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A NEW *ERO* (ARANEAE: MIMETIDAE) FROM CAVES AND MESOVOID SHALLOW SUBSTRATUM IN MAJORCA, SPAIN

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Abstract: *Ero septemspinosa* **sp. n.** is described from female specimens collected in caves and in hypogean environment near Pollença, Majorca. The new species can be distinguished from its European congeners by its troglomorphic features, such as pale colouration and leg elongation. The metatarsi of first pair are armed with seven strong spines and seven series of curved spines. The total number of metatarsal curved spines of adult females range between 34-47, about twice as many as in congeners. Information concerning the distribution and biology of the species is presented.
Key words: Araneae, Mimetidae, *Ero*, taxonomy, new species, Spain, Balearic Islands.

Una especie nueva de *Ero* (Araneae: Mimetidae) de cuevas y sustrato superficial mesovoide de Mallorca, España
Resumen: Se describe *Ero septemspinosa* **sp. n.** a partir de ejemplares recogidos en cuevas y ambientes hipogeos próximos a Pollença, Mallorca. La especie nueva se puede distinguir de sus congéneres europeos por sus rasgos troglomórficos, que incluyen una coloración pálida y patas alargadas. Los metatarsos del par anterior están armados de siete espinas fuertes y siete series de espinas curvas. El número total de espinas curvas metatarsales es de 34-47, aproximadamente el doble que en sus congéneres. Se presenta información relativa a la distribución y biología de la especie.
Palabras clave: Araneae, Mimetidae, *Ero*, taxonomía, especie nueva, España, Islas Baleares.

Taxonomy / Taxonomía: *Ero septemspinosa* **sp. n.**

Introduction

The members of the spider family Mimetidae are known as pirate spiders, the common name refers to most being predatory on other spiders (Jocqué & Dippenaar-Schoeman, 2007). They do not build their own webs but invade the webs of other spiders. The family is characterized by modified metatarsi of leg I and II armed with a prolateral row of strong spines, in between the spines there are series of smaller curved spines, which increase in length distally. During prey capture the anterior pairs of legs, and sometimes also the third pair is held around the victim, and the spines along with the leg positions function as a basket enclosing the victim (Jackson & Whitehouse, 1986).

According to Nentwig *et al.* (2016) Mimetidae is represented in Europe with 9 species in 3 genera (number of species in parenthesis): *Ermetus* Ponomarev, 2008 (1), *Ero* C. L. Koch, 1836 (6), and *Mimetus* Hentz, 1832 (2). Worldwide Mimetidae is a fairly small family with just 152 species in 13 genera (World Spider Catalog, 2016). Only one mimetid genus, *Ero*, is known to be represented with species in the Balearic Islands. *Ero aphana* (Walckenaer, 1802), *E. tuberculata* (De Geer, 1778), and *E. flammeola* Simon, 1881 have all been cited from Majorca (Pons, 2004a). These species were also recorded during field work in Majorca (Bosmans and Lissner in prep.). It should be mentioned that a fourth species may be present in Majorca. According to Pons & Damians (1992) a juvenile specimen found in the entrance area of Cova de Sa Cometa des Morts (Escorca) may belong to *E. furcata* (Villers, 1789). Only two species, *E. aphana* and *E. tuberculata* are cited from Menorca (Pons, 2004a).

In this study, unidentifiable females of *Ero* was collected in Cova del Boc and nearby Cova Morella (Pollença area) about 5-20 m from the cave entrances. A juvenile specimen of the same species was found at some depth among layered stones in a shaded place with boulders below a north-facing rock wall about 350 m from the caves. The specimens are pale, thin-legged and lack abdominal tubercles. The only hitherto known species devoid of abdominal tubercles in Europe is *E. flammeola*, a species with much shorter and stouter legs and different, darker markings. Also the epigyne and vulva do not conform to any known European species. The World Spider Catalog does not mention any *Ero* species specific to Northern Africa, thus there are no obvious non-European species to match, and the species is described here as new.

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

***Ero septemspinosa* Lissner sp. n.** Fig. 1-6.

TYPE MATERIAL: Holotype ♀ from Spain, Majorca, Pollença, Cova Morella, cave, 505 m, 6.IV.2016 (UTM 31S 49863 441048), Emilie Sofie Lissner leg.; deposited at the Natural History Museum of Denmark, Copenhagen.

OTHER MATERIAL EXAMINED: ♀, from Spain, Majorca, Pollença, Cova del Boc, cave, 490 m, 28.X.2014 (UTM 31S 49869 441048), J. Lissner leg.; CJL-9996 (vulva was lost by accidence after stereomicroscope photography was completed).; 1 juvenile, along trail to Cova Morella, 380 m, 28.X.2014 (UTM 31S 49903 441060), J. Lissner leg.; CJL-

10058. Specimens in my private collection will eventually be deposited at the Natural History Museum of Denmark.

DIAGNOSE: With its pale appearance, lack of tubercles and long, slender legs *Ero septemspinosa* **sp. n.** is easily distinguished from any other *Ero* species known from Europe. Mt I of adult females has seven series of curved spines, each series distal to a strong spine. All other European species have only five such strong spines and five series of curved spines. The seven strong spines of *E. septemspinosa* sp. n. are present in all stages of the nympho-imaginal periods, i.e. from time of emergence from the egg sac and after all successive moults, thus facilitating identification of the species at all free-living developmental stages. Curved spines are missing completely in newly emerged spiderlings, but increase in number during each moult. After final moult the total number of curved spines on Mt I range between 34-38 in the smallest female collected to 46-47 in the largest. In all other European species (not including *E. quadrituberculata* Kulczyński, 1905 known from Madeira, unavailable for count) this interval range from 13-20 in adult females. There seem to be some variation in number of curved spines between species, but also within and between right and left leg of the same specimen. The following interval of curved spines were obtained counting Mt I of both legs (n= number of female specimens counted, specimens CJL): *Ero cambridgei* (13-17, n=4), *E. furcata* (15-20, n=4), *E. aphana* (16-20, n=4), *E. tuberculata* (19, n=1), *E. flammeola* (20, n=1). Thus *E. septemspinosa* sp. n. possesses about twice as many curved spines than its European congeners, adult females considered. The epigyne, despite being somewhat variable, is distinctive.

ETYMOLOGY: *Ero septemspinosa*: seven-spined pirate spider, *septemspinosa* referring to the seven strong spines of Mt I.

DESCRIPTION: FEMALE HOLOTYPE

Colouration: Carapace whitish-yellow with darker markings near fovea, along margin and behind posterior lateral eyes (fig. 1, 2, 4a). Chelicers grey, gradually becoming dark brown distally. The abdomen shows typical *Ero* markings, but much weaker (fig. 1, 2, 3b). Darker spots are presents at the bases of abdominal hairs in most specimens (fig. 2). Venter pale, but darker in midline. Sternum pale with darker blotches of variable extent near the coxae (fig. 3a, specimen with most pronounced dark markings). At higher magnification a fine pattern of dark reticulations is visible over the entire surface. Legs pale with grey annulations which appear rather spaced apart due to the long Length of leg segments (fig. 1, 2).

Measurements: Length in mm, n=2: body length 3.2-4.0, prosoma length 1.5-1.9, width 1.2-1.6; abdomen 1.7-2.2; sternum length 0.9-1.1, width 0.7-0.8. Leg measurements (smallest specimen):

	Fe	Pa	Ti	Mt	Ta	Total
Leg I	2.81	0.73	2.81	2.23	1.06	9.64
Leg IV	2.40	0.56	1.77	1.19	0.83	5.92

Carapace: Projecting rather strongly, with two strong spines projecting forward (fig. 4a). Lateral edges with small forward curving bristles, however several have broken off the illustrated specimen prior to capture. Two spine sockets in the midline between the eyes and fovea indicate the position of two strong spines with two additional, but smaller spines just anterior the fovea, slightly off the midline. Clypeus convex in lateral view and very high, about five times the diameter of an anterior median eye (fig. 4b). Eyes not reduced in size, about equal sized and appear conspicuously ringed with black due to the pale head (fig. 4a, b). With the exception of the posterior medians, remaining six eyes are situated on slightly elevated sockets as seen in dorsal view. The anterior row of eyes is recurved, posterior slightly procurved. Median eyes of both rows are closer to one another than to laterals. Median trapezium forms a square.

Chelicers: Long, nearly cylindrical and with approximately 5 teeth-like spines in outer row (fig. 4b, c). Stridulating ridges (if interpreted as present) are not well-defined.

Legs: long and relatively thin (fig. 2). The ratio of Mt I length to Mt I width (at widest point) is 19.6:1 (fig. 4d). This leg segment has seven series of curved spines, each spine of a series increase in length distally and each series is situated distal to a strong spine (fig. 4d). The number of curved spines totalled from counts of all series to 34/38 (female 1) and 47/46 (female 2) depending on left/right leg segment. The apical series of curved spines on Mt I is with 8 or 9 curved spines.

Abdomen: Globular and without tubercles (figs. 1, 2, 3b).

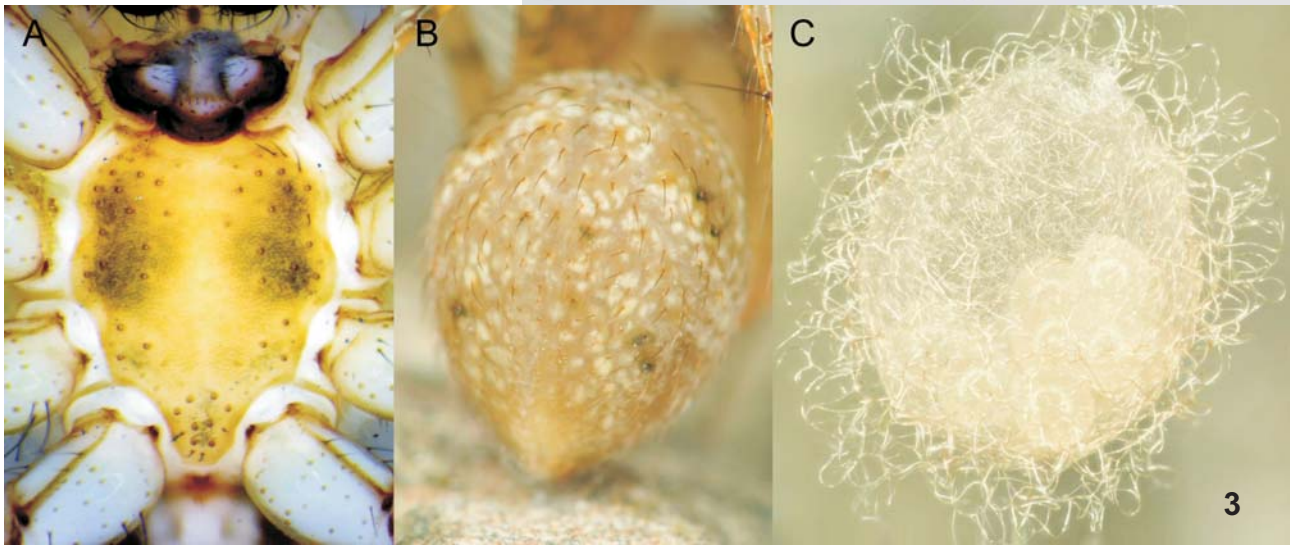
Epigyne and vulva*:* Epigyne forms a projecting protuberance in lateral view. The basal plate of the receptacula forms a chitinous bridge at the posterior margin (figs. 5, 6). The median part in front of the basal plate is pale, quadratic (fig. 5a, 6b) or trapezoid (fig. 6a). Anterior part of epigyne is similar to those of other European *Ero* species having two large globular receptacles nearly touching. The introductory orifices point backwards and appears as ducts slit open dorsally at least close to the orifices (fig. 5b, 6d).

The **MALE** is unknown.

AFFINITIES: Unknown. It seems only possible to place this new species in *Ero*. It is assumed that the rather unusual morphology compared to other members of *Ero* is due to troglomorphic adaptation. The species is not encompassed by the genera descriptions of the other European genera, *Ermetus* Ponomarev, 2008 and *Mimetus* Hentz, 1832. *Ermetus* was erected fairly recently as a monotypic genus holding *E. inopinabilis* Ponomarev, 2008, a species of the semi-arid and arid areas of the Russian Plain and Caucasus (Ponomarev, 2008). According to the genus description all leg segments are shorter than the prosoma, except femora I and IV which are slightly longer. In *E. septemspinosa* sp. n. metatarsus I is twice as long as the length of the prosoma (compare fig. 4a and 4d, note different scale). Thus the new species described here cannot be placed in *Ermetus* because of its long leg segments. *Mimetus* is characterized by having clypeus much narrower than the ocular area and by having the prosoma distinctly longer than wide. Clypeus is much higher I *E. septemspinosa* sp. n., about twice as high as the ocular area and the prosoma is only slightly longer than wide, thus not fitting *Mimetus* either.

ECOLOGY: The long-legged and pale appearance of *E. septemspinosa* sp. n. and the fact that it was found in caves close to the entrance suggest that this species at least is troglophilic. However, Majorcan caves have been explored rather extensively by biospeleogists with this species going unnoticed (Orghidan *et al.,* 1975; Pons, 2004a, b; Pons *et al.,* 1995; Pons & Vadell, 2011). So it is unlikely a true troglobite. The

Fig. 1-3. *Ero septemspinosa* **sp. n. 1.** Habitus of live female from Cova Morella. **2.** Habitus of alcohol preserved female from Cova del Boc. **3.** Female. **A**) Photo of sternum. **B**) Abdomen. **C**) Egg sac.



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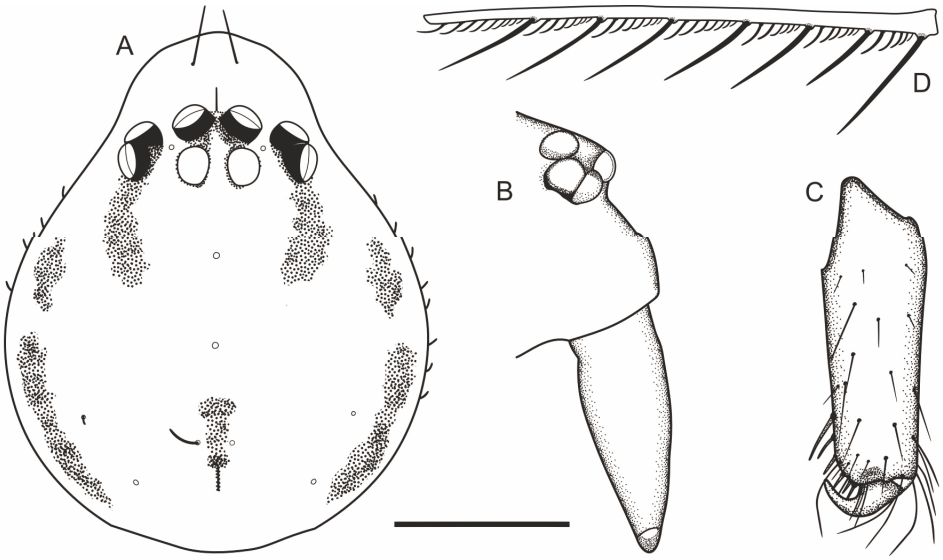

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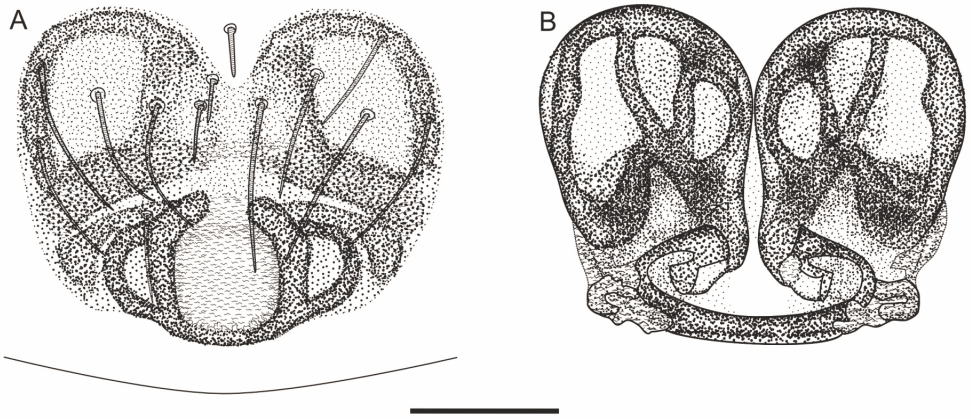

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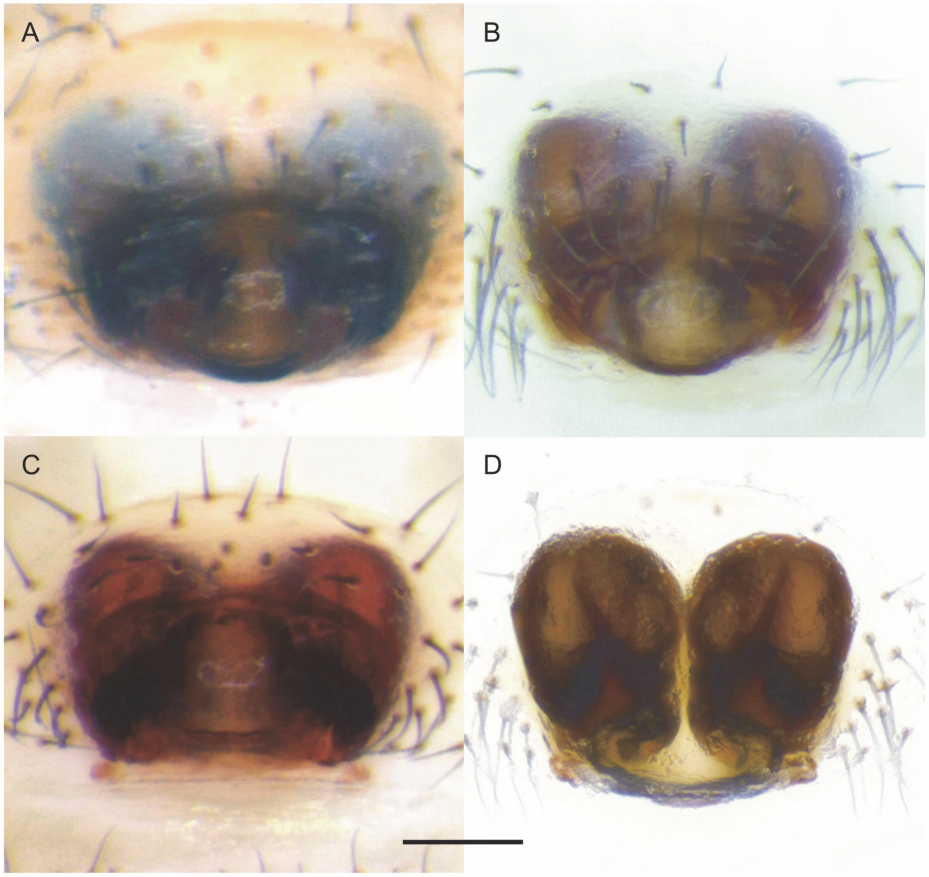

species might occur predominantly in the mesovoid shallow substratum which is extensively developed in the mountainous area the species was found, the entire massif consists of karstified limestone.

At the time of capture one female was entering the web of another spider in a typical *Ero*-like fashion. The second female captured was resting in a web. A third juvenile specimen was found among layered stones removed from underneath a *Ampelodesmos mauritanicus* (Poir.) T. Durand & Schinz, 1894 tussock growing in a shaded place beneath a north-facing rock overhang, about 400 m from Cova Morella, on the steep part of the trail leading to the cave.

Metellina merianae (Scopoli, 1763) is abundant inside the openings of Cova del Boc and Cova Morella and probably constitute the main food source. *Tegenaria scopifera* Barrientos, Ribera & Pons, 2002 is also abundant in the caves, but as a member of Agelenidae it is probably not preyed upon (Jackson & Whitehouse, 1986). In captivity, even small spiderlings of *E. septemspinosa* sp. n. feed readily on spiderlings of *Araneus diadematus* Clerck, 1757, *Zygiella x-notata* (Clerck, 1757), *Enoplognatha ovata* (Clerck, 1757), *Lathys humilis* (Blackwall, 1855), *Theridion melanurum* Hahn, 1831 and linyphiids as long as the prey at most is about the same size as the pirate spider. However, these observations are based on spiders held in tubes and may not extend to natural conditions. When given a spider slightly larger than the pirate spider the prey spider is not preyed upon and the two spiders may then co-exist for many days even in a small tube. It was observed that the pirate spiders always fed from the prey's leg.

The egg sacs of *E. septemspinosa* sp. n. are nearly spherical and with rather short stalks. Two sacs suspended from the cave ceiling were collected in Cova del Boc on April 6, 2016. The stalks of the sacs were measured at 6 and 8 mm, respectively. The sacs are thin walled allowing for counting of eggs without the need of backlight (fig. 3c). They are made of whitish silk covered by a tangle of whitish, wiry silk, not golden in colour as in *E. furcata* or *E. cambridgei* Kulczyński, 1911. The eggs from both sacs hatched during May 6-8, but the spiderlings stayed in the sacs for about two weeks while in their first nympho-imaginal stage. They performed a moult before emergence as evident from exuvia left behind in the egg sacs on May 20 (sac 1, 12 spiderlings) and May 21 (sac 2, 10 spiderlings). There were no mortality in the sacs and no cannibalism while staying in the same small container for three days before given separate containers.

References

JACKSON, R.R. & M.E.A.WHITEHOUSE 1986. The biology of New Zealand and Queensland pirate spiders (Araneae, Mimetidae): aggressive mimicry, araneophagy and prey specialization. *Journal of Zoology,* **210**: 279-303.

JOCQUÉ, R. & A.S.DIPPENAAR-SCHOEMAN 2007. History *Spider Families of the World*. 2nd ed. Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

NENTWIG, W., T. BLICK, D. GLOOR, A. HÄNGGI & C. KROPF 2016. *Spiders of Europe.* Version 10.2016. Available from: www.araneae.unibe.ch (October 26, 2016).

ORGHIDAN, T., M. DUMITRESCO & M. GEORGESCO 1975. Mission biospéologique "Constantin Dragan" à Majorque (1970-1971). Première note: Arachnides (Araneae et Pseudoscorpionidea). *Travaux de l'Institute de Spéologie "Émile Racovitza",* **14**: 9-33.

PONOMAREV, A.V. 2008. Additions to the fauna of spiders (Aranei) of the south of Russia and Western Kazakhstan: new taxa and finds. *Caucasian Entomological Bulletin,* **4**(1): 49-61. [In Russian, with English summary]

PONS, G. 2004a. *Biogeografia, ecologia i taxonomia de les aranyes (arachnida, araneae) de les illes balears. Models de distribució de la fauna insular*. Universitat de les Illes Balears.

PONS, G.X. 2004b. Biogeografia, ecologia i taxonomia de les aranyes (Arachnida, Araneae) cavernícoles de les illes Balears. *Endins,* **26**: 83-104.

PONS, G. & J. DAMIANS 1992. Els aràcnids de la cova de Sa Cometa des Morts (Escorca, Mallorca). *Endins,* **17-18**: 51-56.

PONS, G., D. JAUME & J. DAMIANS 1995. Fauna cavernícola de Mallorca/Cavernicolous Fauna of Mallorca. *Endins*, **20**: 125-143.

PONS, G. & M.VADELL 2011. Biospeleologia de les cavitats de les illes Balears: invertebrats terrestres. *Endins,* **17**: 241-256.

WORLD SPIDER CATALOG 2016. World Spider Catalog. *Natural History Museum Bern, version 17.0*. Available from: http://wsc.nmbe.ch. (June 27, 2016).

◄ **Fig. 4-6.** *Ero septemspinosa* **sp. n. 4.** **A**) Prosoma of ♀ in dorsal view. **B**) Clypeus in lateral view. **C**) Chelicer in frontal view. **D**) Spination of right metatarsus I as seen in dorsal view. Note seven series of curved spines separated by long spines, nine curved spines in apical series. Scale A, B, C: 0.5 mm, D: 1 mm. **5. A**) Epigyne. **B**) Vulva. Scale 0.1 mm. **6.** Photos of epigyne and vulva. **A**, **B**) Epigyne in ventral view. **C**) Epigyne in slight posterior view. **D**) Vulva in dorsal view. A: Cova Morella specimen; B-D: Cova del Boc specimen. Scale 0.1 mm.