20; PME-PLE, 0.45; AME-AME, 1.14; AME-ALE 0.18, ALE-PLE closely placed. Eye diameter: PME 0.61, PLE 0.25, ALE 0.13, AME 0.63 (Fig. 4A). Sternum heart-shaped, wider near first coxa, color

similar to the cephalothorax with light yellowish and cream colored irregular patterns (Fig. 3B, 4B). Long slender legs, clothed with fine hairs. Light yellowish in shade, color decreases towards the end. Measurements of palp and legs (Femur, patella, tibia, metatarsus (except palp) and tarsus): Palp 1.57 [0.51, 0.27, 0.32, 0.47]; Leg I 5.29 [1.95, 0.89, 1.08, 0.98, 0.39], II 4.17 [1.74, 0.51, 0.71, 0.92, 0.29], III 1.83 [0.69, 0.17, 0.38, 0.45, 0.14], IV 3.33 [1.45, 0.39, 0.66, 0.62, 0.21]. Leg formula 1243. Abdomen triangular, extending beyond the spinnerets. Laterals golden with a black patch in the middle towards the tip dorsally. Ventral side black with fine hairs. Spinnerets not equal in size, surrounded by three golden spots which form a triangle when connected.

**Epigyne:** Small, spermathecae oval, separated by half of its diameter. Fertilization duct at the base of spermatheca projecting up wards (Fig. 4C).

**Habitat:** From an undisturbed area between plants.

**Distribution:** Argentina, Galapagos Island, USA, Caribbean, India (Andhra Pradesh)

### ACKNOWLEDGEMENTS

Authors thank the Principal, Department of Zoology, Deva Matha College, Kerala, India for the facilities; the Principal, Sacred Heart College, Kochi, India for encouragements; and the Chief Conservator of Forests, Kerala for providing collection permits. Authors also acknowledge SERB (CRG/2018/004708) for funding.

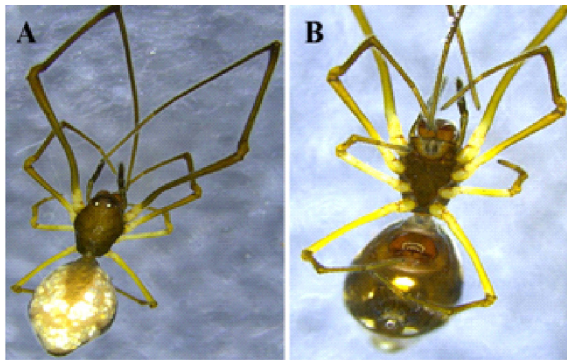


Fig. 1 *Argyrodes bonadea* Karsch, 1881 Female -A. dorsal view; B. ventral view

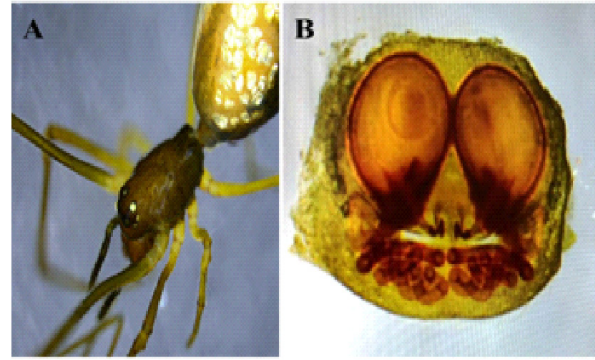


Fig. 2 *Argyrodes bonadea* Karsch, 1881 - A. eyes; B. epigyne

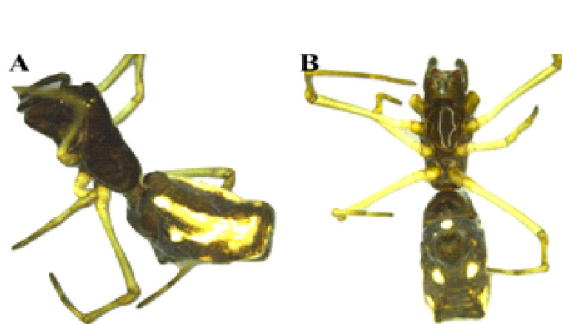


Fig. 3 *Argyrodes nephile* Taczanowski, 1873 - A. dorsal view; B. ventral view

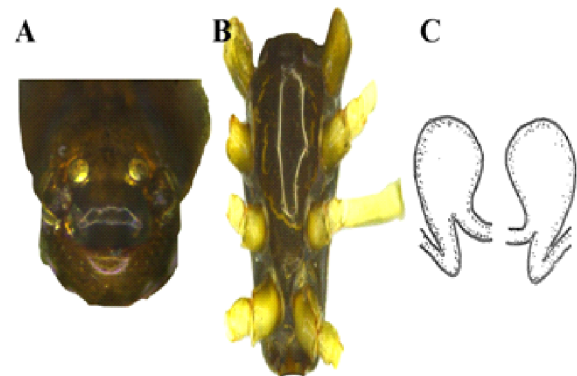


Fig. 4 *Argyrodes nephile* Taczanowski, 1873 - A. eyes view; B. sternum; C. epigyne

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(Received May 08, 2022; revised ms accepted September 08, 2022; published September 30, 2022)