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ON THE PRESENCE OF *SOLENOCERA MEMBRANACEA* (DECAPODA, DENDROBRANCHIATA, SOLENOCERIDAE) IN THE CANARY ISLANDS

BY

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ABSTRACT

We confirm the presence of the shrimp *Solenocera membranacea* (Risso, 1816) (Solenoceridae) in the Canary Islands. In this region, the species was only known from the capture of a specimen on the island of Lanzarote. The present finding based on a male collected on the island of Tenerife represents the second record. The data suggest that the species may be preferentially associated with soft mobile substrates, especially muddy ones, on continental shelves and upper slopes, while its presence on the hard bottoms of the volcanic archipelagos of Macaronesia would be testimonial.

Key words. — Decapods, distribution, habitat, eastern-central Atlantic

RESUMEN

Se confirma la presencia de la gamba *Solenocera membranacea* (Risso, 1816) (Solenoceridae) en las Islas Canarias. En esta región, la especie solo se conocía por la captura de un ejemplar en Lanzarote. El presente hallazgo basado en un macho recolectado en Tenerife representa el segundo registro. Los datos sugieren que la especie podría estar asociada preferentemente a sustratos móviles blandos, especialmente fangosos, en plataformas continentales y taludes superiores, mientras que su presencia en los fondos duros de los archipiélagos volcánicos de la Macaronesia sería testimonial.

Palabras clave. — Decápodos, distribución, hábitat, Atlántico centro-oriental

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INTRODUCTION, HISTORY AND METHODS

The species composition of the Decapoda suborder Dendrobranchiata in waters around and near the Canary Islands has received increasing attention in recent years. As a result of various studies, several species, both pelagic and benthic, have been recorded for the first time, or their presence has been confirmed in the region: benthesicymids (Landeira & Fransen, 2012), penaeids (Landeira & Fransen, 2012; González & Santana, 2014; Landeira & González, 2018; González & Landeira, 2019; González & Telle, 2021), aristeids (González-Lorenzo et al., 2021; González et al., 2023), and sergestids (Landeira & Fransen, 2012; Landeira & González, 2018). To date, no species of Sicyoniidae has been reported in Canary Island waters (González, 2018; González-Lorenzo et al., 2021).

Here, we confirm the presence of *Solenocera membranacea* (Risso, 1816) (Dendrobranchiata, Solenoceridae), based on the collection of a single individual off the Canary Islands, marking the second recorded occurrence of the species in the region. This shrimp was collected as by-catch in a baited shrimp-trap of the local small-scale fishery addressed to pandalid shrimps (González et al., 2020), which is being monitored by the Spanish Institute of Oceanography (IEO-CSIC) in the context of the EU Multi-Annual Programme (EU-MAP) for the Data Collection Framework (DCF). The sampling was performed on board the F/V "Rosario Uno". The shrimp was sorted on board, photographed after being caught, and then preserved in 80% ethanol for morphological analysis and identification at the laboratory.

The postorbital carapace length (pocl) was measured from the posterior margin of the orbit to the posterodorsal border of the carapace, excluding the rostrum (e.g., Landeira & Fransen, 2012), using a digital calliper, in millimetres. The sex of the specimen was recorded as male or female, based on the presence of a petasma or thelycum, respectively. The voucher specimen was labelled, curated, and deposited in the marine fauna collections (CFM-IEOCA) of the 'Centro Oceanográfico de Canarias' (IEO-CSIC) hosted by GBIF-Spain (https://www.gbif.org/es/publisher/a9ccac23-91ec-4b8b-a55c-75abc1bf2672) (Casañas Machín & Pascual Alayón, 2020) under collection no. IEO-CSIC 1671.

The present systematic classification and higher taxa arrangement follow De Grave & Fransen (2011) and the global database DecaNet (DecaNet, 2024).

Suborder DENDROBRANCHIATA Spence Bate, 1888
Superfamily PENAEOIDEA Rafinesque, 1815
Family SOLENOCERIDAE Wood-Mason in Wood-Mason & Alcock, 1891
Genus *Solenocera* Lucas, 1849
Solenocera membranacea (Risso, 1816) (fig. 1A–F)

Material examined.— Collection data: north-east coast of the island of Tenerife, off Punta del Hidalgo, between 28°36′N 16°17′W and 28°36′N 16°19′W, 110-131 m, mud with rocks, 25 May

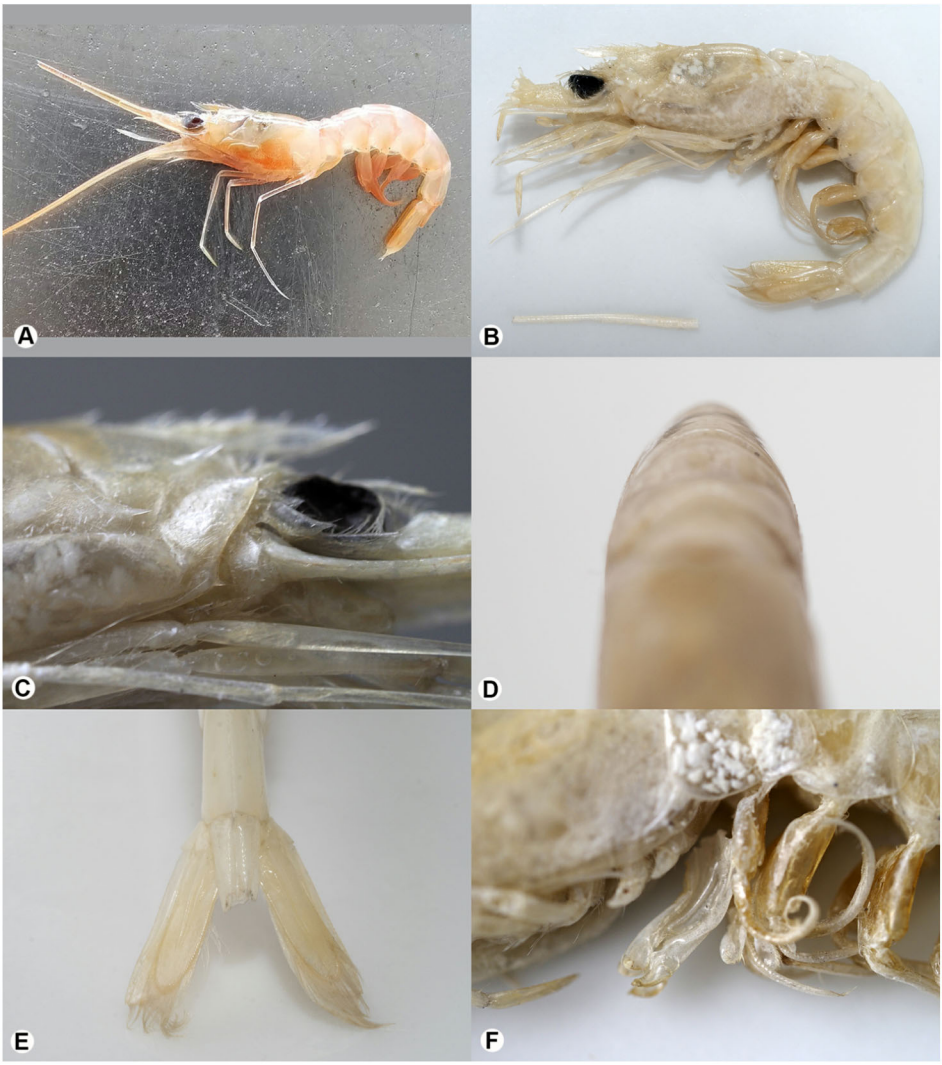

Fig. 1. *Solenocera membranacea* (Risso, 1816) from the Canary Islands. A, Freshly caught young male (pocl 11.2 mm) (GBIF-CFM-IEOCA 1671); B, the same individual preserved in alcohol; C, detail of the cephalothoracic spines; D, detail of the dorsal carina on the abdominal somites; E, dorsal view of its damaged telson; F, petasma.

2023. Voucher code: GBIF-CFM-IEOCA 2001. One young male (pocl 11.2 mm). Sampling gear: shrimp-trap baited with Atlantic chub mackerel (*Scomber colias* Gmelin, 1789).

Identification.— The examined specimen was identified step–by–step, from family to species, using the dichotomous keys of Pérez Farfante & Kensley (1997: 32, 157–158, 178–181) and Fransen (2014: 42–43, 93–94). It was well in agreement with the descriptions provided by Zariquiey Álvarez (1968: 48 (fig. 24c), 49–50), Crosnier & Forest (1973: 272–274, including fig. 91, comparison with *S. africana* Stebbing, 1917), Pérez Farfante & Kensley (1997: 179–181, including figs. 124–125), and Fransen (2014: 96, including illustrations). The species' most characteristic diagnostic details include: body moderately slender, with integument glabrous; rostrum straight, compressed laterally, and short (not overreaching second antennular segment), with 6 dorsal teeth only; carapace with orbital, postorbital, antennal and pterygostomian spines; median dorsal keel initiating on rostrum and extending posteriorly, almost reaching posterior margin of carapace; cervical sulcus strongly marked, not crossing dorsal keel; telson with a pair of fixed posterolateral spines (observable despite this structure appeared partially damaged); antennule with prosartema well developed; antennular flagella lamellate, forming when joined together a tube (respiratory siphon); dorsal carina on abdominal somites weak, with keel on third somite very faint; petasma with external lobe rather broad, ending in blunt point (fig. 1A–F).

Etymology.— The generic name *Solenocera* is a fusion of the ancient Greek roots "*solen*, *solenos*" (meaning channel) and "*keras*, *keratos*" (meaning horn) latinized as "*cera*"; referring to the possession of a long respiratory tube, resulting from the fusion of the ventral and dorsal flagella of the antennules in these species. The specific term *membranacea* is derived from the Latin root "*membranacea*" (meaning membranous), referring to its thin and fragile integument (González, 2024).

Geographic distribution.— *Solenocera membranacea* is an eastern Atlantic species, the current distribution of which is considered to be disjunct. In the northern sector, it is reliably known from the west of Ireland and the west of the English Channel to Senegal, including the Azores and the Canary Islands, and throughout the Mediterranean Sea (though absent in the Black Sea). In the southern sector, it is found off the Cape of Good Hope and Agulhas Bank (at the confluence with the Indian Ocean) (Zariquiey Álvarez, 1968; Pérez Farfante & Kensley, 1997; d'Udekem d'Acoz, 1999; Fransen, 2014).

The first record of this species in the Canary Islands was published by Quiles et al. (2001), based on one juvenile caught with skate trawl off the south coast of the island of Lanzarote (Playa Blanca, at 28°55′N 13°40′W), approximately 130 km from the African coast. The present finding is the second record of *S. membranacea*

in the Canary Islands and has been made on the north-east coast of Tenerife, i.e., in a clearly oceanic location, about 330 km as the crow flies from the African coast.

Size.— Zariquiey Álvarez (1968: 48 (fig. 24c), 49–50) reported a total length between 70 and 100 mm to the species. Crosnier & Forest (1973: 274, fig. 91) reported the petasma of a 15.0 mm pocl male from the western Mediterranean (Spain) and a cross-section of the dorsal part of the third abdominal somite of a 20.5 mm pocl male from the central Mediterranean (Tunisia). On the Catalan coast (north-western Mediterranean, Spain), both males and females of this species showed a marked tendency to increase in size with increasing depth, with the 15-25 mm pocl size range constituting the largest population nucleus along its bathymetric range (Demestre & Abelló, 1993). The latter authors also found remarkable sexual dimorphism by size: males ranged from 11 to 21 mm pocl, while females ranged from 10 to 30 mm pocl. Fransen (2014: 96) attributed a maximum total length of 12 cm to the species (11.2 cm according to Palomares & Pauly, 2024), commonly between 8 and 10 cm. The Canary Islands specimen of Quiles et al. (2001: 8) was a juvenile of 7.4 mm pocl, while the material examined in this note is a young male of 11.2 mm pocl.

Biology.— *Solenocera membranacea* is a subtropical species distributed in temperate to tropical seas (Palomares & Pauly, 2024). It inhabits a wide range of depths, living from 3 to 871 m, most commonly from 50–100 to 450 m (Zariquiey Álvarez, 1968; Holthuis, 1987; Abelló et al., 1988; d'Udekem d'Acoz, 1999; Fransen, 2014). It is mainly a benthic species living on muddy and sandy bottoms (Fransen, 2014), also known as a pelagic form at depths between 100 and 200 m (Bozzano et al., 2005). In the Mediterranean, the species is part of the widespread forms in all very fine-grained loose substrates, from circalittoral mud to bathyal mud (Pérès & Picard, 1964). This species is characteristic of decapod assemblages of the shelf and the upper slope of the coast of Catalonia (Abelló et al., 1988), where it buries itself in the mud during the day and emerges at night, playing an important role in the benthic ecosystem (Demestre & Abelló, 1993). The times series revealed a marked rhythmic nocturnal bottom activity of this species in both summer and autumn on the northwestern Mediterranean shelf, unaffected by sexual maturity (Aguzzi et al., 2006).

The two specimens captured to date in Canary Island waters were collected at 62 m over sandy bottom (Lanzarote) (Quiles et al., 2001) and 110–131 m over a rocky bottom with mud (Tenerife) (this work).

Solenocera membranacea feeds on benthic invertebrates living on soft bottom substrates such as polychaetes, bivalves, gastropods and echinoderms (Aguzzi et al., 2006). This species was found to be an important prey item characterizing

the diet of juvenile hake in the north-western Mediterranean, both in pelagic and benthic catches of the merluccid (Bozzano et al., 2005).

Remarks.— Considering that *Solenocera membranacea* reaches a maximum total size of 12 cm (Fransen, 2014) and that a traditional trap fishery targeting pandalid shrimps takes place in the Canary Islands (González et al., 2020), the known catch of only two specimens would indicate that this species is neither common nor frequent, rather rare, in this archipelago. The species has not been reported for the carcinological fauna of Madeira (Araújo & Wirtz, 2015) or Cape Verde (González, 2018); there is only one record of the species for the Azores (Pérez Farfante & Kensley, 1997). All these data suggest that the species may be preferentially associated with soft mobile substrates, especially muddy ones, on continental shelves and upper slope, while its presence on the hard and abrupt bottoms of the volcanic archipelagos of Macaronesia would be barely testimonial.

Another species in the genus is known from the eastern Atlantic: *Solenocera africana* Stebbing, 1917. This species has a more southerly distribution, from Mauritania (near the Tropic of Cancer) southward to the Agulhas Bank (South Africa) (Fransen, 2014) and, according to Crosnier & Forest (1973), reaching at least the latitude of Durban (29°55′S 31°21′E) in the southwest Indian Ocean.

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