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TWO PSEUDOSCORPION SPECIES NEW TO PORTUGAL

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Abstract: The pseudoscorpions *Allochernes deceuninckorum* Henderickx & Vets, 2003 and *Paraliochthonius singularis* (Menozzi, 1924) are recorded from Portugal for the first time. The myrmecophilous *A. deceuninckorum* was found among layered stones and rubble south of Lisbon in the Arrábida Mountains. The intertidal *P. singularis* was found in coastal habitat under stones and algal mats at Faro. The new localities of these species are nearly 1000 km to the west of Cap de Creus, Catalonia, Spain, which had previously been the westernmost locality of both species. The habitats in which the species were found in Portugal are briefly described. We also report a new locality for *Pseudorhacochelifer spiniger* (Mahnert, 1978) in Portugal.
Key words: Pseudoscorpiones, *Paraliochthonius*, *Allochernes*, *Pseudorhacochelifer*, Chthoniidae, Chernetidae, Cheliferidae.

Dos nuevas especies de pseudoescorpión para Portugal
Resumen: Los pseudoescorpiones *Allochernes deceuninckorum* Henderickx & Vets, 2003 y *Paraliochthonius singularis* (Menozzi, 1924) son registradas por primera vez para Portugal. El mirmecófilo *A. deceuninckorum* fue encontrado entre piedras y escombros en las montañas de Arrábida, al sur de Lisboa. El intermareal *P. singularis* fue localizado en un hábitat costero, bajo piedras y madejas de algas, en Faro. Las nuevas localidades para estas especies están aproximadamente a 1.000 km hacia el oeste de sus localizaciones previas en el Cabo de Creus, Cataluña, España. También se registra una nueva localidad para *Pseudorhacochelifer spiniger* (Mahnert, 1978) en Portugal. Se describen brevemente los hábitats en los que se han encontrado estas especies.
Palabras clave: Pseudoscorpiones, *Paraliochthonius*, *Allochernes*, *Pseudorhacochelifer*, Chthoniidae, Chernetidae, Cheliferidae.

Introduction

Paraliochthonius Beier, 1956 is a genus with 20 described species (Harvey, 2013) confined to the warmer parts of the World between 45°N and 30°S. Only two species are known to occur in Mediterranean Region, *Paraliochthonius singularis* (Menozzi, 1924) known from Spain, France, Italy, Croatia, Greece, and Turkey (Harvey, 2013; Henderickx, 2013) and *Paraliochthonius barrancoi* (Carabajal-Márquez, García-Carrillo & Rodríguez-Fernández, 2001) described from a cave in Spain. *Paraliochthonius singularis* is known to inhabit the intertidal zone and is distinguished from its continental congener by having three long spines on the prolateral side of the hands [see Henderickx (2013) for excellent diagnostic illustrations]; it is also characterized by its epigean facies with well developed eyes versus troglobitic facies and absence of eyes in *P. barrancoi* (Carabajal *et al.*, 2001). Several other *Paraliochthonius* species have been described from Madeira and the Canary Islands, most of which are cave-dwellers (Harvey, 2013). The chernetid *Allochernes deceuninckorum* Henderickx and Vets, 2003 was described from mainland Spain (Cap de Creus, Catalonia) rather recently and is still only known from the type locality. *Pseudorhacochelifer spiniger* (Mahnert, 1978) is endemic to Portugal and is described from Vila do Bispo, Faro (Mahnert, 1978). The species is rarely collected and like *A. deceuninckorum* is only cited from the type locality (Zaragoza, 2007). Here we report new records of the above three mentioned species and also provide brief descriptions of the respective habitats.

Material and methods

Collections methods employed were turning stones, inspecting layered rubble/stones and sifting leaf litter and algal mats.

Results

Three pseudoscorpion species were identified among the collected material:

1. ***Allochernes deceuninckorum***, 1♂ 2♀♀, Arrábida near Azeitão (29S 500570 4262960), 180 m above sea level, 08.III.2014, J. Lissner leg., CJL- 9652 (Fig. 1). The body length of the male was measured at 2.25 mm and the two females at 2.56 and 2.59 mm, respectively. Thus, the male is about 0.45 mm longer than male holotype (1.8 mm) while females are of similar size as the female paratype (2.6 mm), according to measurements data presented in Henderickx & Vets (2003). The chela of both sexes is illustrated in Fig. 2A, B. The sexual dimorphism in dorsal outline of chela is slightly less distinct in specimens from Portugal than in specimens of the type locality, as described in Henderickx & Vets (2003). Measurements in mm: Pedipalps male: trochanter (0.36 x 0.25) ratio 1.44, femur (0.65 x 0.26) ratio 2.48, patella (0.63 x 0.30) ratio 2.10, patella nearly as long as femur, chela (1.10 x 0.33) ratio 3.37, hand with pedicel (0.57 x 0.33) ratio 1.73, movable finger 0.61, ratio movable finger/hand with pedicel 1.1. Pedipalps female (Fig. 3): trochanter (0.39 x 0.24) ratio 1.62, femur (0.65 x 0.27) ratio 2.44, patella (0.65 x 0.29) ratio 2.26, femur of same length as patella, chela (1.12 x 0.36) ratio 3.15, hand with pedicel (0.57 x 0.35) ratio 1.61, movable finger 0.62, ratio movable finger/hand with pedicel 1.1. The biometric data of the pedipalps as well as the position of chelal trichobothria (Fig. 2C) shows good agreement with data in the original description of the species (Henderickx & Vets, 2003). The club of pedipalpal patella of the species is conspicuously rounded and relatively short compared to other *Allochernes* species of the Iberian Peninsula. The two *Allochernes* species known from Portugal [*A. masi* (Navás,

1923) and *A. powelli* (Kew, 1916)] both possess distinctly different pedipalp shape with higher length/width ratios of patella and more slender chela. In conclusion, we find that the specimens fit the type specimens of *A. deceuninckorum* with only minor differences.

2. *Paraliochthonius singularis*, 2♂♂ 2♀♀, Faro, stony beach next to railway tracks facing the salt marsh (Faro Lagoon) near the marina (29S 594480 4097140), 0.2 m above sea level, 23.VI.2013, J. Lissner leg., CJL- 8945 (Fig. 4).

3. *Pseudorhacochelifer spiniger*, 1♂, Cabo da Roca, Sintra (29S 456760 4292480), 120 m above sea level, 10.III.2014, J. Lissner leg., CJL- 9628 (Figs 5, 6). The features of the male genital area are distinct with complex structures partly visible through the cuticle and with the setae of the genital operculum distributed along the posterior margin (Fig. 6A). The male members of the genus are characterized by well-developed lateral keels on carapace and anterior tergites (Fig. 6B). The specimens are stored in the private collection of the first author, except for 1♂ 1♀of *Paraliochthonius singularis* stored in the collection of the second author."

Comments

The habitats in which the species were collected are described below.

1. *Allochernes deceuninckorum*. Specimens were found at some depth among layered concrete rubble on a limestone rock steppe with scattered bushes and trees. Rubble deeper down was embedded in porous soil and could be part of ant nests. The type specimens were also described from ant nests of *Camponotus* (*Tanaemyrmex*) *sylvaticus* (Olivier, 1792).

2. *Paraliochthonius singularis.* Specimens were found under stones and green algal mats on the shore, regularly flooded by sea-water. One hour of search yielded only three specimens. Only one other arachnid species was found in the intertidal zone; the specimens probably belong to *Chaerea maritimus* Simon, 1884 (Araneae: Dictynidae), a halophilic species of circum-mediterranean distribution, but still unrecorded for Portugal (Bosmans *et al.*, 2016; Lissner & Chatzaki, 2016). Unfortunately, rearing to adulthood failed.

3. *Pseudorhacochelifer spiniger*. The specimen was found in leaf litter above the coastal cliffs on gently sloping ground. Here the vegetation is composed of natural tree-less scrub vegetation as a result of the prevailing salt spray and high winds. Areas with the introduced and invasive plant species, ice plant [*Carpobrotus edulis* (L.)] were not sampled. The type locality at Sagres, Southern Portugal (Mahnert, 1978), was the only one previously known for the species, which distribution is widely increased towards the middle of the country with this new record.

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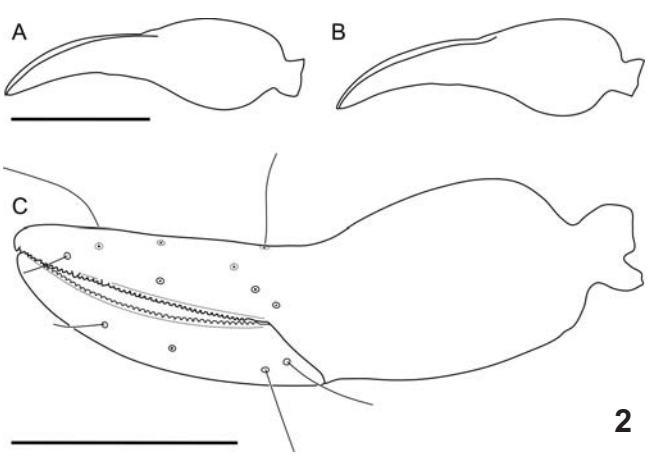












Fig. 1. *Allochernes deceuninckorum* Henderickx & Vets, 2003. Habitus of live female from Arrábida, Portugal.
Fig. 2. *Allochernes deceuninckorum* Henderickx & Vets, 2003, specimens from Arrábida, Portugal. A: dorsal view of right male chela; B: same of female; C: retrolateral view of left male chela. Scale bars 0.5 mm.
Fig. 3. *Allochernes deceuninckorum* Henderickx & Vets, 2003. Dorsal view of right pedipalp of female from Arrábida, Portugal. Scale bar 0.5 mm.
Fig. 4. *Paraliochthonius singularis* (Menozzi, 1924). Habitus of live female from Faro, Portugal.
Fig. 5. *Pseudorhacochelifer spiniger* (Mahnert, 1978), male from Cabo da Roca, Portugal. A: genitalia. B: Cephalothorax and tergites I-III.
Fig. 6. *Pseudorhacochelifer spiniger* (Mahnert, 1978). Habitus of live male from Cabo da Roca, Portugal.