

Redescription of *Caprella hirsuta* Mayer, 1890 (Crustacea, Amphipoda, Caprellidea) from the Strait of Gibraltar

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Redescription of Caprella hirsuta Mayer, 1890 (Crustacea, Amphipoda, Caprellidea) from the Strait of Gibraltar.— *Caprella hirsuta* Mayer, 1890 is redescribed based on specimens collected from the Strait of Gibraltar (Southern Spain–Northern Africa) during a study of the amphipod fauna from these coasts. Careful examination of these caprellids revealed differences with the previous descriptions, mainly the structure of gnathopod 2, pereopods and abdomen.

Key words: Crustacea, Amphipoda, Caprellidea, *Caprella hirsuta*, Strait of Gibraltar, Redescription.

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Introduction

Caprella is the largest genus of the suborder Caprellidea (Crustacea, Amphipoda). It is widely distributed from the temperate to boreal regions occurring primarily on seaweeds, seagrasses and hydroids (TAKEUCHI, 1993).

A total of 109 species of *Caprella* were described around the world before 1970 (McCain & Steinberg, 1970) and since then, more than 30 new species have been described (e.g. Arimoto, 1970; Laubitz, 1970; Laubitz & Lewbel, 1974; Vassilenko, 1974; Arimoto, 1977, 1978, 1979a, 1979b, 1980, 1982; Krapp-Schickel & Ruffo, 1986; Takeuchi, 1986; Vassilenko, 1992; Takeuchi, 1993; Platvoet et al., 1995; Sánchez-Moyano et al., 1995b; Martin & Pettit, 1998; Krapp-Schickel & Vader, 1998; Mori, 1999).

In this paper *Caprella hirsuta* Mayer, 1890 is described on the basis of material collected from the Strait of Gibraltar between 1990 and 1998. This species, considered as Mediterranean endemic since the original description, has also been recently reported from the Atlantic African coast (Bellan-Santini & Ruffo, 1998).

Since the morphological study of *Caprella hirsuta* specimens from the Strait of Gibraltar, several characteristics which were not included in previous descriptions and several differences with the previous descriptions have been observed.

Specimens of *C. hirsuta* from the Strait of Gibraltar have been deposited in the Museu de Zoologia de Barcelona, Spain (MZB 2001-0321) and the Museo Nacional de Ciencias Naturales de Madrid, Spain (MNCN 20.04/4650 and 20.04/4651)

Material and methods

The specimens of *Caprella hirsuta* were collected by scuba diving in shallow waters (2–10 m depth) in the infralittoral zone of Torreguadiaro and San García, Cádiz (Southern Spain) and El Sarchal, El Desnarigado and Rompecala, Ceuta (Northern Africa) (fig. 1).

The samples were fixed using formalin 4% in seawater solution and placed in ethyl alcohol 70%.

Several specimens were dissected under

a stereo-microscope; permanent mounts were made in polyvinyl-lactophenol. All the figures were drawn with the aid of a camera lucida.

Results

Caprella hirsuta Mayer, 1890 (figs. 2–5)

Caprella hirsuta MAYER, 1890, p. 77, pl. 2, fig. 19, pl. 4, figs. 26–29; MONTEROSSO, 1915, pp. 12–13; CHEVREUX & FAGE, 1925, p. 449, figs. 429; RANCUREL, 1949, p. 168; RUFFO & WIESER, 1952, p. 22; COSTA, 1960, pp. 99–100; GOTTLIEB, 1960, p. 164; MCCAIN & STEINBERG, 1970, p. 23; CAVEDINI, 1982, p. 503; KRAPP-SCHICKEL, 1993, pp. 785–786, fig. 535.

Material examined

Two mature males (3.5 and 3.76 mm in body length), four mature females (2.16–3.16 mm), three premature females (2.06–2.23 mm), one juvenile (1.66 mm), VII 90 on the seaweed *Halopteris scoparia* (L.) Sauvageau., 4 m in depth, San García, Bahía de Algeciras (36°10'N, 5°25'W), coll. J. E. Sánchez-Moyano; six mature males (3.16–3.7 mm), 12 mature females (1.66–3.26 mm), five premature females (1.8–2.7 mm), seven juveniles (0.86–1.7 mm), VII 92, clinging to the seaweed *Jania rubens* (L.) Lamouroux, 3 m in depth, Torreguadiaro, Cádiz (36°20'N, 5°15'W), coll. J. E. Sánchez-Moyano; two mature males (3.4–3.7 mm), April 1995, clinging to *Jania rubens* (L.) Lamouroux, 2 m in depth, El Sarchal, Ceuta (35°53'N, 5°18'W), coll. J. E. Sánchez-Moyano; one mature male (3.6 mm), August 1998, clinging to *Halopteris scoparia* (L.) Sauvageau, 5 m in depth, Rompecala, Ceuta (35°54'N, 5°17'W), coll. J. M. Guerra-García; one mature male (3.73 mm) VIII 98, clinging to *Cladostephus spongiosus* (Hudson) C. Agardh, 10 m in depth, El Desnarigado, Ceuta (35°53'N, 5°17'W) coll. J. M. Guerra-García.

Redescription

Male "a" (MNCN 20.04/4650) from El Sarchal, Ceuta (35°53'N, 5°18'W).

Body length. 3.7 mm.

Lateral view. Head rounded, without rostrum or projections. Body smooth.

Gills. Oval, length ca. twice width.

Antennae. Antenna 1 approx. 1/2 body

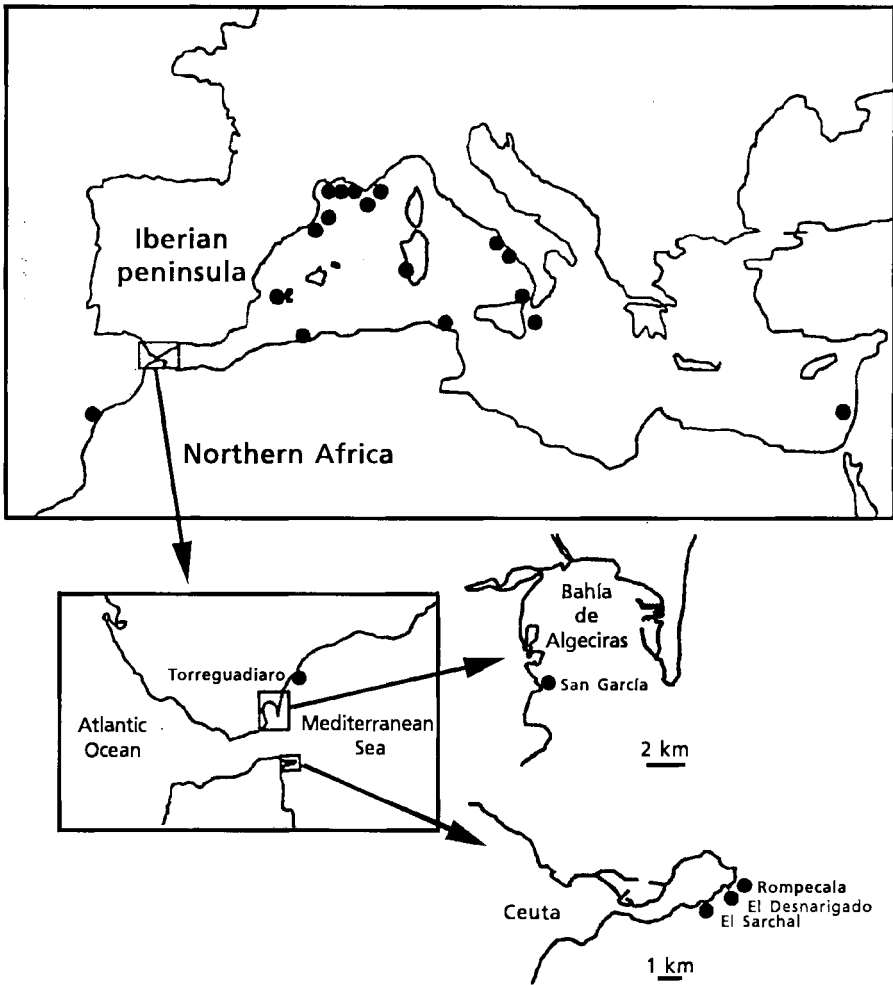


Fig. 1. Distribution of *Caprella hirsuta*. The location of Bahía de Algeciras and Ceuta in the Strait of Gibraltar is also included

Distribución de Caprella hirsuta. Se incluye la localización de la Bahía de Algeciras y de Ceuta en el Estrecho de Gibraltar.

length. Peduncular article 1 a little more robust than the others. Flagellum with nine articles. Antenna 2, shorter than peduncle of antenna 1, carrying many short simple setae. Swimming setae absent. Article 2 of flagellum very short.

Mouthparts. Upper lip semicircular, symmetrically bilobed, pubescent apically. Inner and outer lobes of the lower lip

rounded, with dense setulae close to margin. Mandibular process strong, bordered by rectangular teeth. Incisor and lacinia mobilis both 5-toothed. Maxillae 1 outer lobe with seven forked, 2-pronged spines distally. Distal article of palp with four strong spines on end and a row of five setae medially. Maxilla 2 outer lobe with two rows of simple setae and one plumose setae on distal end.

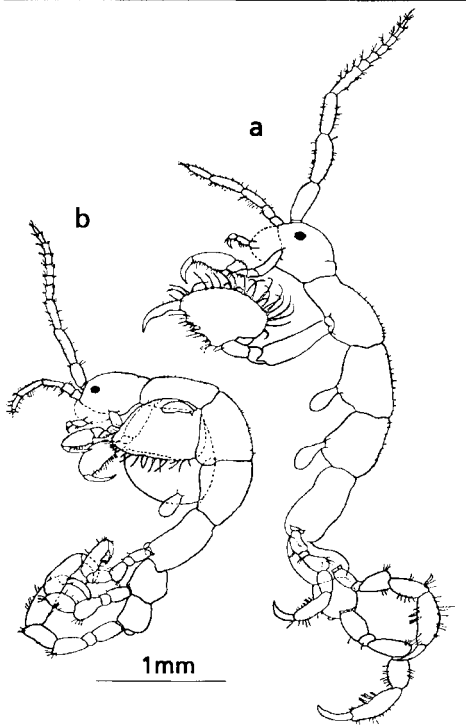


Fig. 2. *Caprella hirsuta* Mayer, 1890. Lateral view: a. ♂; b. ♀.

Caprella hirsuta Mayer, 1890. Vista lateral: a. ♂; b. ♀.

Inner lobe with one plumose setae and a row of simple setae. Inner plate of maxilliped rectangular, as big as outer plate, carrying two teeth and several plumose setae. Outer plate rounded, provided with one tooth and two simple setae distally. Palp 4-articulate. Article 1 short, article 2 almost as wide as long, covered with numerous long setae on medial margin, article 3 slender, article 4 with rows of setulae on grasping margin.

Gnathopods. Gnathopod 1 basis longer than ischium to carpus combined. Propodus 4 times longer than carpus. Length of propodus ca. 1.5 times width. Palm with a pair of proximal grasping spines. Gnathopod 2 inserted at the middle of pereonite 2. Basis about 3/4 of pereonite 2, as long as

propodus, with a distal round projection. Ischium rectangular, as long as wide. Merus slender, length ca. twice width. Carpus short. Propodus as broad as long, with very long, dense setae dorsally. Palm with median acute tooth and deep incision. Proximally, one long tooth followed by 2 smaller teeth.

Pereopods. Palm of propodus with five grasping spines following the formula 1, 2, 2 (from proximal to distal end). Dactylus with 1 plumose setae.

Lateral penes, as long as wide.

Abdomen with a pair of 2-articulate appendages. Proximal article of each appendage carrying several setulae and about 1/3 distal article in length. Distal article slender, length about 1.5 times width. Distal end serrated, with fine short setae. Dorsal lobe with a pair of plumose setae.

Female "b" (MNCN 20.04/4651) from Torreguadiaro, Cádiz (36°20'N, 5°15'W)

Body length. 3.26 mm.

Gnathopod 2 inserted in anterior half of pereonite 2. Propodus twice as long as broad without long setae on dorsal surface. Median acute tooth and deep incision lacking in palm. Two pairs of long proximal teeth. Basis without distal round projection. Anterior brood lamellae setose all round, posterior pair not setose. Abdomen without the 2-articled appendages.

Discussion

In the present paper the previous descriptions of *Caprella hirsuta* (MAYER, 1890; CHEVREUX & FAGE, 1925; KRAPP-SCHICKEL, 1993) are completed. Furthermore, several differences with these descriptions were found:

1. Male specimens of *C. hirsuta* from the Strait of Gibraltar have a round distal projection in the basis of gnathopod 2.

2. There are three proximal teeth on the propodus palm of gnathopod 2 in males and two pairs in females from the Strait of Gibraltar. In previous descriptions of *C. hirsuta* from Portovenere, Italy (see figures in KRAPP-SCHICKEL, 1993) only two teeth are reported.

3. Specimens from the Strait of Gibraltar have five grasping spines on the propodus palm of pereopods. In previous descriptions

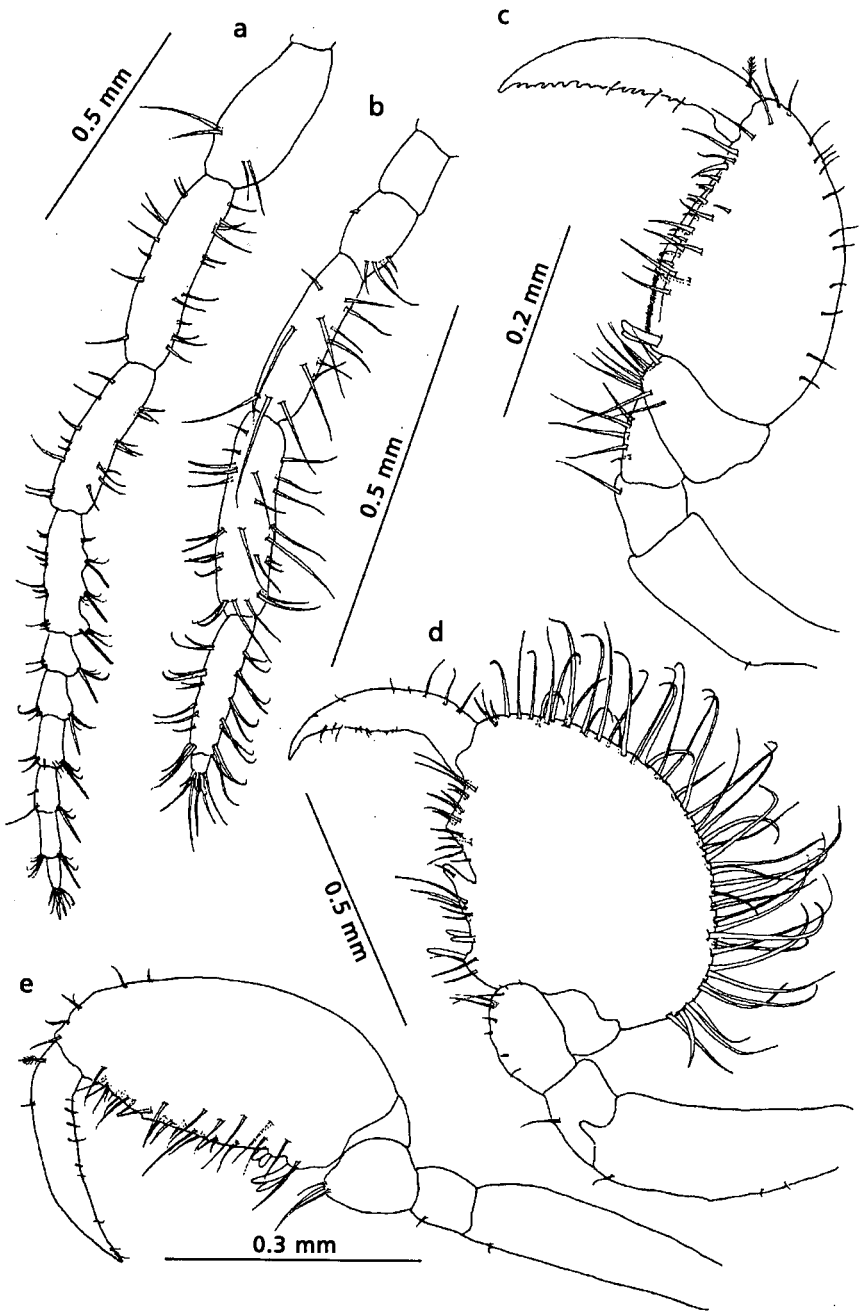


Fig. 3. *Caprella hirsuta* Mayer, 1890, a-d ♂, e ♀: a. Antenna 1; b. Antenna 2; c. Gnathopod 1; d. Gnathopod 2; e. Gnathopod 2.

Caprella hirsuta Mayer, 1890, a-d ♂, e ♀: a. Antena 1; b. Antena 2; c. Gnatòpodo 1; d. Gnatòpodo 2; e. Gnatòpodo 2.

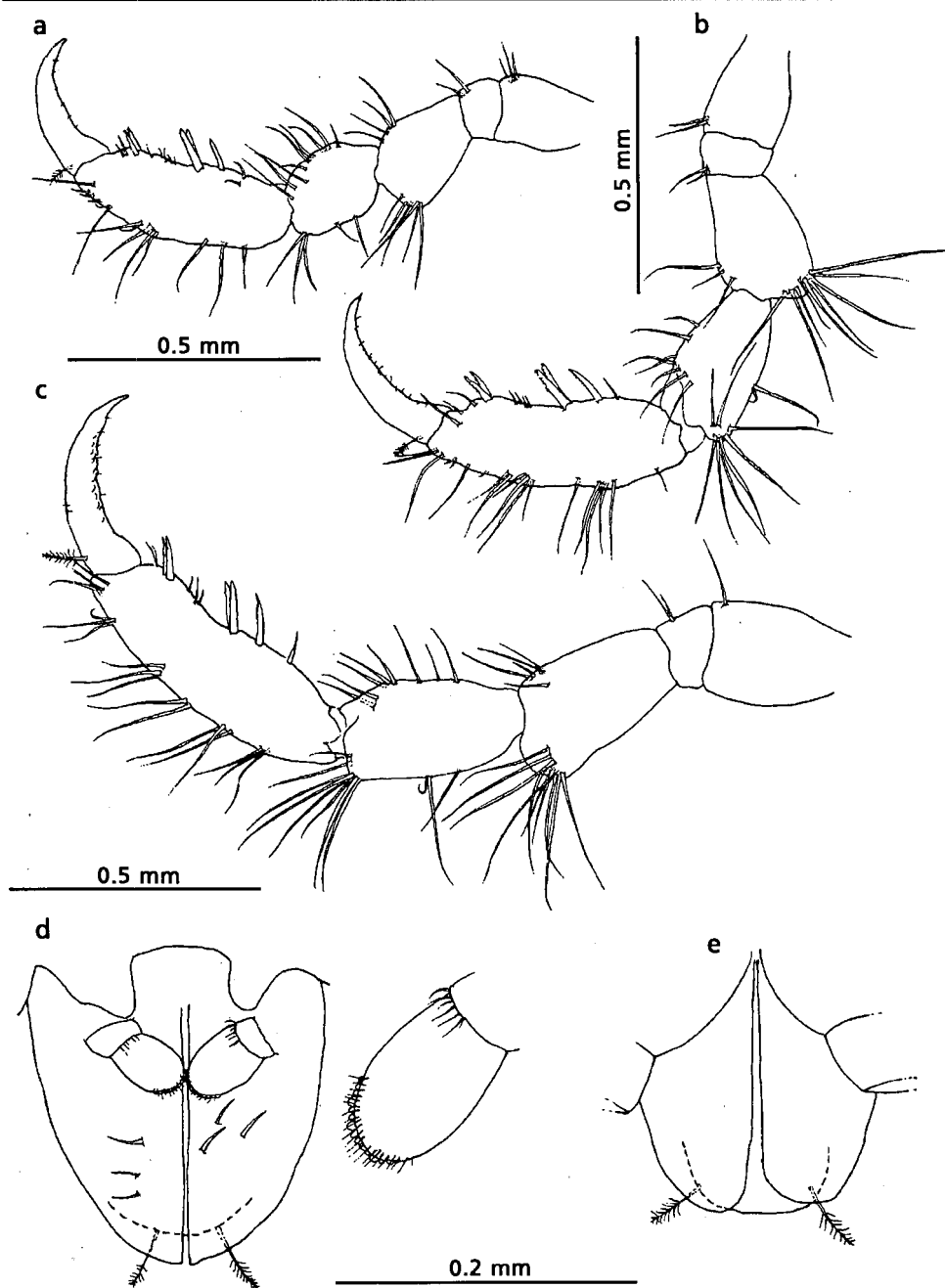


Fig. 4. *Caprella hirsuta* Mayer, 1890, a-d ♂, e ♀: a. Pereopod 5; b. Pereopod 6; c. Pereopod 7; d. Abdomen; e. Abdomen.

Caprella hirsuta Mayer, 1890, a-d ♂, e ♀: a. Pereiódopo 5; b. Pereiódopo 6; c. Pereiódopo 7; d. Abdomen; e. Abdomen.

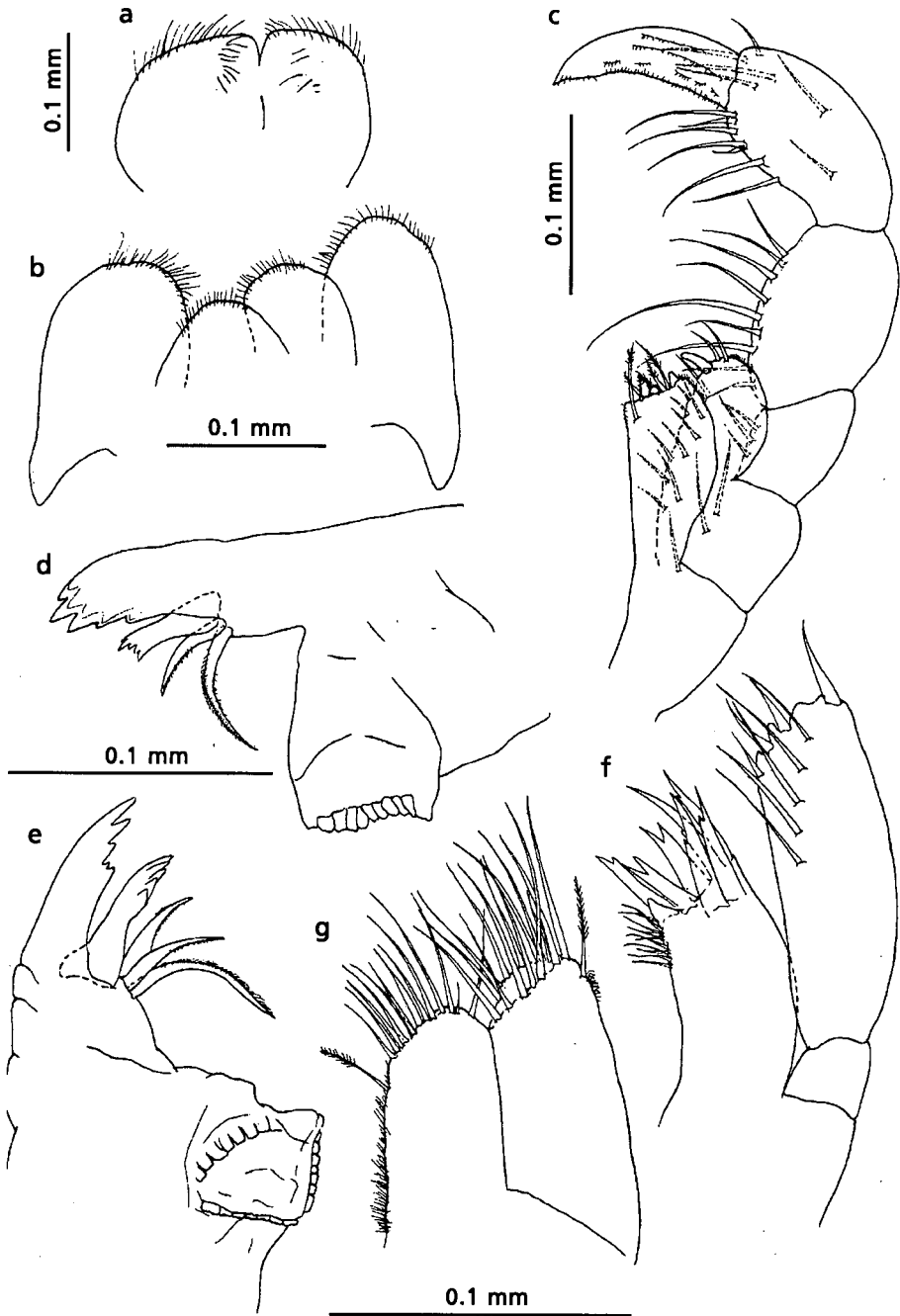


Fig. 5. *Caprella hirsuta* Mayer, 1890, ♂: a. Upper lip; b. Lower lip; c. Maxilliped; d. Right mandible; e. Left mandible; f. Maxillae 1; g. Maxillae 2.

Caprella hirsuta Mayer, 1890, ♂: a. Labio superior; b. Labio inferior; c. Maxillpedo; d. Mandibula derecha; e. Mandibula izquierda; f. Maxila 1; g. Maxila 2.

only three grasping spines are described (one medial and two distal accessory spines).

4. Male specimens from the Strait of Gibraltar present a striking abdomen. The distal article of the 2-articulate appendages has a clearly serrated margin with fine short setae. This serration, not previously reported in the genus *Caprella*, has recently also been observed in other species of caprellids from Ceuta, *Caprella tuberculata* Bate and Westwood and *C. santosrosai* Sánchez-Moyano, Jiménez-Martín and García-Gómez (pers. obs.).

Biogeographical distribution

Caprella hirsuta has been considered as Mediterranean endemic (KRAPP-SCHICKEL, 1993) since its original description. Nevertheless, using information from BITAR (1987) and MENIOUI (1988), BELLAN-SANTINI & RUFFO (1998) recently also reported the presence of this species on the Atlantic African coast (from Cape Spartel to Cape Blanc. This represents the most occidental site for *C. hirsuta* (fig. 1). On the other hand, the most oriental place in the Mediterranean Sea where *C. hirsuta* has been found is Israel. GOTTLIEB (1960) reported the presence of *C. hirsuta* in Caesarea, where this species was found during a study of the benthonic Amphipoda of the Mediterranean coast of Israel. The most cited localities for *C. hirsuta* are on the Mediterranean coast of France and Italy. In France the species has been found in Marseille (CHEVREUX & FAGE, 1925; BELLAN-SANTINI, 1969, 1971), Port-Vendres and Villafranche-sur-Mer (CHEVREUX & FAGE, 1925). In Italy, the presence of *C. hirsuta* has been reported in Capo Caccia (CAVEDINI, 1982), Catania (MONTEROSSO, 1915), Napoli (MAYER, 1890), Portovenere and Sampieri (RUFFO & WIESER, 1952). On the Mediterranean coasts of North Africa *C. hirsuta* has been found in Cherchell, Algeria and in La Galite, Tunisia (CHEVREUX & FAGE, 1925). In Spain, JIMENO (1993) found the species in Blanes and BALLESTEROS et al. (1987) reported its presence in the Balearic Islands. This study shows that *C. hirsuta* is also present in the Strait of Gibraltar. In Algeciras Bay its presence is restricted to San García. In Ceuta we only found *C. hirsuta* in the Mediterranean area Rompecala-El Desnarigado-El Sarchal (fig. 1).

Ecology

Caprella hirsuta had previously been found on *Balanus* (CHEVREUX & FAGE, 1925), hydroids and Asteroidea between 0 and 30 m (KRAPP-SCHICKEL, 1993). In the present study we collected *C. hirsuta* from several species of algae with very different morphological characteristics, i.e. *Jania rubens*, *Halopteris scoparia* and *Cladostephus spongiosus*. This caprellid does not therefore seem very specific in choosing its substrate. Nevertheless, at all times we found *C. hirsuta* on substrates with much detritus. Specimens from the Strait of Gibraltar were usually found covered with sediment. This sediment might be of use in evading predators, as described for another caprellid species (SÁNCHEZ-MOYANO et al., 1995a).

Resumen

Redescripción de Caprella hirsuta Mayer, 1890 (Crustacea, Amphipoda, Caprellidea) del Estrecho de Gibraltar

Se redescrive *Caprella hirsuta* a partir de ejemplares recolectados en el Estrecho de Gibraltar (sur de España-norte de África) (fig. 1) durante un estudio de la fauna de anfípodos de esta zona. Se incluyen ilustraciones completas de la especie (figs. 2-5). La observación detallada de los ejemplares reveló algunas diferencias con las descripciones previas, principalmente en la estructura del gnatópodo 2, los pereiópodos y el abdomen.

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