

Redescription of *Harpactea korgei* Brignoli, 1979 (Araneae: Dysderidae) with the first description of the female

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Received 15 January 2015; Accepted 20 February 2015; Published online 1 June 2015



Abstract

The redescription of dysderid spider *Harpactea korgei* Brignoli, 1979, on the basis of newly collected material is provided. The female of this species, previously unknown, is described here for the first time.

Keywords Anatolia; Haplogynae; Harpacteinae; spider; Turkey.

Arthropods
ISSN 2224-4255
URL: <http://www.iaees.org/publications/journals/arthropods/online-version.asp>
RSS: <http://www.iaees.org/publications/journals/arthropods/rss.xml>
E-mail: arthropods@iaees.org
Editor-in-Chief: WenJun Zhang
Publisher: International Academy of Ecology and Environmental Sciences

1 Introduction

Harpactea Bristowe, 1939, which is a common genus in the Mediterranean basin's pine and deciduous forests, has 23 species recorded from Turkey (Bayram et al., 2014). Although the vast majority of them are known only from the type locality, some species such as *H. babori* (Nosek, 1905) and *H. sturanyi* (Nosek, 1905) are known to have a wider distribution (Kunt et al., 2011).

The purpose of this short article is to describe the female of *H. korgei* which hitherto was described based only on a male specimen from the Western Black Sea region of Turkey by Brignoli (1979) and so far only known from the type locality, and to provide additional morphological information for males.

2 Materials and Methods

All specimens were collected from the Western Black Sea region of Turkey (Fig. 1). The specimens were collected using pitfall traps, sifter and collection by active searching. 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 at 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, with methods as per Chatzaki and Arnedo (2006). Terminology for the copulatory organs is adapted from Alicata (1966) and Deeleman-Reinhold (1993). The following abbreviations are used in

the text: **AL**, abdominal length; **CL**, carapace length; **CW_{max}**, maximum carapace width; **CW_{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; **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; **Depository**: **AUZM**, Anadolu University Zoology Museum, Eskişehir, Turkey; **NHMG**, The Natural History Museum of Geneva, Switzerland; **SMF**, Senckenberg Museum, Frankfurt am Main, Germany.

3 Results

Harpactea korgei Brignoli, 1979

H. korgei: Brignoli, 1979: 311, f. 3-5 (D♂).

H. korgei: Le Peru, 2011: 272, f. 417 (♂).

Examined material: **TURKEY** 4 ♂♂, 1 ♀ (AUZM), Azdavay District, Kastamonu Province, 41°36'13.35"N 33°14'14.27"E, 30 May 2009, Leg. Y. M. Marusik — 1 ♂ (AUZM), Valla Valley, Pınarbaşı District, Kastamonu Province, 41°42'16.79"N 33° 5'1.05"E, 05 May 2011, Leg. K. B. Kunt — 1 ♀ (AUZM), Daday-Ballıdağ Hwy., Kastamonu Province, 41°30'9.00"N 33°23'38.00"E, 22 May 2012, Leg. T. Danişman — 2 ♂♂, 3 ♀♀ 1 ♀ (AUZM), Ecevit Mountain Pass, Between Küre & İnebolu Districts, Kastamonu Province, 41°46'39.00"N 33°43'5.00"E, 26 May 2012, Leg. T. Danişman — 1 ♀ 1 ♀ (AUZM), Out of Düzce, Düzce Province, 40°58'36.00"N 30°10'44.00"E, 27 June 2012, Leg. T. Danişman — 2 ♂♂, 2 ♀♀, 6 J 1 ♀ (AUZM), Abant Vicinity, Dereceören Village, Bolu Province, 40°38'21.00"N 31°21'51.00"E, 13 September 2012 Leg. T. Danişman — 2 ♂♂, 1 ♀ 1 ♀ (NHMG), Ballıdağ-Azdavay Hwy., Azdavay District, Kastamonu Province, 41°34'19.20"N 33°19'21.00"E, 28 April 2013, Leg. K. B. Kunt — 1 ♂ (AUZM), Pınarbaşı Entrance, Kastamonu Province, 41°35'40.70"N 33°8'16.80"E, Pine Forest, pitfall trap, 28 April↔9 July 2013, Leg. K. B. Kunt & R. S. Özkütük — 6 ♂♂, 3 ♀♀ (AUZM), Abant-Bolu Hwy., Bolu Province, 40°41'48.90"N 31°27'2.90"E, Pine Forest, pitfall trap, 15 April↔10 July 2013, Leg. K. B. Kunt & T. Danişman — 1 ♂, 2 ♀♀ (SMF), Dranaz Pass, Kastamonu-Sinop Old Hwy., Boyabat District, Sinop Province, 41°41'16.61"N 34°52'50.46"D, 7 June 2013, Leg. M. Elverici — 1 ♀, 5 J (AUZM), Ballıdağ-Azdavay Hwy., Azdavay District, Kastamonu Province, 41°34'19.20"N 33°19'21.00"E, Pine Forest, in litters, 8.07.2013, Leg. K. B. Kunt.

Diagnosis: *Harpactea korgei* Brignoli, 1979 can be separated from all other known species of *Harpactea* males by its flat and heavily sclerotized embolus on almost entire surfaces and the accompanying massive and long Ap_a which has a hammer-head-shaped tip. Brignoli (1979) associated the *H. korgei* male with *H. osellai* Brignoli, 1978 and *H. sturanyi* Nosek, 1905. However, in both these species the morphology of the distal extensions is different from that in *H. korgei*. The female of *H. korgei* is unique due to the diverticulum posterior vulva, significantly being extremely heavily sclerotized and the horseshoe-shaped anterior basal arc.

Measurements [♂♂ / ♀♀]: AL 3.80-4.20 / 3.80-5.80; CL 2.90-3.40 / 2.80-3.40; CW_{max} 2.30-2.70 / 2.20-2.90; CW_{min} 1.10-1.60 / 1.10-1.80; AMEd 0.10-0.20 / 0.10-0.20; PLEd 0.10-0.20 / 0.10-0.20; PMEd 0.10-0.10 / 0.10-0.10; ChF 0.30-0.50 / 0.30-0.50; ChG 0.20-0.30 / 0.20-0.50; ChL 1.10-1.20 / 0.80-1.30 mm. Leg measurements are given in Table 1.



Fig. 1 Study area.

Description: Carapace greenish-brown in males, brown in females. Surface is smooth in both sexes. Cephalic region darker than thoracic region. Fovea longitudinal, distinct. AME, PLE and PME as is characteristic of the genus, i.e. closely grouped and arranged in a circular pattern; AME separated, the distance between them significant. There is a distinct gap between PME and PLE. Sternum, labium, gnathocoxae and chelicerae brown. In males these areas are relatively darker and greenish. Sternum bright, smooth, barely skin-like; edges dark brown. Entire surface of sternum covered with sparsely distributed fine blackish hairs. In females these hairs are more dense and longer. Cheliceral groove with four teeth: teeth of retromargin smaller than promargin and cone-shaped. Promarginal teeth bigger and triangular. Blackish brown hairs on labium and tips of gnathocoxae. These hairs more dense on gnathocoxae. Chelicerae brown. Blackish hairs on the front surface of the chelicerae and dark brown ridges at the base of these hairs. Abdomen yellowish-light brown, sub-cylindrical. Surface covered with fine brown hairs. Legs yellowish; segments with infrequent blackish hairs. Leg IV > I > II > III.

Tarsi 3 and 4 very weak; metatarsi 3 and 4 scopulae covering slightly less than the distal half of the segment. Scopulae of metatarsi 3 stronger than metatarsi 4. In males, 0-1 spines on the dorsal part of coxa III, 0-2 spines on the dorsal part of coxa IV. In females, coxa III without spine, 0-3 spines on the dorsal part of coxa IV. Details of leg spination for *H. korgei* are given in Table 2.

Palp: Tegulum light brown, pear-shaped. Embolus and Ap_a strongly sclerotized, solid, black. Nearly 1/3 of

tegulum length. Ap_a is longer than embolus, connected with a wide base to the tegulum, top is hammer-head-shaped (Fig. 2a-c).

Table 1 *Harpacea korgei*, leg measurements.

♂	Co	Fe	Pa	Ti	Me	Ta	To
Leg I	1.20-1.60	2.50-3.00	1.70-1.90	2.40-2.90	2.10-2.70	0.50-0.80	10.90-12.60
Leg II	1.00-1.40	2.40-2.90	1.40-1.80	2.10-2.60	1.80-2.40	0.60-0.80	8.70-11.20
Leg III	0.60-0.90	1.90-2.40	0.80-1.10	1.40-1.70	1.90-2.30	0.50-0.70	7.30-8.90
Leg IV	0.80-1.10	3.60-3.00	1.30-1.50	2.40-2.80	2.90-3.30	0.70-0.90	11.30-12.40

♀	Co	Fe	Pa	Ti	Me	Ta	To
Leg I	1.10-1.50	2.10-3.00	1.20-2.00	1.80-2.30	1.80-1.90	0.50-0.80	8.80-11.30
Leg II	0.90-1.20	2.00-3.00	1.20-1.90	1.70-2.60	1.60-2.40	0.50-0.70	8.00-11.80
Leg III	0.60-1.10	1.60-2.40	0.80-1.10	1.20-1.70	1.60-2.20	0.50-0.70	6.50-8.70
Leg IV	0.80-1.30	2.40-3.40	1.10-1.50	1.90-2.60	2.40-3.10	0.70-0.80	9.60-12.40

Table 2 *Harpacea korgei*, leg spination.

♂	Leg I	Leg II	Leg III	Leg IV
C	0	0	0-1 D	0-2 D
Fe	1, 1-2 Pl	1, 1 Pl	1, 1-3 Pl 1-6 D 1, 1-2 Rl	1-4 Pl
Pa	0	0	1 Rl	0-1 Rl
Ti	0	0	2 Pl 3 Rl 4-5 V	3 Pl 3 Rl 5-8 V
Me	0	0	2 Pl 3 Rl 3-5 V	3 Pl 4 Rl 3-6 V
♀				
C	0	0	0	0-3 D
Fe	1-2 Pl	0-2 Pl	0-3 Pl 0-4 Rl 0-5 D 0-1 V	0-3 Pl 0-4 D 0-2 V
Pa	0	0-1 Pl	1 Rl	0-1 Pl 0-1 Rl
Ti	0	0	2-3 Pl 3 Rl 2, 1, 2 V	3 Pl 3 Rl 5-7 V
Me	0	0	2-3 Pl 3 Rl 3-5 V	2-5 Pl 3-5 Rl 3-5 V

Vulva: All surfaces extremely strongly sclerotized, such that nearly all of the vulva can be distinguished from the ventral side of the abdomen, even before being subjected any chemical clearing process.

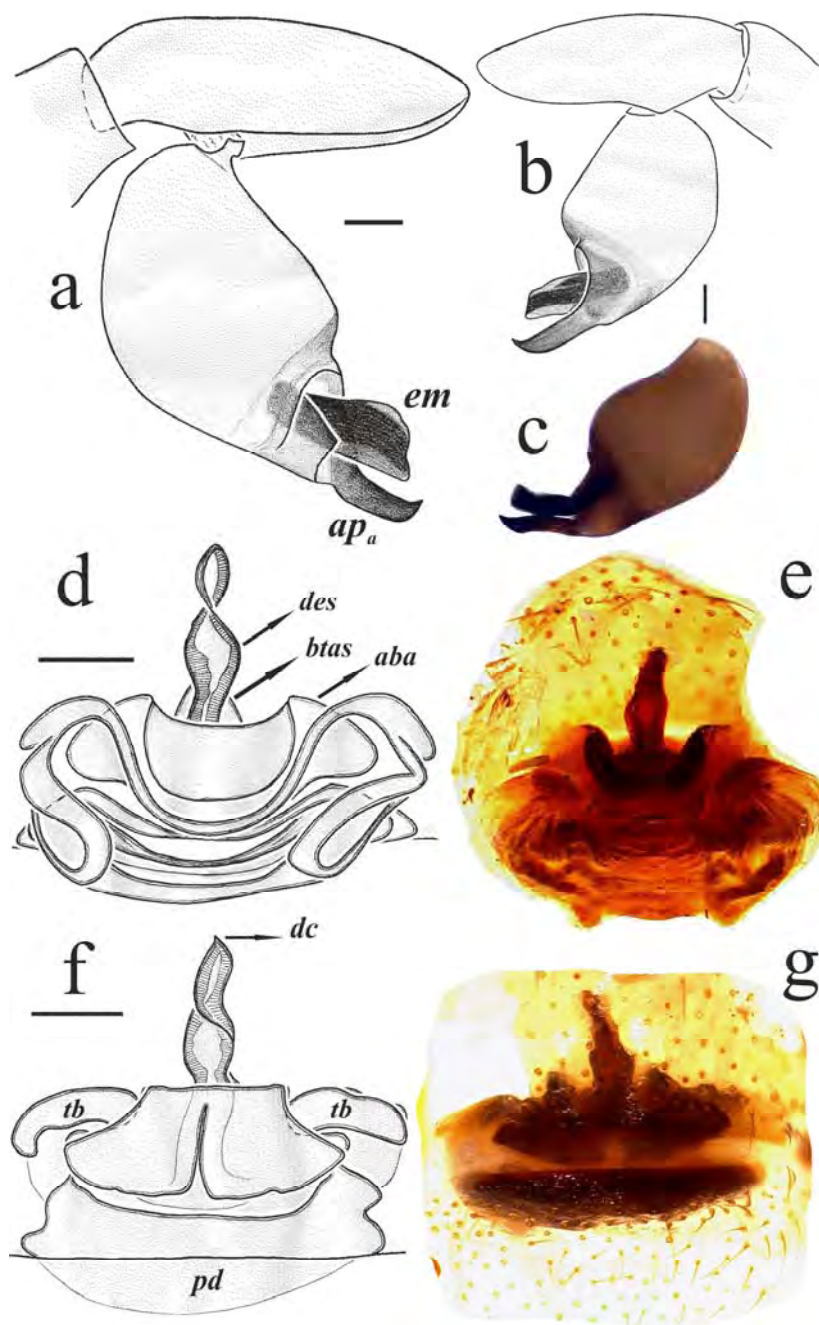


Fig. 2 *Harpactea korgei* (a) Male palp, prolateral view (b) Ditto, retrolateral view (c) Ditto, nearly retrolateral view (d, e) Vulva, dorsal view (f, g) Ditto, ventral view Scale lines: 0.1 mm Abbreviations: *aba*, anterior basal arc; *ap_a*, apophysis_a; *btas*, basal transverse part of the anterior spermatheca; *dc*, distal crest; *des*, distal expansion of the spermatheca; *em*, embolus; *Pd*, posterior diverticulum; *tb*, transverse bar.

Distal crest short, triangular tip, blunt. Rod-shaped part of the anterior spermatheca composes distal crest with torsion after achieved distal expansion of the spermatheca. The central part of the anterior basal arc, a thick crescent-shape directed towards the anterior; this section is strongly sclerotized compared to peripheral parts. Transverse bar, surrounding tubular structure to the central part of the strongly sclerotized crescent-shaped anterior basal arc, but longer than the anterior basal arc. Symmetrical furcates on both sides. One of the branches is blunt, the other one has a tubular structure and reaches through the posterior diverticulum. Posterior diverticulum wide, strongly sclerotized. Membranous sac absent (Fig. 2d-g).

Distribution: *H. korgei*, which was hitherto known only from the type locality (Akçakoca District, Düzce Province), Western Black Sea coastline of Turkey (up to about 1300 metres above sea level), shows a wide distribution.

4 Remarks

Deeleman-Reinhold (1993) divided the genus *Harpactea* into 4 groups according to characteristics of the copulatory organs of both sexes. Based on her classification, *H. korgei* should be included in the ***rubicunda* (D)** group based on the structure of the male copulatory organ and the 3rd patellae and 4th coxae carry "thorns". However, the female of *H. korgei* fits better in the ***lepida* (C)** group because the posterior diverticulum of the vulva is wide and strongly sclerotized; membranous sac is reduced. Then vulva of the female does not conform to the existing definition of Deeleman-Reinhold's (1993) ***rubicunda* (D)** group. We believe, in the near future, that an in-depth study of the genus *Harpactea* will demonstrate that this species is an exception or is a sign that the groups need to be revised.

Acknowledgements

This study was supported by Anadolu University Scientific Research Projects Commission under the grant no: 1301F007. We would like to thank Dr. Fulvio Gasparo (Italy) for providing invaluable suggestions for the taxonomic position of the *H. korgei*. All drawings presented inwith this paper belong to Dr. Mykola Kovblyuk (Ukraine). The English of the final draft was kindly checked by Dr. David Penney (United Kingdom).

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