

# Stygofauna of the Canary Islands, 15 Marine interstitial Isopoda Asellota of the superfamily Gnathostenetroidoidea

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**Abstract :** Gnathostenetroidoidea were not recorded before from the eastern Atlantic. In lava debris (sand, gravel) in the mediolittoral zone of Tenerife, Canary Islands, two new Isopoda belonging to this superfamily are encountered. One belongs to a new genus, *Dignatroides*, closely related to the Mediterranean genus *Gnathostenetroides*. The other belongs to the genus *Caecostenetroides*, previously known from the Mediterranean and Japan. An unidentifiable member of the superfamily (only known in the female sex) is found in anchihaline cave waters of the Canarian island of Hierro.

**Résumé :** Jusqu'ici on ignorait la présence d'Isopodes Gnathostenetroidoidea dans l'Atlantique occidentale. Dans des débris de lave (sable, gravier) de la zone médiolittorale de Ténérife, Iles Canaries, deux espèces nouvelles appartenant à cette superfamille ont été découvertes. L'une appartient à un genre nouveau, *Dignatroides*, apparenté au genre *Gnathostenetroides* de la Méditerranée. L'autre se range dans le genre *Caecostenetroides*, connu auparavant de la Méditerranée et du Japon. Un membre non déterminable de la superfamille (connu seulement par le sexe femelle) a été trouvé dans une grotte anchihaline de l'île de Hierro aux Canaries.

## INTRODUCTION

The superfamily Gnathostenetroidoidea Kussakin, 1967 (correct. Bowman & Abele, 1982), the group with the correct but awkward name as Wilson, 1987 : 258 puts it, is one of the higher isopod taxa only recently discovered (Amar, 1957). It embraces two families, (1) Gnathostenetroididae with 4 marine genera : *Gnathostenetroides* Amar, 1957 (with 1 species), *Caecostenetroides* Fresi & Schiecke, 1968 (with 2 species), *Marsiella* Fresi & Scipione, 1980 (= *Maresia* Fresi, 1973, preocc.) (with 1 species), and *Neostenetroides* Carpenter & Magniez, 1982 (with 1 species) ; and (2) the Protojaniridae, with 3 freshwater genera : *Protojanira* Barnard, 1927 (with 2 species), *Anneckella* Chappuis & Delamare, 1957 (objective syn. *Protojaniroides* Fresi, Idato & Scipione, 1980) (with 4 species), and *Enckella* Fresi, Idato & Scipione, 1980 (with 1 species, divided into 2 subspecies). All these taxa, with the exception of *Gnathostenetroides* and *Marsiella*, are stygobiont (see Henry *et al.*, 1986).

The freshwater taxa are known from Southern Africa and Sri Lanka ; the marine taxa from the Mediterranean basin, the Bahamas, the Galápagos Islands, and Japan.

Surprisingly enough, members of this rarely recorded superfamily turned up in intertidal lava debris and coarse sand in Tenerife and in an anchihaline cave in Hierro (both in the Canary Islands). In sorting these materials, it was assumed that members of the isopod family Microparasellidae, more in particular of the genus *Microcharon*, were concerned,

because of the striking external resemblance to *M. monnioti* Bocquet, 1970. Closer inspection showed that the Canarian material has two free pleonites (only one in Microparasellidae), and a quite distinctive morphology of the male first pleopods : (a) larger than and completely covering the other pleopods, and (b) consisting of one fused basal segment and two free, foliaceous (operculiform) rami, representing the exopodites of the left and right appendage.

#### Systematic part

#### *Dignatroides* n. gen.

Differential diagnosis.- *Gnathostenetroidoidea*, *Gnathostenetroididae*, resembling *Gnathostenetroides* Amar, 1957 (abbreviated *Gn.*), but body narrower, linear, almost vermiform. Pereionites about as long wide (much wider than long in *Gn.*). Antenna 1 6-segmented, but segment 4 vestigial (longer than wide in *Gn.*). Mandible ♂ : pars incisiva consisting of two incurved tusk-like processes (one, outcurved tusk in *Gn.*); toothed incisor absent (present in *Gn.*). Mandible ♀ : normal (with 4-dentate incisor, without tusks). Medial side of maxillipedal palp segment 2 lobate (non-lobate in *Gn.*). Pleopod 2 ♂ with medially setose sympodite (naked in *Gn.*) Pleopod 2 ♀ almost without mediolateral notch (strongly notched in *Gn.*). Both rami of pleopods 3 and 4 (♂, ♀) equally wide and long (exopodite narrowed in pl. 3 and 4, and reduced in pl. 4 of *Gn.*).

Type species.- *Dignatroides leptosoma* n. sp.

Etymology.- The generic name is a contraction of the Greek words *di* (= two) and *gnathos* (= jaw), in combination with the ending of *Stenetroides*, alluding to the bifid mandibular stylet in the male. The specific name *leptosoma* (from the Greek words *leptos* = narrow or thin, and *soma* = body) refers to the slender, vermiform body shape.

#### *Dignatroides leptosoma* n. sp.

Material.- 1 ♂ holotype, 2 ♀♀ paratypes. Station 87/31 : Tenerife, boulevard of Punta del Hidalgo (UTM coordinates CS 36987x316120), in washings of gravel and sand from rockpools in the mediolittoral zone, 23 Apr. 1987. ZMA Is. 105.389. Accompanying fauna Amphipoda (Ingolfiellidae, Melitidae, *Psammogammarus*), flatworms, Ostracoda, Oligochaeta.

1 ovig. ♀, 1 ♂ (paratypes), Stn. 88/604 : same locality as previous station, Bou-Rouch biophreatical pump (see Bou, 1975), 0.50 m under substrate surface in sulfide-rich layer ; 19 Dec. 1988. ZMA Is. 105.395.

1 ♂ (paratype), Stn. 88/628 : Tenerife, Punta del Hidalgo, between cape Punta del Hidalgo and Punta el Guingo (UTM coord. CS 37050x316175) ; rockpool at high-water mark ; Bou-Rouch pump, 0.20 m under substrate surface, in very fine en dense sediments ; 6 Jan. 1989. ZMA Is. 105.396.

Description.- Body length (frontal margin cephalon to distal margin pleotelson) 3.32 mm ( $\delta$  holotype) or 2.86 mm ( $\varphi$  paratype with oostegites). Body (Fig. 1a) about 8 times as long as wide, almost colourless, eyes not found. Midfrontal margin of cephalon with single, rounded rostral process.

Antenna 1 (Fig. 1c) 6-segmented; segment 1 longest; segment 4 vestigial, wider than long; segments 5 and 6 with 1 aesthetasc.

Antenna 2: broken off in all specimens except in 1  $\delta$  paratype; in this specimen, left appendage (Fig. 6e) with 34 segmented flagellum, right appendage (Fig. 7d) with 17-segmented flagellum (probably due to previous injury).

Upper lip (Fig. 2b) with proximolateral lobe; distal part bell-shaped; distal margin truncate.

Mandibles sexually dimorphic and contralaterally asymmetrical. Male mandibles (Fig. 3a-b) with strongly developed, incurved apical process ("elephant's tusk"), projecting beyond frontal margin of cephalon. A smaller, seemingly articulated, second process is implanted at base of "tusk". Just proximad of smaller process, a triangular, medial tooth is found. Left mandible  $\delta$  with 4-dentate lacinia mobilis (2 teeth large, 2 minute), left lacinia  $\varphi$  3-dentate (2 teeth large, 1 small). Right mandible ( $\delta$ ,  $\varphi$ ) without lacinia. Spine row of 8 (left,  $\delta$ ) to 12 (right,  $\delta$ ), or of 5 (left,  $\varphi$ ) to 8 (right,  $\varphi$ ) elements. Palp ( $\delta$ ,  $\varphi$ ) 3 segmented (Fig. 3e); segm. 1 with 2 distal setae; segm. 2 with 2 long and 2 short ventral spines; segm. 3 sickle-shaped, with ventral row of ca. 15 spinules and ca. 4 longer terminal setae. Female mandibles (Fig. 3c-d) without 2 tusk-like processes; pars incisiva normally developed, left 5-dentate, right 4-dentate; small triangular tooth at base of incisor present as in  $\delta$ .

Lower lip (Fig. 2c) deeply cleft.

Maxilla 1 (Fig. 4a) consisting of 2 lobes. Outer lobe with 12 incurved distal spines, which are unilaterally denticulated; number of denticles fluctuating between 4 and 10. Inner lobe with 3 distal spines and several mediiodistal setae.

Maxilla 2 (Fig. 4b) consisting of 3 lobes. Outer lobe with 5 slender distal spines (2 finely denticulate). Central lobe with 5 slender distal spines (1 finely denticulate). Inner lobe with 4 denticulate distal spines and several distal and mediiodistal setae.

Maxilliped (Fig. 2d) with unarmed, tapering epipodite. Endite with straight medial margin (with 4 coupling hooks) and rounded lateral margin; terminal margin truncate, with 3 short, heavy spines. Palp 5-segmented; segm. 2 with mediiodistal, triangular projection.

First leg (gnathopod) (Fig. 5a) larger and much heavier than pereopods 2 to 7 (note that figs. 5a = P1, 4c = P2, and 5b = P7 are drawn to same scale). Proximal segments (ischium, merus, carpus) with more and longer setae than in *Gnathostenetroides*. Carpus > merus. Propodus elongate-rectangular, more than twice as long as wide, longer than basis. One large palmar angle spine; palmar margin slightly convex, slightly oblique, with 5 slender, denticulated spines. Dactylus with 6 denticulated teeth on inner margin and 4 long setae on outer margin; unguis distinctly less than half as long as dactylus, unarmed.

Pereopods 2 (Fig. 4c) and 3 subsimilar; dactylus with 2 subequal claws and an inner spine. This spine is represented by a weak triangular process in pereopods 4 to 7 (Fig. 5b). P4-P7 gradually slightly heavier than P2.



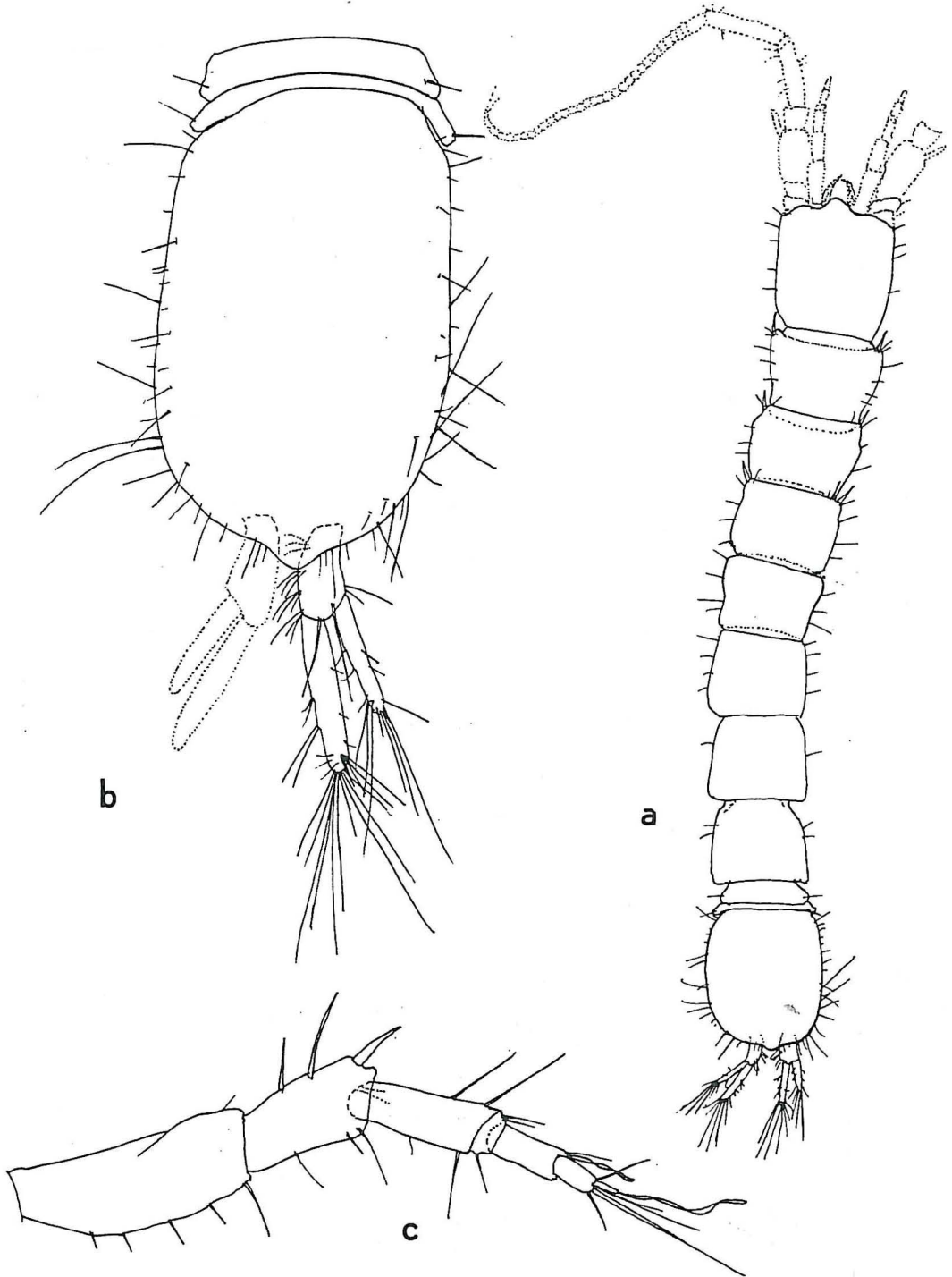


Fig. 1 : *Dignatroides leptosoma* n. gen., n. sp. (♂ holotype). a, body, dorsal (scale 1) ; b, posterior end of body, dorsal (2) ; c, antenna 1 (3). Scales on Fig. 13.

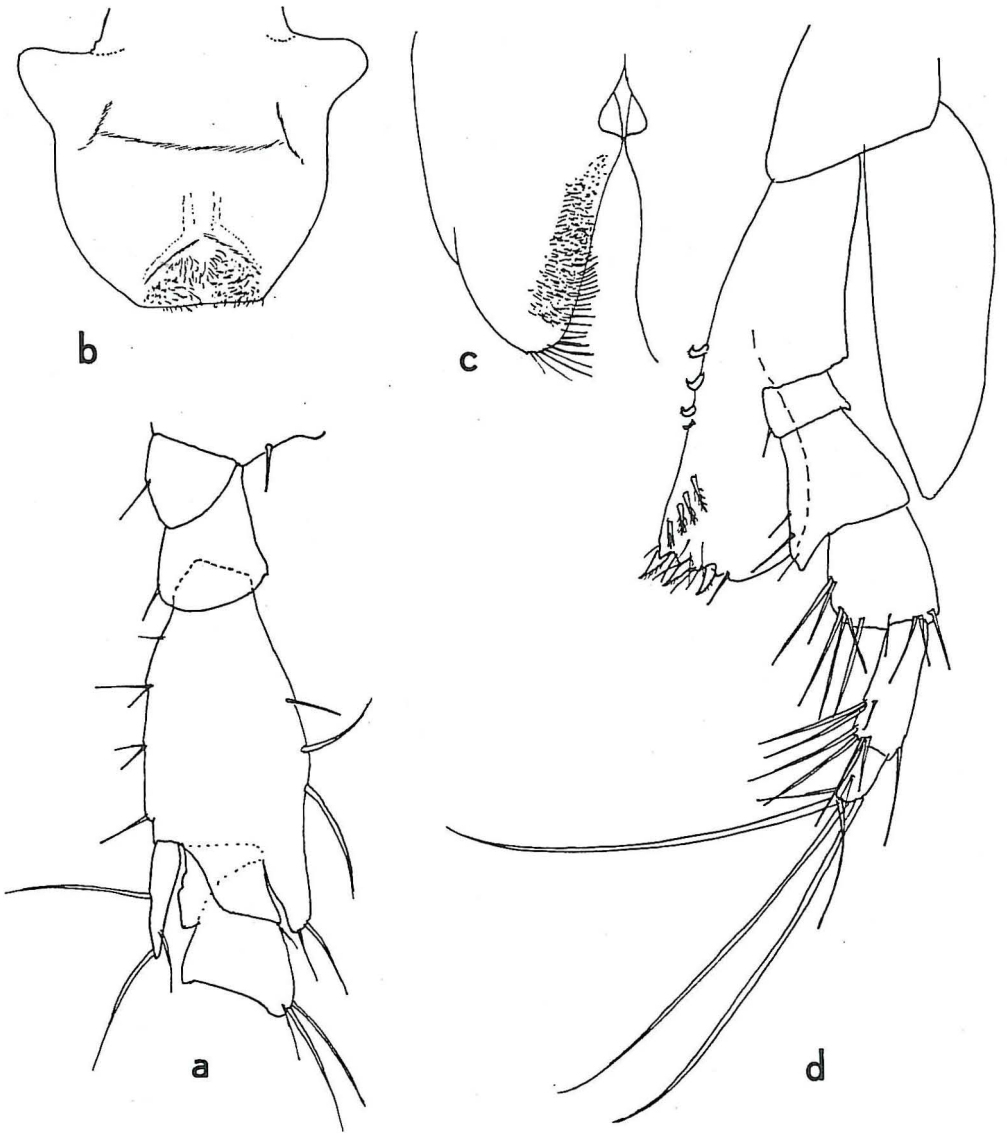


Fig. 2 : *Dignatroides leptosoma* n. gen., n. sp. (♂ holotype). a, basal part of antenna 2 (scale 3) ; b, upper lip (3) ; c, lower lip (4) ; d, maxilliped (3). Scales on Fig. 13.

Two free pleonites (Fig. 1a), short but well-developed, not enclosed by pereionite 7 ; pleonite 2 slightly wider than pleonite 1. Pleotelson (Fig. 1b) shield-like, with inconspicuous, rounded distomedial process ; lateral margins with numerous longer and shorter setae.

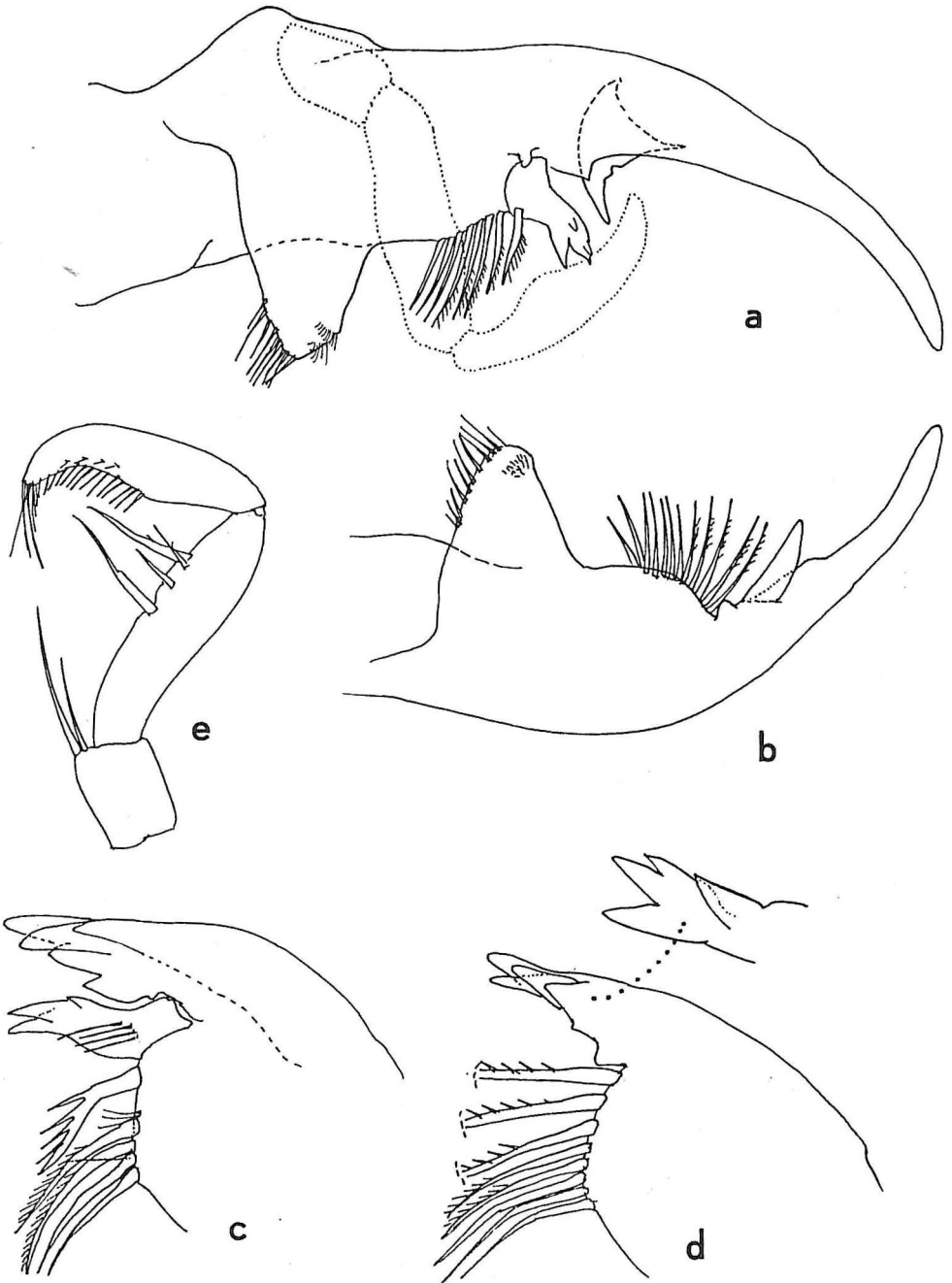


Fig. 3 : *Dignatroides leptosoma* n. gen., n. sp. (a, b, e : ♂ holotype ; c, d : ♀ paratype). a, left mandible (scale 4) ; b, right mandible (4) c, left mandible (5) ; d, right mandible and pars incisiva seen from different angle (5) ; e, mandible palp (4). Scales on Fig. 13.

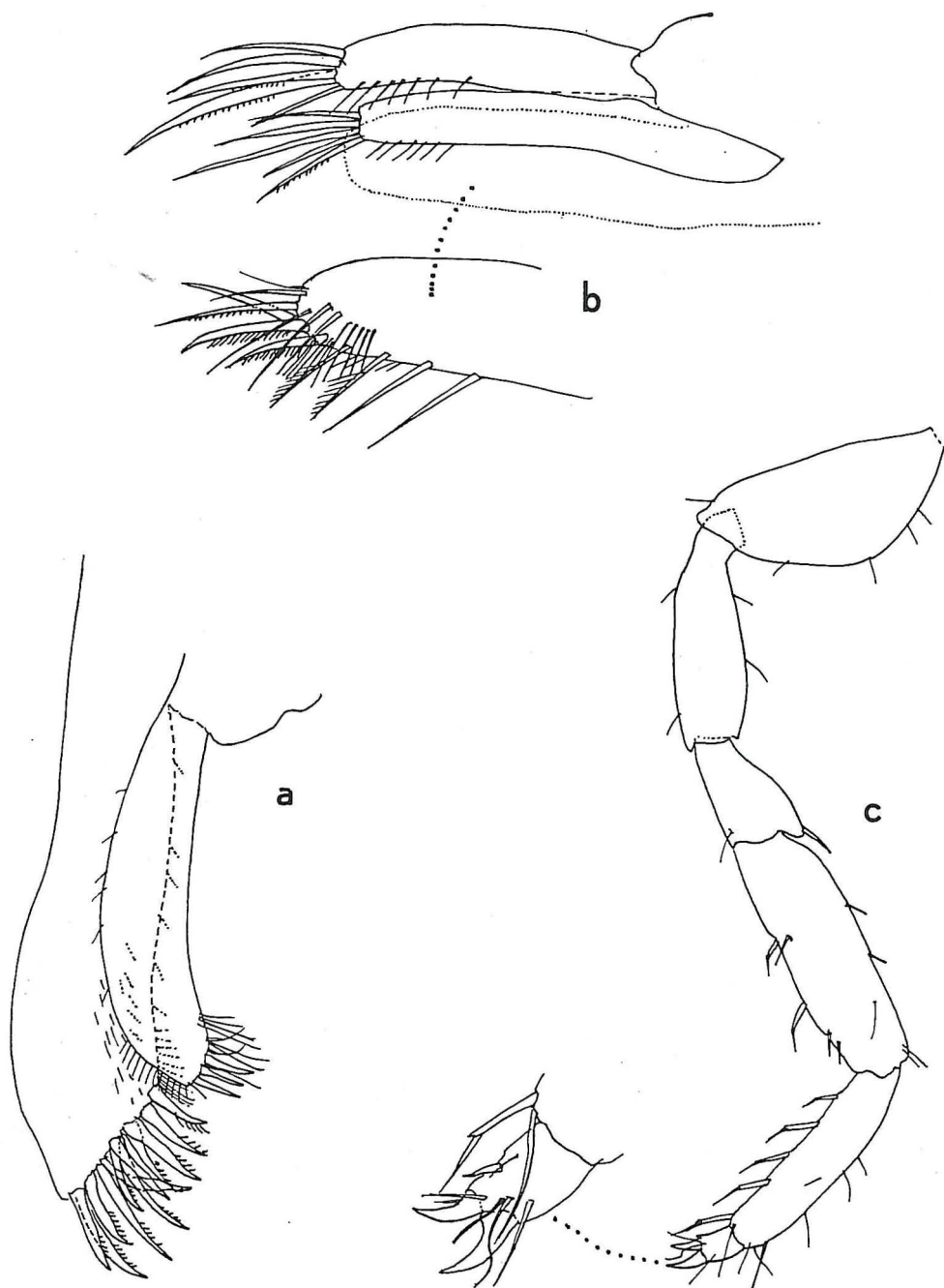


Fig. 4: *Dignatroides leptosoma* n. gen., n. sp. (♂ holotype). a, maxilla 1 (scale 6) ; b, maxilla 2 (6) ; c, pereiopod 2 (3). Scales on Fig. 13.

Pleopod 1 lacking in ♀ ; large and operculiform in ♂ (Fig. 6a) covering all remaining pleopods, consisting of small sympodite and deeply cleft, though basally fused, rami. Pleopods 2 (♂) (Fig. 6b) separate; basipodite with large medial lobe, armed with 4 setae ; endopodite small, 2-segmented (segm. 2 with 1 medial seta) ; exopodite 2-segmented (segm. 1 with huge medial expansion, unarmed; segm. 2 with 5 distal spines). Pleopods 2 (♀) fused, operculiform, with inconspicuous medioterminal notch (Fig. 6c). Pleopod 3 (♂, ♀) with 2-segmented exopodite and 1-segmented endopodite; exopodite pointed (♂, Fig. 7a) or rounded (♀, Fig. 6d), with 1 small distal seta and 1 small proximolateral seta (♂, ♀) ; endopodite with 3 plumose distal setae. Pleopods 4 and 5 not sexually dimorphic. Pleopod 4 biramous (Fig. 7b), exopodite 2-segmented, with 3 plumose distal setae ; endopodite 1-segmented, with minute distal setule. Pleopod 5 (Fig. 7c) uniramous, unsegmented, with 1 plumose distal seta.

Uropod (Fig. 1b) : peduncle and rami richly setose, exopodite about 3/4 as long as endopodite.

Female : Eggs (Fig. 6f) large, elongate-elliptical ; only 2 eggs in marsupium.

Remarks.- Although the morphology of the male mandibles is only approached by *Gnathostenetroides*, numerous details separate the Canarian taxon from its Mediterranean relative. Judging from its unpigmented, vermiform body (reminiscent of the Microparasellidae), the Canarian taxon leads an interstitial life: this corresponds well with its habitat, in sands and gravel. *Gnathostenetroides* (unique species *Gn. laodicense* Amar, 1957) has a wider body, of a more "normal" Asellote shape, and was found on an exposed rocky coast of Syria (Amar, 1957) and in phytobenthos of the Channel of Sicily (Fresi & Mazzella, 1974).

*Caecostenetroides* Fresi & Schiecke, 1968  
*Caecostenetroides ruderalis* n. sp.

Material.- 1 ♂ holotype, 1 ♀ allotype and 69 paratypes. Station 88/586 : Tenerife, Punta del Hidalgo, in front of urbanización Tesesinte (UTM coordinates CS 36990 x 316146) ; bank of coarse lava gravel in intertidal rockpool (partly submerged, partly emerged at low tide) ; Bou-Rouch biophreatical pump (see Bou, 1975, for a description of this apparatus), 0.75-1.00 m under substrate surface ; 1 Dec. 1988. ZMA Is. 105.387. Accompanying fauna Amphipoda (Lysianassidae, Melitidae, *Idunella*, *Psammodromus*), flatworms, Isopoda (*Jaera*-like), Oligochaeta, Ostracoda.

5 specimens. Stn. 88/600: Punta del Hidalgo, in front of bar "7 Chorros" (UTM coord. CS 36990x316115) ; rockpool at high-water mark ; Bou-Rouch pump 0.40 m under substrate surface ; 22 Dec. 1988. ZMA Is. 105.393.

14 specimens. Stn. 88/607 : Punta del Hidalgo, between cape Punta Hidalgo and Punta el Guingo, rockpool at high-water mark (UTM coord. CS 37050x316175) ; Bou-Rouch pump, 0.50 m under substrate surface : 20 Dec. 1988. ZMA Is. 105.391.



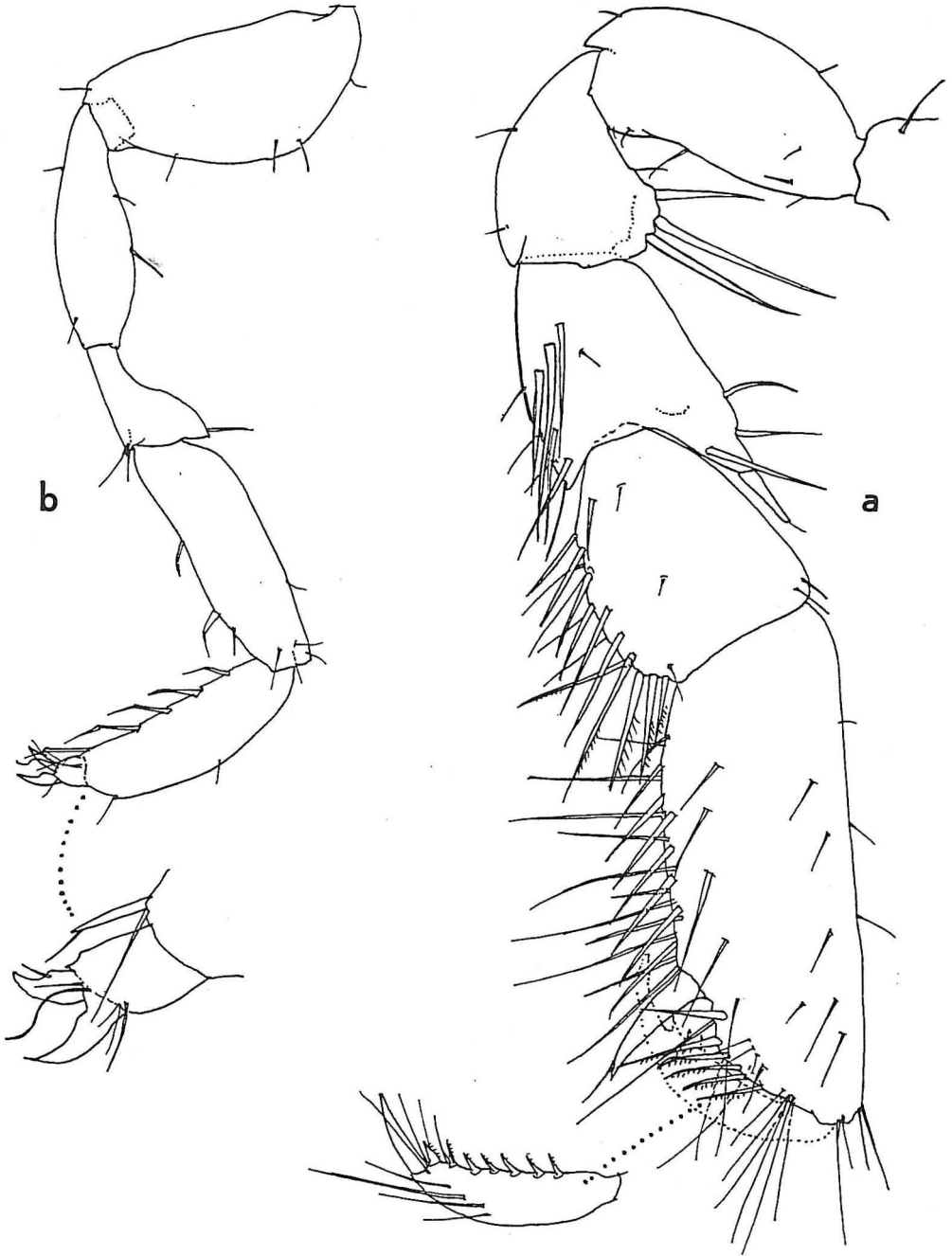


Fig. 5 : *Dignatroides leptosoma* n. gen., n. sp. (♂ holotype). a, gnathopod 1 and claw (scale 3) ; b, pereopod 7 (3). Scales on Fig. 13.

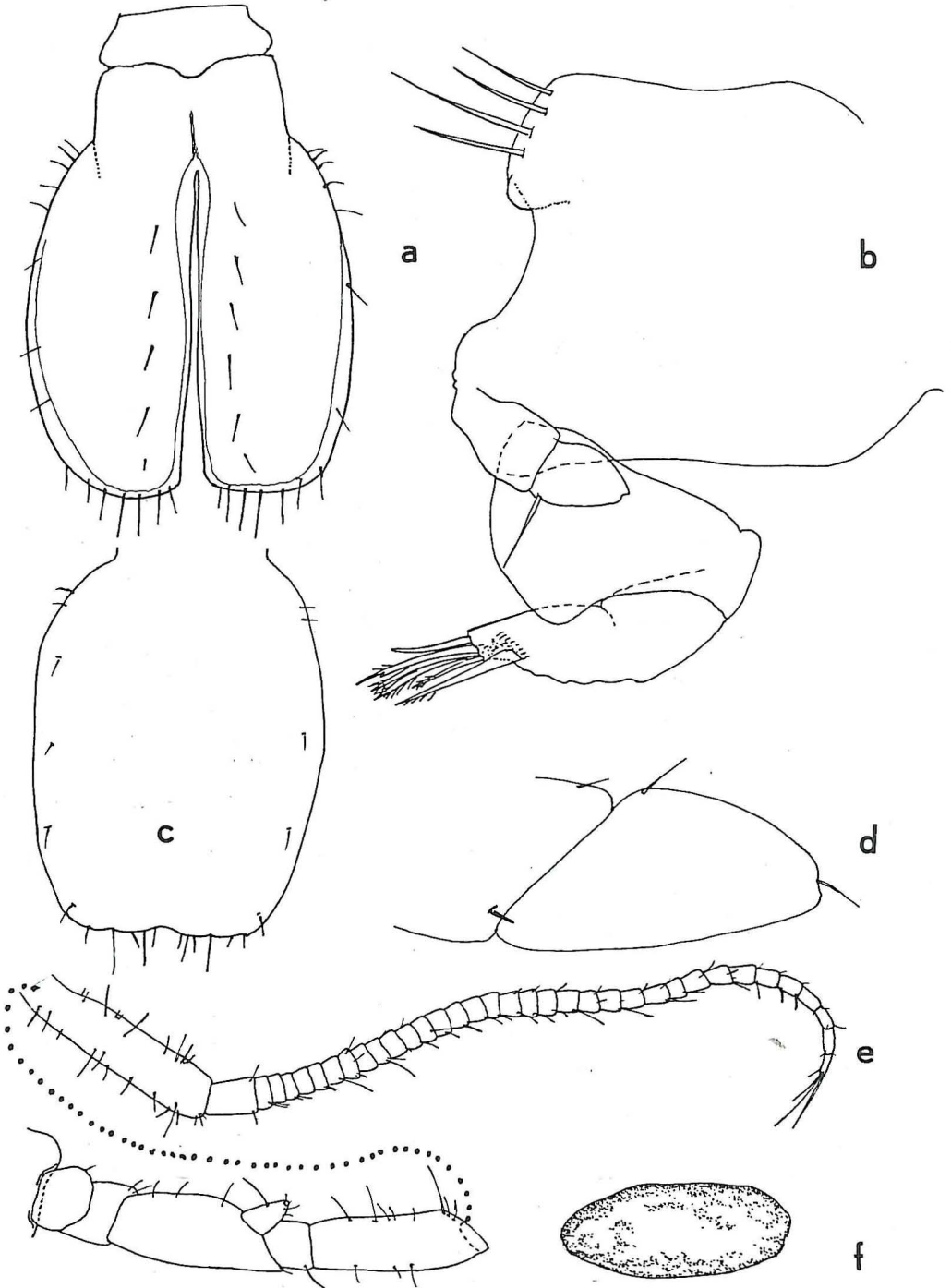


Fig. 6: *Dignatroides leptosoma* n. gen., n. sp. (a-b: ♂ holotype, c, d, f: ♀ paratype; e, ♂ paratype). a, pleopod 1 (scale 2); b, pleopod 2 (6); c, pleopod 2 (2); d, exopodite of pleopod 3 (4); e, left antenna 2 (2); f, egg (2). Scales on Fig. 13.

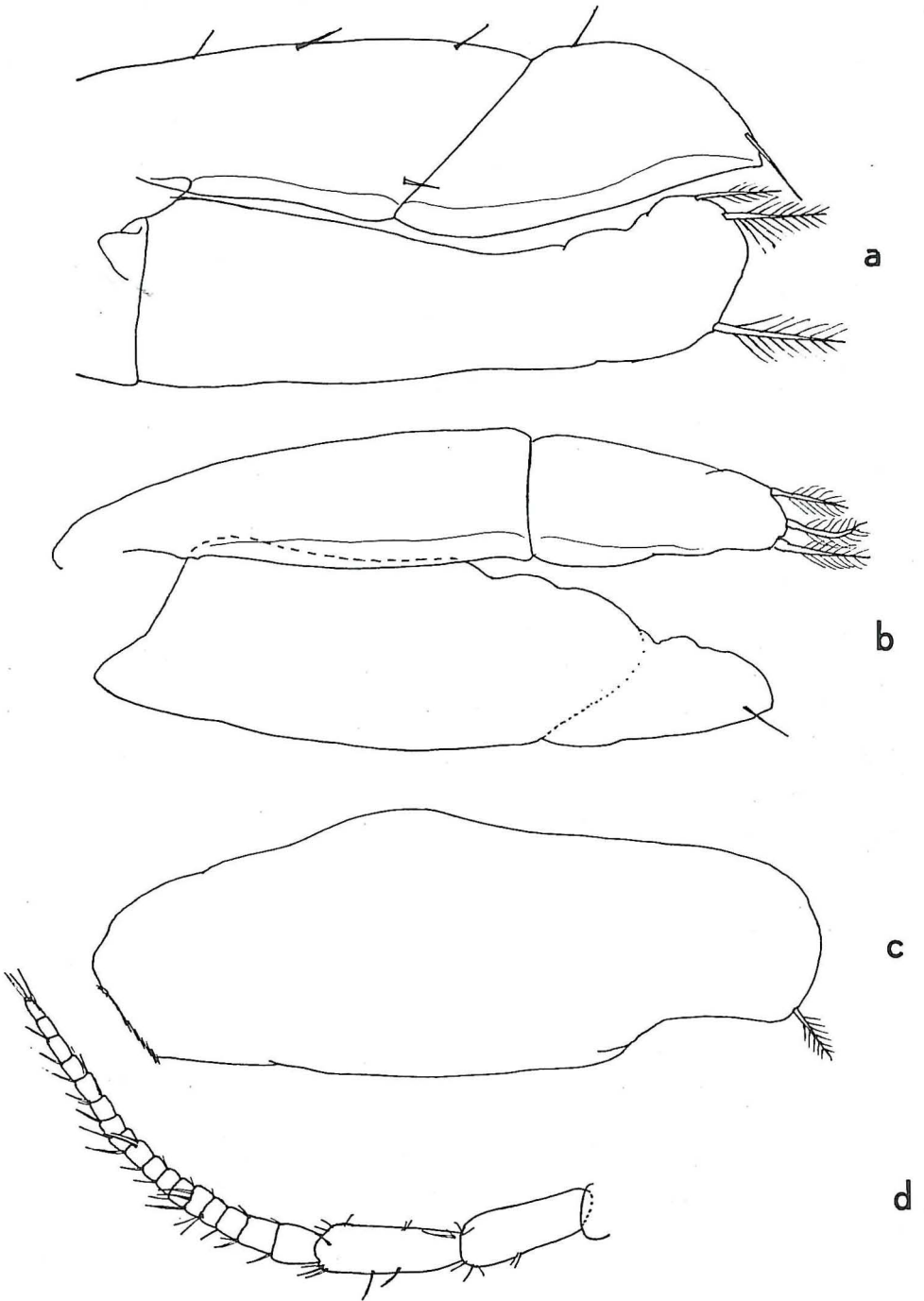


Fig. 7 : *Dignatroides leptosoma* n. gen., n. sp. (a-c, ♂ holotype, d, ♂ paratype). a, pleopod 3 (scale 4) ; b, pleopod 4 (4) ; c, pleopod 5 (4) ; d, right antenna 2 (2). Scale on fig. 13.

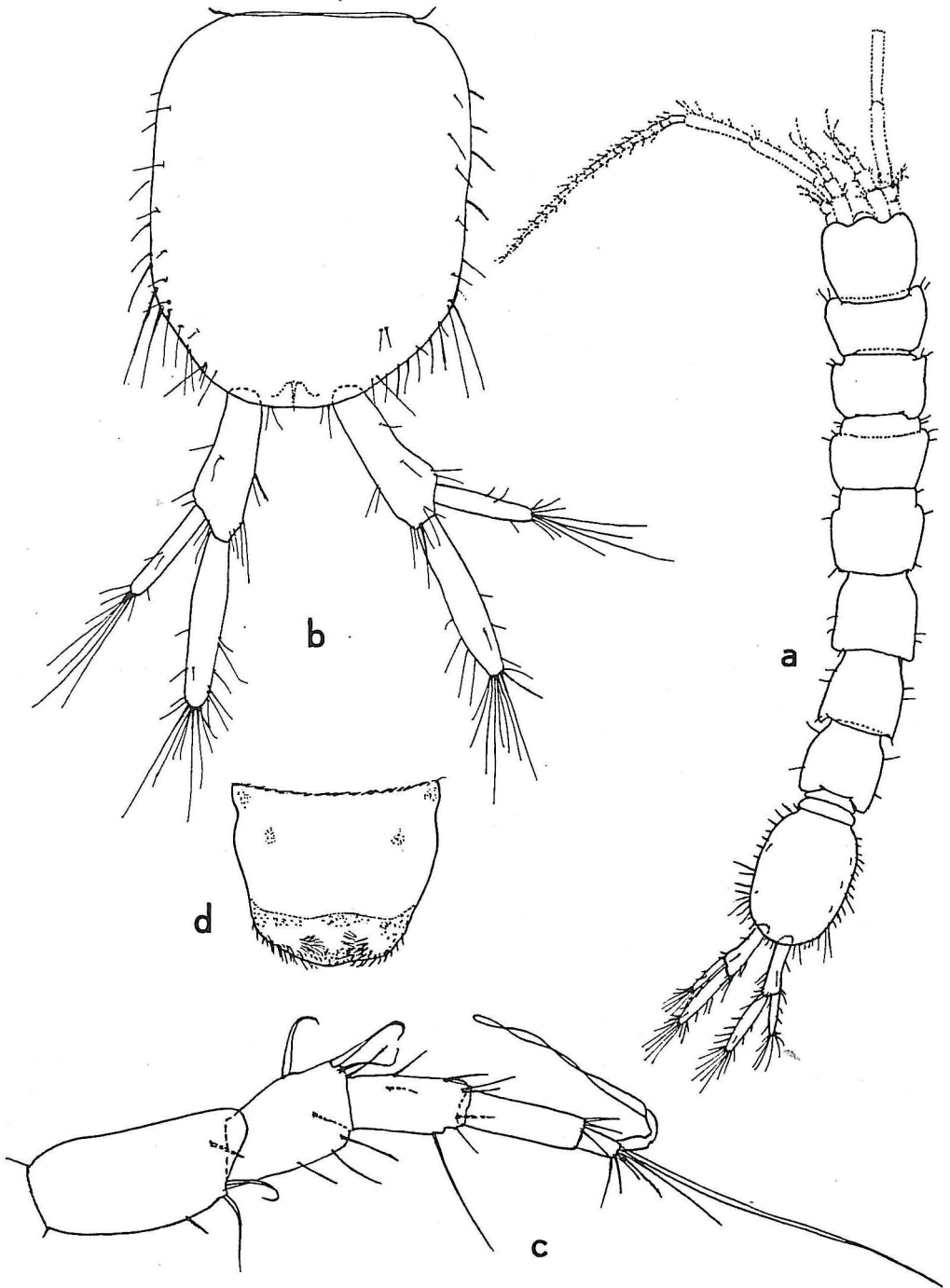


Fig. 8 : *Caecostenetroides ruderalis* n. sp. (a : ♂ paratype ; b-d : ♀ paratype). a, entire-animal, dorsal (scale 1) ; b, pleotelson and uropods, dorsal (2) ; c, antenna 1 (4) ; d, upper lip (4). Scales on Fig. 13.



1 specimen. Stn. 88/611 : Punta del Hidalgo, mediolittoral rockpool, in mid-tidal range, at cape Punta del Hidalgo (UTM coord. CS 37015x316165) ; Bou-Rouch pump, 0.40 cm under substrate surface ; 22 Dec. 1988. ZMA Is. 105.392.

Description.- Body length (excl. antennae and uropods) 2.9-3.3 mm. Body (Fig. 8a) about 10x as long as wide. Blind. Colour white. Rostral plate small, truncate. Pereionites 1 to 3 wider than long, 4 to 7 about as wide as long. Lateral margins of pereionites with a few setules only (no spines). Two narrow free pleonites in front of pleotelson. Pleotelson (Fig. 8b) ca. 1 1/2 x as long as wide, with numerous marginal setules.

Antenna 1 short, reaching to halfway peduncle segment 5 of A2, 5-segmented (Fig. 8c). Peduncle segm. 3 with small, slender, 1 segmented exopodite ; peduncle segments 4 and 5 slender. Flagellum of adults 20- to 29-segmented.

Labrum slightly wider than long (Fig. 8d). Labium cleft over most of its length (Fig. 9c).

Mandibles without marked sexual dimorphism. Left mandible (Fig. 10a,c) : incisor 5-dentate ; lacinia mobilis with 4 distal teeth and 1 proximal tooth ; 4 plumose post-incisor elements. Molar truncate, finely toothed, armed with some fine setae. Palp segm. 1 about 70 % of length of segm. 2 ; segm. 2 with 2 flat and 2 small spines ; segm. 3 sickle-shaped, with 2 rows of ventral spines, some 15 spines in longest row, and 2 distal spines.

Right mandible (Fig. 10b) : lacinia absent, 7 post-incisor elements.

Maxilla 1 (Fig. 9d) : outer lobe with 13 distal, pectinate spines ; number of teeth on these spines fluctuating between 9 (lateralmost spines) to 11 (central spine). Inner lobe distally much narrower than proximally ; 6 distal and subdistal setae and several setules.

Maxilla 2 (Fig. 10d) consisting of 3 lobes ; outer and central lobe each with 4 pennate spines ; inner lobe with 6 distal setae, 5 strong mediobasal setae, and 2 fine medioproximal setae.

Maxilliped (Fig. 10e) : epipodite elongate oval, unarmed but for some setules. Endite with truncate distal margin ; distal and distomedial margins with 9 spines ; 2 oblique rows, each of 3 setae ; 4 minute medial coupling hooks. Palp 5-segmented ; segments 1 to 3 expanded, segments 4 and 5 narrow.

Gnathopod 1 subchelate (Fig. 11a), shorter but much heavier than pereopod 2. Carpus elongate-trapezoidal, ventrally with 5 curved, finely pectinate spines and 8-10 setae. Propodus oval ; 7 ventral, curved, pectinate spines ; 2 palmar angle spines ; proximal spine (Fig. 11d) with 3 coarse teeth and subapical setule ; distal spine hook-shaped, with some 8 comb-teeth. Palmar margin (Fig. 11c) with 3 larger spines. Dactylus with 4 inner spines ; each spine with 4 saw-teeth (Fig. 11e) ; unguis about 1/3 of dactylus, unarmed.

Pereopods 2 (Fig. 11b) to 7 (Fig. 12a) gradually increasing in length ; basis with swollen anterior margin ; propodus with long, crooked spines (as long as propodal diameter). Dactylus subrectangular, longer than wide, armed with 1 inner spine, a sigmoid distal seta, some smaller distal setules, and 2 laterodistal setae. Two claws, inner one markedly smaller than outer one.

Pereopods 2, 3, and 4 of similar morphology. Pereopods 5, 6, and 7 also very similar, but with slightly different armature : P5 carpus with 3 posterior setae (2 in P2-P4) ; P5 with 6 crooked spines on propodus (5 on P2-P4 and P6-P7).

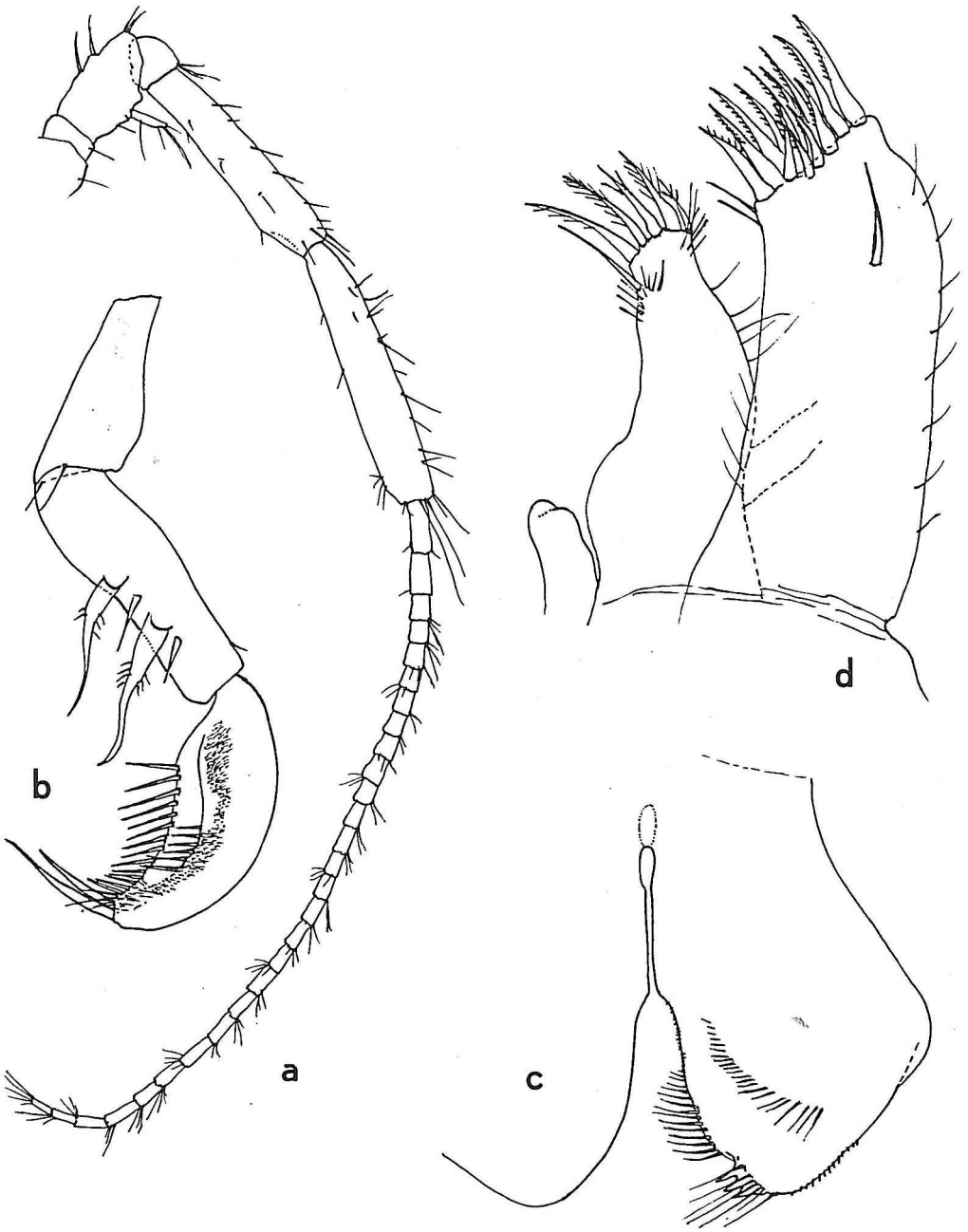


Fig. 9 : *Caecostenetroides ruderalis* n. sp. (a, c : ♀ paratype ; b, d : ♂ paratype). a, antenna 2 (scale 2) ; b, mandible palp (6) ; c, lower lip (6) ; d, maxilla 1 (5). Scales on Fig. 13.

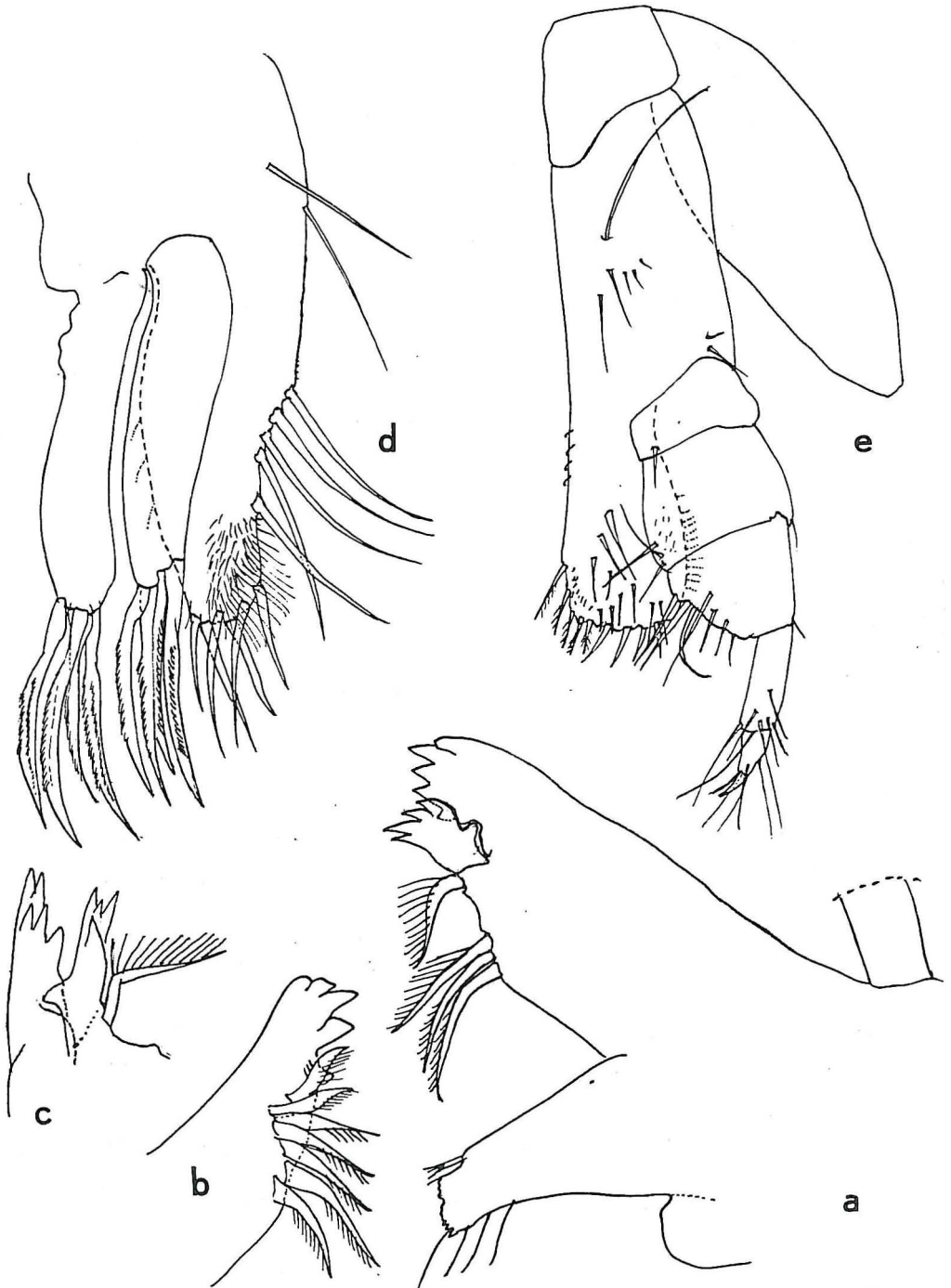


Fig. 10 : *Caecostenetroides ruderalis* n. sp. (a-b : ♀ paratype ; c-e : ♂ paratype). a, left mandible (scale 5) ; b, pars incisiva of right mandible (5) ; c, pars incisiva of left mandible (5) ; d, maxilla 2 (5) ; e, maxilliped (4). Scales on Fig. 13.

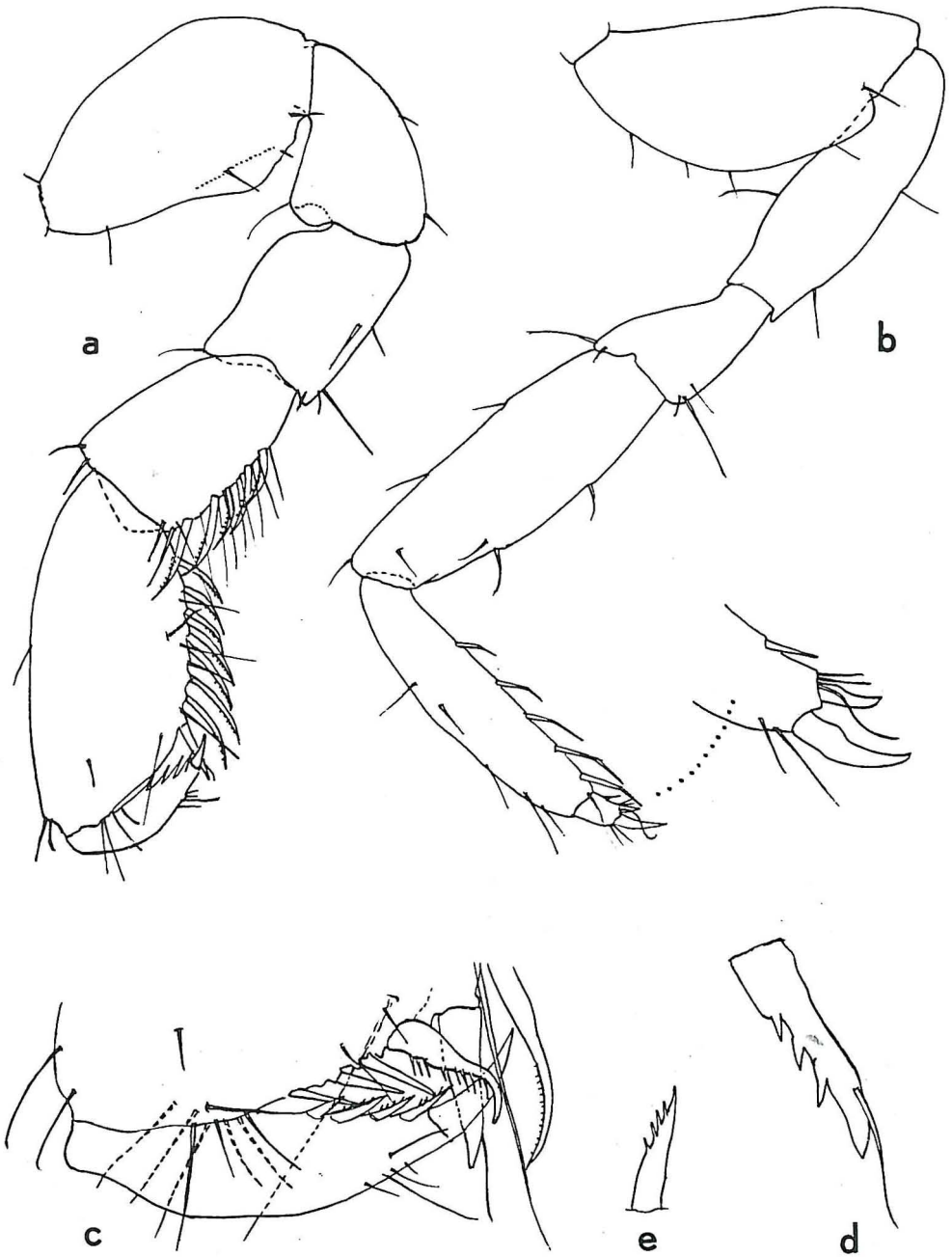


Fig. 11 : *Caecostenetroides ruderalis* n. sp. (♀ paratype). a, gnathopod 1 (scale 4) ; b, pereopod 2 (4) ; c, palma of gnathopod 1 (5) ; d, proximal palmar spine of P1, more strongly magnified ; e, inner spine of claw of P1, more strongly magnified. Scales on Fig. 13.



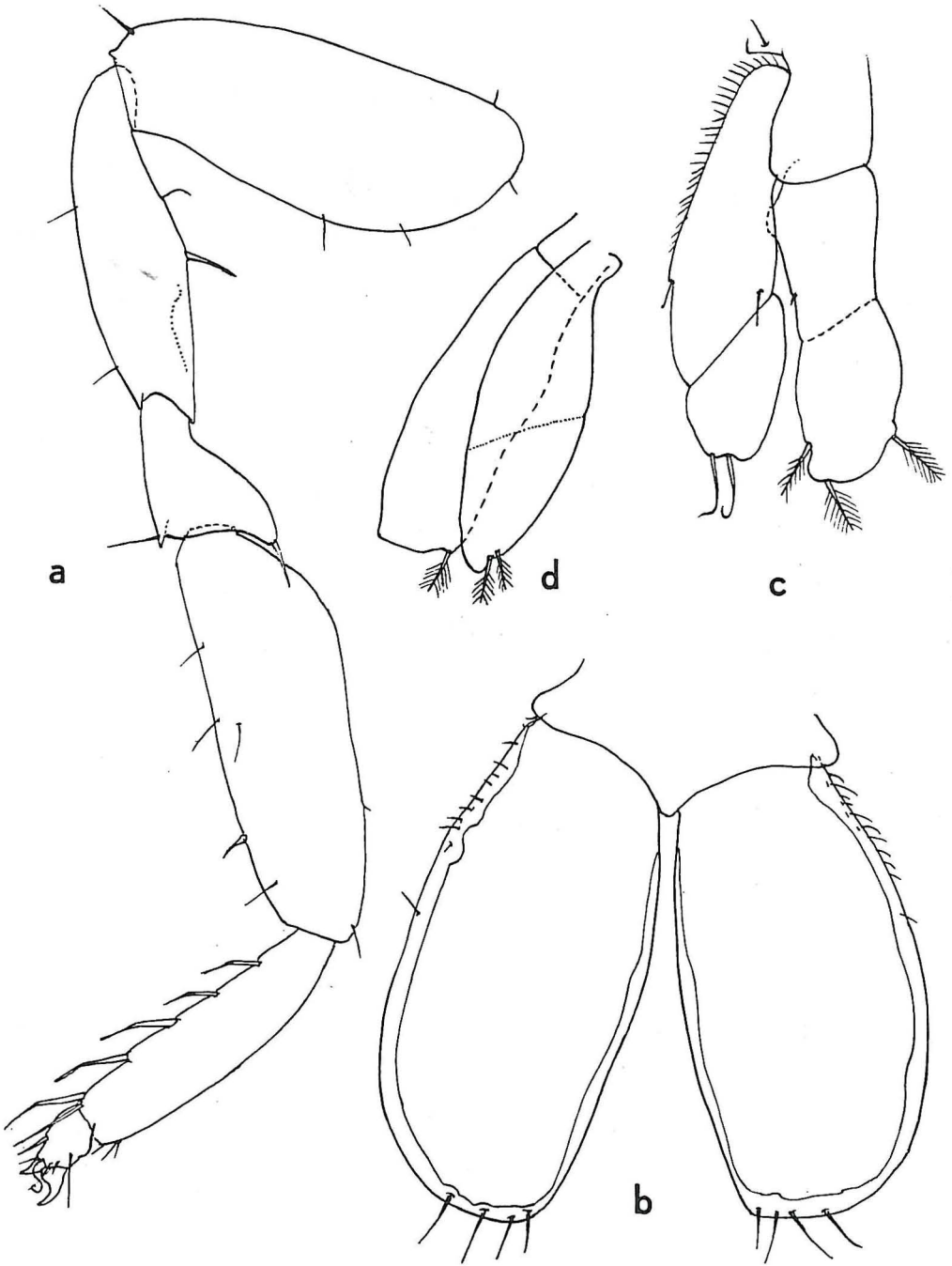


Fig. 12 : *Caecostenetroides ruderalis* n. sp. (a : ♀ paratype ; b-d : ♂ paratype). a, pereiopod 7 (scale 4) ; b, pleopod 1 (3) ; c, pleopod 3 (3) ; d, pleopod 4 (3). Scales on Fig. 13.

Pleopods of male : Pleopod 1 (Fig. 12b) filling almost entire room under pleotelson, covering all other pleopods ; sympodite with median point, unarmed; exopodites broadly oval ; lateroproximally with row of minute setules ; distally truncate with 4 longer setules. Pleopod 2 (Fig. 13 b,c) with elongate, unarmed basipodite; doorknob-shaped 2-segmented exopodite, armed with 1 curved or sigmoid distal seta ; endopodite 2-segmented, segments subequal in length ; segm. 1 with medial incurvation (fitting into a bulge of basipodite), and lateral swelling (fitting into the space between tip of exopodite and tip of endopodite) ; segm. 2 distally wider than proximally, distal margin markedly truncate ; a large S-shaped spine inserts subdistally and projects far beyond the truncate distal margin. Pleopod 3 (Fig. 12c) : exopodite 2-segmented with 2 distal setules ; endopodite vaguely 2-segmented, with

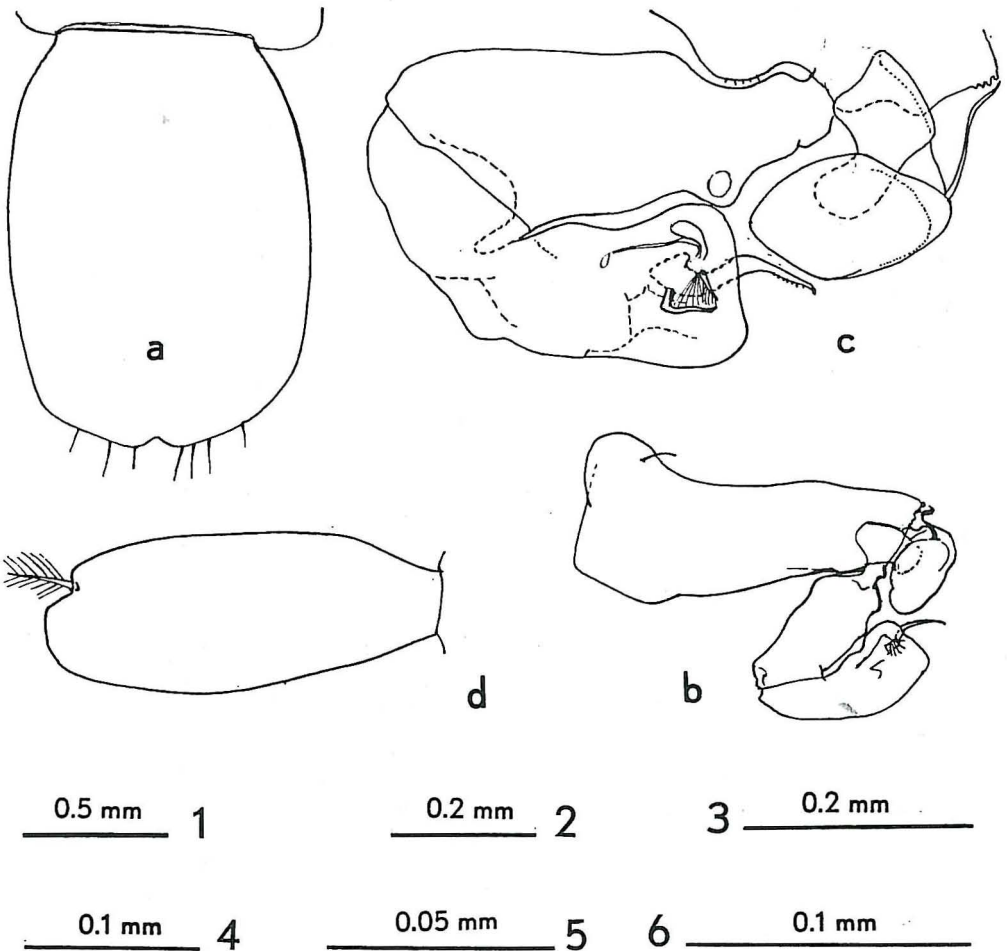


Fig. 13 : *Caecostenetroides ruderalis* n. sp. (a : ♀ paratype ; b-d : ♂ paratype). a, pleopod 2 (scale 2) ; b, pleopod 2 (3) ; c, distal part of pleopod 2 (6) ; d, pleopod 5 (3).

3 short plumose setae in distal part. Pleopod 4 (Fig. 12d) : exopodite vaguely 2-segmented, as long as 1-segmented endopodite; exopodite with 2 short, plumose distal setae ; endopodite with truncate distal margin, bearing 1 small plumose seta. Pleopod 5 (Fig. 13d) about as large as pleopod 4, 1-segmented, uniramous, with 1 small, plumose seta.

Pleopods of female: Pleopod 1 absent. Pleopod 2 (Fig. 13a) forming shield-like operculum with shallow mediobasal notch ; 3 to 4 setules on each side of notch. Other pleopods as in male.

Uropod (Fig. 8b) almost as long as pleotelson. Basipodite widening distally, slightly shorter than endopodite. Exopodite about 2/3 of length of endopodite, with 8 distal setae, and 3 marginal setules. Endopodite with 8 distal setae and several marginal setules.

Remarks.- The new species differs as follows from its congeners :

From *C. ischitanum* Fresi & Schiecke, 1968 in (1) the mandibular pars incisiva with 5 teeth (versus 4) ; (2) the outer lobe of maxilla 1 with 13 spines (vs. 8) ; (3) the P1 dactylus with 4 teeth (vs. 3) ; (4) the claws of P2 to P7 of unequal length (vs. subequal) ; (5) the propodus of P2 to P7 with 5 or 6 long spines (vs. 2 to 3) ; (6) the long uropod, which is only slightly shorter than the pleotelson (vs. much shorter) ; (7) the pleopod 2 ♂ with an elongate basipodite (vs. widened) ; (8) the second exopodite segment of pleopod 2 ♂, which bears a long seta (vs. short seta) ; (9) the second endopodite segment of pleopod 2 ♂, which bears a strongly projecting distal spine (vs. hardly projecting).

From *C. nipponicum* Nunomura, 1975 in (1) the 4-dentate lacinia mobilis (vs. 2-dentate) ; (2) the outer lobe of maxilla 1 with 13 spines (vs. 8 to 10) ; (3) the widened segments 1 to 3 of the maxillipedal palp (vs. narrow) ; (4) pleopod 1 ? with wider rami : (5) exopodite segment 2 of pleopod 2 ♂ wide and swollen (vs. narrow) ; (6) endopodite segment 2 of pleopod 2 ♂ robust, with widened tip (vs. stick-like) and armed with a strong sigmoid spine (vs. several subequal spines) ; (7) the basipodite of the uropod which is shorter than the endopodite (vs. subequal).

Etymology.- The specific name, *ruderalis*, is derived from the latin word *rudus* (= rubble) and means "inhabiting rubble", alluding to habitat in intertidal lava rubble.

#### Gnathostenetroididae gen.? sp.?

Three female specimens belonging to this family were collected in lava debris of an anchihaline cave, Jameos del Puerto, in the village of La Restinga on the island of Hierro, 13 Nov. 1988 (Stn. 88/560). In absence of males, it is not possible to identify this material.

#### ACKNOWLEDGMENTS

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