A survey of East Mediterranean Dasumia (Araneae, Dysderidae) with description of new species

Kadir Boğaç Kunt¹†, Recep Sulhi Özkütük²‡, Mert Elverici³§

¹ Poligon Sitesi 71/27-B TR-06810 Dodurga, Çayyolu, Ankara, Turkey ² Department of Biology, Faculty of Science, Anadolu University, TR- 26470 Eskişehir, Turkey ³ Department of Biological Sciences, Faculty of Arts and Sciences, Middle East Technical University, TR-06531 Ankara, Turkey

† urn:lsid:zoobank.org:author:13EEAB4A-F696-41D7-A323-2333410BF5D7
‡ urn:lsid:zoobank.org:author:7A21C546-989F-417F-BCC3-8D682CCF2B62
§ urn:lsid:zoobank.org:author:E5590C56-F430-41D5-AD6A-2ADE157AB439

Corresponding author: Kadir Boğaç Kunt (chaetopelma@gmail.com)

Academic editor: D. Logunov | Received 7 June 2011 | Accepted 20 September 2011 | Published 14 October 2011

Citation: Kunt KB (2011) A survey of East Mediterranean Dasumia (Araneae, Dysderidae) with description of new species. ZooKeys 137: 89–101. doi: 10.3897/zookeys.137.1783

Abstract

Dasumia gasparoi sp. n. is described based on specimens of both sexes. The new species is compared with the similar D. crassipalpis (Simon, 1882), described from Syria; and with D. mariandyna Brignoli, 1979, the only previously known species of the genus recorded from Turkey. Furthermore, we point out that, due to some contradictions to the original description of the genus, D. mariandyna may necessarily belong to another genus. Detailed morphological descriptions, diagnosis and figures of the copulatory organs of the new species are presented.

Keywords

Harpacteinae, spider, Turkey

Introduction

Dasumia is a genus of the family Dysderidae and includes 13 previously described species (Platnick 2011). Ten are distributed in Europe, two in the Middle East and one in
Turkey. *Dasumia* belongs in the subfamily Harpacteinae, and differs from other genera by the absence of ventral spines on the metatarsi and anterior tibiae; the posterior tarsi with either two claws or with an additional single tiny claw; by the typical arrangement of the cheliceral dentition and by having an abruptly curled embolus in males or more or less sclerotized posterior diverticulum of vulva in females (Thorell 1875; Dunin 1992; Deeleman-Reinhold 1993).

During our survey of the Turkish spider fauna, we encountered some interesting dysderid specimens in Kahramanmaraş province, a region that constitutes a transition zone between the Turkish Mediterranean region and the south-eastern region of Anatolia. Initially, examination of the sternum morphology suggested the specimens were members of the subfamily Harpacteinae. However, the structure of copulatory organs did not conform with the known species of *Harpactea* Bristowe, 1939 and *Stalagtia* Kratochvíl, 1970 from Turkey, nor did they show any similarity with those of *Dasumia mariandyna* Brignoli, 1979, which represented the only known *Dasumia* species recorded from Turkey. Kahramanmaraş is located close to Syria, so we then examined members of Harpacteinae known from Syria and the Middle East. This revealed similarities between our specimens and those of *Dasumia crassipalpis* from Syria, which had previously been described as *Harpactes crassipalpis* by Simon (1882) and later transferred to *Dasumia* by Alicata (1974), based on the structure of the previously unknown female genitalia.

The purpose of this study is to describe and illustrate a new species of *Dasumia* from Turkey and to discuss its placement in the genus together with the Syrian *D. crassipalpis* and the Turkish endemic *D. mariandyna*.

**Materials and methods**

All specimens were collected from Kahramanmaraş province of Turkey (Fig. 1). The specimens were collected from under stones using a hand aspirator. Digital images of the pedipalps and vulvae 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. Photographic images were edited using PHOTOSHOP CS2 and COREL-DRAW X3 was used to create the plates. All measurements are in mm. Terminology for the body measurements follows Chatzaki and Arnedo (2006). Terminology for the copulatory organs is adapted from Alicata (1974) and Deeleman-Reinhold (1993). On the male copulatory organ, additional apophyses developed on the structure called the “Apophysis,” are named as “Apophysis$_{a1}, a2, \text{ etc}$” relating to their sequential order relative to that of Apophysis$_{a1}$. The following abbreviations are used in the text: AL, abdominal length; CL, carapace length; CW$_{\text{max}}$, maximum carapace width; CW$_{\text{min}}$, minimum carapace width; AME, anterior median eyes; PLE, posterior lateral eyes; PME, posterior median eyes; AMEd, diameter of anterior median eyes; PLEd, diameter of posterior lateral eyes; PMEd, diameter of posterior median eyes; AMEd, diameter of posterior median eyes; PLEd, diameter of posterior lateral eyes; PMEd, diameter of posterior median eyes;
A survey of East Mediterranean Dasumia...

median eyes; ChF, length of cheliceral fang; ChG, length of cheliceral groove; ChL, total length of chelicera (lateral external view); Ta, tarsus; Me, metatarsus, Ti, tibia; Pa, patella; Fe, femur; Tr, trochanter; C, coxa; D, dorsal; pl, prolateral; rl, retrolateral; V, ventral; cKBK, Personal collection of Kadir Boğaç Kunt, Ankara, Turkey; AUZM, Anadolu University, Zoology Museum, Eskişehir, Turkey; SMF, Senckenberg Museum, Frankfurt am Main, Germany.

Taxonomy

Dasumia Thorell, 1875

In Thorell, 1875: 100, type species Dasumia taeniifera Thorell, 1875

Dasumia gasparoi sp. n.

urn:lsid:zoobank.org:act:8E19F1DC-74BA-47D4-A505-6498414B4CCE
http://species-id.net/wiki/Dasumia_gasparoi

Material examined. Holotype. ♂ (AUZM), TURKEY, Kahramanmaraş Province, Pazarcık District, c. 5 km S of Narlı Town [37°19’11.78”N; 37°10’16.19”E], 07.03.2008, under stones, leg. E.A.Yağmur. Paratypes: 1 ♀ (AUZM); 1 ♀ (SMF), together with holotype.

Derivatio nominis. The new species is named in honour of the Italian geologist & arachnologist Dr. Fulvio Gasparo, who has made great contributions to the taxonomy of the family Dysderidae.
**Diagnosis.** *Dasumia gasparoi* sp. n. can be readily identified by the unique structure of male and female copulatory organs. It is most similar to *D. crassipalpis* from which it can be differentiated as follows:

1. In *D. gasparoi* sp. n. the transition zone between the tegulum and the distal appendages is more notable than in *D. crassipalpis*.

2. In *D. gasparoi* sp. n. the tip of the falciform embolus is sharper and taller and the embolus extends beyond Apophysis₃, whereas in *D. crassipalpis*, the embolus only reaches the middle of Apophysis₃.

3. Apophysis₃ and Apophysis₄ show explicit differences in structure between the two species.

4. In *D. gasparoi* sp. n. the spermatheca are relatively wider. Distal crest of spermatheca is shorter and thicker in *D. gasparoi* sp. n. than in *D. crassipalpis* (see Alicata 1974).

**Measurements.** (Holotype ♂ / Paratype n=2 ♀): AL 3.50 / 4.47-4.50; CL 3.20 / 3.25-3.50; CWₘₘₐₓ 2.50 / 2.75-2.80; CWₘᵢₘᵢₙ 1.25 / 1.59-1.44; AMEₐ 0.16 / 0.17-0.18; PLEₐ 0.15 / 0.14-0.15; PMEₐ 0.11 / 0.14-0.12; Chₐ 0.58 / 0.66-0.66; Chₐₐ 0.47 / 0.52-0.53; Chₐₐₐ 1.37 / 1.60-1.62. Leg measurements are given in Table 1.

**Description.** Carapace dark brown anteriorly, yellowish brown posteriorly and blackish brown laterally. AME, PLE and PME in a circular arrangement. AME separated. PLE and PME clearly separated. Sternum, labium, gnathocoxae and chelicerae yellowish brown. Sternum blackish brown laterally (Figs 2 – 5). Cheliceral groove with two retromarginal and two promarginal teeth. Teeth on the promargin originate at the base of the groove and end in the middle. Retromarginal teeth originate in alignment with the point at which the promarginal teeth stop, and continue to the top of the cheliceral groove. Teeth on retromargin relatively smaller and more widely separated, when compared with those on the promargin (Figs 6, 7). Cheliceral groove long, top of the labium and gnathocoxae covered with short hairs. In males, joint of trochanter to gnathocoxa thicker and deeper (see Fig. 3). Abdomen greyish to light brown, with short, thin blackish hair over the entire surface. Females with a strongly developed linear postpedicelar and trapezoid epigastric scutum (Fig. 8). Males also have these structures, but they appear thinner and have less colour. Legs yellowish to light brown with sparse blackish setae. Periphery of articulation points dark brown.

Leg IV > Leg I > Leg II > Leg III. Tarsi with three claws. Bent claws and middle claws are well developed (Figs 9, 10, 11, 12).

Tarsi III and IV with fine scopulae (Figs 9-12). Legs III and IV with fine metatarsal scopulae along the ventral surface, covering slightly less than the distal half of the segment. Dorsal part of coxae III and IV with 1-4 spines. Details of leg spination are given in Table 2.

In males, palpal tibia almost double the size of the tarsus. Tarsus bullet-shaped in lateral view. Tegulum yellowish brown; approximately as long as wide, and with a spherical shape. Between the distal appendages and tegulum, there is a visible transition region, peripherally sclerotized in places (Figs 13, 14). Tip of embolus adjacent to Apophysis₄ (Figs 13, 15). Embolic base wide and triangular. Embolus falciform, tapering distally, blackish and well sclerotized along its length (Figs 15, 16). Apophysis₃ triangular, sepa-
Table 1. Leg measurements of *Dasumia gasparoi* sp. n.

| (Holotype ♂ / Paratype ♀) | Fe    | Pa    | Ti    | Me    | Ta    |
|---------------------------|-------|-------|-------|-------|-------|
| Leg I                     | 3.00 / 3.08 | 1.80 / 1.88 | 2.76 / 2.60 | 2.68 / 2.48 | 0.63 / 0.48 |
| Leg II                    | 2.50 / 2.56 | 1.60 / 1.68 | 2.40 / 2.24 | 2.60 / 2.50 | 0.63 / 0.60 |
| Leg III                   | 2.10 / 2.16 | 1.05 / 1.12 | 1.75 / 1.68 | 2.05 / 2.04 | 0.55 / 0.44 |
| Leg IV                    | 2.96 / 3.00 | 1.40 / 1.60 | 2.50 / 2.56 | 2.64 / 3.20 | 0.63 / 0.64 |

Figures 2–5. *Dasumia gasparoi* sp. n. 2, 3 (♂) carapace, sternum 4, 5 (♀) ditto. Scale lines: 0.25 mm.

Table 2. Leg spination of *Dasumia gasparoi* sp. n.

| ♂ (Holotype) | Leg I | Leg II | Leg III | Leg IV |
|--------------|-------|--------|---------|--------|
| C            | 0     | 0      | 2 pl    | 3 pl 1 D |
| Tr           | 0     | 0      | 0       | 0      |
| Fe           | 4 pl  | 5 pl   | 3 D 4 rl| 9 D    |
| Pa           | 0     | 0      | 2 D 1 rl| 0      |
| Ti           | 0     | 0      | 2 pl 1 D 4 rl 5 V | 4 pl 4 rl 5 V |
| Me           | 0     | 0      | 3 pl 6 rl 2 V | 4 pl 1 D 5 rl 6 V |

| ♀ (Paratype) | Leg I | Leg II | Leg III | Leg IV |
|--------------|-------|--------|---------|--------|
| C            | 0     | 0      | 1 pl    | 2 pl   |
| Tr           | 0     | 0      | 1 rl    | 1 rl   |
| Fe           | 2 pl  | 1 pl   | 3 D 3 rl| 8 D    |
| Pa           | 0     | 0      | 2 D 1 rl| 0      |
| Ti           | 0     | 0      | 2 pl 1 D 3 rl 2 V | 4 pl 1 D 3 rl 5 V |
| Me           | 0     | 0      | 4 pl 6 rl 2 V | 4 pl 4 rl 5 V |
Figures 6–8. *Dasumia gasparoi* sp. n. 6, 7 cheliceral teeth 8 female, ventral view Scale line: (6, 7) 0.1 mm.

Figures 9–12. Leg tarsi of *Dasumia gasparoi* sp. n. 9 Leg I 10 Leg II 11 Leg III 12 Leg IV Scale line: 0.25 mm.

rated from embolus and Apophysis_b (Fig. 13). Details of palp in ventral view: Apophysis_a1 short and sharp, beak-shaped at the right corner; Apophysis_a2 semicircular at the left corner; Apophysis_a3 (which is stubbier than apophysis_a1 and Apophysis_a4) ear-shaped at the rear corner. All of these apophyses with well sclerotized margins (Fig. 15).

Vulva generally well sclerotized. Distal crest medium-sized and butt-ended. Distal expansion of the spermatheca wider than distal crest and visually hump-shaped. Rod-
shaped part of the anterior spermatheca short and broader towards the base. Basal transverse part of the anterior spermatheca appears merged with the anterior basal arc. Both structures well sclerotized from centre to periphery. In dorsal view, anterior basal arc arc-shaped; basal transverse part of the anterior spermatheca forming a downward chevron shape. Transverse bar longer than the anterior basal arc. The surface area of the posterior spermatheca is wider than the anterior spermatheca. Transverse bar ends with one snake head-shaped structure at either side; and in contact with posterior diverticulum over complex membranous channel network (Figs 17, 18, 19).

**Note.** In ventral view, and looking at an angle of 70° from the surface to the vulva, we observed symmetrically located, reniform structures consisting of helicoidal canals inside both sides of the vulva (Fig. 20). The origin and function of these structures is unknown.

_Figures 13–16._ Male palp of _Dasumia gasparoi_ sp. n. Abbreviations: _Ap_a Apophysis, Ap_b Apophysis, E embolus. Scale lines: 0.25 mm.
Ecology. Samples were collected during early spring from under stones (using a hand aspirator) in steppe habitat with scrubs of *Quercus coccifera* and with pine woods located close by. The collection locality was on low land at the middle of a mountainous region, which may enhance the probability of this species being an endemic.

**Dasumia crassipalpis** (Simon, 1882)

http://species-id.net/wiki/Dasumia_crassipalpis

*Harpactes c.*: Simon, 1882: 224, f. 7-8 (D ♂).

*Harpactocrates c.*: Reimoser, 1919: 11.

*D. c.*: Alicata, 1974: 40, f. 1-4 (T ♂ from *Harpactocrates*, D ♀).

**Material examined.** 1 ♂ (AUZM), ISRAEL, Mount Meron, 17.XII.2010, leg. C. Drees

Detailed comparison of *D. gasparoi* sp. n. and *D. crassipalpis*. Unfortunately, due to lack of material, we were unable to compare females of the two species. Here we
A survey of East Mediterranean Dasumia... 97

comment on general similarities and differences observed from comparison of male specimens from both species; and from the description of female *D. crassipalpis* given by Alicata (1974) with the female of *D. gasparoi* sp. n., as follows:

Body coloration and general appearance similar in both species.

Arrangement of cheliceral teeth on cheliceral groove similar, but in *D. crassipalpis*, distance between teeth on promargin and retromargin relatively wider.

In the original description of *D. crassipalpis*, carapace width for males was given as 3.2 mm (see Simon 1882, page 224). Our *D. crassipalpis* specimen from Israel has a carapace width of 3.26 mm. Based on the body measurements of *D. gasparoi* sp. n., there are no significant differences between the two species. However, the legs of *D. crassipalpis* from Israel are relatively shorter than *D. gasparoi* sp. n. (see Table 3).

Leg spination similar in both species. Legs III and IV of female *D. gasparoi* sp. n. and leg IV of male *D. crassipalpis* exhibit trochanteric retrolateral spines, which is an interesting observation (see Table 2 and 4).

Linear postpedicelar and trapezoid epigastric scutum present in males of both species, in *D. gasparoi* sp. n. pale; in *D. crassipalpis* even paler.

In *D. crassipalpis*, morphology of the distal appendages distinctive on male palp. Apophysis_b, longer and wider. Also, in *D. gasparoi* sp. n., Apophysis_a1, shorter and projecting downwards; while in *D. crassipalpis* it is well developed, apparent and projected upwards. In *D. crassipalpis* palp when viewed ventrally, except for Apophysis_a1, the remaining apophyses are located at the right corner of Apophysis_a, close to Apophysis_a1 (Figs 21, 22, 23).

Even though there are structural differences apparent, the vulvae of both species are similar and generally well sclerotized (see Alicata 1974).

A short assessment on the distribution of *Dasumia crassipalpis*. First described as *Harpactes crassipalpis* by Simon (1882) on the basis of male specimens collected from

---

**Table 3. Leg measurements of *Dasumia crassipalpis***

| Leg | Fe  | Pa  | Ti  | Me  | Ta  |
|-----|-----|-----|-----|-----|-----|
| I   | 2.67| 1.85| 2.65| 2.57| 0.64|
| II  | 2.69| 1.66| 2.54| 2.49| 0.62|
| III | 2.20| 1.16| 1.75| 2.24| 0.57|
| IV  | 3.12| 1.49| 2.60| 3.06| 0.58|

**Table 4. Leg spination of *Dasumia crassipalpis***

| Leg | Leg I | Leg II | Leg III | Leg IV |
|-----|-------|--------|---------|--------|
| C   | 0     | 0      | 1 pl 1 D| 7 pl 2 D|
| Tr  | 0     | 0      | 0       | 1 rl   |
| Fe  | 4 pl  | 1 pl   | 3 D 3 rl| 9 D    |
| Pa  | 0     | 0      | 2 D 1 rl| 1 D    |
| Ti  | 0     | 0      | 2 pl 1 D 3 rl 5 V| 4 pl 1 D 3 rl 5 V|
| Me  | 0     | 0      | 3 pl 6 rl 2 V | 5 pl 5 rl 5 V|
Syria, females were subsequently described by Alicata (1974); and based on the previously unknown female genitalia, the species was transferred to the genus *Dasumia*. Simon reported the terra typica of *D. crassipalpis* as “Syria”, without giving any further detail (see Simon 1882). Moreover, Syria was the land of the Ottoman Empire in those days, and some provinces today known as Turkish were included with the rest of the region then known as Syria. For this reason, it is hard to draw a northern border line for the distribution of the species. However, considering that the only male specimen examined for the purpose of this study was collected in Israel, it may be assumed that *D. crassipalpis* is distributed along the line of Syria, Lebanon and Israel. Although we have not yet collected this species during our extensive arachnological field studies at the Turkey-Syria border, it is possible that this species reaches Turkey at the north and Jordan at the south of its range.

**Figures 21–23.** Male palp of *Dasumia crassipalpis*. Abbreviations: *Ap*<sub>a</sub> Apophysis, *Ap*<sub>b</sub> Apophysis, *E* embolus. Scale line (21, 22): 0.25 mm.
Dasumia mariandyna Brignoli, 1979
http://species-id.net/wiki/Dasumia_mariandyna

\[ D. \text{m.}: \text{Brignoli}, 1979: 312, f. 9-11 (D ♂♀).
\]
\[ D. \text{m.}: \text{Le Peru}, 2011: 222, f. 240 (♂♀).
\]

Material examined. 1 ♂ (AUZM) TURKEY, Düzce Province, Akçakoca District, c. 1 km south of Kepenç Village [41° 4’11.89”N; 31° 7’9.06”E], 22.V.2008, under leaf litter, leg. K.B. Kunt; 1 ♂ (AUZM), Bolu Province, Abant [40°40’39.36”N; 31°28’18.78”E], 13.IX.2009, under leaf litter, leg. K.B. Kunt.

Comparison of D. gasparoi sp. n. and D. mariandyna. Brignoli defined the relation of D. mariandyna to other species of the genus as follows: “The new species is not related to the Greek and Near Eastern species; it can be easily distinguished from all known species by the genitalia” (see Brignoli 1979, page 313). Indeed, D. mariandyna can be easily distinguished by the copulatory organs from the Middle Eastern representative of the genus, D. crassipalpis and from D. gasparoi sp. n. which is very close to D. crassipalpis. Another very important issue is that the arrangement of cheliceral teeth in D. mariandyna clearly does not conform with the characteristic arrangement of cheliceral teeth in this genus. Nevertheless, D. mariandyna just like D. gasparoi sp. n. and D. crassipalpis, also possesses 3 claws on tarsi III and IV. In accordance with the data mentioned above and by considering embolus/bulbus proportion of the species, the place of D. mariandyna in the subfamily Harpacteinae should be rediscussed, for it is possible that D. mariandyna may belong to another genus.
Results and discussion

With the description of *D. gasparoi* sp. n., the total number of *Dasumia* species is now 14 and the total number of dysderid spiders known from Turkey is raised to 47. Even if we ignore *D. sancticedri* Brignoli, 1978 (described in the genus *Dasumia* and associated with *D. crassipalpis* by Brignoli) which has a suspiciously different palpal structure questioning its correct placement in the genus *Dasumia* (see Brignoli, 1978, page 173. figures 1, 2); it is not unreasonable to think that spiders exist in the Eastern Mediterranean basin includes similar but different species which are slightly different from the European taxa in the structure of copulatory organs. The relationships between the European and Eastern Mediterranean representatives of the genus will be clarified following future revisions and with studies including molecular systematics.

Acknowledgements

This work was supported by the Research Foundation of Anadolu University (Project Number: 1001F31). We are very grateful to Dr. Ersen Aydin Yağmur (Turkey) for providing type specimens of the new species and Dr. Sergei Zonstein (Israel) for sending comparison material of *D. crassipalpis* from Israel. We would like to thank Dr. Murat Bilecenoğlu (Turkey) for translations of Latin texts and Mr. Ahmet Bozardıç (Turkey) for his important help during field trips. The English of the final draft was kindly checked by Dr. David Penney (United Kingdom).

References

Alicata P (1974) Nuova collocazione sistematica di *Harpactea crassipalpis* Simon 1882 (Araneae, Dysderidae). Animalia 1: 39–42.

Brignoli PM (1978). Araignées du Liban IV. Notes sur quelques Dysderidae (Araneae). Bulletin de la Société d’Histoire naturelle de Toulouse 114: 172–175.

Brignoli PM (1979) Spiders from Turkey, VI. Four new species from the coast of the Black Sea (Araneae). Bulletin of the British Arachnological Society 4: 310–313.

Chatzaki M, Arnedo M (2006) Taxonomic revision of the epigean representatives of the spider subfamily Harpacteinae (Araneae: Dysderidae) on the island of Crete. Zootaxa 1169: 1–32.

Deeleman-Reinhold CL (1993) The genus *Rhode* and the harpacteine genera *Stalagitia*, *Folkia*, *Minotauria*, and *Kaemis* (Araneae, Dysderidae) of Yugoslavia and Crete, with remark on the genus *Harpactea*. Revue Arachnologique 10 (6): 105–135.

Dunin PM (1992) The spider family Dysderidae of the Caucasian fauna (Arachnida Aranei Haplogyneae). Arthropoda Selecta 1 (3): 35–76.

Le Peru B (2011) The spiders of Europe, a synthesis of data: Volume 1 Atypidae to Theridiidae. Mémoires de la Société linnéenne de Lyon 2: 1–522.
Platnick NI (2011) The world spider catalog, Version 12.0. New York: American Museum of Natural History. http://research.amnh.org/iz/spiders/catalog/DYSDERIDAE.html [accessed 04.07.2011]

Reimoser E (1919) Katalog der echten Spinnen (Araneae) des Paläarktischen Gebietes. Abhandlungen der Kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 10 (2): 1–280.

Simon E (1882) Erudes Arachnologiques. 13e Mémoire. XX. Descriptions d’espèces et de genres nouveaux de la famille des Dysderidae. Annales de la Société entomologique de France (6) 2: 201–240.

Thorell T (1875) Diagnoses Aranearum Europaearum aliquot novarum. Tijdschrift voor Entomologie 18: 81–108.