

## **Survey of the Moroccan arachnids (Araneae, Scorpiones & Solifugae) in the collections of the Institute of Biodiversity and Ecosystem Research, Bulgaria**

Author: Naumova, Maria

Source: Arachnologische Mitteilungen: Arachnology Letters, 66(1) : 72-78

Published By: Arachnologische Gesellschaft e.V.

URL: <https://doi.org/10.30963/aramit6608>

---

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

# Survey of the Moroccan arachnids (Araneae, Scorpiones & Solifugae) in the collections of the Institute of Biodiversity and Ecosystem Research, Bulgaria

Maria Naumova



doi: 10.30963/aramit6608

**Abstract.** Material belonging to a small collection of Moroccan arachnids housed in the Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences was examined and the results are presented here. A total of 28 species belonging to 16 families from three orders of arachnids were provided, as follows: Araneae (16 species, 12 families), Scorpiones (nine species, two families) and Solifugae (three species, two families). Five spider species, *Adonea* cf. *fimbriata* (Eresidae), *Plexippus* cf. *clemens* (Salticidae), *Thanatus oblongiusculus* (Philodromidae), *Aelurillus aeruginosus* (Salticidae) and *Steatoda incomposita* (Theridiidae), represent new or potential new records for the fauna of Morocco. Furthermore, the latter two are new for the African continent.

**Keywords:** camel spiders, High Atlas, Maghreb, Northern Africa, spiders

**Zusammenfassung. Liste der marokkanischen Arachniden (Araneae, Scorpiones & Solifugae) in den Sammlungen des Instituts für Biodiversität und Ökosystemforschung.** Das Material aus einer kleinen Sammlung von marokkanischen Arachniden im Institut für Biodiversitäts- und Ökosystemforschung an der bulgarischen Akademie der Wissenschaften wurde untersucht und die Ergebnisse werden hier präsentiert. 28 Arten in 16 Familien aus drei Ordnungen werden vorgestellt: Araneae (16 Arten, 12 Familien), Scorpiones (neun Arten, zwei Familien) und Solifugae (drei Arten, zwei Familien). Fünf Spinnenarten, *Adonea* cf. *fimbriata* (Eresidae), *Plexippus* cf. *clemens* (Salticidae), *Thanatus oblongiusculus* (Philodromidae), *Aelurillus aeruginosus* (Salticidae) und *Steatoda incomposita* (Theridiidae), stellen neue oder potentiell neue Nachweise für die Fauna von Marokko dar. Die letzten zwei sind zudem neu für den afrikanischen Kontinent.

Morocco is located in the Mediterranean Basin Hotspot, one of the biologically richest and most endangered ecoregions in the world. It houses the second greatest concentration of terrestrial biodiversity in the Mediterranean basin and the greatest concentration of marine biodiversity. Morocco has a species diversity of more than 31000 species of which about 11% are endemic (Cuttelod et al. 2008, Mittermeier et al. 2004, USAID 2010). The spider fauna of Morocco is relatively poorly studied and the number of known species amounts to only 493 (Alioua & Bosmans 2020, Alioua et al. 2020, Barrientos et al. 2020, 2021, Benhalima & Bosmans 2020, Bosmans & Hervé 2021, Bosmans et al. 2019, 2022, Habita et al. 2022, Huber 2021, 2022, Jäger 2020, Lecigne et al. 2020, Nentwig et al. 2023). The Moroccan scorpion fauna is much better studied and was recently surveyed in some detail (El Hidan et al. 2018, Touloun & Boumezzough 2011, Touloun et al. 2016a, 2016b), with several new species described (Lourenço & Geniez 2005, Lourenço & Leguin 2011a, 2011b, Lourenço et al. 2011, 2012, Turiel 2014). From about 55 scorpion species and subspecies in Morocco, 41 are known to be endemic (Touloun et al. 2016b). The list of the camel spiders of Morocco includes 25 species and one subspecies from 5 families, and 10 of them appear to be endemic (Harvey 2013, World Solifugae Catalog 2023).

The collection of arachnids (excluding Acari) in the Institute of Biodiversity and Ecosystem Research (IBER) at the Bulgarian Academy of Sciences were created simultaneously with the foundation of the institute in 2010, and consists of material collected during the current century. The collections include about 10000 samples and more than 50000 partially identified specimens of arachnids, mostly spiders from the Balkans, predominantly from Bulgaria. During an ongoing internal inventory, all material from Morocco was reviewed

and identified. The aim of this study is to present a detailed survey of the Moroccan spiders, camel spiders and scorpions deposited in the IBER collections.

## Material and methods

Material was collected with tweezers or by hand picking in 2013 and 2019 from 25 localities (Fig. 1) in Morocco, between 69 and 2843 m a.s.l., mostly under stones. Specimens were examined and measured using Zeiss SM and Wild M5A stereomicroscopes with eyepiece scales and preserved in 70–85% ethanol. Identification of the spiders was in accordance with all taxonomic references listed in the World Spider Catalog (2023) for each species. Identification of the scorpions follows Lourenço (1999, 2003), Lourenço & Qi (2006), Touloun & Boumezzough (2011) and Vachon (1952). Identification of the camel spiders follows Roewer (1933, 1934). Nomenclature follows Fet et al. (2000), Harvey (2013), the World Solifugae Catalog (2023) and the World Spider Catalog (2023). All taxa are listed alphabetically. The reference ID codes are given in square brackets. The geographical coordinates are given in decimal degrees. The initials of the collectors are given in brackets, as follows: Dragan Chobanov (DCh), Kostadin Andonov (KA), Nikola Stanchev (NS) and Toshko Ljubomirov (TL).

## Abbreviations

E – East, N – North, S – South, W – West, j – juvenile, sa – subadult.

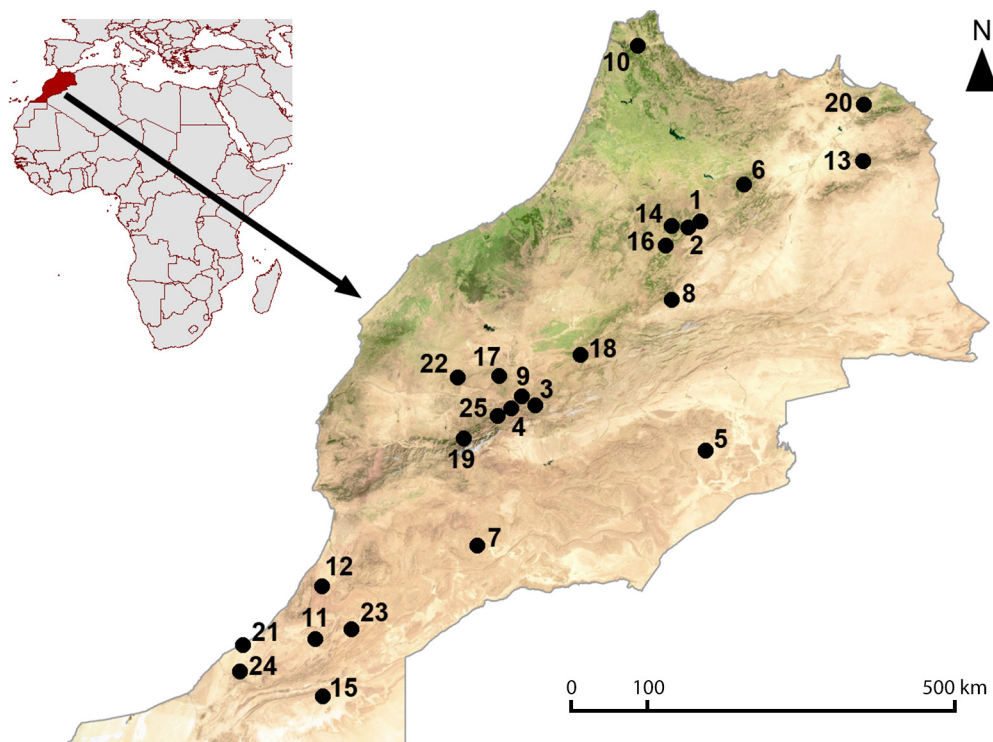
## Results

A total of 56 individuals of arachnids belonging to three orders, 16 families and 28 species are deposited in the IBER as follows: spiders 24 indiv./16 species/12 families, scorpions 27 indiv./9 species/2 families and camel spiders 4 indiv./3 species/2 families. Two spider genera are new records for the country. Five spider species represent new or potentially new country records and two of them are new for the African continent. Two spiders and seven scorpion species occur only in Morocco and are regarded as local endemics.

Maria NAUMOVA, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; E-mail: munny@abv.bg, ORCID: <https://orcid.org/0000-0003-0060-048X>

Academic editor: Tobias Bauer

submitted 18.2.2023, accepted 20.11.2023, online 29.12.2023



**Fig. 1:** Location of the collection sites in Morocco. 1. Ait Arefa; 2. Ait Daoud Ou Moussa; 3. Ait Hammodo; 4. Azrif; 5. Bou Bib; 6. Bou Rha-leb; 7. Bou Soummoum; 8. Bou-mia; 9. Douar Abadou; 10. El Fendek; 11. Fask; 12. Id Yahya; 13. Ifkirene; 14. Ifrane; 15. Inerne; 16. Khazzouza; 17. Marakesh; 18. Ouaouizeght; 19. Oukaime-den; 20. Ouled Mehalhal; 21. Plage Blanche; 22. Sidi Bou Othmane; 23. Taghijit; 24. Tidergit; 25. Touthi

## Survey of species

### ARANEAE

#### Araneidae

##### *Argiope trifasciata* (Forsskal, 1775)

**Material.** 2 sa♀ [Mo-AAr.0001], 35 km N Marakesh, 31.9103N, -7.416E, 520–600 m a.s.l., 31. Mar. 2019, (DCh).

**Distribution.** North, Central and South America. Introduced to Africa, Canary Islands, Portugal to Israel, Iran, China, Japan, Australia (Tasmania), Pacific Islands (Nentwig et al. 2023, World Spider Catalog 2023). Abel et al. (2020) showed that *A. trifasciata* consists of five reciprocally monophyletic clades, one of them mainly distributed in Africa and the rest of the Palearctic excluding India and China.

##### *Cyrtophora citricola* (Forsskal, 1775)

**Material.** 1 ♀, 1 sa♀ [Mo-AAr.0002], 35 km N Marakesh, 31.9103N, -7.4162E, 520–600 m a.s.l., 31. Mar. 2019, (DCh).

**Distribution.** Widespread in tropical and subtropical parts of Asia, Africa and Australia; also occurs in the Middle East, Southern Europe and in the Canary Islands; introduced into the Caribbean and both Americas; accidentally imported into Poland (Rozwałka et al. 2017, Segura-Hernández et al. 2023, World Spider Catalog 2023).

#### Eresidae

##### *Adonea cf. fimbriata* Simon, 1873

**Material.** 1 sa♀ [Mo-AE.0001], NW Boumia, 32.7555N, -5.1366E, 1763 m a.s.l., 29.. May 2013, (TL); 1 sa♀ [Mo-AE.0002], N Ifrane, 33.5744N, -5.0991E, 1585 m a.s.l., 8. Jun. 2013, (TL).

**Distribution.** Mediterranean, distribution and synonymy not well researched. Reported from Algeria, Tunisia, Greece and Israel (Nentwig et al. 2023, World Spider Catalog 2023). New genus and potential species record for Morocco.

**Note.** Both specimens are subadult females and have been tentatively identified based on their somatic traits (see Miller

et al. 2012: figs 1A, 8A-D, 19E-H) and habitats (known from desert habitat with low shrubs, often in valleys (Miller et al. 2012)).

#### Filistatidae

*Sabastata cf. wunderlichi* Magalhaes, Stockmann, Marusik & Zonstein, 2020 (Fig. 2)

**Material.** 1 sa♀ [Mo-AF.0001], W Bou Soummoum, 29.9969N, -7.6986E, 1052 m a.s.l., 25.. May 2013, (TL)

**Distribution.** Endemic to Morocco (Magalhaes et al. 2020).

**Note.** The specimen is a subadult female with underdeveloped genitalia and has been tentatively identified based on its somatic traits (Figs 2-7) and location (according to Magalhaes et al. 2020).

#### Gnaphosidae

##### *Haplodrassus dalmatensis* (L. Koch, 1866)

**Material.** 1 ♂ [Mo-AG.0001], W Oukaïmeden, 31.2013N, -7.8661E, 2690 m a.s.l., 21. May 2013, (TL).

**Distribution.** Europe except the north, Atlantic Islands, North Africa, Türkiye, Israel. In the Mediterranean region often confused with *Haplodrassus omissus* (O. Pickard-Cambridge, 1872) (Bosmans et al. 2018).

##### *Micaria albobittata* (Lucas, 1846)

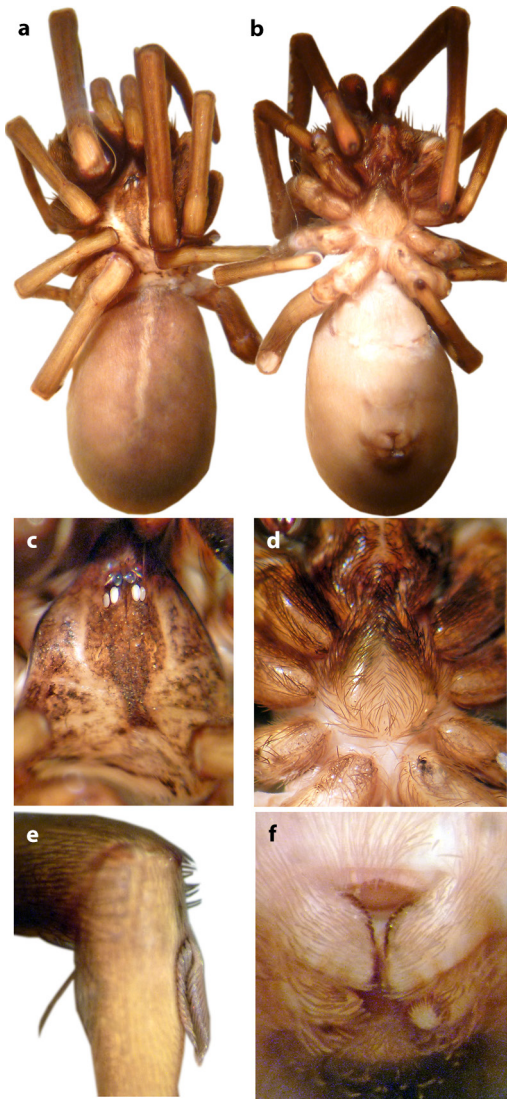
**Material.** 2 ♀♀ [Mo-AG.0002], W Oukaïmeden, 31.2013N, -7.8661E, 2690 m a.s.l., 21. May 2013, (TL).

**Distribution.** From Morocco and Mediterranean Europe, through Russia (Europe to Central Asia), to Turkmenistan and China (World Spider Catalog 2023, Zamani et al. 2017).

##### *Zelotes scrutatus* (O. P.-Cambridge, 1872)

**Material.** 1 ♂ [Mo-AG.0003], NW Sidi Bou Othmane, 31.880N, -7.950E, 572 m a.s.l., 21. May 2013, (TL); 1 ♂ [Mo-AG.0004], N Tidergit, 28.5825N, -10.8525E, 179 m





**Fig. 2:** *Sahastata* cf. *wunderlichii*, subadult female. **a.** habitus, dorsal view; **b.** habitus, ventral view; **c.** carapax; **d.** sternum and coxae; **e.** calamistrum; **f.** cribellum and spinnerets

a.s.l., 25. May 2013, (TL); 1 ♀, 1 sa♀ [Mo-AG.0005], El Fendek, 35.5813N, -5.5819E, 395 m a.s.l., 6. Jun. 2013, (TL).

**Distribution.** Canary Islands, Africa to Central Asia, Greece and Türkiye (Nentwig et al. 2023, World Spider Catalog 2023).

### Hersiliidae

*Hersiliola simoni* (O. P.–Cambridge, 1872)

**Material.** 1 ♀ [Mo-AHe.0001], SE Ifkirene, 34.31189N, -2.6216E, 1334 m a.s.l., 2. Jun. 2013, (TL); 1 sa♀ [Mo-AHe.0002], NE Id Yahya, 29.5294N, -9.7502E, 427 m a.s.l., 24. May 2013, (TL).

**Distribution.** Iberian Peninsula, Northern Africa, Middle East, Iran (Foord & Dippenaar-Schoeman 2005, Nentwig et al. 2023, World Spider Catalog 2023).

### Palpimanidae

*Palpimanus denticulatus* Hernández-Corral & Ferrández, 2017 (Fig. 3)

**Material.** 1 ♀ [Mo-APa.0001], SW Bou Rhaleb, 34.0508N, -4.1819E, 1382 m a.s.l., 4. Jun. 2013, (TL).

**Distribution.** Moroccan endemic (Hernández-Corral & Ferrández 2017).

**Note.** The specimen is an adult female and has been identified based on the shape of the posterior edge of the abdominal scutum and post-scutal sclerotization, which fits well to *P. denticulatus* (see Hernández-Corral & Ferrández 2017: fig 4b) and differs significantly from *P. maroccanus* Kulczyński, 1909 (see Hernández-Corral & Ferrández 2017: fig. 4c; Platnick 1981: fig. 14).

### Philodromidae

*Thanatus oblongiusculus* (Lucas, 1846)

**Material.** 1 ♀ [Mo-APhi.0001], W Oukaïmeden, 31.2013N, -7.8661E, 2690 m a.s.l., 21. May 2013, (TL).

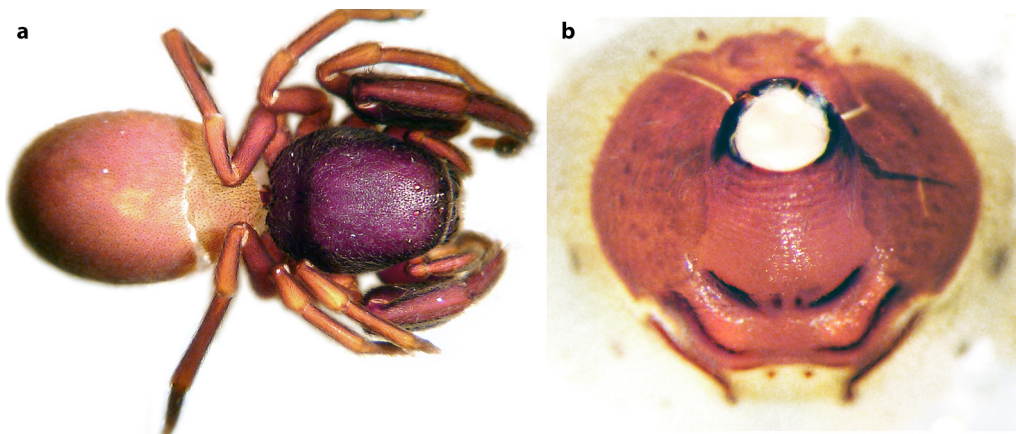
**Distribution.** Southern Europe, Türkiye, North Africa (Algeria, Libya), Ukraine, Russia (Europe) to Central Asia, Iran, China (Nentwig et al. 2023, World Spider Catalog 2023). New genus and species for Morocco.

### Salticidae

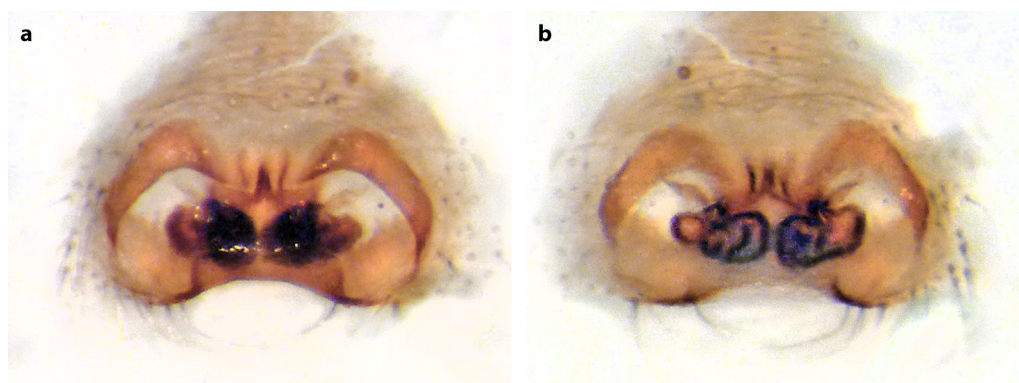
*Aelurillus aeruginosus* (Simon, 1871) (Fig. 4)

**Material.** 1 ♀ [Mo-ASa.0001], NW Sidi Bou Othmane, 31.8808N, -7.9502E, 572 m a.s.l., 21. May 2013, (TL), det. G. Azarkina.

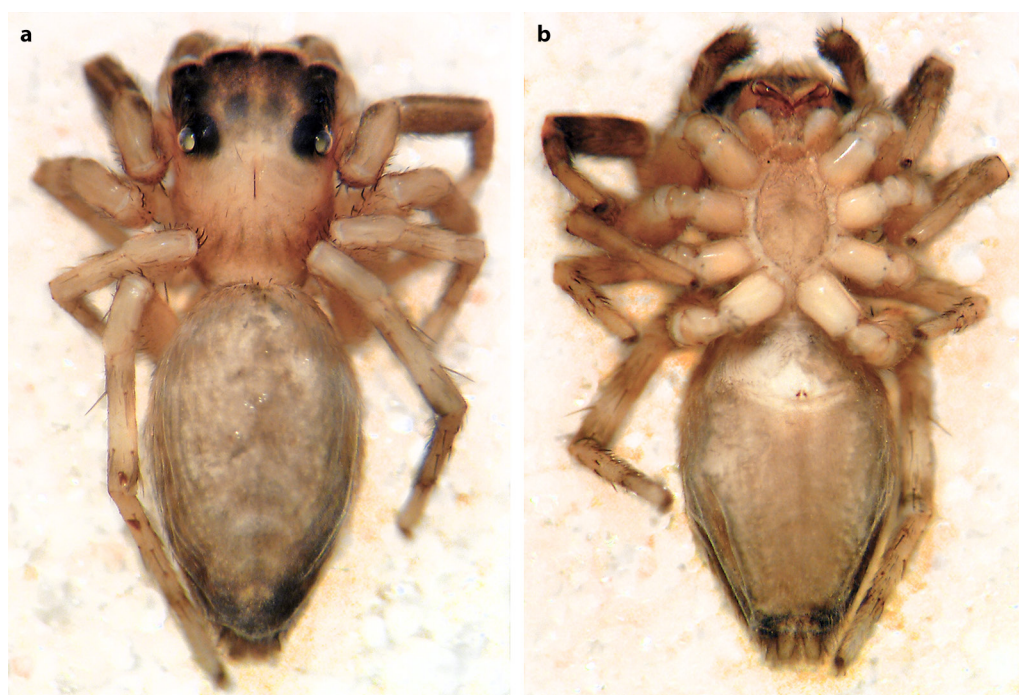
**Distribution.** North Mediterranean (Cyprus, Greece (incl. Chios and Rhodos Islands), Israel, Italy (incl. Sicily), Spain, Syria) (Nentwig et al. 2023, Szűts & Azarkina 2002, World Spider Catalog 2023). First record for Africa and for Morocco, respectively.



**Fig. 3:** *Palpimanus denticulatus*, female. **a.** habitus, dorsal view; **b.** epigyne, ventral view



**Fig. 4:** *Aelurillus aeruginosus*, epigyne/vulva: **a.** ventral view; **b.** dorsal view



**Fig. 5:** *Plexippus cf. clemens*, subadult female, habitus. **a.** dorsal view; **b.** ventral view

***Plexippus cf. clemens*** (O. Pickard–Cambridge, 1872)

(Fig. 5)

**Material.** 1 sa♀ [Mo–ASa.0002], S Douar Abadou, 31.6380N, –7.1316E, 1461 m a.s.l., 28. May 2013, (TL).

**Distribution.** Algeria, China, Egypt, India, Iran, Israel, Libya, Pakistan, Türkiye, Yemen (Prószyński 2017, World Spider Catalog 2023). Potential new species for Morocco.

**Note.** The specimen is a subadult female with underdeveloped epigyne and has been tentatively identified mainly based on its somatic traits (Figs 12–13) and the known distribution of the species.

**Segestriidae**

***Ariadna cf. insidiatrix*** Audouin, 1826

**Material.** 1 sa♀ [Mo–ASe.0001], E Oukameden, 31.2036N, –7.8027E, 2843 m a.s.l., 26. May 2013, (TL).

**Distribution.** Mediterranean (Nentwig et al. 2023, World Spider Catalog 2023).

**Note.** The specimen is a subadult female with underdeveloped genitalia and has been tentatively identified mainly based on its somatic traits and the known distribution of the species.

**Sparassidae**

***Eusparassus oraniensis*** (Lucas, 1846)

**Material.** 1 ♂ [Mo–ASp.0001], S Inerne, 29.3033N, –9.7308E, 1091 m a.s.l., 24. May 2013, (TL); 1 sa♀ [Mo–ASp.0002], N Tidergit, 28.5686N, –10.8286E, 177 m a.s.l., 24. May 2013, (TL).

**Distribution.** North Africa. Discovered in Morocco by Moradmand (2013).

**Theraphosidae**

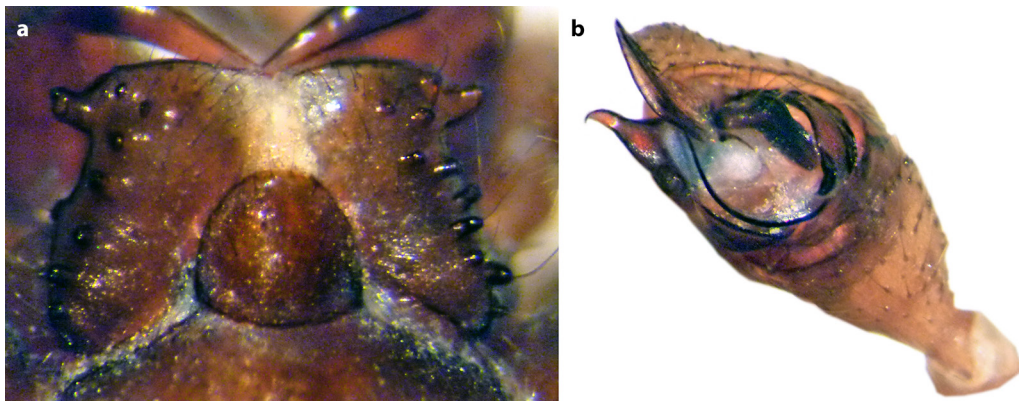
***Ischnocolus valentinus*** (Dufour, 1820)

**Material.** 1 ♂ [Mo–AThp.0001], N Ait Hammodo, 31.5783N, –6.9891E, 1934 m a.s.l., 28. May 2013, (TL).

**Distribution.** According to Korba et al. (2022), the distribution of this species is restricted to the Iberian Peninsula and northern Morocco.

**Note.** The specimen fits well to the diagnosis provided in Korba et al. (2022), with only one spine apically on pro-ventral tibia I, a straight embolus with a narrowing tip and elongated posterior lateral spinnerets.





**Fig. 6:** *Steatoda incomposita*, male. **a.** endites and labium, ventral view; **b.** left palp, ventral view

### Theridiidae

*Steatoda incomposita* (Denis, 1957) (Fig. 6)

**Material.** 1 ♂ [Mo–AThr.0001], Oukaimeden, 31.2013N, –7.8661E, 2695 m a.s.l., 21. May 2013, (TL).

**Distribution.** The species is known from Gibraltar, Portugal, Spain, France and Corsica (Branco et al. 2019, Gaymard & Lecigne 2018, Knoflach 1996). Morphologically it is very close to *Steatoda albomaculata* (De Geer, 1778), and was probably often misidentified (Knoflach 1996). This is the first record from Africa and from Morocco, respectively.

## SCORPIONES

### Buthidae

*Androctonus amoreuxi amoreuxi* (Audouin, 1826)

**Material.** 1 ♀ [Mo–ScB.0001], E Taghijit, 29.0558N, –9.3575E, 625 m a.s.l., 25. May 2013, (DCh), 1 ♂, Plage Blanche, 28.8700N, –10.7800E, 69 m a.s.l., 11. Jul. 2019, (KA); 1 ♀ [Mo–ScB.0002], Fask, 28.9525N, –9.8260E, 338 m a.s.l., 11. Jul. 2019, (NS).

**Distribution.** The nominal subspecies occurs from North Africa to Sudan, Senegal and Chad (Touloun et al. 2016).

*Buthus albengai* Lourenço, 2003

**Material.** 1 ♂ [Mo–ScB.0003], 2 ♀♀ [Mo–ScB.0004–5], N Ait Arefa, 33.6380N, –4.8180E, 1430 m a.s.l., 2. Jun. 2013, (TL); 1 ♂ [Mo–ScB.0006], N Ifrane, 33.5744N, –5.0991E, 1753 m a.s.l., 8. Jun. 2013, (TL); 1 ♂ [Mo–ScB.0007], 2 ♀♀ [Mo–ScB.0008–9], S Khazzouza, 33.3808N, –5.2247E, 1776 m a.s.l., 8. Jun. 2013, (TL); 1 ♂ [Mo–ScB.0010], N Ait Daoud Ou Moussa, 33.5966N, –4.9261E, 1686 m a.s.l., 8. Jun. 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço 2003).

*Buthus boumalenii* Touloun & Boumezzough, 2011

**Material.** 1 ♂ [Mo–ScB.0011], 1 ♀ [Mo–ScB.0012], E Bou Bib, 31.0577N, –4.6805E, 718 m a.s.l., 7. Jun. 2013, (TL).

**Distribution.** Endemic to Morocco (Touloun & Boumezzough 2011).

*Buthus elmoutaouakili* (Lourenço & Qi, 2006)

**Material.** 1 ♂ [Mo–ScB.0013], 1 ♀ [Mo–ScB.0014], NE Id Yahya, 29.5294N, –9.7502E, 427 m a.s.l., 24. May 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço & Qi 2006).

*Buthus lienhardi* Lourenço, 2003

**Material.** 1 j♂ [Mo–ScB.0015], Oukaimeden, 31.2013N, –7.8661E, 2695 m a.s.l., 21. May 2013, (TL); 2 ♀♀ [Mo–

ScB.0016–17], 1 j♂ [Mo–ScB.0018], SE Touftiht, 31.4730N, –7.4119E, 1504 m a.s.l., 27. May 2013, (TL); 1 ♂ [Mo–ScB.0019], NE Azrif, 31.5541N, –7.2438E, 1333 m a.s.l., 28. May 2013, (TL); 1 ♂ [Mo–ScB.0020], S Douar Abadou, 31.6380N, –7.1316E, 1461 m a.s.l., 28. May 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço 2003).

*Buthus paris* (C.L. Koch, 1839)

**Material.** 2 ♂♂ [Mo–ScB.0021–22], 1 ♀ [Mo–ScB.0023], SE Ifkirene, 34.3118N, –2.6216E, 1334 m a.s.l., 2. Jun. 2013, (TL).

**Distribution.** Algeria, Morocco and Tunisia (Kovářík 2006, Lourenço 2003).

*Compsobuthus wiliamsi* Lourenço, 1999

**Material.** 1 ♂ [Mo–ScB.0024], W Inerne, 28.3033N, –9.7308E, 1083 m a.s.l., 24. May 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço 1999).

### Scorpionidae

*Scorpio fuliginosus* (Pallary, 1928)

**Material.** 1 ♀ [Mo–ScS.0001], SE Ifkirene, 34.3113N, –2.6216E, 1339 m a.s.l., 2. Jun. 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço 2009).

*Scorpio weidholzi* Werner, 1929

**Material.** 1 j♂ [Mo–ScS.0002], NW Sidi Bou Othmane, 31.8825N, –7.9530E, 614 m a.s.l., 21. May 2013, (TL).

**Distribution.** Endemic to Morocco (Lourenço 2009).

## SOLIFUGAE

### Galeodidae

*Paragaleodes occidentalis* (Simon, 1885)

**Material.** 1 ♀ [Mo–SoG.0001], S Ouauizeght, 32.1372N, –6.3369E, 900 m a.s.l., 9. Jun. 2013, (DCh).

**Distribution.** Algeria, Mauritania and Morocco (Harvey 2013, World Solifugae Catalog 2023).

### Solpugidae

*Oparba maroccana* (Kraepelin, 1899)

**Material.** 1 ♀ [Mo–SoSp.0001], W Bou Soummoum, 29.9969N, –7.6986E, 1052 m a.s.l., 25. May 2013, (TL); 1 j [Mo–SoSp.0002], NW Sidi Bou Othmane, 31.8808N, –7.9502E, 586 m a.s.l., 21. May 2013 (TL).

**Distribution.** Morocco, Nigeria and Togo (Harvey 2013, World Solifugae Catalog 2023).

*Zeria persephone* Simon, 1879

**Material.** 1 ♂ [Mo–SoSp.0003], E Ouled Mehalhal, 34.9525N, –2.5997E, 119 m a.s.l., 3. Jun. 2013, (DCh).

**Distribution.** Known only from Algeria and Morocco (Harvey 2013, World Solifugae Catalog 2023).

#### Acknowledgements

I am grateful to my colleagues Toshko Ljubomirov (IBER, BAS), Dragan Chobanov (IBER, BAS), Nikola Stanchev (student, Sofia University “St. Kliment Ohridski”) and Kostadin Andonov (IBER, BAS) for providing the material; to Galina Azarkina (Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia; University of Venda, Thohoyandou, South Africa and Tomsk State University, Tomsk, Russia) for the identification of *Aelurillus aeruginosus*, to Wilson Lourenço (Muséum national d'Histoire naturelle, Paris, France) for the provided sources and to Christo Deltchev (NMNHS-BAS, Sofia, Bulgaria) for the identification of *Palpimanus denticulatus* and for the helpful discussion. This study was based on specimens deposited in the Collections of the Institute of Biodiversity and Ecosystem Research – Bulgarian Academy of Sciences upgraded in the frames of the project DiSSCo-BG (Distributed System of Scientific Collections—Bulgaria) funded by the National Roadmap for Research Infrastructures, Ministry of Education and Science of the Republic of Bulgaria and was supported by the project “MCCATF” (funded by the National Science Fund of Bulgaria under Grant contract number KII–06–H61/6–14.12.2022).

#### References

- Abel C, Schneider JM, Kuntner M, & Harms D 2020 Phylogeography of the ‘cosmopolitan’ orb-weaver *Argiope trifasciata* (Araneae: Araneidae). – Biological Journal of the Linnean Society 131: 61–75 – doi: 10.1093/biolinnean/blaa078
- Alioua A & Bosmans R 2020 *Poecilochroa senilis* (O. Pickard-Cambridge, 1872) (Araneae: Gnaphosidae) recorded for the first time in Algeria and Morocco, with the proposition of a new synonym. – Serket 17: 121–126
- Alioua Y, Bosmans R, Kherbouche O & Bissat S 2020 Die Verbreitung der Gattung *Larinia* im Maghreb, mit dem Erstnachweis von *Larinia chloris* in Algerien (Araneae: Araneidae). – Arachnologische Mitteilungen 59: 1–4 – doi: 10.30963/aramit5901
- Barrientos JA, Brañas N, Fadrique F & Mederos J 2021 Un nuevo *Lepthyphantes* Menge, 1866 (Araneae: Linyphiidae) del norte de Marruecos. – Revista Ibérica de Aracnología 38: 63–68
- Barrientos JA, Brañas N & Mederos J 2020 The high complexity of Micronetinae Hull, 1920 (Araneae, Linyphiidae) evidenced through ten new cave-dweller species from the Morocco. – Zootaxa 4866: 1–29 – doi: 10.5252/zootaxa.4866.1.1
- Benhalima S & Bosmans R 2020 Revision of the genus *Zodariion* Walckenaer, 1833 (part IV). The species of Morocco (Araneae: Zodariidae). – Zootaxa 4899: 93–114 – doi: 10.11646/zootaxa.4899.1.5
- Bosmans R, Kherbouche-Abrous O, Benhalima S & Hervé C 2018 The genus *Haplodrassus* Chamberlin, 1922 in the Mediterranean and the Maghreb in particular (Araneae: Gnaphosidae). – Zootaxa 4451: 1–67 – doi: 10.11646/zootaxa.4451.1.1
- Bosmans R, Lecigne S, Benhalima S & Abrous-Kherbouche A 2022 The genus *Lycosoides* Lucas, 1846 in the Maghreb region, with the description of five new species (Araneae: Agelenidae). – Arachnology 19: 316–340 – doi: 10.13156/arac.2022.19.sp1.316
- Bosmans R, Van Keer J, Russell-Smith A, Hadjiconstantis M, Komnenov M, Bosselaers J, Huber S, McCowan D, Snazell R, Decae A, Zoumides C, Kielhorn K-H & Oger P 2019 Spiders of Cyprus (Araneae). A catalogue of all currently known species from Cyprus. – Newsletter of the Belgian arachnological Society 34 (Supplement): 1–173
- Bosmans R & Hervé C 2021 Less is more: eight new synonyms in Mediterranean spiders (Araneae), with a new *Pelecopsis* species from Tunisia (Linyphiidae). – Arachnologische Mitteilungen 61: 58–64 – doi: 10.30963/aramit6109
- Branco VV, Morano E & Cardoso P 2019 An update to the Iberian spider checklist (Araneae). – Zootaxa 4614: 201–254 – doi: 10.11646/zootaxa.4614.2.1
- Cuttelod A, García N, Abdul Malak D, Temple H & Katariya V 2008 The Mediterranean: a biodiversity hotspot under threat. In: Vié J-C, Hilton-Taylor C & Stuart SN (eds.): The 2008 Review of The IUCN Red List of Threatened Species. – IUCN Gland, Switzerland. 14 pp.
- El Hidan MA, Touloun O, Bouazza A, Laaradia MA & Boumezzough A 2018 *Androctonus* genus species in arid regions: Ecological niche models, geographical distributions, and envenomation risk. – Veterinary World 11: 286–292 – doi: 10.14202/vetworld.2018.286–292
- Fet V, Sissom WD, Lowe G & Braunwalder ME 2000 Catalog of the Scorpions of the World (1758–1998). New York Entomological Society. 690 pp.
- Forde SH & Dippenaar-Schoeman AS 2005 A revision of the Afrotropical species of *Hersiliola* Thorell and *Tama* Simon with the description of a new genus *Tyrotama* (Araneae: Hersiliidae). – African Entomology 13: 255–279
- Gaymard M & Lecigne S 2018 Contribution à la connaissance de l'araneofaune (Araneae) du Gard et en particulier du massif des Gorges du Gardon (Occitanie, France). – Bulletin de l'Association Française d'Arachnologie 1: 1–39
- Habita A, Benhalima S, Kherbouche-Abrous O, Bosmans R, Brague-Bouragba N & Guezoul O 2022 Distribution of the genus *Anyphaena* in the Western Mediterranean region, with the first record of *Anyphaena alboirrorata* in the Maghreb (Araneae: Anyphaenidae). – Arachnologische Mitteilungen 63: 19–23 – doi: 10.30963/aramit6306
- Harvey MS 2013 Solifuges of the World, version 1.0. Western Australian Museum, Perth. Internet: <http://www.museum.wa.gov.au/catalogues/solifuges> (15. Jan. 2023)
- Hernández-Corral J & Ferrández MÁ 2017 Descripción de una especie nueva de *Palpimanus* Dufour, 1820 de Marruecos (Araneae: Palpimanidae), con notas sobre los *Palpimanus* del Mediterráneo. – Revista Ibérica de Aracnología 30: 37–46
- Huber BA 2021 First northwest African species of the spider genus *Artema*, from caves in Morocco, with notes on body size in pholcid spiders (Araneae: Pholcidae). – Zootaxa 4984: 324–334 – doi: 10.11646/zootaxa.4984.1.23
- Huber BA 2022 Revisions of *Holocnemus* and *Crossopriza*: the spotted-leg clade of Smeringopinae (Araneae, Pholcidae). – European Journal of Taxonomy 795: 1–241 – doi: 10.5852/ejt.2022.795.1663
- Jäger P 2020 The spider genus *Olios* Walckenaer, 1837 (Araneae: Sparassidae) – Part 1: species groups, diagnoses, identification keys, distribution maps and revision of the *argelasius*-, *coenobitus*- and *auricomis*-groups. – Zootaxa 4866: 1–119 – doi: 10.11646/zootaxa.4866.1.1
- Knoflach B 1996 *Steatoda incomposita* (Denis) from southern Europe, a close relative of *Steatoda albomaculata* (Degeer) (Araneae: Theridiidae). – Bulletin of the British Arachnological Society 10: 141–145
- Korba J, Opatova V, Calatayud-Mascarell A, Enguñados A, Bellvert A, Adrián S, Sánchez-Vialas A & Arnedo MA 2022 Systematics and phylogeography of western Mediterranean tarantulas (Araneae: Theraphosidae). – Zoological Journal of the Linnean Society 196: 845–884 – doi: 10.1093/zoolinnean/zlac042
- Lecigne S, Lips J, Moutaouakil S & Oger P 2020 Zwei neue höhlenbewohnenden Spinnenarten aus dem marokkanischem Hohen Atlas (Araneae: Liocranidae, Theridiidae). – Arachnologische Mitteilungen 60: 12–18 – doi: 10.30963/aramit6002
- Lourenço WR 1999 Two new species of *Compsobuthus* Vachon, 1948 (Scorpiones, Buthidae) from Africa. – Entomologische Mitteilungen aus dem Zoologischen Museum Hamburg 13 (160): 85–94
- Lourenço WR 2003 Compléments à la faune de scorpions (Arachnida) de l'Afrique du Nord, avec des considérations sur le genre *Buthus* Leach, 1815. – Revue Suisse de Zoologie 110: 875–912 – doi: 10.5962/bhl.part.80218
- Lourenço WR 2009 Reanalysis of the genus *Scorpio* Linnaeus 1758 in sub-Saharan Africa and description of one new species from

- Cameroon (Scorpiones, Scorpionidae). – Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut 15 (181): 99–113
- Lourenço WR & Geniez P 2005 A new scorpion species of the genus *Buthus* Leach, 1815 (Scorpiones, Buthidae) from Morocco. – *Euscorpius* 19: 2–6 – doi: [10.18590/euscorpius.2005.vol2005.iss19.1](https://doi.org/10.18590/euscorpius.2005.vol2005.iss19.1)
- Lourenço WR & Leguin E-A 2011a Further considerations on the species of the genus *Orthochirus* Karsch, 1891 from Africa, with description of three new species (Scorpiones: Buthidae). – *Euscorpius* 123: 1–19 – doi: [10.18590/euscorpius.2011.vol2011.iss123.1](https://doi.org/10.18590/euscorpius.2011.vol2011.iss123.1)
- Lourenço WR & Leguin E-A 2011b One more new species of the genus *Orthochirus* Karsch, 1891 from Africa (Scorpiones: Buthidae). – *Euscorpius* 135: 1–6 – doi: [10.18590/euscorpius.2011.vol2011.iss135.1](https://doi.org/10.18590/euscorpius.2011.vol2011.iss135.1)
- Lourenço WR & Qi J-X 2006 A new species of *Buthus* Leach, 1815 from Morocco (Scorpiones, Buthidae). – *Entomologische Mitteilungen aus dem Zoologischen Museum Hamburg* 14 (173): 287–292
- Lourenço WR, Touloun O & Boumezzough A 2011 The genus *Butheoloides* Hirst, 1925 (Scorpiones, Buthidae) in Morocco, with a description of a new species. – *Euscorpius* 113: 1–7 – doi: [10.18590/euscorpius.2011.vol2011.iss113.1](https://doi.org/10.18590/euscorpius.2011.vol2011.iss113.1)
- Lourenço WR, Touloun O & Boumezzough A 2012 Un nouveau *Buthus* Leach, 1815 (Scorpiones, Buthidae) pour le Nord du Maroc; possible lien entre les populations marocaines et européennes. – *Revista Ibérica de Aracnología* 21: 21–25
- Magalhaes ILF, Stockmann M, Marusik YM & Zonstein SL 2020 On *Sabastata* (Araneae: Filistatidae): complementary description of the generotype and two new species from Oman and Morocco. – *Zootaxa* 4899: 215–246 – doi: [10.11646/zootaxa.4899.1.12](https://doi.org/10.11646/zootaxa.4899.1.12)
- Miller JA, Griswold CE, Scharff N, Řezáč M, Szűts T & Marhabaie M 2012 The velvet spiders: an atlas of the Eresidae (Arachnida, Araneae). – *ZooKeys* 195: 1–144 – doi: [10.3897/zookeys.195.2342](https://doi.org/10.3897/zookeys.195.2342)
- Mittermeier RA, Gil PR, Hoffmann M, Pilgrim J, Brooks T, Mittermeier CG, Lamoreux J & Da Fonseca GAB 2004 Hotspots Revisited: Earth's biologically richest and most endangered terrestrial ecoregions. University of Chicago Press for Conservation International. 392 pp.
- Moradmand M 2013 The stone huntsman spider genus *Eusparassus* (Araneae: Sparassidae): systematics and zoogeography with revision of the African and Arabian species. – *Zootaxa* 3675: 1–108 – doi: [10.11646/zootaxa.3675.1.1](https://doi.org/10.11646/zootaxa.3675.1.1)
- Nentwig W, Blick T, Bosmans R, Gloor D, Hänggi A & Kropf C 2023 Spiders of Europe. Version 3.2023. Internet: <https://www.araneae.nmbe.ch> (23. Mar. 2023) – doi: [10.24436/1](https://doi.org/10.24436/1)
- Platnick NI 1981 A review of the spider subfamily Palpimaninae (Araneae, Palpimanidae), I. – *Bulletin of the British Arachnological Society* 5: 169–173
- Roewer CF 1933 Solifuga, Palpigrada. – In: Bronn's Klassen und Ordnungen des Tierreichs. Akademische Verlagsgesellschaft M.B.H., Leipzig 5 (IV) (4) (2–3): 161–480
- Roewer CF 1934 Solifuga, Palpigrada. – In: Bronn's Klassen und Ordnungen des Tierreichs. Akademische Verlagsgesellschaft M.B.H., Leipzig 5 (IV) (4) (4–5): 481–723
- Rozwałka R, Rutkowski T & Bielak-Bielecki P 2017 New data on introduced and rare synanthropic spider species (Arachnida: Araneae) in Poland (II). – *Annales Universitatis Mariae Curie-Skłodowska, Lublin–Polonia* 71: 59–85 – doi: [10.17951/c.2016.71.1.59](https://doi.org/10.17951/c.2016.71.1.59)
- Segura-Hernández L, Barrantes G, Chacón-Madriz E. & García-Rodríguez A 2023 Species distribution models and climatic niche comparisons provide clues on the geographic origin of a spider invasion in the Americas. – *Biological Invasions* 25: 251–265 – doi: [10.1007/s10530-022-02904-5](https://doi.org/10.1007/s10530-022-02904-5)
- Szűts T & Azarkina GN 2002 Redescription of *Aelurillus subaffinis* Caporiacco, 1947 (Araneae: Salticidae). – *Annales Historico-Naturales Musei Nationalis Hungarici* 94: 209–215
- Touloun O & Boumezzough A 2011 Contribution à l'inventaire et à la répartition des scorpions de la province de Sidi Ifni (Maroc). – *Poiretia* 3: 15–19
- Touloun O, El Hidan MA & Boumezzough A 2016a New data on the distribution of *Butheoloides littoralis* Lourenço, Touloun et Boumezzough, 2011 (Scorpiones: Buthidae). – *Euscorpius* 219: 1–4 – doi: [10.18590/euscorpius.2016.vol2016.iss219.1](https://doi.org/10.18590/euscorpius.2016.vol2016.iss219.1)
- Touloun O, El Hidan MA & Boumezzough A 2016b Species composition and geographical distribution of Saharan scorpion fauna, Morocco. – *Asian Pacific Journal of Tropical Disease* 6 (11): 878–881 – doi: [10.1016/S2222-1808\(16\)61150-7](https://doi.org/10.1016/S2222-1808(16)61150-7)
- Turiel C 2014 A new species of *Hottentotta* Birula, 1908 (Scorpiones: Buthidae) from southern Morocco. – *Euscorpius* 181: 1–9 – doi: [10.18590/euscorpius.2014.vol2014.iss181.1](https://doi.org/10.18590/euscorpius.2014.vol2014.iss181.1)
- USAID 2010 Biological Diversity and Tropical Forestry. Analysis FAA 118/119 Annex. USAID/Morocco Strategic Plan FY 2004–2008
- Vachon M 1952 Etudes sur les Scorpions. Publications de l'Institut Pasteur d'Algérie, Alger. 482 pp.
- World Solifugae Catalog 2023 World Solifugae catalog. Natural History Museum Bern. – Internet: <http://wac.nmbe.ch> (20. Jan. 2023).
- World Spider Catalog 2023 World spider catalog. Version 24. Natural History Museum Bern – Internet: <http://wsc.nmbe.ch> (20. Jan. 2023) – doi: [10.24436/2](https://doi.org/10.24436/2)
- Zamani A, Mirshamsi O, Dolejš P, Marusik YM, Eshyunin SL, Hula V & Ponel P 2017 New data on the spider fauna of Iran (Arachnida: Araneae), part IV. – *Acta Arachnologica* 66: 55–71 – doi: [10.2476/asjaa.66.55](https://doi.org/10.2476/asjaa.66.55)