

ORIGINAL ARTICLE

Twenty-three new spider species (Arachnida: Araneae) from Asia

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Abstract A new genus, *Sinophaena* Lin & Li, **gen. nov.**, of the spider family Anyphaenidae Bertkau, 1878 is reported, with *S. xiweni* Lin & Li, **sp. nov.** (♀) from Sichuan, China as the type species. *Sinophaena bivalva* (Zhang & Song, 2004) **comb. nov.** is transferred from *Anyphaena* Sundevall, 1833. Further new species reported in the current paper include: *Anyphaena grovyle* Lin & Li, **sp. nov.** (♂♀, Hainan), *A. szeptile* Lin & Li, **sp. nov.** (♂♀, Hainan), *A. shenzhen* Lin & Li, **sp. nov.** (♂♀, Guangdong), *A. tibet* Lin & Li, **sp. nov.** (♂♀, Tibet), *A. treecko* Lin & Li, **sp. nov.** (♂♀, Hainan), *Cybaeus fushun* Lin & Li, **sp. nov.** (♀, Liaoning), *C. huadian* Lin & Li, **sp. nov.** (♀, Jilin), *Eresus lishizheni* Lin, Marusik & Li, **sp. nov.** (♂, Xinjiang), *Alistra pikachu* Lin & Li, **sp. nov.** (♂♀, Guangdong), *Sinopesa gollum* Lin & Li, **sp. nov.** (♂, Guangdong), *Pimosa gagna* Zhang & Li, **sp. nov.** (♀, India), *P. nainital* Zhang & Li, **sp. nov.** (♂♀, India), *P. shoja* Zhang & Li, **sp. nov.** (♂♀, India), *Selenops crewsae* Lin & Li, **sp. nov.** (♀, Sichuan), *Sinopoda helii* Wang & Li, **sp. nov.** (♂♀, Sichuan), *Phlogiellus jiaxiangi* Lin & Li, **sp. nov.** (♂♀, Guangxi), *Episinus bonjovi* Lin & Li, **sp. nov.** (♂♀, Yunnan), *E. jiangweni* Lin & Li, **sp. nov.** (♂♀, Yunnan), *E. tongyani* Lin & Li, **sp. nov.** (♂♀, Yunnan), *Meotipa luoqiae* Lin & Li, **sp. nov.** (♂, Yunnan), *M. menglun* Lin & Li, **sp. nov.** (♂, Yunnan), and *M. zhengguoi* Lin & Li, **sp. nov.** (♂, Yunnan). The female of *Belisana yuexiu* Yao & Li, 2020 is reported for the first time. All types are deposited in the Institute of Zoology, Chinese Academy of Sciences (IZCAS) in Beijing, China.

Keywords Diagnosis, distribution, epigyne, taxonomy, type species.

1 Introduction

Species identification is the first step towards discovery of living organisms all over the world, and it will always be an irreplaceable part of science. When faced with the high percentage of unknown species in large, developing countries, such as China and India, the first step is using morphological methods to identify these organisms and differentiate them from others.

Spiders are found on every continent except for Antarctica. As of April 2021, at least 49335 spider species in 4211 genera, and 129 families have been recorded by taxonomists (World Spider Catalog, 2021). However, this is only a very small part of spider species worldwide as many from collections are known to be undescribed, and new field collections nearly always turn up new species. It is an immense job for the current generation of systematic biologists to report these

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unknown organisms.

In the current paper, we make progress by reporting 23 new spider species from China and India.

2 Materials and methods

All specimens were preserved in 80% ethanol. Epigynes were cleared in proteinase K at 56°C to dissolve non-chitinous tissues. Specimens were examined under a LEICA M205C stereomicroscope. Photomicroscope images were taken with an Olympus C7070 zoom digital camera (7.1 megapixels). Photos were stacked with Helicon Focus 6.7.1® (Khmelik *et al.*, 2006) and processed in Adobe Photoshop CC® 2020.

All measurements are made in millimeters (mm) and were obtained with a LEICA M205C stereomicroscope. 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). In Selenopidae, the description of spine numbers follow Dankittipakul and Corronca (2009) and in Sparassidae, leg formula, spination, and measurements of palps and legs follow Jäger (2012). Types from the current study are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

Abbreviations used in text and figures:

AB—anterior bands;
 AER—anterior eye row;
 AG—accessory gland;
 ALE—anterior lateral eyes;
 AME—anterior median eyes;
 AS—alveolar sclerite;
 AW—anterior width of prosoma;
 C—conductor;
 CD—copulatory duct;
 CDP—cymbial denticulate process;
 CH—clypeus height;
 CO—copulatory opening;
 DP—dorsal plate of the epigyne;
 dRTA—dorsal branch of retrolateral tibial apophysis;
 E—embolus;
 EA—embolic apophysis;
 EP—epigynal pockets;
 ep—frontal “epigynal” pocket;
 ET—epigynal teeth;
 FD—fertilization duct;
 GA—glandular appendages;
 H—hood;
 LL—lateral lobes;
 LS—lobal septum;
 MA—median apophysis;
 MOA—median ocular area;
 MS—membranous sac;
 OL—opisthosoma length;
 OW—opisthosoma width;
 P—paracymbium;
 PCS—pimoid cymbial sclerite;
 PEP—pimoid embolic process;
 PER—posterior eye row;
 PF—posterodorsal fold;
 PL—prosoma length;
 PLE—posterior lateral eyes;

- PME—posterior median eyes;
- pp—pore plates;
- PP—posterior part of internal duct system;
- PW—prosoma width;
- RTA—retrolateral tibial apophysis;
- S—spermathecae;
- Se—septum;
- Sp—spermophor;
- SS—slit sensillum;
- ST—subtegulum;
- T—tegulum;
- TTA—Theridiidae tegular apophysis;
- VP—ventral plate of epigyne;
- vRTA—ventral branch of retrolateral tibial apophysis;
- VTBA—ventral tibial basal apophysis.

3 Taxonomy

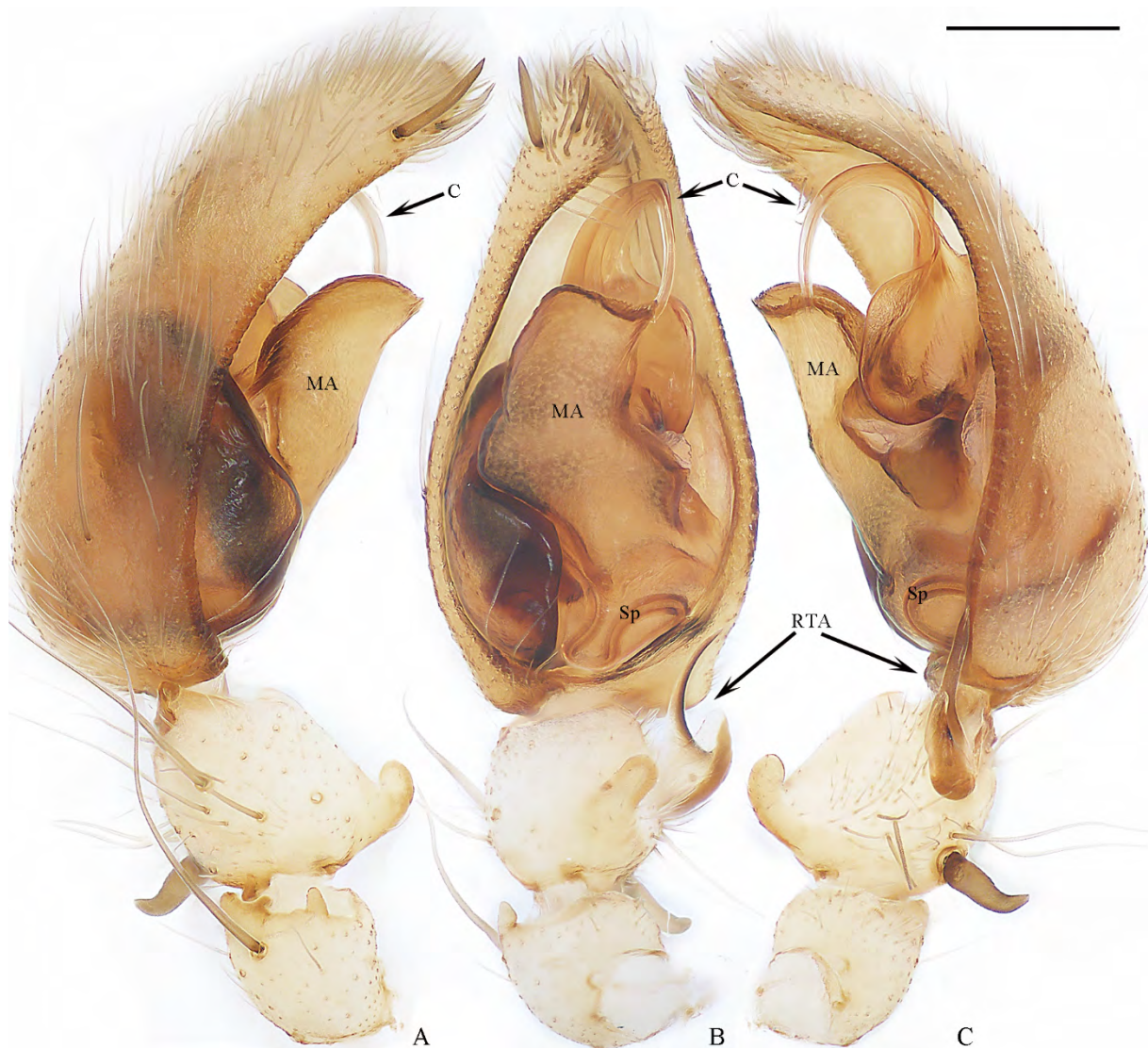


Figure 1. *Anyphaena grovyle* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.3 mm.

3.1 Family Anyphaenidae Bertkau, 1878

Genus *Anyphaena* Sundevall, 1833

Type species: *Anyphaena accentuata* (Walckenaer, 1802).

Anyphaena grovyle Lin & Li, **sp. nov.** (Figs 1A–C, 2A–B, 12A, 14A–B)

Diagnosis. Males of *A. grovyle* Lin & Li, **sp. nov.** are similar to those of *A. mogan* Song & Chen, 1987 in having a similarly shaped MA, C, and RTA, but they can be distinguished by the jagged terminus of the MA (*vs.* smooth in *A. mogan*), the C reaches the top of the MA (*vs.* C short, C and MA do not touch in *A. mogan*), and the length ratio of the dRTA to the vRTA is almost 1:2 (*vs.* 1:4 in *A. mogan*). Females of *A. grovyle* Lin & Li, **sp. nov.** are similar to *A. mogan* in having globular S and convoluted CDs with an enlarged base, but the COs directed laterally ET (*vs.* ET absent in *A. mogan*), and in *A. grovyle* Lin & Li, **sp. nov.**, the sclerotized epigynal plate is with an atrium, COs laterally (*vs.* COs without any cover in *A. mogan*).

Description. Male (holotype, IZCAS-Ar42101, Figs 1A–C, 12A, 14A). Total length 5.12, carapace 2.02 long, 1.41 wide, pale yellow. Opisthosoma 3.62 long, 1.52 wide. Opisthosoma pale yellow. AER slightly recurved, PER procurved. Eye sizes and interdistances: AME 0.08, ALE 0.11, PME 0.12, PLE 0.12, AME–AME 0.10, AME–ALE 0.09, PME–PME 0.11, PME–PLE 0.12, AME–PME 0.15, ALE–PLE 0.14. Clypeus height 0.06. Chelicerae with four promarginal and eight retromarginal teeth. Endites, labium, and sternum pale yellow. Legs yellow, covered with many setae. Leg measurements: leg I 9.19 (2.20 + 3.26 + 2.50 + 1.23), leg II 7.50 (2.04 + 2.93 + 1.77 + 0.76), leg III 8.13 (2.65 + 3.04 + 1.72 + 0.72), leg IV 9.17 (2.82 + 2.92 + 2.52 + 0.91). Leg formula 1432.

Palp (Figs 1A–C, 12A). VTBA short; RTA with two parts, longer than wide, dRTA long, needle shaped, two times longer than vRTA. vRTA triangular. Sp with two conspicuous spirals. MA irregular polygon shaped, terminus flat, serrated. C strongly curved, tip reaches the MA. E filamentous.

Female (paratype, IZCAS-Ar42217, Figs 2A–B, 14B). Total length 6.72, carapace 2.20 long, 1.81 wide, pale yellow. Opisthosoma 4.02 long, 2.52 wide. Colour as in male. Eye sizes and interdistances: AME 0.10, ALE 0.12, PME 0.13, PLE 0.13, AME–AME 0.11, AME–ALE 0.10, PME–PME 0.12, PME–PLE 0.12, AME–PME 0.16, ALE–PLE 0.14. Clypeus height 0.08. Chelicerae with four promarginal and three retromarginal teeth. Leg measurements: Leg I 8.60 (2.24 + 3.24 + 2.06 + 1.06), leg II 6.90 (1.66 + 2.46 + 1.80 + 0.98), leg III 5.25 (1.65 + 1.72 + 1.18 + 0.70), leg IV 8.01 (2.46 + 2.45 + 2.30 + 0.80). Leg formula 1423.

Epigyne (Figs 2A–B) wider than long; COs inconspicuous, with ET above; CDs convoluted, base of CDs enlarged. AG distinct, located anterolaterally of S. S globular.

Material examined. Holotype ♂, China: Hainan, Wuzhishan City, Wuzhi Mountain (18.0695°N, 109.8774°E), 9 April 2009, leg. Guo Tang (IZCAS-Ar42101). Paratypes. 115♂ (IZCAS-Ar42102–Ar42216), same data as holotype; 150♀ (IZCAS-Ar42217–Ar42300, Ar42326–Ar42391), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after Grovyle, a fictional character from Pokémon Emerald that lives in the forest, as does the new species; noun (name) in apposition.

Anyphaena sceptrile Lin & Li, **sp. nov.** (Figs 3A–C, 4A–B, 12B, 14C–D)

Diagnosis. Male of *A. sceptrile* Lin & Li, **sp. nov.** is similar to those of *A. grovyle* Lin & Li, **sp. nov.** and *A. mogan* Song & Chen, 1987 in having a similarly shaped C, but they can be distinguished by the long, sword-shaped MA (*vs.* irregular polygon shaped in *A. grovyle* Lin & Li, **sp. nov.** and *A. mogan*), the dRTA is short and robust (*vs.* dRTA slender in *A. grovyle* Lin & Li, **sp. nov.** and *A. mogan*). Females can be easily distinguished by the inconspicuous COs, beneath the inner edges of the LL.

Description. Male (holotype, IZCAS-Ar42392, Figs 3A–C, 12B, 14C). Total length 5.22, carapace 2.52 long, 2.02 wide, pale yellow. Opisthosoma 2.61 long, 1.81 wide. Opisthosoma pale yellow. AER slightly recurved, PER procurved. Eye sizes and interdistances: AME 0.07, ALE 0.10, PME 0.13, PLE 0.11, AME–AME 0.07, AME–ALE 0.08, PME–PME 0.21, PME–PLE 0.18, AME–PME 0.25, ALE–PLE 0.20. Clypeus height 0.08. Chelicerae with five promarginal and six retromarginal teeth. Endites, labium, and sternum pale yellow. Legs yellow, covered with many setae. Leg measurements: Leg I 11.23 (2.70 + 3.76 + 3.04 + 2.03), leg II 9.44 (3.04 + 3.13 + 2.04 + 1.23), leg III 10.15 (3.15 + 3.33 + 2.25 + 1.42), leg IV 11.10 (2.56 + 3.68 + 2.89 + 1.97). Leg formula 1432.

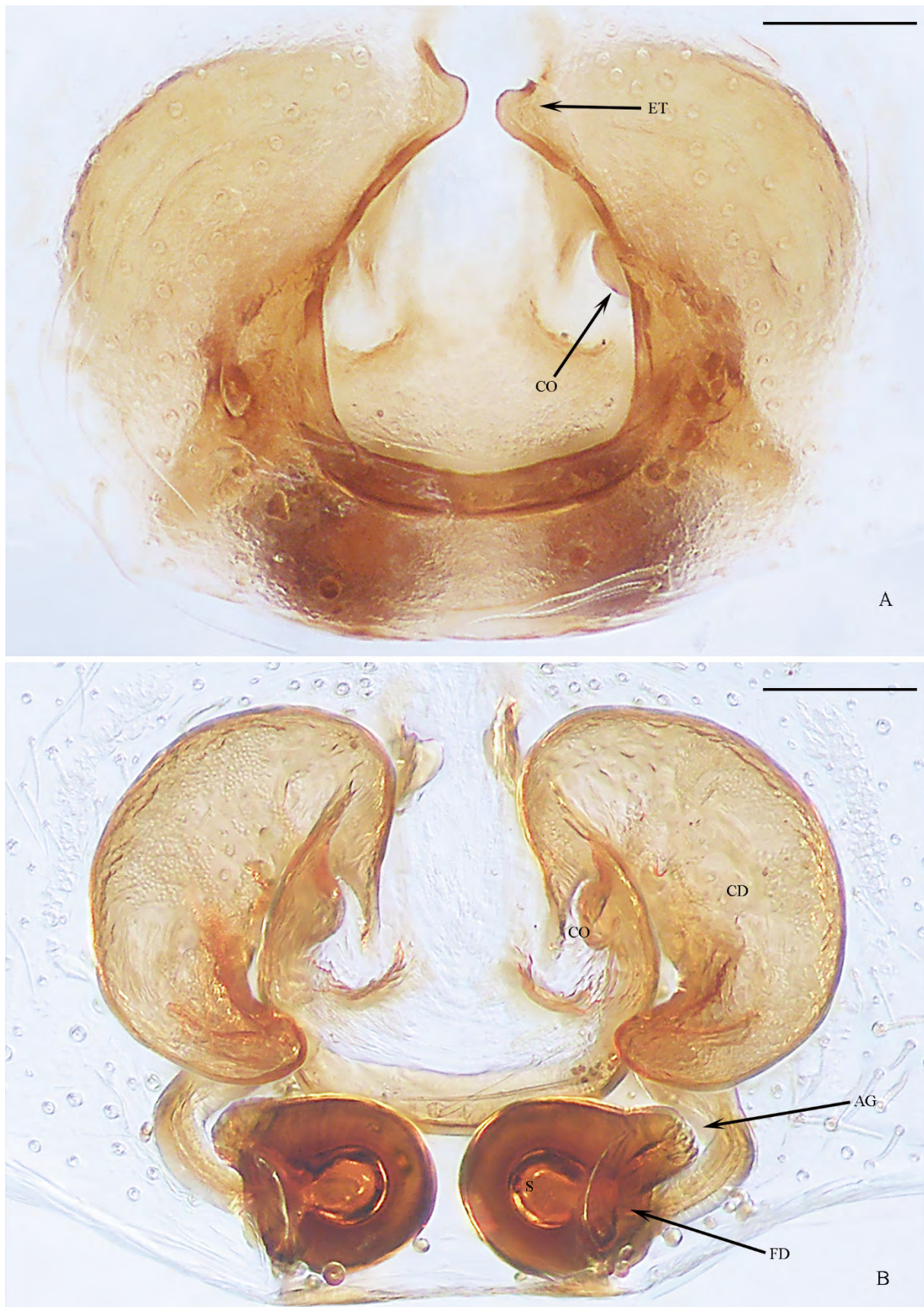


Figure 2. *Anyphaena grovyle* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

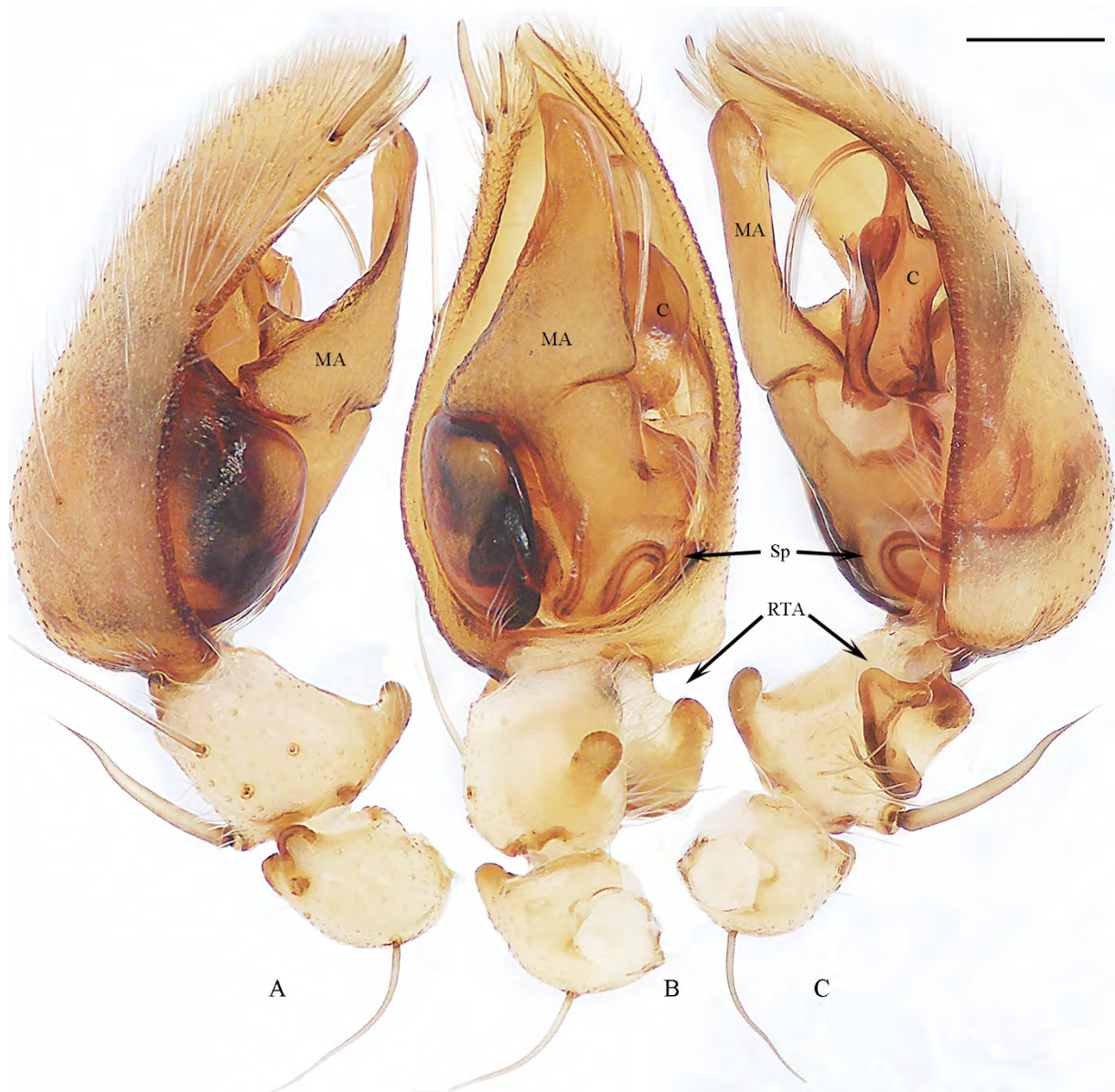


Figure 3. *Anyphaena sceptrile* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.3 mm.

Palp (Figs 3A–C, 12B). VTBA short; RTA with two parts, wider than long, dRTA distal to vRTA, both robust. vRTA with two apophyses. Sp with two conspicuous spirals. MA long, almost triangular, covers C in ventral view. C strongly curved. E filamentous.

Female (paratype, IZCAS-Ar42393, Figs 4A–B, 14D). Total length 7.12, carapace 2.62 long, 2.23 wide, pale yellow. Opisthosoma 4.06 long, 2.49 wide. Colour as in male. Eye sizes and interdistances: AME 0.12, ALE 0.13, PME 0.15, PLE 0.15, AME–AME 0.07, AME–ALE 0.09, PME–PME 0.18, PME–PLE 0.24, AME–PME 0.26, ALE–PLE 0.24. Clypeus height 0.11. Chelicerae with five promarginal and six retromarginal teeth. Leg measurements: Leg I 9.88 (2.69+3.51+2.33+1.35), leg II 8.18 (1.97+2.83+2.05+1.33), leg III 6.40 (1.92+2.03+1.43+1.02), leg IV 9.27 (2.72+2.82+2.61+1.12). Leg formula 1423.

Epigyne (Figs 4A–B) longer than wide; COs inconspicuous, beneath chitinized structure; CDs convoluted, base enlarged. AG distinct, located anterolaterally on S. S globular.

Material examined. Holotype ♂, China: Hainan, Changjiang County, Bawangling, Dongsizhan (19.0495°N, 109.1157°E), 23 April 2009, leg. Guo Tang (IZCAS-Ar42392). Paratypes. 2♀ (IZCAS-Ar42393–Ar42394), same data as holotype.



Figure 4. *Anyphaena sceptile* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

Distribution. Known only from the type locality.

Etymology. The species is named after Scepter, a fictional character from Pokémon Emerald who lives in the forest, as does this new species; noun (name) in apposition.

***Anyphaena shenzhen* Lin & Li, sp. nov.** (Figs 5A–E, 6A–B, 13A, 14E–F)

Diagnosis. Males of *A. shenzhen* Lin & Li, **sp. nov.** are similar to those of *A. rhynchophysa* Feng, Ma & Yang, 2012 and *A. tibet* Lin & Li, **sp. nov.** in the absence of a VTBA, but they can be distinguished by the dog head-shaped C (*vs.* C thin and curved in *A. rhynchophysa* and *A. tibet* Lin & Li, **sp. nov.**), and the RTA is wider than long (*vs.* RTA longer than wide in *A. rhynchophysa* and *A. tibet* Lin & Li, **sp. nov.**). Female can be easily distinguished by the C-shaped Cos, and the CDs have 4 spirals.

Description. Male (holotype, IZCAS-Ar42395, Figs 5A–E, 13A, 14E). Total length 5.62, carapace 2.81 long, 2.02 wide, brown with black pattern. Opisthosoma 3.62 long, 1.52 wide. Opisthosoma brown, with black pattern. AER slightly recurved, PER procurved. Eye sizes and interdistances: AME 0.10, ALE 0.14, PME 0.22, PLE 0.16, AME–AME 0.12, AME–ALE 0.13, PME–PME 0.23, PME–PLE 0.17, AME–PME 0.18, ALE–PLE 0.20. Clypeus height 0.12. Chelicerae with six promarginal and seven retromarginal teeth. Endites, labium, and sternum brown. Legs brown, covered with many setae. Leg measurements: Leg I 10.39 (2.45+3.47+2.82+1.65), leg II 8.46 (2.31+3.22+1.91+1.02), leg III 9.34 (2.88+3.31+2.04+1.11), leg IV 10.26 (3.12+3.22+2.71+1.21). Leg formula 1432.

Palp (Figs 5A–E, 13A). VTBA absent; RTA wider than long, two parts, dRTA short but almost two times longer than vRTA. vRTA triangular. Sp with one conspicuous curve. MA short, terminus pointed. C dog head shaped, with a hood. E filamentous.

Female (paratype, IZCAS-Ar42397, Figs 6A–B, 14F). Total length 7.62, carapace 3.20 long, 2.41 wide. Opisthosoma 6.02 long, 3.43 wide. Colour as in male. Eye sizes and interdistances: AME 0.12, ALE 0.13, PME 0.12, PLE 0.12, AME–AME 0.14, AME–ALE 0.12, PME–PME 0.11, PME–PLE 0.13, AME–PME 0.17, ALE–PLE 0.13. Clypeus height 0.11. Chelicerae with five promarginal and nine retromarginal teeth. Leg measurements: Leg I 10.10 (2.64+3.64+2.46+1.36), leg II 7.43 (2.04+2.26+1.92+1.21), leg III 6.59 (1.95+2.15+1.47+1.02), leg IV 8.69 (2.34+2.72+2.61+1.02). Leg formula 1423.

Epigyne (Figs 6A–B) longer than wide; COs inconspicuous, CDs long, with four spirals, AG conspicuous. S oval.

Material examined. Holotype ♂, China: Guangdong, Shenzhen, Longhua, Mount Yangtai (22.6624°N, 113.9744°E), 21 January 2021, leg. Qianle Lu. (IZCAS-Ar42395). Paratypes. 2♂1♀ (IZCAS-Ar42396–Ar42398), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species name is a noun in apposition derived from the type locality.

***Anyphaena tibet* Lin & Li, sp. nov.** (Figs 7A–C, 8A–B, 13B, 14G–H)

Diagnosis. Males of *A. tibet* Lin & Li, **sp. nov.** are similar to those of *A. wuyi* Zhang, Zhu & Song, 2005 and *A. rhynchophysa* in having a similar C and RTA but can be distinguished by the extended terminus of the MA (*vs.* narrowing toward terminus in *A. wuyi* and *A. rhynchophysa*), the width/length ratio of the vRTA is 0.5 (*vs.* 0.25 in *A. wuyi* and 0.33 in *A. rhynchophysa*), and the length ratio of the dRTA to the vRTA is almost 1:1 (*vs.* 0.33 in *A. wuyi* and *A. rhynchophysa*). Females are similar to *A. wuyi* and *A. rhynchophysa* by the convoluted CDs, but in *A. tibet* Lin & Li, **sp. nov.**, the base of the COs is not enlarged (*vs.* enlarged base in *A. wuyi* and *A. rhynchophysa*) and the CDs are not spiraled in *A. tibet* Lin & Li, **sp. nov.** (*vs.* two spirals in *A. wuyi* and one in *A. rhynchophysa*).

Description. Male (holotype, IZCAS-Ar42399, Figs 7A–C, 13B, 14G). Total length 7.02, carapace 3.02 long, 2.51 wide, brown with black pattern. Opisthosoma 4.12 long, 2.52 wide. AER slightly recurved, PER procurved. Eye sizes and interdistances: AME 0.13, ALE 0.15, PME 0.20, PLE 0.17, AME–AME 0.14, AME–ALE 0.12, PME–PME 0.19, PME–PLE 0.18, AME–PME 0.22, ALE–PLE 0.19. Clypeus height 0.10. Chelicerae with five promarginal and eight retromarginal teeth. Endites, labium, and sternum brown. Legs brown, covered with many setae. Leg measurements: Leg I 10.82 (2.65+3.52+2.93+1.72), leg II 9.74 (2.63+3.52+2.25+1.34), leg III 10.39 (3.05+3.63+2.42+1.32), leg IV 11.56 (3.62+3.52+3.01+1.41). Leg formula 4132.

Palp (Figs 7A–C, 13B). VTBA short; RTA with two parts, dRTA as long as vRTA, vRTA narrow. Sp with two conspicuous curves. MA well developed, shield shaped, terminus narrow. C thin. E filamentous, curved.

Female (paratype, IZCAS-Ar42400, Figs 8A–B, 14H). Total length 8.87, carapace 3.12 long, 2.47 wide. Opisthosoma 6.04 long, 4.23 wide. Colour as in male. Eye sizes and interdistances: AME 0.14, ALE 0.14, PME 0.13, PLE 0.14, AME–AME 0.16, AME–ALE 0.14, PME–PME 0.12, PME–PLE 0.16, AME–PME 0.17, ALE–PLE 0.15. Clypeus height 0.10.

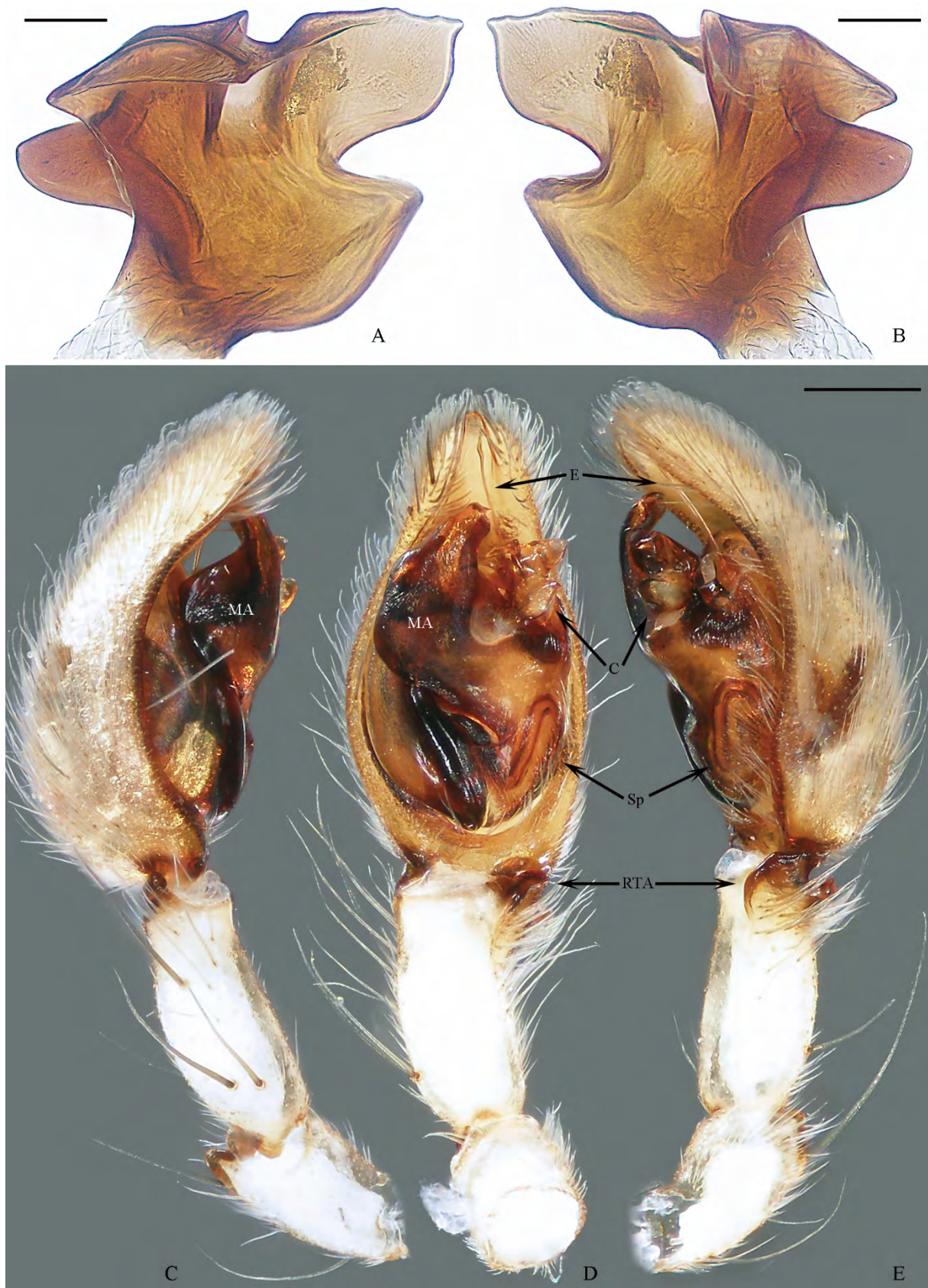


Figure 5. *Anyphaena shenzhen* Lin & Li, **sp. nov.**, holotype male, left palp. A. C, dorsal view; B. C, lateral view; C. Palp, prolateral view; D. Palp, ventral view; E. Palp, retrolateral view. Scale bars: A–B=0.05 mm; C–E=0.3 mm.



Figure 6. *Anyphaena shenzhen* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

Chelicerae with five promarginal and nine retromarginal teeth. Leg measurements: Leg I 9.69 (2.54+3.47+2.39+1.29), leg II 7.07 (1.98+2.13+1.88+1.08), leg III 6.11 (1.87+2.02+1.31+0.91), leg IV 8.10 (2.21+2.60+2.42+0.87). Leg formula 1423.

Epigyne (Figs 8A–B) oval. COs concealed at lateral margin of atrium. Vulva with long and semitransparent CDs twisted between COs and S. S large, oval, separated.

Material examined. Holotype ♂, China: Tibet, Shannan, Cuona County, Le Menbazuxiang, Lewang Bridge (27.7987°N, 91.4374°E), 1 June 2016, leg. Jianglang Wu (IZCAS-Ar42399). Paratypes. 2♂2♀ (IZCAS-Ar42400–Ar42403), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species name is a noun in apposition derived from the type locality.

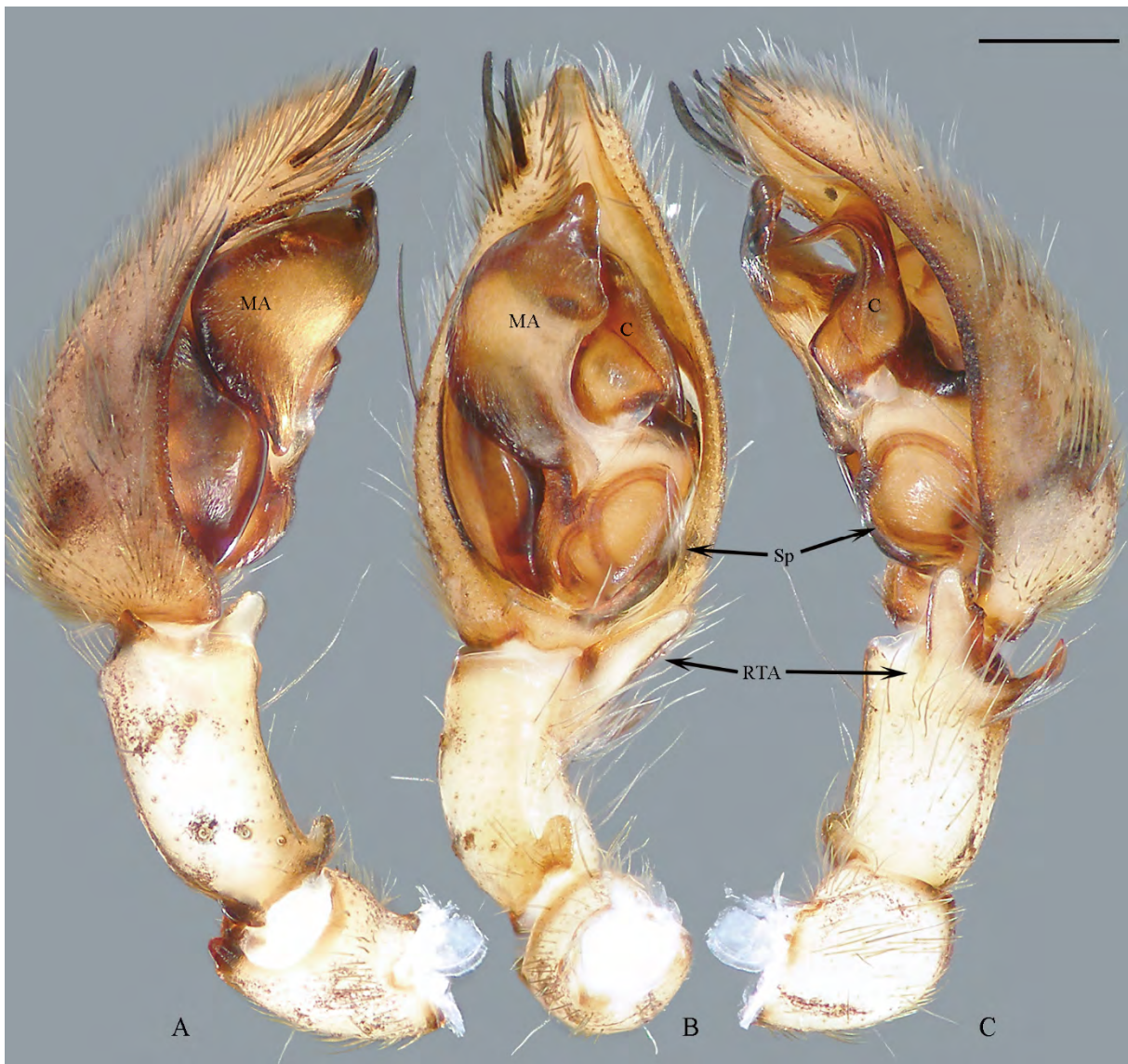


Figure 7. *Anyphaena tibet* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.3 mm.

Anyphaena treecko* Lin & Li, **sp. nov.* (Figs 9A–C, 10A–B, 14I–J)

Diagnosis. Male of *A. treecko* Lin & Li, **sp. nov.** is similar to *A. xiushanensis* Song & Zhu, 1991 in having a similarly shaped MA, C, and RTA but can be distinguished by the RTA which narrows toward the terminus and has an obvious bifurcation (vs. terminus extended and bifurcation inconspicuous in *A. xiushanensis*), and the cymbial apophysis is well



Figure 8. *Anyphaena tibet* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars=0.1 mm.

developed, triangular (*vs.* bifurcated in *A. xiushanensis*). Females are similar to *A. xiushanensis* by the shape of the epigyne, but in *A. treecko* Lin & Li, **sp. nov.**, the epigyne is anteriorly narrow and flat (*vs.* blunt in *A. xiushanensis*) and the CDs in *A. treecko* Lin & Li, **sp. nov.** are narrow.

Description. Male (holotype, IZCAS-Ar42404, Figs 9A–C, 14I). Total length 5.26, carapace 2.12 long, 1.31 wide, pale yellow. Opisthosoma 3.14 long, 1.42 wide. AER slightly recurved, PER procurved. Eye sizes and interdistances: AME 0.09, ALE 0.12, PME 0.14, PLE 0.12, AME–AME 0.09, AME–ALE 0.10, PME–PME 0.12, PME–PLE 0.11, AME–PME 0.14, ALE–PLE 0.13. Clypeus height 0.08. Chelicerae with four promarginal and eight retromarginal teeth. Endites, labium, and sternum pale yellow. Legs yellow, covered with many setae. Leg measurements: Leg I 9.31 (2.32+3.24+2.51+1.24), leg II 7.50 (2.03+2.94+1.78+0.75), leg III 8.08 (2.61+3.02+1.75+0.70), leg IV 9.30 (2.81+2.95+2.56+0.98). Leg formula 1432. Opisthosoma pale yellow.

Palp (Figs 9A–C). VTBA well developed; RTA bifurcated. Cymbial apophysis triangular. Sp without spirals. MA irregular polygon shaped, terminus flat, with a hook. C arc shaped distally and cone shaped mesally. E filamentous.

Female (paratype, IZCAS-Ar42405, Figs 10A–B, 14J). Total length 6.82, carapace 2.21 long, 1.91 wide, pale yellow. Opisthosoma 4.61 long, 2.53 wide. Colour as in male. Eye sizes and interdistances: AME 0.10, ALE 0.12, PME 0.13, PLE 0.13, AME–AME 0.11, AME–ALE 0.10, PME–PME 0.12, PME–PLE 0.12, AME–PME 0.16, ALE–PLE 0.14. Clypeus height 0.08. Chelicerae with four promarginal and three retromarginal teeth. Leg measurements: Leg I 8.47 (2.21+3.14+2.03+1.09), leg II 6.89 (1.68+2.36+1.89+0.96), leg III 5.34 (1.67+1.73+1.16+0.78), leg IV 8.11 (2.49+2.42+2.31+0.89). Leg formula 1423.

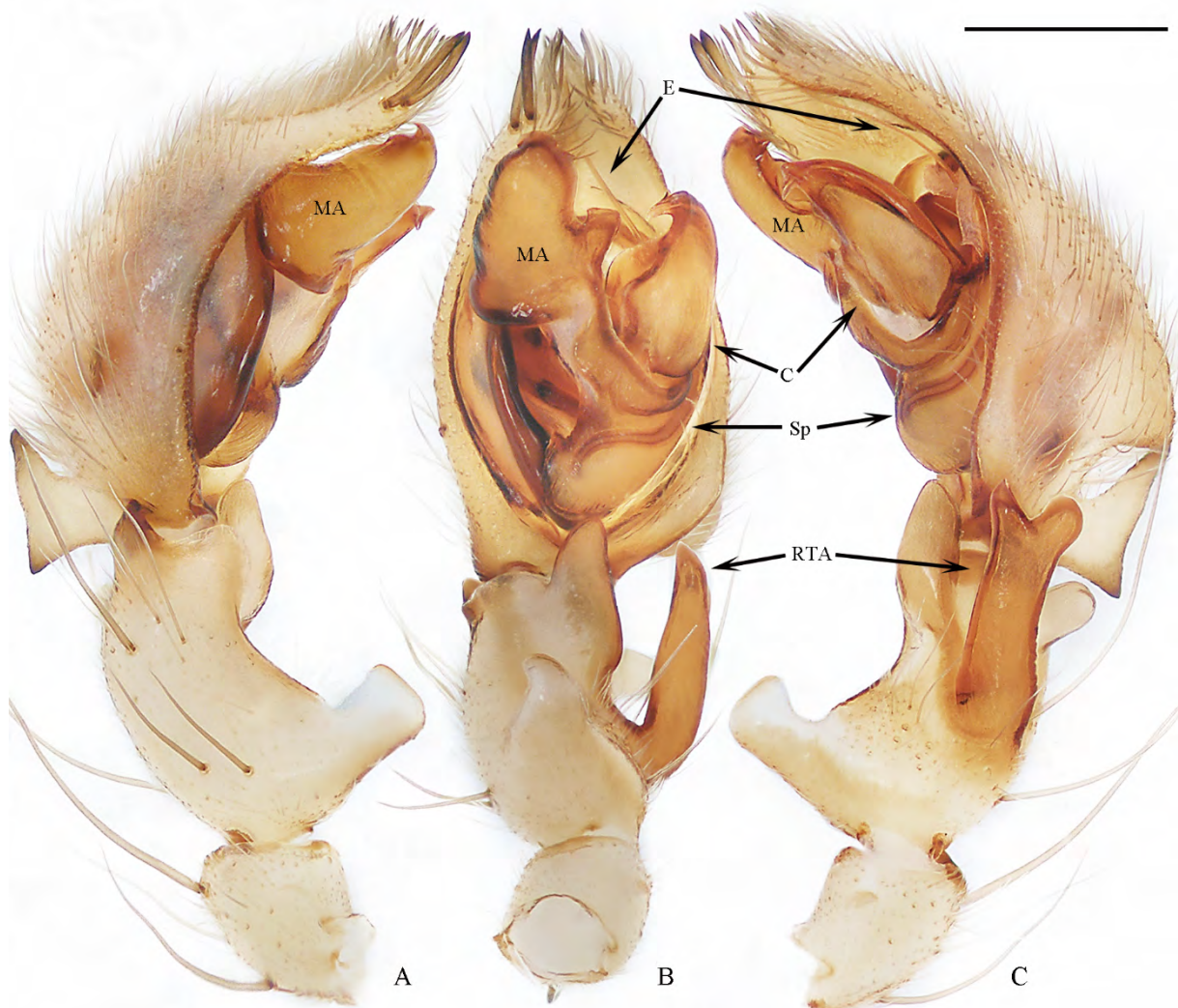


Figure 9. *Anyphaena treecko* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.5 mm.

Epigyne (Figs 10A–B) longer than wide, triangular; COs inconspicuous; CDs almost straight. AG distinct, at middle of CDs. S inconspicuous, oval.

Material examined. Holotype ♂, China: Hainan, Changjiang County, Bawangling, Dongsizhan (19.0495°N, 109.1157°E), 23 April 2009, leg. Guo Tang (IZCAS-Ar442404). Paratypes. 2 ♀ (IZCAS-Ar42405–Ar42406), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after Treecko, a fictional character from Pokémon Emerald that lives in the forest, as does this new species; noun (name) in apposition.

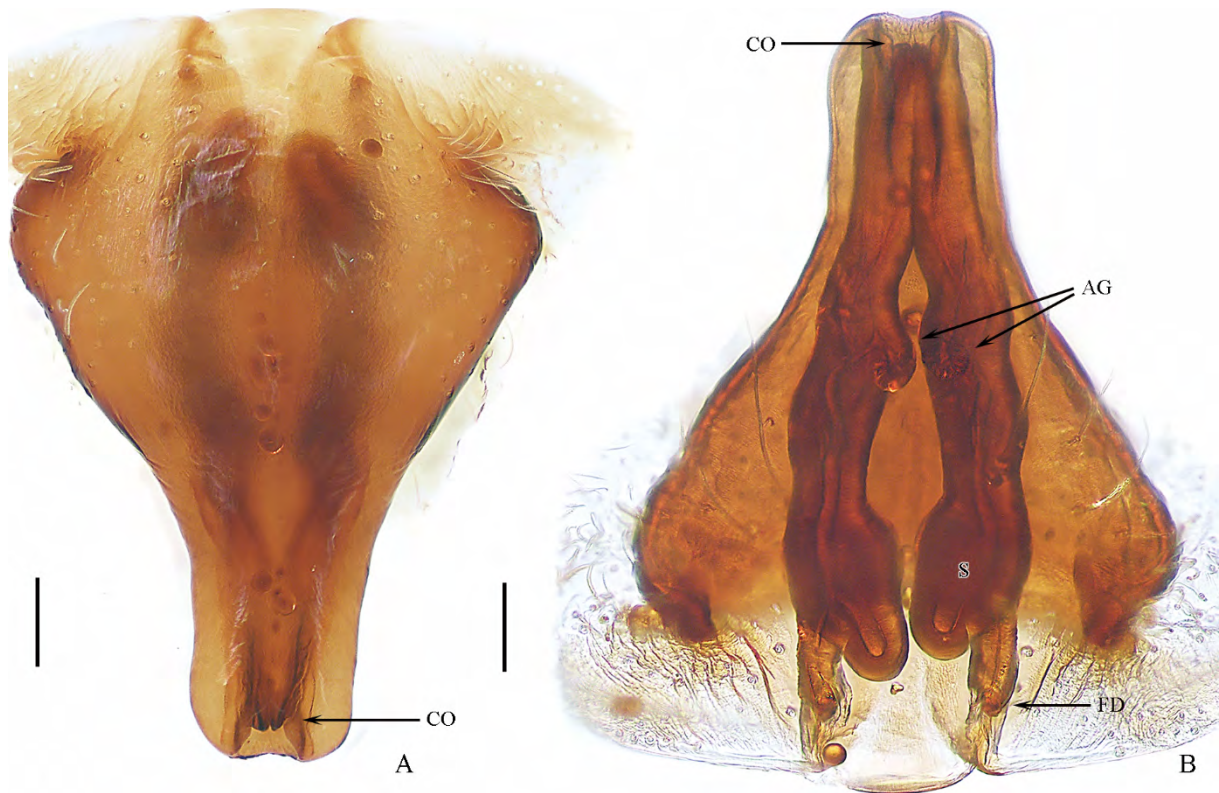


Figure 10. *Anyphaena treecko* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

Genus *Sinophaena* Lin & Li, **gen. nov.**

Type species: *Sinophaena xiweni* Lin & Li, **sp. nov.**

Diagnosis. *Sinophaena* Lin & Li, **gen. nov.** can be easily distinguished from *Macrophyes* O. Pickard-Cambridge, 1893 by the following characters: habitus with black pattern (*vs.* concolorous in *Macrophyes*), the anterior part of the epigynum with a pair of tongue-shaped membranes (*vs.* membranes absent in *Macrophyes*), CDs straight in *Sinophaena* Lin & Li, **gen. nov.** (*vs.* curved in *Macrophyes*).

Description. Medium-sized. Body length 6.60–7.62. Carapace oval, covered with white setae and black pattern. PLE largest, AME smallest, AER recurved, PER procurved. Fovea distinct. Body and legs covered by white setae. Epigyne simple, with a pair of membrane. COs hidden under the membrane, inconspicuous. CDs straight. One pair of S large, oval. FDs posteriorly directed.

Etymology. The new generic name is a combination of “*Sino*” (meaning China) and “*Anyphaena*”. The gender is feminine.

Species included. *Sinophaena xiweni* Lin & Li, **sp. nov.** and *Sinophaena bivalva* (Zhang & Song, 2004) **comb. nov.**

Sinophaena xiweni Lin & Li, **sp. nov.** (Figs 11A–B, 14K–L)

Diagnosis. *S. xiweni* Lin & Li, **sp. nov.** can be distinguished from *S. bivalva* (Zhang & Song, 2004) **comb. nov.** by the

length ratio of the membrane to the diameter of the S, which is 2:1 (*vs.* 1:1 in *S. bivalva*) and by the length ratio of the S to the length of CDs, which is 1:1.3 (*vs.* 1:1 in *S. bivalva*).

Description. Female (holotype, IZCAS-Ar42407, Figs 11A–B, 14L). Total length 7.62. Colour in alcohol: carapace, sternum, chelicerae, labium, endites, palps, and legs white with black pattern. Carapace 2.72 long, 1.96 wide. Opisthosoma 4.78 long, 1.62 wide. Fovea longitudinal. Eye sizes and interdistances: AME 0.08, ALE 0.15, PME 0.13, PLE 0.19, AME–AME 0.05, PME–PME 0.16, AME–PME 0.17, AME–ALE 0.05, PME–PLE 0.13, ALE–PLE 0.09. AER almost straight. Leg measurements: Leg I 14.21 (3.84+5.20+3.64+1.53), leg II 13.91 (3.72+5.10+3.64+1.45), leg III 6.90 (1.88+2.28+1.78+0.96), leg IV 11.70 (3.52+3.64+3.52+1.02). Leg formula 1243. Abdomen oval, spinnerets short and unsegmented.

Epigyne (Figs 11A–B) longer than wide, with a pair of tongue-shaped membranes. COs inconspicuous; CDs almost straight. AG distinct, at the middle of CDs. S large, oval.

Male. Unknown.

Material examined. Holotype ♀, China: Sichuan, Meishan, Hongya County, Xianwan Village, 24 March 2020, leg. Xiwen Chen (IZCAS-Ar42407).

Distribution. Known only from the type locality.

Etymology. The species is named after Mr. Xiwen Chen, the collector of the holotype; noun (name) in genitive case.

***Sinophaena bivalva* (Zhang & Song, 2004) comb. nov.**

Anyphaena bivalva Zhang & Song, 2004: 11, fig. 1A–C.

Material examined. None.

Diagnosis. See diagnosis of the species *Sinophaena xiweni* Lin & Li, **sp. nov.**

Description. See Zhang & Song (2004).

Distribution. China (Guangxi).

Comments. The straight CDs and the membrane covering the COs indicate that this species belongs to *Sinophaena* Lin & Li, **gen. nov.** Thus, we move *Anyphaena bivalva* Zhang & Song, 2004 to *Sinophaena* Lin & Li, **gen. nov.** as *S. bivalva* (Zhang & Song, 2004) **comb. nov.**

3.2 Family Cybaeidae Banks, 1892

Genus *Cybaeus* L. Koch, 1868

Type species: *Cybaeus tetricus* (C.L. Koch, 1839).

***Cybaeus fushun* Lin & Li, sp. nov.** (Figs 15A–B, 17A–B)

Diagnosis. *Cybaeus fushun* Lin & Li, **sp. nov.** can be distinguished from *C. huadian* Lin & Li, **sp. nov.** and *C. songniensis* Seo, 2016 by the inconspicuous COs and the same shape of the S but can be distinguished by the spiraled CDs (*vs.* no spirals in *C. huadian* Lin & Li, **sp. nov.** and *C. songniensis*), S narrowed (*vs.* elongate in *C. huadian* Lin & Li, **sp. nov.** and *C. songniensis*).

Description. Female (holotype, IZCAS-Ar42408, Figs 15A–B, 17A–B). Total length 10.44. Color in alcohol: carapace, sternum, chelicerae, labium, endites, palp, and legs white with black pattern. Carapace 4.21 long, 3.50 wide. Opisthosoma 6.08 long, 4.26 wide. Fovea longitudinal. Eye sizes and interdistances: AME 0.18, ALE 0.13, PME 0.23, PLE 0.19, AME–AME 0.13, PME–PME 0.14, AME–PME 0.14, AME–ALE 0.13, PME–PLE 0.13, ALE–PLE 0.13. AER almost straight. Leg measurements: Leg I 14.00 (4.05+5.05+3.10+1.80), leg II 13.10 (3.60+4.75+3.00+1.75), leg III 11.33 (3.50+3.03+3.30+1.50), leg IV 14.95 (4.00+4.90+4.15+1.90). Leg formula 4123. Abdomen oval, spinnerets short and unsegmented.

Epigyne (Figs 15A–B) wider than long. COs inconspicuous; CDs extend basally, middle of CDs with a spiral. AG distinct, at the middle of CDs. S large, oval.

Male. Unknown.

Material examined. Holotype ♀, China: Liaoning, Fushun, Qingyuan County, Dahulinchang, (42.5878°N, 124.9367°E; elev. ca. 350m), 8 September 2019, leg. Yejie Lin & Pengyu Jin (IZCAS-Ar42408). Paratypes. 1 ♀ (IZCAS-Ar42409), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species name is a noun in apposition, derived from the type locality.

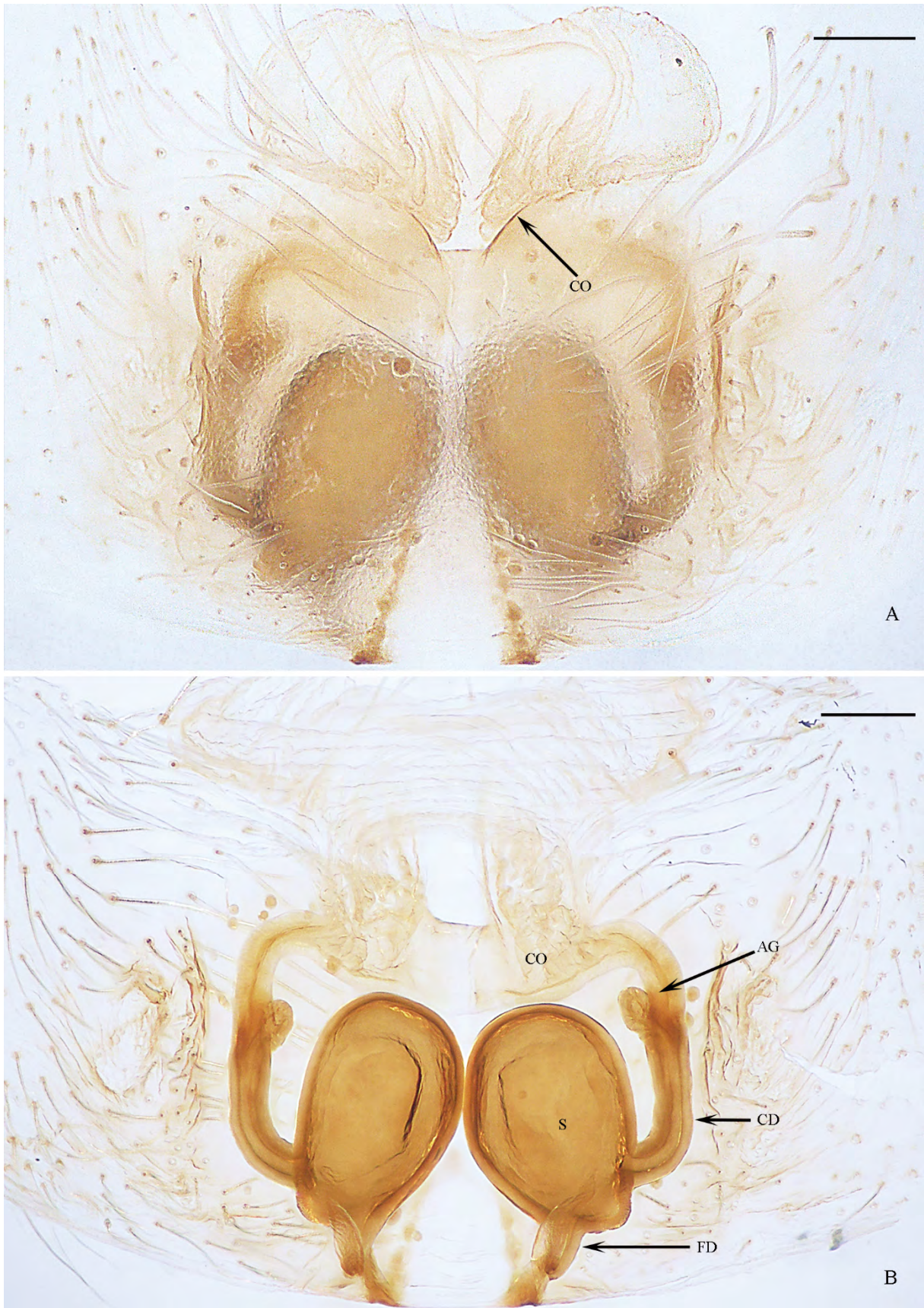


Figure 11. *Sinophaena xiweni* Lin & Li, **sp. nov.**, holotype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

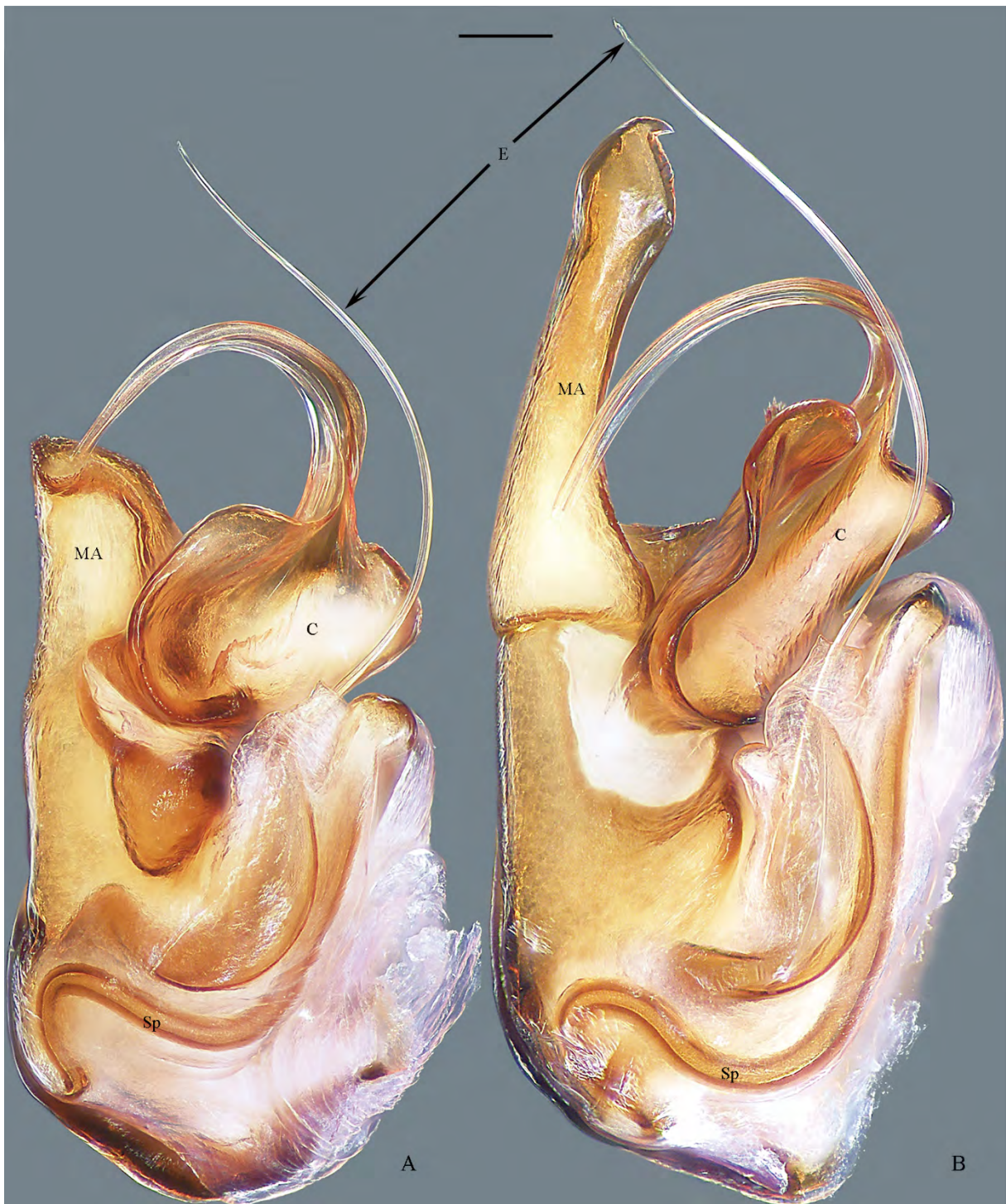


Figure 12. *Anyphaena* spp., paratype male, left bulb, ventral view. A. *A. grovyle* Lin & Li, **sp. nov.**; B. *A. sceptile* Lin & Li, **sp. nov.** Scale bar=0.1 mm.

***Cybaeus huadian* Lin & Li, sp. nov.** (Figs 16A–B, 17C–D)

Diagnosis. See diagnosis of the species *Cybaeus fushun* Lin & Li, **sp. nov.**

Description. Female (holotype, IZCAS-Ar42410, Figs 16A–B, 17C–D). Total length 10.12. Color in alcohol: carapace, sternum, chelicerae, labium, endites, palps, and legs white with black pattern. Carapace 4.24 long, 3.14 wide. Opisthosoma 6.42 long, 4.26 wide. Fovea longitudinal. Eye sizes and interdistances: AME 0.17, ALE 0.15, PME 0.21, PLE 0.20, AME–AME 0.14, PME–PME 0.16, AME–PME 0.15, AME–ALE 0.13, PME–PLE 0.15, ALE–PLE 0.14. Leg measurements: Leg

I 15.70 (4.05+5.85+3.65+1.70), leg II 13.25 (3.50+5.00+3.25+1.50), leg III 12.00 (3.20+4.25+3.15+1.40), leg IV 15.75 (4.00+5.25+4.50+2.00). Leg formula 4123. Abdomen oval, spinnerets short and unsegmented.

Epigyne (Figs 16A–B) wider than long. COs inconspicuous; CDs curved, middle of CDs folded. AG distinct, at middle of CDs. S large, anteriorly elongate.

Male. Unknown.

Material examined. Holotype ♀, China: Jilin, Huadian County, Hongshilizi (42.9913°N, 127.1373°E; elev. ca. 350 m), 6 September 2019, leg. Yejie Lin & Pengyu Jin (IZCAS-Ar42410). Paratypes. 3 ♀ (IZCAS-Ar42411–Ar42413), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species name is a noun in apposition, derived from the type locality.

3.3 Family Eresidae C. L. Koch, 1845

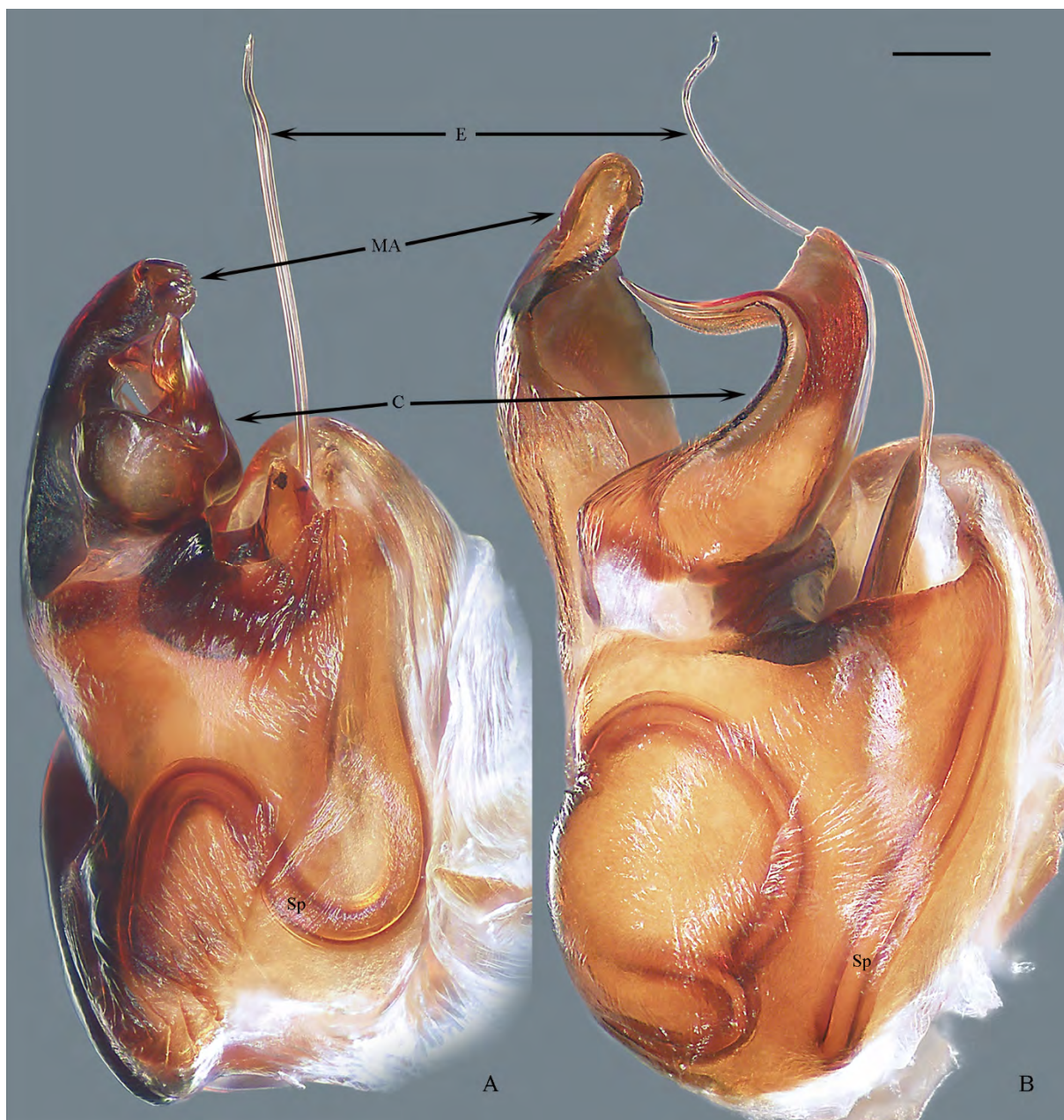


Figure 13. *Anyphaena* spp., paratype male, left bulb, ventral view. A. *A. shenzhen* Lin & Li, **sp. nov.**; B. *A. tibet* Lin & Li, **sp. nov.** Scale bar=0.1 mm.

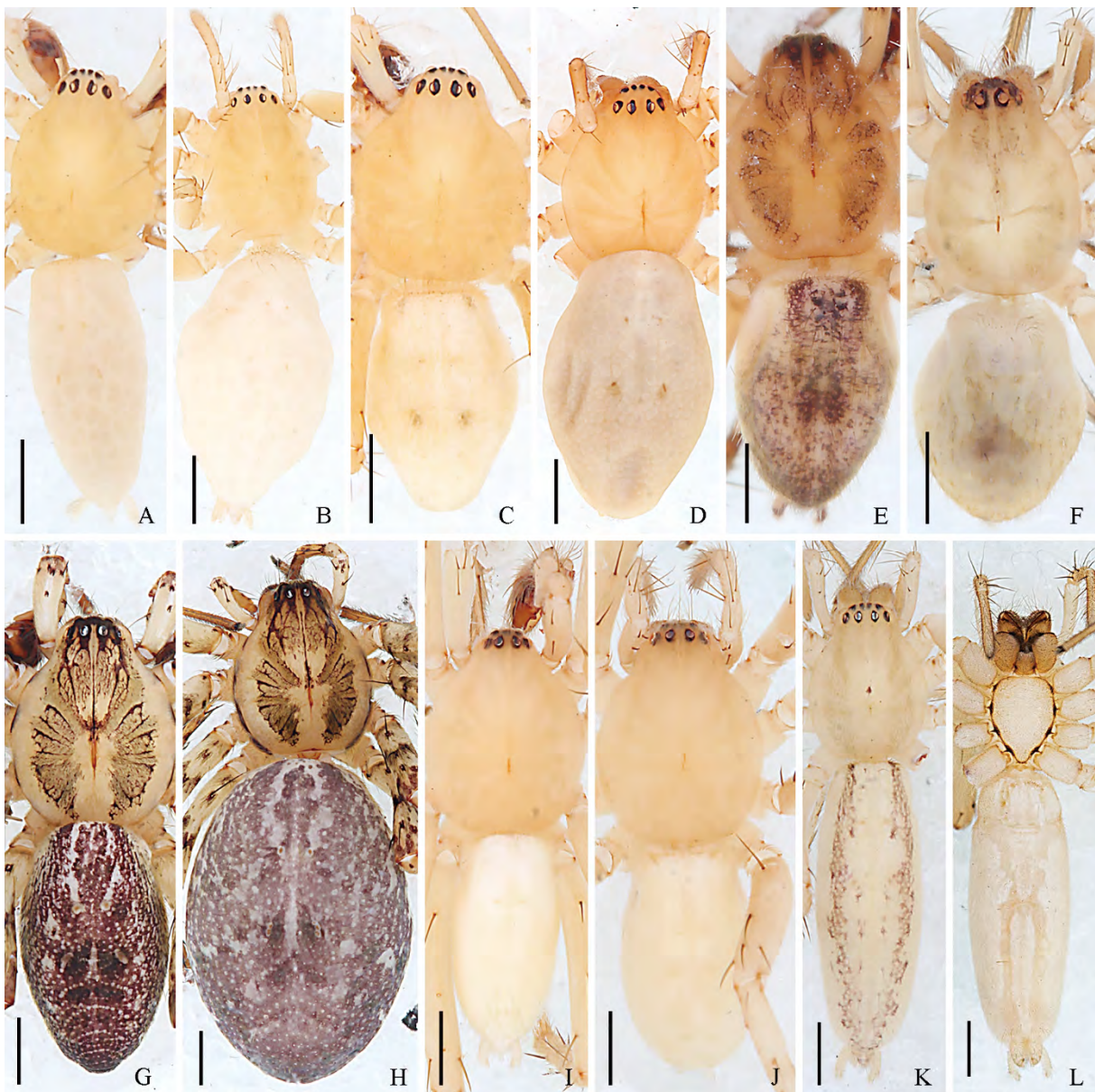


Figure 14. Habitus of six new Anyphaenidae species, male dorsal view (A, C, E, G, I), female dorsal view (B, D, F, H, J, K), and ventral view (L). A–B. *Anyphaena grovyle* Lin & Li, **sp. nov.**; C–D. *A. szeptile* Lin & Li, **sp. nov.**; E–F. *A. shenzhen* Lin & Li, **sp. nov.**; G–H. *A. tibet* Lin & Li, **sp. nov.**; I–J. *A. treecko* Lin & Li, **sp. nov.**; K–L. *Sinophaena xiweni* Lin & Li, **sp. nov.** Scale bars = 0.1 mm.

Genus *Eresus* Walckenaer, 1805

Type species: *Aranea cinnaberina* Olivier, 1789.

Eresus lishizheni Lin, Marusik & Li, **sp. nov.** (Figs 18A–E, 19A–C)

Diagnosis. *Eresus lishizheni* Lin, Marusik & Li, **sp. nov.** is similar to the Iranian species *E. adaleari* Zamani & Szűts, 2020 by having a black carapace covered with short black and white setae that is almost as wide at the pars cephalica as it is at the pars thoracica, and a relatively steep but straight slope of the ocular area (Figs 18A–B; Zamani, Altin & Szűts, 2020, figs 26–27). This species can be distinguished from *E. adaleari* by a uniformly black abdomen (Fig. 18A) (vs. with four brown spots). The palp are similar to those of *E. adaleari* by the shape of the C, the strongly curved terminal tooth, and the conspicuously deep lamellar groove but can be distinguished by the unique shape of the C (Zamani, Altin & Szűts, 2020,

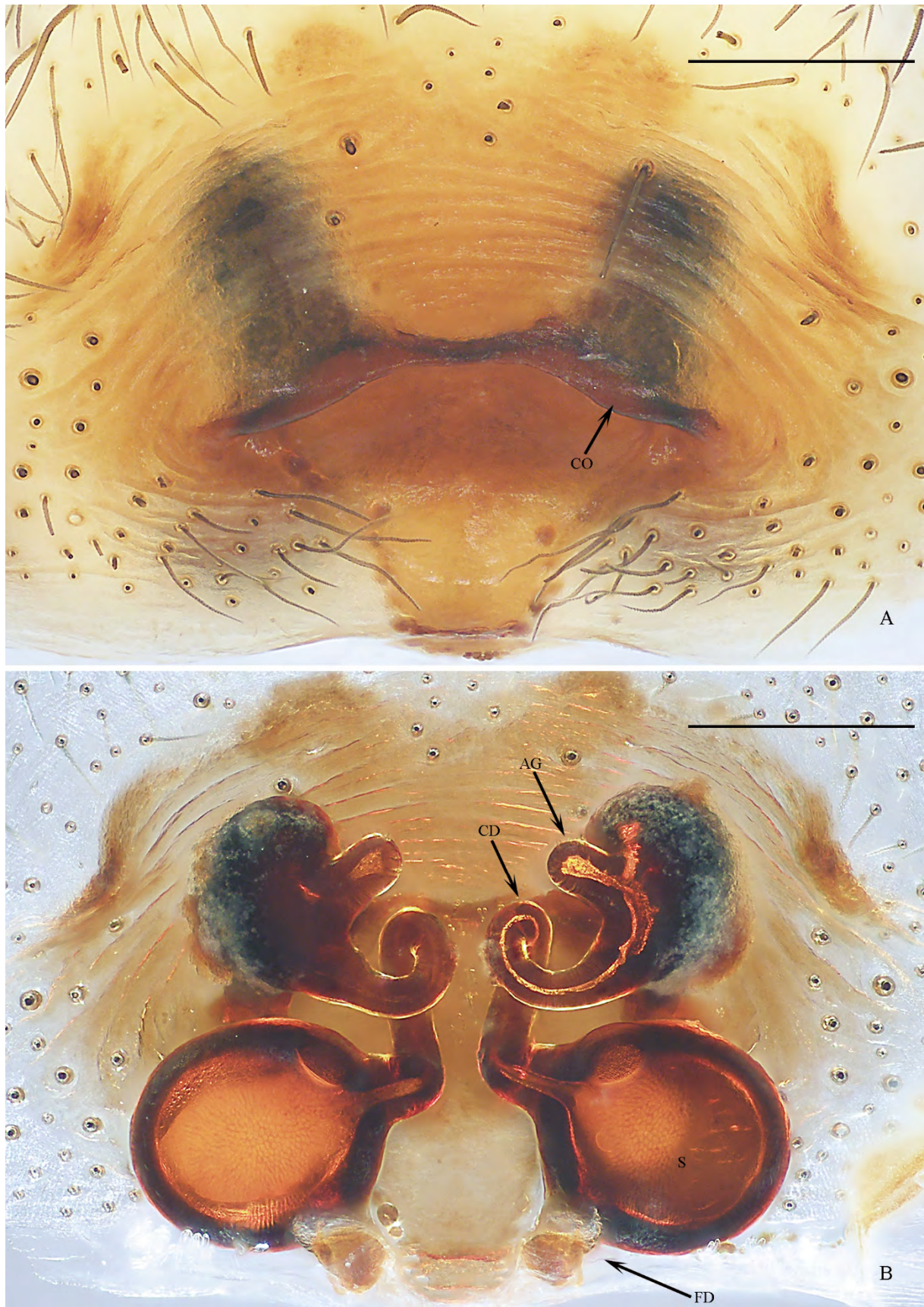


Figure 15. *Cybaeus fushun* Lin & Li, **sp. nov.**, holotype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars=0.3 mm.



Figure 16. *Cybaeus huadian* Lin & Li, **sp. nov.**, Holotype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.2 mm.

figs 3–14), the lamella almost reaching the top of the C (Fig. 18A), and the narrow lamellar groove (*vs.* the lamella reaching the middle of the C, and the wide lamellar groove).

Description. Male (Holotype, IZCAS-Ar42414, Figs 18A–E, 19A–C). Habitus as in Figs 19A–C. Total length: 8.91, carapace 4.94 long, 3.72 wide, 2.60 high. Opisthosoma 5.00 long, 3.84 wide. Carapace nearly equally wide at pars cephalica (3.92) and pars thoracica (3.72). Carapace red-brown with white setae; pars cephalica elevated. Eye sizes and interdistances: AME 0.20, ALE 0.13, PME 0.13, PLE 0.14, AME–AME 0.20, AME–ALE 1.13, PME–PME 0.20, PME–PLE 2.02, AME–PME 0.11, ALE–PLE 1.88. Pars cephalica with a pointed posterior margin dorsally, almost as long as wide (1.72 long, 2.00 wide). Chelicerae covered with white and black setae. Legs with a white ring of setae at joints. Patella, tibia, and metatarsus III–IV with inconspicuous white stripes of setae. Legs with ventral macrosetae on tarsus, metatarsus, and tibia I–IV. Leg measurements: Leg I 9.49 (2.88+3.13+2.04+9.49); leg II 7.50 (2.14+2.63+1.58+1.15); leg III 5.95 (1.78+1.96+1.24+0.97); leg IV 9.08 (2.63+3.40+1.90+1.15). Abdomen dark brown, covered with white setae, without any pattern, sigilla inconspicuous.

Palp (Figs 18A–E). T round. C length is greater than width, with slight “shoulder”, and curved terminal tooth; the length of terminal tooth almost equal to the length of the lamella; groove deep and narrow; lamella triangular.

Female. Unknown.

Material examined. Holotype ♂, China: Xinjiang Uygur Autonomous Region, Ili Kazak Autonomous Prefecture, Yining, Huocheng County (44.0695°N, 80.8774°E), 4 April 2019, leg. Zitan Zhao (IZCAS-Ar42414). Paratype. 1♂ (IZCAS-Ar42415), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after Mr. Li Shizhen (1518–1593) who described the first spider species in 1578 in a highly influential materia medica, the Ben Cao Gang Mu (*Compendium of Materia Medica*), and it is a noun (name) in genitive case.

3.4 Family Hahniidae Bertkau, 1878

Genus *Alistra* Thorell, 1894

Type species: *Alistra longicauda* Thorell, 1894.

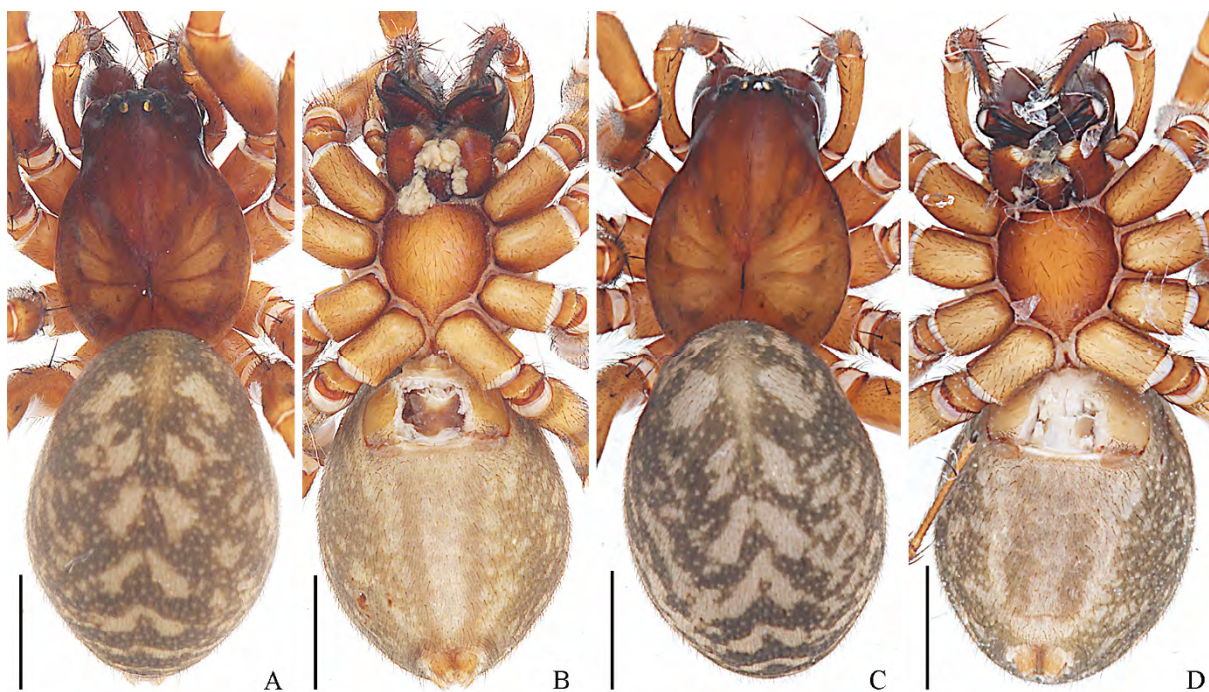


Figure 17. *Cybaeus fushun* Lin & Li, **sp. nov.** (A–B) and *C. huadian* Lin & Li, **sp. nov.** (C–D), female, habitus. A, C. Dorsal view; B, D. Ventral view. Scale bars=2.0mm.

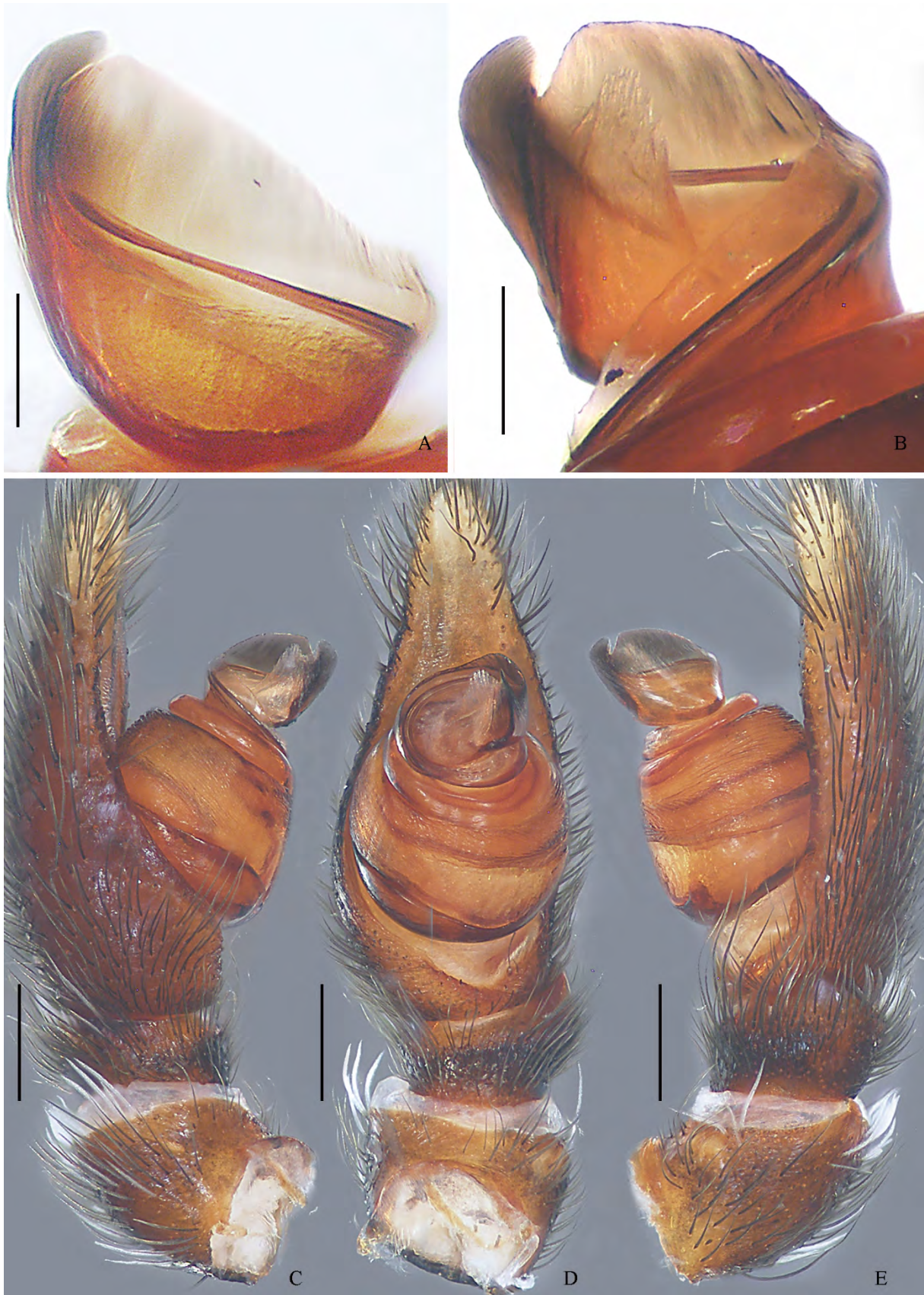


Figure 18. *Eresus lishizheni* Lin, Marusik & Li, **sp. nov.**, holotype male, palp. A. Conductor, right palp, retrolateral view; B. Conductor, left palp, prolateral view; C. Palp, left palp, prolateral view; D. Palp, left, palp, ventral view; E. Palp, left palp, retrolateral view. Scale bars: A–B=0.1 mm; C–E=0.3 mm.

***Alistra pikachu* Lin & Li, sp. nov.** (Figs 20A–C, 21A–B)

Diagnosis. Males of *A. pikachu* Lin & Li, **sp. nov.** are similar to those of *A. hippocampa* Zhang, Li & Zheng, 2011 in having a slender embolus, short cymbial furrow, and an absence of the MA and C, but there are no patellar apophyses in *A. pikachu* Lin & Li, **sp. nov.** (*vs.* present in *A. hippocampa*), and the RTA is long and thin (*vs.* short RTA in *A. hippocampa*). Females of the new species are distinguished from other *Alistra* species by the folded CDs and oval S.

Description. Male (holotype, IZCAS-Ar42416, Figs 20A–C). Total length 1.55. Prosoma 0.71 long, 0.63 wide; opisthosoma 0.92 long, 0.63 wide. Eye sizes and interdistances: AME 0.04, ALE 0.05, PME 0.03, PLE 0.04; AME–AME 0.03, AME–ALE 0.01, PME–PME 0.07, PME–PLE 0.05, ALE–PLE 0.01. Clypeus height 0.08. Leg measurements: Leg I 2.41 (0.71+0.81+0.48+0.41); leg II 2.34 (0.69+0.78+0.47+0.40); leg III 1.095 (0.55+0.64+0.40+0.34); leg IV 2.42 (0.67+0.78+0.54+0.41). Leg formula 4123.

Palp (Figs 20A–C), patella without an apophysis. Palpal tibia longer than patella, RTA sickle shaped. E originating prolatero-basally, curving clockwise along the tegular margin, semicircular. C and MA absent. Cymbium with short and deep furrow, the length is one quarter of the cymbial length.

Female (paratype, IZCAS-Ar42417, Figs 21A–B). Total length 1.84. Prosoma 0.71 long, 0.72 wide; opisthosoma 1.12 long, 0.79 wide. Eye sizes and interdistances: AME 0.04, ALE 0.04, PME 0.06, PLE 0.07; AME–AME 0.05, AME–ALE 0.02, PME–PME 0.09, PME–PLE 0.06, ALE–PLE 0.02. Clypeus height 0.09. Leg measurements: Leg I 2.84 (0.70+0.74+0.45+0.39); leg II 2.26 (0.69+0.74+0.43+0.40); leg III 2.08 (0.62+0.66+0.43+0.37); leg IV 2.61 (0.74+0.87+0.57+0.41). Leg formula 4123. Opisthosoma yellow-brown.

Epigyne (Figs 21A–B) small and simple. CDs folded. S oval.

Material examined. Holotype ♂, China: Guangdong, Qingyuan, Yangshan County, Gaofengdaoban, Jile Cave (24.4912°N, 112.6956°E; elev. ca. 280 m), 5 January 2019, leg. Zhigang Chen and Zhe Zhao (IZCAS-Ar42416). Paratypes. 3♂3♀ (IZCAS-Ar42417–Ar42422), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after Pikachu, a fictional character from Pokémon Yellow, as the habitus color of this new species is yellow; noun (name) in apposition.

Variation. Male (holotype and paratypes; $n=4$) total length 1.45–1.62. Female (paratypes; $n=3$) total length 1.63–1.84.

3.5 Family Nemesiidae Simon, 1889**Genus *Sinopesa* Raven & Schwendinger, 1995**

Figure 19. *Eresus lishizheni* Lin, Marusik & Li, **sp. nov.**, holotype male, habitus. A. Dorsal view; B. Ventral view; C. Lateral view. Scale bars: A–B=2.0 mm; C=1.0 mm.

Type species: *Sinopesa maculata* Raven & Schwendinger, 1995.

Sinopesa gollum Lin & Li, **sp. nov.** (Figs 22A–C, 23A–B)

Diagnosis. Male of *S. gollum* Lin & Li, **sp. nov.** is similar to *Raveniola montana* Zonstein & Marusik, 2012 (the genus is allied to *Sinopesa*, distinguished only by the longer legs and developed scopulae) in having a similarly shaped E but can be distinguished by the terminus, which is directed opposite of the tarsus (vs. directed toward the tarsus in *R. montana*), and *S. gollum* Lin & Li, **sp. nov.** has six eyes (vs. eight eyes in *R. montana*).

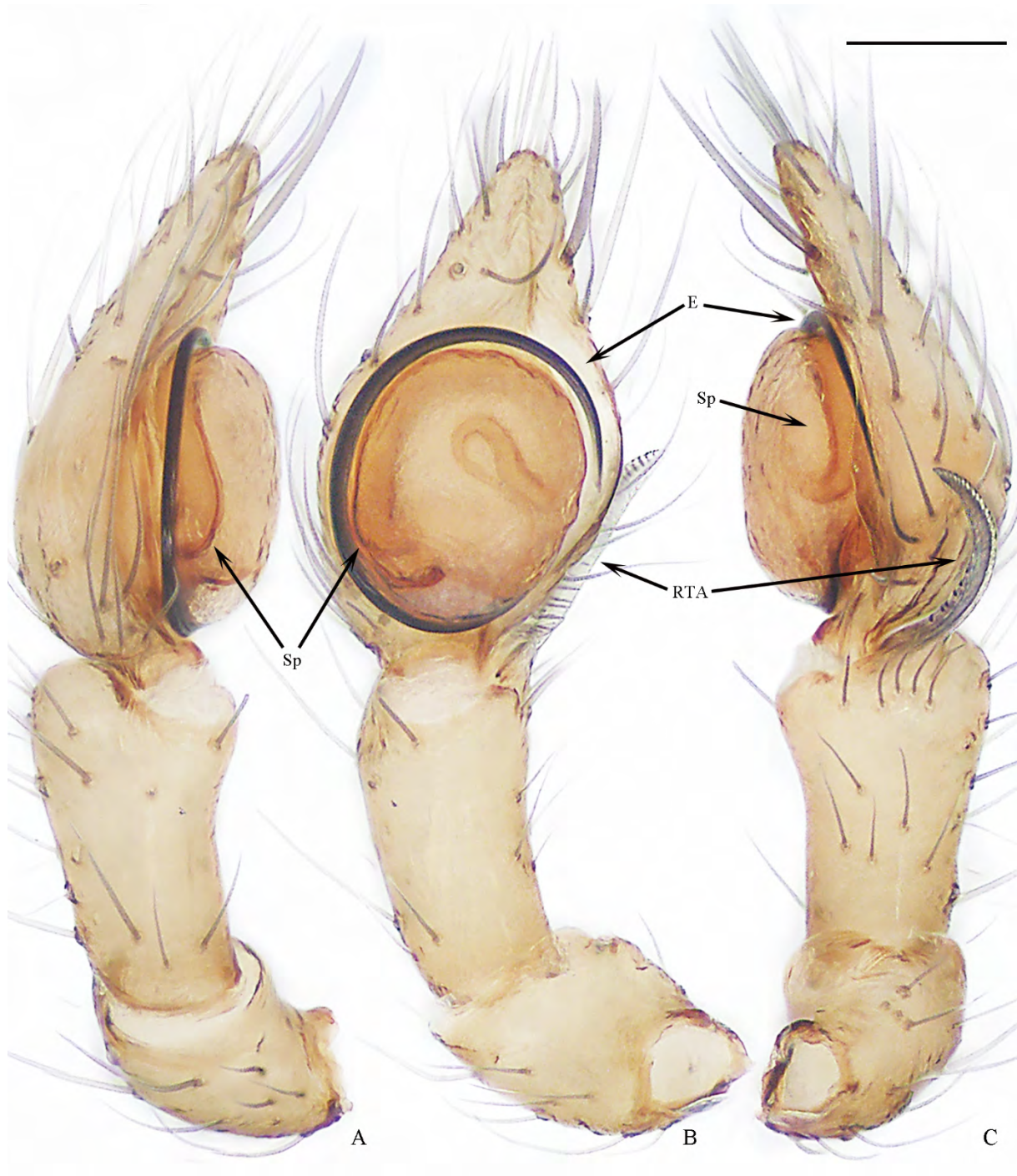


Figure 20. *Alistra pikachu* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar = 0.1 mm.

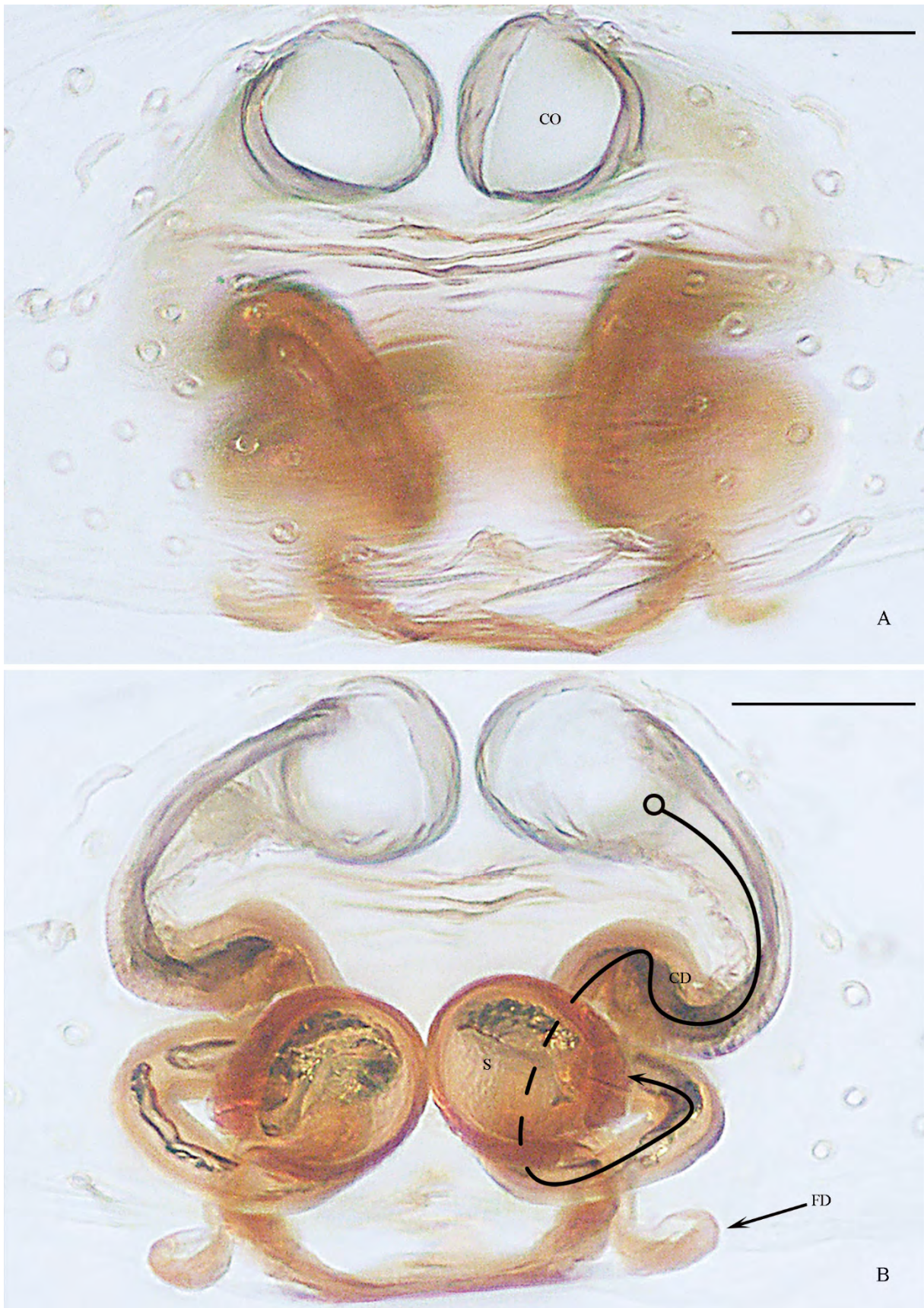


Figure 21. *Alistra pikachu* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars=0.05 mm.

Description. Male (holotype, IZCAS-Ar42423, Figs 22A–C, 23A–B). Total length 6.44. Color in alcohol: carapace, sternum, chelicerae, labium, endites, palps, and legs white. Carapace 5.21 long, 4.02 wide. Opisthosoma 5.78 long, 3.86 wide. Fovea longitudinal. Eye sizes and interdistances: AME 0.14, ALE 0.13, PLE 0.16, AME–AME 0.10, AME–ALE 0.22, ALE–PLE 0.19. Leg measurements: Leg I 11.20 (3.70 + 5.10 + 2.14 + 1.76), leg II 13.00 (3.04 + 4.45 + 1.80 + 1.86), leg III



Figure 22. *Sinopesa gollum* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.5 mm.

11.00 (2.64+3.74+2.34+1.60), leg IV 13.99 (3.75+4.75+3.95+1.75). Leg formula 4213. Abdomen oval, two spinnerets, short.

Palp (Figs 22A–C), tip of cymbium with 2 strong spines. Bulb smooth, pyriform, with a short, slender E, ratio of bulb length to E 1:1.

Female. Unknown.

Material examined. Holotype ♂, China: Guangdong, Qingyuan, Yangshan County, Shuitoucun, Chaiyan (24.4805°N, 112.7046°E; elev. ca. 340 m), 5 January 2019, leg. Zhigang Chen & Zhe Zhao (IZCAS-Ar42423).

Distribution. Known only from the type locality.

Etymology. The species is named after Gollum, a fictional character from *The Lord of the Rings* who lived in a cave, as does this new species; noun (name) in apposition.



Figure 23. *Sinopesa gollum* Lin & Li, **sp. nov.**, holotype male, habitus. A. Dorsal view; B. Ventral view. Scale bars=2.0 mm.

3.6 Family Pholcidae C. L. Koch, 1850

Genus *Belisana* Thorell, 1898

Type species: *Belisana tauricornis* Thorell, 1898.

Belisana yuexiu Yao & Li, 2020 (Figs 24A–D)

Belisana yuexiu Yao & Li in Zhu, Yao, Zheng & Li, 2020: 190, figs 11, 12, 13K, L.

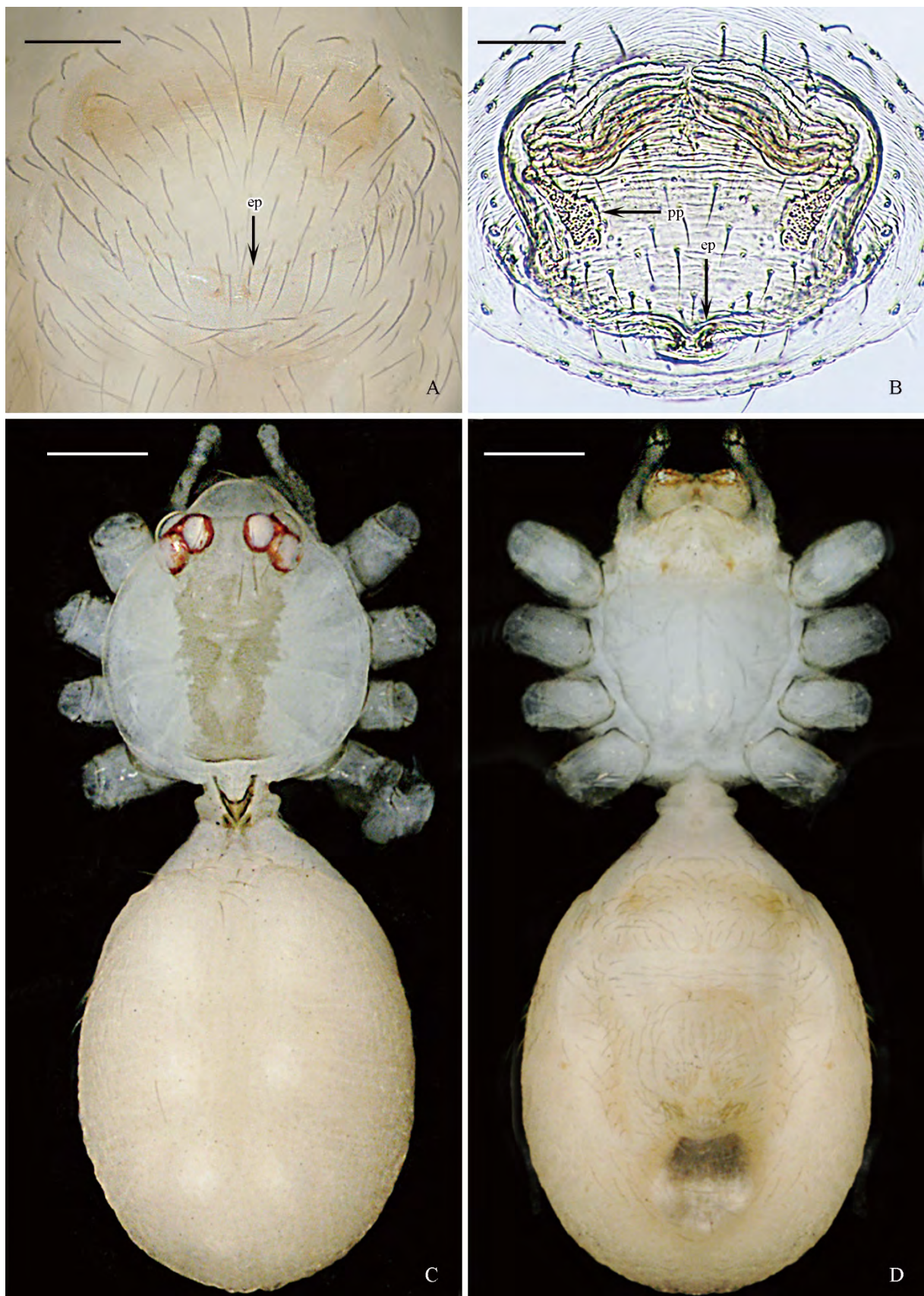


Figure 24. *Belisana yuexiu* Yao & Li, 2020, female. A. External female genitalia, ventral view; B. Vulva, dorsal view; C. Habitus, dorsal view; D. Habitus, ventral view. Scale bars=0.2 mm.

Diagnosis. The females resemble *B. davao* Huber, 2005 (see Huber, 2005: 74, figs 27–28, 449–462) by the similar external female genitalia (Fig. 24A), frontal ep located posteriorly on sclerotized plate (arrow ep in Figs 24A–B) and vulval anterior arch, but the species can be distinguished by the presence of nearly triangular pp (arrow pp in Fig. 24B, wave shaped in *B. davao*).

Description. Female (IZCAS-Ar42424, Figs 24A–D). Habitus as in Figs 24C–D. Total length 1.50 (1.63 with clypeus), carapace 0.65 long, 0.63 wide, opisthosoma 0.98 long, 0.78 wide. Tibia I 2.30; tibia I L/d 33. Distance PME–PME 0.22, diameter PME 0.06, distance PME–ALE 0.07, AME absent. Sternum approximately as wide as long (0.39).

External female genitalia (Fig. 24A) simple and flat, with pair of pockets 0.05 apart (arrow ep in Figs 24A–B). Vulva (Fig. 24B) with slightly curved anterior arch and pair of nearly triangular pp (arrow pp in Fig. 24B).

Male. See Zhu *et al.* (2020).

Material examined. 2♀, China: Guangdong, Guangzhou, Yuexiu District, Yuexiu Park (23.1395°N, 113.2660°E; elev. ca. 20 m), 10 April 2020, leg. Tongyao Jiang (IZCAS-Ar42424–Ar42425).

Biology. The species was found on domed webs attached to the underside of the leaves of a camphor tree.

Distribution. Known only from the type locality.

Variation. Tibia I in another female (IZCAS-Ar42425) 2.10.

3.7 Family Pimoidae Wunderlich, 1986

Genus *Pimoa* Chamberlin & Ivie, 1943

Type species: *Pimoa hespera* (Gertsch & Ivie, 1936).

Pimoa gagna Zhang & Li, *sp. nov.* (Figs 25A–G)

Diagnosis. The species *P. gagna* Zhang & Li, *sp. nov.* resembles *P. indiscreta* Hormiga, 1994 (see Hormiga, 1994: 66, figs 248–255) and *P. nyingchi* Zhang & Li, 2020 (see Zhang *et al.*, 2020: 91, fig. 9) but can be distinguished from *P. indiscreta* by the laterally oriented pair of FDs (*vs.* medially oriented in *P. indiscreta*) and from *P. nyingchi* by the S, which are separated by ca. 1/3 of the width of a S (*vs.* close to each other in *P. nyingchi*), and by the distally blunt DP (*vs.* pointed in *P. nyingchi*).

Description. Female (holotype, IZCAS-Ar42426, Figs 25A–G). Total length 8.64. Carapace 4.16 long, 3.44 wide. Abdomen 4.48 long, 3.96 wide. Eye sizes and interdistances: AME 0.21, ALE 0.20, PME 0.22, PLE 0.22; AME–AME 0.14, AME–ALE 0.24, PME–PME 0.19, PME–PLE 0.29. Leg measurements: Leg I 31.09 (8.72+10.24+8.77+3.36); leg II 26.85 (7.81+8.92+7.52+2.60); leg III 18.16 (5.64+5.84+4.92+1.76); leg IV 23.97 (7.56+7.97+6.32+2.12). Promargin of chelicerae with 3 teeth, retromargin with 3 teeth. Habitus as in Figs 25E–G. Carapace yellowish; thoracic fovea and radial grooves distinct; sternum brownish. Abdomen black with yellowish transverse bands. Legs brownish, with black annulations. Epigyne (Figs 25A–D): triangular; VP broad, length subequal to width; DPs tongue shaped, longer than wide; C distinct; S nearly oval, separated by ca. 1/3 width of a spermatheca; FDs yellowish, laterally oriented.

Male. Unknown.

Material examined. Holotype ♀, India: Himachal Pradesh, Gagna (28.3000°N, 99.1500°E; elev. ca. 2540 m), 29 September 1999, leg. Klaus Weisshart (IZCAS-Ar42426). Paratype. 1♀ (IZCAS-Ar42427), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The specific name is a noun in apposition taken from the type locality.

Pimoa nainital Zhang & Li, *sp. nov.* (Figs 26A–C, 27A–G)

Diagnosis. The male of *P. nainital* Zhang & Li, *sp. nov.* resembles *P. mainling* Zhang & Li, 2020 (see Zhang *et al.*, 2020: 89, fig. 6) and *P. thaleri* Trotta, 2009 (see Trotta, 2009: 1404, figs 1–2) but can be distinguished from *P. mainling* by the narrower cymbium (*vs.* significantly wide in *P. mainling*), and from *P. thaleri* by the small PCS (*vs.* large in *P. thaleri*) and by having the PEP longer than the embolus (*vs.* subequal to embolus in *P. thaleri*). The females of *P. nainital* Zhang & Li, *sp. nov.* resemble *P. crispa* (Fage, 1946) (see Hormiga, 1994: 63, figs 239–247) and *P. sinuosa* Hormiga, 1994 (see Hormiga, 1994: 67, figs 266–284) but can be distinguished by the S touching each other (*vs.* separated by a short distance in *P. crispa* and separated by ca. 1/3 width in *P. sinuosa*).

Description. Male (holotype, IZCAS-Ar42428, Figs 26A–C, 27E). Total length 5.37. Carapace 2.28 long, 2.06 wide. Abdomen 3.09 long, 2.03 wide. Eye sizes and interdistances: AME 0.17, ALE 0.16, PME 0.17, PLE 0.17; AME–AME 0.21, AME–ALE 0.13, PME–PME 0.14, PME–PLE 0.18. Leg measurements: Leg I 23.32 (6.22+7.72+6.66+2.72); leg II 18.78

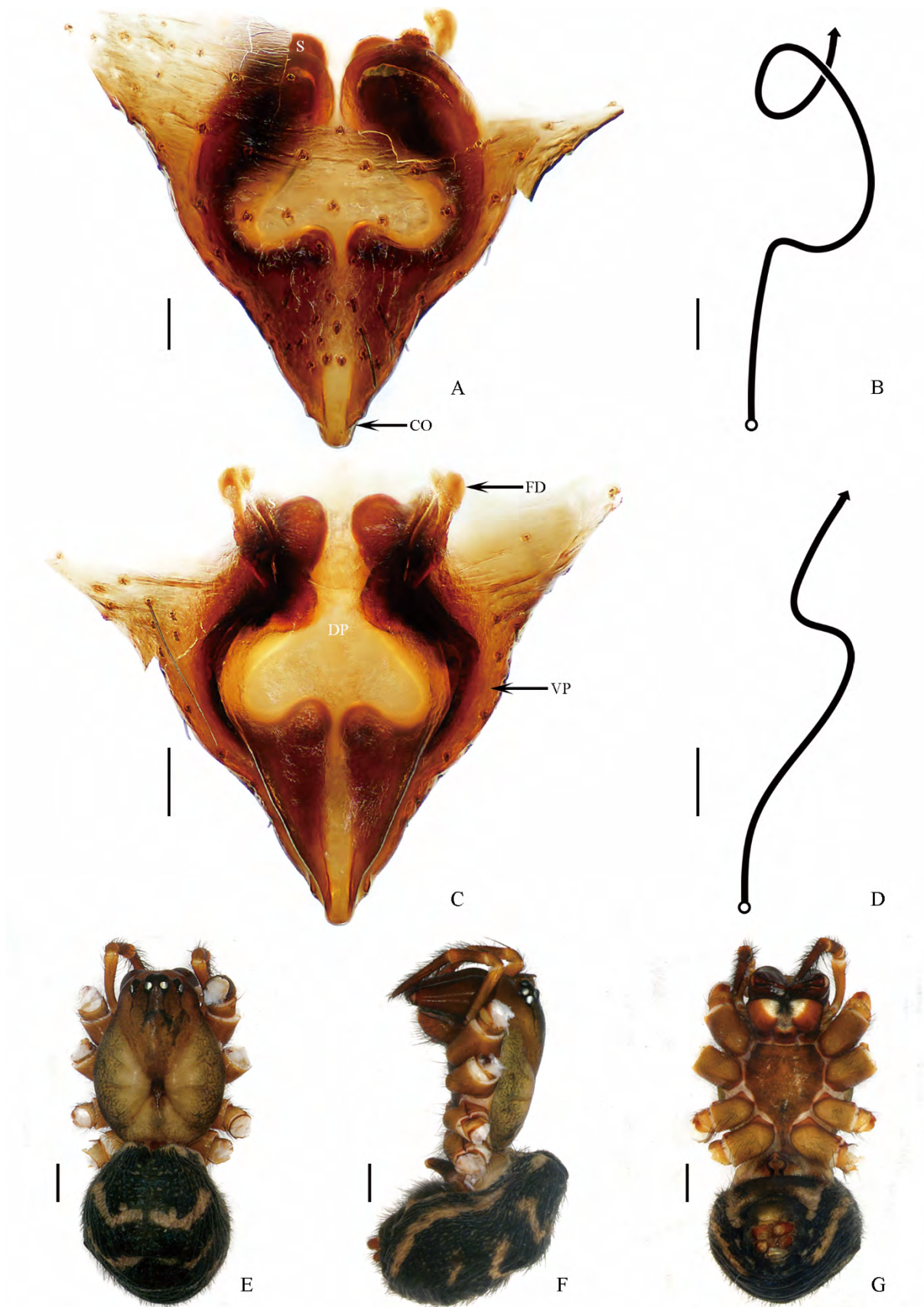


Figure 25. Epigyne and habitus of *Pimoa gagna* Zhang & Li, **sp. nov.**, female holotype. A. Epigyne, ventral view; B. Schematic course of internal duct system, ventral view; C. Vulva, dorsal view; D. Schematic course of internal duct system, dorsal view; E. Female habitus, dorsal view; F. Female habitus, lateral view; G. Female habitus, ventral view. Scale bars: A–D=0.1 mm; E–G=1.0 mm.

(5.13+6.22+5.49+1.94); leg III 11.76 (3.09+3.82+3.41+1.44); leg IV 16.47 (4.56+5.46+4.69+1.76). Promargin of chelicerae with 3 teeth, retromargin with 3 teeth. Habitus as in Fig. 27E. Carapace brownish with greyish lateral margins; thoracic fovea and radial grooves distinct; sternum yellow. Abdomen black, with yellow transverse chevrons, nearly oval. Legs reddish, with black annulations, especially distinct on legs III and IV.

Palp (Figs 26A–C) patella short, ca. 1/2 of tibial length, with 1 macroseta; tibia short, ca. 2/3 of cymbial length, with several macrosetae and a dorsal process; P short, about 1/3 of cymbial length, hook shaped; PCS L-shaped, ca. 1/3 of cymbial length; CDP short, with more than 7 cuspules; MA slender; C distinct; PEP membranous, distally pointed, longer than E; E beginning at the 6:30 o'clock position; embolic tooth absent.

Female (paratype, IZCAS-Ar42429, Figs 27A–D, F–G). Total length 5.72. Carapace 2.94 long, 2.31 wide. Abdomen 2.78 long, 2.69 wide. Eye sizes and interdistances: AME 0.17, ALE 0.18, PME 0.16, PLE 0.18; AME–AME 0.16, AME–ALE 0.13, PME–PME 0.16, PME–PLE 0.19. Leg measurements: Leg I 20.33 (5.76+6.82+5.28+2.47); leg II 16.94 (4.97+5.62+4.44+1.91); leg III 11.66 (3.47+3.65+3.13+1.41); leg IV 14.87 (4.47+5.15+3.53+1.72). Cheliceral teeth as in male. Habitus as in Figs 27F–G. Carapace yellowish with black lateral margins; thoracic fovea and radial grooves distinct; sternum yellow. Abdomen black with yellowish transverse chevrons. Legs brownish, with black annulations.

Epigyne (Figs 27A–D) subtriangular; VP broad, width ca. 1/2 of length; DP tongue shaped; COs distinct; S nearly oval, touching each other; FDs yellow, laterally oriented.

Material examined. Holotype ♂, India, Uttarakhand, Nainital, Nanda Devi Bird Conservation Reserve (29.4200°N, 79.4500°E; elev. ca. 2290 m), 18 September 1999, leg. Klaus Weisshart (IZCAS-Ar42428). Paratypes. 2 ♀ (IZCAS-Ar42429–Ar42430), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The specific name is a noun in apposition taken from the type locality.

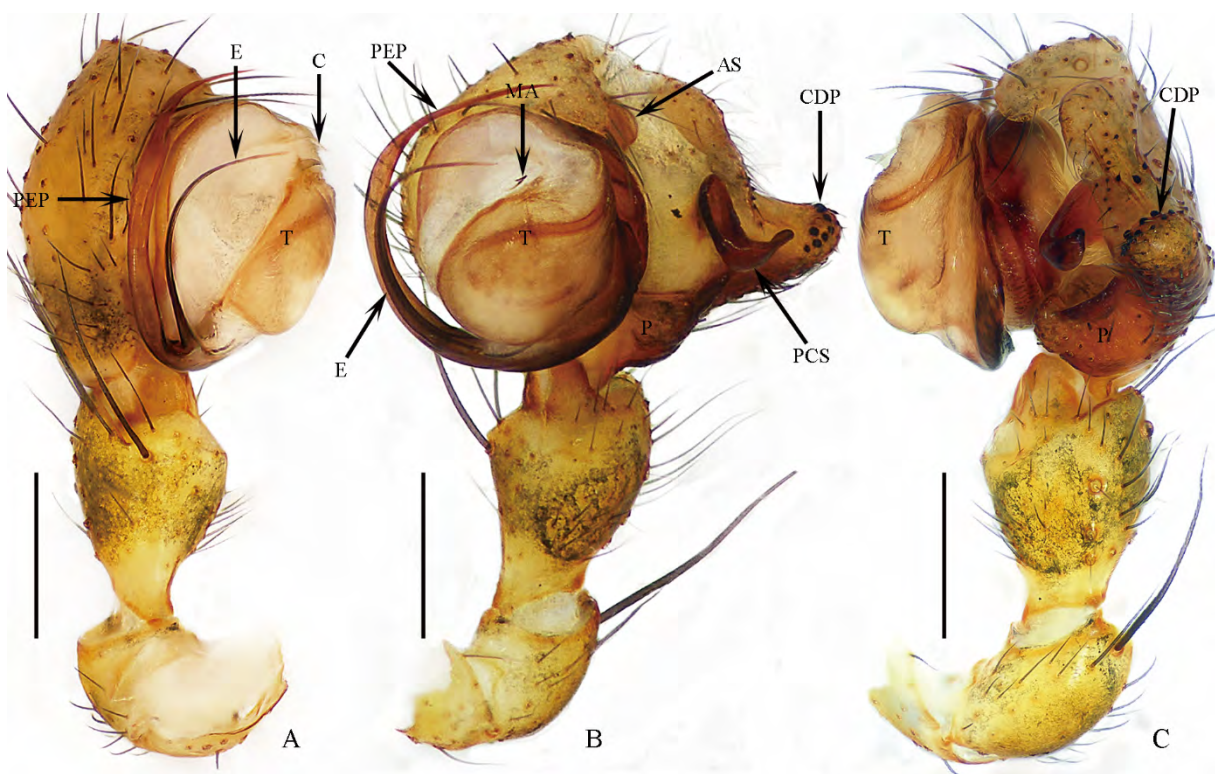


Figure 26. *Pimoa nainital* Zhang & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.3 mm.

Pimoa shoja* Zhang & Li, **sp. nov.* (Figs 28A–C, 29A–G)

Diagnosis. The male of *Pimoa shoja* Zhang & Li, **sp. nov.** resembles *P. mainling* (see Zhang *et al.*, 2020: 89, fig. 6) and *P. samyai* Zhang & Li, 2020 (see Zhang *et al.*, 2020: 97, fig. 12) but can be distinguished from *P. mainling* by the distally pointed PEP (vs. slightly wider distally in *P. mainling*), and from *P. samyai* by the U-shaped PCS (vs. L-shaped in *P. samyai*),

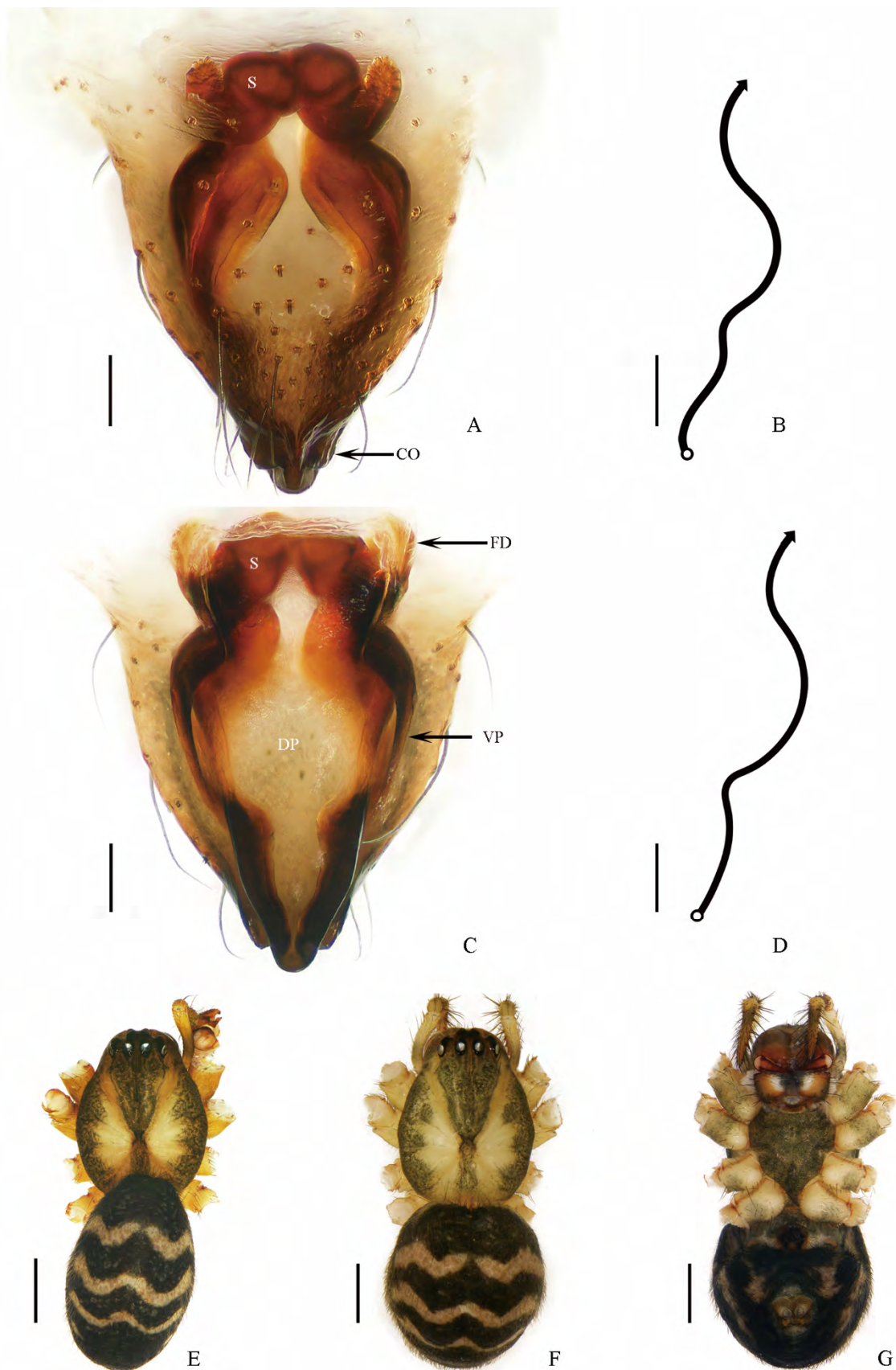


Figure 27. Epigyne and habitus of *Pimoa nainital* Zhang & Li, **sp. nov.**, paratype female and holotype male. A. Epigyne, ventral view; B. Schematic course of internal duct system, ventral view; C. Vulva, dorsal view; D. Schematic course of internal duct system, dorsal view; E. Male habitus, dorsal view; F. Female habitus, dorsal view; G. Female habitus, ventral view. Scale bars: A–D=0.1 mm; E–G =1.0 mm.

and by the broad CDP, with many cuspules (*vs.* CDP short and distally narrow, with few cuspules in *P. samyai*). The female of *P. shoja* Zhang & Li, **sp. nov.** resembles *P. crispa* (see Hormiga, 1994: 63, figs 239–247) and *P. samyai* (see Zhang *et al.*, 2020: 97, fig. 13) but can be distinguished from the nearly round DP of the epigynum (*vs.* DP narrow in *P. crispa* and nearly tongue shaped in *P. samyai*), from *P. crispa* by the nearly round S (*vs.* kidney shaped in *P. crispa*), and by the S separated by a short distance (*vs.* separated by ca. 1/2 width of a spermatheca in *P. samyai*).

Description. Male (holotype, IZCAS-Ar42431, Figs 28A–C, 29E). Total length 7.10. Carapace 2.69 long, 2.56 wide. Abdomen 4.41 long, 2.25 wide. Eye sizes and interdistances: AME 0.06, ALE 0.11, PME 0.11, PLE 0.12; AME–AME 0.08, AME–ALE 0.21, PME–PME 0.13, PME–PLE 0.24. Leg measurements: Leg I 42.93 (11.88+13.80+13.84+3.41); leg II 38.86 (10.36+12.50+12.64+3.36); leg III 25.53 (7.44+7.81+7.96+2.32); leg IV 32.64 (9.28+10.36+10.32+2.68). Promargin of chelicerae with 3 teeth, retromargin with 3 teeth. Habitus as in Fig. 29E. Carapace brownish with greyish lateral margins; thoracic fovea and radial grooves distinct; sternum yellow. Abdomen black, with yellowish transverse chevrons and vertical bands not extending to the distal part. Legs yellowish, without annulations.

Palp (Figs 28A–C): patella short, ca. 1/2 of tibial length, with a macroseta; tibia short, subequal to cymbial length, with several macrosetae and a dorsal process; P short, about 1/3 of cymbial length, hook shaped; PCS U-shaped, ca. 1/3 of cymbial length; CDP broad, with more than 35 cuspules; MA slender; C distinct; PEP subequal to E length; E beginning at the 6:30 o'clock position; embolic tooth absent.

Female (paratype, IZCAS-Ar42432, Figs 29A–D, F–G). Total length 11.17. Carapace 3.61 long, 3.64 wide. Abdomen 7.56 long, 6.08 wide. Eye sizes and interdistances: AME 0.14, ALE 0.19, PME 0.19, PLE 0.18; AME–AME 0.18, AME–ALE 0.30, PME–PME 0.22, PME–PLE 0.28. Leg measurements: Leg I 42.16 (11.64+13.56+13.08+3.88); leg II 37.44 (10.60+11.96+11.40+3.48); leg III 24.93 (7.44+7.81+7.36+2.32); leg IV 31.79 (9.36+10.44+9.35+2.64). Cheliceral teeth as in male. Habitus as in Figs 29F–G. Carapace yellowish with black lateral margins; thoracic fovea and radial grooves distinct; sternum yellow. Abdomen black with yellowish transverse bands. Legs brownish, without annulations. Epigyne (Figs 29A–D): triangular; VP broad, width subequal to length; DP nearly round; COs distinct; S nearly round, separated by a short distance; FDs yellow, laterally oriented.

Material examined. Holotype ♂, India, Himachal Pradesh, Shoja, unnamed cave (31.5300°N, 77.3800°E; elev. ca. 2960m), 1 October 1999, leg. Klaus Weisshart (IZCAS-Ar42431). Paratype. 1 ♀ (IZCAS-Ar42432), India, Himachal Pradesh, Shoja (31.5400°N, 77.3800°E; elev. ca. 3040m), 1 October 1999, leg. Klaus Weisshart.

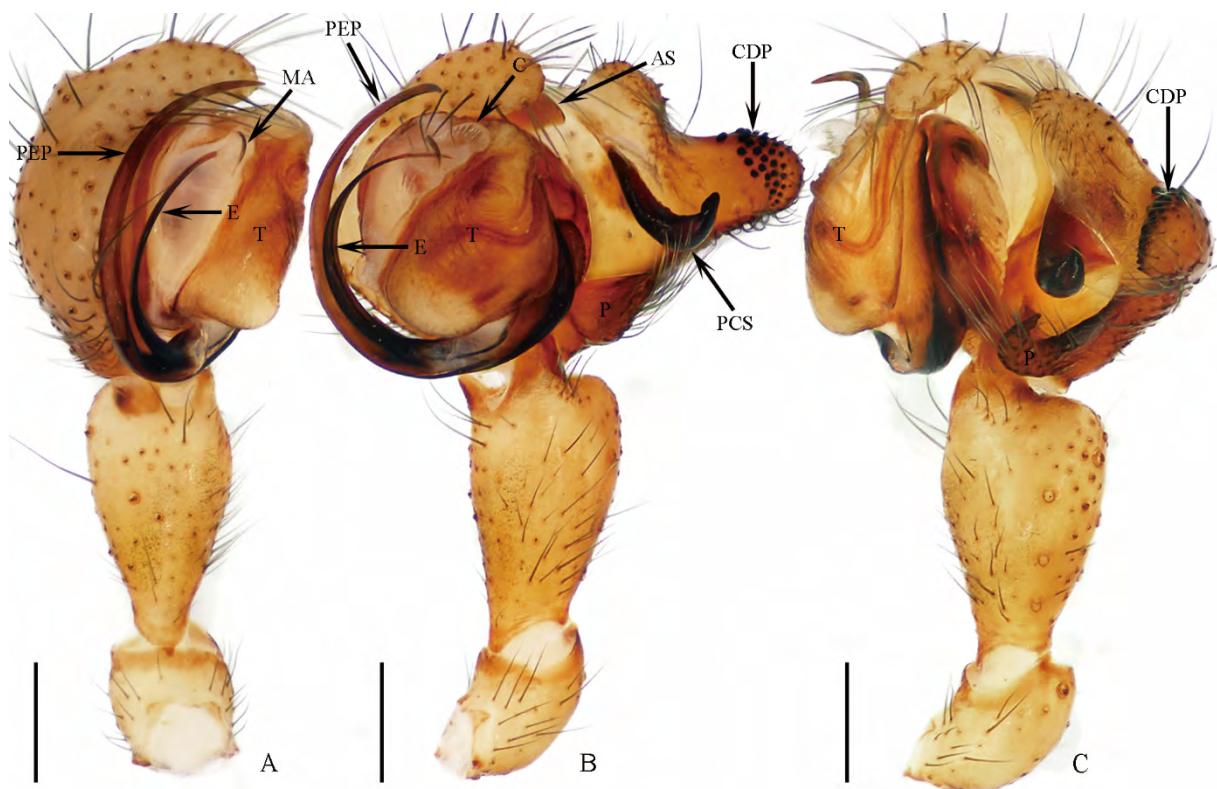


Figure 28. *Pimoa shoja* Zhang & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.3 mm.

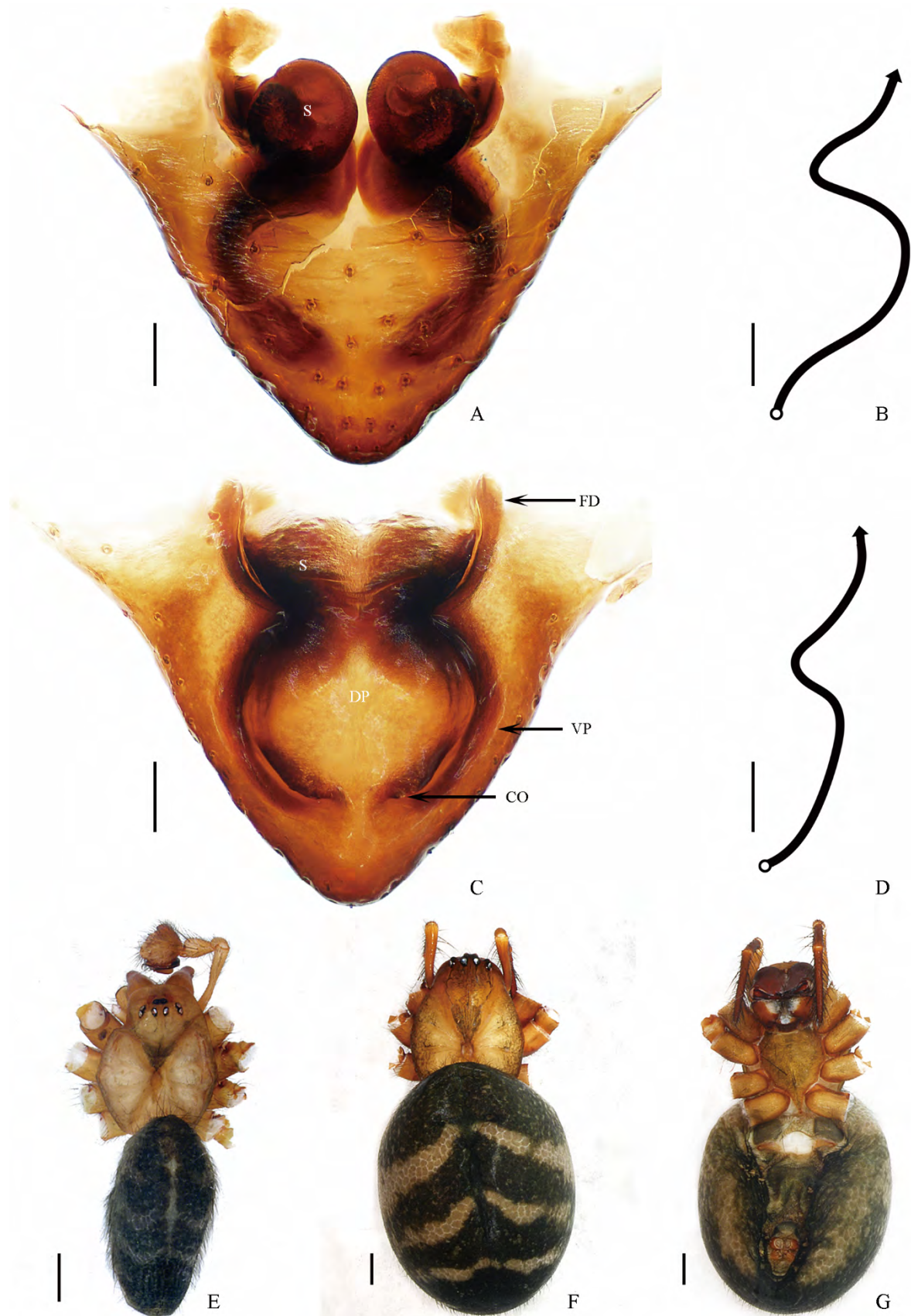


Figure 29. Epigyne and habitus of *Pimoa shoja* Zhang & Li, **sp. nov.**, paratype female and holotype male. A. Epigyne, ventral view; B. Schematic course of internal duct system, ventral view; C. Vulva, dorsal view; D. Schematic course of internal duct system, dorsal view; E. Male habitus, dorsal view; F. Female habitus, dorsal view; G. Female habitus, ventral view. Scale bars: A–D=0.1 mm; E–G =1.0 mm.

Distribution. Known only from the type locality.

Etymology. The specific name is a noun in apposition taken from the type locality.

3.8 Family Selenopidae Simon, 1897

Genus *Selenops* Latreille, 1819

Type species: *Selenops radiatus* Latreille, 1819.

Selenops crewsae Lin & Li, sp. nov. (Figs 30A–B, 31A–B)

Diagnosis. *Selenops crewsae* Lin & Li, sp. nov. can be distinguished from *S. ollarius* Zhu, Sha & Chen, 1990 by the length ratio of the median field to the width of the Se, which is almost 1:1 (*vs.* 1:2 in *S. ollarius*); conspicuous EP (*vs.* no apparent EP in *S. ollarius*); LL not extend posteriorly in *S. crewsae* Lin & Li, sp. nov. (*vs.* extend beyond the plate medially and are pointed in *S. ollarius*) and S swell at the middle (*vs.* hollow in *S. ollarius*).

Description. Female (holotype, IZCAS-Ar42433, Figs 30A–B, 31A–B). Total length 10.46. Carapace 3.91 long, 4.61 wide. Abdomen 6.55 long, 4.55 wide. Eye sizes and interdistances: AME 0.19, ALE 0.17, PME 0.28, PLE 0.44; AME–AME 0.18, AME–ALE 0.08, PME–PME 0.72, PME–PLE 0.51. Leg measurements: Leg I 15.08 (4.56+6.05+3.00+1.47); leg II 17.98 (5.83+7.20+3.40+1.55); leg III 16.95 (5.90+6.30+3.35+1.40); leg IV 15.27 (5.13+5.65+3.16+1.33). Spination: Leg I tibia ventral 2.2.2; metatarsus ventral 2.2; leg II tibia ventral 2.2.2; metatarsus ventral 2.2. Promargin and retromargin of chelicerae with 3 teeth. Carapace yellowish with black lateral margins. Abdomen yellow with black pattern. Legs brownish, with black annulations.

Epigyne (Figs 30A–B) subtriangular; epigynal plate broad, width ca. 1 to 1.5 of length; median field with a lobe, lobe nose shaped; EP, do not reach the caudal margin, COs inconspicuous; S nearly oval; FDs long.

Male. Unknown.

Material examined. Holotype ♀, China: Sichuan Province, Ganzi Zang Autonomous Region, Zhubalong, Gunre, under rocks (29.6703°N, 98.9961°E; elev. ca. 2450 m), 18 July 2019, leg. Yan Tong (IZCAS-Ar42433). Other material examined: 2j (IZCAS-Ar42434–Ar42435), same data as holotype; 2j (IZCAS-Ar42436–Ar42437), same data as holotype, but 6 August 2019, leg. Shuo Qi and Chao Wu; 3j (IZCAS-Ar42438–Ar42440), same data as holotype, but 14 June 2019, leg. Yejie Lin.

Distribution. Known only from the type locality.

Etymology. The species is named after Miss Sarah Crews, a leading taxonomist in Selenopidae; noun (name) in genitive case.

3.9 Family Sparassidae Bertkau, 1872

Genus *Sinopoda* Jäger, 1999

Type species: *Sinopoda forcipata* (Karsch, 1881).

Sinopoda helii Wang & Li, sp. nov. (Figs 32A–F, 33A–B)

Diagnosis. The males of this new species are similar to *S. globosa* Zhang, Zhang & Zhang, 2015 (Zhang *et al.*, 2015: 65, figs 17–32; Zhong *et al.*, 2019: 32, figs 24A–F, 25A–D) and *S. longiducta* Zhang, Zhang & Zhang, 2015 (Zhang *et al.*, 2015: 69, figs 33–37, 42–45; Zhong *et al.*, 2019: 45, figs 34A–B, 35A–F, 36A–D) in having a nearly straight Sp and similar C, but the new species can be recognized by the following: the C is longer than the E or EA (*vs.* the C, E, and EA are all of equal length in *S. globosa*), *S. helii* Wang & Li, sp. nov. has a smooth, long, straight vRTA (*vs.* short and curved in *S. globosa* and *S. longiducta*); the dRTA is slender and long, with the tip enlarged and blunt in the new species (*vs.* the dRTA is shorter in *S. longiducta*, and the tip of the dRTA in *S. globosa* is angular); the tip of EA is triangular and wider in the new species, (*vs.* EA are flagelliform and equal width in *S. globosa* and *S. longiducta*). The females of this new species are similar to *S. globosa* in having a short GA, and the anterior part of internal duct system is fused with the median line, but they differ from *S. globosa* by: the triangular LS (*vs.* more rounded in *S. globosa*), the LL extend horizontally in this species (*vs.* not the case in *S. globosa* (Fig. 32A); the anterior part of the internal ducts are folded ventrally (*vs.* in *S. globosa*, the internal ducts are slightly bent), the posterior part of the S extend diagonally and are as wide as the anterior part of the internal ducts system (*vs.* horizontal and swollen in *S. globosa*) (Fig. 33B).

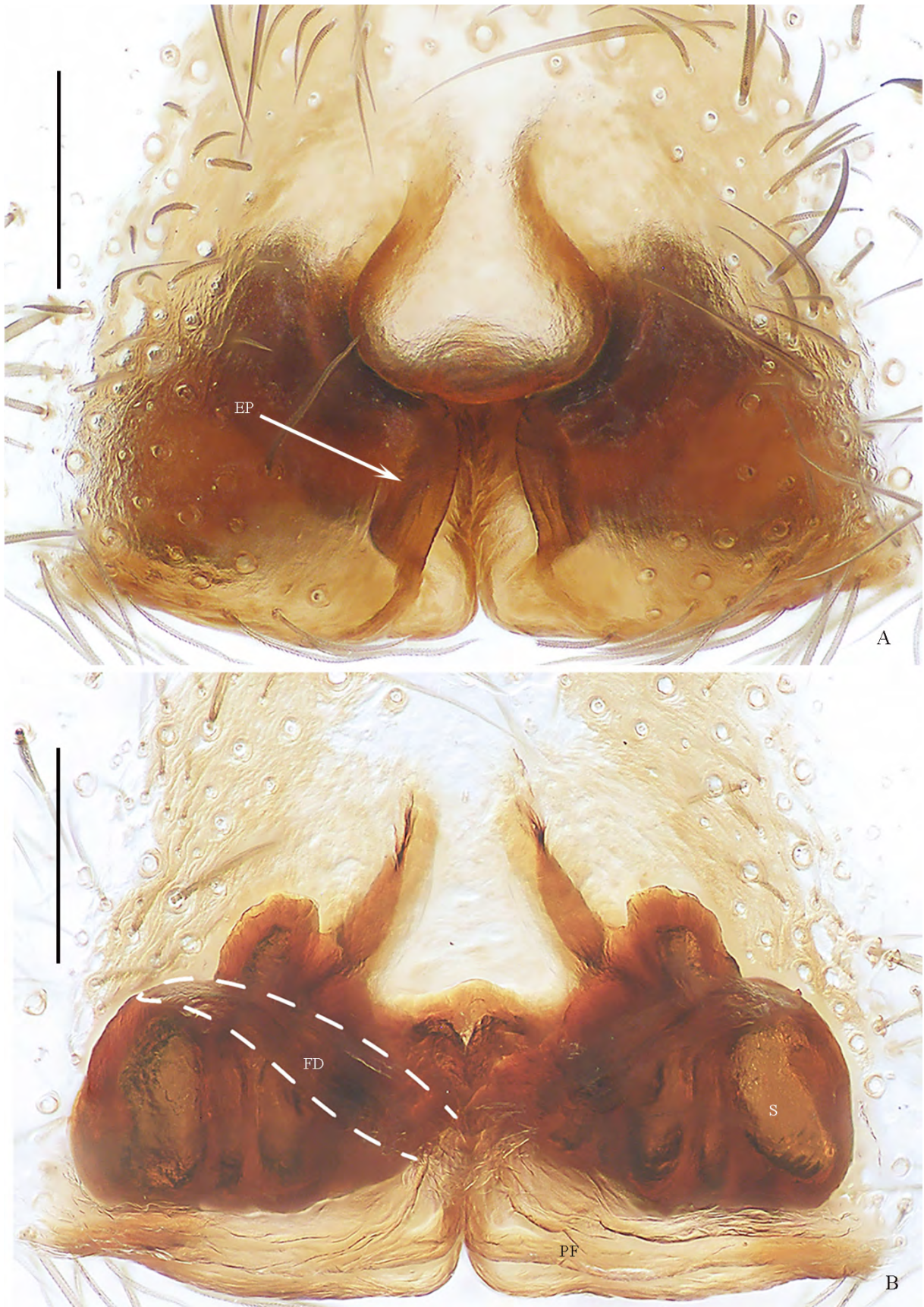


Figure 30. *Selenops crewsae* Lin & Li, **sp. nov.**, female holotype. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.2mm.

Description. Male (holotype, IZCAS-Ar42441, Figs 32A–F) Measurements: PL 6.85, PW 6.6; AW 3.46; OL 7.69, OW 4.8. Eyes: AME 0.25, PME 0.27, ALE 0.41, PLE 0.57, AME–AME 0.15, AME–ALE 0.07, PME–PME 0.23, PME–PLE 0.42, AME–PME, 0.42, ALE–PLE 0.33, CH–AME 0.17, CH–ALE 0.26. Palp 10.69 (3.26, 2.05, 2.37, –, 3.01). Leg measurements: Leg I 50.35 (12.17+2.75+14.74+16.34+4.35); leg II 57.73 (15.38+3.07+16.79+17.75+4.74); leg III 40.17 (11.53+2.69+11.73+11.28+2.94); leg IV 43.12 (10.70+2.69+12.56+13.39+3.78). Leg formula 2143. Spination: Palp 131 101 303 1310. Legs: Femur I and II 323, III and IV 333, Patella 101, Tibia I 2128, II 1218, III and IV 2326 Metatarsus I and II 1014, III 2024, IV 2026. Chelicerae: Furrow with 3 anterior teeth, 4 posterior teeth, and 18 denticles.

Cymbium longer than tibia. E arising from T at 7-o'clock-position in ventral view, with embolic tip as long as EA. T not covering E. RTA arising basally from tibia, base of RTA with a brush of setae (Figs 32A–D).

Female (paratype, IZCAS-Ar42444, Figs 33A–B). Measurements: PL 6.6, PW 6.08; AW 3.65; OL 7.56, OW 3.84. Eyes: AME 0.2, PME 0.28, ALE 0.41, PLE 0.44, AME–AME 0.18, AME–ALE 0.16, PME–PME 0.3, PME–PLE 0.46, AME–PME 0.4, ALE–PLE 0.34, CH–AME 0.4, CH–ALE 0.44. Palp: 9.53 (2.94, 1.15, 2.24, –, 3.2). Leg measurements: Leg I 31.45 (7.75+2.88+9.29+8.65+2.88); leg II 32.99 (9.23+2.56+9.61+8.65+2.94); leg III 29.73 (7.69+2.24+9.10+7.69+3.01); leg IV 31.13 (7.62+2.37+8.97+8.97+3.20). Leg formula 2143. Spination: Palp 141 101 303 3030. Legs: Femur 323, Patella 101, Tibia I and II 1018, III 2126, IV 2226, Metatarsus I and II 1014, III 2026, IV 3036. Chelicerae: Furrow with 3 anterior teeth, 4 posterior teeth, and 21 denticles.

Epigynal field wider than long, with two short AB and one slit sensillum on each side, close to the field. LL fused. Internal ducts system as wide as half the epigynal field. FDs arising posteriorly. Unexpanded MS between FDs (Figs 33A, B).

Material examined. Holotype ♂, China: Sichuan Province, Meishan City, Renshou District, Lujia Town, Huanggu Cave (29.8186°N, 104.3944°E; elev. ca. 470 m), 8 March 2020, leg. Li He, Yuan Li, and Chao Zhou (IZCAS-Ar42441). Paratypes. 2♂ (IZCAS-Ar42442–Ar42443), 2♀ (IZCAS-Ar42444–Ar42445); same data as holotype.

Distribution. Known only from the type locality.

Etymology. The specific name is dedicated to Mr. Li He, one of the collectors of this species; name in genitive case.

3.10 Family Theraphosidae Thorell, 1869

Genus *Phlogiellus* Pocock, 1897

Type species: *Phlogiellus atriceps* Pocock, 1897.

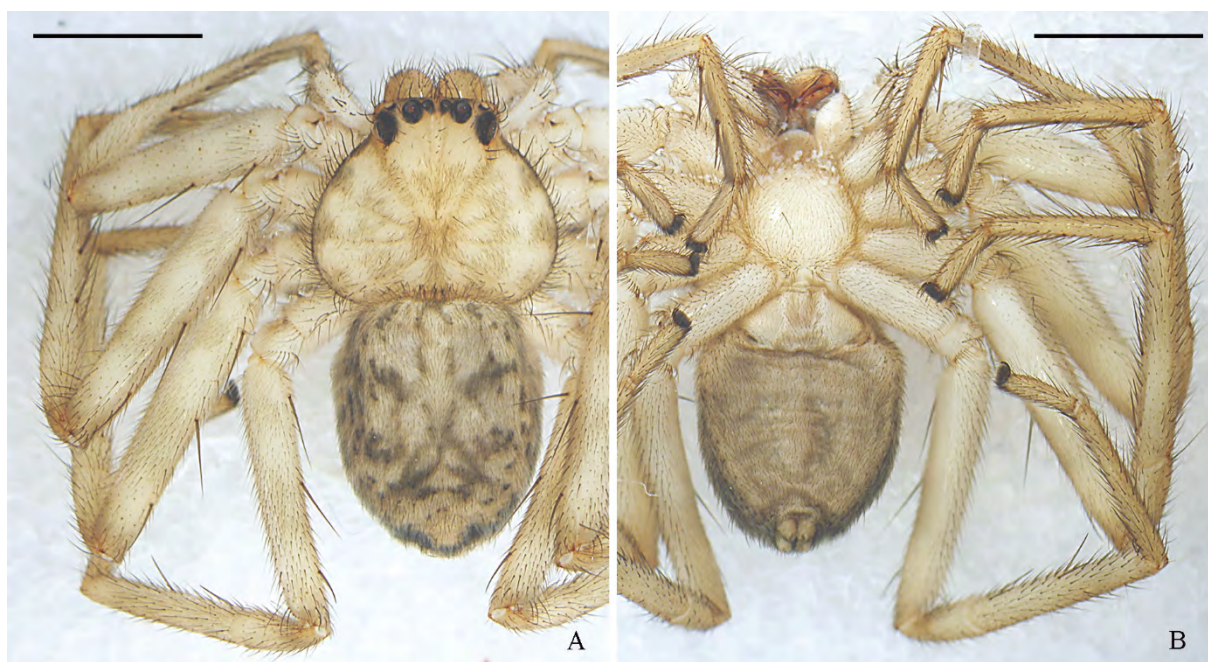


Figure 31. *Selenops crewsae* Lin & Li, **sp. nov.**, female, habitus. A. Dorsal view; B. Ventral view. Scale bars = 3.0 mm.

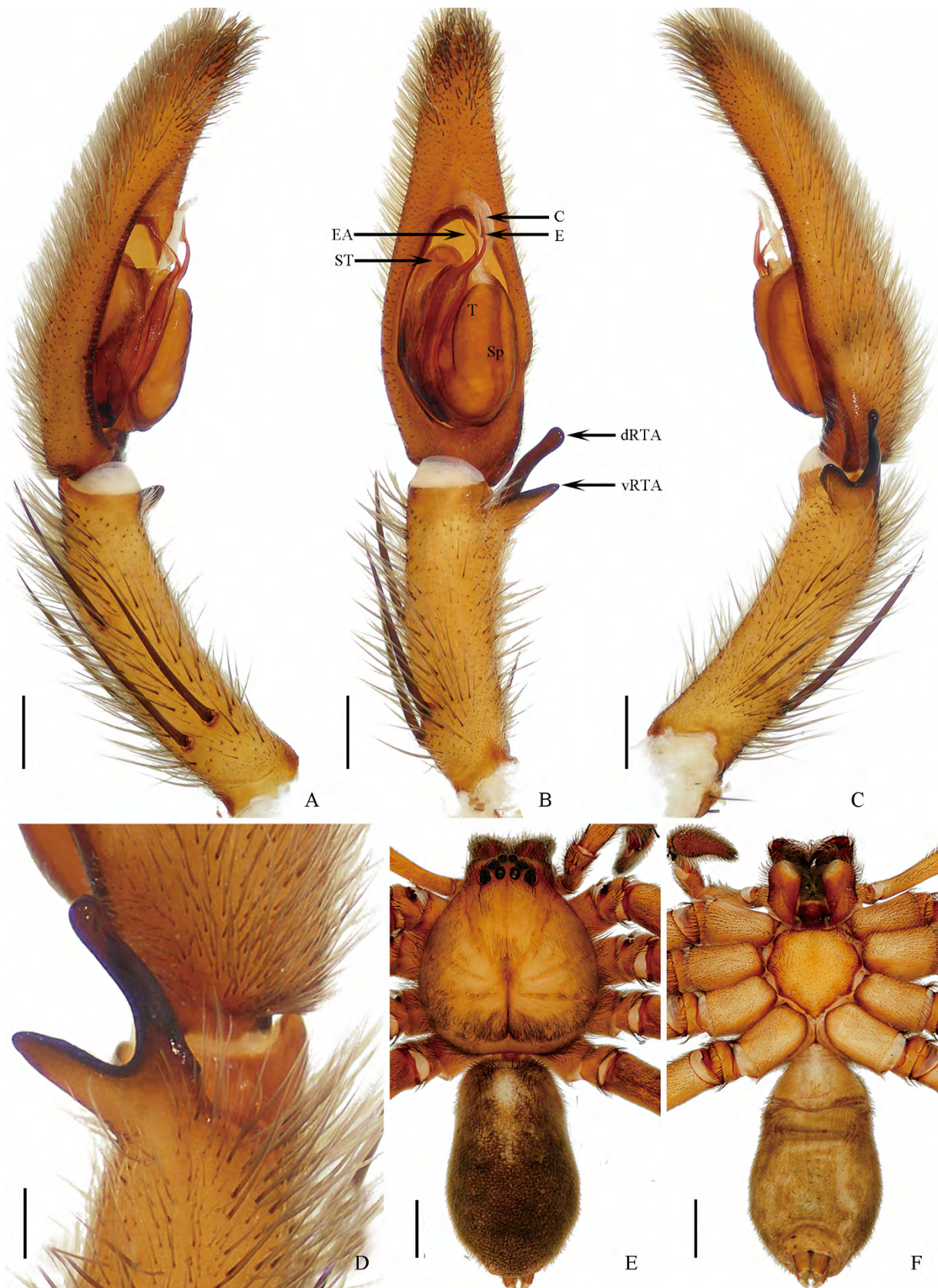


Figure 32. *Sinopoda helii* Wang & Li, **sp. nov.**, holotype male. A. Left palp, prolateral view; B. Left palp, ventral view; C. Left palp, retrolateral view; D. RTA, retrolateral view; E. Habitus, dorsal view; F. Habitus, ventral view. Scale bars: A–D = 0.5 mm; E–F = 2.0 mm.



Figure 33. *Sinopoda helii* Wang & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars=0.5 mm.

***Phlogiellus jiaxiangi* Lin & Li, sp. nov.** (Figs 34A–C, 35A–G, 36A–G, 37A–E)

Diagnosis. Male of *P. jiaxiangi* Lin & Li, **sp. nov.** is similar to *P. xinping* (Zhu & Zhang, 2008) by having lyra setae and the same angle of the E relative to the bulb (Figs 37E–F), and females of the new species are similar to *P. xinping* by having one pair of S. *P. jiaxiangi* Lin & Li, **sp. nov.** can be separated from *P. xinping* by the curved lyra setae on the maxillae. The male of *P. jiaxiangi* Lin & Li, **sp. nov.** can be distinguished from *P. xinping* by the ratio of the width of the longitudinal keel to the embolus base in ventral view is 1:18 (vs. 1:4 in *P. xinping*) and dense racket-shaped setae on the cymbium in *P. jiaxiangi* Lin & Li, **sp. nov.** (vs. sparse in *P. xinping*). Females can be differentiated from *P. xinping* by having the base of the S extended, and the length-width ratio of the S almost 2:1 (vs. 3:1 in *P. xinping*).

Description. Male (holotype, IZCAS-Ar42446, Figs 34A–C, 35A–G, 36D–E). Total length 10.18, carapace 5.85 long, 5.08 wide, dark brown with long setae. Opisthosoma 6.16 long, 4.24 wide, oval, brown, hirsute. Eye group 1.21 long, 0.62 wide. MOA 0.44 long, anterior width 0.56, posterior width 0.71. Eye sizes and interdistances: ALE 0.32, AME 0.29, PLE 0.26, PME 0.20; ALE–AME 0.02, AME–AME 0.10, PLE–PME 0.02, PME–PME 0.44. Fovea transverse, recurved. Chelicerae dark brown, with row of 11 promarginal teeth, 24 mesoventral denticles. Labium wider than long, with ca. 283 cuspules. Sternum yellow-brown with 3 pairs of sigilla. Legs with long and short setae. Tarsi I–III with 2 claws without denticles, tarsus IV with 3 claws, no denticles on paired claws. Bent tarsi present on legs II–IV. Leg measurements: Leg I 18.30 (5.61+7.37+3.22+2.10); leg II 15.48 (4.52+6.34+2.76+1.86); leg III 12.81 (3.76+4.40+2.79+1.86); leg: IV 18.79 (5.35+6.44+4.63+2.37). Leg formula 4123.



Figure 34. *Phlogiellus jiaxiangi* Lin & Li, **sp. nov.**, holotype male, right palp, rotated horizontally. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.5 mm.

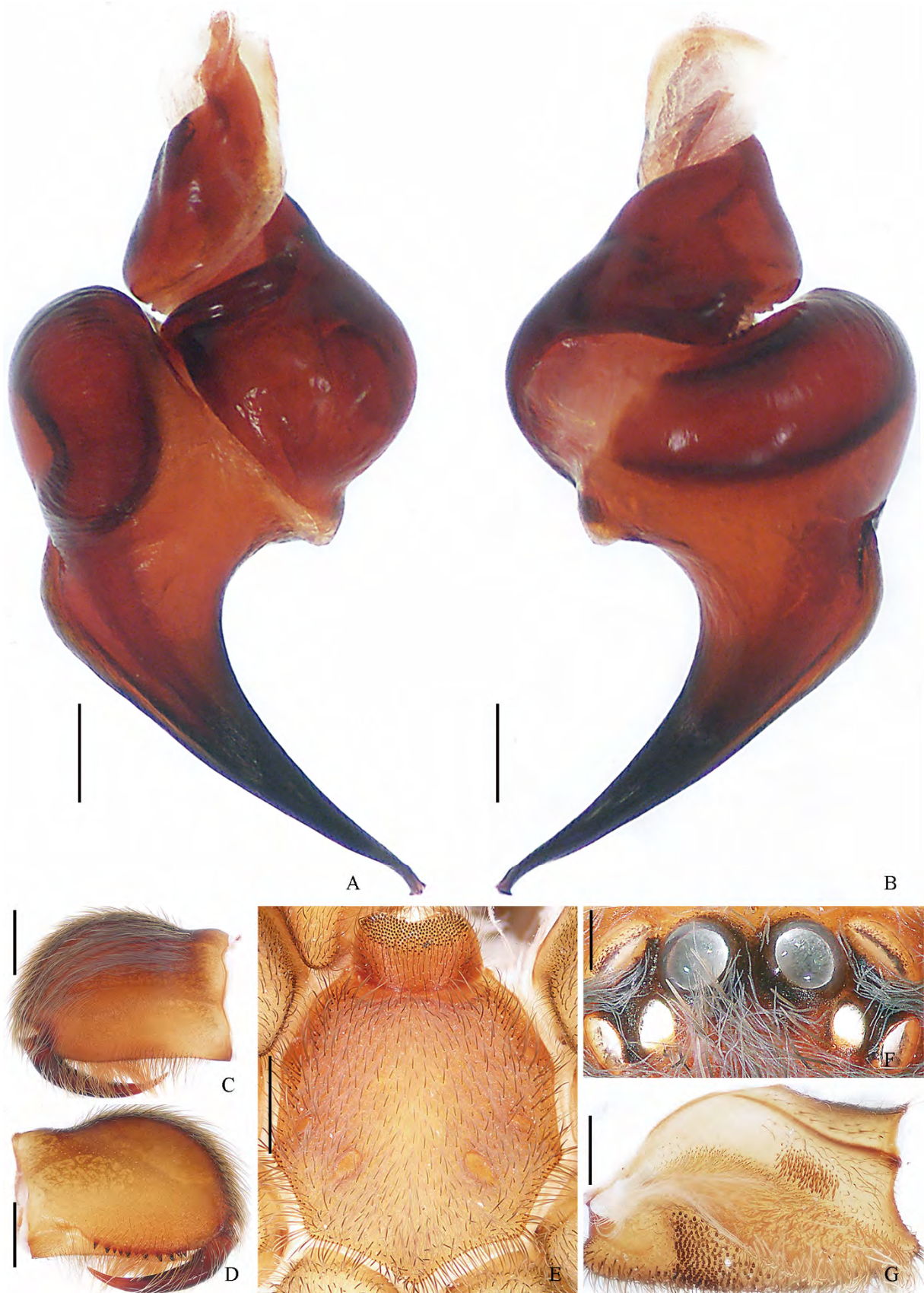


Figure 35. *Phlogiellus jiaxiangi* Lin & Li, **sp. nov.**, holotype male. A. Left palp bulb, retrolateral view; B. Left palp bulb, prolateral view; C. Chelicerae, retrolateral view; D. Chelicerae, prolateral view; E. Sternum; F. Eye group; G. Left palp maxillae, prolateral view. Scale bars: A–B, F=0.2 mm; C–E=1.0 mm; G=0.5 mm.



Figure 36. *Phlogiellus jiexiangi* Lin & Li, **sp. nov.**, holotype male and paratype females. A–C. Vulva, dorsal view; D. Male, dorsal view; E. Male, ventral view; F. Female, dorsal view; G. Female, ventral view. Scale bars: A–C=0.3 mm; D–G=3.0 mm.

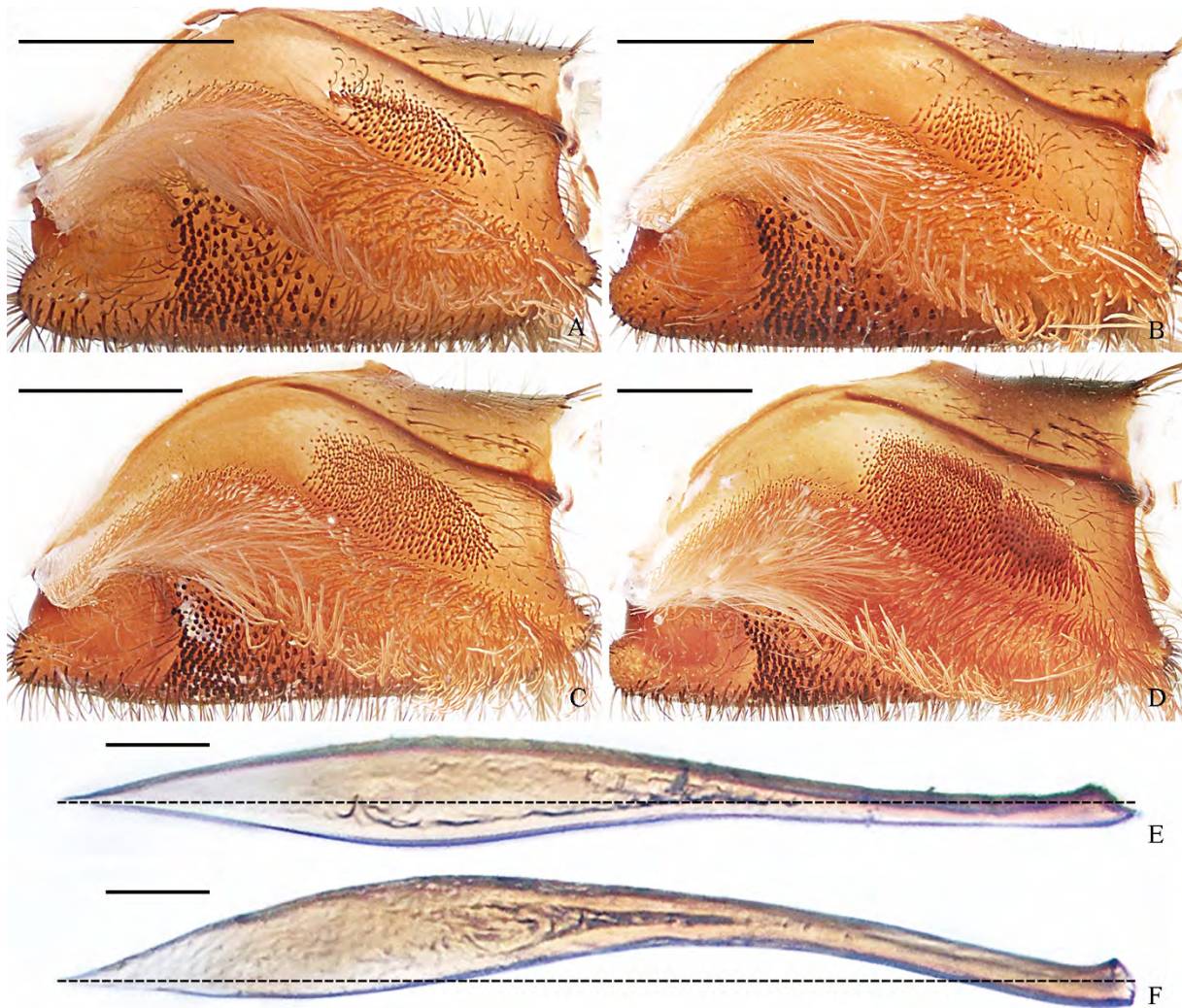


Figure 37. *Phlogiellus jiaxiangi* Lin & Li, **sp. nov.**, paratype females. A–D. Different sizes of left palp maxillae, IZCAS-Ar42447–Ar42450, respectively; E. Maxillae lyra setae of *P. jiaxiangi* Lin & Li, **sp. nov.**; F. Maxillae lyra setae of *P. xinping*. Scale bars: A–D = 1.0 mm; E–F = 0.02 mm.

Palp (Figs 34A–C, 35A–B, G). Maxillae without lyra setae, with ca. 223 cuspules ventrally. Tibia with many setae laterally, swollen at base. Bulb nearly globose, E curved, sickle shaped, with a vertical ridge.

Female (paratype, IZCAS-Ar42449, Figs 36A–C, F–G). Total length 15.87, carapace 6.38 long, 5.34 wide, similar to that of male. Opisthosoma 9.21 long, 6.32 wide, oval, gray, hirsute. Eye group 1.21 long, 0.71 wide. MOA 0.62 long, anterior width 0.77, posterior width 0.91. Eye sizes and interdistances: ALE 0.31, AME 0.22, PLE 0.31, PME 0.14; ALE–AME 0.10, AME–AME 0.18, PLE–PME 0.07, PME–PME 0.72. Chelicerae with row of 11 promarginal teeth, 31 mesoventral denticles. Labium with ca 262 cuspules. Palp maxillae without lyra setae. Tarsi I–III with 2 claws without denticles, tarsus IV with 3 claws, no denticles on paired claws. Bent tarsi inconspicuous. Leg measurements: Leg I 14.02 (4.10+5.51+2.42+1.99); leg II 12.62 (2.16+2.21+4.31+3.94); leg III 10.46 (2.24+2.21+3.23+2.78); leg IV 14.19 (2.22+3.10+5.05+3.82). Leg formula 4123.

Female genitalia (Figs 36A–C) simple. Two separate S, swollen distally, without wrinkles.

Material examined. Holotype ♂, China: Guangxi, Nanning, Xixiangtang, Goudan (22.8996°N, 108.2050°E), 17 November 2017, leg. Jiaxiang Wu (IZCAS-Ar42446). Paratypes. 3 ♀ (IZCAS-Ar42447–Ar42449), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after the collector Mr. Jiaxiang Wu and is a noun (name) in genitive case.

Variation. Female (paratypes; $n=4$). Total length 8.22–20.18. Carapace 4.00–11.42 length, 3.15–6.52 wide. Chelicerae with row of 8–11 promarginal teeth, 21–31 mesoventral denticles. Labium cuspules 195–283.

3.11 Family Theridiidae Sundevall, 1833

Genus *Episinus* Walckenaer, in Latreille, 1809

Type species: *Episinus truncatus* Latreille, 1809.

Episinus bonjovi Lin & Li, sp. nov. (Figs 38A–C, 39A–B, 40A–D, 53A–B)

Diagnosis. The new species is similar to *E. unitus* Levi, 1964, but it can be distinguished by the larger atrium, the nephroid S, the conspicuous CD, and the medially curved FDs.

Description. Male (holotype, IZCAS-Ar42451, Figs 38A–C, 40C–D, 53A). Total length 2.10. Prosoma 0.88 long, 0.68 wide, flat, pale yellow, with a broad reddish brown stripe at middle, anterior part of ocular area with two distinct processes. Sternum 0.41 long, 0.38 wide, pale yellow. Opisthosoma 1.13 long, 1.13 wide, pale yellow, with 3 protuberances and white spots. Eyes developed: AME 0.09, ALE 0.05, PME 0.06, PLE 0.06, AME–AME 0.06, AME–ALE 0.02, PME–PME 0.06, PME–PLE 0.03. Clypeus height about 1.64 times AME diameter. Leg I femur 1.55, patella 0.30, tibia 1.33, metatarsus 1.30, tarsus 0.63. Patella and tibia II–IV: 0.88, 0.63, 0.88. Legs pale yellow, tip of femur IV and base of patella reddish brown.

Palp (Figs 38A–C, 40C–D). ST confined; Sp distinct in ventral view; E long and slender; TTA with tiny tubes and 2 acute protuberances; C huge.

Female (paratypes, IZCAS-Ar42455, Figs 39A–B, 40A–B, 53B). Total length 3.63. Prosoma 1.03 long, 0.94 wide, flat, pale yellow, with a broad reddish brown stripe at middle, anterior part of ocular area with 2 distinct processes. Sternum 0.61 long, 0.46 wide, pale yellow. Opisthosoma 2.42 long, 3.12 wide, brown or pale, with tiny white spots and 3 protuberances. Eyes developed.

Epigynum (Figs 39A–B, 40A–B). Atrium large; S nephroid; CD strong sclerotized; FDs bent at middle.

Material examined. Holotype ♂, China: Yunnan, Menglun Nature Reserve (21.9588°N, 101.2064°E; elev. ca. 899 m), 6 August 2007, leg. Guo Zheng (IZCAS-Ar42451). Paratypes. 3♂ (IZCAS-Ar42452–Ar42454), 3♀ (IZCAS-Ar42455–

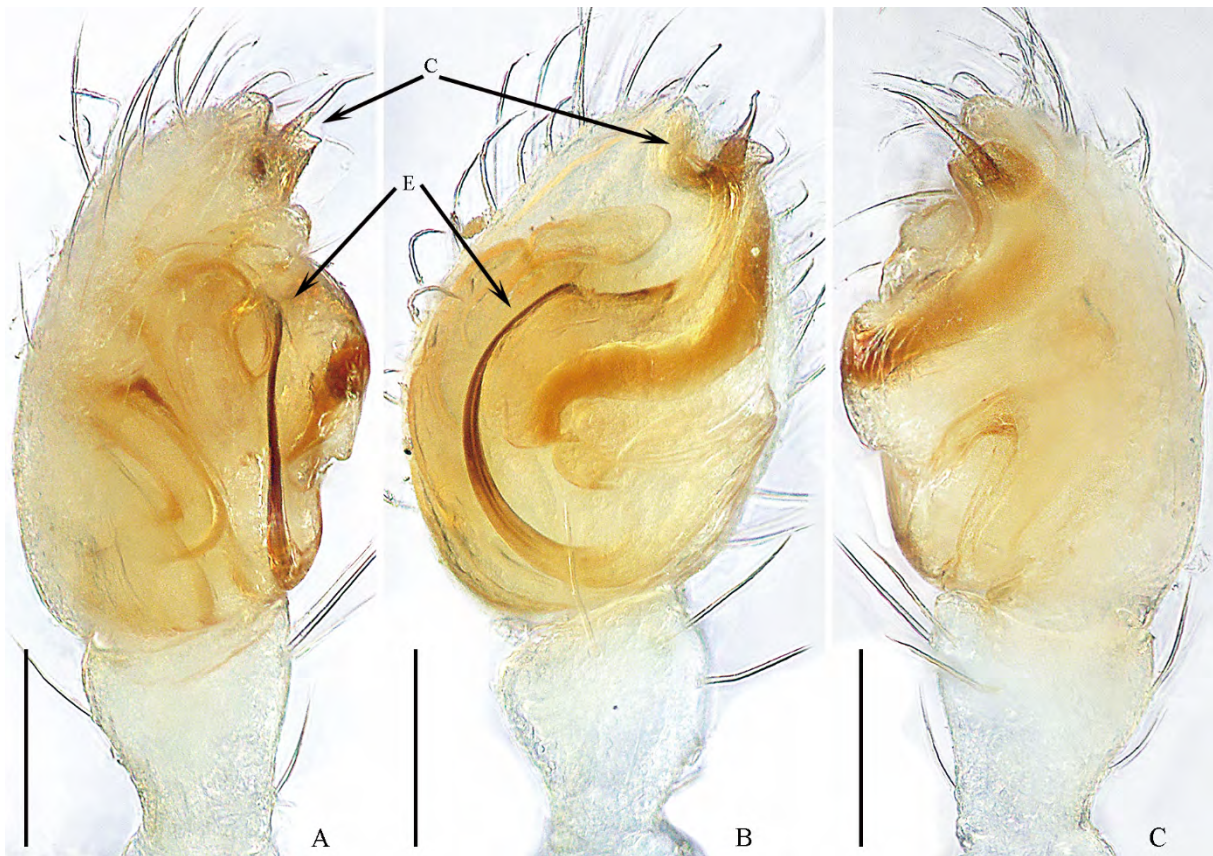


Figure 38. *Episinus bonjovi* Lin & Li, sp. nov., holotype male, left palp. A. Prolatateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.1 mm.



Figure 39. *Episinus bonjovi* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.02mm.

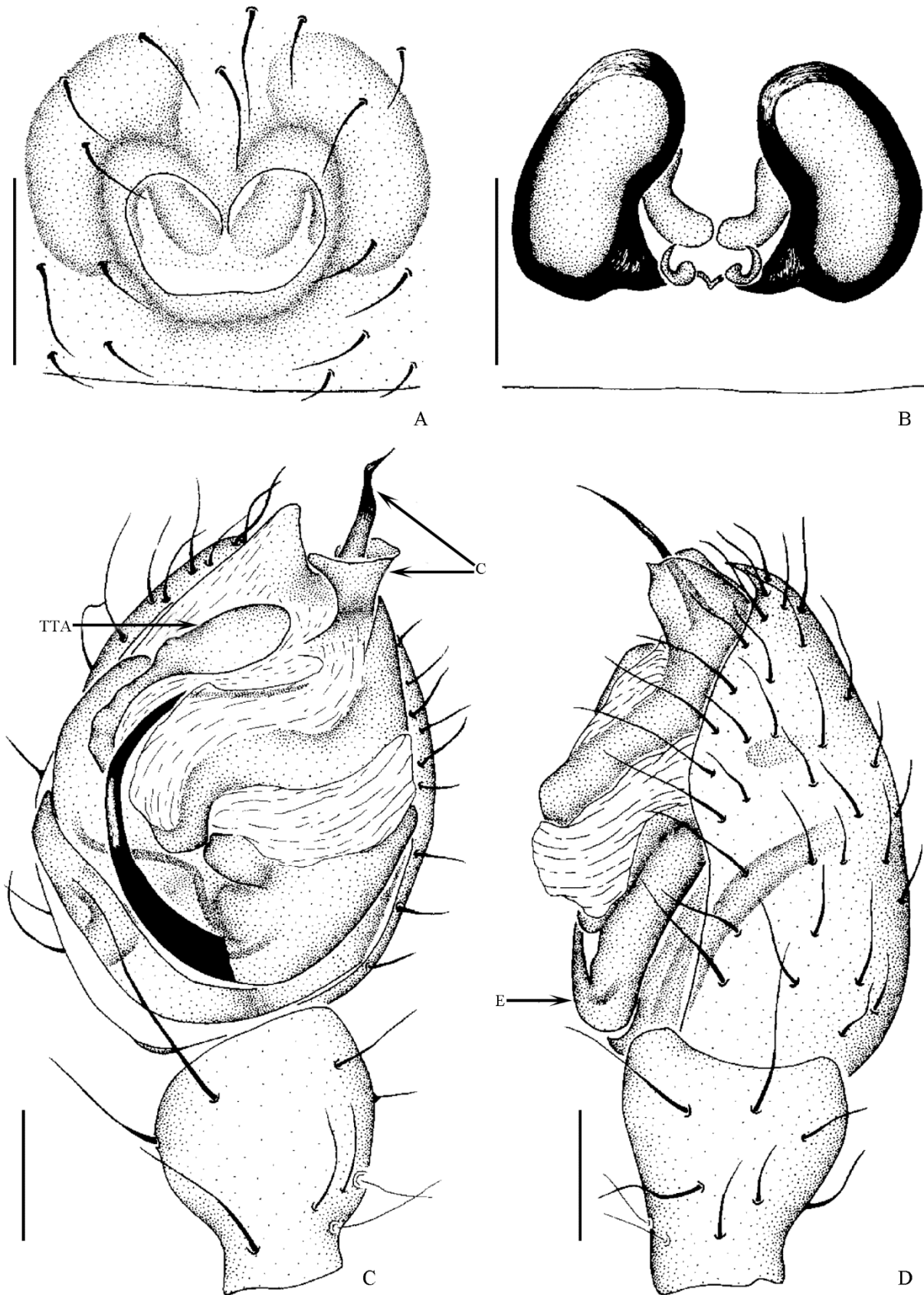


Figure 40. *Episinus bonjovi* Lin & Li, **sp. nov.**, paratype female and holotype male. A. Epigyne, ventral view; B. Vulva, dorsal view; C. Left palp, ventral view; D. Left palp, retrolateral view. Scale bars=0.1 mm.

Ar42457), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species name is honoring the American rock band Bon Jovi, composer of the music album "Have a Nice Day" and the singles "Because We Can" and "Living On A Prayer", which encouraged the author by their songs full of romance and freedom; noun (name) in apposition.

Variation. Male (paratypes; $n=3$). Total length 1.88–1.93; prosoma 0.68–0.72 long, 0.63–0.65 wide; sternum 0.35–0.38 long, 0.30–0.38 wide; opisthosoma 1.13–1.18 long, 1.13–1.18 wide. Female (paratypes; $n=3$). Total length 3.25–3.75. Prosoma 1.00–1.10 long, 0.90–1.00 wide, Sternum 0.60–0.65 long, 0.48–0.50 wide, pale yellow. Opisthosoma 2.25–2.65 long, 3.00–3.25 wide.

***Episinus jiangweni* Lin & Li, sp. nov.** (Figs 41A–C, 42A–B, 43A–D, 53C–D)

Diagnosis. The new species is similar to *Episinus porteri* (Simon, 1901) but can be distinguished by the long spur on the cymbium, the broad ST, and the C with 1 acute process.



Figure 41. *Episinus jiangweni* Lin & Li, sp. nov., holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bar=0.1 mm.



Figure 42. *Episinus jiangweni* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.02 mm.

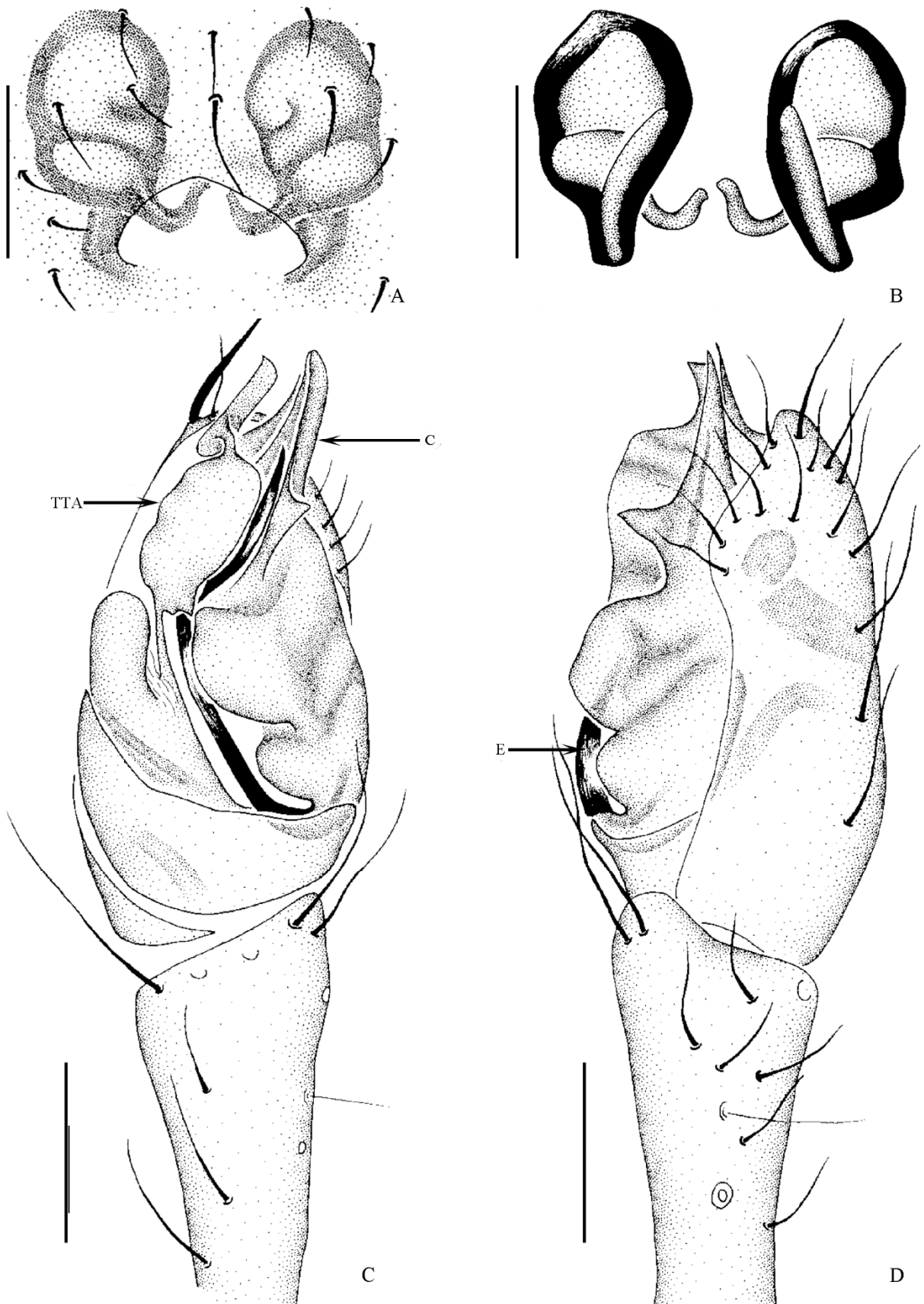


Figure 43. *Episinus jiangweni* Lin & Li, **sp. nov.**, paratype female and holotype male. A. Epigyne, ventral view; B. Vulva, dorsal view; C. Left palp, ventral view; D. Left palp, retrolateral view. Scale bars=0.1 mm.

Description. Male (holotype, IZCAS-Ar42458, Figs 41A–C, 43C–D, 53C). Total length 1.75. Prosoma 0.69 long, 0.50 wide, flat, pale yellow with black edge, anterior part of ocular area with two small processes. Sternum 0.44 long, 0.38 wide, pale yellow. Opisthosoma 0.94 long, 1.00 wide, pale yellow, with large black and white spots. Eyes developed: AME 0.09, ALE 0.06, PME 0.06, PLE 0.06, AME–AME 0.04, AME–ALE 0.03, PME–PME 0.08, PME–PLE 0.03. Clypeus height same as AME diameter. Leg I femur 1.23, patella 0.25, tibia 1.18, metatarsus 1.13, tarsus 0.38. Patella and tibia II–IV: 0.75, 0.50, 1.13. Leg I yellow, femur black in dorsal view, with a line of dorsal bristles; patella, tibia tip, metatarsus, and tarsus with black rings. Legs II and IV same as leg I; leg III pale yellow, without black rings.

Palp (Figs 41A–C, 43C–D): tibia long; ST broad; E long and slender; TTA with 2 small basal protuberances, handle-shaped structure at end; conductor scaphoid, with one acute process.

Female (paratype, IZCAS-Ar42459, Figs 42A–B, 43A–B, 53D). Total length 2.40. Prosoma 0.75 long, 0.75 wide, flat, pale yellow with black edge, anterior part of ocular area with two indistinct processes. Sternum 0.50 long, 0.45 wide, pale yellow. Opisthosoma 1.68 long, 1.63 wide, brown with white spots. Eyes developed. Leg I yellow, femur black in dorsal view, with a line of dorsal bristles; patella, tibia tip, metatarsus and tarsus with black rings. Leg IV same as leg I; legs II–III pale yellow, without black rings.



Figure 44. *Episinus tongyani* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.1 mm.



Figure 45. *Episinus tongyani* Lin & Li, **sp. nov.**, paratype female. A. Epigyne, ventral view; B. Vulva, dorsal view. Scale bars = 0.1 mm.

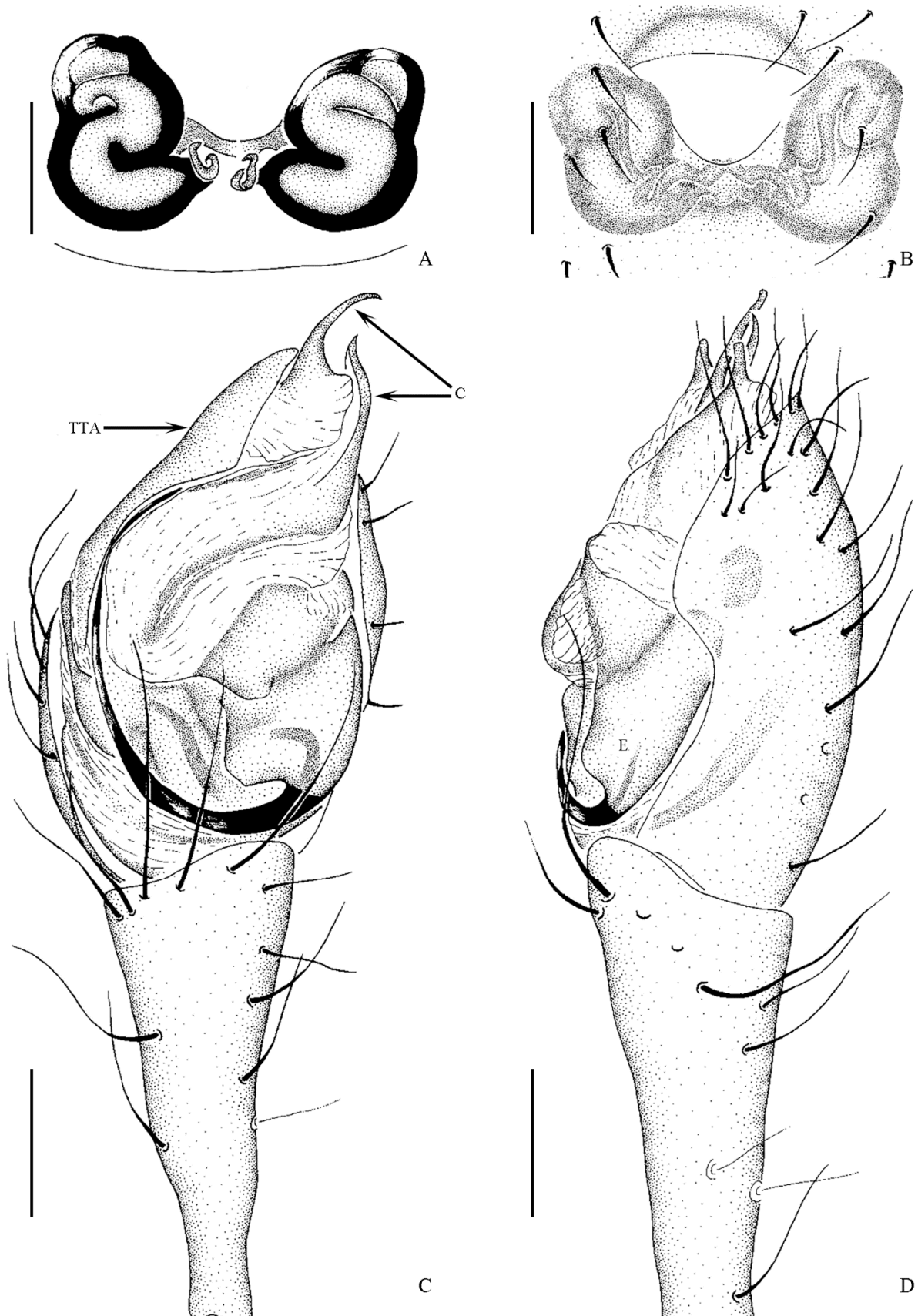


Figure 46. *Episinus tongyani* Lin & Li, **sp. nov.**, paratype female and holotype male. A. Vulva, dorsal view; B. Epigyne, ventral view; C. Left palp, ventral view; D. Left palp, retrolateral view. Scale bars=0.1 mm.

Epigynum (Figs 42A–B, 43A–B) flat; S coiled; CDs short, opening to the anterior margin of atrium; FDs short, linear. Material examined. Holotype ♂, China: Yunnan, Menglun (21.9108°N, 101.2710°E; elev. ca. 572 m), 19–26 May 2007, leg. Guo Zheng (IZCAS-Ar42458). Paratypes. 1 ♀ (IZCAS-Ar42459), Menglun Nature Reserve (21.9077°N, 101.2663°E; elev. ca. 569 m), 19–25 February 2007; 1 ♀ (IZCAS-Ar42460), Menglun (21.9173°N, 101.2750°E; elev. ca. 558 m), 10–20 June 2007, leg. Guo Zheng.

Distribution. Known only from the type locality.

Etymology. The species is named after the famous director Mr. Wen Jiang, in honor of his tremendous impact on Chinese cinema and is a noun (name) in genitive case.



Figure 47. *Meotipa luokiae* Lin & Li, sp. nov., holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.1 mm.

***Episinus tongyani* Lin & Li, sp. nov.** (Figs 44A–C, 45A–B, 46A–D, 53E–F)

Diagnosis. The new species is similar to *E. nubilus* Yaginuma, 1960, but it can be distinguished by the Sp, which is straight in ventral view; the C surrounds the tip of the E and is hooked distally.

Description. Male (holotype, IZCAS-Ar42461, Figs 44A–C, 46C–D, 53E). Total length 2.50. Prosoma 0.81 long, 0.73 wide, flat, pale yellow, anterior part of ocular area with two distinct processes. Sternum 0.53 long, 0.44 wide, pale yellow. Opisthosoma 1.28 long, 1.38 wide, pale yellow with large white spots in dorsal view. Eyes developed: AME 0.13, ALE 0.08, PME 0.09, PLE 0.08, AME–AME 0.08, AME–ALE 0.05, PME–PME 0.05, PME–PLE 0.03. Clypeus height about same size as AME diameter. Leg I femur 2.00, patella 0.40, tibia 1.75, metatarsus 2.13, tarsus 0.75. Patella and tibia II–IV: 1.65, 0.65, 1.30. Legs yellow to black, femur and tibia with a line of dorsal bristles; metatarsus with a line of bristles in dorsal and

ventral view.

Palp (Figs 44A–C, 46C–D) tibia long; Sp straight in ventral view; E long, slender; C large, surrounding the end of E.

Female (paratype, IZCAS-Ar42465, 45A–B, 46A–B, 53F). Total length 3.00–3.50. Prosoma 1.00–1.13 long, 1.00–1.05 wide, flat, pale yellow, anterior part of ocular area with two distinct processes. Sternum 0.63–0.68 long, 0.55–0.62 wide, pale yellow. Opisthosoma 1.88–2.00 long, 2.63–3.13 wide, yellow, with white spots. Eyes developed. Legs similar to those of male.

Epigynum (Figs 45A–B, 46A–B) flat; S curved; CD long, winding, opening to the anterior margin of atrium; FDs short, falcate.

Material examined. Holotype ♂, China: Yunnan, Menglun Nature Reserve (21.9588°N, 101.2064°E; elev. ca. 899 m), 6 August 2007, leg. Yan Tong (IZCAS-Ar42461). Paratypes. 1 ♂ (IZCAS-Ar42462), same data as holotype; 2 ♂ (IZCAS-Ar42463–Ar42464), 2 ♀ (IZCAS-Ar42465–Ar42466), same data as holotype.

Distribution. Known only from the type locality.

Etymology. The species is named after the collector Mr. Yan Tong and is a noun (name) in genitive case.

Variation. Male (paratypes; $n=3$). Total length 1.88–2.25; prosoma 0.81–0.83 long, 0.69–0.75 wide; sternum 0.55–0.63 long, 0.45–0.50 wide; opisthosoma 1.25–1.31 long, 1.40–1.60 wide.

Genus *Meotipa* Simon, 1894

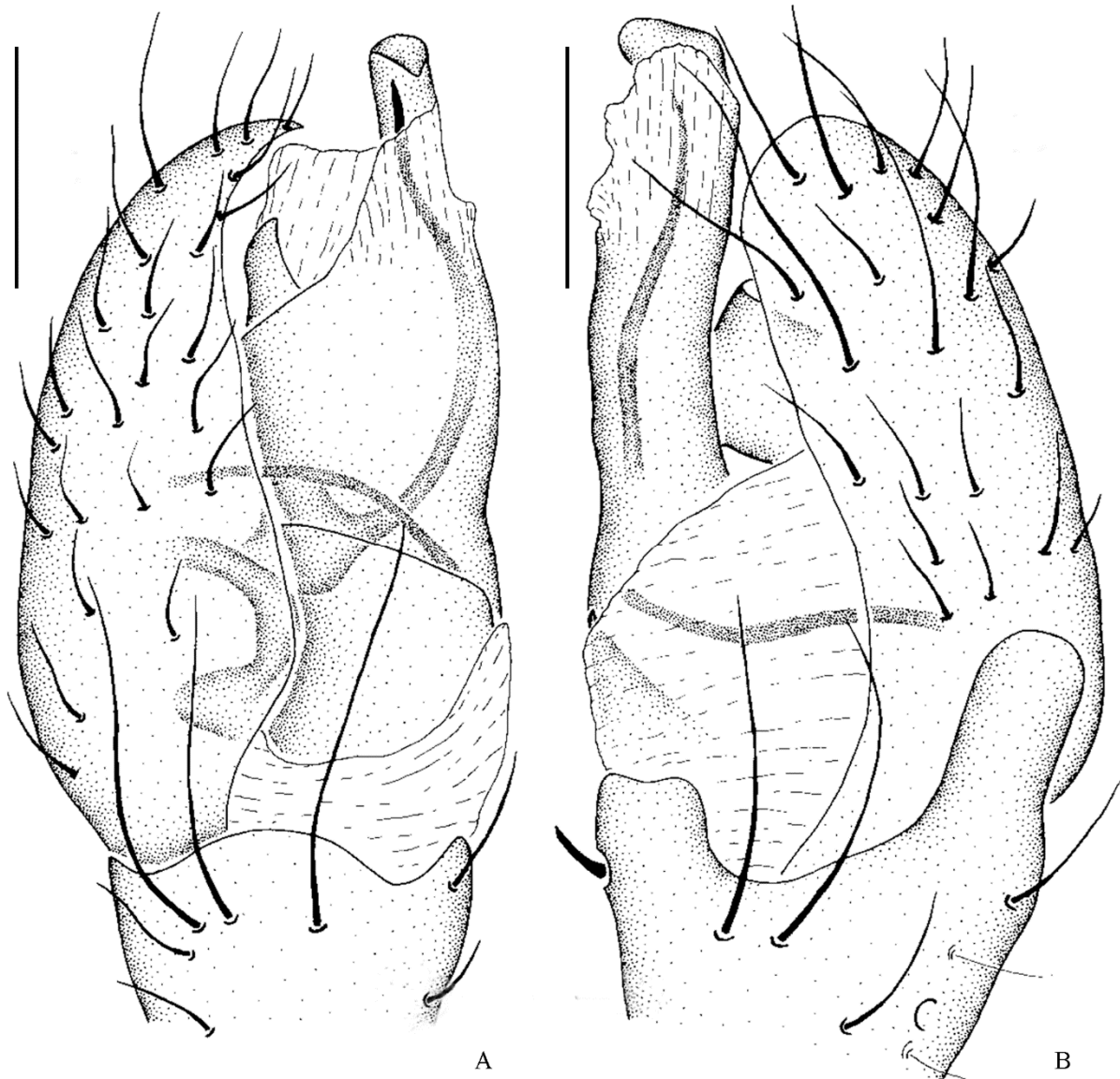


Figure 48. *Meotipa luoqiae* Lin & Li, **sp. nov.**, holotype male, left palp. A. Prolateral view; B. Retrolateral view. Scale bars=0.1 mm.

Type species: *Meotipa picturata* Simon, 1895.

***Meotipa luoqiae* Lin & Li, sp. nov.** (Figs 47A–C, 48A–B, 53G–H)

Diagnosis. The new species is similar to *M. spiniventris* (O. Pickard-Cambridge, 1869) but can be distinguished by the presence of 2 distal spines on the opisthosoma (vs. 4 distal spines in *M. spiniventris*), 2 conductor apophysis, and the straight Sp in ventral view (vs. curved in *M. spiniventris*).

Description. Male (holotype, IZCAS-Ar42467, Figs 47A–C, 48A–B, 53G–H). Total length 2.65. Prosoma 0.93 long, 0.83 wide, pale yellow, flat. Sternum 0.50 long, 0.50 wide, pale yellow. Opisthosoma 0.93 long, 0.83 wide, pale yellow, with large white and tiny dark spots; with 2 strong spines on distal part. Eyes developed: AME 0.09, ALE 0.08, PME 0.09, PLE 0.08, AME–AME 0.09, AME–ALE 0.06, PME–PME 0.09, PME–PLE 0.06. Clypeus height about 3.33 times AME diameter. Chelicerae with 1 promarginal tooth, retromarginal tooth absent. Leg I femur 2.65, patella 0.45, tibia 2.15, metatarsus 2.75, tarsus 0.85. Patella and tibia II–IV: 1.60, 0.85, 1.75. Leg I pale yellow, femur with a disto-ventral spine; patella with a disto-dorsal spine; tibia with 2 dorsal spines. Legs II–IV same as leg I in spination.

Palp (Figs 47A–C, 48A–B) patella with a strong spine; tibia with a strong retrolateral spine; Sp linear in ventral view; C coiled at end, with 3 small outgrowths; E with 2 apophyses at middle.

Female. Unknown.

Material examined. Holotype ♂, China: Yunnan, Menglun Nature Reserve (21.9589°N, 101.2050°E; elev. ca. 816 m), 4 August 2007, leg. Guo Zheng (IZCAS-Ar42467). Paratype. 1 ♂ (IZCAS-Ar42468), same data as holotype.

Distribution. Only known from type locality.

Etymology. The species name is honoring the Chinese rock singer Mrs. Qi Luo, which encouraged the author by her courage, freedom and spirit of exploration; noun (name) in apposition.

Variation. Male (paratype). Total length 2.05–2.65; prosoma 0.88–0.93 long, 0.73–0.83 wide; sternum 0.50–0.55 long, 0.44–0.50 wide; opisthosoma 0.93–1.13 long, 0.63–0.83 wide.

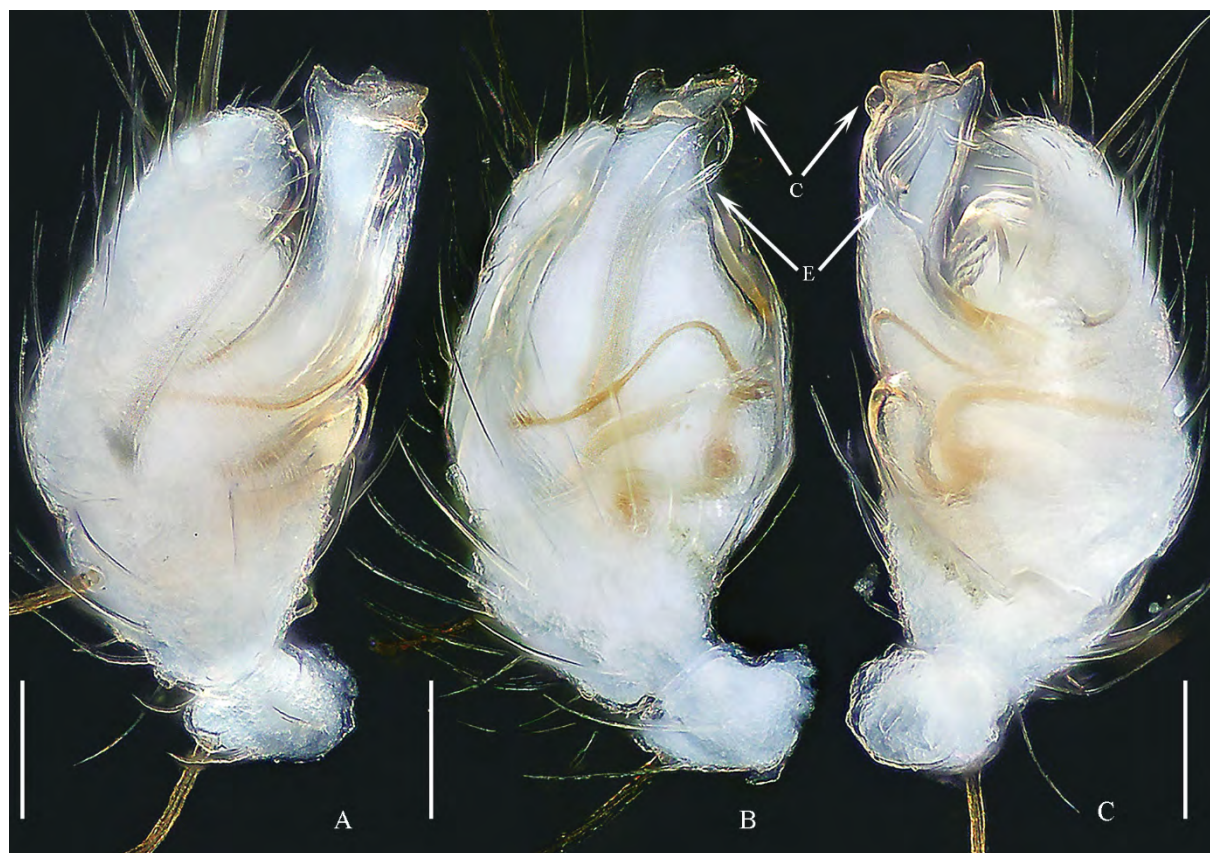


Figure 49. *Meotipa menglun* Lin & Li, sp. nov., holotype male, left palp. A. Prolateral view; B. Ventral view; C. Retrolateral view. Scale bars=0.1 mm.

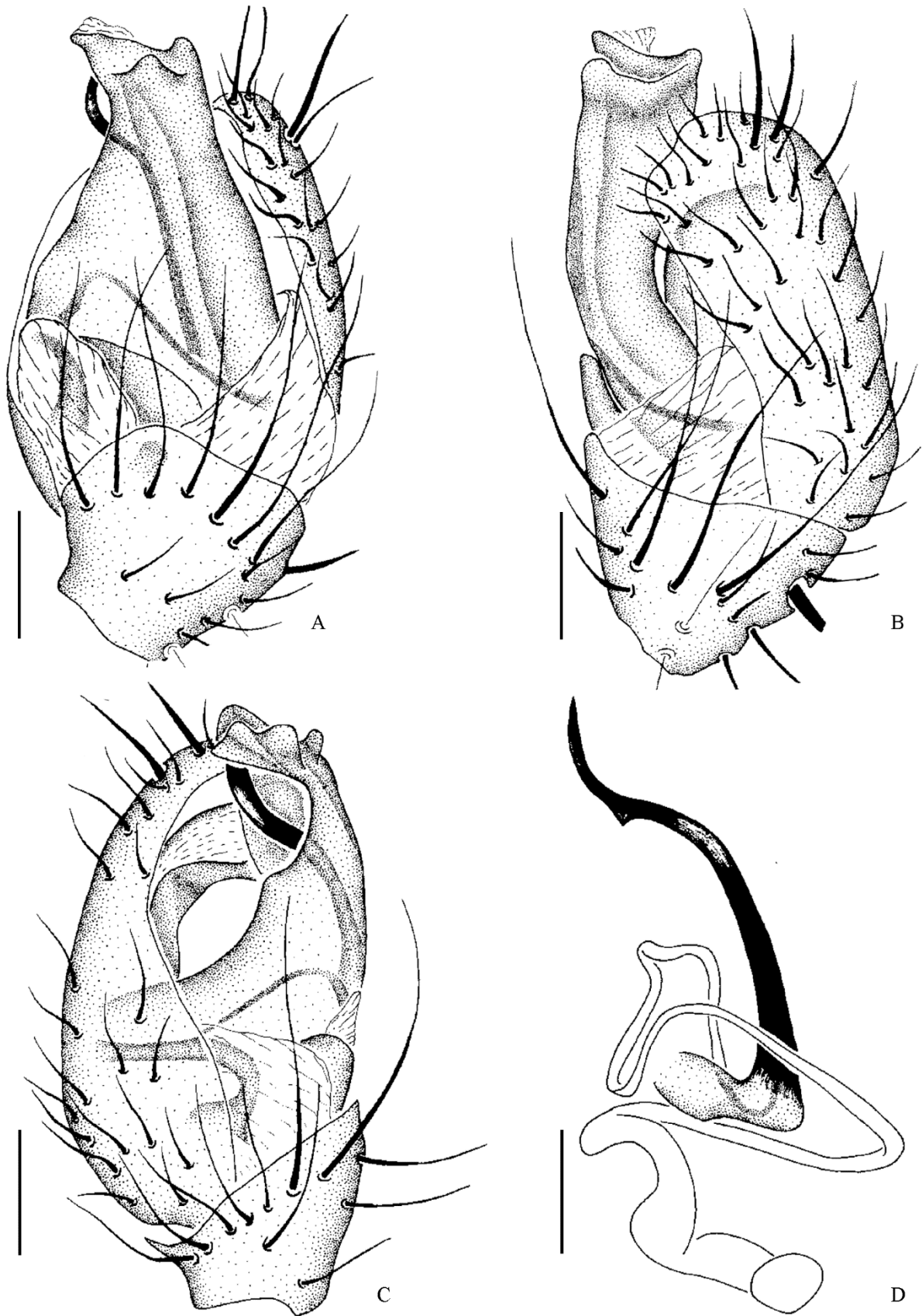


Figure 50. *Meotipa menglun* Lin & Li, **sp. nov.**, holotype male, left palp. A. Ventral view; B. Retrolateral view; C. Prolateral view; D. Embolus, ventral view. Scale bars=0.1 mm.

***Meotipa menglun* Lin & Li, sp. nov.** (Figs 49A–C, 50A–D, 53I–J)

Diagnosis. The new species is similar to *Meotipa vesiculosa* Simon, 1895 but can be distinguished by the distally projected conductor and the distally curved E, mostly covered by the C. *M. vesiculosa* has a glossy, unprojected C (Zhu, 1998; Yoshida, 2003).

Description. Male (holotype, IZCAS-Ar42469, Figs 49A–C, 50A–D, 53I–J). Total length 2.25. Prosoma 0.95 long, 0.75 wide, pale yellow, flat. Sternum 0.53 long, 0.50 wide, pale yellow. Opisthosoma 1.23 long, 1.08 wide, pale yellow, with large white spots and tiny dark spots in dorsal view, with 4 strong distal spines. Eyes developed: AME 0.08, ALE 0.08, PME 0.06, PLE 0.06, AME–AME 0.12, AME–ALE 0.05, PME–PME 0.08, PME–PLE 0.06. Clypeus height about 3.13 times AME diameter. Chelicerae with 1 promarginal tooth, retromarginal tooth absent. Leg I femur 2.25, patella 0.45, tibia 0.23, metatarsus 2.58, tarsus 0.75. Patella and tibia II–IV: 1.50, 0.75, 1.52. Leg I pale yellow, femur, tibia and metatarsus with ventral dark spots; femur with lines of weak spines and a strong distal spine; patella with a strong spine; tibia with 2 strong spines. Legs II, III, IV same as leg I.

Palp (Figs 49A–C, 50A–D) patella and tibia with a strong retrolateral spine; Sp curved in ventral view; C with a distal projection; E curved distally, with a lateral protuberance, mostly covered by C.

Female. Unknown.

Material examined. Holotype ♂, China: Yunnan, Menglun Nature Reserve (21.9090°N, 101.2867°E; elev. ca. 713 m) 10 August 2007, leg. Guo Zheng (IZCAS-Ar42469).

Distribution. Known only from the type locality.

Etymology. The specific name is a noun in apposition taken from the type locality.

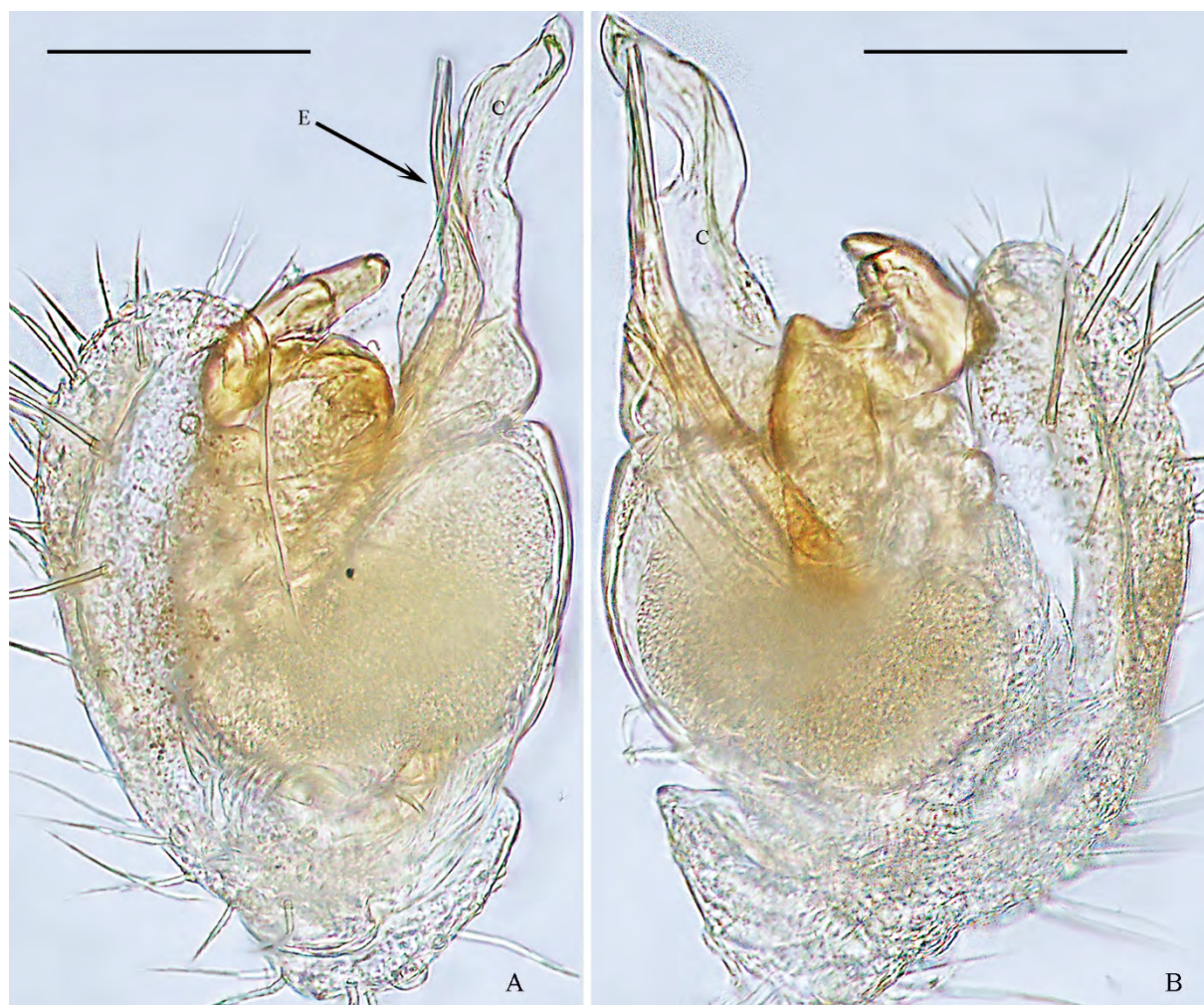


Figure 51. *Meotipa zhengguoi* Lin & Li, sp. nov., holotype male, left palp. A. Prolateral view; B. Retrolateral view. Scale bars = 0.1 mm.

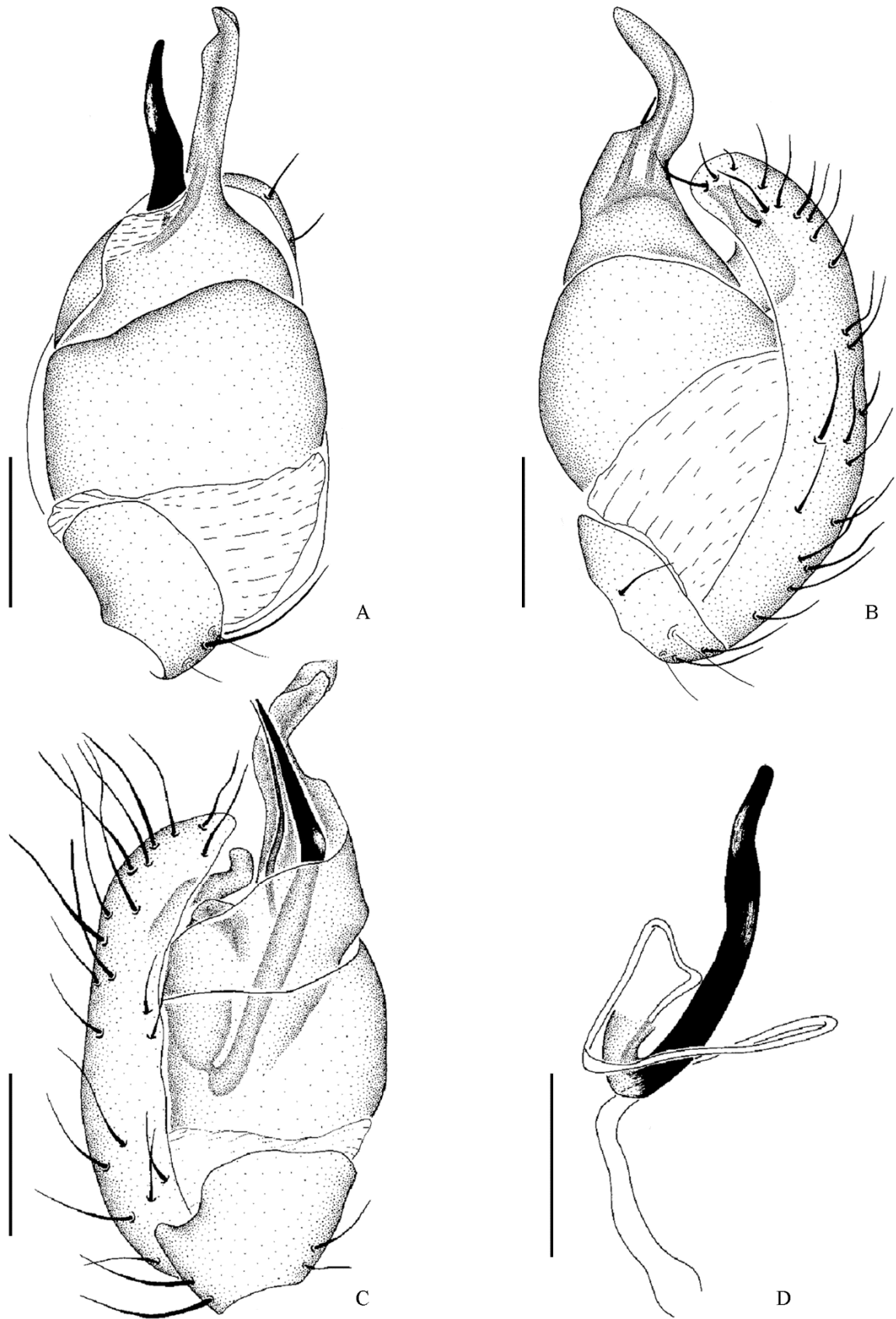


Figure 52. *Meotipa zhengguoi* Lin & Li, **sp. nov.**, holotype male, left palp. A. Ventral view; B. Retrolateral view; C. Prolateral view; D. Embolus, ventral view. Scale bars=0.1 mm.

***Meotipa zhengguoi* Lin & Li, sp. nov.** (Figs 51A–B, 52A–D, 53K–L)

Diagnosis. The new species is similar to *Chryso vitra* Zhu, 1998 but can be distinguished by the broad ST, the slender C, and the ventrally visible TTA. *C. vitra* has a narrow ST, a broad C, and an indistinct TTA in ventral view (Zhu, 1998).

Description. Male (holotype, IZCAS-Ar42470, Figs 51A–B, 52A–D, 53K–L). Total length 1.19. Prosoma 0.43 long, 0.23 wide, flat, pale yellow, with small black spots and 3 long bristles at middle. Sternum 0.29 long, 0.30 wide, pale yellow. Opisthosoma 0.78 long, 0.53 wide, pale yellow, with dark spots. Eyes developed: AME 0.07, ALE 0.06, PME 0.07, PLE 0.05, AME–AME 0.06, AME–ALE 0.03, PME–PME 0.05, PME–PLE 0.04. Clypeus height about 1.43 times AME diameter. Chelicerae with 1 promarginal tooth, retromarginal tooth absent. Leg I femur 1.00, patella 0.18, tibia 0.70, metatarsus 0.75,



Figure 53. Habitus of six new Theridiidae species, male dorsal view (A–C, E, G–L), lateral view (H, J, L) and female dorsal view (B, D, F, H). A–B. *Episinus bonjovi* Lin & Li, sp. nov.; C–D. *E. jiangweni* Lin & Li, sp. nov.; E–F. *E. tongyani* Lin & Li, sp. nov.; G–H. *Meotipa luoqiae* Lin & Li, sp. nov.; I–J. *M. menglun* Lin & Li, sp. nov.; K–L. *M. zhengguoi* Lin & Li, sp. nov. Scale bars = 1.0mm.

tarsus 0.25. Patella and tibia II–IV: 0.59, 0.38, 0.69. Leg I pale yellow, strong spine absent, femur, tibia and metatarsus with ventral dark spots. Legs II, III, IV same as leg I.

Palp (Figs 51A–B, 52A–D) patella and tibia without strong spines; ST broad; Sp indistinct in ventral view; C narrow, tip coiled; TTA visible in ventral view; E filiform.

Female. Unknown.

Material examined. Holotype ♂, China: Yunnan, Menglun Nature Reserve (21.9598°N, 101.2035°E; elev. ca. 822 m), 8 August 2007, leg. Guo Zheng (IZCAS-Ar42470). Paratype. 1♂ (IZCAS-Ar42471), Menglun (21°55'N, 101°16'E), 1–15 July 2007, leg. Guo Zheng.

Distribution. Only known from the type locality.

Etymology. The species is named after the collector Mr. Guo Zheng and is a noun (name) in genitive case.

Variation. Male (paratype). Total length 1.25; prosoma 0.50 long, 0.33 wide; sternum 0.28 long, 0.30 wide; opisthosoma 0.69 long, 0.50 wide.

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