

Description of a rare isopod crustacean, *Arcturella poorei* sp. nov. (Isopoda: Valvifera: Arcturidae), from the Atlantic seaboard of Cadiz (Iberian Peninsula)*

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SUMMARY: This paper describes a new species of arcturidean isopod, *Arcturella poorei*, from the Atlantic seaboard of Cadiz (Spain). A diagnosis and description of the species is presented, and a comparison with other species of the genus from the area.

Key words: Isopoda, Valvifera, Arcturidae, *Arcturella poorei* sp. nov., Atlantic Ocean.

RESUMEN: DESCRIPCIÓN DE UN CRUSTÁCEO ISÓPODO RARO, *ARCTURELLA POOREI* SP. NOV. (ISOPODA: VALVIFERA: ARCTURIDAE), PROCEDENTE DEL LITORAL ATLÁNTICO DE CÁDIZ (PENÍNSULA IBÉRICA). – En este trabajo se describe una nueva especie de isópodo arctúrido, *Arcturella poorei*, recolectada en el litoral atlántico de Cádiz (España). En él se incluye la diagnosis, la descripción y la comparación con el resto de especies del género geográficamente próximas.

Palabras clave: Isopoda, Valvifera, Arcturidae, *Arcturella poorei* sp. nov., Océano Atlántico.

INTRODUCTION

The genus *Arcturella* Sars, 1897 currently includes 15 species, of which only 5 are described from Europe or northern Africa: (*A. damnoniensis* (Stebbing, 1874), *A. dilatata* (Sars, 1883), *A. cornuta* (Koehler, 1911), *A. dollfusi* (Monod, 1925) and *A. carlosoteroi* (Reboreda, Wägele and Garmendia, 1994). Six other species are found in southern Africa: *A. brevipes* (Barnard, 1920), *A. corniger* (Stebbing, 1873), *A. lineata* (Stebbing, 1873), *A. lobulata* (Barnard, 1925), *A. longipes* (Barnard,

1920) and *A. pustulata* (Barnard, 1920). Three other species are found in the the American Atlantic (3 species: *A. sawayae* (Moreira, 1973), *A. spinata* (Menzies and Kruczynski, 1983) and *A. bispinata* (Menzies and Kruczynski, 1983). A single species is found off the coasts of the Philippines: *A. nodosa* (Dana, 1849).

This study presents the diagnosis and description of *Arcturella poorei* sp. nov., on the basis of a specimen collected by members of the Marine Biology Laboratory at the University of Seville in a sample of algae, from Caños de Meca, Cadiz (Spain), on the Atlantic seaboard. We also compare the new species with other species of the genus found near this geographical region.

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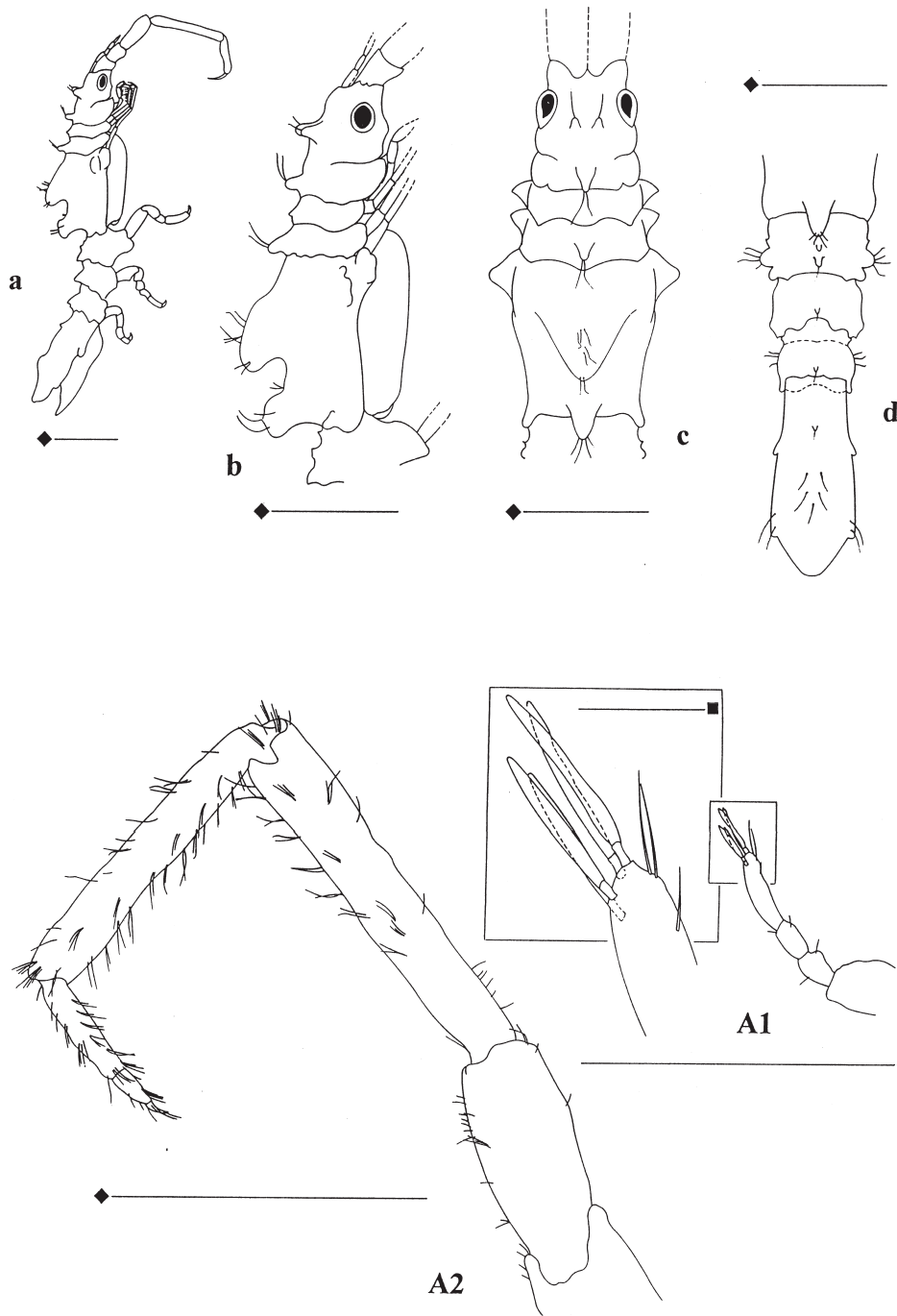


FIG. 1. – *Arcturella poorei* sp. nov., female holotype: a, habitus lateral view; b, cephalon and pereon lateral view; c, cephalon and pereon dorsal view; d, pleotelson dorsal view; A1, antenna 1; A2, antenna 2. Scale bars: u=1 mm, n=0.1 mm.

MATERIAL AND METHODS

The specimen was preserved in 70% ethanol and dissected in glycerine with minute needles. The microscopic preparations were kept in a drop of glycerine as mountant medium, and sealed with paraffin.

Dorsal and lateral views of the specimen were drawn, with a camera lucida on a WILD M5 stereoscopic microscope. Figures of the appendages were drawn using an OLYMPUS CH2 microscope with an accessory drawing tube.

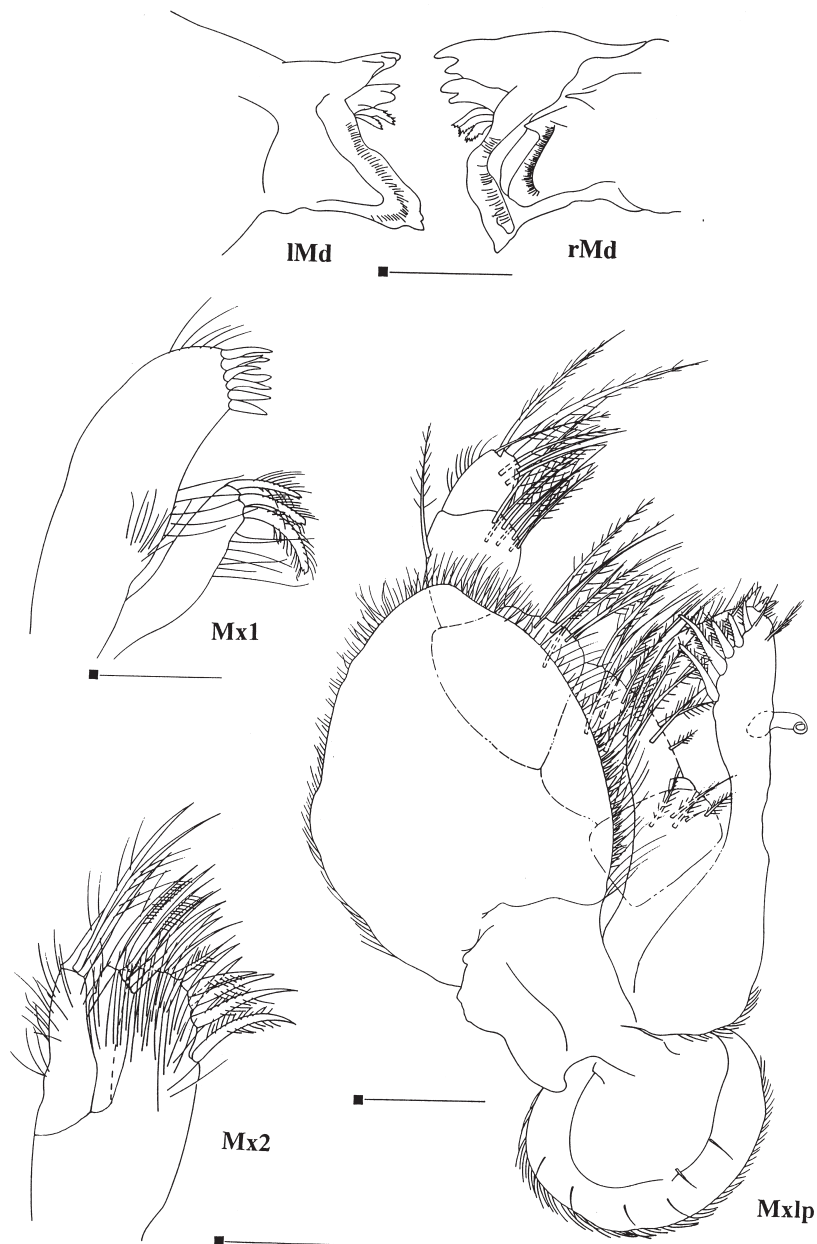


FIG. 2. —*Arcturella poorei* sp. nov., female holotype: lMd, left mandible; rMd, right mandible; Mx1, maxilla 1; Mx2, maxilla 2; Mxlp, maxilliped. Scale bar: n = 0.1 mm.

RESULTS

Arcturella Sars, 1897

Relatively robust body, widened at the level of the fourth pereonite of the female. Cephalon with fairly prominent lateral eyes. Antennae not excessively long, fairly robust, with three-jointed flagellum. Maxillipeds with five-jointed palp. Pereon made up of three regions; the anterior is formed by

three very short segments, first dorsally fused to the cephalon; fourth pereonite wider than the anterior ones, in some species wider than long; the posterior region made up by three segments that are longer than the three first ones but much smaller than the fourth. Pereopods of different form and shape; first pair short and robust, no unguis on the dactylopodite; three following pairs without dactylopodites, flexed at the joint between the carpopodite and the propodite, bearing setae in rows on

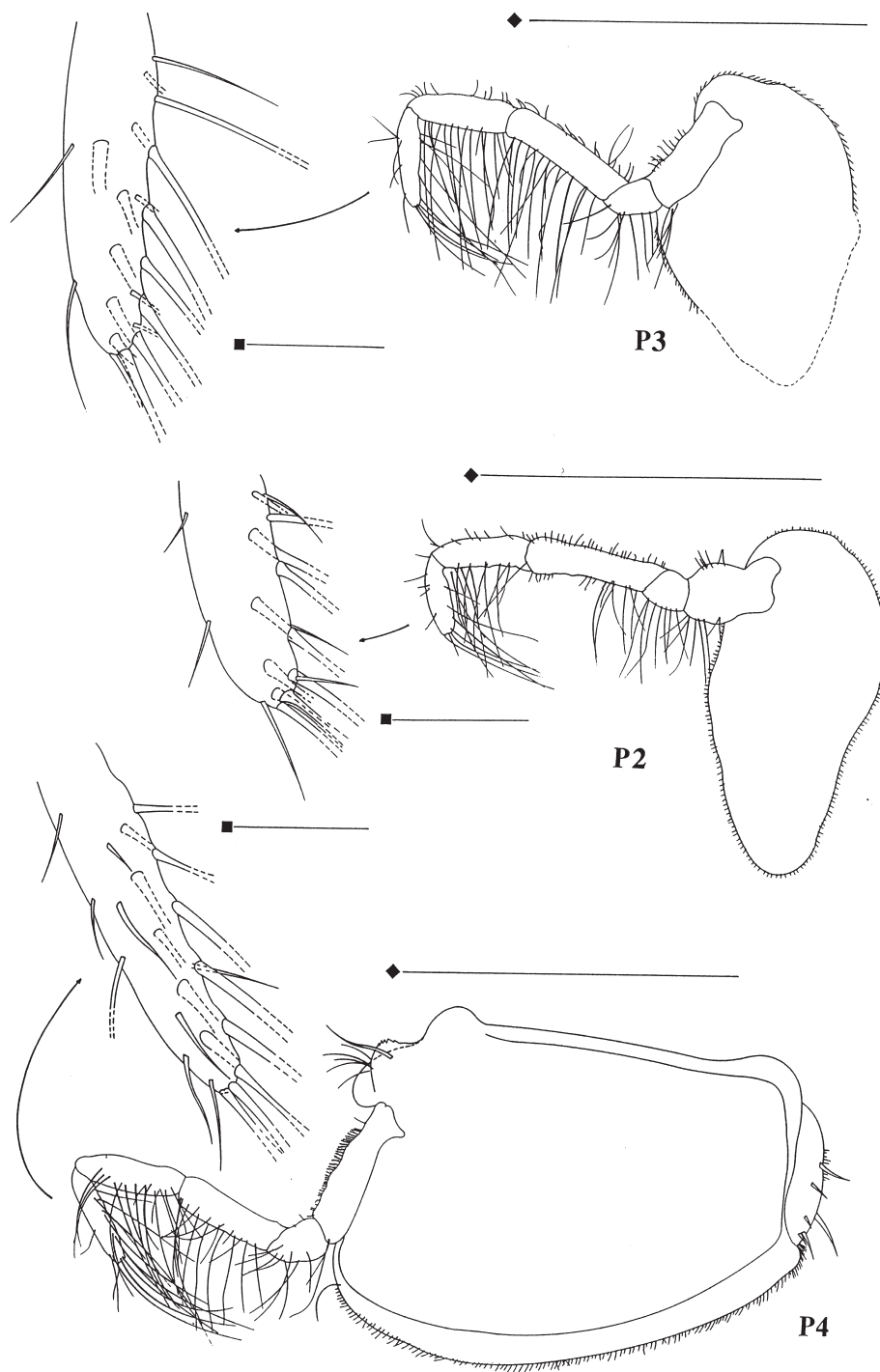


FIG. 3. – *Arcturella poorei* sp. nov., female holotype: P2, pereopod 2; P3, pereopod 3; P4, pereopod 4. Scale bars: u=1 mm, n=0.1 mm.

the lower margin; three posterior pairs larger and stronger, dactylopodite with unguis and two tooth-like protuberances; the distal one forms a false claw with the unguis. Pleotelson made up of two regions; anterior composed of fused three first segments, posterior of remaining segments with fused the telson; one partial suture on lateral margin. Exopodite

of male pleopod 1 with concave margin in the proximal region. Uropods with triangular endopodite and exopodite with apical setae, generally 2 or 3. Female larger than the male. Dorsal sculpture more prominent in the female, Body section at the level of the fourth pereonite circular in the male and depressed in the female.

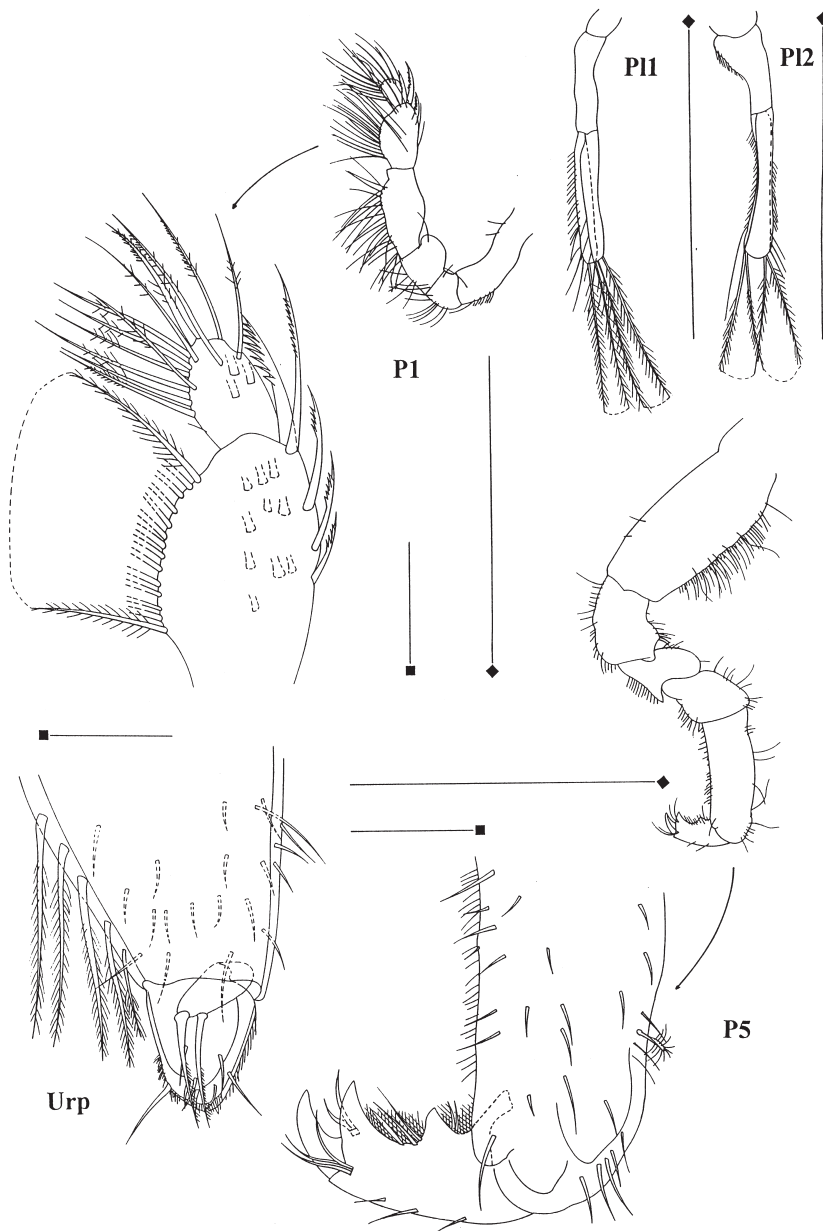


FIG. 4. – *Arcturella poorei* sp. nov., female holotype: P1, pereopod 1; P5, pereopod 5; P11, pleopod 1; P12, pleopod 2; Urp, uropod. Scale bars: $\mu=1$ mm, $n=0.1$ mm.

***Arcturella poorei* sp. nov.**

Material examined: Holotype. – 1 adult female in pre-moult phase, length 5.5 mm excluding antennae; Museu de Zoologia, Ajuntament de Barcelona, Repository number: 97-0302

Type locality. – Caños de Meca (Cadiz, Spain): 36° 10' 00" N 06° 00' 00" W; 4 m; *Sphaerococcus coronopifolius*; J.L. Carballo *et al.* leg. (15.08.91)

Diagnosis: Dorsal sculpture formed by 1 pair of fairly large dorsal tubercles on the cephalon, 1 tuber-

cle on the first pereonite, the same size as the anterior ones, 1 small tubercle on the second pereonite, 1 large tubercle, slightly larger than those on the cephalon, on the third pereonite, and 2 enormous, hunchbacked tubercles with wide bases, on the fourth pereonite, situated centrally and at the end of the segment respectively. All the tubercles lean backwards and all except the one on the second pereonite present fine wavy hairs at their apex. Exopodite of uropod with 2 setae.

Description: Body robust (Fig. 1, a), with fourth pereonite slightly wider (1.5 mm) than long (1.3 mm); length/width ratio 0.8. Smooth tegument. Small cephalon, with large lateral eyes and 1 pair of dorsal tubercles, situated slightly behind the level of the eyes, showing several fine, flexible hairs on their apex. Pereon (Fig. 1, b, c) robust, especially the fourth segment, with dorsal sculpture formed by 1 tubercle in the first pereonite, 1 very small tubercle in the second pereonite, 1 tubercle in the third pereonite, and 2 very large and characteristic hunch-backed tubercles in the fourth pereonite. Pereonites 5-7 with dorsal tubercles; the fifth presents 2, the sixth, 1 and the seventh, 1, leaning backwards; the two last present long, fine hairs at their apex. Pleotelson (Fig. 1, d) convex, with partial suture halfway along; dorsally it shows a small tubercle with hairs on its apex in a fairly anterior position. Short antennules (Fig. 1, A1) that only reach the beginning of the third article of the antennal peduncle; at its end 4 aesthetascs and a group of 2 sensorial setae. Antenna (Fig. 1, A2) robust and not very long (3.7 mm); the proportions of the peduncular articles in relation to the flagellum, from the third one onwards, are 1.2: 2.1: 1.8: 1; the two last peduncular articles are robust and have a few spiniform hairs, as in the flagellum, which is short and three-jointed. Mandibles (Fig. 2, IMd, rMd) slightly asymmetrical; left pars incisiva formed by two groups of 3 and 2 teeth, lacinia mobilis with 3 pectinated teeth and pars molaris with slightly toothed margins, right pars incisiva with two groups of 2 teeth each, lacinia mobilis with 4 pectinated teeth and pars molaris with a very slightly toothed margin. Maxillules (Fig. 2, Mx1) with medial endite with 3 thick plumose setae and lateral endite with 8 setae without teeth in two rows. Maxillae (Fig. 2, Mx2) with three endites carrying plumose setae which become thicker and shorter towards the internal margin; the external lobe has 3 setae, in the middle there are 5, and the internal lobe has approximately 10. Maxilliped (Fig. 2, Mxlp) endite with thick plumose setae on its upper internal angle, internal margin with retinaculum and upper margin with hairs; its length is greater than the epipodite, oval and with fine setae in its margin; palp with robust articles carrying plumose setae in its upper margin and external side, the ratio of their lengths, from the second one onwards, being 1.9: 2: 1.6: 1. Pereopod 1 (Fig. 4, P1) robust, with numerous long, thin, slightly plumose setae, on its lower margin, especially from the carpopodite onwards; propodite with numerous

plumose setae, leaning forward, on its internal margin, as well as some thick membranous setae on dactylopodite, unguis absent at apex, but one seta. Pereopods 2-4 (Fig. 3, P2, P3, P4) robust, flexed at the joint of the carpopodite and the propodite, with long, fine setae on its lower margin; their size increases slightly from the second pair to the fourth (lengths of 1.2, 1.4 and 1.5 mm respectively); pereopod 2 shows ratios between the articles, from the basipodite onwards, of 2.5: 1: 3.8: 2.5: 2.3; pereopod 3, 2.4: 1: 2.8: 2.1: 2.1; and pereopod 4, 2.8: 1: 2.1: 2.1: 1.8. Oostegites oval, with a length/width ratio of 2, 1.5 and 1.3 respectively, third pair reaching a length of 1.4 mm. Pereopods 5-7 similar, robust; pereopod 5 (Fig. 4, P5) is the longest, length of propodite being less than a third of the width; dactylopodite shows two tooth-like protuberances on upper margin; the distal protuberance forms a false claw with the unguis. Pleopod 1 (Fig. 4, P11) long and thin, with retinaculum on the internal margin of the protopodite and rami of the same length, with 8 long apical plumose setae and 4 shorter setae on the internal margin of each of them. Pleopod 2 (Fig. 4, P12) more robust, protopodite with retinaculum on internal margin; rami of the same length, with 11 long plumose setae at apex of endopodite and 14 setae on exopodite, of which 11 were long, apical and plumose, 1 on external margin and 3 in the internal margin. Uropod (Fig. 4, Urp) with very large protopodite, endopodite apical and triangular although with a rounded end and short setae on its margins, and exopodite much smaller, with 2 apical setae. Light yellowish colour with a darker back, with abundant red chromatophores all over the surface of the body.

Etymology: The species is dedicated to the eminent carcinologist Dr. Gary C.B. Poore, of the Museum of Victoria, Australia, as a token of our gratitude for his valuable comments on our studies of Arcturidae.

DISCUSSION

The genera *Arcturella* Sars, 1897 and *Astacilla* Cordiner, 1793 are distinguished by the shape of the body, the former being squat and the latter elongated, and by the absence of unguis in pereopod 1 of the former and its presence in pereopod 1 of the latter; in fact, though, these differences are not quite as clear, and it would be useful to study the possibility of redefining them, as several authors have already

suggested (Monod, 1925; Poore (pers. com.)). In the case of *Arcturella poorei* sp. nov. we have included it in this genus on the basis of its robust body and its lack of unguis in pereopod 1. However, this situation is provisional, until it is possible to study the male; if the male presents a ventral process the species would be attributed to the genus *Arcturoopsis* Koehler, 1911 (ventral process in pereonite 3) or to the genus *Arctopsis* Barnard, 1920 (ventral process in pereonite 5).

Geographically, the *Arcturella* species known on European or north African coasts are *A. damnoniensis* (Stebbing, 1874) and *A. dilatata* (Sars, 1883) (both from the north-east Atlantic), *A. carlosoteroi* (Reboreda, Wägele and Garmendia, 1994) (from Galicia, Spain), *A. cornuta* (Koehler, 1911) (from the Azores), and *A. dollfusi* (Monod, 1925) (from Morocco). There are a number of morphological differences between them; first, while some present a robust body (*A. damnoniensis* (Stebbing, 1874), *A. dilatata* (Sars, 1883) and *A. dollfusi* (Monod, 1925)), others present a long and fairly thin body (*A. cornuta* (Koehler, 1911) and *A. carlosoteroi* (Reboreda, Wägele and Garmendia, 1994)). In addition, if we consider the dorsal sculpture, *A. carlosoteroi* (Reboreda, Wägele and Garmendia, 1994) is totally smooth, while the others bear several tubercles of different size and disposition; for example on pereonite 4 *A. damnoniensis* (Stebbing, 1874) has 2 tubercles in the middle line, one in the middle of the segment and another at the end, and *A. dilatata* (Sars, 1883), *A. cornuta* (Koehler, 1911) and *A. dollfusi* (Monod, 1925) possess 1 pair of tubercles leaning towards the anterior part and in a position that varies according to species, although it is always near the middle of the segment. *A. poorei* sp. nov. has such a characteristic dorsal relief of the body, especially due to the tubercles of pereonite 4, with a

hunchback shape, that it cannot be considered similar to any of the species mentioned above. In our view, this character fully justifies the establishment of this new species.

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