



Two new species of the genus *Asceua* Thorell, 1887 (Araneae, Zodariidae) from China

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Abstract

Background

The spider genus *Asceua* Thorell, 1887 contains 34 species, almost entirely limited to Indochina, India, Sri Lanka and China, with a regional distribution. Eleven species of *Asceua* are currently only known from China, five of them are described only from one sex.

New information

Two new spider species of the genus *Asceua* are reported from China, *A. haocongi* sp. n. (♂♀, Hainan) and *A. zijin* sp. n. (♂♀, Jiangsu). Photos and a morphological description of the new species are provided.

Keywords

Hainan, Jiangsu, taxonomy, diagnosis, type

Introduction

The ant spider family Zodariidae Thorell, 1881 contains 90 genera and 1264 known species worldwide (World Spider Catalog 2023). Members of this family are small to medium-sized (Jocqué 1991). *Asceua* Thorell, 1887, with the type species *A. elegans* Thorell, 1887 described from Myanmar, is a relatively large genus of the family Zodariidae and currently comprises 34 species mainly distributed in Asia and Africa. Members of this genus can be distinguished from other zodariids by their small size, laterally compressed bulb, developed cymbial fold and long and meandering copulatory ducts (Zhang and Zhang 2018). Recently, a large number of new spider species have been reported from China (Li 2020, Li et al. 2021, Yao et al. 2021, Zhao et al. 2022, Lu et al. 2022), but Zodariidae is poorly studied in China, especially for *Asceua*. Until now, only 11 species are known, all species are endemic to China except, *A. torquata* (Simon, 1909) from China, Laos and Vietnam, most of those being distributed in Yunnan and Hainan (Song and Kim 1997, Yin et al. 2012, Zhang et al. 2012, Barrion et al. 2013, Zhang and Zhang 2018, Li et al. 2022, Lin et al. 2023).

During the examination of spider collections from China (Hainan and Jiangsu), we found two new species and describe them here as *A. haocongi* sp. n. and *A. zijin* sp. n (Fig. 1). The goal of this paper is to provide descriptions of the new species.

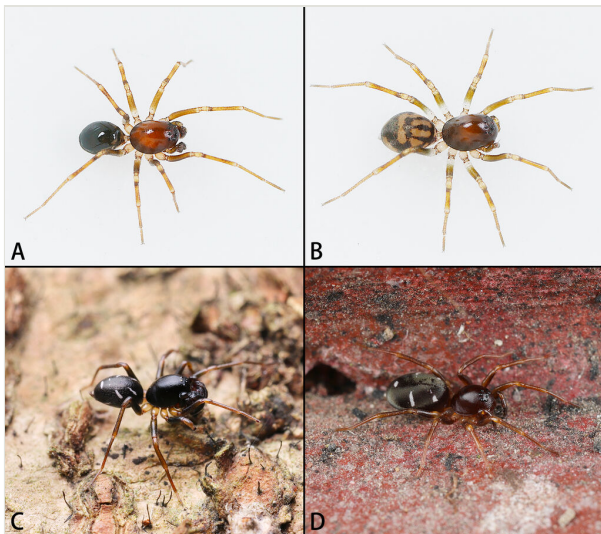


Figure 1. [doi](#)

Asceua haocongi sp. n. (A, B) and *A. zijin* sp. n. (C, D), alive. A, C Holotype male; B, D Paratype female. Photos by Fan Gao (C, D).

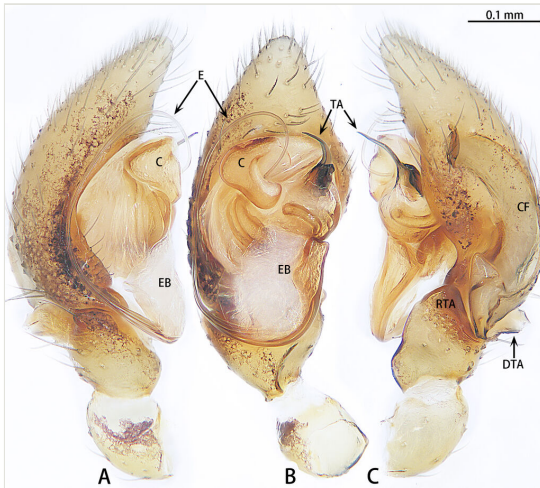


Figure 2. [doi](#)

Asceua haocongi sp. n., holotype male. **A** Prolateral view; **B** Ventral view; **C** Retrolateral view. Abbreviations: **C** conductor; **CF** cymbial furrow; **DTA** dorsal tibial apophysis; **E** embolus; **EB** embolic base; **RTA** retrolateral tibial apophysis; **TA** tegular apophysis.

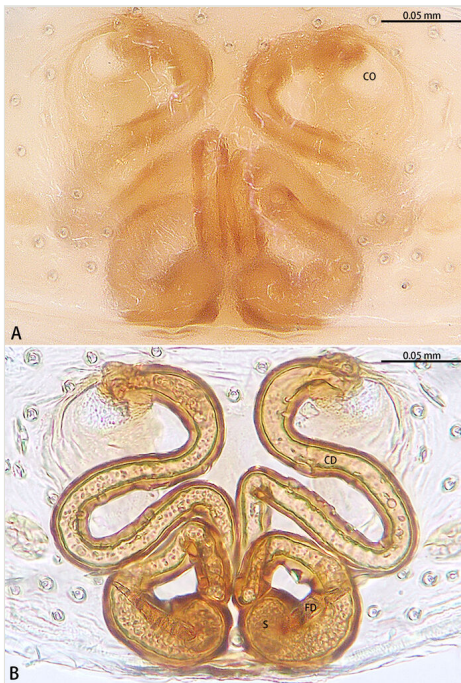


Figure 3. [doi](#)

Asceua haocongi sp. n., paratype female. **A** Epigyne, ventral view; **B** Vulva, dorsal view. Abbreviations: **CD** copulatory duct; **CO** copulatory opening; **FD** fertilisation duct; **S** spermatheca.

Materials and methods

All specimens were preserved in 80% ethanol. The spermathecae were cleared in trypsin enzyme solution to dissolve non-chitinous tissues. Specimens were examined under a Leica M205C stereomicroscope. Photomicrographs were taken with an Olympus C7070 zoom digital camera (7.1 megapixels). Laboratory habitus photographs were taken with a Sony A7RIV digital camera equipped with a Sony FE 90 mm Goss lens. Photos were stacked with Helicon Focus® (Version 7.6.1) or Zerene Stacker® (Version 1.04) and processed in Adobe Photoshop CC2022®. The distribution map was generated with ArcGIS v. 10.2 (ESRI Inc.).

All measurements are in millimetres (mm) and were obtained with an Olympus SZX16 stereomicroscope with a Zongyuan CCD industrial camera. All measurements of body lengths do not include the chelicerae. Eye sizes are measured as the maximum diameter from either the dorsal or frontal view. Leg measurements are given as follows: total length (femur, patella, tibia, metatarsus, tarsus). The type materials are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (**IZCAS**).

Abbreviations: **ALE**, anterior lateral eye; **AME**, anterior median eye; **C**, conductor; **CD**, copulatory duct; **CF**, cymbial furrow; **CO**, copulatory opening; **DTA**, dorsal tibial apophysis; **E**, embolus; **EB**, embolic base; **FD**, fertilisation duct; **H**, hood; **MOA**, median ocular area; **PLE**, posterior lateral eye; **PME**, posterior median eye; **RTA**, retrolateral tibial apophysis; **S**, spermatheca; **TA**, tegular apophysis; **VTA**, ventral tibial apophysis.

Comparative material examined

Asceua torquata (Simon, 1909), 4 males, without institution ID, China, Guangdong, Shenzhen, IZCAS.

Taxon treatments

Asceua haocongi Lin & Li, 2023, sp. n.

- ZooBank [9067DEED-2DAB-4075-8E07-0392BD8D1EB3](https://doi.org/10.21203/rs.3.rs-2888881/v1)

Materials

Holotype:

- country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates: N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: male; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44408; occurrenceID: 840AD147-8576-5FF5-9E4E-7454F1D069F4

Paratypes:

- country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates:

- N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: female; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44409; occurrenceID: 0D741223-ED30-5E71-909A-A073F7FDF091
- b. country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates: N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: female; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44410; occurrenceID: 0D741223-ED30-5E71-909A-A073F7FDF091
- c. country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates: N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: female; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44411; occurrenceID: 0D741223-ED30-5E71-909A-A073F7FDF091
- d. country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates: N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: female; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44412; occurrenceID: 0D741223-ED30-5E71-909A-A073F7FDF091
- e. country: China; stateProvince: Hainan; locality: Sanya City, Jiyang District, Sanya Xiaodonghai Wedding Photography Base; verbatimElevation: 2 m; verbatimCoordinates: N18.2004°, E109.4984°; year: 2023; month: 2; day: 4; sex: female; recordedBy: Haocong Yang; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44413; occurrenceID: 0D741223-ED30-5E71-909A-A073F7FDF091

Description

Male (holotype). Total length 2.13; carapace 1.07 long, 0.74 wide, opisthosoma 1.06 long, 0.71 wide. Eye sizes and interdistances: AME 0.08, ALE 0.06, PME 0.06, PLE 0.06, AME–AME 0.05, AME–ALE 0.03, PME–PME 0.08, PME–PLE 0.08, AME–PME 0.09, ALE–PLE 0.05. MOA 0.21 long, front width 0.19, back width 0.19. Clypeus height 0.29. Chelicerae with 2 promarginal teeth. Leg measurements: I 3.00 (0.76, 0.24, 0.73, 0.78, 0.49), II 2.34 (0.64, 0.25, 0.48, 0.61, 0.36), III 2.34 (0.64, 0.25, 0.47, 0.64, 0.36), IV 3.23 (0.84, 0.25, 0.73, 0.96, 0.45).

Colouration (Fig. 4A, B). Carapace red-brown, edge brown. Chelicerae, endites, labium and sternum red-brown. Legs yellow-brown with black ring pattern. Opisthosoma oval, dark brown with numbers of small yellow-brown spots, with ventral scutum covering opisthosoma, dorsal white with purple spots. Spinnerets purple.

Palp (Fig. 2). Patella almost as long as tibia. Tibia with two apophyses, retrolateral tibial apophysis blunt, triangular-shaped; dorsal tibial apophysis lamellate. Cymbium almost two times longer than wide. Cymbial furrow with a hood anteriorly and a digitiform apophysis posteriorly. Bulb almost 1.5 times longer than wide. Tegulum almost round. Tegular apophysis black, terminal sharp. Conductor bent, originating dorsally on bulb, with slightly widened tip. Embolus slender and whip-like, distal portion pointing to middle of conductor in ventral view. Base of embolus large, with large membranous prolateral part, arising at 7 o'clock position.

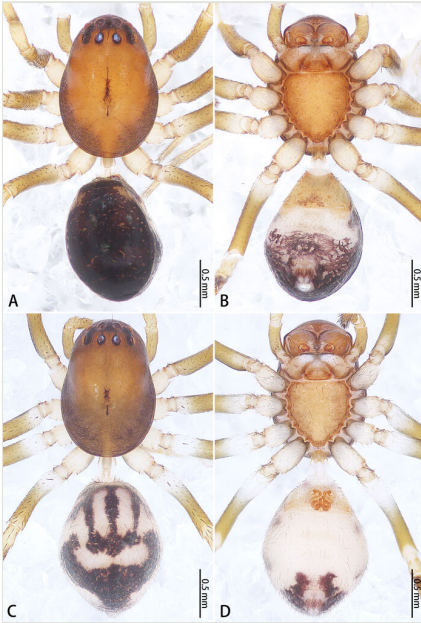


Figure 4. [doi](#)

Asceua haocongii sp. n., male holotype (A, B) and female paratype (C, D), Habitus. A, C Dorsal view; B, D Ventral view.

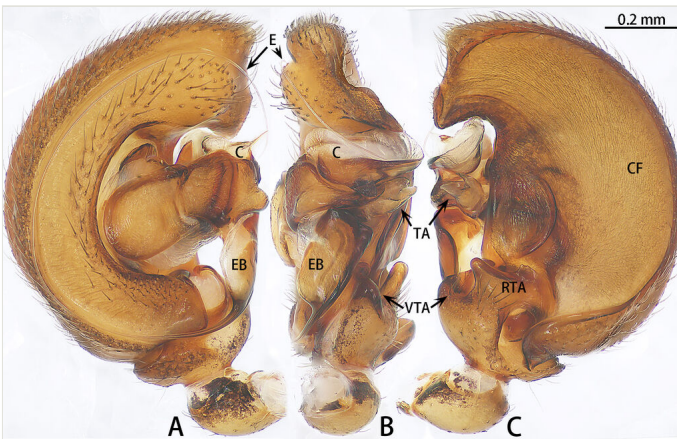


Figure 5. [doi](#)

Asceua zijin sp. n., holotype male. A Prolateral view; B Ventral view; C Retrolateral view. Abbreviations: C conductor; CF cymbial furrow; E embolus; EB embolic base; RTA retrolateral tibial apophysis; TA tegular apophysis; VTA ventral tibial apophysis.

Female (IZCAS-Ar44409). Total length 2.57; carapace 1.22 long, 0.84 wide, opisthosoma 1.35 long, 0.92 wide. Eye sizes and interdistances: AME 0.08, ALE 0.07, PME 0.06, PLE 0.06, AME–AME 0.05, AME–ALE 0.03, PME–PME 0.09, PME–PLE

0.10, AME–PME 0.10, ALE–PLE 0.06. MOA 0.23 long, front width 0.20, back width 0.21. Clypeus height 0.33. Chelicerae with 2 promarginal teeth. Leg measurements: I 2.90 (0.77, 0.27, 0.65, 0.73, 0.48), II 2.44 (0.67, 0.27, 0.49, 0.61, 0.40), III 2.45 (0.66, 0.28, 0.49, 0.66, 0.36), IV 3.34 (0.87, 0.28, 0.75, 0.98, 0.46).

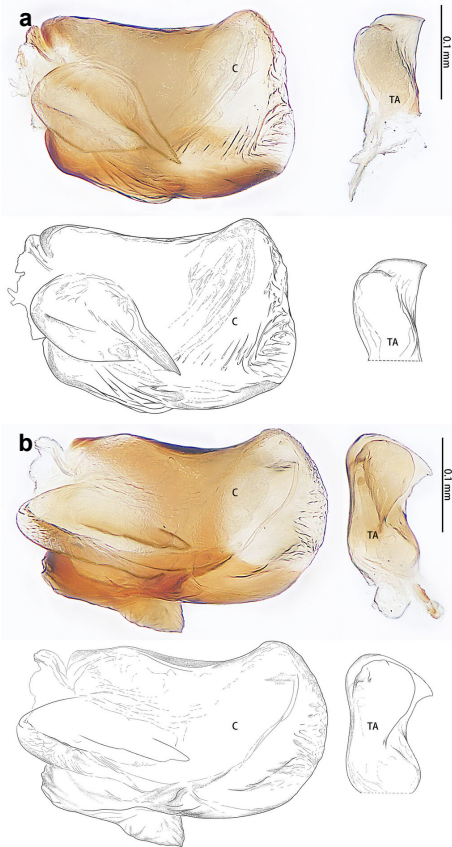


Figure 6.

Asceua torquata and *A. zijin* sp. n., conductor and tegular apophysis, dorsal view. Abbreviations: **C** conductor; **TA** tegular apophysis.

a: *A. torquata* doi

b: *A. zijin* sp. n. doi

Colouration (Fig. 4C, D). As in male, except lacking scutum on opisthosoma and opisthosoma with three pairs of white spots, first pair oblong-oval, longitudinal, largest; second pair irregular in shape, positioned lateral to the first pair, third pair ovoid, transverse, slightly connected to the second pair.

Epigyne (Fig. 3). Epigynal plate as long as wide. Copulatory openings located on anterior portion of epigyne. Copulatory ducts intertwined. Spermathecae kidney-shaped, two times wider than copulatory ducts. Fertilisation ducts directed at the 2 o'clock position from spermathecae.

Diagnosis

The male is similar to that of *Asceua radiosa* Jocqué, 1986 by the triangular-shaped retrolateral tibial apophysis, same shaped cymbial furrow and tegular apophysis needle-shaped. Females share the same shape of the copulatory duct. However, the new species can be distinguished from *A. radiosa* by the cymbial furrow with a digitiform apophysis posteriorly (Fig. 2C) [vs. absent in *A. radiosa* (see Jocqué (1986), fig. 4)] and tegular apophysis strongly curved (Fig. 2B) [vs. almost straight in *A. radiosa* (see Jocqué (1986), fig. 5)]. The female can be distinguished from *A. radiosa* by the kidney-shaped spermatheca (Fig. 3B) [vs. oval in *A. radiosa* (see Jocqué (1986), fig. 8)].

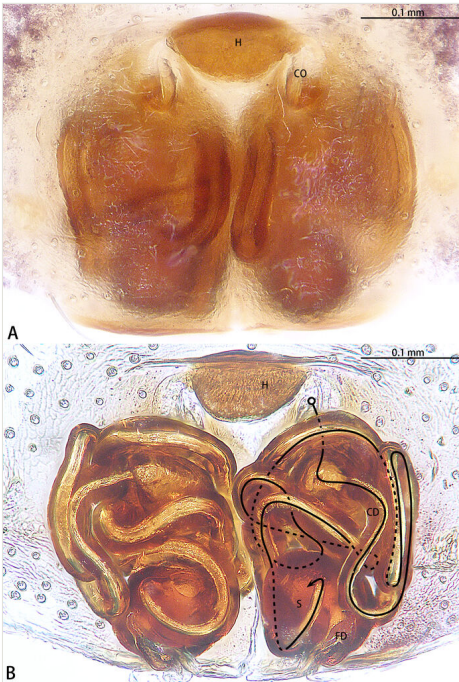


Figure 7. [doi](#)

Asceua zijin sp. n., paratype female. **A** Epigyne, ventral view; **B** Vulva, dorsal view. Abbreviations: **CD** copulatory duct; **CO** copulatory opening; **FD** fertilisation duct; **H** hood; **S** spermatheca.

Etymology

The species is named after the collector Mr. Haochong Yang; noun (name) in genitive case.

Distribution

Known only from the type locality (Fig. 9).

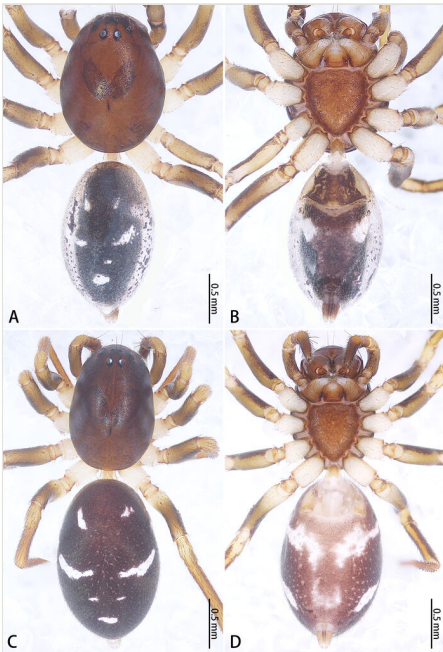


Figure 8. [doi](#)

Asceua zijin sp. n., male holotype (A, B) and female paratype (C, D), Habitus. A, C Dorsal view; B, D Ventral view.

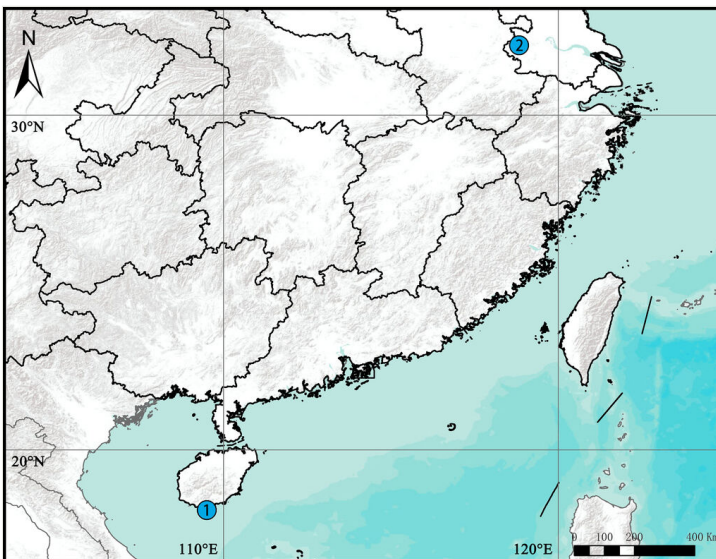


Figure 9. [doi](#)

Distribution records of new *Asceua* species in China: 1 *A. haocongi* sp. n.; 2 *A. zijin* sp. n.

***Asceua zijin* Lin & Li, 2023, sp. n.**

- ZooBank [A2DFE36D-A028-4C42-ADDE-C7D39592C7E1](https://doi.org/10.21203/rs.3.rs-2811111/v1)

Materials***Holotype:***

- a. country: China; stateProvince: Jiangsu; locality: Nanjing City, Xuanwu District, Zijin Mountain; verbatimElevation: 75 m; verbatimCoordinates: N32.0794°, E118.8298°; year: 2019; month: 12; day: 13; sex: male; recordedBy: Fan Gao; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44414; occurrenceID: D22DAF21-8C47-5E82-B8BC-DDBD8CC8ACBC

Paratype:

- a. country: China; stateProvince: Jiangsu; locality: Nanjing City, Xuanwu District, Zijin Mountain; verbatimElevation: 75 m; verbatimCoordinates: N32.0794°, E118.8298°; year: 2019; month: 12; day: 13; sex: female; recordedBy: Fan Gao; identifiedBy: Yejie Lin; institutionID: IZCAS-Ar44415; occurrenceID: 989B35C2-6891-546B-A70D-ACD332C95103

Description

Male (holotype). Total length 3.33; carapace 1.56 long, 1.17 wide, opisthosoma 1.77 long, 1.03 wide. Eye sizes and interdistances: AME 0.07, ALE 0.06, PME 0.07, PLE 0.07, AME–AME 0.06, AME–ALE 0.06, PME–PME 0.09, PME–PLE 0.14, AME–PME 0.13, ALE–PLE 0.05. MOA 0.26 long, front width 0.17, back width 0.22. Clypeus height 0.40. Chelicerae with 2 promarginal teeth. Leg measurements: I 4.12 (1.06, 0.37, 1.01, 1.03, 0.65), II 3.69 (0.99, 0.38, 0.84, 0.91, 0.57), III 3.41 (0.96, 0.41, 0.70, 0.88, 0.46), IV 4.38 (1.17, 0.42, 1.06, 1.18, 0.55).

Colouration (Fig. 8A, B). Carapace brown, middle with two oblong black-brown spots. Chelicerae, endites, labium and sternum brown. Legs yellow-brown. Opisthosoma oval, black, dorsum with three pairs of pale oblong spots, second one largest, followed by a pale spot. Spinnerets black.

Palp (Figs 5, 6b). Tibia two times longer than patella. Tibia with two apophyses; ventral tibial apophysis digitiform; retrolateral tibial apophysis bifurcate, ventral ramus digitiform, transverse, dorsal ramus sickle-shaped. Cymbium almost 1.5 times longer than wide. Cymbial furrow wide, almost as wide as cymbium in retrolateral view. Tegulum almost oblong. Tegular apophysis with two lateral processes. Conductor membranous, with a prolateral apophysis. Embolus slender and whip-like. Base of embolus large, with membranous prolateral part, arising at the 6:30 o'clock position.

Female (IZCAS-Ar44415). Total length 3.98; carapace 1.70 long, 1.16 wide, opisthosoma 2.28 long, 1.38 wide. Eye sizes and interdistances: AME 0.06, ALE 0.08, PME 0.07, PLE 0.08, AME–AME 0.06, AME–ALE 0.08, PME–PME 0.09, PME–PLE 0.15, AME–PME 0.15, ALE–PLE 0.04. MOA 0.27 long, front width 0.16, back width 0.23. Clypeus height 0.42. Chelicerae with 2 promarginal teeth. Leg measurements: I

3.70 (1.00, 0.39, 0.86, 0.85, 0.60), II 3.45 (0.95, 0.41, 0.75, 0.80, 0.54), III 3.40 (0.93, 0.44, 0.70, 0.88, 0.45), IV 4.23 (1.10, 0.44, 1.00, 1.12, 0.57).

Colouration (Fig. 8C, D). Similar to that of male, except paler.

Epigyne (Fig. 7). Epigynal plate as long as wide, with a hood anteriorly, the hood almost 1.5 times longer than wide. Copulatory openings located on anterior portion of epigyne. Copulatory ducts intertwined, starting part expanded. Spermathecae oval. Fertilisation ducts directed at the 1:00 o'clock position from spermathecae.

Diagnosis

The male is similar to *Asceua torquata* (Simon, 1909) and *A. japonica* (Bösenberg & Strand, 1906) by the same shape of retrolateral tibial apophysis and cymbium, long and slender embolus. Females share the same shape of the copulatory duct. However, the new species can be distinguished from *A. torquata* by the opisthosoma dorsum with seven pale spots (Fig. 8) [vs. four yellow spots, a triangular black spot in the middle of the largest spot (see Zhang and Zhang (2018), figs. 7A, C)] conductor with an apophysis prolaterally and tegular apophysis with a lamellate apophysis (Fig. 6b) [vs. absent in *A. torquata* (Fig. 6a)]. The female can be distinguished from *A. torquata* and *A. japonica* by the obvious, semi-circular hood, 1.5 times longer than wide (Fig. 7B) [vs. oval in *A. torquata* (see Zhang and Zhang (2018), fig. 8D) and eight times longer than wide in *A. japonica* (see Ono (2009), fig. 30)] and copulatory ducts starting part expanded (Fig. 7B) [vs. absent in *A. japonica* (see Ono (2009), fig. 30)].

Etymology

The specific name refers to the type locality; noun (name) in genitive case.

Distribution

Known only from the type locality (Fig. 9).

Acknowledgements

The manuscript benefitted greatly from comments by Yanfeng Tong, Hirotsugu Ono and two anonymous reviewers. We thank Tongyao Jiang (Beijing, China) for checking specimens. Danni Sherwood (UK) checked the English. Haocong Yang (Beijing, China) and Fan Gao (Jiangsu, China) helped in fieldwork. Ying Lu (Beijing, China) helped with measurements. Fan Gao (Jiangsu, China) helped with photographs.

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