



**RICEPLANT INHABITING LONG-JAWED SPIDERS GENUS
TETRAGNATHA LATREILLE, 1804 FROM DISTRICT JHENAIDAH,
SOUTHWEST BANGLADESH
(ARANEAE: TETRAGNATHIDAE: TETRAGNATHINAE)**

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Received: 22 July 2025; **Accepted:** 23 August 2025

ABSTRACT

Taxonomic account of two species of rice-plant inhabiting long-jawed spiders genus *Tetragnatha* Latreille, 1804 are presented. Of these, species *T. okumae* n. sp. is identified as new to science and *T. boydi* Cambridge is recorded first time from the area of present study. Brief generic diagnosis together with illustrated description, distribution and key to the species is provided. The web-building behaviour of the new species is briefly discussed.

Keywords: *Tetragnatha*, *T. okumae*, *T. boydi*, Araneae, Tetragnathidae, Tetragnathinae

INTRODUCTION

Spiders inhabiting rice-plant ecosystems are very much important due to their active predatory role in the management of pest insects. In Asia, more specifically in Bangladesh, the role of these spiders as a potential biological control agent is well known and accepted earlier. Orb-weaving spiders appear to be of special importance among them as they trap more than a number of pest insects in their webs what they actually consume. About 64 species of rice-field spiders are reported in Bangladesh (Chowdhury and Nagari 1981, Chowdhury and Pal 1984, Okuma *et al.* 1993, Biswas and Raychaudhury 1996, 2013, Biswas *et al.* 1993) and among them spiders of the genus *Tetragnatha* Latreille, 1804 (family Tetragnathidae Menge) were found dominant (Kamal *et al.* 1992, Okuma *et al.* 1993, Biswas *et al.* 1993). Members of the family Tetragnathidae are distributed all over the world and till date, it contains a total of 991 valid species belonging to 47 genera.

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Genus *Tetragnatha* Latreille are tropical, moisture-loving, nocturnal spiders mostly abundant during monsoon. They are inhabitants of vegetations and commonly found in the surroundings of streams, lakes, tanks, wetland rice-fields etc. stretching the legs forward on leaves of plants. They make typical circular or nearly-circular webs below which they stay long times directing upward for the preys. They are one of the important predatory components in the rice-agroecosystems.

Genus *Tetragnatha* (Gk. *Tetra* = four + *gnatha* = jaw) was first established by Pierre Andre Latreille in 1804 with the type-species *Tetragnatha extensa* (Linnaeus 1758). These spiders are distributed all over the world with majority are tropical and sub-tropical countries but species are rich in Asia (Okuma *et al.* 1993). The genus at present composed of 349 valid species worldwide of which only 14 (fourteen) species are recorded in Bangladesh (World Spider Catalog 2025, Okuma *et al.* 1993, Biswas 2009, Biswas and Raychaudhuri 1996). Significant contributors on the genus *Tetragnatha* Latreille are – Gravely (1921), Seeley (1928), Okuma (1987, '88), Barrion (1998), Barrion and Litsinger (1981, '84, '95), Gillespie (1987, '91, '92, '93, '94, 2002), Gillespie *et al.* (1997), Dimitrov and Hormigera (2009), Basu and Raychaudhuri (2016), Tikader (1966), Yin (1976), Zhu *et al.* (2002, 2003), Zhu and Shi (1988), Tanikawa (1997, 2003, 2009), Chickering (1957, '62), Vungsilabutr (1988), Kim and Lee (2013), Kim *et al.* (2008) and Dippenaar-Schoeman *et al.* (2023). The present paper contains description of 2 (two) species of which *T. okumae* n. sp. is described as new and another one *T. boydi* O. P. -Cambridge is recorded first time from Jhenaidah (area of the present study), Bangladesh.

MATERIALS AND METHODS

Collection and Preservation: Specimens were collected from different rice-fields of village South Shikerpur and Bamonail, from 12th April, 2024 to November 2025 in different crop seasons, district Jhenaidah by hand and hand-sweeping net from the webs and plant leaves and collected in a large glass jar containing chloroform. After collection, these were transferred to a large Petri dish for sorting. After sorting, the specimens were put in separate glass vials filled with 70% ethyl alcohol for identification (Lincoln and Sheals 1985).

Identification and Deposition: The preserved specimens were identified following different books and journals of home and abroad; these were – Tikader (1987),

Barrion and Litsinger (1995), Zhu *et al.* (2003), Yaginuma (1986), Tanikawa (2009), Biswas (2009), Basu and Raychaudhuri (2016), Kim and Lee (2013) and Dippenaar-Schoeman *et al.* (2023).

After identification, the specimens were preserved separately in Audmans' preservatives (90 parts 70% alcohol + 5 parts glycerine + 5 parts acetic acid) and preserved in the laboratory of the Department of Zoology, Khulna Government Women's College, Khulna, Bangladesh.

Illustration and Photographs: Illustrations of whole body and different body-parts were made by the Camera lucida fitted with the Stereo zoom Binocular Microscope. Measurements of different body-parts are taken in millimeters (mm). Photographs were taken by DSLR Camera fitted with macro zoom lens (both in the field and laboratory).

RESULTS AND DISCUSSION

Taxonomy

Family : TETRAGNATHIDAE Menge, 1866

Subfamily : Tetragnathinae Menge, 1866

Genus : *Tetragnatha* Latreille, 1804

Type-species : *T. extensa* (Linnaeus, 1758)

1804. *Tetragnatha* Latreille, *Nouv. Dict. d' Hist. Nat.*, **24** : 135.

Cambridge, 1884 : 243 ; Simon, 1894 : 723 ; Thorell, 1895 : 1390 ; Pocock, 1900 : 214 ; Gravely, 1921 : 426 ; Comstock, 1940 : 423 ; Kaston, 1948 : 268 ; Locket & Millidge, 1954 : 94 ; Tikader, 1966 : 8 ; Okuma, 1968 : 98 ; Tikader & Biswas, 1981 : 45 ; Yaginuma, 1986 : 130 ; Koh, 1989 : 53 ; Chen & Zhang, 1991 : 124 ; Gillespie, 1992 : 1 ; Okuma *et al.*, 1993 : 35 ; Barrion & Litsinger, 1995 : 494 ; Biswas & Raychaudhuri, 1996 : 45 ; Mikhailov, 1997 : 108 ; Platnick, 1997 : 463 ; Song *et al.*, 1999 : 221 ; Gillespie, 2002 : 159 ; Zhu *et al.*, 2003 : 109 ; Gajbe, 2004 : 32 ; Majumder, 2004 : 983 ; Tanikawa, 2007 : 104 ; Kim *et al.*, 2008 : 37 ; Biswas, 2009 : 321 ; Marusik, 2010 : 199 ; Barrion *et al.*, 2011 : 385 ; Kim & Lee, 2013 : 54 ; Basu & Raychaudhuri, 2016 : 210 ; World Spider Catalog, 2025, Version 25.5, Nat. Hist. Mus. Bern., <http://www.wsc.nmbe.ch>.

Diagnosis: Members of the genus *Tetragnatha* Latreille, 1804 have body prominently long, narrow, sub-cylindrical, several times longer than wide. Cephalothorax longer than wide, basally broad and wider nearer the middle, flattened above with conspicuous thoracic groove. Eyes in two rows, parallel, divergent or convergent; lateral eyes never contiguous. Chelicerae usually very long, especially in males and margins of furrow provided with numerous teeth. Maxillae long, parallel and dilated at distal ends. Legs and palpi very long and slender clothed with spines, hairs and trichobothria (Okuma *et al.* 1993).

Abdomen long, sometimes like a pointed tail beyond spinnerets. Spinnerets may be present at the end or nearer to the end of abdomen. Epigynal slit posterior to lung slits in the procurved epigastric furrow.

Biological note: All these are orb-weaving spiders and make circular or semi-circular webs in the crop-fields and gardens. They are commonly found on grasses, leaves of rice-plants and other foliages in the vicinity of water. They spin large horizontal webs during dusk under which they stay directing upward. They are nocturnal predators and take rest in the day stretching the legs forward on the leaves or under the webs appearing boat-shaped. All members are biological control agents of small insect pests.

Distribution: All over the world with majority in Asia (Okuma *et al.* 1993; Zhu *et al.* 2003).

Key to the species of genus *Tetragnatha* Latreille

1. Cephalothorax medially wide with deep median fovea and distinct cervical furrows; abdomen long, dumbbell-shaped, with dorsal net-like decoration; lateral eyes distantly placed; chelicerae without anterior dorsal spine and fang with black basal band; leg formula 4123 and epigyne as in figure
..... *T. okumae* n. sp.
- Cephalothorax posteriorly wide, without median fovea and cervical furrows ; abdomen long, cylindrical with long dorsal wavy-decoration ; lateral eyes close each other ; chelicerae with a long, dorsal spine and fang without black basal band ; leg formula 1243 and epigyne as in figure
..... *T. boydi* Cambridge

Description of the species

1. *Tetragnatha boydi* O. P. -Cambridge

(Figs. 1a-g ; Figs. 3a-b)

1898. *Tetragnathaboydi* O. P.- Cambridge, *Proc. zool. Soc. London* : 389.
1921. *Tetragnathamandi bulatabidentata* : Gravely, *Rec. Indian Mus.*, **22** : 442.
1966. *Tetragnathamandi bulatabidentata* : Tikader, *J. Assam Sci. Soc.*, **22** : 9.
1983. *Tetragnathaboydi* : Okuma, *Esakia*, **22** : 69.
1996. *Tetragnathaboydi* : Biswas & Raychaudhuri, *Ann. Entomol.*, **14** (1) : 52.
2006. *Tetragnathaboydi* : Platnick, *World Spider Catalog*, Version 6.5, : 986.
2009. *Tetragnathaboydi* : Biswas, *Ency. Flora & fauna Bangladesh, Arachn.*, **18** (1) : 322.
2016. *Tetragnathaboydi* : Basu & Raychaudhuri, *World Scientific News*, **55** : 210.
2025. *Tetragnathaboydi* : *World Spider Catalog*, Version 25.5, Nat. Hist. Mus. Bern., <http://www.wsc.nmbe.ch>. (Accessed on 7th July, 2025).

Material examined: 2 females, Rice-fields, South Shikerpur, district Jhenaidah, 12.IV.20024, Coll. V. Biswas; 3 females, Bamonail rice-field, district Jhenaidah, 17.III. 2025, Coll. V. Biswas; 2 females, again from rice-fields, South Shikerpur, district Jhenaidah, 07.IV.2025, Coll. V. Biswas.

General: Body long, sub-cylindrical and narrowing posteriorly. Colour brown, cephalothorax dark brown, legs pale and abdomen brown. Total body length (female) 12.20 mm. Carapace 2.20 mm long, 1.40 mm wide; abdomen 10.00 mm long and 2.80 mm wide. Total body length (male) 10.40 mm. Carapace 2.40 mm long, 1.40 mm wide; abdomen 8.00 mm long and 2.60 mm wide.

Cephalothorax: Long, narrowing anteriorly, clothed with fine pubescence. Cephalic region slightly raised; cervical furrows deeply distinct, radial furrows deep and distinct. Eyes black, with black bands basally, anterior row strongly recurved, posterior row faintly so, laterals separated, ocular quad wider than long. Chelicerae long, little longer than carapace; first tooth in female largest and situated at the base of fang; second tooth nearer the first with a series of small teeth (Figs. 1b-c); fang in female with one inner cusp. Maxillae long, posteriorly curved, scopulate anteriorly (Fig. 1d). Labium bell-shaped, scopulate anteriorly (Fig. 1d). Sternum elongate, posteriorly narrowing, anterior margin little concave (Fig. 1e). Legs very long and

slender, clothed with fine hairs and spines; leg formula 1243 and the measurements (mm) of leg segments are shown in Table 1.

Table 1. Measurements (mm) of leg segments of female *T. boydi* Cambridge.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	7.49/7.49	0.45/0.45	5.90/5.90	4.15/4.15	2.50/2.50	20.49/20.49
II	7.10/7.10	0.40/0.40	5.50/5.50	3.80/3.80	2.00/2.00	18.80/18.80
III	1.90/1.90	0.40/0.40	2.00/2.00	2.20/2.20	1.10/1.10	7.60/7.60
IV	3.65/3.65	0.40/0.40	4.10/4.10	2.45/2.45	1.55/1.55	12.15/12.15

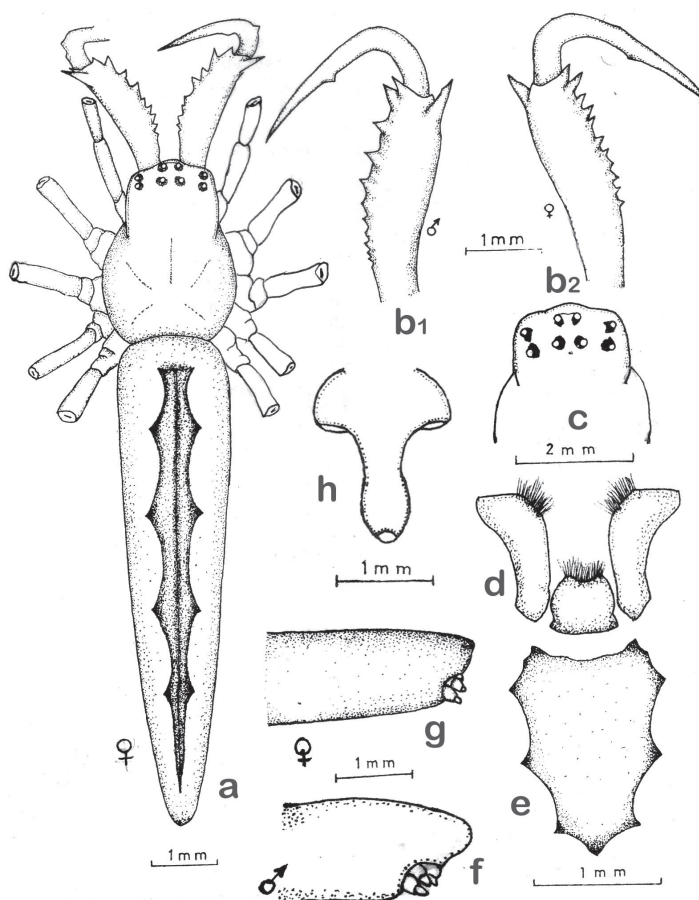


Fig. 1. *Tetragnatha boydi* O. P. –Cambridge

a. Whole body (dorsal view); b1-b2. Chelicerae; c. Ocular area; d. Maxillae & Labium; e. Sternum; f. Posterior part of abdomen (male) showing spinneretes; g. Do (female showing spinneretes; h. Epigynum.

Abdomen: Very long, anteriorly broad, posteriorly tapering, clothed with fine pubescence; dorsum with brownish long scaly decorations, anteriorly ridged, posteriorly with two longitudinal ridges; epigyne long, tongue-like as in Figure 1i.

Distribution: BANGLADESH: Jhenaidah, Bagerhat, Tangail; INDIA; NEPAL; AFRICA; BRAZIL (Tikader 1966; Okuma 1988; Biswas and Raychaudhuri 1996).

2. *Tetragnatha okumae* n. sp.

(Figs. 2a-i; Figs. 3c-d)

Material examined: 1 female (Holotype), Village South Shikerpur, District Jhenaidah, 22.IX.2024, Coll. V. Biswas; 2 females (Paratypes), collected from same locality, 17.IV.2025, Coill. V. Biswas.

General: Body very long, nearly dumbbell-shaped, anteriorly wide. Colour yellow-brown with deep brown chelicerae. Cephalothorax dark-brown with black dorsal fovea. Legs long, pale yellow-brown. Total body length (holotype) 14.00 mm. Carapace 2.70 mm long, 1.60 mm wide; abdomen 11.30 mm long and 1.70 mm wide (Fig. 3a).

Cephalothorax: Holotype: Broad, elongate, flat, wider medially with a black median fovea and two lateral distinct cervical furrows; some radiating striae present around the fovea. Eyes black, each encircled with small black basal bands; anterior row slightly recurved and posterior row faintly so; lateral eyes separated; ocular quad wider than long. Chelicerae long, strong, deep brown with many sharp pointed teeth on each margin; fang with black basal band (Fig. 3b-c). Maxillae long, backwardly curved, anteriorly broad and scopulate (Fig. 3d). Labium small, nearly apple-shaped, anteriorly scopulate (Fig. 3d). Sternum brown, broad, nearly heart-shaped, pointed posteriorly (Fig. 3e). Legs yellowish, very long and slender, clothed with fine hairs and spines; leg formula 4123 and the measurements (in mm) are shown in Table 2.

Table 2. Measurements (mm) of leg segments of female *T. okumae* n. sp.

Leg	femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	7.00/7.00	0.50/0.50	5.45/5.45	3.85/3.85	2.05/2.05	18.85/18.85
II	3.65/3.65	0.45/0.45	4.10/4.10	2.60/2.60	1.60/1.60	12.40/12.40
III	1.90/1.90	0.35/0.35	2.10/2.10	2.10/2.10	1.00/1.00	7.45/7.45
IV	7.60/7.60	0.50/0.50	6.50/6.50	4.15/4.15	2.50/2.50	21.25/21.25

Abdomen: Long, yellowish-brown, nearly dumbbell-shaped; anteromedially wide; dorsum with scaly decoration; posteriorly blunt; spinnerets broad, situated at the end; ventrally light-yellow; epigyne as in Figure - 2h.

Male unknown. This will be described in detail after collection (when will be available).

Holotype: 1 female in spirit.

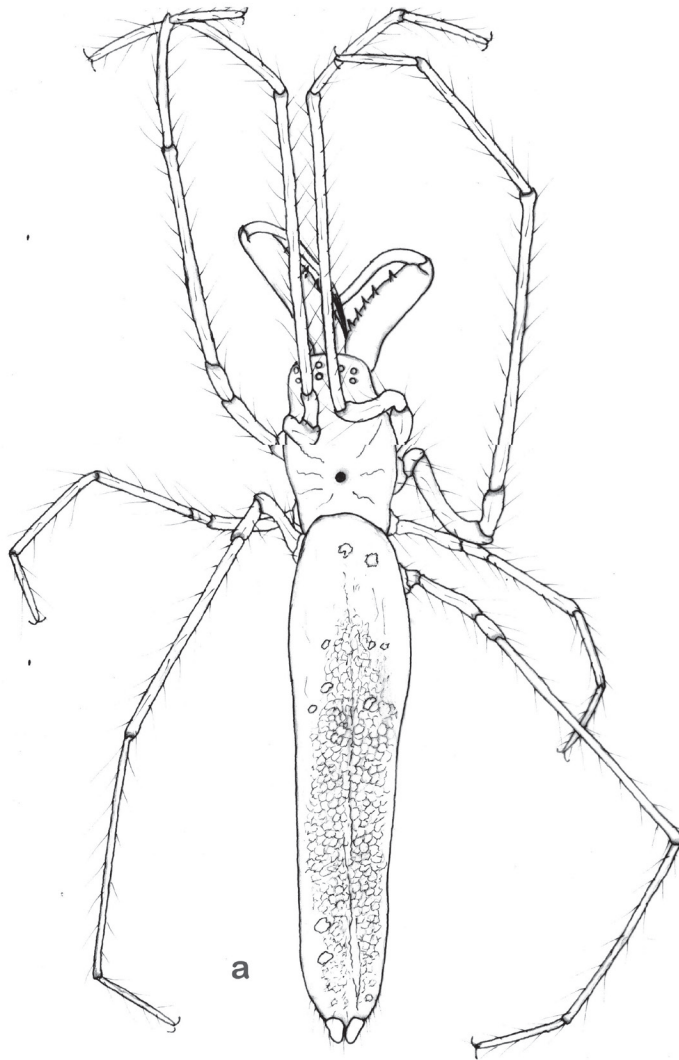


Fig. 2. *Tetragnatha okumae* n. sp. a. Whole body (dorsal view)

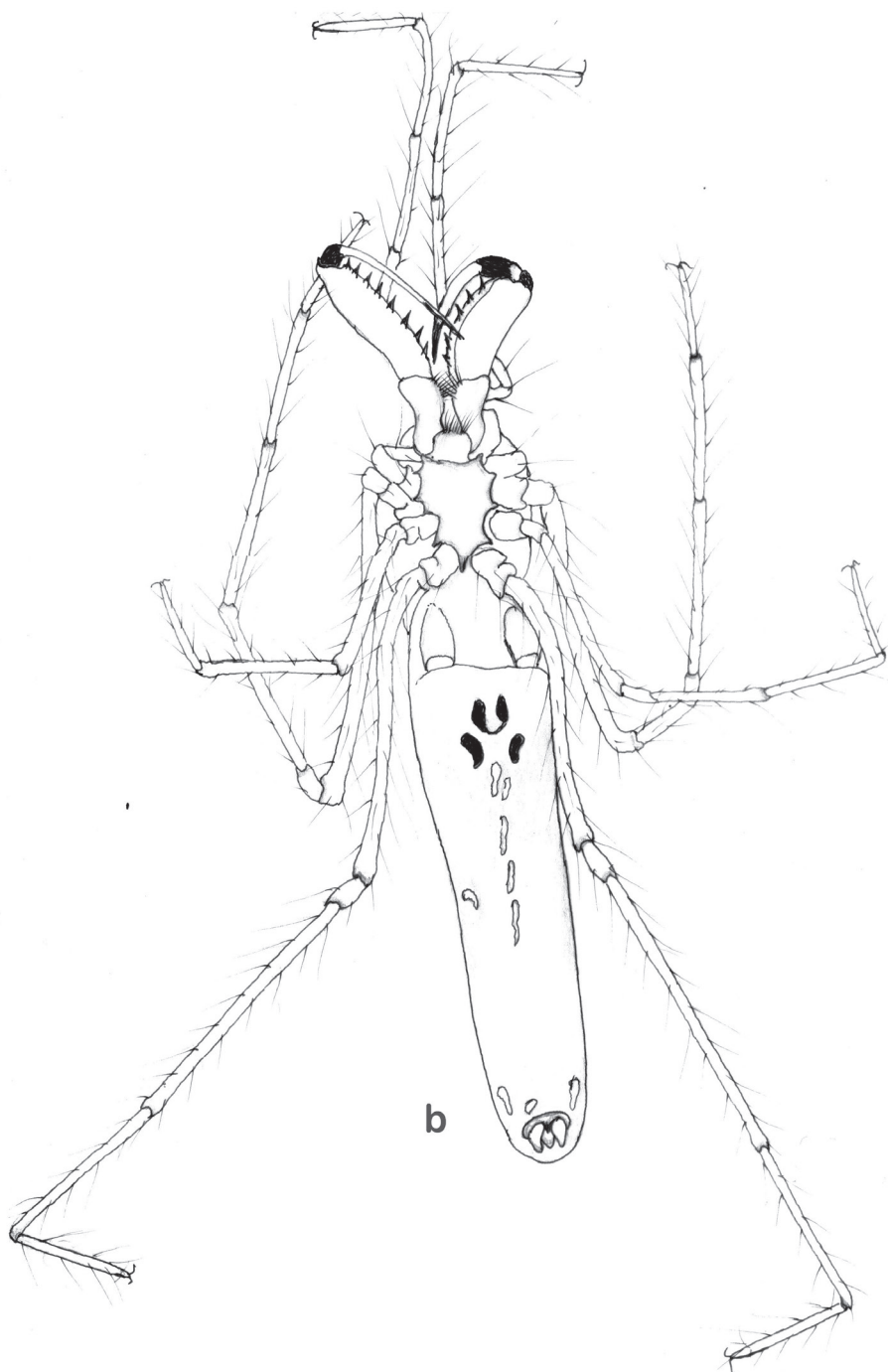


Fig. 2. *Tetragnatha okumae* n. sp. b. Whole body (ventral view)

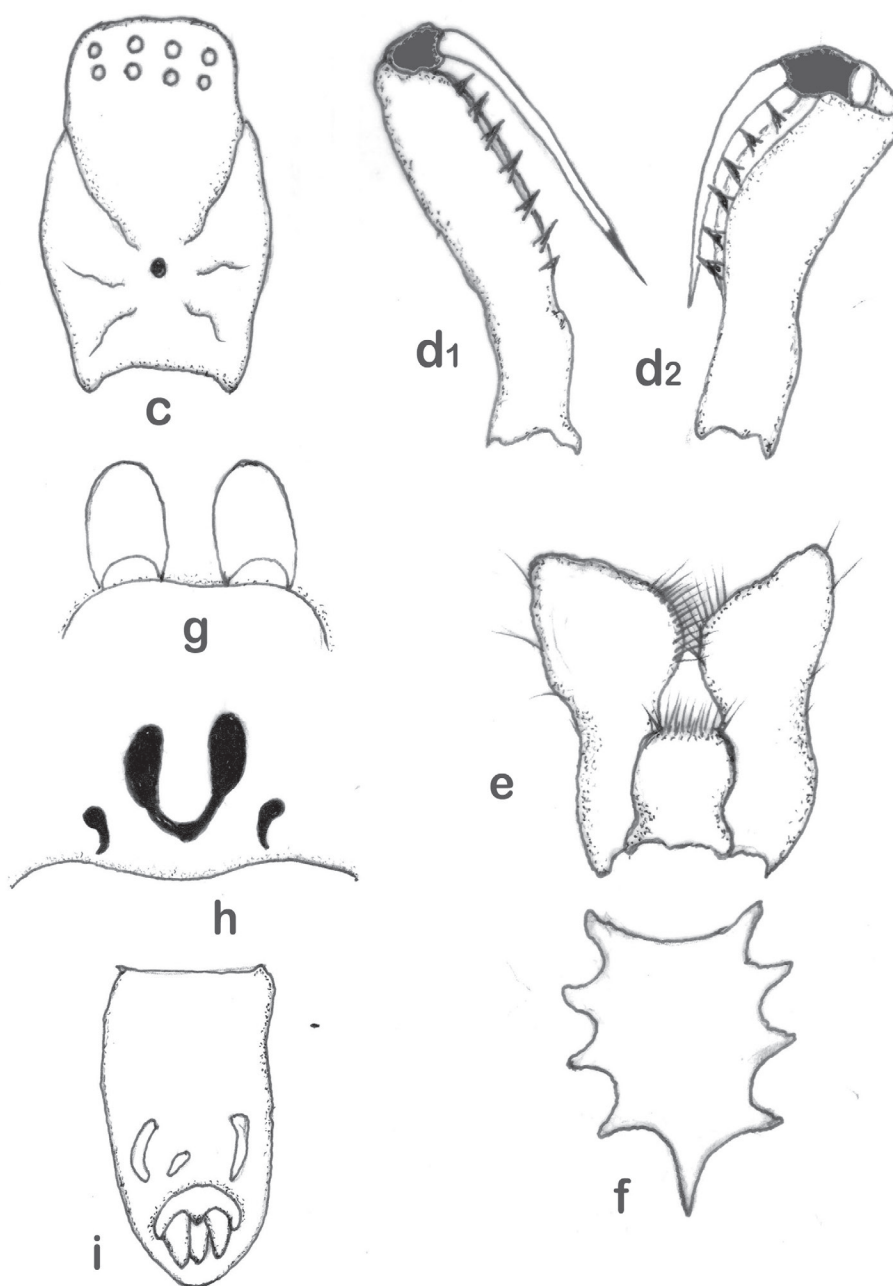


Fig. 2. *Tetragnatha okumae* n. sp.

c. Cephalothorax; d1 - d2. Chelicerae; e. Maxillae & labium; f. Sternum; g. Book-lung; h. Epigynum; i. Posterior end showing spinneretes

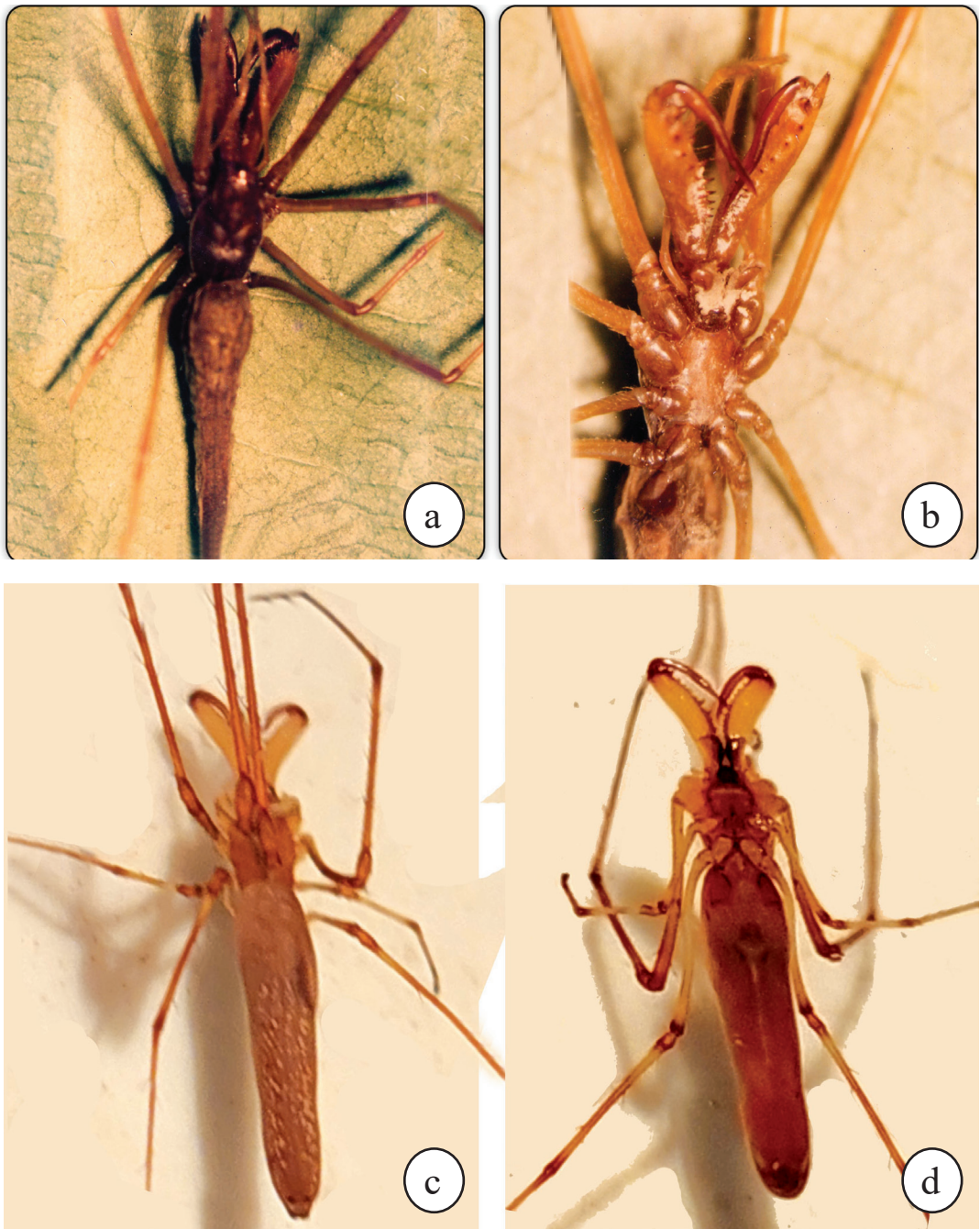


Fig. 3. a. *T. boydi* Cambridge (dorsal view); b. Do, Chelicerae, maxillae, labium & sternum; c. *T. okumae* n. sp. (dorsal view); d. Do, ventral view showing chelicerae, maxillae, labium & sternum.

Paratypes: 2 females, collected from the same locality and data were same as for the holotype.

Etymology: The species is named in honour of the Japanese Arachnologist late Dr. Chyuku Okuma who helped a lot in my research on the tetragnathids of Bangladesh.

Distribution: Bangladesh: Village South Shikerpur, District Jhenaidah (Type locality).

Remarks: The species *T. okumae* n. sp. appears close to *T. boydi* Cambridge in general appearance but stands distinct in the following characters ----

1. Cephalothorax broad medially with distinct median fovea and cervical furrows.
2. Cheliceral fang basally with black band.
3. Abdominal dorsum with scaly decoration and
4. Typical female genitalia or epigynum.

The species, is therefore, described as new to science.

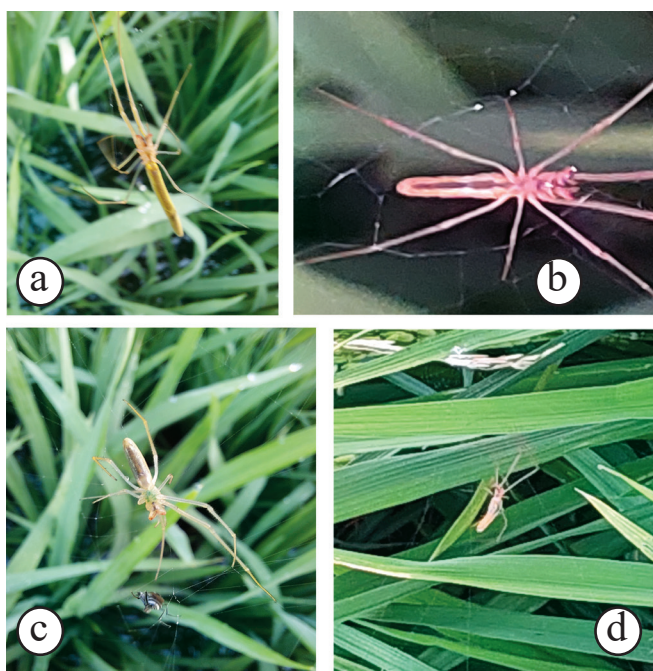


Fig. 4 (a, b, c, d) Illustration of the web-building behaviour of *Tetragnatha okumae* n.sp.

Web-building behaviour of *Tetragnatha okumae* n. sp. : The species *T. okumae* n. sp. is an orb-weaver long-jawed spider commonly found in different rice-fields of Village South Shikerpur and Bamonail, district Jhenaidah, Bangladesh. It can spin a typical geometric web within rice-plants during dusk. During building the web, first the spider secretes the threads from the spinnerets which it catches by the metatarsal spines and trichobothria by which they first connect it to the rice-plants. After completion of lateral connections, the spider then moves in circular way over the threads and spin the circular web-lines by their metatarsal spines. Thus, a circular or semi-circular orb-web is formed. After completion of construction, the spider stays below the web directing the ventral side upward (Fig. 4a-d).

The spider thus stays whole day and consume the prey insect pests continually. Their foods composed of different types of small moths, green leaf hoppers (GLH), brown plant hoppers (BPH), aphids etc. and the numbers of insect pests caught by the webs are more than their expectations. It was observed that a mature long-jawed spider can consume more than 30 small insect pests per day.

CONCLUSION

In the taxonomic history of rice-plant inhabiting long-jawed spiders of Bangladesh (Biswas 2009; Biswas and Raychaudhuri 1996; Okuma *et al.* 1993), it is found that *T. okumae* n. sp. is new and *T. boydi* Cambridge is a new record for the area of present study. From the earlier description it is found that there are some variations with the previous ones (in colour, shape, size etc.) which distinctly identify the present species.

Both these species of spiders are orb-weavers and predatory in habit. They consume many kinds of small pest insects of different crop-field ecosystems by their webs. Thus, they help as an important biological control agent in the pest management system of different crops of Bangladesh. Therefore, conservation of these important predators is necessary for crop cultivation.

ACKNOWLEDGEMENTS

The author is grateful to late Professor Chyuku Okuma, Department of Agriculture of Kyushu University, Japan for her continuous help in this study and to the Principal, Khulna Govt. Women's' College, Khulna for providing laboratory facilities during the study.

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