FIRST RECORD OF *ACHAEARANEA BROOKESIANA* BARRION & LITSINGER, 1995 (ARANEAE: THERIDIIDAE) FROM MAINLAND INDIA

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plus web supplement of 3 pages

ABBREVIATIONS

AME - Anterior median eye; PME - Posterior median eye; ALE - Anterior lateral eye; PLE - Posterior lateral eye; MOQ - Median ocular quadrate; WILD - Wildlife Information & Liaison Development Society

The genera of the family Theridiidae can be categorized into six groups based on their habit and habitat (Murphy & Murphy, 1993). One group of theridiid genera found on shrubs and buildings are *Achaearanea*, *Anelosimus*, *Enoplognatha*, *Nesticodes* and *Theridion*, out of which only two genera (*Achaearanea* & *Theridion*) have been reported from India. Spiders of these genera are very similar in size and appearance. Due to lack of proper taxonomic generic key, it is advisable to identify them based on, and with special reference to the web structure.

The genus *Achaearanea* is represented by 148 species from the world and four endemic species from India, *A. budana* Tikader, 1970, *A. durgae* Tikader, 1970, *A. diglipuriensis* Tikader, 1977, and *A. triangularis* Patel, 2005 (Platnick, 2007; Siliwal & Molur, 2007). All the species are known only from their type locality. The first two species have been reported from Sikkim and the latter two from Andaman Island and Parambikulam Wildlife Sanctuary in Kerala, respectively (Tikader, 1970, 1977; Patel, 2005).

Material and Methods: Measurements were taken with calibrated ocular micrometer. All measurements in mm. Spermathecae were dissected from female and were cleaned in sodium hypoclorite (bleach) solution. Photographs were taken with the help of Olympus™ (µ720 SW) camera attached to CETII™ stereomicroscope and illustrations were prepared with the help of camera lucida.

***Achaearanea brookesiana* Barrion & Litsinger, 1995**

Type material: 1.x.1987, Holotype female, Brookes Pt., Palawan Province, Palawan Island, Philippines, coll. A.T. Barrion

Material examined: 28.ii.2006, one female, Forest College campus, Mettupalayam, Coimbatore, Tamil Nadu, coll. Manju Siliwal and M. Ganesh Kumar, WILD-06-ARA-138, WILD, Coimbatore.

Diagnosis: This species can be distinguished from *A. budana*, *A. diglipuriensis*, *A. durgae* and *A. triangularis* by having a globular abdomen like a balloon without any notch on the posterior end of the abdomen; white abdominal pattern and epigyne structure. This spider can also be distinguished from other genera with its web structure in the field (Image 10[w]).

Description: (In mm) Female: total length 4.50; cephalothorax 1.25 long, 1.43 wide; abdomen 3.25 long, 2.68 wide and 2.91 high. Morphometry of legs and palp given in Table 1.

Cephalothorax: (Images 1[w], 4[w]) Uniformly yellowish-orange, slightly wider than long, thoracic area broader than cephalic area, long grey and short black hair on caput and ocular area, thoracic area glabrous; fovea absent. Eyes (Image 5[w], also see images 3[w] & 4[w], Fig. 1) eight, transparent, on low black tubercles, two rows, anterior row recurved, posterior row slightly procurved; diameter of PME=ALE, 0.1, AME, 0.13, PLE, 0.12; distance between AME-AME, 0.1, PME-PME, 0.1, PME-PLE 0.04, AME-ALE, 0.04, ALE and PLE almost touching each other; MOQ square; ocular group 0.31 long and 0.48 wide. Clypeus: yellowish-orange, glabrous, 0.2 high. Sternum (Images 7[w], 9[w], Fig. 2): 0.82 long, 0.77 wide, yellowish, black longitudinal band present on the distal one-fourth area, black short and long hair present. Labium (Images 7[w], 9[w]): wider (0.29) than long (0.14) yellowish with black brush of hair on apical end. Maxillae (Images 7[w], 9[w]): yellowish basal one-fourth, apical border brown and rest yellowish-orange, covered with long black hair. Leg: formula 1423, uniformly yellowish-orange except distal ends of tibiae, metatarsi and tarsi with black annulets; paired claws without dentations or claw teeth, inferior claw present leg I-IV. Palp: yellowish-orange with black annulets on distal ends of tarsi, single curved claw with big tooth.

Abdomen: (Images 1[w], 2[w], Fig. 3) Globular, oval, longer than wide, orange with white pattern on dorsum, lateral and between the spinnerets and epigynum area, brown spot above the spinnerets. Spinnerets, two pairs, conical, towards posterior end (Image 6[w], Fig. 4).

Epigyne: (Image 8[w], Fig. 5, 6) External epigynum of female consists of sclerotised round spermetheca and semicircular orifices. Internal epigynum consists of a pair of round spermetheca with slightly long curved arms (almost touching circular orifice) and short apical rim of circular orifice.

Distribution: India, Philippines

Web: (Image 10[w], 11[w]) The web of *Achaearanea* spiders consists of a horizontal platform-like, close-meshed silk sheet, to which are attached supporting silk strands (cobwebs). In the center of the cobweb, the spider sits in a retreat made up of an inverted cone-shaped dry leaf.

The spider we found in a web built on a shrub (*Plusia rosea*) at about 2.5m from the ground; the female was found with her eggsac in the month of February. Barrion & Litsinger (1995) found the spider along with eggsac in October. It is likely that these spiders either lay eggs more than once a year, or, depending upon the geographic location the reproductive period varies.

Habitat: The spider from India was found on shrubs of a pathway in the college campus surrounded with experimental plots consisting of various indigenous trees and bamboo

[w] See Images in the web supplement at www.zoosprint.org

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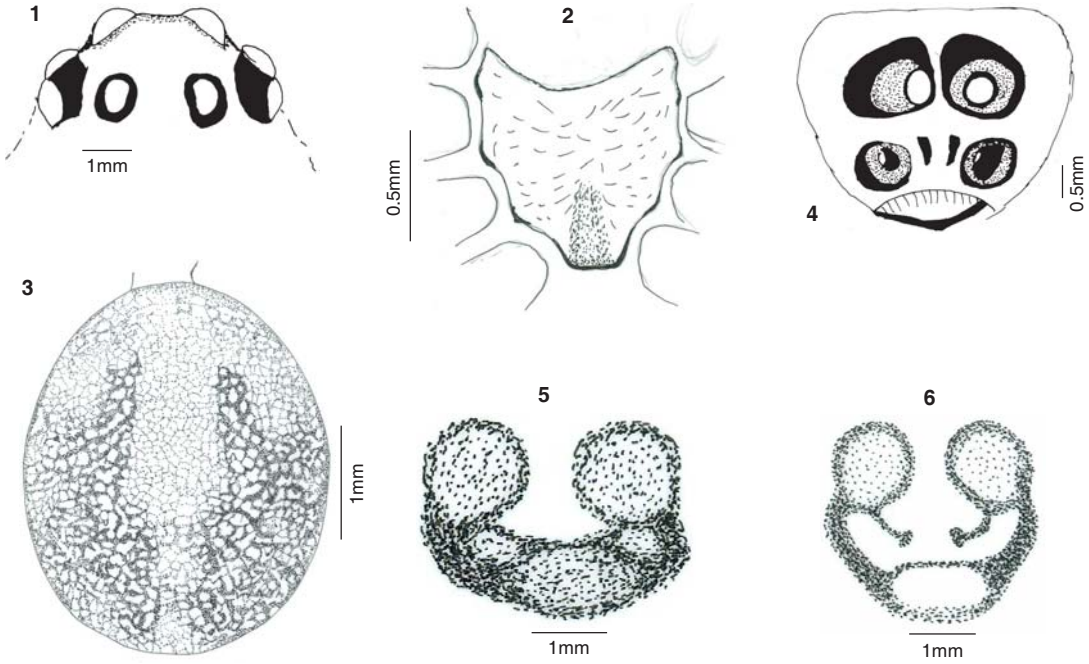

***Figures 1-6.* Achaearanea brookesiana**
1 - eyes; 2 - sternum; 3 - abdomen; 4 - spinnerets; 5 - external epigynum; 6 - internal epigynum

Table 1. Morphometry of legs and palp (in mm)

	Leg I	Leg II	Leg III	Leg IV	Palp
Femur	2.01	1.56	1.04	1.76	0.40
Patella	0.67	0.46	0.40	0.38	0.10
Tibia	1.45	0.94	0.72	1.18	0.26
Metatarsus	1.79	1.07	0.87	1.44	-
Tarsus	0.78	0.71	0.55	0.78	0.43
Total	6.70	4.74	2.71	5.54	1.19

plantations. The original habitat is basically of dry deciduous type. Murphy and Murphy (1993) report that members of genus *Achaearanea* construct their web on shrubs in gardens, secondary forests and mangrove swamps. The type specimen from Philippines was collected from a clump of rice tillers (Barrion & Litsinger, 1995).

Discussion: The specimen of *Achaearanea brookesiana* from India very closely resembles *Theridion indicum* described by Tikader (1977) from Andaman in having similar abdominal patterns and external epigyne structure having semicircular orifices and round spermetheca. The original description of *Theridion indicum* lacks detail taxonomic information, internal epigyne sketch and web description. The diagram of epigyne (ventral view) is not clear due to poor illustration.

There is an error in the original publication (Barrion & Litsinger, 1995), wherein the holotype is assigned as male instead of female under type material. Description of this species is based on a single female alone (Platnick, 2007).The members of genus *Achaearanea* morphologically resembles genus *Theridion* in having a globular abdomen.

The *Achaearanea* spp. described by Tikader (1970, 1977) from Sikkim (*A. budana*, *A. durgae*) and Andaman Island (*A. diglipuriensis*) lack globular abdomen and have a notch on the posterior end of the abdomen. The structure of the epigynum of Tikader's Acahaeranea species cannot be understood from the illustrations in the original description. It is likely that these species are wrongly placed in this genus. We recommend that the type specimens be studied carefully and the taxonomic validity of these specimens be established.

The taxonomic differences between females of *Theridion* and *Achaearanea* are not very distinguishable (Levi & Levi, 1962). The most reliable method of separating *Achaearanea* from other genera is by its characteristic platform and tangle web. The web of *Theridion* lacks any distinguishing character and is a simple tangle/irregular web, like the majority of theridiid spiders.

Based on the description and epigynum structure of *Theridion indicum* Tikader, 1977, we suspect that *T. indicum* is a member of genus *Achaearanea*. It is also likely that *Theridion indicum* and *Achaearanea brookesiana* (Image 1[w]) are one and the same species and we recommend the holotype be re-examined.

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