



A checklist of spiders from Yongxing Island, South China Sea, with taxonomic notes on four species of goblin spiders

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Abstract

Background

Yongxing Island (about 1.85 km²) is the largest island of the Xisha Islands. It is located in the Western South China Sea and belongs to the tropical ocean monsoon climate zone. Yongxing Island is quite rich in biological resources, for example, plants and birds which have been well documented. However, there are limited reports on spider resources in Yongxing Island.

New information

A preliminary checklist of spiders of the Yongxing Island is provided, based on a short-term study undertaken in January 2008. A total of 23 species, belonging to 21 genera and 11 families, were recorded from the area, which forms baseline information of spiders of the Yongxing Island. Amongst these, Oonopidae, Pholcidae, Araneidae and Salticidae were found to have more species in the area. *Brignolia parumpunctata* (Simon, 1893), *Opopaea*

apicalis (Simon, 1893), *Opopaea deserticola* Simon, 1891 and *Xyphinus baehrae* Kranz-Baltensperger, 2014 were firstly reported from China, for which we provide taxonomic description in this paper.

Keywords

Araneae, checklist, Oonopidae, new records, Yongxing Islands

Introduction

Yongxing Island (Fig. 1), also known as Woody Island of the Paracel Islands and originating from coral reef, is the largest island of the Xisha Islands (Ye 1996). This area belongs to tropical marine monsoon climate, characterised by dampness and heat (Zhao et al. 1994). The annual mean lowest and highest temperatures are 22.9°C and 28.9°C and the annual rainfall is about 1505 mm (Zhao et al. 2017). Soil of Yongxing Island consists of phosphatic lime type and was formed in the late Holocene (Yu et al. 1995). The above environmental conditions endow the Island with suitable natural habitat and high biodiversity potential. In the sea, tropical marine organisms abound, while on land, tropical plants are luxuriant, with many bird species and other terrestrial organisms (Zhao et al. 1994). Nevertheless, the reports of spiders in the locality are extremely limited up to now.

Oonopids are tiny haplogyne spiders with usually six eyes often gathered together (Tong 2013). According to World Spider Catalog (2021), the family consists of 1874 species in 114 genera distributed mainly in the Tropics and Subtropical Regions. Up to now, a total of 14 genera with 85 species of oonopids are known in China (World Spider Catalog 2021). In the present paper, four species belonging to three genera are reported and illustrated from China for the first time, thereby increasing the total of oonopids to 89 species.

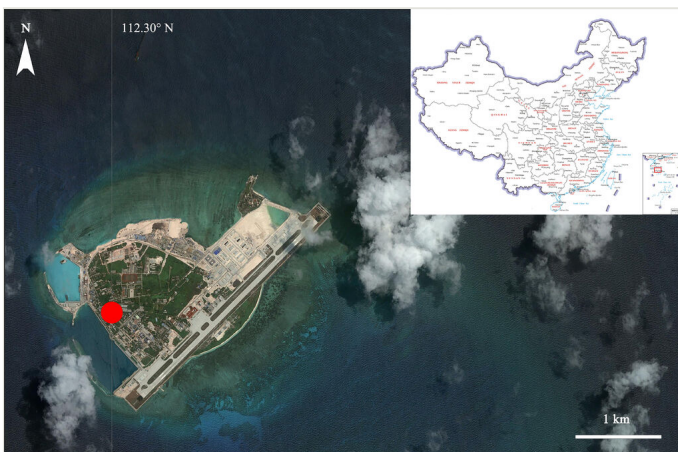


Figure 1. [doi](#)

Map showing the survey site in Yongxing Island, South China Sea.

Materials and methods

Specimens were collected through intensive hand searching and afterwards stored in 75% alcohol and examined using a Leica M205C stereomicroscope. Further details were studied under a Leica DM2500 compound microscope. All illustrations were made using a drawing tube and inked on ink jet plotter paper. Vulvae of females were cleared in lactic acid.

The following abbreviations are used in the text: ALE-anterior lateral eyes; PLE-posterior lateral eyes; IZCAS-Institute of Zoology, Chinese Academy of Sciences in Beijing.

Taxon treatments

Brignolia parumpunctata (Simon, 1893)

Material

- a. scientificName: *Brignolia parumpunctata* (Simon, 1893); taxonomicStatus: accepted; kingdom: Animalia; phylum: Arthropoda; class: Arachnida; order: Araneae; family: Oonopidae; genus: *Brignolia*; country: China; countryCode: CHN; stateProvince: Hainan; county: Yongxing; decimalLatitude: 16.833; decimalLongitude: 112.333; year: 2008; month: 1; day: 13–19; individualCount: 2; sex: 1 male, 1 female; lifeStage: adult; recordedBy: Shuqiang Li; identifiedBy: Jiaxin Tang; identificationReferences: Platnick et al., 2011 & Ranasinghe & Benjamin, 2016

Description

Male. Measurements (in mm): Body length 1.28; carapace 0.70 length, 0.55 width; abdomen 0.85 length, 0.60 width. Leg measurements: I 2.03 (0.61, 0.29, 0.48, 0.40, 0.25), II 1.76 (0.60, 0.16, 0.55, 0.25, 0.20), III 1.65 (0.55, 0.22, 0.36, 0.34, 0.18), IV 1.69 (0.59, 0.25, 0.34, 0.30, 0.21). Leg formula: 1 > 2 > 4 > 3.

Cephalothorax. Carapace and sternum yellow; legs and abdomen pale yellow; chelicerae brownish-yellow. Sides of carapace with finely longitudinal striae; dorsal area smooth with some mesially pointing hairs at lateral edges. Eyes six in two rows, rather large, nearly equally-sized; posterior eyes in a straight row, touching each other (Fig. 2A). Base of fang without ornament (Fig. 2C). Labium wider than long, endites with membranous tips (Fig. 2B).

Legs. Leg with distinct hairs: femur with a row of short ventral setae, 2 prolateral setae; patella without setae; tibia with 2 prolateral setae, 1 retrolateral seta and 1–2 trichobothria; metatarsus with 2 long dorsal setae.

Abdomen. Dorsal scutum oval-shaped, covering nearly whole abdomen. Lobes on anterolateral corners of petiolar tube distinct, ridges developed, but without forming a scutal cove.

Male palp. Palp (Fig. 3A, B) minute, strongly sclerotised. Palp cymbium dark yellow, bulb dark yellow. Palp trochanter normal, with ventral projection. Palpal patella shorter than femur, not enlarged, unmodified. Palp cymbium narrow in dorsal view, cymbium and bulb incompletely fused, with seam visible in retrolateral view, covered with setae. Bulb of palp elongated, gradually tapering apically, obtusely bent before apex. Embolic part not divided into distinct lobes, bearing some membranous outgrowths.

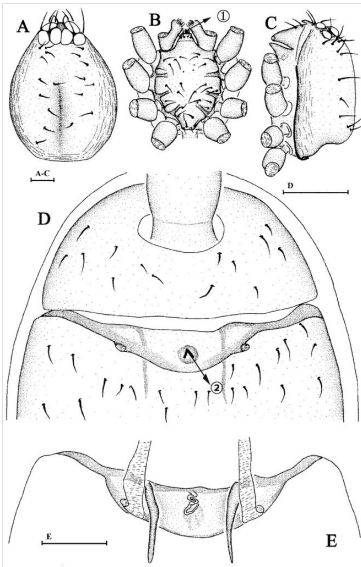


Figure 2. [doi](#)

Brignolia parumpunctata (Simon, 1893). **A.** Carapace of male, dorsal view; **B.** Same, ventral view; **C.** Same, lateral view, arrow ① points at membranous tips; **D.** Ventral scutum of female, ventral view, arrow ② points at V-shaped ridge; **E.** Genital area of female, dorsal view. Scale bars: 0.1 mm.

Female. As in male, except as noted. Slightly larger than male. Measurements (in mm): Body length 1.34; carapace 0.65 length, 0.50 width; abdomen 1.00 length, 0.70 width. Leg measurements: I 1.61 (0.55, 0.20, 0.36, 0.28, 0.22), II 1.61 (0.50, 0.26, 0.34, 0.31, 0.20), III 1.43 (0.45, 0.18, 0.33, 0.30, 0.17), IV 1.91 (0.55, 0.28, 0.44, 0.39, 0.25).

Epigynum. Genital area with a small knoblike projection, most of which showing inverted V-shaped ridges (Fig. 2D), a few are inverted Y-shaped. Two internal apodemes rise from the anterior border of post epigastric furrow; a strongly-twisted duct runs from the anterior border of the postepigastric furrow ending in the middle of the knob-like projection (Fig. 2E).

Distribution

America, Australia, China (new record), Gambia, India, Indonesia, Pakistan, Pacific Is., Philippines, Seychelles, Sierra Leone, Sri Lanka, Yemen.

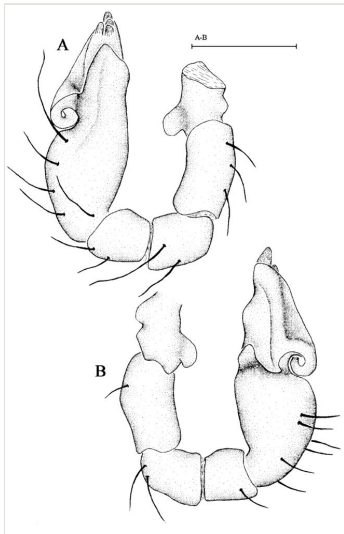


Figure 3. [doi](#)

Brignolia parumpunctata (Simon, 1893), male. **A.** Left male palp in prolateral view; **B.** Left male palp in retrolateral view. Scale bar: 0.1 mm.

Opopaea apicalis (Simon, 1893)

Material

- a. scientificName: *Opopaea apicalis* (Simon, 1893); taxonomicStatus: accepted; kingdom: Animalia; phylum: Arthropoda; class: Arachnida; order: Araneae; family: Onopidae; genus: *Opopaea*; country: China; countryCode: CHN; stateProvince: Hainan; county: Yongxing; decimalLatitude: 16.833; decimalLongitude: 112.333; year: 2008; month: 1; day: 13–19; individualCount: 13; sex: 2 males, 11 females; lifeStage: adult; recordedBy: Shuqiang Li; identifiedBy: Jiaxin Tang; identificationReferences: Platnick & Dupérré, 2009

Description

Male. Measurements (in mm): Body length 1.35; carapace 0.60 length, 0.40 width; abdomen 0.70 length, 0.35 width. Leg measurements: I 2.15 (0.55, 0.25, 0.40, 0.50, 0.45), II 1.70 (0.55, 0.25, 0.35, 0.30, 0.25), III 1.01 (0.40, 0.18, 0.25, 0.18), IV 1.75 (0.50, 0.25, 0.40, 0.35, 0.25). Leg formula: 1 > 4 > 2 > 3.

Cephalothorax. Sides of carapace yellowish-brown; dorsally yellow; chelicerae, sternum yellow; legs and abdomen light yellow. Carapace with a dark brown patch behind eyes, dorsally with a few rows of short hairs. Sides of carapace with finely longitudinal striae. Eyes six in two rows, rather large, nearly equally-sized, ALE slightly separated, touching posterior lateral eyes; posterior eyes in procurved row, touching each other (Fig. 4A and C). Base of fang with two plumose hairs on lateral sides (Fig. 4F). Labium wider than long, endites with membranous tip (Fig. 4B).

Legs. Leg I: femur with a row of dorsal setae, 3 retrolateral setae; patella without setae; tibia with a ventral seta; tarsus with distinct strong setae. Leg II, III and IV similar to leg I.

Abdomen. Dorsal scutum oval-shaped, covering nearly entire abdominal length. Lobes on anterolateral corners of petiolar tube distinct, ridges developed, but without forming a scutal cove; opercula small, oval-shaped. Sperm pore clearly discernible, transverse.

Male palp. Patella of palp (Fig. 5A and B) significantly larger than cymbiobulbus; cymbiobulbus with a clavate protrusion at base and three branches at the end.

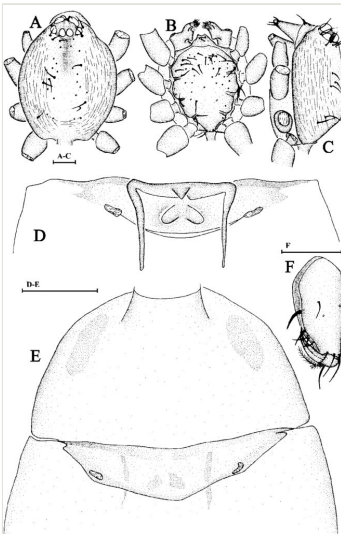


Figure 4. [doi](#)

Opopaea apicalis (Simon, 1893). **A.** Carapace of male, dorsal view; **B.** Same, ventral view; **C.** Same, lateral view; **D.** Genital area of female, dorsal view; **E.** Ventral scutum of female, ventral view; **F.** Right male chelicerae, posterior view. Scale bars: 0.1 mm.

Female. As in male, except as noted. Slightly larger than male. Measurements (in mm): Body length 1.35–1.45; carapace 0.40–0.60 length, 0.35–0.40 width; abdomen 0.50–0.65 length, 0.40–0.45 width. Leg measurements: I 1.88 (0.55, 0.25, 0.40, 0.48, 0.20), II 1.50 (0.50, 0.25, 0.30, 0.25, 0.20), III 1.38 (0.40, 0.20, 0.30, 0.30, 0.18), IV 1.79 (0.54, 0.30, 0.40, 0.35, 0.20).

Epigynum. Postgynal depression of epigastric area shallow, with inverted V-shaped sclerotisation situated posterior to epigastric furrow; parmula black, small (Fig. 4D and E).

Distribution

China (new record), Ecuador, Indonesia, Mexico, Pacific Is., Panama, Philippines, Seychelles, Thailand, USA.

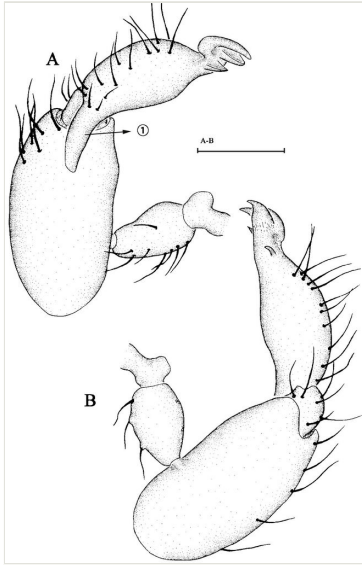


Figure 5. [doi](#)

Opopaea apicalis (Simon, 1893). **A.** Left male palp in prolatateral view, arrow ① points at clavate protrusion; **B.** Left male palp in retrolateral view. Scale bar: 0.1 mm.

Opopaea deserticola Simon, 891

Material

- a. scientificName: *Opopaea deserticola* Simon, 1891; taxonomicStatus: accepted; kingdom: Animalia; phylum: Arthropoda; class: Arachnida; order: Araneae; family: Oonopidae; genus: *Opopaea*; country: China; countryCode: CHN; stateProvince: Hainan; county: Yongxing; decimalLatitude: 16.833; decimalLongitude: 112.333; year: 2008; month: 1; day: 13–19; individualCount: 3; sex: 1 male, 2 females; lifeStage: adults; recordedBy: Shuqinag Li; identifiedBy: Jiaixn Tang; identificationReferences: Saaristo, 2001

Description

Male. Measurements (in mm): Body length 1.45; carapace 0.65 length, 0.60 width; abdomen 0.90 length, 0.70 width. Leg measurements: I 2.14 (0.62, 0.37, 0.54, 0.40, 0.21), II 1.56 (0.54, 0.27, 0.33, 0.25, 0.17), III 1.98 (0.64, 0.30, 0.43, 0.35, 0.26), IV 1.84 (0.58, 0.26, 0.35, 0.40, 0.25). Leg formula: 1 > 3 > 4 > 2.

Cephalothorax. Sides of carapace yellowish-brown; dorsally deep yellow; scutum yellow; chelicerae, sternum, legs and ventral scutum yellow. Sides of carapace with finely longitudinal striae; dorsal area smooth with some mesially pointing hairs at lateral edges. Eyes rather large, PLE relatively smaller; compactly arranged, ALE slightly separated, touching posterior lateral eyes; posterior eyes in slightly recurved row, touching each other (Fig. 6A and C). Base of fang without ornaments. Labium wider than long, endites with pointed tip (Fig. 6B).

Legs. Leg I: femur smooth, with some hairs; patella with a ventral seta; tibia with distinct hairs, a row of ventral setae and 2–3 trichobothria; tarsus with distinct strong setae. Leg II, III and IV similar to leg I, except femur II with a ventral setae.

Abdomen. Dorsal scutum oval-shaped, covering nearly entirely abdominal length. Lobes on anterolateral corners of petiolar tube distinct, ridges developed, forming a scutal cove.

Male palp (Fig. 7A and B). Patella of palp significantly larger than cymbiobulbus; cymbiobulbus with two protrusions at middle and a curving extension to the end.

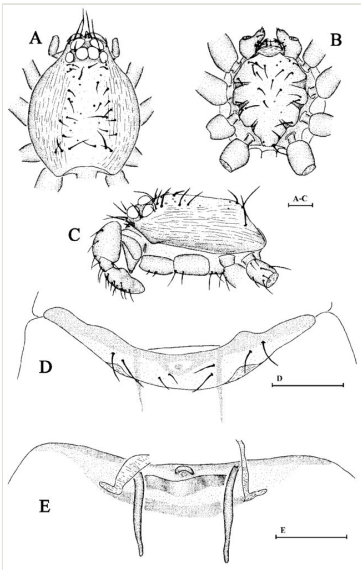


Figure 6. [doi](#)

Opopaea deserticola Simon, 1893. **A.** Carapace of male, dorsal view; **B.** Same, ventral view; **C.** Same, lateral view; **D.** Ventral scutum of female, ventral view; **E.** Genital area of female, dorsal view. Scale bars: 0.1 mm.

Female. As in male, except as noted. Measurements (in mm): Body length 1.65–1.70; carapace 0.70–0.74 length, 0.60–0.65 width; abdomen 1.00–1.30 length, 0.70–0.80 width. Leg measurements: I 2.00 (0.60, 0.30, 0.45, 0.40, 0.25), II 1.80 (0.60, 0.25, 0.40, 0.35, 0.20), III 1.70 (0.50, 0.25, 0.35, 0.40, 0.20), IV 2.15 (0.65, 0.30, 0.50, 0.45, 0.25).

Epigynum. Postgynal depression of epigastric area shallow; parmula black (Fig. 6D and E).

Distribution

Brazil, Caribbean, China (new record), Germany, Japan, Middle East, Pacific Is., Philippines, Spain, USA to Panama, Venezuela.

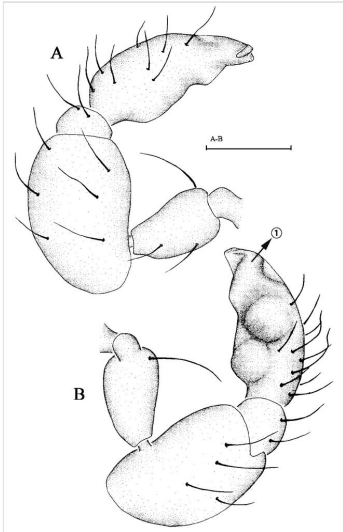


Figure 7. [doi](#)

Opopaea deserticola Simon, 1893. male. **A** Left male palp in prolateral view; **B**. Left male palp in retrolateral view, arrow ① points at the curving extension. Scale bar: 0.1 mm.

Xyphinus baehrae Kranz-Baltensperger, 2014

Material

- a. scientificName: *Xyphinus baehrae* Kranz-Baltensperger, 2014; taxonomicStatus: accepted; kingdom: Animalia; phylum: Arthropoda; class: Arachnida; order: Araneae; family: Onopidae; genus: *Xyphinus*; country: China; countryCode: CHN; stateProvince: Hainan; county: Yongxing; decimalLatitude: 16.833; decimalLongitude: 112.333; year: 2008; month: 1; day: 13–19; individualCount: 4; sex: 1 male, 3 females; lifeStage: adult; recordedBy: Shuqiang Li; identifiedBy: Jiaixn Tang; identificationReferences: Kranz-Baltensperger, 2014

Description

Male. Measurements (in mm): Body length 1.30; carapace 0.70 length, 0.50 width; abdomen 1.00 length, 0.50 width. Leg measurements: I 2.73 (0.80, 0.40, 0.60, 0.61, 0.32), II 2.55 (0.70, 0.30, 0.60, 0.65, 0.30), III 2.35 (0.70, 0.30, 0.55, 0.55, 0.25), IV 3.17 (0.90, 0.50, 0.70, 0.65, 0.42). Leg formula: 4> 1 > 2 > 3.

Cephalothorax. Carapace yellow-grey; chelicerae yellow to brownish-yellow; sternum yellow; legs and abdomen light yellow. Sides of carapace with reticulate veins, dorsal area without hairs. Margin of carapace without distinct setae or denticle. Eyes six in two rows, rather large, nearly equally-sized, compactly arranged, ALE slightly separated, posterior eyes in slightly retrocurved row, touching each other (Fig. 8A and, C). Base of fang with two plumose hairs on lateral sides (Fig. 8D and E). Labium wider than long, endites with membranous tip (Fig. 8B).

Legs. Leg I: femur with 2 rows of setae; patella without setae; tibia with 2 ventral setae, 2 dorsal setae and a dorsal trichobothrium; tarsus without setae. Leg II, III and IV similar to leg I.

Abdomen. Dorsal scutum oval-shaped, covering nearly entirely abdominal length. Lobes on anterolateral corners of petiolar tube distinct, ridges developed, but without forming a scutal cove; opercula large, oval-shaped.

Male palp. Cymbium separated from bulb, with two robust spurs. Bulb with numerous membranous outgrowths on terminal part (Fig. 9A, B).

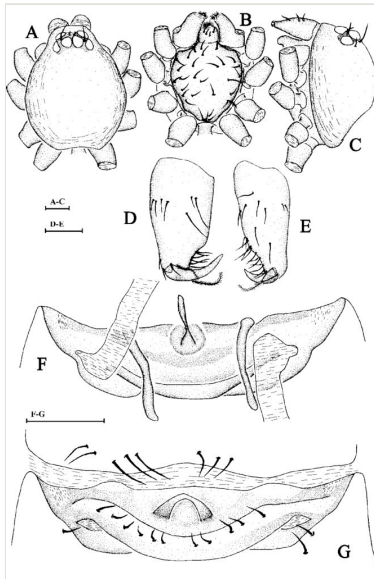


Figure 8. [doi](#)

Xyphinus baehrae Kranz-Baltensperger, 2014. **A.** Carapace of male, dorsal view; **B.** Same, ventral view; **C.** Same, lateral view; **D.** Left male chelicerae, posterior view; **E.** Left male chelicerae, frontal view; **F.** Genital area of female, dorsal view; **G.** Ventral scutum of female, ventral view. Scale bars: 0.1 mm.

Female. As in male, except as noted. Tibiae with three trichobothria. Measurements (in mm): Body length 1.75–1.90; carapace 0.78–0.90 length, 0.65–0.70 width; abdomen 1.10–1.35 length, 0.45–0.60 width. Leg measurements: I 2.33 (0.60, 0.32, 0.50, 0.48, 0.43), II 4.48 (0.60, 0.30, 0.50, 0.50, 0.25), III 2.01 (0.55, 0.27, 0.50, 0.45, 0.24), IV 2.80 (0.80, 0.31, 0.65, 0.65, 0.39).

Epigynum. Postgynal depression of epigastric area shallow. An arc process visible originating from near the middle of epigastric sulcus (Fig. 8F and G).

Distribution

China (new record), India to Australia.

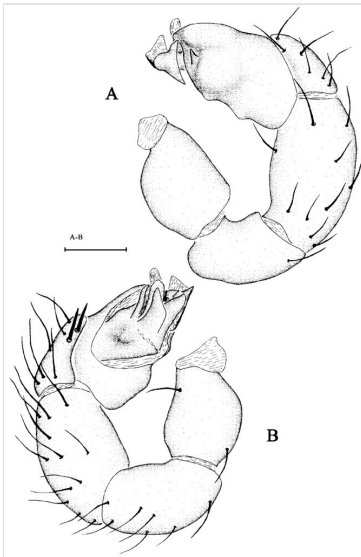


Figure 9. [doi](#)

Xyphinus baehrae Kranz-Baltensperger, 2014. male. **A.** Left male palp in retrolateral view; **B.** Left male palp in prolateral view. Scale bar: 0.1 mm.

Checklist of spiders (Araneae) in Yongxing Island

Argiope macrochoera Thorell, 1891

Material

- a. family: Araneidae; individualCount: 2; sex: female

Diagnosis: see Levi (1983)

Gasteracantha hasselti C. L. Koch, 1837

Material

- a. family: Araneidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Williams (2017)

Thelacantha brevispina (Doleschall, 1857)

Material

- a. family: Araneidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Emerit (1974)

Marinarozelotes jaxartensis* (Kroneberg, 1875)*Material**

- a. family: Gnaphosidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Ponomarev and Shmatko (2020)

Wadicosa fidelis* (O. Pickard-Cambridge, 1872)*Material**

- a. family: Lycosidae; individualCount: 1; sex: male

Diagnosis: see Kronestedt and Zyuzin (2009)

Brignolia parumpunctata* (Simon, 1893)*Material**

- a. family: Onopidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Platnick et al. (2011), Ranasinghe and Benjamin (2016)

Opopaea apicalis* (Simon, 1893)*Material**

- a. family: Onopidae; individualCount: 13; sex: 2 males, 11 females

Diagnosis: see Platnick and Dupérré (2009)

Opopaea deserticola* Simon, 1891*Material**

- a. family: Onopidae; individualCount: 3; sex: 1 male, 2 females

Diagnosis: see Saaristo (2001)

Xyphinus baehrae* Kranz-Baltensperger, 2014*Material**

- a. family: Onopidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Kranz-Baltensperger (2014)

Oxyopes javanus* Thorell, 1887*Material**

- a. family: Oxyopidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Sherriffs (1951)

Artema atlanta* Walckenaer, 1837*Material**

- a. family: Pholcidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Gao and Li (2010)

Pholcus manueli* Gertsch, 1937*Material**

- a. family: Pholcidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Zhang and Zhu (2009)

Pholcus suizhongicus* Zhu and Song, 1999*Material**

- a. family: Pholcidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Yao and Li (2012)

Smeringopus pallidus* (Blackwall, 1858)*Material**

- a. family: Pholcidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Saaristo (1978)

Hasarius adansoni* (Audouin, 1826)*Material**

- a. family: Salticidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Yin and Wang (1979)

Plexippus paykulli* (Audouin, 1826)*Material**

- a. family: Salticidae; individualCount: 1; sex: female

Diagnosis: see Prószyński (2017)

Menemerus bivittatus* (Dufour, 1831)*Material**

- a. family: Salticidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Žabka (1985)

Dictis striatipes* L. Koch, 1872*Material**

- a. family: Scytodidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Kim and Lee (2018)

Argyrodes argentatus* O. P.-Cambridge, 1880*Material**

- a. family: Theridiidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Zhu and Song (1991)

Meotipa pulcherrima* (Mello-Leitão, 1917)*Material**

- a. family: Theridiidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Yoshida (1993)

Coleosoma blandum* O. P.-Cambridge, 1882*Material**

- a. family: Theridiidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Amalin and Barrion (1990)

Philoponella prominens* (Bösenberg and Strand, 1906)*Material**

- a. family: Uloboridae; individualCount: 2; sex: female

Diagnosis: see Kim and Lee (2013)

Tropizodium serraferum* (Lin & Li, 2009)*Material**

- a. family: Zodariidae; individualCount: 2; sex: 1 male, 1 female

Diagnosis: see Lin and Li (2009)

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