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***Harpactea gonselorum* sp. n., a new spider species from northern Cyprus (Araneae: Dysderidae)**

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Abstract

A new species of the spider genus *Harpactea* Bristowe, 1939 is described from Cyprus. Detailed morphological description and photographs of both male and female specimens of the new species, *Harpactea gonselorum* sp. n., are provided. The taxonomic relationships of the new species are discussed.

Keywords: Araneae, Dysderidae, *Harpactea*, new species, taxonomy, Cyprus.

Introduction

One of the characteristic spiders' genera of the Mediterranean basin *Harpactea* Bristowe, 1939. Its members are commonly ground dwelling, known for preferring to live in hot environments, such as inland forest foliage (pine, deciduous trees, maquis shrubland, etc.). This genus is represented by 180 species today; some species such as *H. hombergi* (Scopoli, 1763) [Europe to Ukraine], *H. lepida* (C.L. Koch, 1838) [Europe to Ukraine], and *H. rubicunda* (C.L. Koch, 1838) [Europe to Georgia] are widespread while the majority's distribution is limited to a specific locality (World Spider Catalog, 2018).

The first and only *Harpactea* record known from Cyprus is *H. ceconii* (Kulczyński, 1908). Brignoli (1980) examined a series of four male and female syntypes, emphasizing that the current samples are in poor conditions and that it is not possible to examine the vulvae of female individuals of *H. ceconii*.

The famous Polish arachnologist Władysław Kulczyński studied spider samples collected from Palestine and Cyprus by the Italian entomologist Giacomo Cecconi, describing a series of spiders as new species, including *H. cecconii* (Kulczyński, 1908). The author provided the reproductive organs of the male individual of *H. cecconii* however skipped the drawings of female reproductive organs.

The purpose of this study is to describe a new *Harpactea* species as new to science with both genders, *Harpactea gunselorum* sp. n., which were collected during field studies aimed at cataloging the spider fauna of Cyprus.

Material and Methods

The specimens were collected from Beşparmak Mountains in the Northern Cyprus using a litter reducer (sifter) and pitfall traps. Digital images of the pedipalp were taken with a Leica DFC295 digital camera attached to a Leica S8AP0 stereomicroscope and 5-15 photographs were taken in different focal planes and combined. SEM microphotographs were made from dried and sputter coated (by gold) organs by use of a Zeiss Ultra Plus SEM device (Anadolu University, Eskişehir, Turkey).

All measurements are in millimetres (mm). Terminology for the body measurements and copulation organ structures follows Chatzaki & Arnedo (2006).

Abbreviations used: **Carapace and abdomen:** AL = abdominal length, CL = carapace length, CWmax & CWmin = maximum & minimum carapace width, TL = total length. **Eyes:** AME = anterior median eye, PLE = posterior lateral eye, PME = posterior median eye, AMEd, PLEd, PMEd = diameter of AME, PLE, PME. **Chelicera:** ChF = length of cheliceral fang, ChG = length of cheliceral groove, ChL = total length of chelicera (lateral external view). **Legs:** C = coxa, Fe = femur, Pa = patella, Ti = tibia, Me = metatarsus, Ta = tarsus, D = dorsal, Pl = prolateral, Rl = retrolateral, V = ventral. **Depository:** NHMNEU = Natural History Museum of Near East University, Cyprus. SMF = Senckenberg Museum, Frankfurt am Main, Germany.

Taxonomy

Family **Dysderidae** C.L. Koch, 1837

Genus *Harpactea* Bristowe, 1939

Harpactea gunselorum sp. n. (Figs. 1-3)

Examined material: Holotype 1♂ (NHMNEU), Cyprus, Lefkoşa, Beşparmak Mountain, Environs of Beşparmak Cave (35°17'22"N, 33°27'56"E), asl c. 426 m, 6 March 2018, Leg. S. Gücel. **Paratypes** [25♂, 8♀] 9♂, same data as holotype; 1♀, 7♂ (NHMNEU), Cyprus, Lefkoşa, Kalavaç Village Alevkayası (35°17'06"N, 33°31'41"E), asl c. 630 m, 13 January 2018-21 February 2018, Leg. K.B. Kunt & S. Gücel; 1♀, 4♂ (SMF), Cyprus, Beşparmak Mountain, Btw Alevkayası-Girnekayası (35°17'13"N, 33°31'01"E), asl c. 633 m, 14 January 2018-21 February 2018, Leg. K.B. Kunt & S. Gücel; 2♂ (NHMNEU), Cyprus, Beşparmak Mountains (35°17'5.99"N, 33°29'10.65"E) asl c. 558 m, 14 January 2018-22 March 2018, Leg. K.B. Kunt & S. Gücel; 1♂ (NHMNEU), Cyprus, Lefkoşa, Beşparmak Mountain, Girne Rock (35°17'03"N, 33°30'04"E), asl c. 605 m, 12 January 2018, Leg. K.B. Kunt & S. Gücel; 1♂ (NHMNEU), Cyprus, Lefkoşa, Beşparmak Mountain Environs of Beşparmak Cave (35°17'22"N, 33°27'56"E), asl c. 426 m, 15 January 2018-23 March 2018, Leg. K.B. Kunt & S. Gücel; 6♀, 1♂ (NHMNEU), Cyprus, Beşparmak Mountains, St. Hilarion Castle (35°18'56"N, 33°10'14"E), asl c. 778 m, 11 January 2018, Leg. K.B. Kunt & S. Gücel.

Derivatio nominis: The new species is dedicated to the honour of “Günsel Family” who is the founder of the Near East University in Cyprus.

Diagnosis: *Harpactea gunselorum* sp. n. is easily separated from other members of the genus because of the uniqueness of the bellows-shaped haematodocha folds located at the base of the "embolus from the bulb's distal extensions" and the cylindrical shape of the embolus in the male reproductive organ. The new species is closely related to *Harpactea heliconia* Brignoli, 1984 and *Harpactea rubicunda* (C.L. Koch, 1838) widely known from Greece (Boeotia) in terms of general appearance, anterior spermatheca parts ratios, and large posterior diverticulum of the female reproductive organ parts.

Measurements [Holotype ♂ / Paratype ♀]: TL 4.25 / 4.10; AL 2.40 / 2.50; CL 1.85 / 1.60; CWmax 1.50 / 1.25; CWmin 0.70 / 0.62; AMEd 0.11 / 0.12; PLEd 0.11 / 0.10; PMEd 0.07 / 0.07; ChF 0.35 / 0.32; ChG 0.24 / 0.20; ChL 0.82 / 0.64. Leg measurements are given in Table (1).

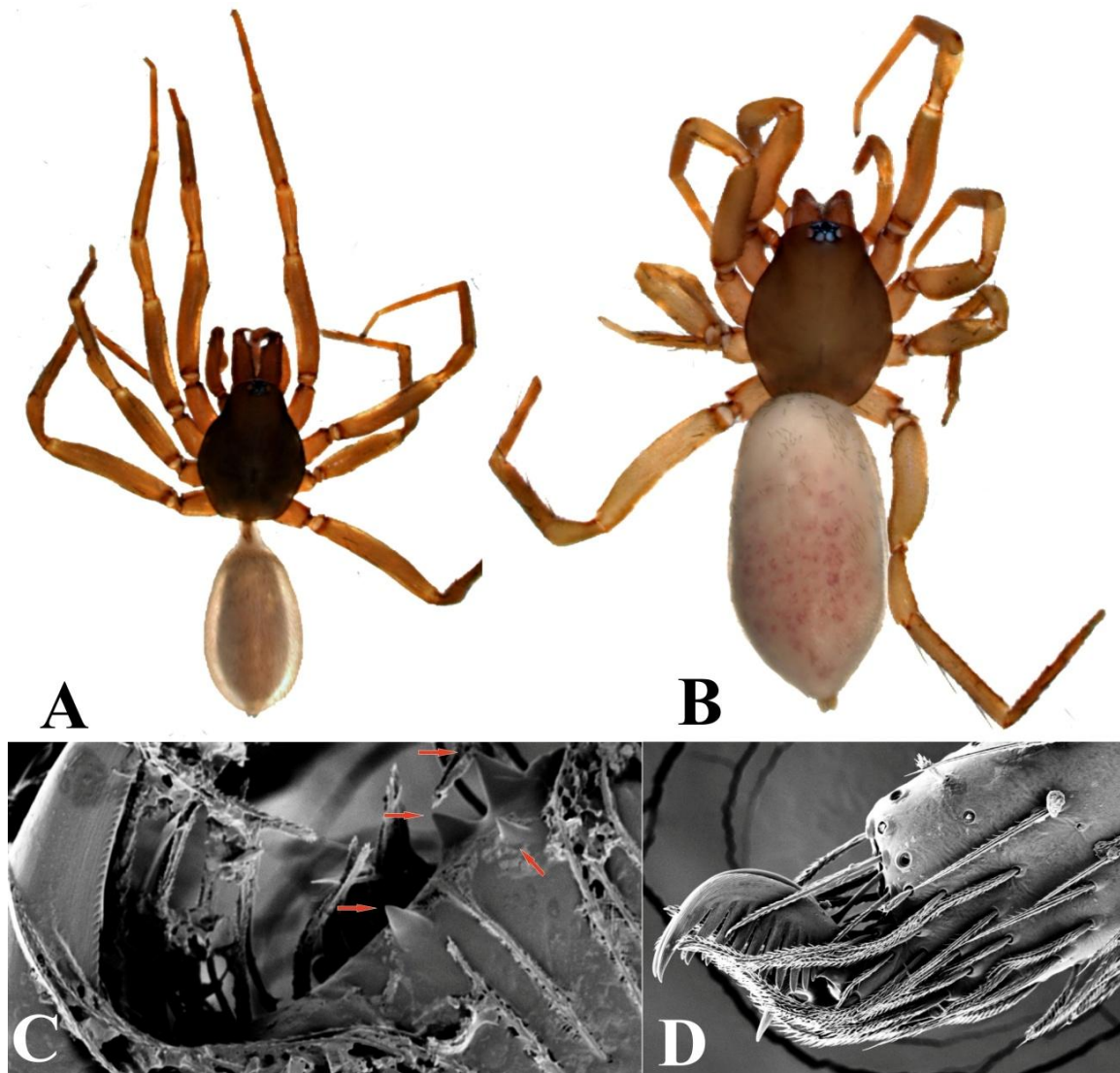


Fig. 1. *Harpactea gunselorum* sp. n. A-B. Habitus, dorsal view. A. male. B. female. C. Cheliceral teeth. D. Tarsal claws, leg I.

Table 1. Leg measurements of *Harpactea gunselorum* sp. n. (Holotype ♂ / Paratype ♀).

Legs	Fe	Pa	Ti	Me	Ta	TL
I	1.50 / 1.25	1.00 / 0.65	1.50 / 1.00	1.25 / 0.90	0.35 / 0.30	5.60 / 4.10
II	1.50 / 1.10	0.95 / 0.72	1.25 / 0.85	1.25 / 0.75	0.40 / 0.30	5.35 / 3.72
III	1.25 / 1.00	0.63 / 0.50	0.88 / 0.75	1.20 / 0.90	0.40 / 0.30	4.36 / 3.45
IV	1.85 / 1.25	0.90 / 0.65	1.50 / 1.20	1.75 / 1.35	0.50 / 0.30	6.50 / 4.75

Description: Small-sized harpacteinae spiders. Carapace brownish, khaki, with smooth surface. Fovea extremely prominent, in the form of a black line. Cephalic region narrower than thoracic region. There is no obvious colour difference between the two regions. However, the edges of the carapace are darker and browner as the contour rises. In males, there are weak hairs on the dorsal side of the carapace. These hairs are also present in females but are much less frequent. Six eyes; well-developed silvery greyish colours and ring sequenced. AME's light. Chelicerae, cheliceral teeth, gnathocoxae and labium are very light brown. There are short, weak brownish hairs on the anterior of the chelicerae that are generally equally spaced, coming out of blackish holes. These hairs are elongating while going down the cheliceral teeth. The outer basal parts of the cheliceral teeth have long hairs in clusters. Sternum brownish yellow, with smooth and bright surface. There are fine brownish hairs on the sternum. These hairs are longer towards the dark brown edges of the sternum. In particular, they have formed a tuft on the edge of the sternum posterior tip towards the pedicel.

Legs yellowish brown. There are no difference in colouration between segments of anterior and posterior legs in both sexes.

Table 2. Leg spination of *Harpactea gunselorum* sp. n.

♂ (Holotype)	Leg I	Leg II	Leg III	Leg IV
C	0	0	1 Pl	1 Pl
Fe	2 Pl	1, 1 Pl	1, 1 Rl 1 D	1, 1 Pl 1 D
Pa	0	0	1 Rl	0
Ti	0	0	1, 1, 1 Rl 1, 1 Pl 1, 1, 2 V	1, 1, 1 Rl 1, 1, 1 Pl 1, 1 2 V
Me	0	0	1, 1, 1 Rl 1, 1 Pl 2 V	4 Rl 1, 1, 1 Pl 2 V
♀ (Paratype)				
C	0	0	1-2 Pl	1 Pl
Fe	2 Pl	1, 1 Pl	1, 1 Rl 1 D	1 D
Pa	0	0	1 Rl	0
Ti	0	0	1, 1, 1 Rl 1, 1 Pl 1, 1, 2 V	1, 1 Rl 1, 1 Pl 1, 1 2 V
Me	0	0	1, 1, 1 Rl 1, 1 Pl 2 V	4 Rl 1, 1, 1 Pl 1, 1 2V

The surfaces of all leg segments are covered with blackish hair. Anterior and posterior femora and posterior coxae with spines prolaterally. For detailed spination see Table (2). Anterior tarsi without claw tuft, and with 3 claws. The posterior tarsi also have very weakly developed claw tuft and with 3 claws. The front tarsal claws on all legs carry 9-10 teeth. There are weak scopulae on the first quarters of tarsi and metatarsi of the posterior legs. Abdomen greyish-pale brown, cylindrical. Its surface is covered with weak, blackish hairs. These hairs are denser on the ventral side of the abdomen, while getting less on the dorsal surface.

Male bulb oval, brownish orange. Distal expansions blackish and short like a tubercle at the tip of the bulb. Embolus and conductor are not easily distinguishable from each other. The accessory apophysis is absent.

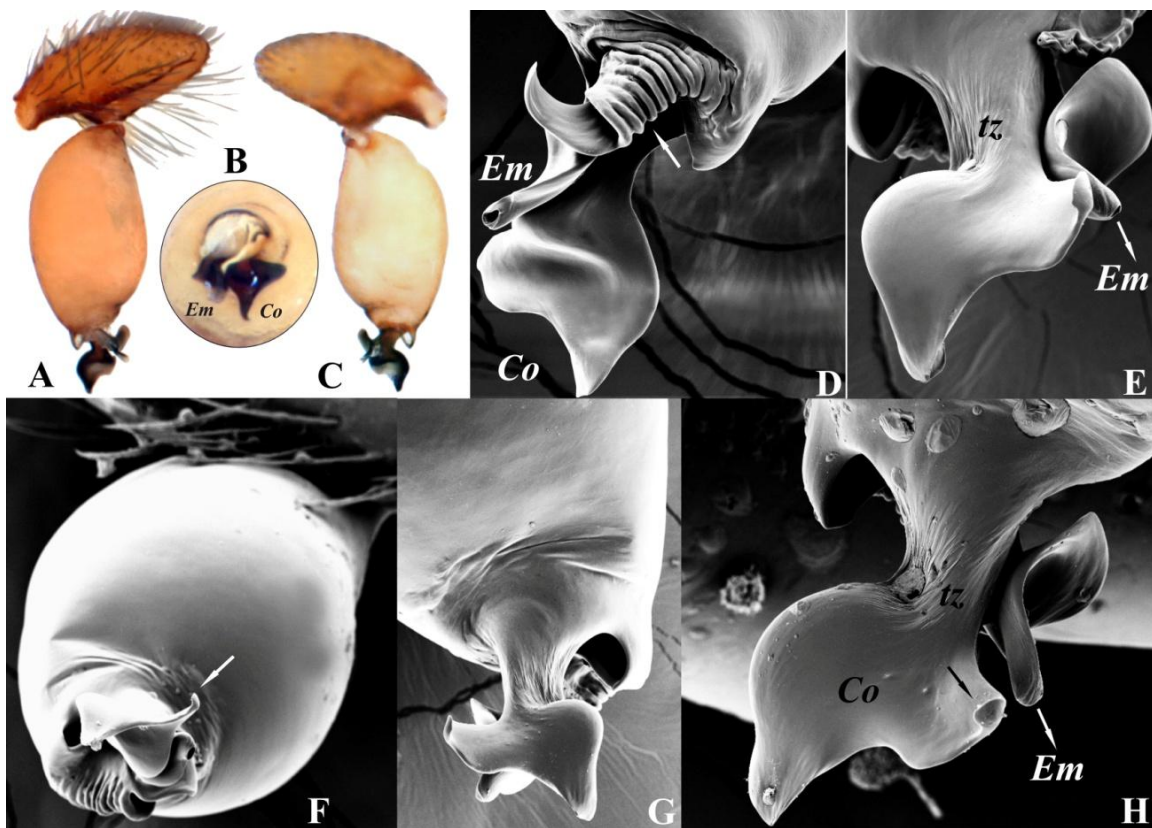


Fig. 2. Male palp of *Harpactea gunselorum* sp. n. A. Prolateral view. B. Dorsal view. C, D. Retrolateral view. E, H. Nearly prolateral view. F. Nearly dorsal view. G. Nearly retrolateral view. *Co* = Conductor, *Em* = Embolus, *tz* = Transition zone.

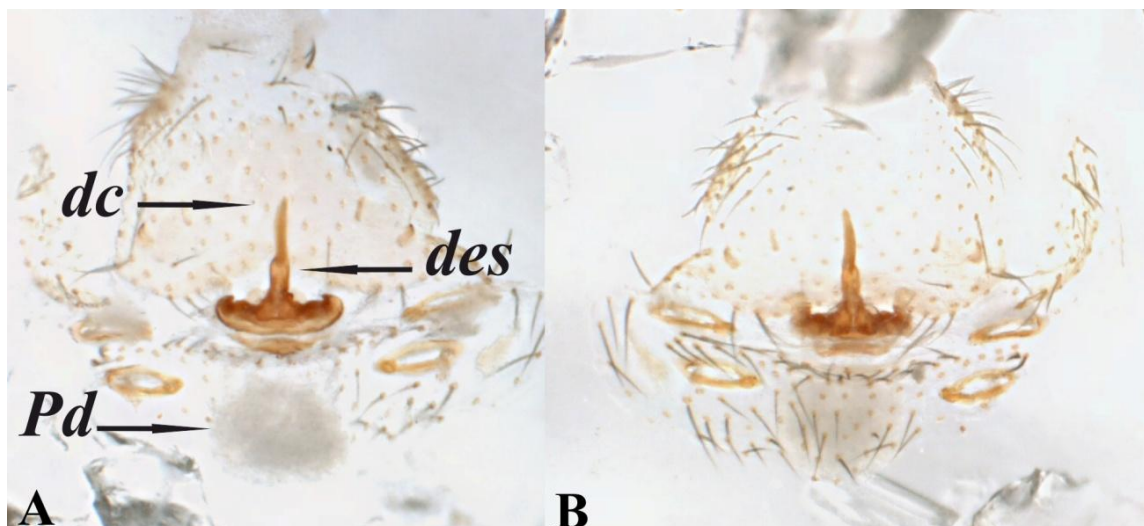


Fig. 3. Vulva of *Harpactea gunselorum* sp. n. A. Dorsal view. B. Ventral view. *dc* = Distal crest, *des* = Distal expansion of the spermatheca, *Pd* = Posterior diverticulum.

The base of embolus is composed of folds of haematodocha in the form of bellows and the sclerotized first fold is in the shape of a finger and led to the bulb's apex. The other end where the sperm duct exit is cylindrical; toward eight o'clock in the posterior side. There is an obvious transitional zone between the conductor and the bulb. After this transition zone, the expanding conductor shrinks suddenly towards the tip. The anterior side of the conductor is circular and wide; posterior edge is folded toward the prolateral side. At the distal end, there is also a slight curve towards the prolateral side.

Generally, vulva is weakly sclerotized. Only the basal transverse part of the anterior spermatheca appears to be more strongly sclerotized than the other parts. Basal transverse part of the anterior spermatheca is also fused with the anterior basal arc at the same time. Distal crest is spinose. There is no difference in width between the basal transverse part of the anterior spermatheca and the distal expansion of the spermatheca. The length of the transverse bar is half the length of the anterior basal arc. Posterior diverticulum is membranous and widened.

Results

According to the classification of Deeleman-Reinhold (1993), *Harpactea gunselorum* sp. n., is evaluated to be within the *rubicunda* (D) species group. This assessment has been done:

1. Embolus and conductor are massive in males. Especially the embolus is complicated.
2. The vulva has a wide and membranous posterior diverticulum.
3. Coxae IV and patellae III with one spine.

According to the present faunistic records, the only *Harpactea* species known from Cyprus is *H. ceconii* (Bosmans *et al.*, 2016). However, 5 *Harpactea* species from North Aegean islands, 4 from Crete and Sardinia, and 2 from Corsica have been identified (Helsdingen, 2018).

Apart from *Harpactea corticalis* (Simon, 1882), which has relatively broad distribution (France and Italy), others are endemic to the islands. *H. gunselorum* sp. n. is widely distributed through out the Beşparmak mountains, however its distribution from the southern part of Cyprus is as yet undetermined. Future arachnological studies will help to understand *H. gunselorum* sp. n. both taxonomic situation in the genus and the distribution on the island.

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