

CORRESPONDENCE

Description on *Solitudes dushengi* gen. et sp. nov. from Xinjiang, China (Araneae: Gnaphosidae)

Yejie Lin, Shuqiang Li*

Institute of Zoology, Chinese Academy of Sciences, Beijing 100101, China

*Corresponding author, E-mail: lisq@ioz.ac.cn

Abstract *Solitudes dushengi* gen. & sp. nov. is described from Xinjiang, China. This species is tentatively assigned to the Gnaphosidae Pocock, 1898, and a new subfamily is described, namely Solitudinae **subfam. nov.** A full morphological description of the female, with epigyne illustrations are given for the new species. The type specimen is deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

Key words Morphology, new record, sandy wilderness, taxonomy.

The spider family Gnaphosidae Pocock, 1898 includes 2549 species in 161 genera (WSC, 2020), divided into seven subfamilies: Gnaphosinae Pocock, 1898, Zelotinae Platnick, 1990, Herpyllinae Platnick, 1990, Molycriinae Platnick, 1990, Drassodinae Simon, 1893, Prodidominae Simon, 1884 and Leptodrassinae Azevedo, Griswold & Santos, 2018 (Azevedo *et al.*, 2018). The current study reports a new subfamily: Solitudinae **subfam. nov.**, which includes one species: *Solitudes dushengi* gen. & sp. nov. This new subfamily can be distinguished by the curved tarsus with long claws, lacking serration, spines present on the leg IV tarsus and leg scopulae with spatulate hairs.

The specimen was preserved in 75% ethanol. The epigyne was cleared in trypsin enzyme solution to dissolve non-chitinous tissue. The specimen was 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 and processed in Adobe Photoshop CC® 2018.

All measurements are in millimetres (mm). 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). Leg spination was recorded for each segment following Marusik & Omelko (2018). The terminology used in the text and figures follows Azevedo *et al.* (2018). The map was generated using ArcMap 10.2 (Esri Inc.). The holotype is deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

Abbreviations used in the text and figures are listed as follow:

AER—Anterior eye row;
ALE—Anterior lateral eyes;
ALS—Anterior lateral spinnerets;
AME—Anterior median eyes;
CD—Copulatory duct;
CO—Copulatory opening;
FD—Fertilization duct;
MP—Median plate;
PER—Posterior eye row;
PLE—Posterior lateral eyes;

urn:lsid:zoobank.org:pub:D5CB5EBB-C920-4021-83A4-726302098A5C

Received 10 September 2020, accepted 15 October 2020

Executive editor: Fuqiang Chen

PLS—Posterior lateral spinnerets;
 PME—Posterior median eyes;
 PMS—Posterior median spinnerets;
 PR—Primary receptacle;
 SR—Secondary receptacle.

Family Gnaphosidae Pocock, 1898

Subfamily Solitudinae subfam. nov.

Type genus. *Solitudes* **gen. nov.**

Diagnosis. This new subfamily is similar to the subfamily Drassodinae Simon, 1893 in eyes size, habitus and chelicera, but can be distinguished by the absence of a deep notch on trochanter IV (*vs.* present in Drassodinae); by habitus, with the body and legs covered with dense white setae (*vs.* sparse short setae in Drassodinae); leg I and leg II, with the tarsus longer than metatarsus (*vs.* shorter in Drassodinae); scopulae consisting of spatulate hair reaching the middle of tarsus (*vs.* tenent setae in Drassodinae); leg III and leg IV, with tarsus curved with a long claw and lacking serration (*vs.* straight and claws short, with serration in Drassodinae) and leg IV tarsus with spines present (*vs.* absent in Drassodinae).

Solitudes **gen. nov.**

Etymology. The new generic name is a combination of the Latin word ‘*solitudo*’ (wilderness) which reflects its habitat, and ‘*Drassodes*’ (a genus of Gnaphosidae). The gender is masculine.

Diagnosis. Same as for the subfamily.

Description (Figs 1–2). Medium-sized. Carapace oval, covered with white hair, tapering anteriorly. AME largest, ALE smallest, AER recurved, PER procurved. Fovea distinct. Body covered by white setae. Legs covered with white hair; tarsus (including palp) curved, claws not pectinated. Leg scopulae with spatulate hair ventrally; tarsus longer than metatarsus in leg I and leg II but opposite in leg III and leg IV; tarsi IV with 2 dorsal spines, dorsal scopula of tarsus IV dense. Epigyne (Figs 2A–B) triangular, with wide M-shaped hood. Copulatory opening unobvious. Copulatory ducts short. Two pairs of spermathecae; primary spermathecae longer than wide, secondary spermathecae oval. Fertilization ducts posteriorly directed.

Type species. *Solitudes dushengi* **sp. nov.**

Distribution. The genus is currently known only from the type locality of the type species.



Figure 1. *Solitudes dushengi* **sp. nov.**, female holotype. A. Habitus, dorsal view. B. Same, ventral view. C. Leg I tarsus, lateral view. D. Same, dorsal view. E. Leg IV tarsus, lateral view. F. Same, dorsal view. Scale bars: A–B=1.0 mm; C–F=0.5 mm.



Figure 2. *Solitudes dushengi* sp. nov., female holotype. A. Epigyne, ventral view. B. Vulva, dorsal view. Scale bars=0.1 mm.

***Solitudes dushengi* sp. nov.** (Figs 1–2)

Type material. Holotype female (IZCAS-Ar41820) China, Xinjiang Uyghur Autonomous Region, Aksu Prefecture, Awat County, Bositan pastureland, near G580 Road, Sandy wilderness, 80.9567°N, 39.8647°E, 03 March 2020, Sheng Du leg.

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

Diagnosis. Same as for the subfamily.

Description. Female (Figs 1–2). Total length (without chelicerae) 9.64. Colour in alcohol: carapace pale; chelicerae, endites, labium and sternum brown; Legs pale, tarsi covered with spatulate hair, claw obvious long; Abdomen pale. Carapace 5.19 long, 3.85 wide; Fovea about 0.15 of carapace length. Eye sizes and interdistances: AME 0.23, ALE 0.10, PME 0.19, PLE 0.13, AME-AME 0.28, PME-PME 0.09, AME-PME 0.27, AME-ALE 0.08, PME-PL 0.27, ALE-PL 0.15. AER recurved, PER procurved. Chelicerae with 2 promarginal teeth and 1 retromarginal tooth. Sternum oval. Endites darker in middle. Leg covered with white long hair, on leg IV tarsus with two spines. Leg measurements: I: 12.34 (3.80 + 1.75 + 3.00 + 1.60 + 2.19), II: 12.46 (3.50 + 1.88 + 2.76 + 1.85 + 2.47), III: 12.75 (3.40 + 1.65 + 2.60 + 2.28 + 2.22), IV: 13.67 (3.72 + 1.40 + 3.24 + 2.81 + 2.50). Spination of leg I: femur 3p, 3d, patella 2p, tibia 3p, 2d, 3r, 4v, metatarsus 1p, 1r, 2v; leg II: femur 3p, 3d, 1-2r, patella 2p, tibia 3p, 2d, 3r, 6v, metatarsus 2p, 1r, 2v; leg III: femur 2p, 3d, 2r, patella 2p, 2r, tibia 4p, 3d, 3r, 6v, metatarsus 4p, 2d, 4r, 6v; leg IV: femur 2p, 3d, 2r, patella 2p, 2r, tibia 4p, 2d, 4r, 6v, metatarsus 5p, 5d, 2r, 4r, 6v, tarsus 2d. Abdomen oval, covered with dense white setae. Spinnerets white. ALS 0.60, PMS 0.18, PLS 0.29.

Epigyne (Figs 2A–B). Plate triangular, with a ratio of length to width of 1:1, atrium heart-shaped, with a ratio of length to width of 1:2, with an M-shaped hood terminally. Copulatory opening covered by median plate, with a ratio of length to width of 5:4; copulatory ducts short. Two pairs of receptacles, primary receptacle longer than wide, secondary receptacle oval. Fusion bubbles present on posterior aspect. Fertilization ducts close to each other.

Distribution. Known only from the type locality.

Funding This study was supported by the National Natural Science Foundation of China (31530067).

Acknowledgements The manuscript benefitted greatly from comments by Yuri Marusik (Magadan, Russia), Peter Jäger (Frankfurt a M., Germany), Theo Blick (Hummeltal, Germany). Danniella Sherwood (London, UK) checked the English.

References

- Azevedo, G.H.F., Griswold, C.E., Santos, A.J. 2018. Systematics and evolution of ground spiders revisited (Araneae, Dionycha, Gnaphosidae). *Cladistics*, 34(6): 579–626. doi: 10.1111/cla.12226.
- Marusik, Y.M., Omelko, M.M. 2018. New data on *Synaphosus* (Araneae: Gnaphosidae) from Southeast Asia. *Zootaxa*, 4374(2): 235–248. doi: 10.11646/zootaxa.4374.2.4.
- WSC. 2020. World Spider Catalog. Version 21.5. Natural History Museum Bern. Available from <http://wsc.nmbe.ch> (accessed 21 October 2020). doi: 10.24436/2.