

A new *Metacirolana* (Crustacea: Isopoda: Cirolanidae) from an anchihaline cave lake on Cabrera (Balearic Islands)

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Abstract

Metacirolana ponsi n.sp. is described from a single male trapped at a depth of 15 m in an anchihaline cave lake on Cabrera. It is the first known stygobiont representative of the genus. The possible origin of the species in pre-Messinian times (before the salinity crisis) is postulated.

Resumen

Descripción de *Metacirolana ponsi*, el primer representante conocido del género que muestra hábitos estigobiontes. La descripción se basa en un único macho, capturado a unos 15 m de profundidad en un lago anquihalino de la isla de Cabrera. Se propone un posible origen de la especie previo a la crisis de salinidad Messiniana.

Introduction

An adult male of a blind cirolanid isopod was trapped in the deeper layers (ca. 15 m) of the anchihaline lake of Cova des Burri (Cabrera, Balearic Islands). The lake has no known direct connection to the sea, and harbours a very interesting crustacean assemblage, consisting of the thermosbaenacean *Monodella argentarii* Stella, 1951 and the amphipods *Bogidiella balearica* Dancau, 1973 and *Salentinella* sp. in the upper, more or less freshened layers (Jaume, 1990, and unpublished obs.; Ginés & Ginés, 1977). The deeper, marine waters are occupied by *Psammogammarus burri* Jaume & García, 1992, an undescribed Heteromysini, 2 un-

described Copepoda Misophrioida, and unidentified Harpacticoida. We present here the description of the blind cirolanid as a new species of *Metacirolana* Nierstrasz, 1931 emend. Bruce, 1981. The known distribution of the genus, previously unrecorded from the Mediterranean region, is considerably expanded.

Taxonomy

Metacirolana Nierstrasz, 1931: 147, 162; Kussakin, 1979: 212; Bruce, 1981: 950, Figs. 1f–i, 2c–f, 3c–d, 4b, 5e,g; 1986: 31, Figs. 17–21.

Metacirolana ponsi n.sp. (Figs. 1–32).

Material examined. – Holotype (male 6.4 mm). Cova des Burri (Cabrera, Balearic Islands); cave entrance at 20 m a.s.l. just in front of Ses Bledes islet. Anchihaline lake occupying the bottom of the cave. Leg. Damià Jaume & Lluç Garcia, 13 Jan. 1991. Specimen partially dissected, deposited in the crustacean collection of the Museu de la Naturalesa de les Illes Balears (MNCM-130).

Description of holotype. – Eyes absent. Body (Fig. 1) without pigment, stout, flattened, 2.8 times as long as wide. Head acute anteriorly; posterolateral margins not overlapped by anterolateral lobes of pereonite 1. Pereonites 2 and 3 somewhat shorter than remaining pereonites. Coxae (Figs. 4, 5) with pointed posteroventral angles; those of pereonites 5 to 7 clearly broader than the rest; coxa 7 not

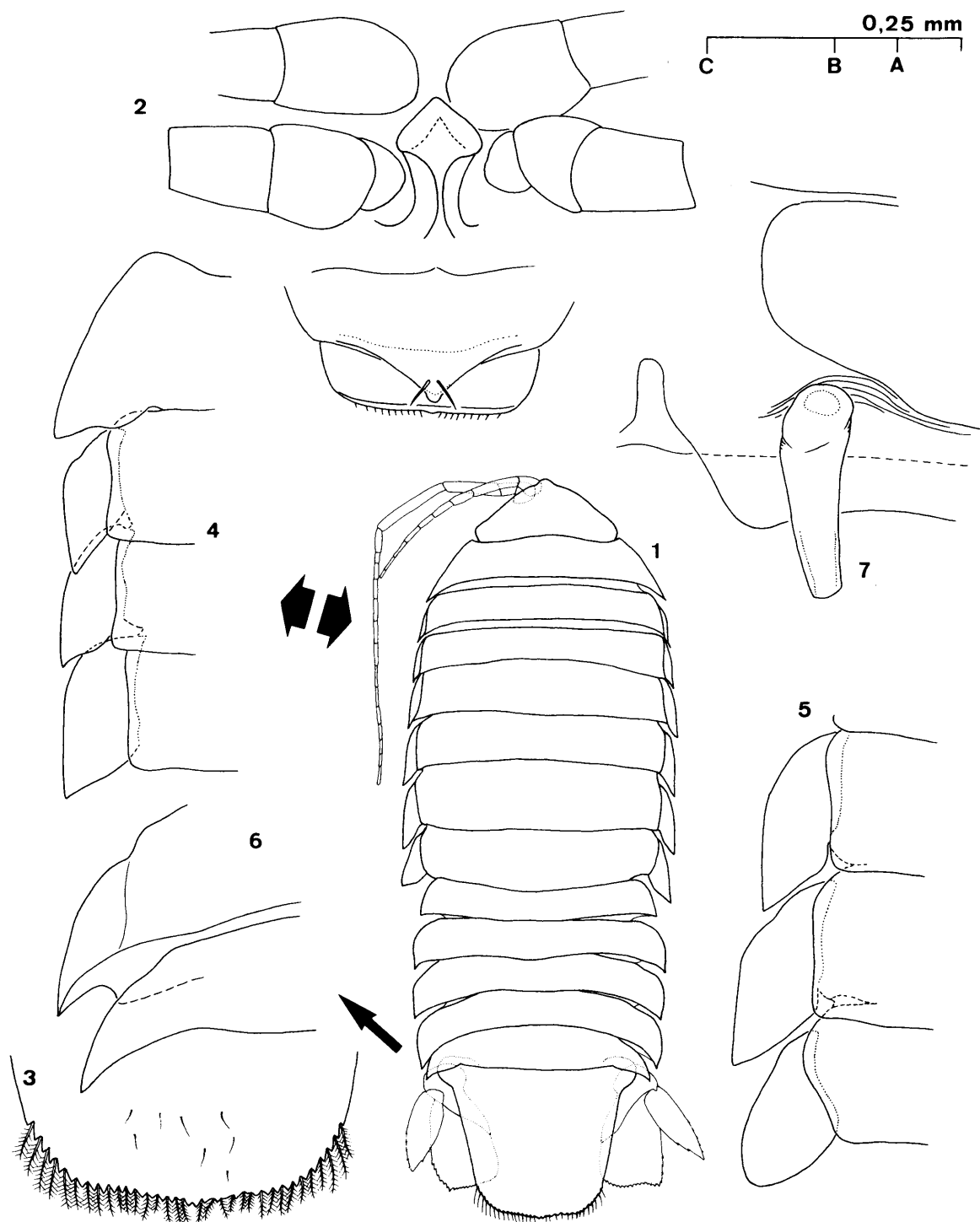


Fig. 1–7. *Metacirolana ponsi* n.sp. (♂ holotype): 1, body (scale A); 2, frontal lamina, clypeus and labrum (C); 3, distal margin of telson (B); 4, left coxae 1–4 (B); 5, left coxae 5–7 (B); 6, left margins of pleonites 4–5 (B); 7, left penis (C).

reaching posterior margin of pleonite 1; distinct furrows absent. Pleonites subequal in length, all completely visible in dorsal view, with epimera (Fig. 6) acutely produced. Pleotelson trapezoid, 1.3 times as long as wide, with serrate distal margin, slightly pointed in the middle, bearing a row of 33 short plumose setae inserted between denticles (Fig. 3); some short setae implanted sparsely on dorsal surface. Pereonites, pleonites and pleotelson lacking any kind of surface sculpture.

Frontal lamina (Fig. 2) with ventral swollen anterior margin, roughly triangular in profile, posteriorly narrowed. Clypeus (Fig. 2) with strongly produced posterior margin, apex constricted and narrowly rounded bearing 2 setae. Antennule (Fig. 21) not extending beyond pereonite 2, subequal in length to antennal peduncle; peduncle 4-segmented; flagellum 7-segmented, with 1-2-2-1-1-1 slender aesthetascs on segments 1 to 6, respectively; terminal segment lacking aesthetascs. Antenna (Fig. 22) not extending beyond pereonite 6; peduncle of 5 segments: proximal two partially fused, 5th clearly longer than 4th; flagellum 14-segmented, lacking aesthetascs.

Mandible (Figs. 8, 9) with accessory tooth of left incissor slightly developed. Lacinia mobilis absent. Spine row with 11 spines. Molar process finely serrated. Left palp segment 2 with 12 marginal (right palp with 11), and 2 medial setae; palp segment 3 about as long as segment 1, with row of 9 marginal setae.

Maxillule (Fig. 10) exopodite with 10 stout spines, mostly denticulated. Endopodite with 3 plumose spines and 2 short setae.

Maxilla (Fig. 11); Outer and medial lobes with 3 terminal glabrous setae; inner lobe with 3 long and 3 shorter glabrous setae, and 1 long and 1 shorter feathered setae.

Maxilliped (Fig. 12): Endite with 1 coupling spine and 4 distal plumose setae. Palp large; segment 1 squarish, bearing 1 seta; segment 2 with distal margin widened, bearing 2 + 1 setae; segment 3 the largest, with 6 + 2 setae; segment 4 squarish, with 5 + 1 setae; segment 5 smallest, bearing 8 setae.

Pereopods 1 to 3 similar, becoming progressively longer. Merus of all three with distal part anteriorly projecting. Pereopod 1 propodus slightly shorter

than that of pereopods 2 and 3. Pereopod 1 (Fig. 23) with 2 short blunt spines on posterior margin of propodus. Pereopods 2 and 3 (Figs. 24, 25) with 3 spines on posterior margin of propodus, distal spine glabrous, other 2 spines slightly denticulated. Pereopod 4 (Fig. 26) similar to pereopods 1–3, but more slender, ischium and carpus more elongate, and propodus less wide; no clear distinction between spines and setae can be made, this being valid for the following pereopods, too; there is a hypertrophied distal spine on anterior margin of carpus. Pereopods 5 to 7 (Figs. 27–32) slender, ambulatory; segments not flattened, increasingly longer, P7 slightly longer than P6 and attaining 54% of body length; armature well developed, spines present on distal angle of anterior margins, and along posterior margins of all segments except basis; 3–4 long, plumose setae along anterior margin of basis.

Penes (Fig. 7) implanted close to medial line of sternite 7, long, slightly shorter than the sternite, and separated from each other by roughly their own length.

Pleopod 1 (Figs. 13, 14): Basis twice as wide as long, with 1 seta on outer margin and 4 plumose coupling hooks and 2 plumose setae on medial margin; this pattern is the same in pleopods 2–4 (sometimes there are only 3 coupling hooks instead of 4); endopodite 2.5 times as long as wide, of subtriangular shape, bearing a distal row of 20 marginal plumose setae. Exopodite longer than endopodite, rhomboidal in shape, bearing a row of 26 marginal plumose setae. Pleopod 2 (Figs. 15, 16): Exopodite rhomboidal, longer than endopodite, with a row of 34 marginal plumose setae. Endopodite sub-rectangular, twice as long as wide, with a row of 15 marginal plumose setae. Appendix masculina straight, arising near base of endopodite and just reaching its apex; proximal two-thirds roughly 3 times wider than distal third, which is suddenly narrowed; medial margin of proximal two-thirds covered with setules, while transverse rows of 1–3 minute denticles are implanted subdistally on the terminal third. Pleopod 3 (Fig. 17): Exopodite ovoid and 2-segmented, with row of 34 marginal plumose setae on distal segment; only 1 seta on outer margin of proximal segment. Endopodite subrectangular, slightly shorter than exopodite, with 16

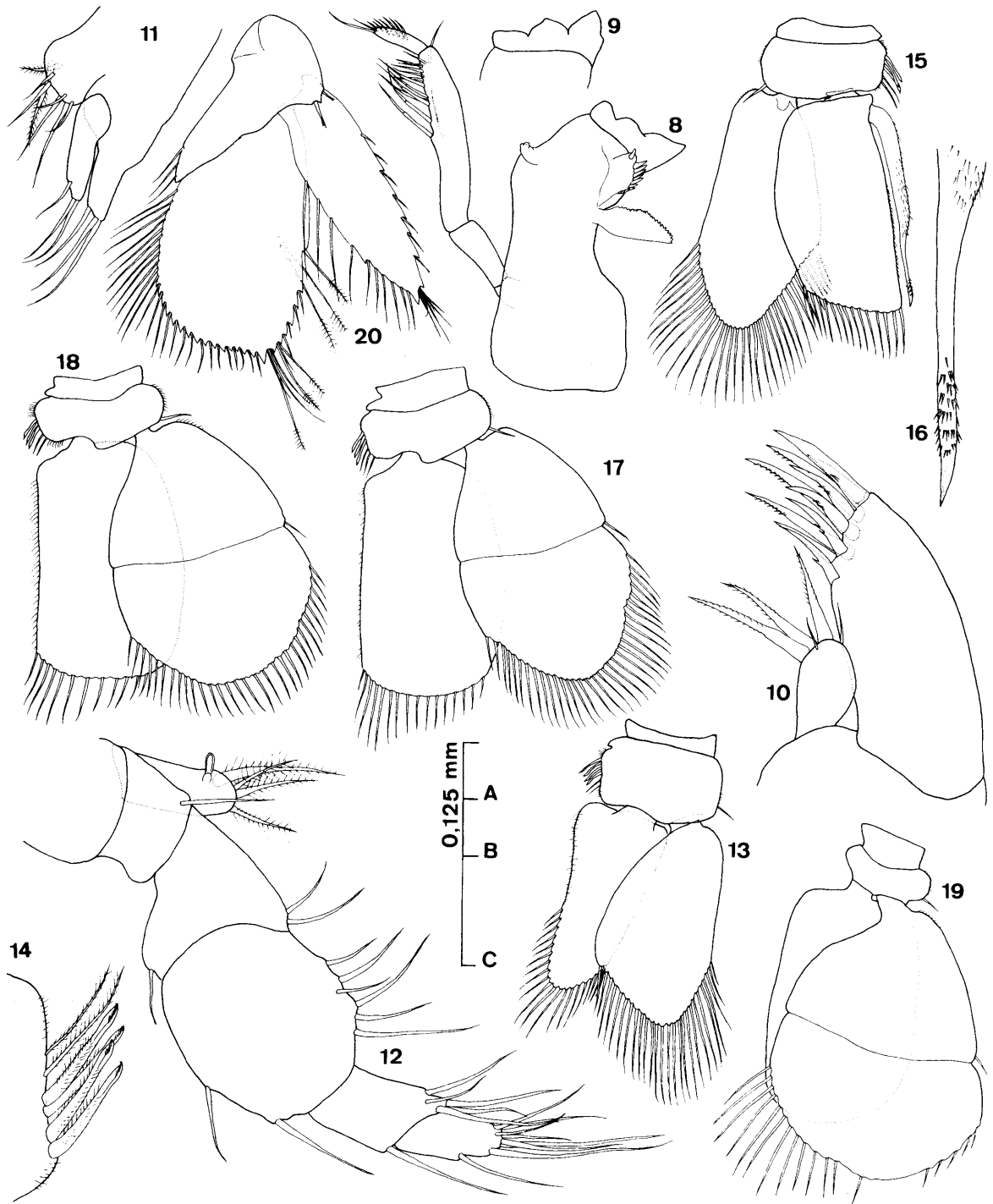


Fig. 8–20. *Metacirolana ponsi* n.sp. (♂ holotype): 8, left mandible (B); 9, incisor of right mandible (B); 10, maxillule (C); 11, maxilla (C); 12, maxilliped (C); 13, pleopod 1 (A); 14, armature of medial margin of basis segment 2 of pleopod 1 (C); 15, pleopod 2 (A); 16, appendix masculina (C); 17, pleopod 3 (A); 18, pleopod 4 (A); 19, pleopod 5 (A); 20, uropod (A). Secondary setation on setae of pleopods and uropod has been omitted.

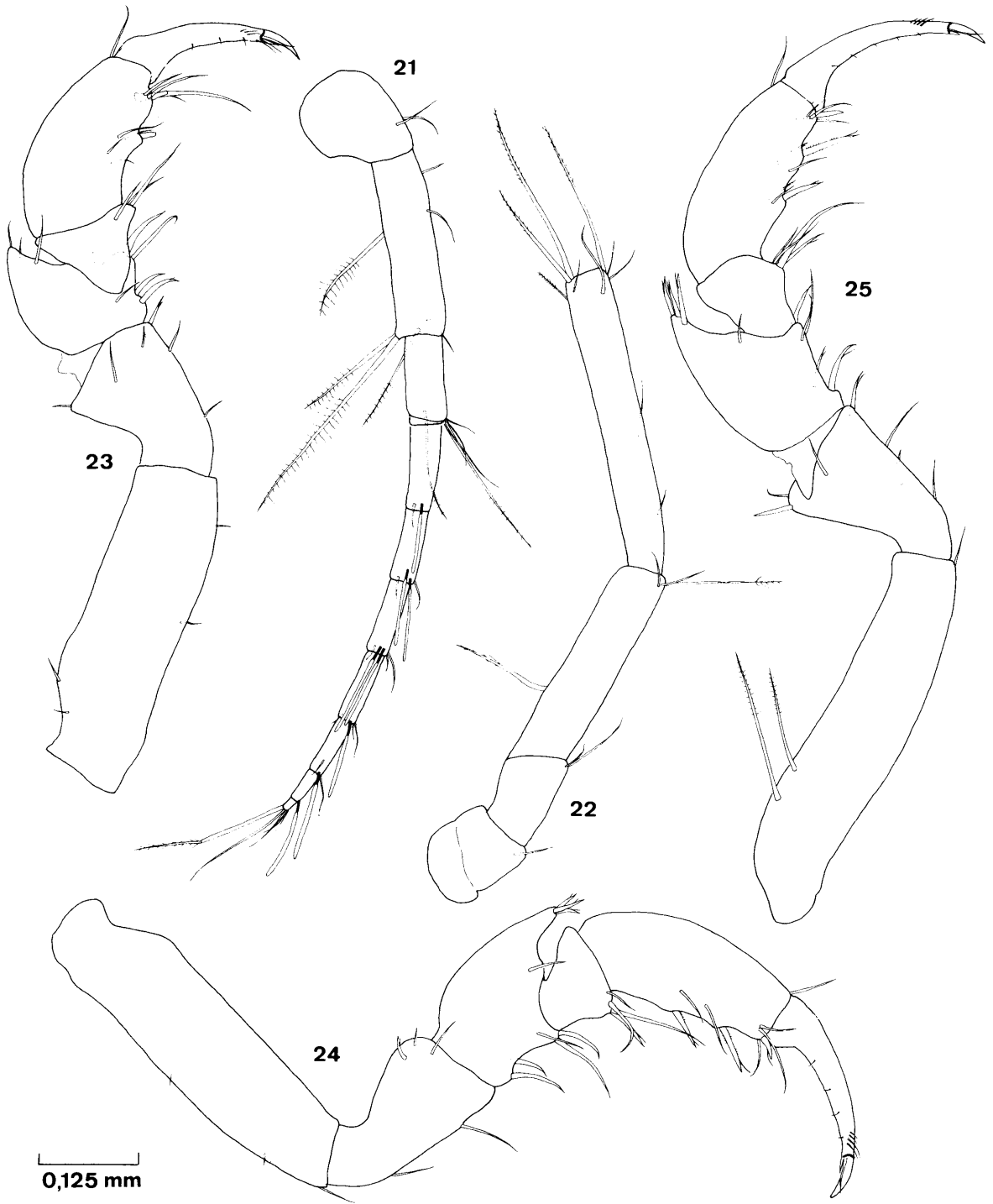


Fig. 21–25. *Metacirolana ponsi* n.sp. (σ holotype): 21, antennula; 22, basal articles of antenna; 23, pereopod 1; 24, pereopod 2; 25, pereopod 3.

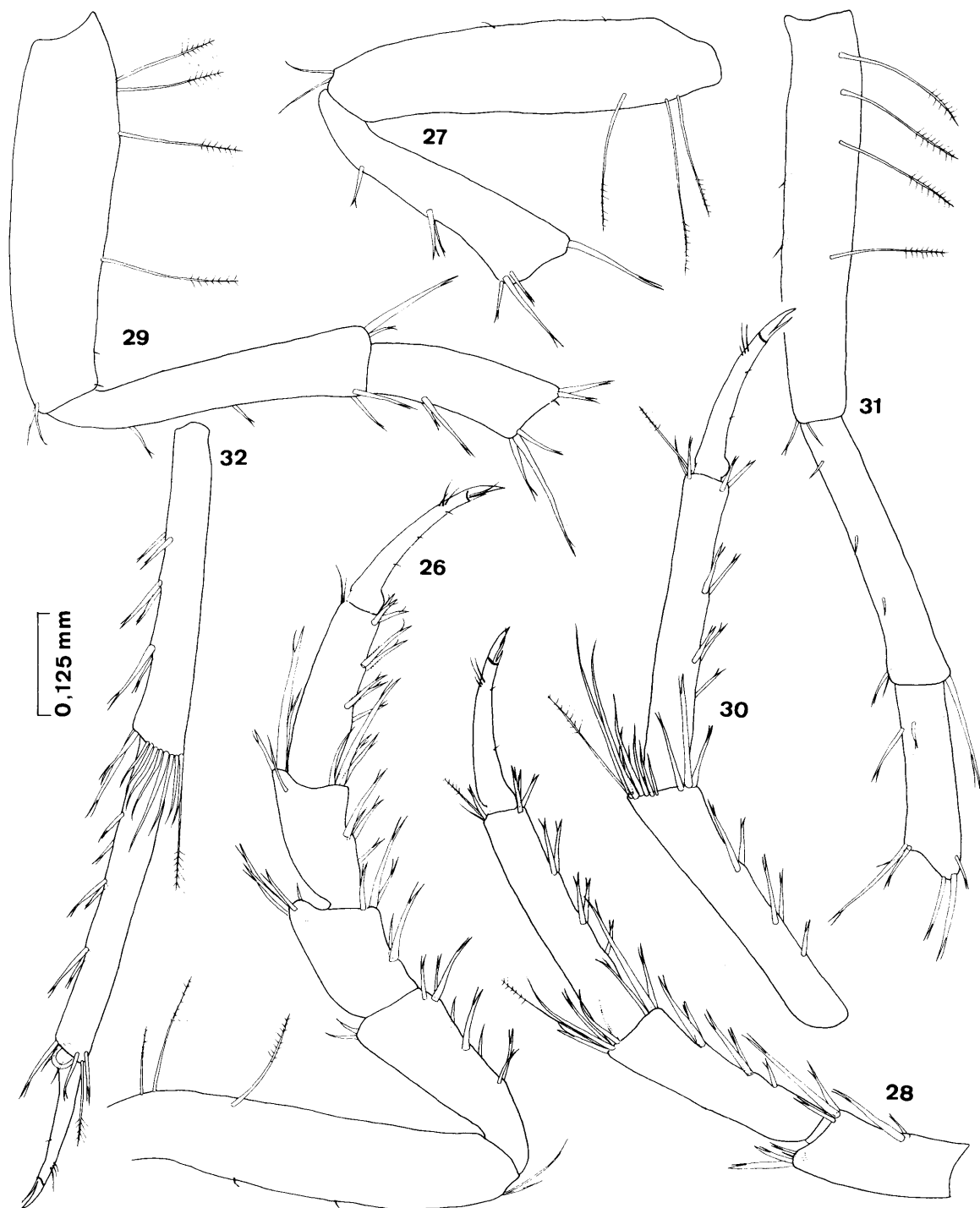


Fig. 25–32. *Metacirrolana ponsi* n.sp. (♂ holotype): 26, pereopod 4; 27–28, pereopod 5; 29–30, pereopod 6; 31–32, pereopod 7.

plumose setae on distal margin. Pleopod 4 (Fig. 18) similar to pleopod 3. Pleopod 5 (Fig. 19) lacking marginal armature on medial margin of basis; exopodite ovoid, 2-segmented, with 18 marginal setae on distal segment and 1 seta on outer margin of proximal segment; endopodite subrectangular, clearly shorter than exopodite, lacking any setation.

Uropod (Fig. 20) shorter than telson. Peduncle wedge-shaped, with 3 distolateral setae and 2 proximalateral spines. Endopodite subrectangular, with serrate distal margin; there are intercalary plumose setae between the denticles, of increasing length towards medial margin. A row of 11 long plumose setae along proximal two-thirds of medial margin. Three long, apically plumose setae and 3 slightly shorter glabrous setae on outer angle of distal margin. One long, apically plumose seta implanted roughly in middle of outer margin; other 2 similar setae on the dorsal side of endopodite not far from it. Exopodite shorter than endopodite, narrow, 3.3 times longer than broad, with acute tip; 7 spines along outer margin and 10 long plumose setae along medial margin; a tuft of 6 smooth setae on tip.

Etymology. – The species is dedicated to Guillem Pons, which kindly helped us during the field work.

Diagnostic characters and affinities. – The taxon from Cabrera agrees well with *Metacirolana* Nierstrasz, 1931, emend. Bruce, 1981. This is shown by the shape of its appendix masculina, maxillule, maxilla and maxilliped similar to those of other representatives of the genus. Also the antennule, antenna, pereopods and uropods agree with *Metacirolana*. Some characters such as the absence of eyes, shared only by *M. anocula* (Kensley, 1984), the somewhat more elongated body shape, the slender pereopods and the telson longer than the uropods differ from the marine species, but do not warrant the establishment of a separate genus (N. Bruce, in litt.).

Discussion

M. ponsi is the first known stygobiont *Metacirolana*. Its affinities are uncertain; *M. hanseni* (Bon-

nier, 1896), a bathyal oculate North Atlantic species, is its geographically closest relative, but among other characters, it differs in its very different armature and dentation of the distal margin of pleotelson (Bonnier, 1896). *M. fishelsoni* (Bruce & Jones, 1978), described from the Gulf of Aqaba (Red Sea), was originally recorded by Larwood (1940) from Mediterranean waters (Alexandria, Egypt); this species, which may be a Lessepsian migrant, differs from *M. ponsi* in the shape and armature of telson, among other characters (Bruce & Jones, 1978).

Metacirolana has a worldwide distribution (see Bruce, 1986 and references therein; Müller, 1991), and is particularly common on coral reefs. Absence of a species closely related with *M. ponsi* in Mediterranean waters, which could be considered as possible ancestor, and presence of well developed upper Miocene coral reef facies in the vicinity of Cabrera (Pomar, 1991) suggest that *M. ponsi* was a relictual pre-Messinian species. This hypothesis has been advanced elsewhere referring to other stygobiont marine taxa of Cabrera (Jaume & García, 1992).

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