

## ***DYSDERA UDATA* SP. N., A NEW SPIDER SPECIES FROM CYPRUS (ARANEAE, DYSDERIDAE)**

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**Abstract:** A new *Dysdera* spider species is described from Cyprus. Based on male and female morphological features, the new species, *D. udata* n. sp., can be considered in the *asiatica* species group. Besides the copulatory characters, the new species' males also have cheliceral projections, which are rarely observed in the genus *Dysdera*, and both sexes have retrolaterally positioned tubercles on the patellae.

## **INTRODUCTION**

Compared to other members of the order Araneae, the species of the family Dysderidae C.L. Koch, 1837 are medium-sized, two or three tarsal clawed, ecribellate and haplogynous spiders.

*Dysdera* Latreille, 1804, the most species-rich genus of the family, distributed mainly in and around the Mediterranean basin, was first reported from Cyprus by Strand (1907). The first recorded *Dysdera westringi* O. Pickard-Cambridge, 1872 was represented by a male individual and is deposited at the Zoological Institute of Tübingen, Germany.

Deeleman-Reinhold and Deeleman (1988) recorded *Dysdera lata* Reuss, 1834; *D. longiman dibularis* Nosek, 1905; *D. spinicrus* Simon, 1882; and *D. westringi* O. Pickard-Cambridge, 1872 from the island, while Bosmans et al. (2019) recorded *D. gigas* Roewer, 1928. During faunistic studies in the northern part of Cyprus since 2018, we discovered few specimens which belong to a new *Dysdera* species. The aim of this paper is to properly describe and illustrate this species via photographs of the copulatory organs and somatic features.

## **MATERIALS AND METHODS**

Specimens were collected from under stones from different localities in the northern part of Cyprus using a hand aspirator or pitfall traps. Subsequently, all speci-

mens were preserved in 96% ethanol. Digital images of the pedipalps and vulva were taken with an AmScope MU1803 digital camera attached to an AmScope SM745NTP stereomicroscope.

SEM micrographs were made from dried and sputter-coated (by gold) organs by use of a Zeiss Ultra Plus SEM device (Eskişehir Technical University, Eskişehir, Turkey). Photographic images were edited using Photoshop CS2, and CorelDRAW Home Student Suite X7 was used to create the plates. All measurements are in mm. Terminology for the copulatory organs is adapted from Arnedo et al. (1996, 2000), Arnedo and Ribera (1996, 1997), and Deeleman-Reinhold and Deeleman (1988).

Abbreviations used in the text and figures are as follows. **Abdomen:** SC – Scutum, **Eyes:** AEd – diameter of anterior eyes, iAE – inter distance of anterior eyes, PLEd – diameter of posterior lateral eyes, PMed – diameter of posterior median eyes. **Cheliceral teeth:** B – basal tooth, M – medial tooth, D – distal tooth. **Male palp:** C – crest, DH – distal haematodocha, ES – external sclerite, IS – internal sclerite, LML – lateral margin of the lateral sheet, P – posterior apophysis, T – tegulum. **Vulva:** DA – dorsal arch, PD – posterior diverticulum, S – spermatheca, TB – transversal bar, VA – ventral arch. **Legs:** Cx – coxa, Fe – femur, Pa – patella, Ti – tibia, Me – metatarsus, Ta – tarsus, d – dorsal, pl – pro-lateral, rl – retrolateral, v – ventral.

Specimens of the new species are deposited in the Museum of Cyprus Wildlife Research Institute (MCW).

## TAXONOMY

Family Dysderidae C.L. Koch, 1837

Subfamily Dysderinae Cooke, 1965

### Genus *Dysdera* Latreille, 1804

in Latreille (1804): 134 (type *Aranea erythrina* Walckenaer, 1802)

#### *Dysdera udata* sp. n.

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#### Figs 1–3

**Material examined: Holotype Cyprus (MCW)** 1 ♂, Beşparmak Mountains, Btw Alevkayası-Girnekayası (35°17'13"N, 33°31'01"E), asl c. 633 m, 14 Jan 2018 ↔ 21 Feb 2018, Leg. Kunt and Gücel. **Paratypes (MCW)** 2 ♀, same data with holotype; 1 ♂, Beşparmak Mountains (35°17'5.99"N, 33°29'10.65"E), asl c. 558 m, 30 Nov 2018, Leg. Kunt and Gücel; 1 ♂, Lefkoşa, Beşparmak Mountain, Environs of Beşparmak Cave (35°17'22"N, 33°27'56"E), asl 426 m, 15 Jan ↔ 23 March 2018, Leg. Kunt and Gücel; 2 ♀, Lefkoşa, Kalavaç Village, Alevkayası (35°17'06"N, 33°31'41"E), asl c. 630 m, 15 Sept 2017 ↔ 13 Jan 2018, Leg. Kunt and Gücel; 3 ♂, 1 ♀, Girne (35°19'34.75"N, 33°9'4.37"E),

asl 776 m, 1 Nov 2018, Leg. Kunt and Gücel; 1 ♂, Gazimağusa, Tatlısu (35°23'5.68"N, 33°47'14.68"E), asl c. 200 m, Leg. Karaman.

**Etymology:** The new species is dedicated to Ud Ata, the bull god in Turkish, Mongolian, and Altai mythology, referring to the horn-like structures on the males' chelicerae.

**Diagnosis:** Due to the morphological features of the male copulatory organ, *Dysdera udata* sp. n. resembles *D. haykana* Kosyan, Zamani and Marusik, 2023; and *D. mazini* Dunin, 1991, which are distributed in Caucasus Minor and belong to the *asiatica* species group (see Kosyan et al. 2023; Zamani and Marusik 2024). These morphological resemblances are generally characterised by the development of a distinct crest distal to the bulbs and the lateral margin of the lateral sheet. However, the angle of attachment of the lateral margin of the lateral sheet to the distal division axis also differs in these species. This angle is about 20° in *D. udata* sp. n. and close to 45° in *D. haykana* and *D. mazini*. Aside from the angular difference, although the lateral margin of the lateral sheet of *D. udata* sp. n. and *D. haykana* is similar, the median crest of *D. haykana* is single-lobed, which clearly distinguishes these two species. However, the median crest of *D. mazini* is unilobed like that of *D. hay-*

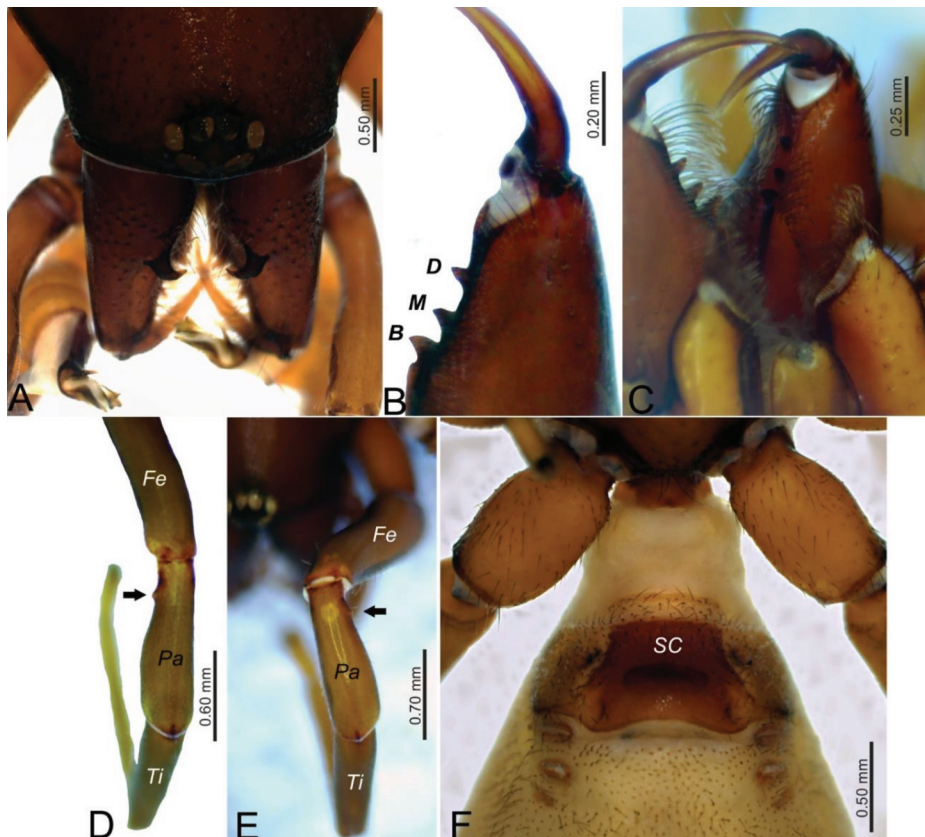


Figure 1. *D. udata* sp. n.: A. Chelicerae, male, frontal view; B. Cheliceral teeth, male, ventral view; C. Ditto, female, ventral view; D. Patella I, male, right; E. Ditto, female, left; F. Gastral area, female, ventral view.

kana, and the lateral margin of the lateral sheet is in the form of two short spines rather than thorn-shaped.

The female copulatory organ of *D. udata* sp. n. resembles that of *D. argaeica*, *D. mazini*, and *D. sultani*. However, *D. udata* sp. n. is easily distinguished from the others because the anterior margin of the spermatheca is straight compared to the other species (see Özkütük et al. 2019; Zamani and Marusik 2024).

**Description: Measurements: [Holotype ♂ / Paratypes ♀]** TL 6.00/7.50–7.91; AL 3.10/4.20–4.34; CL 2.90/3.30–3.57; CW 2.40/2.60–3.10; Clh 0.04/0.08–0.10; AEd 0.18/0.22–0.23; iAE 0.09/0.10–0.12; PLEd 0.16/0.18–0.20; PMEd 0.15/0.17–0.18; ChF 0.71/0.90–0.94; ChG 0.48/0.69–0.70; ChL 1.29/1.47–1.50.

**[Paratype ♂]** TL 6.00; AL 3.20; CL 2.80; CW 2.20; Clh 0.05; AEd 0.18; iAE 0.08; PLEd 0.16; PMEd 0.14; ChF 0.79; ChG 0.49; ChL 1.27.

Middle-sized dysderine spider. Carapace reddish-brown and covered with indentations from which thin, short hairs originate. Cephalic region of carapace wider than thoracic region, anterior margin of cephalic region convex.

Eyes arranged annularly. Posterior eyes circular and in contact with each other. Anterior and posterior lateral eyes ovalish. Distance between anterior eyes slightly longer than half diameter of posterior median eye. Chelicerae reddish-brown with horn-like structures on their anterior surface (Figure 1A). Cheliceral groove with three teeth.  $B > M > D$ . The distance between the basal and median teeth is approximately half the distance between the median and distal teeth. Terminals of basal teeth slightly curved basally (Figure 2B and 2C).

Sternum brown. Surface of sternum dull, with sparsely scattered blackish hairs. Labium and gnathocoxae brown. Labium trapezoid. Base wider, tip recessed inwards. Middle of lateral margins of labium, where they contact, gnathocoxae, sclerotized, blackish.

Legs orangish-brown. The coxae of the anterior legs darker than others. Scopulae present ventral to tarsi and first distal quarter of metatarsi of posterior legs. There is a tubercle positioned proximal to the patellae, retrolaterally (Figure 1D and 1E). Leg formula II, I, IV, III. Leg measurements and spination are given in Table 1 and Table 2, respectively. Abdomen grey, cylindrical. Surface covered with fine, short, blackish hairs.

Males and females are almost identical, except for the absence of hook-shaped structures and size differences. Leg formula IV, II, I, III. Females also have a large sclerotised scutum in the gastral area (Figure 1F).

**Palp (Figure 2A–C, 3):** Palpal tarsus is almost the same length as the tibia (0.75 vs 0.74, respectively). Tegulum cylindrical, shorter than embolic division (Figure 2B).

Table 1. *D. udata* sp. n., leg measurements.

Legs	I	II	III	IV
♂	Holotype–Paratype			
Cx	1.31–1.26	1.15–1.12	0.75–0.45	0.94–0.95
Fe	2.12–2.24	2.40–2.15	1.75–1.75	1.89–2.30
Pa	1.25–1.14	1.50–1.45	0.91–1.00	1.12–1.25
Ti	1.70–1.75	1.89–1.75	1.26–1.00	1.68–1.75
Me	1.90–1.75	1.75–1.75	1.54–1.50	2.10–2.15
Ta	0.50–0.49	0.56–0.55	0.42–0.50	0.60–0.70
Total	8.78–8.63	9.25–8.77	6.63–6.20	8.33–9.10
♀	Paratype–Paratype			
Cx	1.35–1.50	1.10–1.30	0.77–0.77	1.12–1.19
Fe	2.30–2.45	2.20–2.30	2.00–2.10	2.45–2.80
Pa	1.54–1.60	1.40–1.50	1.05–1.12	1.14–1.15
Ti	1.90–1.96	1.60–1.90	1.19–1.26	1.82–2.03
Me	1.80–1.82	1.40–1.70	1.40–1.65	2.38–2.45
Ta	0.50–0.56	0.50–0.50	0.55–0.56	0.70–0.70
Total	9.39–9.89	8.20–9.20	6.96–7.46	9.61–10.32

Table 2. *D. udata* sp. n., leg spination.

Legs	I	II	III	IV
	♂			
Fe	0	0	0	2 d
Ti	0	0	4 rl 2 pl 3 v	4 rl 2 pl 3 v
Me	0	0	3 rl 2 pl 6 v	6 rl 3 pl 6 v
	♀			
Fe	0	0	0	1 d
Ti	0	0	4 rl 3 pl 3 v	4 rl 3 pl 3 v
Me	0	0	2 rl 2 pl 4 v	5 rl 3 pl 6 v

External margin straight, and internal margin curved outward. There is an angle of approximately  $45^\circ$  between the distal division and the tegulum. Posterior apophysis markedly sclerotised, not fused with tegulum. Attached to the tegulum at a  $45^\circ$  angle. Distal haematodocha wide posteriorly and gradually narrowing anteriorly (Figure 2A). External and internal sclerites fused at the border of the tegulum (Figure 2C). The lateral margin of the lateral sheet strongly developed, thorn-shaped (Figures 2A, B and 3). Lower margin straight, upper margin slightly curved. Lateral margin of the lateral sheet also with spines visible with SEM, distally (Figure 3B). Crest very well developed and divided into two different structures (Figure 2A, B and 3B). Flagellum absent.

**Vulva (Figure 2D and E):** Anterior margin of spermatheca slightly convex, lateral margins roundish. Dorsal arch subtrapezoidal. Posterior margins of dorsal arch ovate, relatively less sclerotised and membranous. Transversal bar wider than spermatheca and dorsal arch. Widths of the spermatheca and transversal bar almost equal to each other. Posterior diverticulum sac-shaped, rounded, and membranous; width less than the transversal bar, almost the same as the spermatheca.

**Note:** Because the length of the chelicerae is shorter than half the length of the carapace, the distal appendages of the bulb are longer than the tegulum, and a lateral pro-

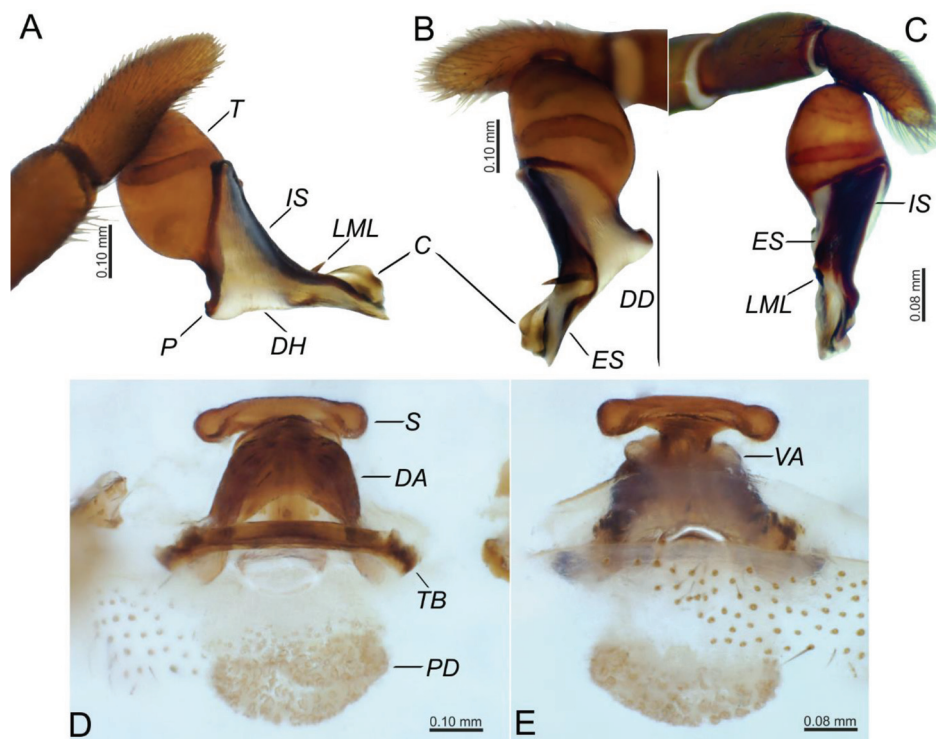


Figure 2. Male palp of *D. udata* sp. n., left: A. Retrolateral view; B. Prolateral view; C. Anterior view. Vulva of *D. udata* sp. n.: D. Ventral view; E. Dorsal view.

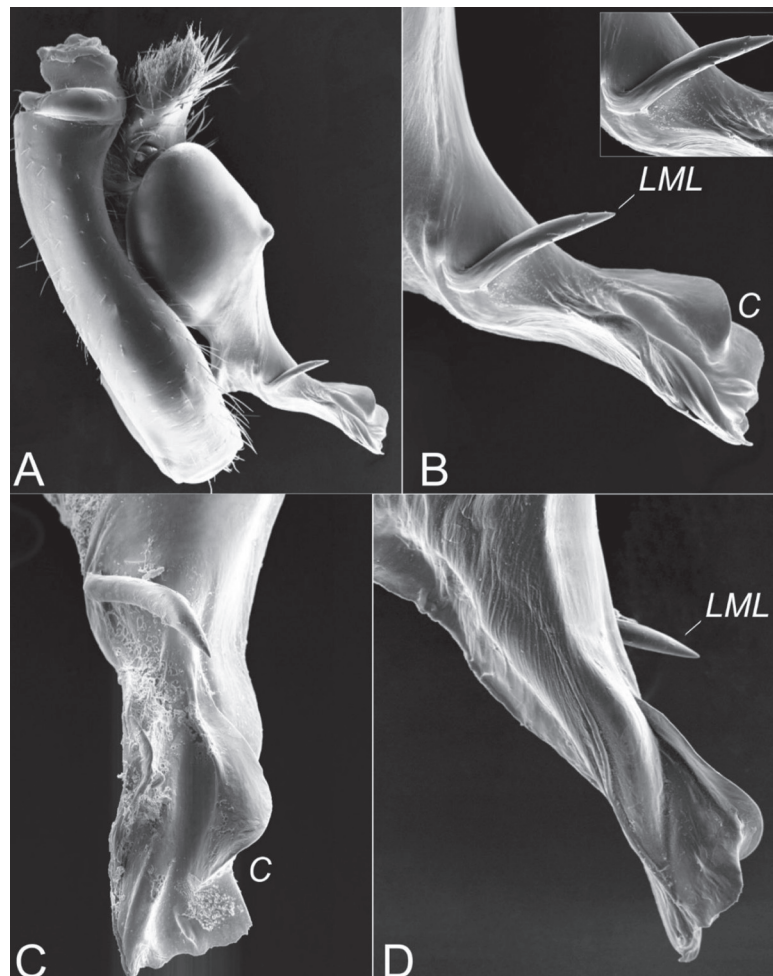


Figure 3. Male palp of *D. udata* sp. n., right, SEM photos: A, B. Retrolateral view; C. Anterior view; D. Prolateral view.

jection corresponding to the lateral margin of the lateral sheet is present, *D. udata* sp. n. can be included in the *asiatica* species group defined by Deeleman-Reinhold and Deeleman (1988).

## DISCUSSION

Among the 325 species of the *Dysdera* known to date, there are only three species (*D. festai* Caporiacco, 1929; *D. denticheles* Simon, 1882; and *D. mucronata* Simon, 1911) with cheliceral projections like *D. udata* sp. n. (World Spider Catalog 2024). Cheliceral projections are triangular in *D. festai*, and spiniform and directed anteriorly in *D. denticheles*. A small denticle on *D. mucronata* is positioned in the middle of the cheliceral groove (Deeleman-Reinhold and Deeleman 1988; Ferrández 1985).

There is no information available on the function of these projections. Interestingly, their presence shows an interspecific variation, as has been reported recently by Bellvert et al. (2024): these projections were found in the Rhodes population of *D. festai* but not in the Turkish population. This means the reliability and taxonomic relevance of this character to identify species is questionable. However, all males collected from Cyprus during our study have modified chelicerae, but species delimitations cannot be based on this character alone. The presence of patellar tubercles is also of special interest. We initially thought that there might be a relationship between these apophyses and the cheliceral projections; however, the retrolateral position of the tubercles and their presence in both sexes make such a relationship unlikely.

With *D. udata* sp. n., the number of known species of *Dysdera* from Cyprus increased to six. Among the existing species, only *D. udata* sp. n. appears to be endemic to Cyprus. Of these, *D. longiman dibularis* belongs to the “*crocata*” species group; *D. lata*, *D. spinicurus*, and *D. westringi* belong to the “*lata*” species group; and *D. gigas* and *D. udata* sp. n. belong to the “*asiatica*” species group. It is clear that more detailed analyses supported by molecular methods are needed to understand its relationship with other related species on the mainland.

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