

**ADDITION TO THE CRAB SPIDER
(ARANEAE: THOMISIDAE) FAUNA OF INDIA**

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[Sen, S., Saha, S. & Raychaudhuri, D. 2012. Addition to the crab spider (Araneae: Thomisidae) fauna of India. Munis Entomology & Zoology, 7 (2): 909-919]

ABSTRACT: Four species of crab spiders belonging to four genera are reported from the reserve forests of Dooars, North Bengal, India. Of these *Massuria uthoracica*, *Misumena mickeyi*, *Pharta indica* are described as new to science and *Synema revolutum* Tang & Li 2010 is a new record from the subcontinent. The genus *Pharta* Thorell, 1891 is reported for the first time from India. All four species are described/diagnosed and illustrated.

KEY WORDS: Araneae, Thomisidae, new species, new record, India.

Crab spiders included under Thomisidae, is the sixth largest spider family. They are represented by 174 genera and 2151 species, of which more than 500 species are known from Asia (Murphy & Murphy, 2000; Platnick, 2012). Lehtinen (2004) made a substantial revision of Misumenini and some species of other subfamilies of Palaearctic and Oriental regions. He (op.cit.) clarified status of many Indian thomisids.

‘Dooars’ of North Bengal is one of biodiversity hotspot of the world. Several new crab spiders (including a new genus) have been reported from the region (Saha & Raychaudhuri, 2007; Sen et al., 2010). During our faunistic survey (2006-2010) we could sample several thomisids. In this communication, we describe 3 new thomisid species (viz. *Massuria uthoracica* sp. nov., *Misumena mickeyi* sp. nov., and *Pharta indica* sp. nov.) and diagnose Indian *Synema revolutum* Tang & Li, 2010.

Search of literature revealed that the genus *Pharta* Thorell 1891 and *Synema revolutum* Tang & Li, 2010 are the first report from India. Of the recorded genera two, *Misumena* Latreille and *Synema* Simon are cosmopolitan, while *Massuria* Thorell is known to be distributed both in the Oriental and Palaearctic region. It is interesting to note that the genus *Pharta* Thorell is typically an oriental one (Platnick, 2012). Till date Indian *Massuria* Thorell, *Misumena* Latreille and *Synema* Simon are represented by 2, 6 and 2 species respectively (Sebastian & Peter, 2009; Platnick, 2012).

MATERIAL AND METHODS

Thomisids were collected and preserved following Tikader (1987) and Barrion and Litsinger (1995). The materials were studied under Stereo Zoom Binocular Microscopes, model Olympus SZX-7 and Zeiss SV-11. The measurements indicated in the text are in millimeters, made with an eye piece graticule. Leg measurements are given as: Total length (femur, patella + tibia, metatarsus, tarsus). The terminology used in text mainly follows Ono (1988) and Tang & Li (2010).

Abbreviations used: CL= Cephalothorax length, CW= Cephalothorax width, AL= Abdominal length, AW= Abdominal width, TL= Total length, AME= Anterior median eyes, ALE= Anterior lateral eyes, PME= Posterior median eyes, PLE= Posterior lateral eyes; GNP= Gorumara National Park, CWLS= Chapramari Wildlife Sanctuary, MWLS= Mahananda Wildlife Sanctuary, WB= West Bengal.

Type material are in the deposition of Entomology Laboratory, Department of Zoology, University of Calcutta.

TAXONOMIC ACCOUNT

Family Thomisidae Sundevall, 1833 Genus *Massuria* Thorell, 1887

Massuria uthoracica sp. nov.

(Figs.1-5 & 21)

Type material: Holotype: ♀, Chapramari, CWLS, WB, India, 07.v.2008, coll. S. Sen; Paratype: 1♀, Chapramari, CWLS, WB, India, 07.v.2008, coll. S. Sen.

Description:

Female (Holotype): CL- 1.82, CW- 1.73, AL- 2.93, AW- 2.69, TL- 4.75.

Cephalothorax (Fig.1) yellowish brown, globular, anteriorly narrowed, transverse, rectangular, posteriorly globose, convex, nearly as long as wide, with a 'U' shaped brown band extending from PLE up to near base, further beyond triradiate, clothed with hairs and spines. Eyes 8, black, round, on white tubercles, both rows recurved, posterior row longer than anterior, eye diameter: ALE>PLE>AME>PME, laterals close, ocular quad squarish. Inter ocular distance: AME-AME=0.30, ALE-AME=0.13, ALE-ALE=0.65, PME-PME=0.23, PLE-PME=0.23, PLE-PLE=0.73, ALE-PLE=0.13, AME-PME=0.13. Clypeus height high, margin with 10 spines. Chelicerae (Fig.2) yellow, nearly as long as wide, margins devoid of any tooth, anteriorly scopulate, fangs yellowish brown, curved. Maxillae (Fig.3) yellow, long, apically weakly scopulate, medially incurved, labium (Fig.3) yellowish brown, nearly as long as wide, apically convex and weakly scopulate, basally notched. Sternum (Fig.3) yellow, roughly pentagonal, longer than wide, anterior margin concave, posteriorly narrowed. Legs yellowish brown, long, strong, clothed with hairs, tarsal claw 2, each with 5 teeth. Leg measurements: I 6.38 (1.72, 2.31, 1.54, 0.81); II 6.58 (1.81, 2.44, 1.47, 0.86); III 3.66 (1.0, 1.35, 0.77, 0.54); IV 3.70 (1.09, 1.35, 0.72, 0.54). Leg formula 2143. Leg spinations: femora I= 2200, tibiae I =0004 and metatarsi II=0005.

Abdomen (Fig.1) greyish, pentagonal, anteriorly narrowed, posteromedially broad, nearly as long as wide, dorsum entirely margined with a grey band enclosing nearly triangular, off white reticulate patch, medially with a grey midlongitudinal band, this at the middle and posterior tip weakly armed, extending to 2 pairs of thomisid punctures (muscular apodemes), anterior tip with 1 such puncture, clothed with hairs and spines; venter grey with median chalk white reticulations, spinnerets small, greyish.

Epigynum - Internal genitalia (Figs. 4-5): Spermatheca broad, nearly as long as wide, copulatory ducts convoluted, copulatory openings little wider, anterior rim sclerotised, with a midlongitudinal pit, holding the spermatheca.

Distribution: India: West Bengal (only known from the type locality).

Etymology: The species name refers to the 'U' shaped cephalothoracic band.

Type deposition: Entomology Laboratory, Department of Zoology, University of Calcutta, registration no. EZC 0027-12.

Remarks: The species shows a close affinity to *Massuria roonwali* (Basu, 1964), but can be separated by i) cephalothorax with a 'U' shaped brown band extending from PLE upto near base, further beyond triradiate (cephalothorax devoid of any such band in *M. roonwali*); ii) spermatheca broad, nearly as long as wide, copulatory ducts convoluted, copulatory openings little wider, anterior rim sclerotised, with a midlongitudinal pit, holding the spermatheca (spermatheca small, circular, copulatory duct never convoluted, copulatory openings close, anterior rim and pit indistinct in *M. roonwali*); iii) sternum posteriorly bluntly produced (sternum posteriorly acutely produced in *M. roonwali*). The species is therefore recognized as new to science.

Genus *Misumena* Latreille, 1804

Misumena mickeyi sp. nov.

(Figs.6-10 & 22)

Type material: Holotype: ♀, 7th Mile, MWLS, WB, India, 10.iii.2009, coll. D. Raychaudhuri; Paratype: 1♀, Laltong, MWLS, WB, India, 07.xii.2009, coll. S. Sen.

Description:

Female (Holotype): CL- 1.42, CW- 1.60, AL- 2.89, AW- 2.82, TL- 4.31.

Cephalothorax (Fig. 6) yellowish brown, nearly as long as wide, narrowing in front, cephalic region little high, clothed with few spine like hairs. Eyes 8, black, ringed with white, arranged in two recurved rows, anterior row more recurved than posterior, laterals situated on the elevated confluent white tubercles, white markings of laterals and PME forming a triangle, eye diameter: ALE>PLE>AME>PME, ocular quad trapezoid. Inter ocular distance: AME-AME=0.17, ALE-AME=0.12, ALE-ALE=0.60, PME-PME= 0.32, PLE-PME=0.14, PLE-PLE=0.75, ALE-PLE=0.14, AME-PME=0.19. Clypeus yellow, height high. Chelicerae (Fig.7) yellow brown, clothed with hairs, margins devoid of any tooth, fangs brown, small, broad. Maxillae (Fig.8) yellow, longer than wide, apically broad and scopulate, medially incurved, labium (Fig.8) yellowish brown, apically narrow and scopulate, medially broad, basally notched. Sternum (Fig.8) yellow, triangular, longer than wide, anterior margin concave, posteriorly narrowing, clothed with small hairs. Legs yellowish brown, femora brown, tibia and metatarsi I and II with 4 and 5 pairs of ventral spines respectively, tarsal claw 2, each with 4 teeth. Leg measurements: I 5.35 (1.11, 2.28, 1.32, 0.64); II 5.17 (1.05, 2.25 1.29, 0.58); III 3.30 (0.88, 1.26, 0.64, 0.52); IV 3.63 (1.0, 1.35, 0.70, 0.58). Leg formula 1243. Leg spinations: tibia III and IV=0002; metatarsi III and IV=0004.

Abdomen (Fig. 6) yellow, globular, with uniform chalk white reticulations, broadest just behind the middle, dorsal abdominal decoration appears like cartoon figure 'Mickey' (Fig. 200), clothed with small hairs; venter yellowish brown with lateral chalk white reticulations, reddish brown striations just above the spinnerets, spinnerets small, brownish.

Epigynum-Internal genitalia (Figs. 9-10): spermatheca broad, irregular, copulatory ducts short, openings wide, anterior sclerotised hood distinct, with arch.

Distribution: India: West Bengal (only known from the type locality).

Etymology: The species has been named after the cartoon figure 'Mickey'.

Type deposition: Entomology Laboratory, Department of Zoology, University of Calcutta, registration no. EZC 0028-12.

Remarks: The new species is similar to *Misumena annapurna* Tikader, 1963, but can be separated by i) spermatheca broad, irregular, copulatory openings wide, anterior sclerotised hood distinct, with arch (spermatheca sub circular, copulatory openings close, anterior sclerotised hood indistinct in *M. annapurna*); ii) dorsal abdominal decoration appears like cartoon figure 'Mickey' (such abdominal decorations completely lacking in *M. annapurna*); iii) abdominal dorsum devoid of any sigilla (abdominal dorsum with 2 pairs of sigilla in *M. annapurna*). Therefore, the present species is considered as new to science.

Genus *Pharta* Thorell, 1891

Pharta indica sp. nov.

(Figs.11-15 & 23)

Type material: Holotype: ♀, Bichabhanga, GNP, WB, India, 24.xii.2008, coll. S. Saha; Paratypes: 3♀♀, Gorumara, GNP, WB, India, 11.ii.2009, coll. S. Sen; 2♀♀, Bichabhanga, GNP, WB, India, 18.ix.2009, coll. D. Raychaudhuri.

Description:

Female (Holotype): CL- 1.67, CW- 1.50, AL- 1.67, AW- 2.07, TL- 3.74.

Cephalothorax (Fig.11) brown, globose, anteriorly narrowed, clothed with white hairs and pubescence, cephalic region dark brown, elevated, with cervical furrows, thoracic region flat, midlongitudinally with a fovea, radii weakly distinct. Eyes 8, white, laterals on tubercles, both rows of eyes recurved, eye diameter: ALE>PLE>PME>AME ocular quad nearly squarish. Inter ocular distance: AME-AME=0.07, ALE-AME=0.08, ALE-ALE=0.35, PME-PME= 0.14, PLE-PME=0.10, PLE-PLE=0.48, ALE-PLE=0.10, AME-PME=0.12. Chelicerae (Fig.12) yellowish brown, elongate, anteriorly scopulate, promargin with 4 teeth and retromargin with 3 teeth, median one largest, fangs yellowish brown, strongly curved. Both maxillae and labium (Fig.13) yellow, apically scopulate, maxillae longer than wide, apically much broad and truncate, labium wider than long, apically concave, basally notched, medially broad. Sternum (Fig.13) yellow, heptagonal, anterior margin concave, posteriorly narrowing, clothed with white hairs. Legs yellowish brown, long and strong, tarsi with 2 claws and claw tuft. Leg measurements: I 5.20 (1.45, 2.04, 1.40, 0.31); II 6.70 (1.90, 2.54, 1.54, 0.72); III 3.10 (0.90, 1.35, 0.54, 0.31); IV 3.29 (1.0, 1.26, 0.63, 0.40). Leg formula 2143. Leg spinations: femora, tibia, metatarsi I-II=0546, femora, tibia, metatarsi III-IV=0334.

Abdomen (Fig.11) yellow, oval, medially broad, clothed with white hairs and pubescence, dorsum decorated with black, thomisid punctures (muscular apodemes) 2; venter yellow, with scattered black spots and a midlongitudinal

broad, faint black band extending from epigastric furrow to spinnerets; spinnerets yellow, small.

Epigynum - Internal genitalia (Figs. 14-15): Spermatheca bean shaped, atrium small, copulatory ducts small, laterally placed, fertilization ducts distinct.

Distribution: India: West Bengal.

Etymology: The species name is derived from the name of the country.

Type deposition: Entomology Laboratory, Department of Zoology, University of Calcutta, registration no. EZC 0029-12.

Remarks: The species appears to be closely allied to *Pharta tengchong* (Tang, Griswold & Yin, 2009), but can be separated by i) bean shaped spermatheca, laterally placed copulatory ducts, distinct fertilization ducts (spermatheca curved, tube shaped, copulatory openings invisible, fertilization ducts indistinct in *P. tengchong*); ii) epigynum without any lateral hood (epigynum with a pair of lateral hoods in *P. tengchong*); iii) abdominal dorsum with a pair of thomisid punctures (abdominal dorsum devoid of any such punctures in *P. tengchong*); iv) abdominal venter with a midlongitudinal broad, faint black band extending from epigastric furrow to spinnerets (abdominal venter devoid of any such band in *P. tengchong*); v) cephalothorax without any black stripes (cephalothorax with 3 small black stripes behind the posterior eye row in *P. tengchong*).

Such differences appear to justify the erection of a new species.

Genus *Synema* Simon, 1864

Synema revolutum Tang & Li, 2010

Zootaxa 2703: 80

(Figs. 16-20 & 24)

Material examined: 3♀♀, Sukhna, MWLS, WB, India, 04.ix.2007, coll. D. Raychaudhuri; 2♀♀, Punding, MWLS, WB, India, 14.x.2008, coll. S. Sen; 5♀♀, Gorumara, GNP, WB, India, 29.x.2007, coll. S. Sen; 2♀♀, Murti, GNP, WB, India, 04.v.2008, coll. S. Saha; 1♀, Gorumara, GNP, WB, India, 11.ii.2009, coll. S. Sen; 1♀, Chapramari, CWLS, 21.iii.2007, WB, India, coll. S. Sen.

Diagnosis: Spermatheca longer than wide, convoluted; copulatory ducts twisted, atrium nearly triangular. Abdomen dorsally blackish brown with a basal and a pair of median incomplete white stripes and 2 pairs of postero lateral white spots.

Measurements (♀):

CL- 2.17, CW- 2.0, AL- 3.82, AW- 3.47, TL- 5.99.

Inter ocular distance: AME-AME=0.58, ALE-AME=0.29, ALE-ALE=1.41, PME-PME= 0.76, PLE-PME=0.41, PLE-PLE=1.67, ALE-PLE=0.23, AME-PME=0.11.

Legs: I 7.60 (2.40, 2.80, 1.40, 1.0); II 7.90 (2.40, 3.10, 1.40, 1.00); III 4.30 (1.30, 1.50, 0.90, 0.60); IV 4.60 (1.60, 1.50, 0.90, 0.60), Leg formula 2143.

Variations: TL: 5.20-6.00; CL: 2.0-2.40; AW: 2.90-3.50.

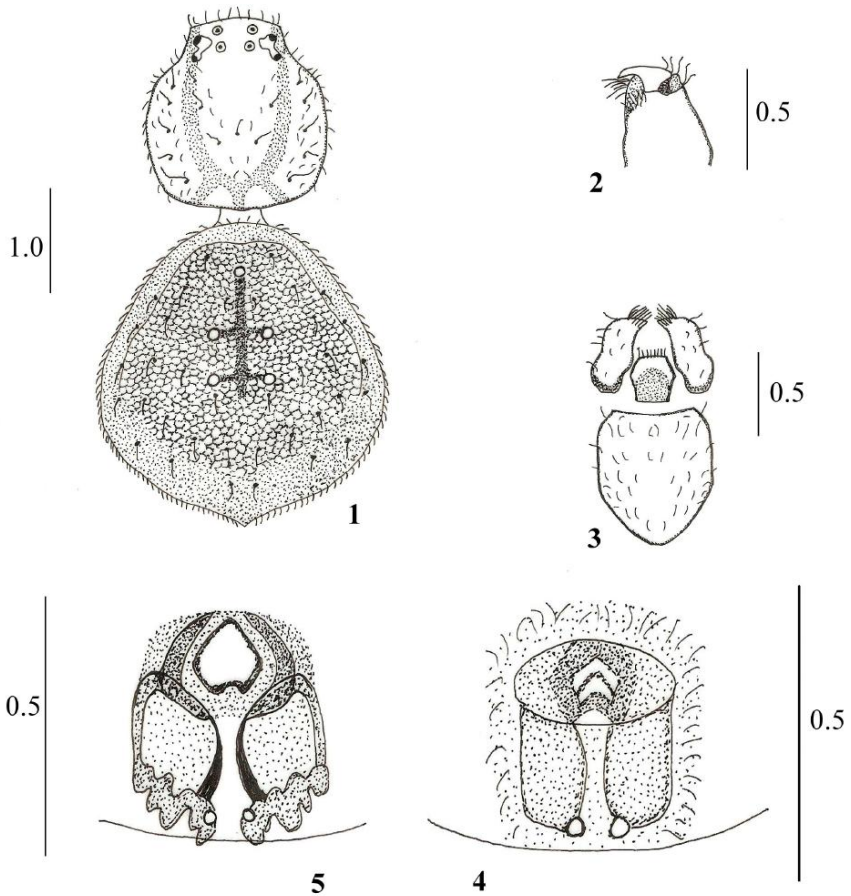
Distribution: India (New record): West Bengal; China.

ACKNOWLEDGEMENTS

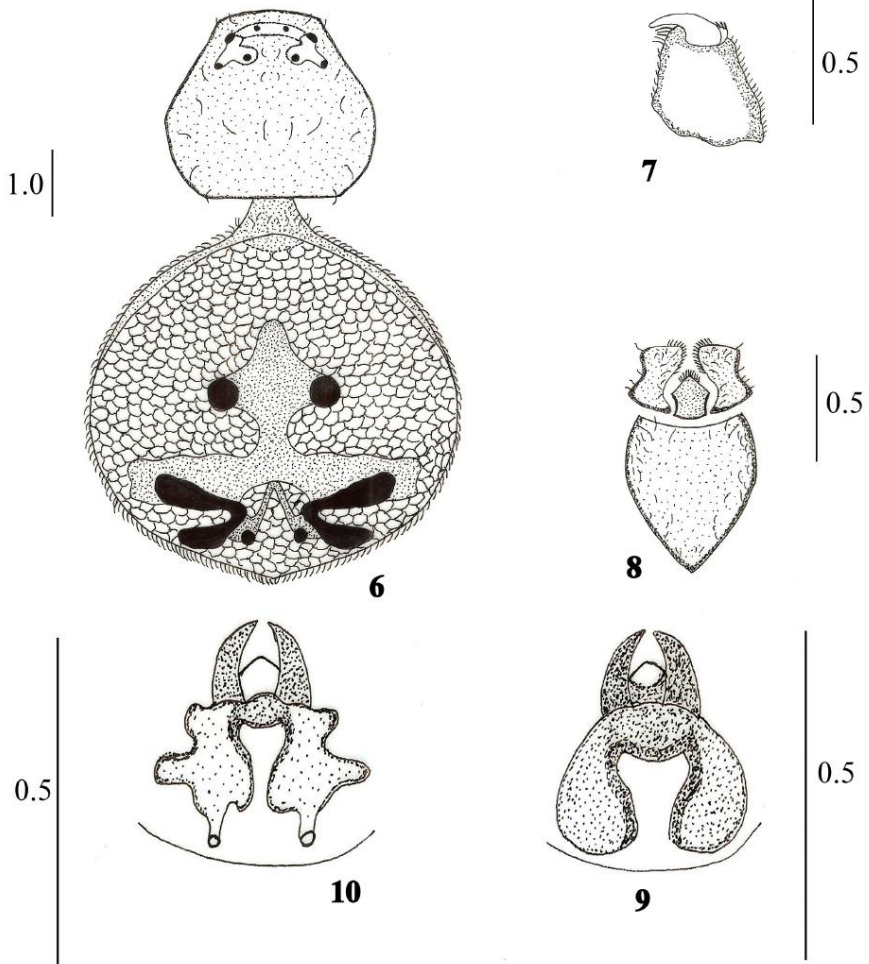
We are grateful to Dr. Tang Guo, China, for literature support during this study. We also thank Department of Biotechnology, Govt. of India (BT/PR6391/NDB/51/078/2005 dt. 20.11.2006) for sponsoring the project and Directorate of Forests, Govt. of West Bengal and the Head, Department of Zoology, University of Calcutta for necessary support.

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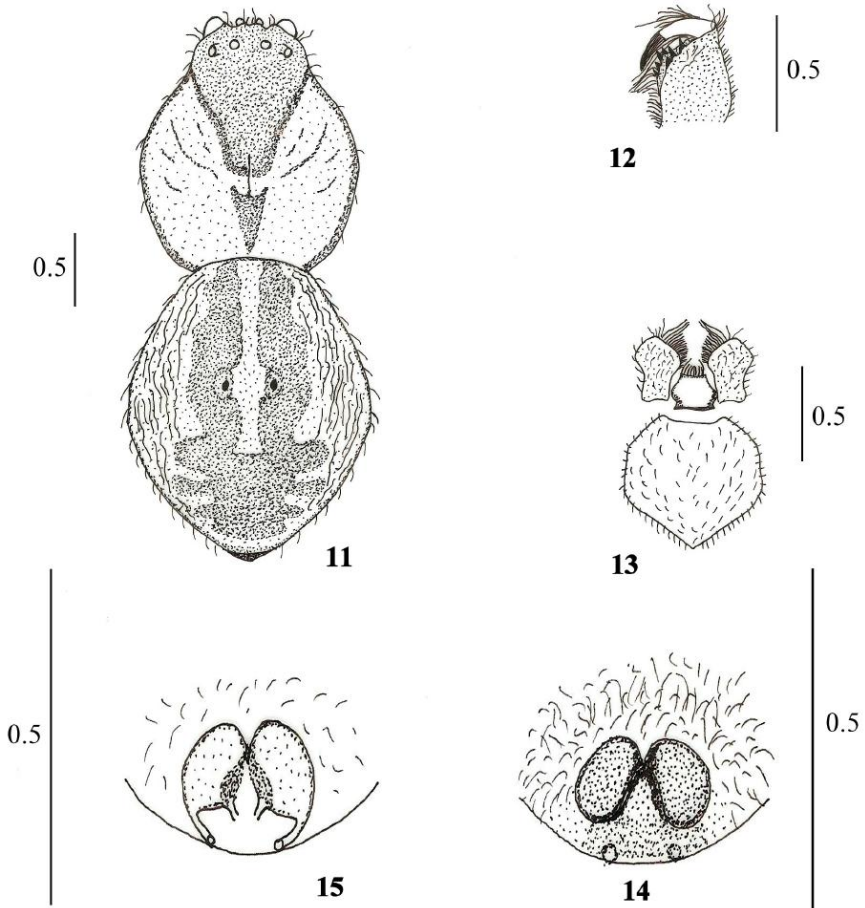
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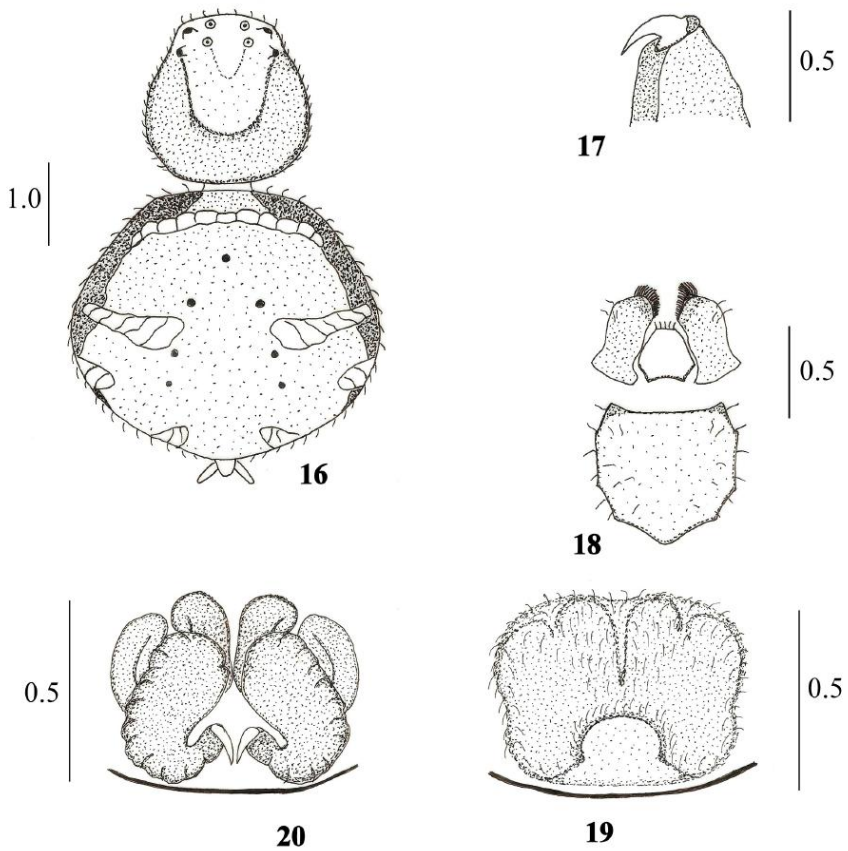
Figures 1-5. *Massuria uthoracica* sp. nov., female (Holotype): 1. Cephalothorax and abdomen, dorsal view; 2. Chelicerae, ventral view; 3. Maxillae, labium and sternum, ventral view; 4. Epigynum, ventral view; 5. Internal genitalia, dorsal view.



Figures 6-10. *Misumena mickeyi* sp. nov., female (Holotype): 6. Cephalothorax and abdomen, dorsal view; 7. Chelicerae, ventral view; 8. Maxillae, labium and sternum, ventral view; 9. Epigynum, ventral view; 10. Internal genitalia, dorsal view.



Figures 11-15. *Pharta indica* sp. nov., female (Holotype): 11. Cephalothorax and abdomen, dorsal view; 12. Chelicerae, ventral view; 13. Maxillae, labium and sternum, ventral view; 14. Epigynum, ventral view; 15. Internal genitalia, dorsal view.



Figures 16-20. *Synema revolutum* Tang & Li, female: 16. Cephalothorax and abdomen, dorsal view; 17. Chelicerae, ventral view; 18. Maxillae, labium and sternum, ventral view; 19. Epigynum, ventral view; 20. Internal genitalia, dorsal view.



Figures 21-24. Photographic images: General habitus: 21. *Massuria uthoracica* sp. nov., female; 22. *Misumena mickeyi* sp. nov., female; 23. *Pharta indica* sp. nov., 24. *Synema revolutum* Tang & Li, female.