



A new *Otacilia* Thorell, 1897 species from Hubei Province, China (Araneae, Phrurolithidae)

Minghao Guo[‡], Yannan Mu^{§,||}, Feng Zhang^{§,||}

[‡] Hebei Vocational University of Industry and Technology, Shijiazhuang, China

[§] Key Laboratory of Zoological Systematics and Application, College of Life Sciences, Hebei University, Baoding, China

^{||} Hebei Basic Science Center for Biotic Interaction, Hebei University, Baoding, China

Corresponding author: Feng Zhang (dudu06042001@163.com)

Academic editor: Yanfeng Tong

Received: 13 Sep 2024 | Accepted: 17 Oct 2024 | Published: 23 Oct 2024

Citation: Guo M, Mu Y, Zhang F (2024) A new *Otacilia* Thorell, 1897 species from Hubei Province, China (Araneae, Phrurolithidae). Biodiversity Data Journal 12: e137014. <https://doi.org/10.3897/BDJ.12.e137014>

ZooBank: [urn:lsid:zoobank.org:pub:5C60AD25-C894-498F-BA76-E93D2F0BFAC1](https://doi.org/urn:lsid:zoobank.org:pub:5C60AD25-C894-498F-BA76-E93D2F0BFAC1)

Abstract

Background

Phrurolithidae is a family of spiders with 405 species belonging to 25 genera distributed worldwide. Notably, 213 species belonging to 17 genera have been recorded in China.

New information

A new species of the genus *Otacilia* Thorell, 1897 is described from Duheyuan Nature Reserve, Hubei Province, China. Diagnosis, morphological description, living photos and photos of the habitus and genitalia of the new species are provided.

Introduction

Otacilia Thorell, 1897, the largest genus of family Phrurolithidae, contains 143 species and is distributed in East Asia and Southeast Asia; amongst them, 120 species were reported in China (Anonymous 2024). The species and studies of *Otacilia* have

accelerated considerably during past decade and reduced the complexity of *Otacilia* by assigning species to newly-established genera (Liu et al. 2020, Zamani and Marusik 2020, Kamura 2021, Mu and Zhang 2021, Liu et al. 2022, Mu and Zhang 2022, Mu et al. 2022, Mu and Zhang 2023), which greatly promoted the study of *Otacilia*. Recently, *O. khezu* Lin & Li, 2024, a eyeless species collected from a cave was described, showing enormous potential for species diversity (Lin et al. 2024). While examining specimens collected from Duheyuan Nature Reserve, one new *Otacilia* species has been discovered and is described here: *Otacilia subshanxi* sp. nov.

Materials and methods

All measurements in the text are given in millimetres. The leg measurements are shown as total length (femur, patella, tibia, metatarsus, tarsus). The epigynes were removed and cleared in a pancreatin solution (Álvarez-Padilla and Hormiga 2007) and then transferred to 95% ethanol. All specimens are preserved in 95% alcohol. Photographs were taken using the Leica M205A stereomicroscope, equipped with a DFC 550 CCD. All specimens are deposited in the Museum of Hebei University (MHBUE), Baoding, China.

The abbreviations of genital structures are listed under figure legends. The following abbreviations are used in text: AER—anterior eye row; ALE—anterior lateral eye; AME—anterior median eye; CH—clypeal height; CRW—cephalic region width; CW—carapace width; EAW—eye area width; MOA—median ocular area; PLE—posterior lateral eye; PME—posterior median eye; PER—posterior eye row. Spination: d—dorsal; pl—prolateral; pv—prolateral ventral; rv—retrolateral ventral.

Taxon treatment

Otacilia subshanxi sp. nov.

- ZooBank [D1195279-905F-403F-BDED-986692B2B4C0](https://doi.org/10.21203/rs.3.rs-3111111/v1)

Materials

Holotype:

- a. scientificName: *Otacilia subshanxi*; order: Araneae; family: Phrurolithidae; genus: *Otacilia*; country: China; stateProvince: Hubei; county: Zhushan; locality: Shunshuiping Villag; verbatimLatitude: 31°33'7.1359"N; verbatimLongitude: 110°1'10.4883"E; year: 2023; month: 9; day: 19; sex: male; lifeStage: adult; occurrenceID: E556732B-3666-537F-AB57-06D34F340423

Paratype:

- a. scientificName: *Otacilia subshanxi*; order: Araneae; family: Phrurolithidae; genus: *Otacilia*; country: China; stateProvince: Hubei; county: Zhushan; locality: Shunshuiping Village; verbatimLatitude: 31°33'7.1359"N; verbatimLongitude: 110°1'10.4883"E; year: 2023; month: 9; day: 19; sex: 1 male, 5 females; lifeStage: adult; occurrenceID: 74251D57-B22A-59A7-B2A8-7AFE3F008FFE

Description

Male (Holotype): total length 3.04, carapace 1.50 long, 1.30 wide; abdomen 1.54 long, 1.03 wide. Eye sizes and interdistances: AME 0.08, ALE 0.09, PME 0.08, PLE 0.10; AME–AME 0.05, AME–ALE 0.01, ALE–ALE 0.22, PME–PME 0.10, PME–PLE 0.06, PLE–PLE 0.40, ALE–PLE 0.08. EAW 0.52, CRW 0.68, EAW/CRW 0.76, CRW/CW 0.52. MOA 0.26 long, anterior width 0.21, posterior width 0.27. CH 0.11, CH/AME 1.38. Labium 0.15 long, 0.22 wide. Sternum 0.87 long, 0.78 wide. Leg measurements: I 6.15 (1.57 + 0.55 + 1.81 + 1.48 + 0.74), II 4.91 (1.30 + 0.51 + 1.27 + 1.15 + 0.68), III 4.02 (1.08 + 0.45 + 0.80 + 1.07 + 0.62), IV 6.51 (1.78 + 0.54 + 1.53 + 1.80 + 0.86). Spination: femur I d 1 pl 4, femur II d 1 pl 2, femur III–IV d 1, tibia I pv 7 rv 8, tibia II pv 7 rv 6, metatarsus I pv 4 rv 4, metatarsus II pv 4 rv 3.

Colouration (Fig. 1A, Fig. 2A and B). Carapace slightly brown, radial striae indistinct, with one black longitudinal stripe nearly same width as eye area. Abdomen grey, with small dorsal scutum darker than carapace, with black pattern beside dorsal scutum anteriorly and four black transverse stripes at posterior of abdomen. Legs yellow, with black annuli near ventral of tibiae I–IV tip.



Figure 1. [doi](#)

Living photos of *Otacilia subshanxi* sp. nov.: **A** Male; **B** Female (photographs by Qianle Lu).

Palp as in Fig. 3A–D. Femur with large, well-developed apophysis at middle part. Prolateral tibial apophysis distinct. Tibial nearly as long as wide. Retrolateral tibial apophysis (RTA) with wide base and narrow, tip blunt, base of retrolateral with a small tuber (Fig. 3D), a row of strong setae at base of RTA (Fig. 3B). Bulb pyriform, sperm duct distinct, tapering off close to embolus. Embolus wide, hook-like, blade-shaped. Conductor small, triangular, membranous.

Female (Paratype): total length 3.52, carapace 1.52 long, 1.36 wide; abdomen 2.00 long, 1.22 wide. Eye sizes and interdistances: AME 0.09, ALE 0.10, PME 0.08, PLE 0.09; AME–AME 0.04, AME–ALE 0.01, ALE–ALE 0.21, PME–PME 0.10, PME–PLE 0.06, PLE–PLE 0.37, ALE–PLE 0.06. EAW 0.48, CRW 0.69, EAW/CRW 0.69, CRW/CW 0.51. MOA 0.27 long, anterior width 0.19, posterior width 0.27. CH 0.09, CH/AME 1.00. Labium 0.15 long, 0.25 wide. Sternum 0.93 long, 0.79 wide. Leg measurements:

I 6.00 (1.50 + 0.52 + 1.85 + 1.44 + 0.69), II 4.93 (1.25 + 0.51 + 1.33 + 1.13 + 0.71), III 4.29 (1.14 + 0.47 + 0.93 + 1.12 + 0.63), IV 6.32 (1.68 + 0.59 + 1.37 + 1.77 + 0.91). Spination: femur I d 1 pl 4, femur II d 1 pl 3, femora III–IV d 1, tibia I pv 7 rv 8, tibia II pv 7 rv 6, metatarsus I pv 4 rv 4, metatarsus II pv 4 rv 3. Other characters as in male, except dorsal scutum absent (Fig. 1B, Fig. 2C and D).

Epigyne as in Fig. 3E and F. Epigynal plate sclerotised, non-transparent, with two large atriums. Median septum wide, edge arched, widest at middle part. Copulatory openings located at middle part of atrium, separated by septum. Copulatory ducts short and thick, straight. Connecting tubes long and thin, curved. Bursae balloon-shaped, transparent. Spermathecae oval and small, bean-shaped. Fertilisation ducts short, located anteromesally on spermathecae.



Figure 2. [doi](#)

Habitus of *Otacilia subshanxi* sp. nov.: **A** Male holotype, dorsal view; **B** Same, ventral view; **C** Female paratype, dorsal view; **D** Same, ventral view.

Diagnosis

This new species resembles *O. shanxi* Mu & Zhang, 2021 in having a similar femoral apophysis, atrium, curved connecting tubes, but it can be recognised by: 1) the wide embolus (vs. thin, cf. Fig. 3C and fig. 7F in Mu and Zhang 2021), 2) the thin retrolateral tibial apophysis (vs. wide, cf. Fig. 3B and fig. 7G in Mu and Zhang (2021))

and 3) the thin median septum (vs. wide, cf. Fig. 3E and fig. 7F in Mu and Zhang (2021)).

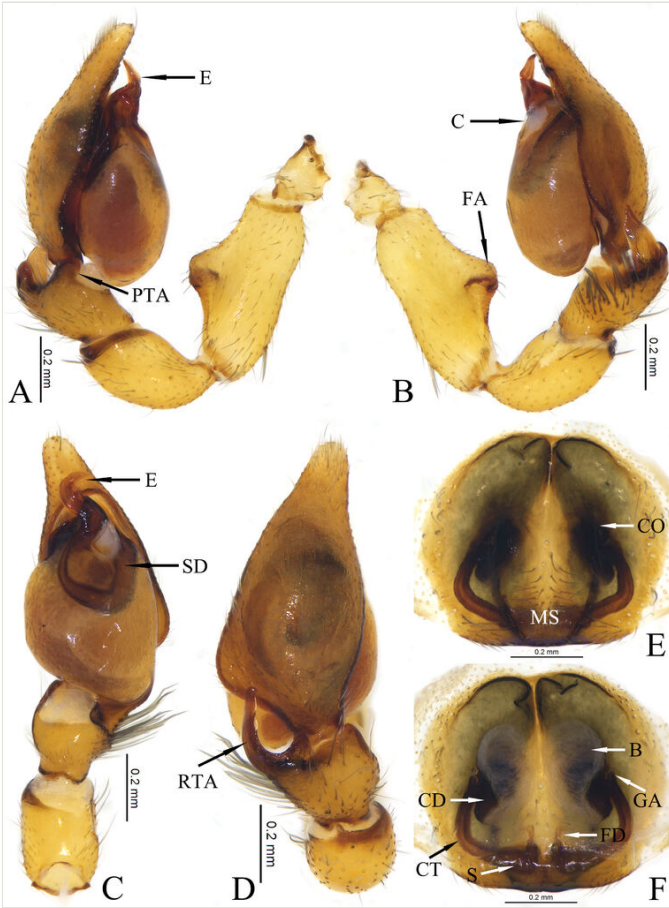


Figure 3. [doi](#)

Copulatory organs of *Otacilia subshanxi* sp. nov.: **A** Male left palp, prolateral view; **B** Same, retrolateral view; **C** Same, ventral view; **D** Same, dorsal view; **E** Epigyne, ventral view; **F** Same, dorsal view. Abbreviations: E—embolus; FA—femoral apophysis; PTA—prolateral tibial apophysis; RTA—retrolateral tibial apophysis; SD—sperm duct; B—bursa; CO—copulatory opening; CD—copulatory duct; CT—connecting tube; FD—fertilisation duct; GA—glandular appendage; MS—median septum; S—spermathecae.

Etymology

This species is named for its similarity to *O. shanxi* Mu & Zhang, 2021.

Distribution

Know only from the type locality (Fig. 4).

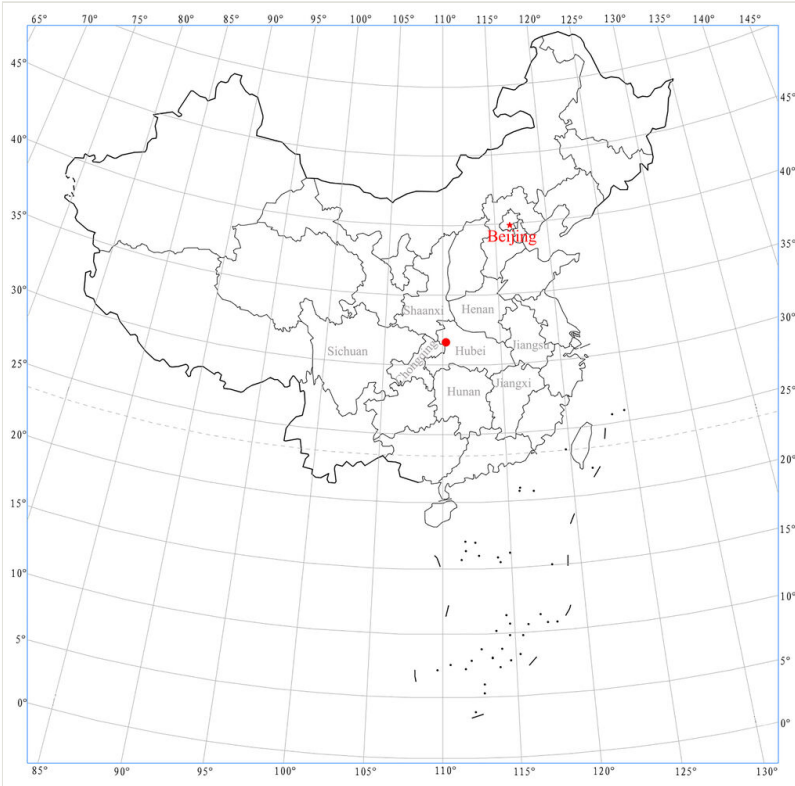


Figure 4. [doi](#)

Distribution map of *Otacilia subshanxi* sp. nov. in this study (red circle).

Acknowledgements

Thanks to Drs. Luyu Wang and Xulong Chen (Southwest University, China) for collecting valuable specimens. Thanks to Mr Qianle Lu for providing living photos. Many thanks to two reviewers, Yejie Lin and KeKe Liu, for their valuable comments that greatly improved the manuscript. This study was supported by the National Natural Science Foundation of China (No. 32170468) and by the Science & Technology Fundamental Resources Investigation Program (Grant No. 2022FY202100).

References

- Álvarez-Padilla F, Hormiga G (2007) A protocol for digesting internal soft tissues and mounting spiders for scanning electron microscopy. *Journal of Arachnology* 35: 538-542. <https://doi.org/10.1636/Sh06-55.1>
- Kamura T (2021) Three new genera of the family Phrurolithidae (Araneae) from East Asia. *Acta Arachnologica* 70: 117-130. <https://doi.org/10.2476/asjaa.70.117>

- Lin YJ, Chen HF, Wang XH, Li SQ (2024) *Otacilia khezu* sp. nov., a new troglobitic spider (Araneae, Phrurolithidae) from Guangxi, China. Biodiversity Data Journal 12 (e126716): 1-7. <https://doi.org/10.3897/BDJ.12.e126716>
- Liu KK, Luo HP, Ying YH, Xiao YX, Xu X, Xiao YH (2020) A survey of Phrurolithidae spiders from Jinggang Mountain National Nature Reserve, Jiangxi Province, China. ZooKeys 946: 1-37. <https://doi.org/10.3897/zookeys.947.51175>
- Liu KK, Li SQ, Zhang XQ, Ying YH, Meng ZY, Fei MH, Li WH, Xiao YH, Xu X (2022) Unknown species from China: the case of phrurolithid spiders (Araneae, Phrurolithidae). Zoological Research <https://doi.org/10.24272/zj.issn.2095-8137.2022.055>
- Mu YN, Zhang F (2021) Seven new *Otacilia* Thorell, 1897 species from China (Araneae: Phrurolithidae). Zootaxa 5032 (4): 533-548. <https://doi.org/10.11646/zootaxa.5032.4.4>
- Mu YN, Zhang F (2022) *Lingulatus* gen. nov., a new genus with description of three new species and one new combination (Araneae: Phrurolithidae). Zootaxa 5178: 265-277. <https://doi.org/10.11646/zootaxa.5178.3.5>
- Mu YN, Jin C, Zhang F (2022) Description of eight new species of *Otacilia* Thorell, 1897 from southern China (Araneae: Phrurolithidae). Zootaxa 5134: 238-260. <https://doi.org/10.11646/zootaxa.5134.2.4>
- Mu YN, Zhang F (2023) Further additions to the guardstone spider fauna from China (Araneae: Phrurolithidae). Zootaxa 5338: 1-104. <https://doi.org/10.11646/zootaxa.5338.1.1>
- World Spider Catalog (2024) World Spider Catalog Version 25.5. Natural History Museum Bern. <http://wsc.nmbe.ch>. Accessed on 2024-8-29.
- Zamani A, Marusik YM (2020) A survey of Phrurolithidae (Arachnida: Araneae) in southern Caucasus, Iran and Central Asia. Zootaxa 4758: 311-329. <https://doi.org/10.11646/zootaxa.4758.2>