

## ORIGINAL ARTICLE

# *Dysdera dushengi* sp. nov., the easternmost species of the spider family Dysderidae (Arachnida: Araneae)

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**Abstract** Dysderidae C. L. Koch, 1837 is reported from China for the first time. A new species of the genus *Dysdera* Latreille, 1804, *D. dushengi* sp. nov. from Xinjiang Uygur Autonomous Region, is described based on both sexes. The new species is closely related to *D. pamirica* Dunin, 1992, a species known from adjacent Tajikistan.

**Key words** Xinjiang, China, taxonomy, new record, morphology.

## 1 Introduction

The family Dysderidae includes 574 species in 25 genera (Li, 2020) before the current study, with most distributed in the Palearctic of Europe and West Asia. According to the current World Spider Catalog, Dysderidae are not recorded from China (WSC, 2020). An anthropochorous species, *Dysdera crocata* C. L. Koch, 1838, had been reported from Taiwan, China (Kayashima, 1943; Lee, 1966); however, the record was doubted by Song *et al.* (1999) because no illustrations were provided, and it may refer to Oonopidae. Zhang and Wang (2017) reported *Dysdera crocata* from Taiwan, China again, but the specimens are from a pet market and are exotic. The current study reports the first Dysderidae species from China, *Dysdera dushengi* sp. nov. (Figs 1–6), the easternmost species of the family.

## 2 Materials and methods

All specimens were preserved in 100% ethanol. Epigynes were cleared in trypsin enzyme solution to dissolve non-chitinous tissue. 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® and processed in Adobe Photoshop CC 2018®.

All measurements are made 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 Arnedo & Ribera (1996). The terminology used in the text and figures follows Macías-Hernández *et al.* (2010) and Dimitrov (2018). The map was generated using ArcMap 10.2 (Esri Inc.). Types are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

Abbreviations are used as following:

AE—Anterior eyes;

AL—Additional lateral sheet at the internal border;

C—Crest;

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DA—Dorsal arc of anterior diverticulum;  
 DAP—Dorsal arc of posterior diverticulum;  
 L—Lateral sheet;  
 P—Posterior apophysis;  
 PD—Posterior diverticulum;  
 PLE—Posterior lateral eyes;  
 PME—Posterior median eyes;  
 S—Spermatheca;  
 SD—sperm duct;  
 T—Tegulum;  
 VW—Ventral wall.

### 3 Taxonomy

#### Dysderidae C. L. Koch, 1837

##### *Dysdera* Latreille, 1804

*Dysdera* Latreille, 1804: 134.

Type species. *Aranea erythrina* Walckenaer, 1802 from France.



Figure 1. *Dysdera dushengi* sp. nov., habitus, male holotype and female paratype. A. Male, dorsal view. B. Same, ventral view. C. Female, dorsal view. D. Same, ventral view. Scale bars = 1.0 mm.



Figure 2. *Dysdera dushengi* sp. nov., bulb, male holotype. A. Retrolateral view. B. Prolateral view. Scale bars=0.1 mm.

Diagnosis. See Deeleman-Reinhold & Deeleman (1988).

Distribution. An anthropochorous species, *D. crocata*, which is native of Europe, Caucasus, Iraq and Central Asia, has



been introduced to North America, Chile, Brazil, Australia, New Zealand, and Hawaii (WSC, 2020). Aside from this species, Dysderidae is the only family of spiders that is nearly endemic to the Palearctic and particularly to the Western Palearctic (Marusik, 2017). Before this study, the easternmost distribution record of Dysderidae is *D. tartarica* Kroneberg, 1875, reported from Bishkek, Kyrgyzstan (42.8241°N, 74.7380°E, see Dunin, 1985). The new species reported in this study, *D. dushengi* **sp. nov.**, has a distribution that reaches 81.0180°E longitude, making it the easternmost member of the family.

***Dysdera dushengi* sp. nov.** (Figs 1–6)

Type material. Holotype ♂ (IZCAS-Ar39719), CHINA: Xinjiang Uygur Autonomous Region, Ili Kazak Autonomous Prefecture, 10km N. of Kekedala City, 44.0244°N, 81.0180°E, elev. 751 m, 06.IV.2019, Sheng Du leg. Paratypes. 1♂, 1♀ (IZCAS-Ar39720–IZCAS-Ar39721), same data as holotype.

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

Diagnosis. *Dysdera dushengi* **sp. nov.** is similar to *D. pamirica* Dunin, 1992, which has been found only at the ridge of Peter the Great, Central Tajikistan (38.7833°N, 70.3000°E, see Dunin, 1992). Males of the two species are similar in: the ratio of the height of the tegulum to the height of the distal division, which is 1:2 in lateral view, the semi-circular crest, and the posterior leaf-shaped apophysis but can be distinguished from *D. pamirica* by the tegulum and distal division which are in a straight line in lateral view (vs. angle between tegulum and distal division approximately 10° in *D. pamirica*) and the height of the tegulum to the length of the widest part of the crest is 1:2

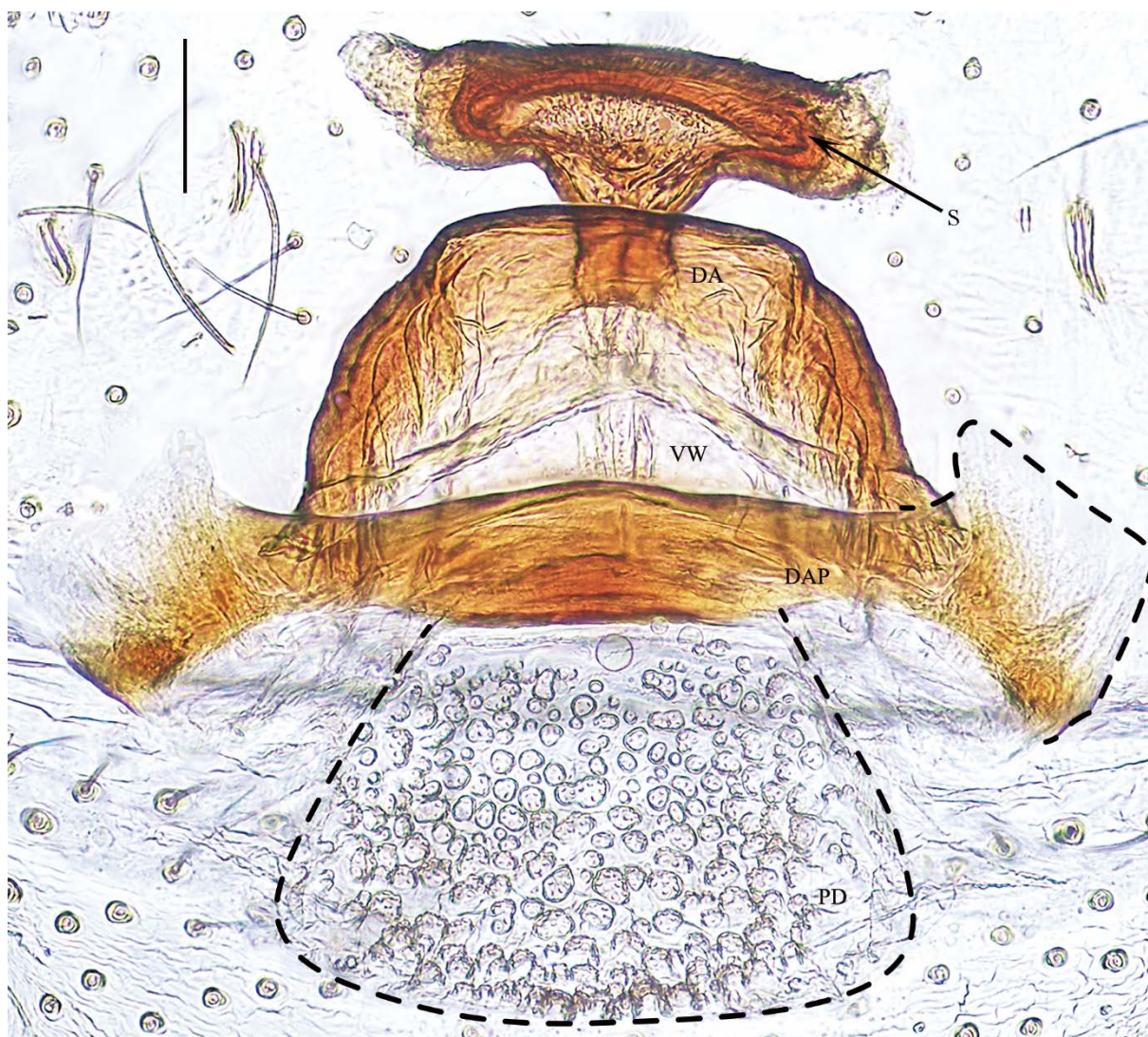


Figure 3. *Dysdera dushengi* **sp. nov.**, vulva, female paratype, dorsal view. Scale bar=0.1 mm.



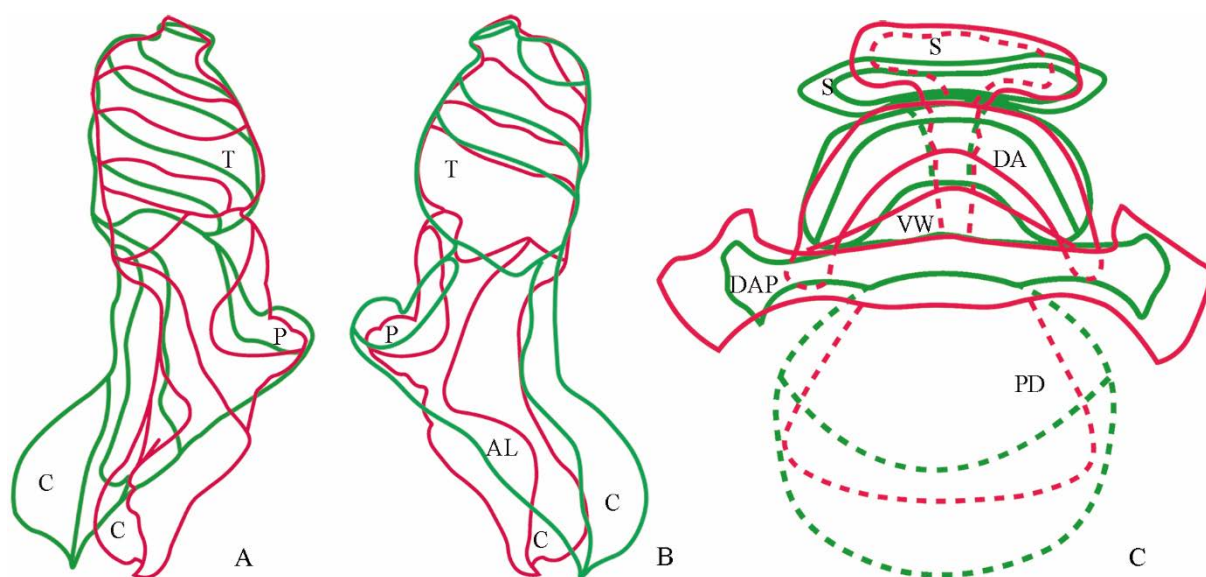


Figure 4. *Dysdera* spp., outlines of bulbs and vulvae (Red line, *D. dushengi* **sp. nov.**; green line, *D. pamirica*, changed after Dunin, 1992). A. Bulbs, retrolateral view. B. Bulbs, prolateral view. C. Vulvae, dorsal view.



Figure 5. Collecting localities and live spiders. A–B. Kekedala City, where the spider was found under stones. C. Mating couple.

(vs. 1 : 1 in *D. pamirica*) (Figs 2, 4 A–B). Females have a similar dorsal arc of the anterior diverticulum but can be distinguished by the spermatheca which are not connected to the dorsal arc of anterior diverticulum (vs. connected to the dorsal arc of anterior diverticulum in *D. pamirica*), and the two extremities of the dorsal arc of the posterior diverticulum are well-developed (vs. less well developed in *D. pamirica*) (Figs 3, 4C).

**Description.** Male (Figs 1A–B, 2, 4A–B). Total length 7.37. Carapace 3.21 long, 2.31 wide. Abdomen 4.25 long, 2.34 wide. Eye sizes and inter-distances: AE 0.20, PLE 0.12, PME 0.12, AE–AE 0.44, PME–PME 0.28, PME–PLE 0.25, AE–PLE 0.28. PLE–PLE 0.52. Chelicerae 2.00 long. Fang 1.40. Legs: I 10.25 (2.88 + 3.85 + 2.88 + 0.64), II 9.40 (2.88 + 3.21 + 2.56 + 0.75), III 6.75 (2.25 + 2.00 + 2.25 + 0.25), IV 8.38 (3.00 + 2.50 + 2.50 + 0.38). Carapace red, smooth, lighter posteriorly, with sparse setae. Clypeus dark red. Chelicerae long, red, with 1 promarginal tooth and 2 retromarginal teeth. Endites and labium red. Sternum colored as endites, with sparse setae. Legs orange. Spination of leg I: femur 3d; leg II: femur 3d; leg III: femur 11–6r, 4–0v, tibia 5–6d, 5–7p, 4v, metatarsus 5–7d, 3–2p; leg IV: femur 3d, 4–2r, tibia 7–4d, 5–4p, metatarsus 6–9d, 2p, 3–0r, 4v. Abdomen oval, dorsum pale yellow, covered with setae.

**Bulb** (Figs 2, 4A–B) three times longer than tegulum; distal division straight in lateral view; crest semicircular, half length of tegulum; lateral sheet well-developed, with an apophysis; anterior apophysis of lateral sheet absent; AL present; posterior apophysis leaf-shaped, perpendicular to tegulum in lateral view, ratio of lateral length to length of tegulum 2 : 1.

**Female** (Figs 1C–D, 3, 4C). Total length 7.69. Carapace 2.80 long, 1.92 wide. Abdomen 4.49 long, 0.96 wide. Eye sizes and inter-distances: AE 0.16, PLE 0.12, PME 0.12, AE–AE 0.40, PME–PME 0.24, PME–PLE 0.25, AE–PLE 0.28. PLE–PLE 0.48. Chelicerae 1.25. Fang 1.17. Legs: I 7.80 (2.20 + 3.00 + 2.00 + 0.60), II 6.74 (2.19 + 2.75 + 1.20 + 0.60), III 6.00 (1.80 + 2.00 + 1.60 + 0.60), IV 6.89 (2.56 + 1.50 + 2.20 + 0.63). Spination of leg I: femur 3d, 3–0p; leg II: femur 2d; leg III: femur 3–0d, 1–0r, tibia 3r, 3–5p, 3–1d, metatarsus 3–6d, 2–3p, 4r, 1–3v; leg IV: femur 7–4r, tibia 4–5p, 3–2d, metatarsus 3–7d, 2–1p. Appearance as in male.

**Endogyne** (Figs 3, 4C): Anterior spermatheca with straight lateral wings, four times wider than long, neck of spermatheca visible; dorsal arc of anterior diverticulum ladder-shaped, two times wider than long; terminus of dorsal arc of posterior diverticulum well-developed; ventral wall triangular.

**Distribution.** Known only from the type locality.

**Life history.** All specimens of the new species were collected under stones on a rocky massif.

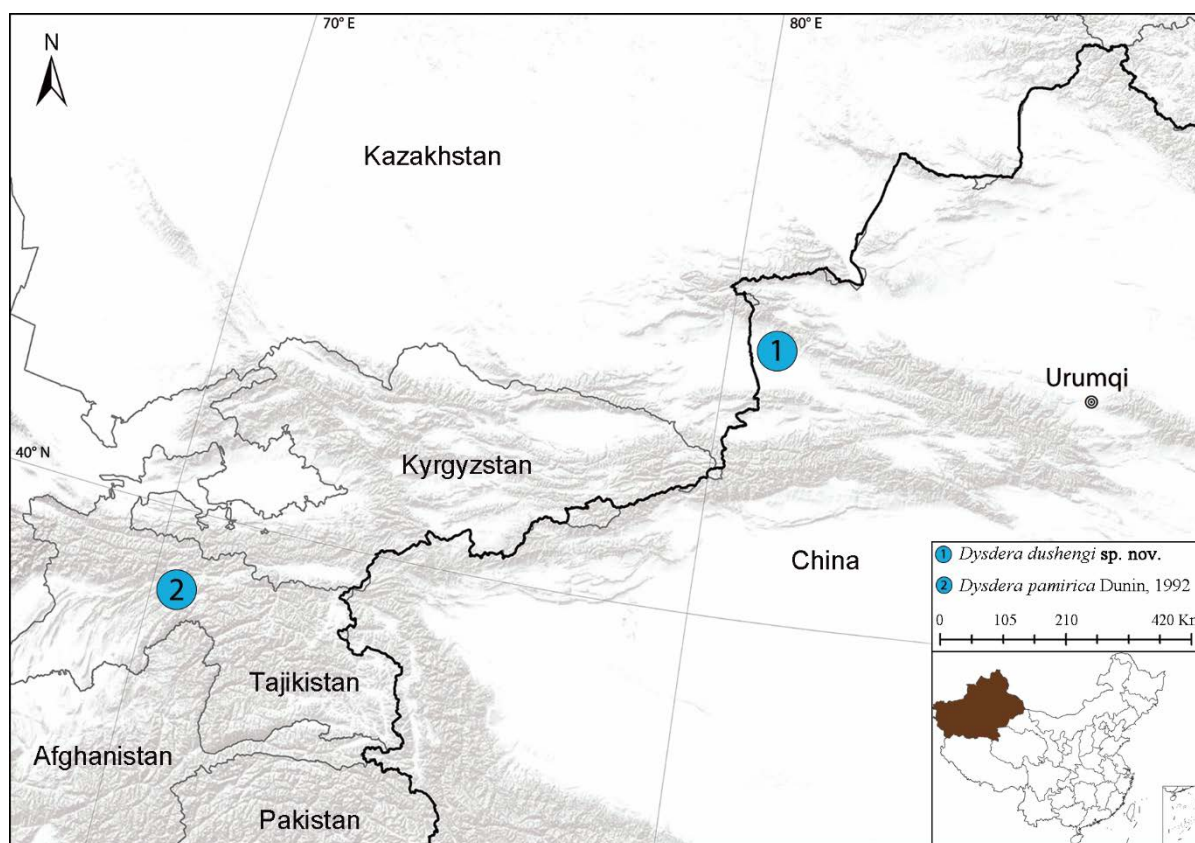


Figure 6. Distribution records of two *Dysdera* species.



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