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## A NEW SPECIES OF GENUS *THOMISUS* WALCKENAER, 1805 (ARANEAE: THOMISIDAE) FROM TELANGANA, INDIA AND A DETAILED DESCRIPTION OF *THOMISUS PROJECTUS* TIKADER, 1960

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### OPEN ACCESS

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**Abstract:** A new species of the genus *Thomisus* Walckenaer, 1805, *Thomisus telanganaensis* is described from Telangana, India. The new species differs from its congeners based on the female genital structure. A detailed description of *Thomisus projectus* Tikader, 1960 is provided for lack of one, along with illustrations of female genitalia and other distinguishing characters.

**Keywords:** New description, Telangana, Thomisidae, *Thomisus telanganaensis* sp. nov., *Thomisus labefactus*, *Thomisus projectus*.

**Abbreviations:** AER - anterior eye row; ALE - anterior lateral eye; AME - anterior median eye; Bp - beak-like protuberances; d - dorsal; Fe - femur; GO - genital opening; IC - intromittent canal; Mt - metatarsus; OUNHM, Osmania University Natural History Museum; p - prolateral; PER - posterior eye row; PLE - posterior lateral eye; PME - posterior median eye; Sp - spermathecae; Tib - tibia; TBL - total body length (carapace + abdomen); v - ventral.

Thomisidae Sundevall, 1833 is a speciose family comprising 174 genera and 2166 species (Platnick 2014) of spiders worldwide. Spiders of this family are commonly known as (i) crab spiders - for their body is generally slightly flattened and the legs are laterigrade, leg I & II long and stout, outstretched, appearing and walking sideways like a crab, and (ii) flower spiders - as they are most commonly found on flowering plants, where they lie on the flowers and wait for prey. The species of this family vary in size and color. They are small to large (3–23 mm), vary from bright and colorful to dull colored. They do not build webs and capture small insects by ambush. They are usually found on



DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
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*Thomisus telanganaensis* sp. nov.  
Telangana Crab Spider



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Competing Interest: The authors declare no competing interests.

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plants, shrubs, grasses, on flowering plants, also in leaf litter and sometimes under stones on the ground (Foelix 1996).

In India, the Thomisidae family is represented by 40 genera and 176 species; the genus *Thomisus* Walckenaer, 1805 is known by 45 species (Platnick 2014). In this paper, we describe a new species of the genus *Thomisus* from Telangana and provide a detailed description of *Thomisus projectus* Tikader, 1960 as the original description is scanty.

## MATERIAL AND METHODS

Two female specimens of the new *Thomisus* species were collected opportunistically on 24 March 2014, in a grassland at Nagnur (18°30'N & 79°9'E; 274m) in Karimnagar District, Telangana, India. One female specimen of *Thomisus projectus* was collected on 2 May 2014, in a home garden in Alwal (17°29'N & 78°30'E; 567m), Secunderabad in Ranga Reddy District, Telangana, India. The specimens were photographed in life, collected and preserved, and deposited in the collection of the Natural History Museum of Osmania University, Hyderabad. Line diagrams were drawn using camera lucida mounted on an Olympus binocular microscope.

All measurements presented are in millimeters. Minor colour corrections were made to the pictures. The epigynum was dissected and immersed in 50% NaOH solution (following Barrion & Litsinger 1995) for 10 minutes to study the internal structure.

## RESULTS

### *Thomisus telanganaensis* sp. nov.

(Images 1–4; Figs. 1)

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### Type material

**Holotype:** OUNHM.ART.ARA.2014.26, female, 24.iii.2014, Nagnur (18°30'N & 79°9'E, 274m), Karimnagar, Telangana, India, coll. G. Chethan Kumar.

**Paratype:** OUNHM.ART.ARA.2014.27, female, same information as in holotype.

### Diagnosis

The species is diagnosed by the presence of beak-like protuberances on the spermathecae and the diverging, loop-like intromittent canals.

*Thomisus telanganaensis* sp. nov. shows similarity to *Thomisus labefactus* Karsch, 1881 and *Thomisus*

*nirmali* Saha & Raychaudhuri, 2007 in basic epigynum structure, in having a pair of balloon-like spermathecae, but differs with respect to beak-like protuberances on spermathecae and the intromittent canal structure, respectively.

### Description of female

Holotype (OU.NHM.ART.ARA.2014.26, Image 1A, 2A-C, 4A-B).

Habitus: Medium-sized (TBL 6.02mm). General color: Cephalothorax off-white (Image 1A), ocular area white, yellow patches present between AME-ALE (Image 2C), three narrow white bands extending from PER to the center of the carapace; sternum, chelicerae, maxillae, labium with white mottling. Legs off-white with white

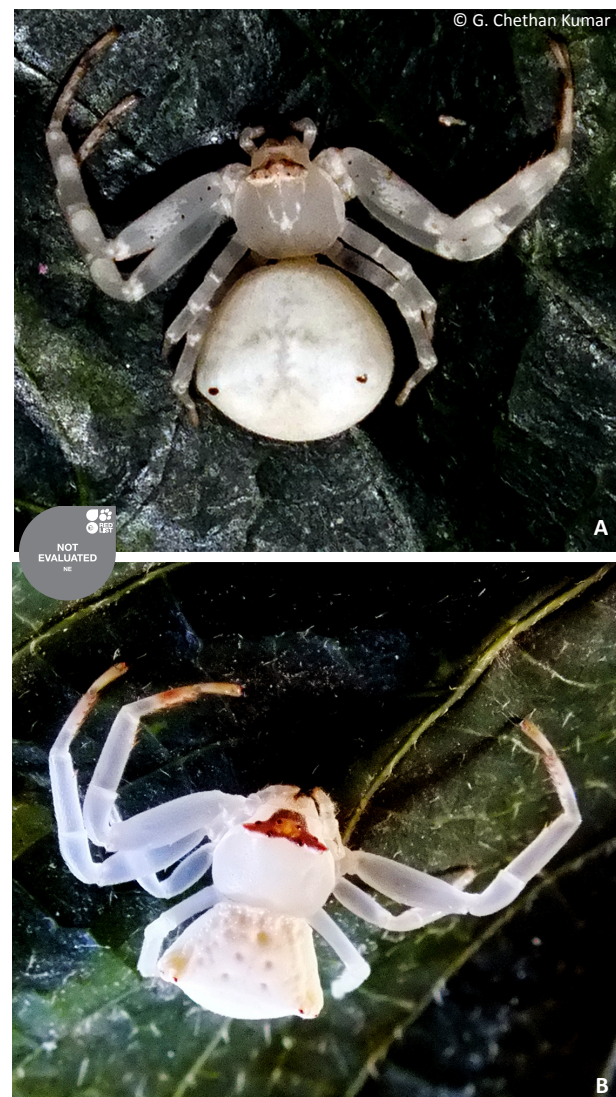


Image 1. *Thomisus telanganaensis* sp. nov. A - holotype; B - paratype depicting morphological variations.



Image 2. *Thomisus telanganaensis* sp. nov. (in alcohol). A - Holotype, dorsal view; B - ventral view; C - ocular area.

patches, distal tip brownish (Image 1A). Abdomen with a pair of tubercles, with black spots (Image 1A, 2A).

Carapace: Rounded, wider than long, 2.27 long, 2.41 wide; chelicerae small, 0.58 long. Maxilla, longer than wide 0.53 long, 0.24 wide; labium, longer than wide 0.32 long, 0.20 wide; sternum, longer than wide 1.07 long, 0.82 wide.

Eyes: Eight eyes arranged in two rows. ALE and PLE separated by tubercles. Eyes sub equal in size, lateral eyes larger than median eyes, ALE largest, AME smallest, AMEs paler.

Legs: Leg I, II long and stout leg, III smallest. Spines present only on leg I, II. Leg formula, 1243. Lengths of legs and palp [total length (femur + patella + tibia + metatarsus + tarsus)]: I = 8.85 (2.82+1.30+1.91+1.64+1.18); II = 8.38 (2.54+1.15+1.94+1.64+1.11); III = 3.92 (1.35+0.68+0.84+0.66+0.39); IV = 4.7 (1.61+0.59+0.98+0.89+0.63); palp [total length (femur + patella + tibia + tarsus)] =

1.69 (0.53+0.31+0.35+0.50). Leg spination: I (Fe 4p; Tib 3,2v; Mt 5,4v); II (Tib 1,1v; Mt 5,4).

Abdomen: Wider than long 3.75 long, 4.04 wide. Pentagonal, slightly overlapping the posterior region of cephalothorax, broadest posteriorly, a pair of tubercles marked with a black spot, five sigillae present medially, four arranged in two pairs, posterior half with transverse muscular corrugations. Venter chalk white with muscular corrugation, three pairs of sigillae medially.

Epigynum (Image 4A–B; Fig. 1A–B): Without sclerotized plate, a pair of deflated balloon-like spermathecae, with beak-like protuberances, intromittent canals short, winding back and going in the opposite direction of origin.

**Variations**

The paratype (OU.NHM.ART.ARA.2014.27) (Image 1B, 3A-C), also female, was slightly bigger than the holotype



Image 3. *Thomisus telanganaensis* sp. nov. A - Paratype, dorsal view; B - ventral view; C - ocular area.

Table 1. Comparison of external measurements (in mm) of body parts of the holotype and paratype of *Thomisus telanganaensis* sp. nov.

Characters		Holotype (OU.NHM.ART. ARA.2014.26)	Paratype (OU.NHM.ART. ARA.2014.27)
Sex		Female	Female
TBL		6.02	7.13
Carapace	Length	2.27	2.90
	Width	2.41	3.12
Chelicerae	Length	0.58	0.89
Maxilla	Length	0.53	0.62
	Width	0.24	0.34
Labium	Length	0.32	0.48
	Width	0.20	0.31
Sternum	Length	1.07	1.27
	Width	0.82	1.07
Abdomen	Length	3.75	4.23
	Wide	4.04	4.35
Length of legs and palp			
Leg I [total length (femur + patella + tibia + metatarsus + tarsus)]		8.85 (2.82+1.30+1.91+1.64+1.18)	9.92 (3.12+1.58+2.21+1.71+1.30)
Leg II [total length (femur + patella + tibia + metatarsus + tarsus)]		8.38 (2.54+1.15+1.94+1.64+1.11)	9.69 (3.09+1.41+2.17+1.71+1.31)
Leg III [total length (femur + patella + tibia + metatarsus + tarsus)]		3.92 (1.35+0.68+0.84+0.66+0.39)	5.11 (1.5+0.95+1.06+0.93+0.67)
Leg IV [total length (femur + patella + tibia + metatarsus + tarsus)]		4.7 (1.61+0.59+0.98+0.89+0.63)	5.7 (1.81+0.92+1.2+1.01+0.76)
Palp [total length (femur + patella + tibia + tarsus)]		1.69 (0.53+0.31+0.35+0.50)	5.7 (0.53+0.48+0.37+0.67)
Leg spination			
Leg I		Fe 4p; Tib 3,2v; Mt 5,4v	Tib 2,3v; Mt 6,3v
Leg II		Tib 1,1v; Mt 5,4	Tib 1,1v; Mt 5,4

(TBL 7.13mm; Table 1). It varied from the holotype in the following characters: ocular area greyish (vs. whitish); sternum, chelicerae, maxillae, labium without white mottling (vs. with white mottling); prolateral spines on the femur absent (vs. 4 prolateral spines present) and possessing four pairs of sigillae medially on ventrum (vs. 3 pairs).

### Etymology

The specific nomen is a noun in apposition taken from the name of Telangana State, India wherein the type locality is present. We propose the common English name 'Telangana Crab-spider' for this species.

### Distribution

Presently known only from the type locality, Nagnur in Karimnagar (18°30'N & 79°09'E), Telangana, India.

### Natural History

All the specimens were collected from the flowers of Fava bean *Vicia faba* L. plant.

### Detailed description of *Thomisus projectus* Tikader, 1960

### Material examined

OUNHM.ART.ARA.2014.28, female, 2.v.2014, Alwal (17°29'N & 78°30'E, 567m), Secunderabad, Telangana, India, coll. G.B. Pravalikha.

### Diagnosis

The species is diagnosed by the presence of a prominent black spot anteriorly above on the tibia of leg I and epigynum with a pair of balloon-like spermathecae connected to the genital openings. *Thomisus projectus* shows affinity to *Thomisus dhakuriensis* Tikader, 1960, *Thomisus memae* Sen & Basu, 1963 and *Thomisus rishus*



Image 4. *Thomisus telanganaensis* sp. nov. epigyne, dorsal view: A - Holotype; B - Paratype.

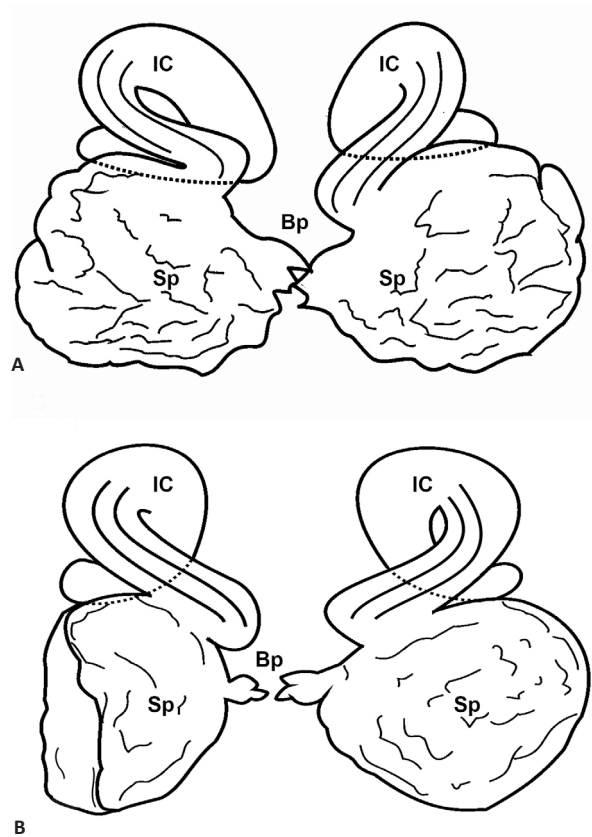


Figure 1. *Thomisus telanganaensis* sp. nov. epigyne, dorsal view line drawing showing deflated-balloon like spermathecae (Sp), short intromittent canal (IC), and beak-like protruberances of spermathecae (Bp). A - Holotype; B - Paratype.

Tikader, 1970 in having black spots on first pair of legs, but differs with respect to the pattern on the abdomen and epigyne structure.

**Detailed description of female (Image 5)**

Habitus: Medium-sized (TBL 7.11mm). General color: Cephalothorax yellowish-brown, ocular area blackish-brown; sternum, chelicerae, maxillae, labium without white mottling. Legs pale yellow, metatarsus and tarsus of leg I & II brown. Tibia of leg I with a black spot anteriorly above and a small black spot posteriorly; femur of leg II with a small black spot posteriorly above. Abdomen with a pair of tubercles, with black spots and antero-lateral ridges on the dorsal side, dark brown in color and appears granular.

Carapace: Rounded, wider than long, 2.96 long, 3.23 wide; chelicerae small, 1.39 long. Maxilla, longer than wide 0.75 long, 0.38 wide; labium, longer than wide 0.48 long, 0.39 wide; sternum, longer than wide 1.57 long, 1.12 wide.

Eyes: Eight eyes arranged in two rows. ALE and PLE separated by tubercles. Eyes sub equal in size, lateral



Image 5. *Thomisus projectus* Tikader, 1960 live habitus.

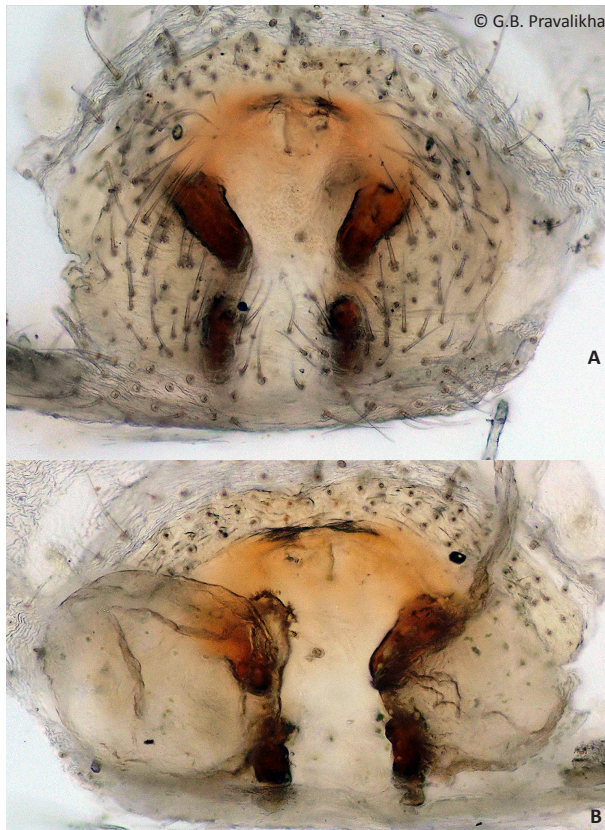


Image 6 A-B. *Thomisus projectus* Tikader, 1960 epigyne  
A - external view; B - internal view.

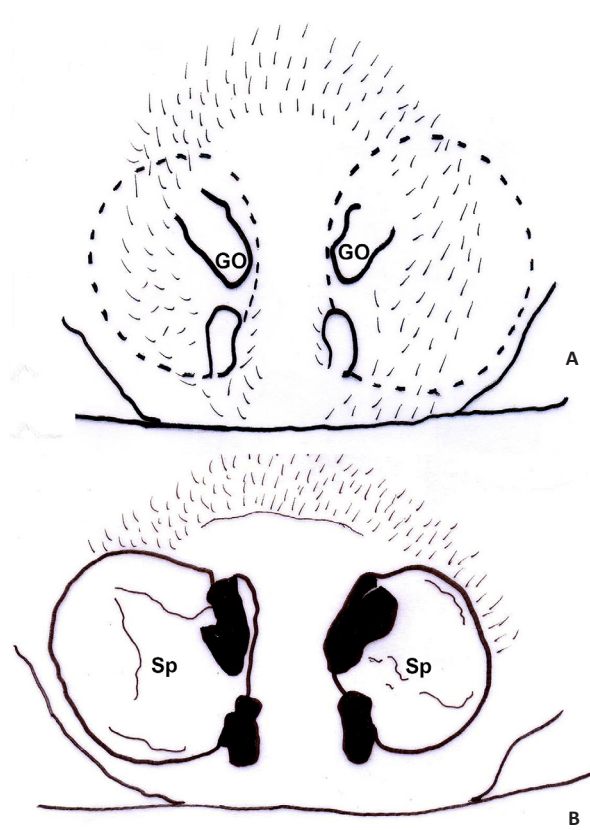


Figure 2 A-B. *Thomisus projectus* Tikader, 1960 epigyne, line drawing showing balloon like spermathecae (Sp) connected to genital openings (GO). A - external view; B - internal view.

eyes larger than median eyes, ALE largest, AME smallest, AMEs paler.

Legs: Leg I, II long and stout; leg III, smallest. Spines present only on leg I, II. Leg formula, 2143. Lengths of legs and palp [total length (femur + patella + tibia + metatarsus + tarsus)]: I = 10.89 (3.22+1.78+2.43+1.99+1.47); II = 10.91 (3.45+1.64+2.40+1.99+1.43); III = 5.3 (1.69+0.94+1.12+0.92+0.60); IV = 6.26 (2.18+0.91+1.36+1.09+0.72); palp [total length (femur + patella + tibia + tarsus)] = 2.34 (0.69+0.46+0.49+0.70). Leg spination: I (Tib 3,1v; Mt 6,6v); II (Tib 2,1v; Mt 6,5).

Abdomen: Wider than long 4.15 long, 4.53 wide. Pentagonal, slightly overlapping the posterior region of cephalothorax, broadest posteriorly, anterior lateral ridges dark brown with yellow spots, five sigillae present medially, four arranged in two pairs, posterior half with conspicuous transverse muscular corrugations. Venter chalk white with muscular corrugation, three pairs of sigillae medially.

Epigynum (Image 6A–B; Fig. 2A–B): Epigynum simple, without sclerotized plate, with a pair of balloon-like spermathecae, connected to the genital openings.

#### Distribution

This species is endemic to India and has been reported from West Bengal (Tikader 1960), Chhattisgarh (Gajbe 2003), Madhya Pradesh (Gajbe 2003), Assam (Chetia & Kalita 2012), Rajasthan (Lawania et al. 2013) and Telangana (present study).

#### Natural History

The specimen from Secunderabad, Telangana has been collected from a home garden, on flowers of marigold *Tagetes* sp. The type specimen was collected from Howrah, a suburb of Kolkata (Tikader 1960).

#### DISCUSSION

The two female specimens of *Thomisus telanganaensis* sp. nov. show variation in the morphology with respect to clypeal area, coloration, spination and abdomen pattern, giving an illusion that both are different (Images 1–3), but are identical with respect to the structure of the internal genitalia (Image 4). These kind of intraspecific variations were also noted in *Thomisus labefactus* Karsch, 1881 and *T. okinawensis*

Strand, 1907 (Ono 1988).

Out of 45 species belonging to the genus *Thomisus*, 43 species are reported from mainland India, while two species (*Thomisus andamanensis* and *T. armillatus*) are restricted to Andaman & Nicobar Islands (Platnick 2014). *Thomisus nirmali* Saha & Raychaudhuri, 2007 from West Bengal was the latest species described from mainland India, indicating a possibility of presence of more diversity within this family.

No studies published so far on *T. projectus* have attempted to provide detailed description of the species (Tikader 1980; Gajbe 2003). In view of the variability with respect to external and internal epigynal structures among the morphologically similar looking individuals of spiders it would be difficult to determine the actual range of many species belonging to the genus *Thomisus*. Further studies from different parts of India will help in addressing the Linnaean shortfall with respect to this group of spiders.

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