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A NEW SPECIES OF CRAB-SPIDER UNDER THE GENUS *THOMISUS* WALCKENAER, 1805 (ARANEAE: THOMISINAE: THOMISIDAE) FROM BANGLADESH

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Abstract

Taxonomic description of a new species of crab-spider genus *Thomisus* Walckenaer, 1805 is provided herewith. The species *Thomisus aruni* n. sp. was identified as new to science. The paper contains an illustrated description of the species together with the generic diagnosis and distribution of the species.

Keywords: Taxonomy, Crab-spider, Araneae, Thomisinae, Thomisidae, *Thomisus,* Bangladesh.

Introduction

Crab-spiders are the members of the moderately largest family Thomisidae which are world wide in distribution. These spiders are one of the common, attractive and fascinating groups in the garden and forests. Their body is short, strong and slightly flattened and the legs are laterigrades. They are small to medium in size (about 2 mm to 23 mm in length).

Thomisids do not build any web to trap preys though all of them produce silk for drop lines and sundry reproductive purpose. Some are wandering hunters and are known as 'ambush predators'. Thomisids are usually wandering spiders inhabiting mainly on leaf litter, grasses, foliages of plants and a few live under loose barks and on the ground. Some species sit on or besides flower so that sometimes they are called 'flower spiders'. These spiders are able to change colour showing mimicry over a period of several days. The spiders of the family Thomisidae are not known to be harmful to humans, but majority are helpful predators and consume small pest insects of crop-fields, gardens and forests.

Thomisidae is one of the largest families with 2,155 species belonging to 177 genera and its members are distributed world wide (World Spider Catalog, 2022; Buchar and Ruzicka, 2002). The members of the genus *Thomisus* Walckenaer, 1805 are commonly found in the garden and forests of Bangladesh and all of them are small, but robust and

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colourful. The genus was first established by Walckenaer in 1805 with the type-species *T. onustus* Walckenaer, 1805. At present, it is represented by 145 species in the world fauna (World Spider Catalog, 2022) and 45 species in the Indian Sub-continent (Tikader, 1980; Majumder, 2005, 2007; Keswani *et al*., 2012). In Bangladesh, only 7 (seven) species are recorded (Okuma *et al.,* 1993; Biswas *et al*., 1993; Chowdhury and Nagari, 1981; Chowdhury and Pal, 1984; Begum and Biswas, 1997; Biswas, 2009, 2019), but a good number of species is described in other Asian countries like – China (Chen and Zhang, 1991; Zhao, 1993; Song *et al.,* 1999; Song and Zhu, 1997), Japan (Yaginuma, 1986; Ono, 1988; Shinkai and Takano, 1984), Singapore (Koh, 1989), Korea (Paik, 1978; Kim and Lee, 2012) etc. In the present paper an illustrated description of a new species of the genus *Thomisus* together with its generic diagnosis and distribution of the species has been given.

Materials and Methods

Collection: The specimens of new species was collected from the gardens and crop-fields of southern coastal areas of districts Faridpur and Pirojpur of Bangladesh. The collection was made by jarking the branches of Jaba plants (*Hibiscus rosa-sinensis*) from Agricultual Diploma Institute (ADI), Faridpur on an inverted umbrella placed underneath the plants and from the rice-plants (*Oryza sativa*) of district Pirojpur by hand sweeping net. The specimens thus collected were then placed to a large glass jar containing a wade of cotton with chloroform for anesthesizing specimens. These are transferred to a petridish filled with 70% ethyl alcohol for sorting. After sorting, the specimens were then placed in glass vials with 70% ethyl alcohol for identification and future study.

Preservation: The collected specimens were preserved temporarily in 70% ethyl alcohol and after identification, these were preserved permanently (separate specimen in separate vial) in Audman's Preservatives (90 parts 70% ethyl alcohol + 5 parts glycerine + 5 parts glacial acetic acid) following Lincoln and Sheals (1985).

Identification

The specimens thus preserved, were identified by the study of different important taxonomic characters viz.- shape, size, colour, dorsal decoration, structure of legs, male pedipalp, female epigynum, cheliceral structure and dentition, eye patterns etc. These were done following the keys and description made by Tikader (1971, 1980, 1987), Ono (1988, 2009), Barrion and Litsinger (1995), Song and Zhu (1997), Dondale and Redner

(1978), Okuma *et al*. (1993), Koh (1989), Chen and Zhang (1991), Zhao (1993), Levy (1973, 1985), Yaginuma (1986), Biswas (2009) and Kim and Lee (2012).

After identification, the species was later confirmed from the Arachnida section, Zoological Survey of India, Kolkata. At present, the preserved specimens are placed in the Department of Zoology, Khulna Government Womens' College, Khulna and will be deposited to the Museum of the Department of Zoology, University of Dhaka, in due course of time.

Illustration and Photograph

The whole body of spider and its different body-parts were illustrated under a Stereozoom Binocular Microscope fitted with Camera Lucida. Leg measurements were taken under the same condition in the following sequences: femur, patella, tibia, metatarsus, tarsus and total length, and all measurements were taken in millimeters (mm).

The photographs of the identified specimens were taken both in natural condition (in the field) by DSLR Camera fitted with 90 mm macrozoom lens and in the laboratory by Camera fitted with microscope (model SV8, Zeiss).

Results and Discussion

Systematics

Family: THOMISIDAE Sundevall, 1833
Subfamily: Thomisinae Sundevall, 1833
Genus: *Thomisus* Walckenaer, 1805
Type-species: *T. onustus* Walckenaer, 1805

Diagnosis

Spiders (under the genus *Thomisus*) with short, compact and robust bodies. Body bright in colour. Cephalothorax truncated in front, with the upper fore corners strongly and conically protruberant and divergent. Eyes very small, arranged in two rows, with lateral eyes on distinct eye tubercles; anterior row strongly recurved with medians nearer to laterals than the others. Legs long, relatively much longer in males; leg I and II much longer than III and IV.

Abdomen narrow and truncated in front, enlarging to a considerable width behind, where at either corner with a short, blunt, conical protruberance.

Females small to medium in size (usually 2 mm - 11 mm). Carapace usually as wide as long, high and convex but posterior margin concave. Males are much smaller (1.9 mm –

3.6 mm) and most species darker in colour, with strong erect setae both on the carapace and abdomen. Eye tubercles in all species distinct and sharply pointed.

Biological note

Spiders of the genus *Thomisus* usually live in vegetation, mainly inside flower corollas. They can not make any web and can consume small insects in the crop-fields and gardens. Some can change their colours to match the substratum (Levy 1985). They catch their prey lurking on the flowers with their legs spread widely.

Distribution: Africa, America, Asia, Australia and Europe.

Description of the new species

***Thomisus aruni* n. sp.**

(Figs. 2a-f & 1a-b)

Material examined: Holotype: 1 female, ADI, Faridpur, 12. VIII. 1993 & 08. V. 1995, Coll. V. Biswas; Allotype: 1 male, Pirojpur, 18.IX. 1991, Coll. V. Biswas; Paratype: Nil.

Designation of the type

Holotype: This is a single female specimen preserved permanently in Audman's preservatives. It was collected from a shrub (*Hibiscus rosa-sinensis*) of Agricultural Diploma Institute (ADI) campus, Faridpur and the whole illustrated description is made on the basis its taxonomic characters.

Allotype: This is a single male specimen collected from Pirojpur. Its single pedipalp is drawn showing the male identifying character of the new species.

General: Body small and robust but bright in colour (Fig. 2). Cephalothorax brown, legs and abdomen pale brown. Total body length (holotype) 6.20 mm. Carapace 2.40 mm long, 2.00 mm wide; abdomen 3.80 mm long and 2.60 mm wide. Total body length (allotype) 5.20 mm long; Carapace 1.90 mm long, 1.50 mm wide; abdomen 3.30 mm long and 2.00 mm wide.

Cephalothorax: Nearly rounded, slightly longer than wide, medially wide, anteriorly convex; cephalic region raised with 2 distinct, anteriorly wide cervical furrows. Eyes situated on an elevated, laterally concave, pointed, chalk-white tubercle; anterior row recurved, anterolaterals slightly larger than the anteromedians; posterior row longer,

posterolaterals situated on the lateral margin. Chelicerae brown, broad, both inner and outer margins with 1 tooth (Fig. 2b). Maxillae longer than wide, anteriorly wide and scopulate (Fig. 2c). Labium broad, posteriorly flat, anteriorly rounded and scopulate (Fig. 2c). Sternum brown, longer than wide, posteromedially wide, posteriorly pointed, clothed with fine hairs (Fig. 2d). Legs long and slender, clothed with hairs and spines; leg formula 1243 and the measurements (in mm) of different leg segments are shown in Table 1.

Abdomen: Broad, posteriorly wide, narrowing anteriorly; posterior margin with 2 deep constrictions forming a median rounded concave area; each of antero and posterolateral margins pointed forming a tetrangular shape; dorsum with few spots; epigyne as in Fig. 1e.

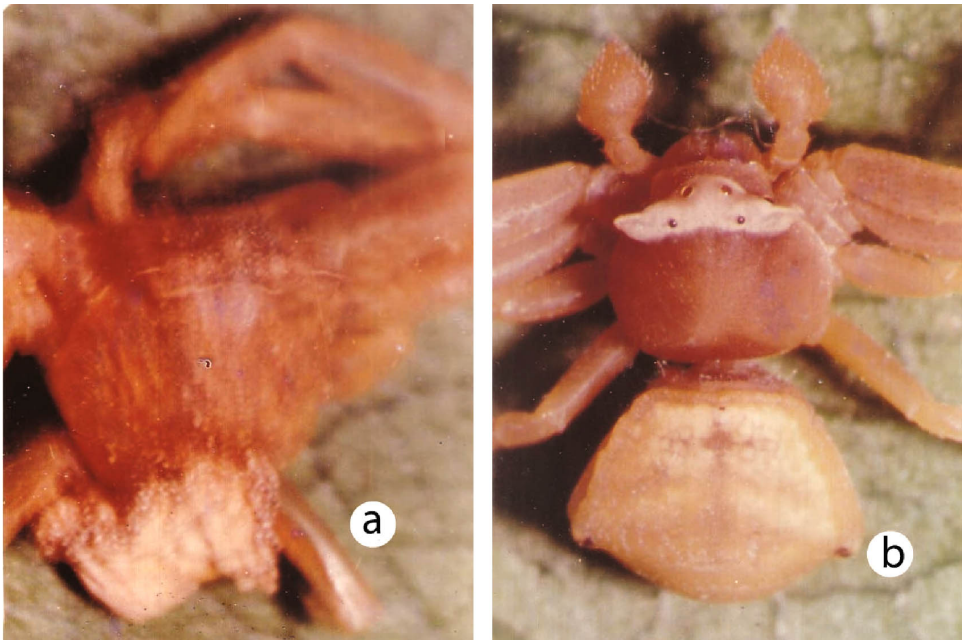

Figure 1. *Thomisus aruni* n. sp. a. Female; b. Male

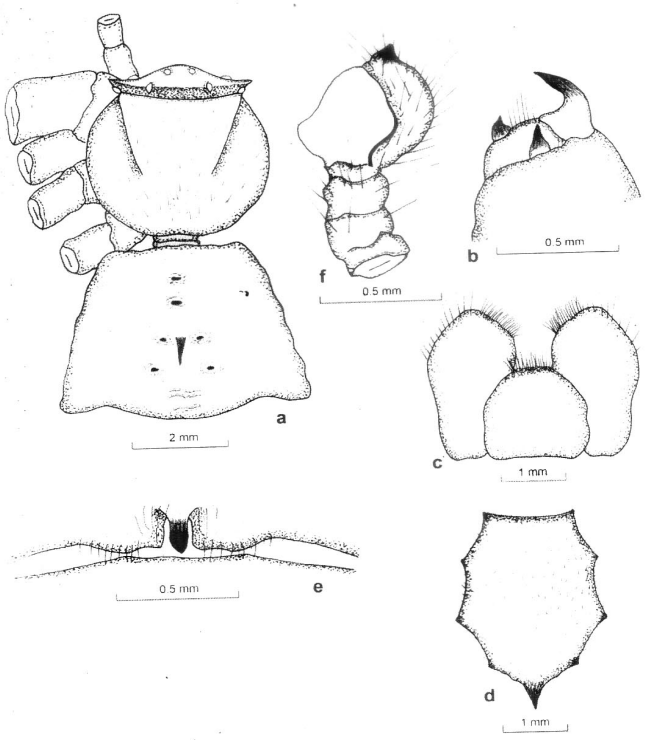

Figure 2. *Thomisus aruni* n. sp. a. Whole body of female (dorsal view); b. Chelicerae; c. Maxillae & Labium; d. Sternum; e. Epigynum; f. Male palp

Table 1. Measurements (in mm) of the leg segments of *Thomisus aruni* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	4.00/4.00	1.80/1.80	2.50/2.50	2.50/2.50	0.90/0.90	11.70/11.70
II	3.90/3.90	1.80/1.80	2.30/2.30	2.00/2.00	0.80/0.80	10.80/10.80
III	1.50/1.50	0.90/0.90	1.00/1.00	1.00/1.00	0.80/0.80	5.20/5.20
IV	2.20/2.20	1.00/1.00	1.20/1.20	1.50/1.50	0.80/0.80	6.70/6.70

Male little smaller than female and comparatively darker in colour. Male palp as in Fig. 1f.

Etymology: The species is named after Professor Arun Kumar Das, Department of Botany, Government Profulla Chandra College, Bagerhat, Bangladesh, who helped in the collection of specimens.

Distribution: Bangladesh: Gardens of Agricultural Diploma Institute (ADI), Faridpur and the rice-fields of district Pirojpur (type- localities).

Remarks: The species *T. aruni* n. sp. shows the following diagnostic characters:

1. Cervical furrows deep and distinct.
2. abdomen not overhanging the cephalothorax.
3. anterior margin of abdomen straight posteriorly, weakly convex.
4. transverse band on the ocular area of cephalothorax white and
5. much different epigynum.

Discussion

The new species *Thomisus aruni* n. sp. is a small, unique and brightly coloured crab-spider. These are found in the gardens and crop-fields of Bangladesh. It shows some special diagnostic features on the basis of those it is established as a species new to science. From this study, we can expect that there are some considerable numbers of endemic species present in the country.

Reports on the study of thomisid spiders in Bangladesh is scarce, except Okuma *et al.* (1993), Biswas (2009) and Biswas and Raychaudhuri (2003, 2017). Therefore, a detailed taxonomic study on these spiders may discover some new species in future.

Moreover, as the new species *Thomisus aruni* n. sp. is distributed in the gardens and crop-fields, so, it may be assumed that they must have a predatory role in controlling insect pests of both these ecosystems (as crab-spiders are good predators of insect pests).

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