

Two new species of *Dysdera* (Aranei: Dysderidae) from TurkeyДва новых вида пауков рода *Dysdera* (Aranei: Dysderidae) из Турцииİlhan Coşar*¹, Ersen Aydın Yağmur², Tarık Danişman³,
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КЛЮЧЕВЫЕ СЛОВА: Анатолия, Araneae, Dysderinae, Восточное Средиземноморье, пауки.

ABSTRACT. Two new species of *Dysdera* Latreille, 1804, *D. yigitakcai* sp.n. (♂♀; Kahramanmaraş) and *D. mehmeti* sp.n. (♂♀; Gaziantep), are described from the eastern Mediterranean region of Turkey. Of these, *D. mehmeti* sp.n. belongs to the *asiatica* species-group. *Dysdera yigitakcai* sp.n. possesses characteristics of different species-groups but appears closest to the *longirostris*-group. In addition, photographs of the palp of *D. neoretica* Deeleman-Reinhold, 1988; *D. fragaria* Deeleman-Reinhold, 1988; and the vulva of *D. argaica* Nosek, 1905 are included for comparison.

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РЕЗЮМЕ. Из восточно-средиземноморской части Турции описаны два новых вида пауков рода *Dysdera* Latreille, 1804, *D. yigitakcai* sp.n. (♂♀; Кахраманмараш) и *D. mehmeti* sp.n. (♂♀; Газиантеп). *D. mehmeti* sp.n. принадлежит к группе видов *asiatica*. *Dysdera yigitakcai* sp.n. обладает признаками разных групп видов, но ближе к группе *longirostris*. В качестве сравнительного материала, приведены иллюстрации пальпы самца *D. neoretica* Deeleman-Reinhold, 1988 и *D. fragaria* Deeleman-Reinhold, 1988, а также вульвы самки *D. argaica* Nosek, 1905.

Introduction

Dysdera Latreille, 1804, is the largest genus in the family. It includes 326 species, mainly distributed in the

Western Palaearctic; only *D. crocata* Koch, 1839 has been introduced to the New World, South Africa, and some Pacific Islands [WSC, 2024].

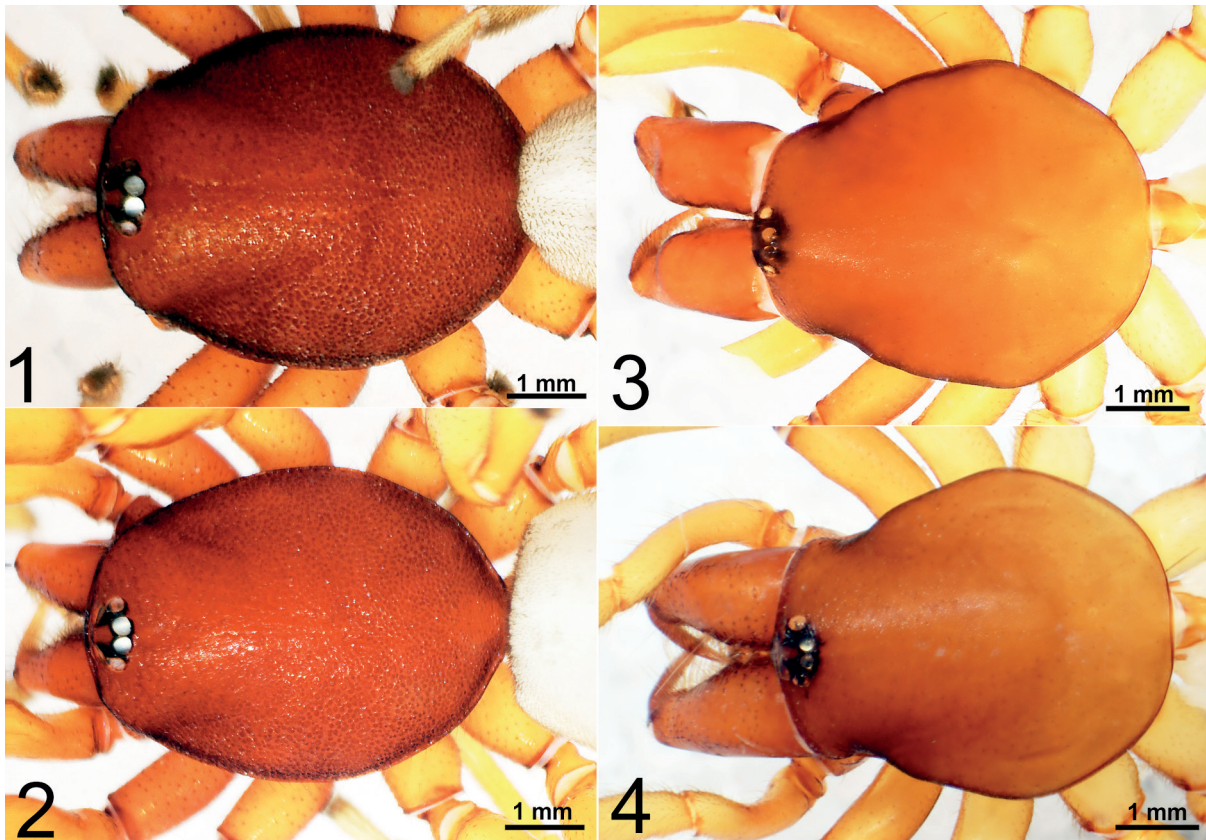
Currently, 30 *Dysdera* species are known to occur in Turkey [Danişman *et al.*, 2024]. Most of them are endemic to Turkey; the rest are otherwise known from Europe or countries adjacent to Turkey.

This paper aims to describe two new *Dysdera* located at the intersection of the Mediterranean and southeastern Anatolian Regions of Turkey. We include images of the somatic parts that reflect taxonomic characters and a discussion on the affinities of the new species within the genus.

Material and methods

All specimens were collected from under stones using a hand aspirator or by pitfall traps and preserved in 96% ethanol. Digital images of the palps and endogyne were taken with a Leica DFC295 digital camera attached to a Leica S8AP0 stereomicroscope, with 5–15 photographs taken in different focal planes and combined using image stacking software CombineZP. SEM images were obtained from dried and sputter gold-coated structures using a Zeiss Ultra Plus SEM at Eskişehir Technical University, Eskişehir, Turkey. Photographs 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 follows Arnedo *et al.* [1996, 2000] and Arnedo & Ribera [1997, 1999].

Abbreviations used in text and figures are as follows. Eyes: AME — anterior median eye, PLE — posterior lateral eye, PME — posterior median eye. Cheliceral teeth: B — basal tooth, M — medial tooth, D — distal tooth. Male palp: C — crest of bulb, Dap — distal apophysis of bulb, DD — distal division, H — haematodocha, ES — external sclerite of bulb, FA — frontal



Figs 1–4. Dorsal view of prosoma of *Dysdera yigitkcai* sp.n. (1–2) and *D. mehmeti* sp.n. (3–4). 1, 3 — holotype male; 2, 4 — paratype female.
Рис. 1–4. Просома *Dysdera yigitkcai* sp.n. (1–2) и *D. mehmeti* sp.n. (3–4), дорсально. 1, 3 — голотип самец; 2, 4 — паратип самка.

apophysis of bulb, F — flagellum, IS — internal sclerite of bulb, OSD — opening of the sperm duct, Pap — posterior apophysis of bulb, RC — retrolateral crest of bulb, SP — spermophor, T — tegulum. Vulva: DA — dorsal arch, PD — posterior diverticle, S — spermatheca, TB — transversal bar, V — bursal valve, VA — ventral arch. Legs: Co — coxa, Tr — trochanter, Fe — femur, Pa — patella, Ti — tibia, Me — metatarsus, Ta — tarsus, d — dorsal, pl — prolateral, rl — retrolateral, v — ventral.

The new species' specimens are deposited in the collections of the Arachnology Museum, Kırıkkale University, Kırıkkale, Turkey (KUAM), and the Alaşehir Zoological Museum, Manisa Celal Bayar University, Alaşehir, Manisa, Turkey (AZMM).

Taxonomy

Family Dysderidae C.L. Koch, 1837
Subfamily Dysderinae C.L. Koch, 1837

Genus *Dysdera* Latreille, 1804

TYPE SPECIES: *Aranea erythrina* Walckenaer, 1802.

Dysdera yigitkcai sp.n.
Figs 1–2, 5–6, 9, 11–15, 17–18.

TYPES. Holotype ♂ and paratypes 2 ♀♀ (KUAM), TURKEY, Kahramanmaraş Prov., Göksun Dist., Taşoluk Vill., Wolves Valley (37°58'22"N, 36°26'33"E), c. 1500 m a.s.l., 2.XI.2020, leg. İ. Coşar & T. Danişman.

ETYMOLOGY. This species is named in honor of Yiğit

Akca, a deceased son of authors' friends Nesrin Akca and Candoğan Akca (Kırıkkale, Turkey).

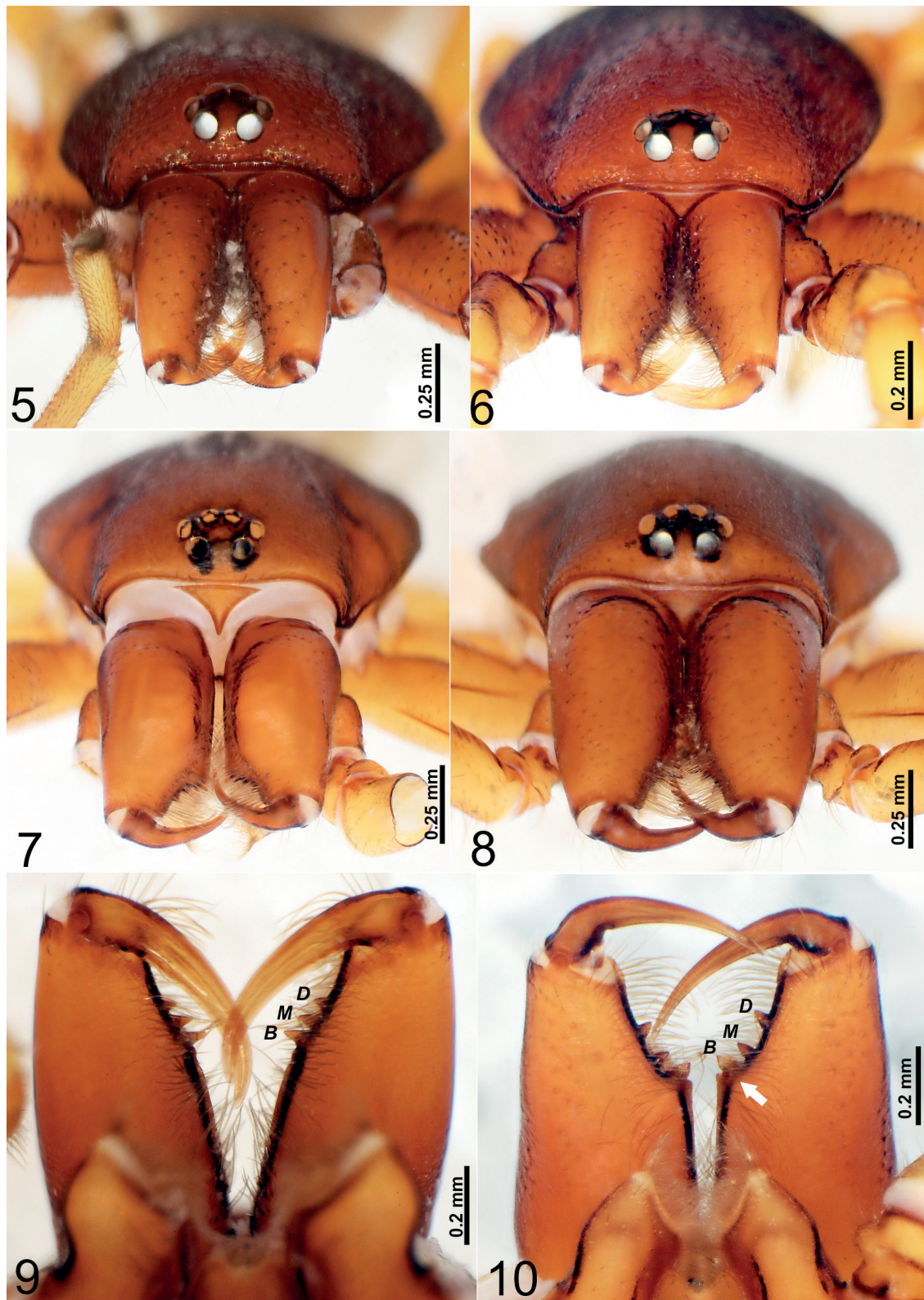
DIAGNOSIS. The new species belongs to the *longirostris* species group. The general appearance of the bulb and the large, ear-shaped posterior apophysis (Pap) of new species is similar to those of *D. neocretica* Deeleman-Reinhold, 1988. However, in *D. neocretica*, the indentation between posterior apophysis (Pap) and haematodocha (H) is deeper than in *D. yigitkcai* sp.n. (cf. Figs 13 and 16).

The spermatheca of *D. yigitkcai* sp.n. is similar to that of *D. krosis* Komnenov et Chatzaki, 2016. However, in *D. yigitkcai* sp.n. the anterior margin of the spermatheca (S) is close to the width of the dorsal arch (DA), while in *D. krosis* the same part is shorter (cf. Figs 33 and 34 in Komnenov et al. [2016]).

DESCRIPTION. Male. Measurements: Total length 6.50. Carapace 3.0 long, 2.5 wide. Abdomen 3.5 long, 1.90 wide. Ocular area 0.5 long, 0.6 wide. Sternum 1.9 long, 1.5 wide. Eye diameters: AME 0.17, PLE 0.15, PME 0.15.

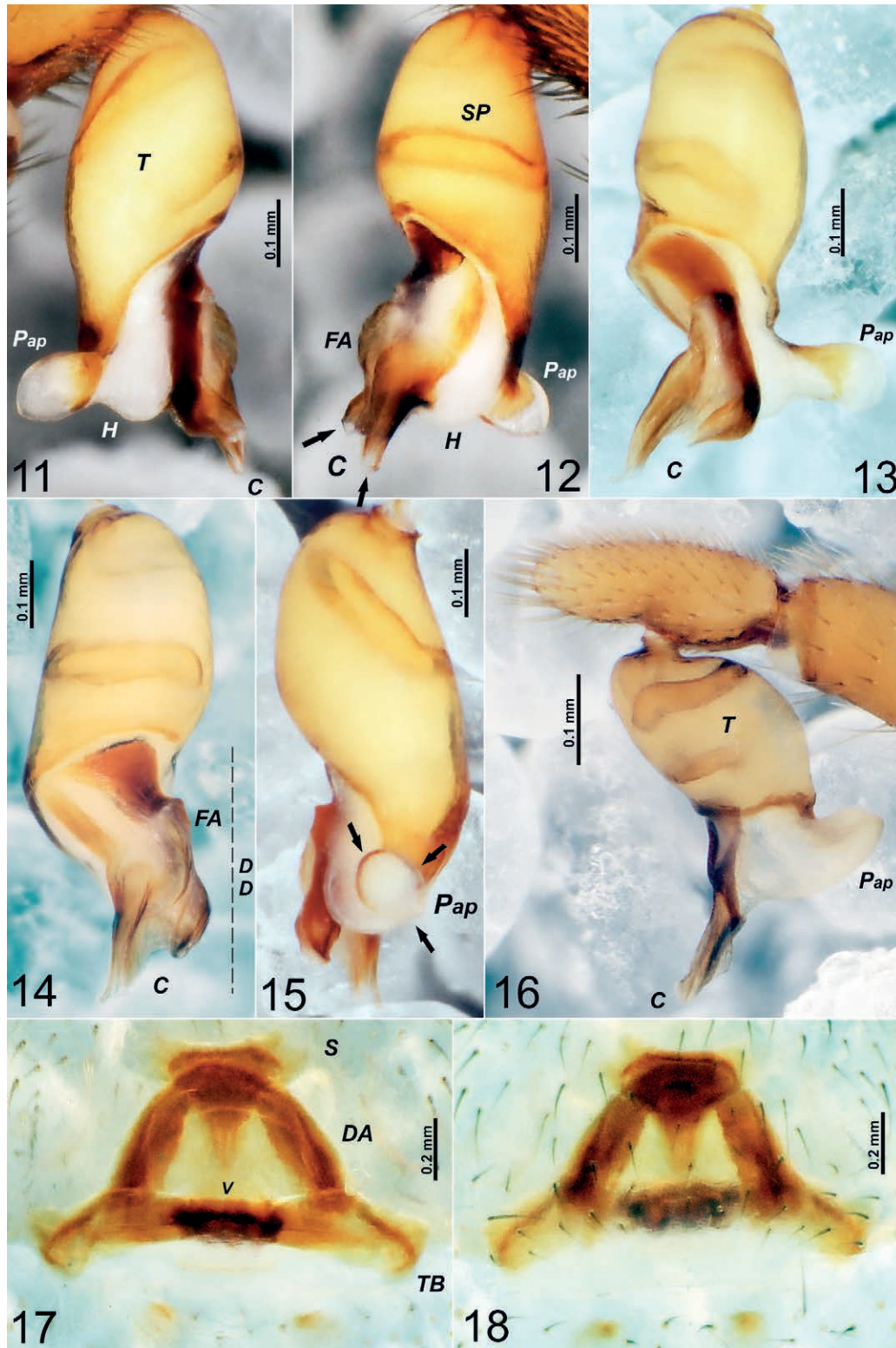
Carapace oval, reddish brown, tubercled on surface, margins darker (Figs 1, 5). Chelicerae reddish brown and have tubercles with hairs growing from the center. Chelicerae with long ventral yellowish-brown setae (Fig. 5). Cheliceral inner groove with 3 teeth (Fig. 9), B>M>D. Labium, gnathocoxae, and sternum dark orange. Sternum abundantly covered with setae. Legs yellowish orange. Legs III and IV and coxae of legs I and II darker than others. Legs spineless. Leg measurements as given in Table 1.

Palp (Figs 11–15): Tegulum (T) cylindrical, ca. 2 times longer than wide. Size of tegulum 0.3 dorsal, 0.4 ventral; 0.17 wide. Distal division (DD) 0.25 long, 0.1 wide. Posterior apophysis (Pap) broad and almost perpendicular to axis of tegulum. Junction with haematodocha (H) slightly sclerotized, outer parts



Figs 5–10. Prosoma (anterior view) and chelicerae (ventral view) of *Dysdera yigitakcai* sp.n. (5–6, 9) and *D. mehmeti* sp.n. (7–8, 10). 5, 7 — prosoma of male holotype; 6, 8 — prosoma of female paratype; 9–10 — chelicerae. Abbreviations (teeth): B — basal, D — distal, M — medial.

Рис. 5–10. Просома (вид спереди) и хелицеры (вентрально) *Dysdera yigitakcai* sp.n. (5–6, 9) и *D. mehmeti* sp.n. (7–8, 10). 5, 7 — просома голотипа самца; 6, 8 — просома паратипа самки; 9–10 — хелицеры. Обозначения (зубцы): В — базальный, D — дистальный, М — срединный.



Figs 11–18. Copulatory organs of *Dysdera yigitakcai* sp.n. (11–15, 17–18) and *D. neoretica* (16). 11 — male palp, prolateral; 12, 16 — same, retrolateral; 13 — same, subretrolateral; 14 — same, dorsal; 15 — same, ventral, arrows indicate posterior apophysis; 17–18 — vulva, dorsal and ventral. Abbreviations: C — crest, DA — dorsal arch, DD — distal division, FA — frontal apophysis, H — haematodocha, Pap — posterior apophysis, S — spermatheca, SP — spermophor, V — bursal valve.

Рис. 11–18. Копулятивные органы *Dysdera yigitakcai* sp.n. (11–15, 17–18) и *D. neoretica* (16). 11 — палепа самца, пролатерально; 12, 16 — то же, ретролатерально; 13 — то же, субретролатерально; 14 — то же, дорсально; 15 — то же, вентрально, стрелками показан задний апофиз; 17–18 — вульва, дорсально и вентрально. Обозначения: С — гребень, DA — дорсальная арка, DD — дистальный отдел, FA — передний апофиз, H — гематодоха, Pap — задний апофиз, S — сперматека, SP — спермофор, V — створка бурсы.

Table 1. *Dysdera yigitakcai* sp.n., leg measurements (♂/♀).
Таблица 1. Промеры ног *Dysdera yigitakcai* sp.n. (♂/♀).

Legs	C	Tr	Fe	Pa	Ti	Me	Ta	Total
I	1.3/1.6	0.3/0.4	2.4/2.8	1.2/1.5	2.0/2.3	1.8/2.1	0.6/0.7	9.6/11.4
II	1.05/1.3	0.25/0.3	2.3/2.7	1.1/1.5	1.9/2.3	1.9/2.2	0.6/0.6	9.1/10.6
III	0.7/1.0	0.2/0.4	2.0/2.4	0.9/1.1	1.4/1.6	1.8/2.1	0.5/0.6	7.5/9.2
IV	0.85/1.1	0.35/0.5	2.5/2.8	1.2/1.4	1.9/2.2	2.4/2.8	0.7/0.7	9.9/11.6

membranous (Fig. 11). Frontal apophysis (*FA*) convex (Figs 12, 14). Haematodocha parallel to tegulum but wider in posterior part compared with frontal (Fig. 11). Crest (*C*) wide, bifurcated (Figs 12–14).

Female. Measurements. Total length 9.2. Carapace 4.0 long, 3.0 wide. Abdomen 5.2 long, 2.8 wide. Ocular area 0.7 long. Chelicerae 1.4 long, 0.7 wide. Sternum 2.4 long, 1.9 wide. Eye diameters: AME 0.20, ALE 0.15, PME 0.20.

General appearance is the same as in males except for a more oval carapace (Fig. 2).

Vulva (Figs 17–18): anterior part of vulva 0.5 long, 1.2 wide. Spermatheca (*S*) triangle-shaped, wider anteriorly than posteriorly. Anterior lateral margins of spermatheca weakly sclerotized (Figs 17–18). Posterior margin of spermatheca in contact with bursal valve. Bursal valve (*V*) hemispherical. Dorsal arch (*DA*) with laminated structure (Fig. 17). Middle region of transversal bar more sclerotized than other regions (Fig. 17). Posterior diverticle (*PD*) indistinct.

NOTE: The male and female copulatory organs of *D. yigitakcai* sp.n. are generally compatible with those of other species of the *longirostris* species group. However, the spineless legs of *D. yigitakcai* sp.n. and the relatively different carapace morphology made us hesitant to place the new species in the *longirostris* species group.

Dysdera mehmeti sp.n.

Figs 3–4, 7–8, 10, 19–24, 26–29.

TYPES. Holotype ♂ and paratypes 2 ♂♂ 3 ♀♀ (AZMM), TURKEY, Gaziantep Prov., Oğuzeli Dist., 2 km South of Çaybaşı Vill. (36°59'58"N 37°30'48"E), c. 750 m a.s.l., 23.VIII.2017–3.VIII.2018, leg. E.A. Yağmur & M. Özkörük.

Additional material. 9 ♂♂ 3 ♀♀ (AZMM), same data as holotype; 4 ♂♂ 5 ♀♀ (AZMM), Gaziantep Prov., Şehitkamil Dist., İncesu Vill. (37°13'18.00"N 37°17'58.53"E), 10.IX.2016–6.IV.2017, leg. E.A. Yağmur.

ETYMOLOGY. The new species is named in honor of Mehmet Özkörük (Gaziantep, Turkey) for his assistance during the field trips to Ersen Yağmur.

DIAGNOSIS. The new species belongs to the *asiatica* species group. Males of *D. mehmeti* sp.n. are similar to those of *D. fragaria* Deeleman-Reinhold, 1988, and can be distinguished by the presence of the distal apophysis (*Dap*) of the bulb (Fig. 25) vs. those lacking in *D. fragaria*. Vulva of the new species is similar to those in *D. argaica* Nosek, 1905 distributed in Turkey (Figs 32–33) and can be distinguished by shorter spermatheca (*S*) and triangle-shaped dorsal arch (*DA*) (cf. Figs 30–31 and 32–33).

DESCRIPTION. Male (holotype). Measurements: Total length 7.9. Carapace 3.3 long, 2.8 wide. Abdomen 4.6 long, 2.2 wide. Ocular area 0.5 long. Chelicerae 1.7 long, 0.8 wide. Sternum 1.9 long, 1.7 wide. Eye diameters: AME 0.15, PLE 0.12, PME 0.10. Legs III and IV with spines (see Table 3).

Carapace reddish brown, matte, and smooth; cephalic region higher than thoracic region, slightly convex in front; thoracic region rounded posteriorly; front edges of carapace parallel to each other; eyes arranged annularly, not in contact with each other; chelicerae brownish (Figs 3, 7), dorsal side darker than ventral, with thin blackish short setae on both surfaces, cheliceral groove with 3 teeth. Basal tooth looks like 2 fused teeth (Fig. 10), B>M=D; labium, gnathocoxae, and sternum light brown; inner and outer margins of gnathocoxae and all margins of sternum dark brown; legs yellowish brown; palpal segments and coxae of anterior legs darker; leg measurements and spination as given in Tables 2 and 3.

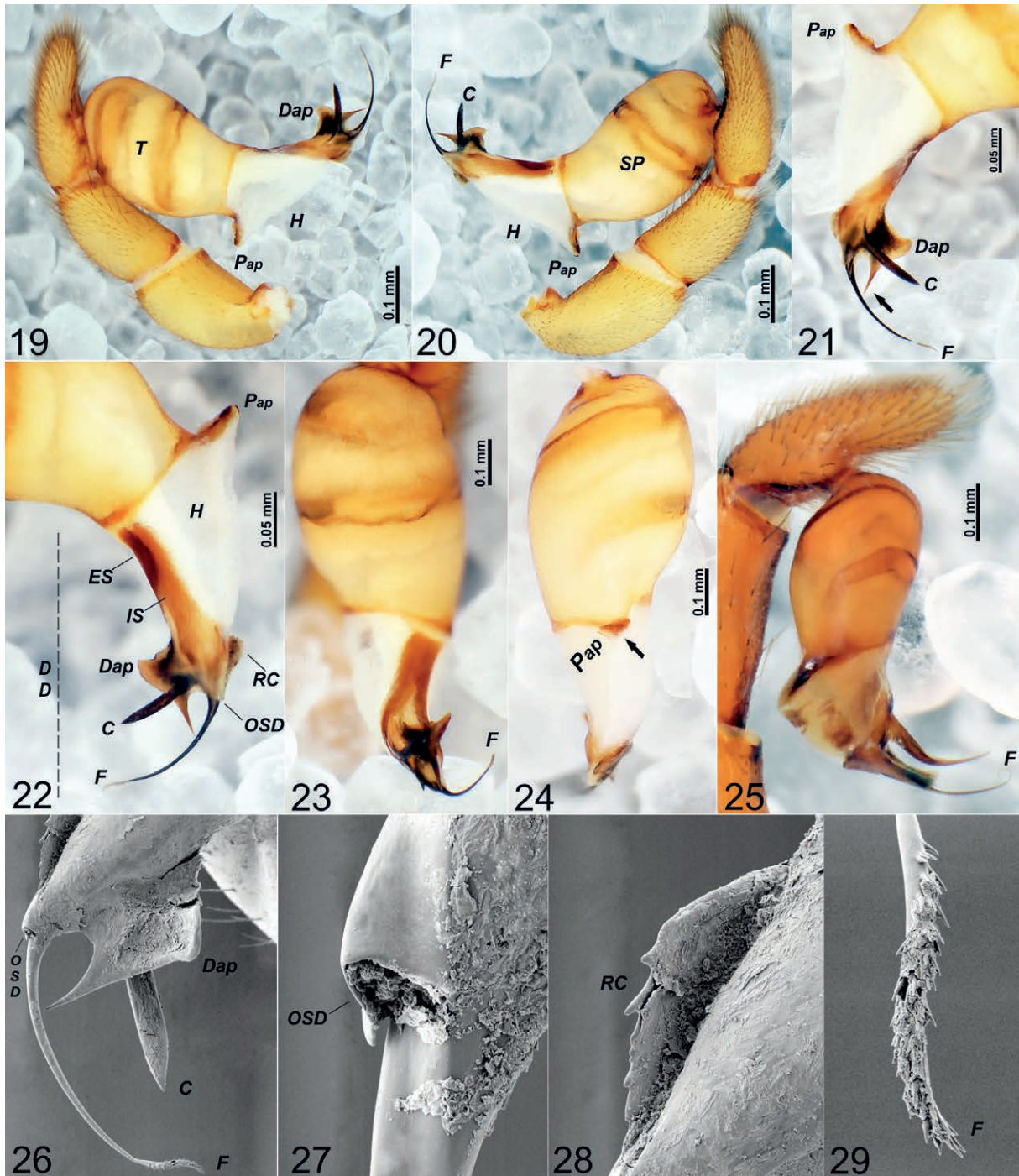
Table 2. *Dysdera mehmeti* sp.n., leg measurements (♂/♀).
Таблица 2. Промеры ног *Dysdera mehmeti* sp.n. (♂/♀).

Legs	C	Tr	Fe	Pa	Ti	Me	Ta	Total
I	1.5/1.7	0.4/0.4	2.8/3.1	1.6/1.8	2.4/2.6	2.5/2.6	0.8/0.7	12.0/12.9
II	1.2/1.4	0.5/0.4	2.7/2.9	1.5/1.7	2.2/2.3	2.4/2.5	0.7/0.7	11.2/11.9
III	0.8/1.0	0.4/0.3	2.1/2.4	1.0/1.1	1.5/1.7	1.9/2.1	0.7/0.7	8.4/9.3
IV	1.2/1.2	0.5/0.4	2.7/3.3	1.3/1.5	2.2/2.4	2.7/2.4	0.8/0.9	11.4/12.7

Palp (Figs 19–24, 26–29): tibia almost of same size as cymbium and patella (Figs 19–20). Cymbium triangular. Tegulum (*T*) cylindrical. Size of tegulum 0.4 dorsal, 0.35 ventral; 0.25 wide. Distal division (*DD*) 0.28 long, 0.1 wide. Posterior apophysis (*Pap*) triangular, with angle of ca. 90° to tegulum (Figs 19–22); external (*ES*) and internal sclerites (*IS*) prominent between haematodocha and distal processes; distal apophysis (*Dap*) comb-shaped, its tip thin and pointed (Figs 21–22); crest (*C*) 0.75 long, elongated, originated from same base as flagellum (Figs 21–22, 26). Flagellum (*F*) 0.16 long, about twice as much as crest, retrolaterally curved (Figs 19–23, 26), its tip

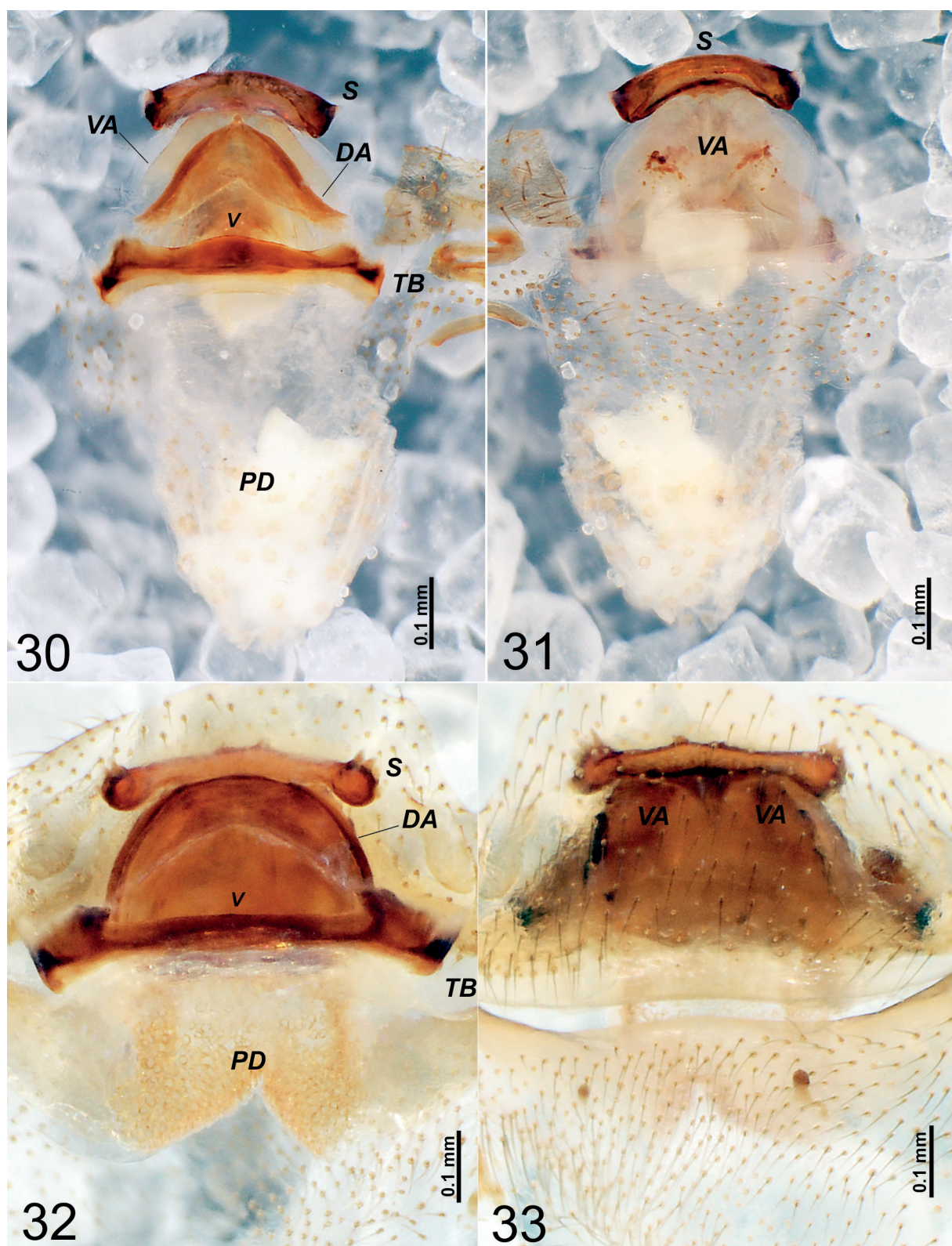
Table 3. *Dysdera mehmeti* sp.n., leg spination (♂/♀).
Таблица 3. Вооружение ног *Dysdera mehmeti* sp.n. (♂/♀).

♂	Fe	Ti	Me
III	0	2pl 3v 4rl	2pl 2v 5rl
IV	1d	4pl 3v 4rl	3pl 6v 4rl
♀			
III	0	3pl 3v 2rl	6pl 2v 2rl
IV	2-3d	4pl 2v 5rl	6pl 7rl



Figs 19–29. Copulatory organs of *Dysdera mehmeti* sp.n. (19–24, 26–29) and *D. fragaria* (25). 19, 21 — male palp, retrolateral; 20, 22, 25 — same, prolateral view; 23 — same, ventral view; 24 — same, dorsal view; 26, 28 — SEM photos of male palp, prolateral view; 29 — flagellum. The arrows indicate tip of the *Dap* in Fig. 21 and the *Pap* in Fig. 24. Abbreviations: *C* — crest, *Dap* — distal apophysis, *DD* — distal division, *ES* — external sclerite, *F* — flagellum, *H* — haematodocha, *IS* — internal sclerite, *OSD* — opening of the sperm duct, *Pap* — posterior apophysis, *RC* — retrolateral crest, *SP* — spermophor.

Рис. 19–29. Копулятивные органы *Dysdera mehmeti* sp.n. (19–24, 26–29) и *D. fragaria* (25). 19, 21 — палпы самца, ретролатерально; 20, 22, 25 — то же, пролатерально; 23 — то же, вентрально; 24 — то же, дорсально; 26, 28 — СЭМ-фотографии палпы самца, пролатерально; 29 — флагеллум. Стрелки указывают вершину *Dap* на рис. 21 и *Pap* на рис. 24. Обозначения: *C* — гребень, *Dap* — дистальный апофиз, *DD* — дистальный отдел, *ES* — наружный склерит, *F* — флагеллум, *H* — гематодоха, *IS* — внутренний склерит, *OSD* — отверстие семенного канала, *Pap* — задний апофиз, *RC* — ретролатеральный гребень, *SP* — спермофор.



Figs 30–33. Copulatory organs of *Dysdera mehmeti* sp.n. (30–31) and *D. argaieca* (32–33). 30, 32 — vulva, dorsal view; 31, 33 — same, ventral view. Abbreviations: DA — dorsal arch, S — spermatheca, PD — posterior diverticle, V — bursal valve, VA — ventral arch.

Рис. 30–33. Копулятивные органы *Dysdera mehmeti* sp.n. (30–31) и *D. argaieca* (32–33). 30, 32 — вульва, дорсально; 31, 33 — то же, вентрально. Обозначения: DA — дорсальная арка, S — сперматека, PD — задний дивертикул, V — створка бурсы, VA — вентральная арка.

bearing spiny structures (Fig. 29); sperm duct opening (*OSD*) located between flagellum and retrolateral crest (*RC*) (Fig. 27); retrolateral crest ear-shaped, outer margin serrated (Fig. 28).

Female. Measurements. Total length 10.4. Carapace 3.5 long, 3.0 wide. Abdomen 6.8 long, 3.5 wide. Ocular area 0.65 long. Chelicerae 1.9 long, 1.0 wide. Sternum 2.1 long, 2.0 wide. Eye diameters: AME 0.17, PLE 0.15, PME 0.12.

General appearance as in male except for several spines (Table 3).

Vulva (Figs 30–31): anterior part 0.3 long, 0.4 wide. Spermatheca (*S*) slightly arched, strongly sclerotized laterally; dorsal arch (*DA*) triangular (Fig. 30), posterior margin triangularly recessed; right and left margins slightly sclerotized; ventral arch (*VA*) membranous, much larger than dorsal arch (Figs 30–31); bursal valve (*V*) membranous, prominent (Fig. 30); transversal bar (*TB*) arc-shaped; distance between the lateral margins of the spermatheca and the length dorsal arch almost the same, transversal bar longer. Posterior diverticle (*PD*) membranous, about 2 times longer than spermatheca.

VARIATIONS. The body and leg measurements of male and female individuals do not differ significantly from the abovementioned measurements. However, the number of retrolaterally located spines on the metatarsi IV of some females exceeds 10.

Discussion

Deeleman-Reinhold & Deeleman [1988] considered Greece and Turkey as the evolutionary base of *Dysdera*. However, they emphasized that our knowledge of the genus is incomplete and that many more species and species groups will be discovered and described from this region. Indeed, as new species were discovered and morphological features were described, it was found that some species had morphological features that contradicted the known species groups.

The number of known *Dysdera* species in Turkey has increased to 32 due to discovering new species. In the Caucasus, this number is also 32. However, in Western Mediterranean countries like Spain (90 species) and Italy (38 species), including both mainland and islands, the number is higher [Helsdingen, 2021; Kosyan *et al.*, 2023; Otto, 2022; Zamani, Marusik, 2024]. This difference may be attributed to the fact that taxonomic studies on Dysderidae began earlier and were more extensive in these countries compared to Turkey. It is anticipated that the gap in the number of taxa will continue to widen in the future.

Compliance with ethical standards

CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

Ethical approval: No ethical issues were raised during our research.

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