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NOTES ON THE MAJORCAN *CENTROMERUS* DAHL (ARANEAE, LINYPHIIDAE) WITH THE DESCRIPTION OF A NEW CAVE SPECIES (BALEARIC ISLANDS, SPAIN)

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Abstract: *Centromerus ponsi* Lissner **sp. n.** is described from a cave in Majorca (Spain). Specimens attributed to *C. sylvaticus* (Blackwall, 1841) in previous biospeleological studies of the Balearic troglofauna are considered conspecific with the new species, hence removal of *C. sylvaticus* from the checklist of Balearic spiders is proposed. The new species seems closest to *C. acutidentatus* Deltshev, 2002 and *C. obenbergeri* Kratochvíl & Miller, 1938, known from caves in the Balkan Peninsula. *Centromerus desmeti* Bosmans, 1986 is reported from Majorca, representing the first European record of this species.
Key words: Araneae, Linyphiidae, *Centromerus*, taxonomy, new species, Balearic Islands

Notas sobre los *Centromerus* Dahl (Araneae, Linyphiidae) de Mallorca y descripción de una especie nueva cavernícola (islas Baleares, España)
Resumen: Se describe *Centromerus ponsi* Lissner **sp. n.** de una cueva de Mallorca (España). Los especímenes atribuidos a *C. sylvaticus* (Blackwall, 1841) en previos estudios bioespeleológicos de la troglofauna balear se consideran aquí como coespecíficos con la especie nueva, por lo cual se propone la retirada de *C. sylvaticus* de la lista de arañas de las Baleares. La especie nueva parece emparentada sobre todo con *C. acutidentatus* Deltshev, 2002 y *C. obenbergeri* Kratochvíl & Miller, 1938, conocidas de cuevas de la Península Balcánica. Se cita *Centromerus desmeti* Bosmans, 1986 de Mallorca, siendo ésta la primera cita europea de la especie.
Palabras clave: Araneae, Linyphiidae, *Centromerus*, taxonomía, especie nueva, Islas Baleares, España.

Taxonomy/Taxonomía: *Centromerus ponsi* **sp. n.**

Introduction

Centromerus Dahl 1886 is a large linyphiid genus in Europe with about sixty species (Nentwig *et al.,* 2014). Several species are cavernicolous and some have lost the eyes completely, adapted to a life in darkness (Deltshev & Curcic 2002; Drensky 1931). Just one species, first identified as *Centromerus sylvaticus* (Blackwall, 1841), has been reported from the Balearic Islands so far (Ginés 1982; Pons 2004; Ribera 1989). During some field work in Majorca additional material of this *Centromerus* species has become available from a survey of caves near Génova and Portocolom. It is the belief of the author that this species does not conform with *C. sylvaticus* nor with any other known *Centromerus* species. Thus, the present study is devoted to describing this species as new. A further aim is to present data on a congener recorded for the first time in Europe at Puig Randa, Majorca.

Material and methods

Specimens were collected by hand only. Illustrations were created from photos of selected features using a Leica Wild M10 stereomicroscope fitted with Leica DFC425 digital camera connected to a computer with Leica Application Suite software v. 4.3.0, Zerene Stacker software v. 1.04 and the vector graphics editor Inkscape v. 0.48.

Description

Centromerus ponsi Lissner sp. n.

TYPE MATERIAL: Holotype ♂ from Spain, Majorca, Génova, Cova d'en Palerm, cave, 410 m (UTM 31S 46198 438044), 27.IV.2014, J. Lissner leg.; deposited at the Zoological Museum of Copenhagen. Paratypes 4 ♀♀, 2 subadult ♂♂, 1 juvenile idem.

OTHER MATERIAL EXAMINED: 2 ♀♀, 2 juveniles, Majorca, Portocolom, Cova dets Ases, cave, 20 m (UTM 31S 52341 436482), 5.IV.2016, Emilie Sofie Lissner leg., CJL-11362. *Centromerus acutidentatus* Deltshev, 2002 from Stursheliths Cave and Gaber Reserve, Bulgaria (coll. Institute of Zoology, Sofia, Bulgaria).

DIAGNOSE: A small *Centromerus* species belonging to the *sylvaticus*-group. The species subgroups with *Centromerus* species having a tibial chaetotaxy of 2221 and a serrated paracymbium. *Centromerus ponsi* is most closely related to *C. acutidentatus* known from caves in the Balkan Peninsula and second closest to *C. obenbergeri* Kratochvíl & Miller, 1938 known from Montenegro, Serbia and Macedonia. It differs from *C. acutidentatus* by having some specimens much smaller according to measurement data in Deltshev & Curcic (2002). The male has a higher number of teeth on the paracymbium (c. 24 versus 13-15 longer ones in *C. acutidentatus* and *C. obenbergeri*), different shaped lamella being not as massive as in *C. acutidentatus* and a different shaped toothed sclerite of the membrane. Structures of the vulva are similar in build but show some differences, in particular the curvature of lateral ducts when seen in dorsal view. The male of *C. ponsi* is most easily distinguished from all other congeners by the shapes of the two apophyses of the radix which project below the paracymbium when viewed in retrolateral view. A dorsal spine on Mt I and II is absent in *C. ponsi*. This spine is usually situated around 0.5-0.6 in congeners and a character in the genus diagnose, but nevertheless appears completely reduced in this species.

DESCRIPTION
Colouration (Cova d'en Palerm): It is a pale species also when live. Abdomen of live male is light brown mottled with

darker brown patches (fig. 1), the colour changing to light grey in alcohol. The male is overall darker than females (compare figs. 1, 2). Prosoma (except for darker striae), legs and sternum whitish. Chelicers light brown. The only male of this study was kept in captivity under subdued light conditions for 5 months before it matured. This may have affected the depth of colouration and perhaps also the size of eyes. Alcohol preserved male white except for narrow black area surrounding eyes, darker striae on carapace and light grey abdomen. Females fades to all white in alcohol, except eye area and epigyne. *Colouration (Cova dets Ases)*: The females of Cova dets Ases are distinctly greyer than females of Cova d'en Palerm and as grey as the male from Cova d'en Palerm. A dorsal spine on Mt I and II is absent in both sexes. The position of the trichobothrium on metatarsus I (T Mt I) is tabled below (one specimen of each sex measured). Eyes are fairly small and reduced compared to epigean *Centromerus* species. Size of eyes is variable among adult females and possibly this is also the case for males. Some females miss the lenses of the posterior median eyes all together, and only some dark pigments reveal their former positions.

Male holotype.
Measurements: ♂ (n=1): total length 1.79; prosoma length 0.81, width 0.64; opisthosoma length 0.98; sternum length 0.46, width 0.46. The male specimen from Cova d'en Palerm is larger than the females from this cave. Leg measurements (mm) and position of metatarsal trichobothria:

	Fe	Pa	Ti	Mt	Ta	T Mt I
I	0.96	0.21	0.83	0.71	0.53	0.30
IV	1.00	0.24	0.87	0.76	0.52	-

Male palp: The male chelicer possesses a longitudinal row of minute anterolateral bristles (fig. 3a). Stridulation files absent. Promargin with 3 large teeth. Retromargin with four small closely set teeth in a position near middle of fang. The patellar spine of the male palp is almost straight and about 1.5 the diameter of patella in length. Cymbium with a conical protuberance. Basal part with a notch forming a pointed, hook-like process curving forward (best seen in prolateral view). Parts of cymbium covering anterior parts of bulb forms a semi-transparent lamina. The paracymbium is large and furnished with numerous teeth (ca. 24) along its inner margin, the teeth decreasing in height distally (fig. 4a). Embolic membrane transparent with margin almost straight, with a pleated appearance distally, at most very weakly serrated.

Female paratype
Measurements (Cova d'en Palerm): ♀ (n=4, ranges): total length 1.37-1.64; prosoma length 0.68-0.71, width 0.51-0.56; opisthosoma length 0.73-1.00; sternum length 0.42.-0.45, sternum width 0.38-0.41. Epigyne width 0.27, length 0.17. The two females collected in Cova dets Ases are distinctly larger: total length 1.99-2.03. Leg measurements (mm, specimen from Cova d'en Palerm) and position of metatarsal trichobothria:

	Fe	Pa	Ti	Mt	Ta	T Mt I
I	0.79	0.21	0.74	0.62	0.49	0.34
IV	0.89	0.22	0.85	0.72	0.48	-

Epigyne and vulva: The oval epigyne is reddish, clear in outline and ca. 1.6 times wider than long. Scape with transverse wrinkles, appears short in ventral view but is bent 90° near base pointing upwards so that apical part is hidden in ventral view (compare fig. 3b, c). The former figure depicts the epigyne in slightly posterior view and shows that the scape is longer than it appears in ventral view. Vulva is depicted in fig. 3d and resemble those of *C. acutidentatus* and *C. obenbergeri*, but with different proportions and curvature of ducts, in particular the lateral ones.

COMMENTS: Specimens assigned to *Centromerus sylvaticus* or *Centromerus* sp. have been collected in Cova des Robiols near Puigpunyent, Majorca (Ginés 1982), Coves d'Arta, Canyamel, Majorca (Pons 2004), and Cova de ses Bruixes near Alaior, Menorca (Ribera 1989). The same species was also collected during the field work of this study as apparent from photos of genitals of above material forwarded by Carles Ribera. However, comparing specimens to material of *C. sylvaticus* and other *Centromerus* species it became clear that the species was closer related to *C. acutidentatus* Deltshev 2002 known from caves in the Balkan Peninsula. Material from Majorca and the Balkans was compared by Christo Deltshev who is of the opinion that the specimens of the two regions are not conspecific (Deltshev pers. comm.). Hence the Majorcan specimens are described as belonging to a new species here. Thus it seem evident that *C. sylvaticus* has to be removed from the checklist of the Balearic Islands. Pons & Damians (1992) collected two *Centromerus* females at Cova de sa Cometa des Morts near Escorca (Majorca) which were left undetermined to species level. It is probable that these females also belong to the same species as described herein. Due to the similarity of both the epigyne and male palp of *C. ponsi* to those of *C. acutidentatus* it is likely that these species share a common ancestor.

ECOLOGY: The specimens were collected in Cova d'en Palerm near Génova. Specimens were found in a complete dark section of the cave. This karst cave has a 5-10 m long, narrow entrance channel that bends 90° and opens to a larger chamber to which no light reach. A colony of specimens covering about 1 m^2 was found in rubble on the cave floor, each specimen occupying a tiny sheet web. Only one colony was found in the cave. The specimens collected in Cova dets Ases were also found within a small area, adding evidence to a notion that this species occurs in small, dense colonies. The species is therefore easily overlooked and is probably more widespread in Balearic caves than shown by current records. This study indicate cave-specific variation in size and depth of colouration. Specimens collected in Cova dets Ases are significantly larger than specimens from Cova d'en Palerm. This may relate to prey availability being higher in Cova dets Ases due to a larger cave entrance and additional input of organic material from roots growing through the ceiling in this cave.

DISTRIBUTION: Majorca: Cova des Robiols, Puigpunyent (Ginés 1982); Cova de sa Cometa des Morts, Escorca (Pons & Damians 1992); Coves d'Arta, Canyamel (Pons 2004); Cova d'en Palerm, between Génova and Calviá (this study), Cova dets Ases, Portocolom (this study). Menorca: Cova de ses Bruixes, Alaior (Ribera 1989).

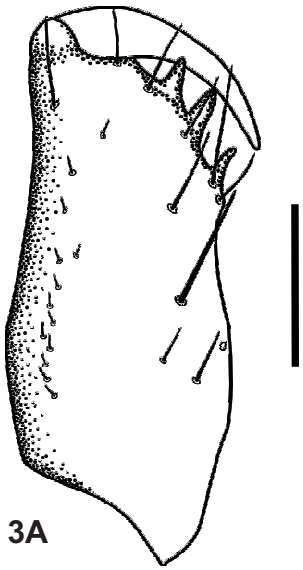
ETYMOLOGY: The species is dedicated to Guillem Xavier Pons Buades, a lecturer at the University of the Balearic Islands, in recognition of his significant contributions to the knowledge of the Balearic cave fauna, in particular spiders.



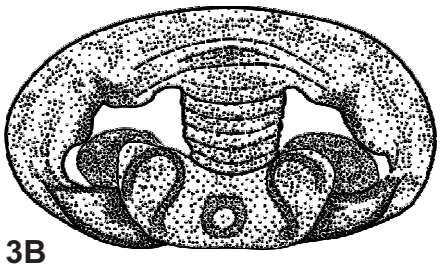
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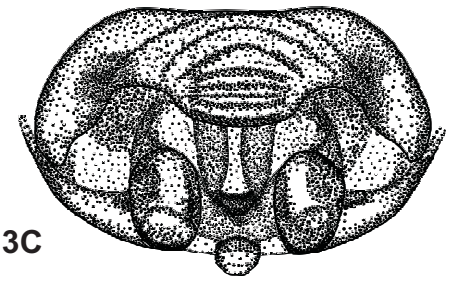
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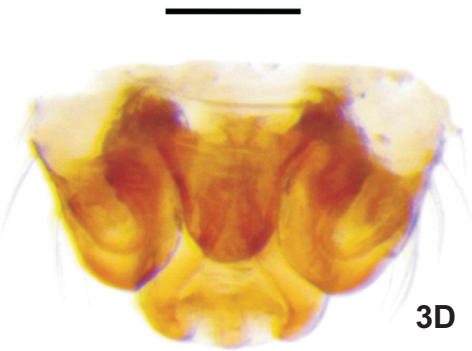
3A



3B



3C



3D

Fig. 1-3. *Centromerus ponsi* Lissner sp. n. **1**. Habitus of live male. **2**. Habitus of live female. **3**. **A**) Male chelicer showing three teeth on promargin. **B**) Detached epigyne in posteroventral view. **C**) Epigyne in ventral view. **D**) Photo of vulva in dorsal view. Scale bar A-C: 0.2 mm; D: 0.1 mm.

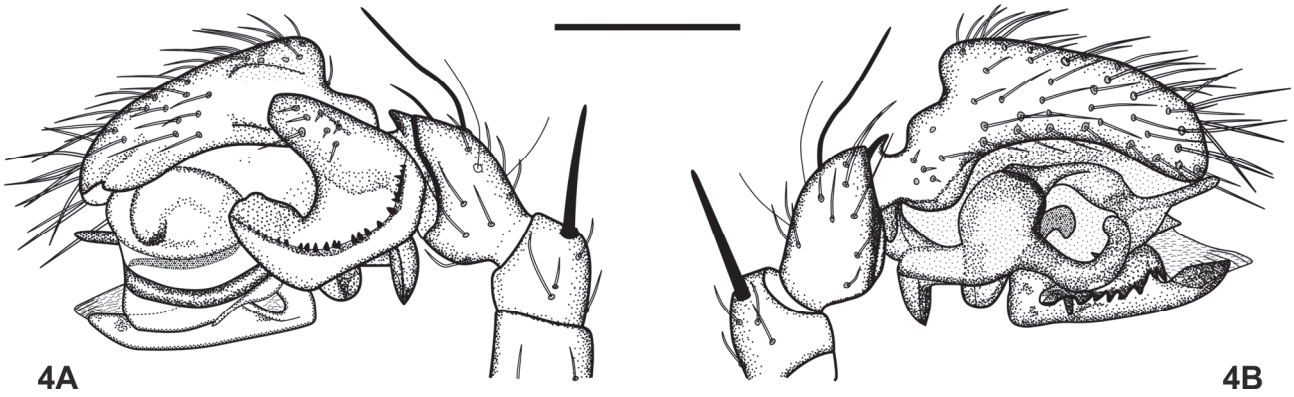


Fig. 4. *Centromerus ponsi* Lissner sp. n. **A**) Left male palp in retrolateral view. **B**) Same, prolateral view. Scale bar 0.2 mm.

***Centromerus desmeti* Bosmans, 1986**

MATERIAL EXAMINED: Spain, Majorca, Puig Randa, mixed forest (UTM 31S 49297 437496), 1♀, 380 m, 27.X.2014, J. Lissner leg., CJL-9948. Matured in captivity ca. 5.XI.2014.

COMMENTS: One female was collected in *Quercus ilex* litter. This represents the first European record, previously known only from Algeria and Morocco (Bosmans 1986). Tibial spines 2221, metatarsus I and II with a spine situated at 0.4-0.5 and 0.35-0.45 respectively (positions more proximal in right side of specimen), spines about 1½ times the diameter of an leg in length.

Acknowledgements

I wish to thank Christo Deltshev for comparing material of *Centromerus ponsi* with *C. acutidentatus* Deltshev, 2002. Carles Ribera is thanked for providing stereomicroscope photos of Majorcan and Menorcan specimens.

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