



## Two new species of deep-water caprellids (Crustacea: Amphipoda) from northeastern Brazil

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**Abstract:** Two new caprellid species, *Liropus nelsonae* sp. nov. and *Parvipalpus colemani* sp. nov. are described and illustrated based on specimens of deep-sea samples collected from northeastern Brazil. *Liropus nelsonae* is the only species in the genus that has pereopod 5 three-articulate. *Parvipalpus colemani* can be distinguished from the remaining species of *Parvipalpus* mainly by the presence of abdominal appendages and a mandibular palp with 7-10 apical setae. *Liropus nelsonae* and *Parvipalpus colemani* represent the southernmost record of the genera *Liropus* and *Parvipalpus* respectively. A key to the world species of the genera *Liropus* and *Parvipalpus* and an up-to-date list of the deep-sea caprellidea are included.

**Résumé:** Deux nouvelles espèces de caprellidés (Crustacea: Amphipoda) du nord-est du Brésil. *Liropus nelsonae* sp. nov. et *Parvipalpus colemani* sp. nov. sont décrites d'après des spécimens récoltés dans les eaux profondes au large du nord-est du Brésil. *Liropus nelsonae* est la seule espèce du genre à posséder le cinquième périopode triarticulé. *Parvipalpus colemani* peut être séparé des autres espèces du genre essentiellement par la présence d'appendices abdominaux et d'un palpe mandibulaire garni de 7 à 10 soies apicales. *Liropus nelsonae* et *Parvipalpus colemani* sont actuellement les espèces de *Liropus* et *Parvipalpus* les plus méridionales. Une clé d'identification des espèces des genres *Liropus* et *Parvipalpus* au niveau mondial, ainsi qu'une liste des Caprellidea des eaux profondes, entièrement mise à jour, sont également proposées dans ce travail.

**Keywords:** Amphipoda, Caprellidea, *Liropus*, *Parvipalpus*, deep-sea, new species.

### Introduction

Caprellids are found frequently in deep-sea collections, and the number of species known to inhabit deep waters has grown considerably during the last four decades (McCain,

1966; McCain & Gray, 1971; Laubitz & Mills, 1972; Laubitz, 1991a, b; Laubitz & Sorbe, 1996). Nevertheless, caprellids from deeper waters have been less investigated than have those from shallow waters.

The absence of caprellid studies in the deep-sea is specially significant along the Brazilian coast. Recently, Wakabara et al. (1991) reviewed the gammaridean and caprellidean fauna from Brazil and pointed out that despite

the extensive surveys in the area, studies of Amphipoda from deeper waters and soft bottoms were still lacking. In their revision, Wakabara et al. (1991) listed six species of caprellids from the Brazilian coast, all of them living in the intertidal region: *Caprella danilevskii* Czerniavskii, 1868; *C. dilatata* Kröyer, 1843; *C. equilibra* Say, 1818; *C. scaura* Templeton, 1836; *Paracaprella pusilla* Mayer, 1890, and *Phthisica marina* Slabber, 1769. Besides these caprellids, four more species, *Hemiaegina minuta* Mayer, 1890, *Paracaprella digitimanus* Quitete, 1971, *Fallotritella montoucheti* Quitete, 1971, and *Orthoprotella melloi* Quitete, 1975, have been recorded from shallow waters of the Brazilian coast. However, no caprellids have been reported from deep waters along the Brazilian coast before this study.

## Material & methods

During the 1960s, the Woods Hole Oceanographic Institution, using the vessel "Atlantis II" sponsored by the National Science Foundation, conducted several sampling surveys of deep-sea fauna along the Atlantic coast of America. The amphipod material from the North American Basin, especially from the Gay Head-Bermuda transect (Sanders et al., 1965) has been reported in a series of papers (Gammaridea: Mills, 1967; Caprellidea: Laubitz & Mills, 1972). But no material collected from the Brazil Basin had been studied previously.

During a visit to the National Museum of Natural History, Smithsonian Institution, Washington, D.C., I studied a small collection of deep-sea caprellids collected by the "Atlantis II" (cruise 31) from the coast of Brazil in 1967, at 943-1007 metres depth. The collection contained two species, both described as new to science in the present paper.

Specimens of the two species are deposited in the U.S. National Museum of Natural History (USNM), Smithsonian Institution, Washington, D.C., U.S.A. The familial classification used here follows Takeuchi (1993).

## Systematics

Order Amphipoda Latreille, 1816

Suborder Caprellidea Leach, 1814

Family Caprellidae Leach, 1814

Genus *Liropus* Mayer, 1890

*Liropus nelsonae* sp. nov. (Figs 1-4)

*Type material*: Holotype male USNM 1008383; Allotype female USNM 1008384; Paratypes (1 premature female, 2 juveniles) USNM 1008385.

*Type locality*: Woods Hole Benthic Sta. 167, 7°58'S, 34°17'W to 7°50'S, 34°17'W. 943-1007 m depth. "Atlantis

II" cruise 31, 20 February 1967. Epibenthic sled.

*Etymology*: the species is named after Elizabeth Nelson, U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C., for making the specimens available for study and for her kindness and hospitality during my stay at the U.S. National Museum of Natural History.

### Description

#### *Holotype male*

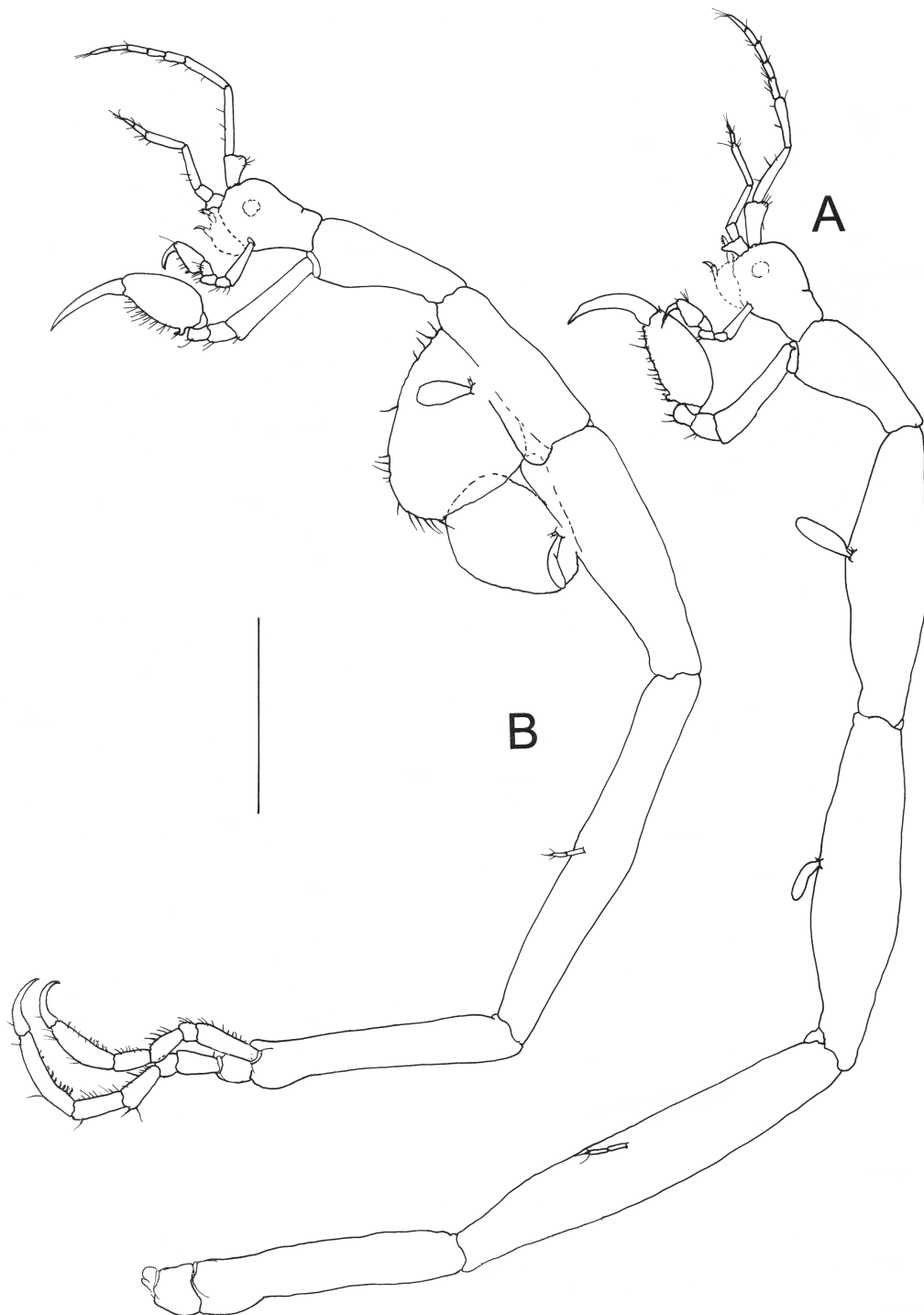
*Body length*: 7.9 mm. (Fig. 1A). Body dorsally smooth. Head rounded. Eyes without distinguishable ommatidia. Pereonite 1 fused with head, suture present. Pereonites 2-5 increasing in length. Pereonite 5 the longest. Pereonite 7 the shortest.

*Gills* (Fig. 1A) present on pereonites 3-4, oval, length about two times width. Gills on pereonite 4 slightly shorter than those on pereonite 3.

*Mouthparts*: upper lip (Fig. 2A) symmetrically bilobate, smooth apically. Mandibles (Figs 2D, E) with three-articulate palp; distal article of palp with row of seven distally plumose setae and another row of six small, robust spines; mandibular molar present, bordered by teeth; left mandible (Fig. 2E) with incisor six-toothed, lacinia mobilis five-toothed followed by three plumose setae; incisor of right mandible (Fig. 2D) six-toothed, lacinia mobilis deeply serrate, followed by two plumose setae; molar flake (accessory plate attached to the molar, see Laubitz (1993)) absent. Lower lip (Fig. 2B) inner and outer lobes well demarcated, without setae; inner lobes rectangular, with a cleft medially. Maxilla 1 (Fig. 2G) outer lobe carrying six robust setae; distal article of palp with three apical setae and a medial seta. Maxilla 2 (Fig. 2F) inner lobe triangular, carrying three setae distally; outer lobe rectangular, 1.2 times as long as inner lobe, with four apical setae. Maxilliped (Fig. 2C) inner plate rectangular carrying two long setae and a nodular seta; outer plate oval, three times as long as inner plate, with two plumose setae apically and two lateral, smooth setae; palp four-articulate, third article with three plumose setae and dactylus with a simple seta.

*Antennae*. Antenna 1 (Fig. 3A) about one-sixth of body length; proximal article of peduncle with triangular projection; flagellum five-articulate. Antenna 2 (Fig. 3B) about one-half length of antenna 1; proximal peduncular article with acute projection distally; swimming setae absent; flagellum two-articulate.

*Gnathopods*. Gnathopod 1 (Fig. 3E) basis as long as the combination of ischium, merus and carpus; propodus elongate, length about two times width, palm with pair of grasping spines proximally; grasping margin of propodus palm and dactylus smooth. Gnathopod 2 (Fig. 3C) inserted on the anterior half of pereonite 2; basis a little shorter than pereonite 2; ischium rectangular; merus rounded; carpus short and triangular; propodus oval, as long as basis; palm



**Figure 1.** *Liropus nelsonae* sp.nov. Lateral view. **A.** male; **B.** female. Scale bar: 1 mm.

**Figure 1.** *Liropus nelsonae* sp.nov. Vue latérale. **A.** mâle ; **B.** femelle. Echelle : 1 mm.

with proximal projection provided with single spine, followed by serrate margin and small U-notch medially; dactylus with denticulate margin.

*Pereopods.* Pereopod 3 and 4 (Figs 4A, B) one-articulate,

with two plumose setae apically. Pereopod 5 (Fig. 4C) three-articulate, attached at middle of pereonite 5; second article twice as long as proximal one, carrying two simple setae distally; distal article small and truncate, with single seta

distally. Pereopod 6 (Fig. 4D) attached to posterior end of pereonite 6, six-articulate, basis without carina, ischium short and rectangular, propodus palm carrying row of setae, with proximal ones plumose distally. Pereopod 7 (Fig. 4E) slightly larger than pereopod 6.

*Penes* (Fig. 2H) situated laterally, triangular, length about 1.2 times width.

*Abdomen* (Fig. 2H) with two indistinguishable, vestigial

appendages (degenerated to a tiny bunt with two setae), a row of three setae medially, a pair of lobes, and a single dorsal lobe.

*Allotype female*

Body length 7.2 mm. Oostegites setose in pereonite 3 and not setose in pereonite 4 (Fig. 1B). Abdomen (Fig. 2I) with only two setae ventrally in the middle (each appendage degenerated into 1 seta).

Key to the world species of *Liropus*

- |                                                                                                                 |                             |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1. Pereopod 5 three-articulate.....                                                                             | <i>L. nelsonae</i> sp. nov. |
| Pereopod 5 two-articulate.....                                                                                  | 2                           |
| 2. Flagellum of antenna 1 two-articulate.....                                                                   | <i>L. japonicus</i>         |
| Flagellum of antenna 1 more than two-articulate.....                                                            | 3                           |
| 3. Head with anterodorsal projection looking like a rostrum.....                                                | 4                           |
| Head without projection.....                                                                                    | 5                           |
| 4. Propodus of pereopods 6 and 7 with row of setae along palm.....                                              | <i>L. gracilis</i>          |
| Propodus of pereopods 6 and 7 with one grasping spine proximally.....                                           | <i>L. africanus</i>         |
| 5. Propodus of pereopods 6 and 7 with row of setae along palm. Gnathopod 2 basis with a basal constriction..... | <i>L. minimus</i>           |
| Propodus of pereopods 6 and 7 with one grasping spine proximally. Gnathopod 2 basis with parallel margins.....  | <i>L. elongatus</i>         |

Genus *Parvipalpus* Mayer, 1890

*Parvipalpus colemani* sp. nov. (Figs 5-8)

*Type material*: Holotype male USNM 1008537; Allotype female USNM 1008538; Paratypes (6 males, 1 premature female) USNM 1008539.

*Type locality*: Woods Hole Benthic Sta. 167, 7°58'S, 34°17'W to 7°50'S, 34°17'W. 943-1007 m depth. "Atlantis II" cruise 31, 20 February 1967. Epibenthic sled.

*Etymology*: The species is named after Dr. Charles Oliver Coleman, Institut für Systematische Zoologie, Museum für Naturkunde, Berlin, for his valuable contribution to the knowledge of the Amphipoda.

*Description*

*Holotype male*

*Body length*: 6.2 mm (Fig. 5A). Body dorsally smooth. Head rectangular. Pereonite 1 fused with head, suture present; pereonites 2-5 increasing in length; pereonites 3-5 long; pereonite 6 and 7 subequal, short; pereonite 3 with acute anteroventral projection.

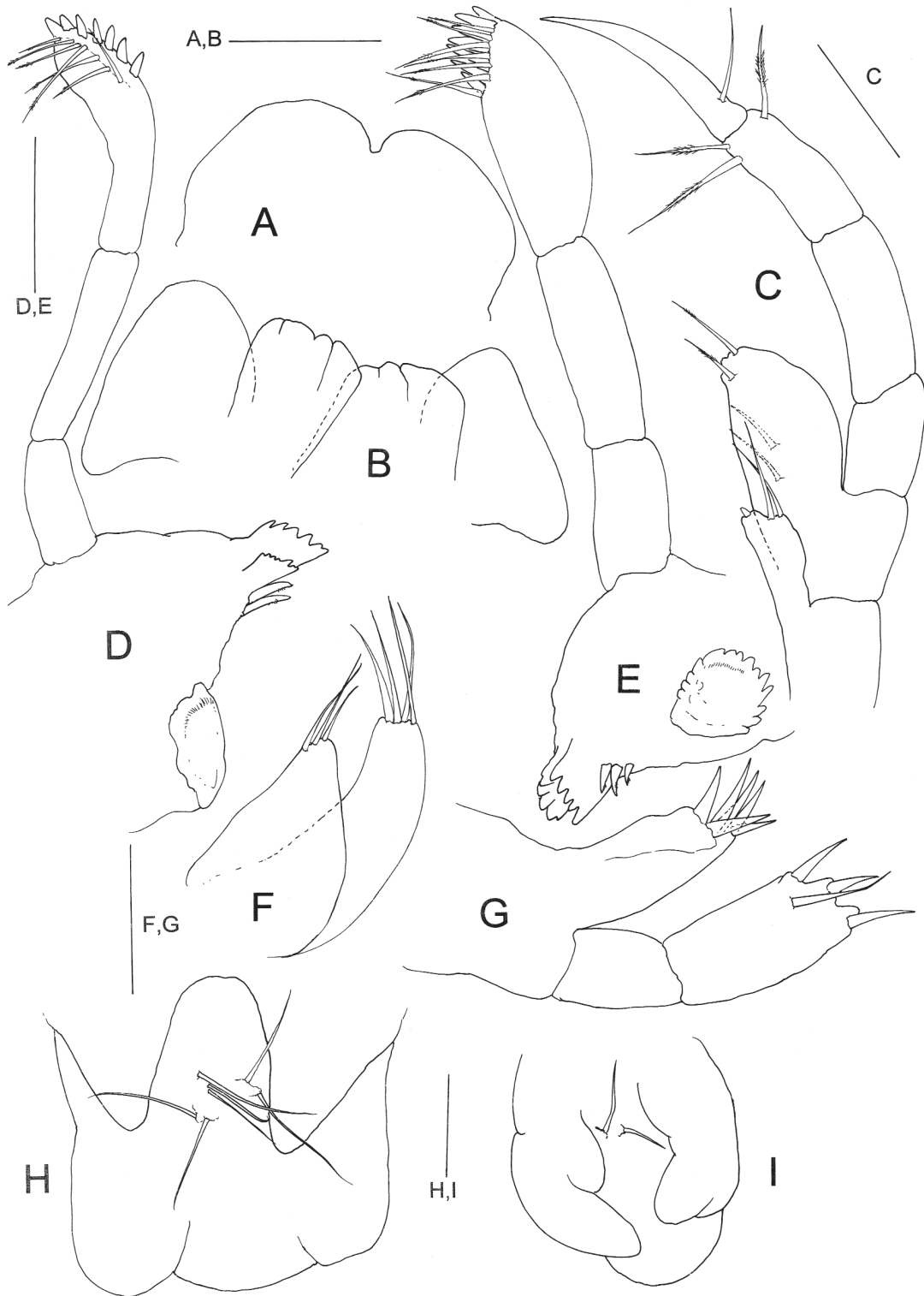
*Gills* (Fig. 5A) present on pereonites 3-4, attached to anterior half of pereonites, small and oval, length about twice width.

*Mouthparts*. Upper lip (Fig. 6A) symmetrically bilobate, smooth apically. Mandibles (Figs. 6C, D) with three-articulate palp; distal article of palp with row of 9 setae on left mandible and 10 setae on right; second article of palp with two setae; mandibular molar present, bordered by robust teeth; left mandible with incisor five-toothed, lacinia

*mobilis* five-toothed, followed by three plumose setae; incisor of right mandible five-toothed, lacinia mobilis deeply serrate, followed by two plumose setae; molar flake present on the right mandible, rectangular and slightly plumose distally. Lower lip (Fig. 6B) inner and outer lobes well demarcated; inner lobes rectangular. Maxilla 1 (Fig. 6F) outer lobe with six robust, stout setae; distal article of palp with four apical robust setae and three medial fine setae. Maxilla 2 (Fig. 6G) inner lobe rectangular, with nine simple setae distally; outer lobe as long as inner lobe, with nine apical simple setae and one plumose seta. Maxilliped (Fig. 6E) inner plate rectangular, with five long setae and two nodular setae; outer plate oval, almost three times as long as the inner plate, with two plumose setae apically and four nodular setae laterally; palp four-articulate, third article with row of six simple setae, and dactylus grasping margin smooth.

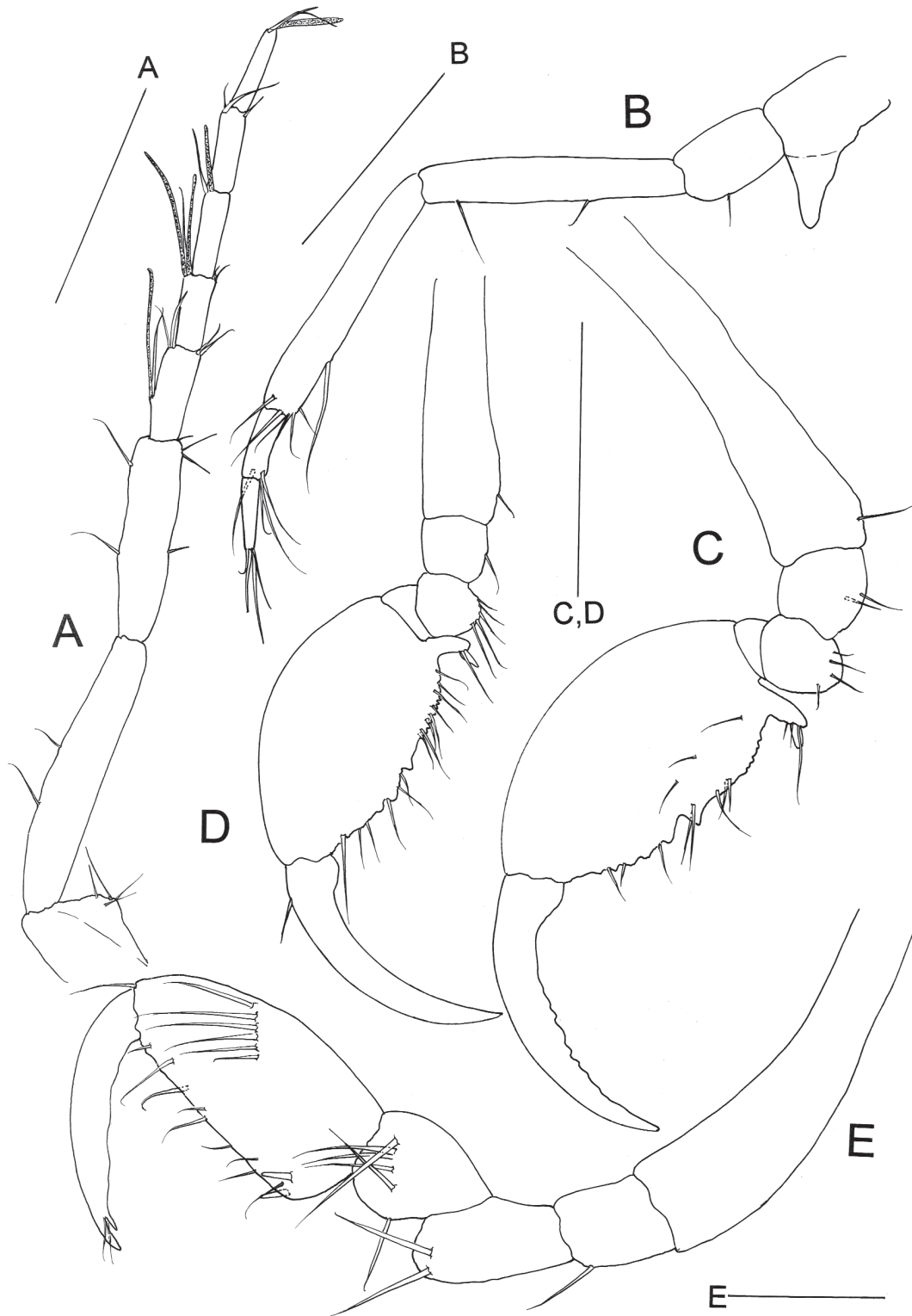
*Antennae*. Antenna 1 (Fig. 7A) about one-fifth of body length; distal article of peduncle short, about half length of previous one; flagellum with eleven articles. Antenna 2 (Fig. 9B) about one-half length of antenna 1; proximal article of peduncle with acute projection distally; swimming setae absent; flagellum two-articulate; distal article of flagellum with group of distal setae.

*Gnathopods*. Gnathopod 1 (Fig. 7C) basis a little shorter than ischium, merus and carpus combined; propodus elongate, length about 2.5 times width, palm with pair of grasping spines proximally and with margin serrate on



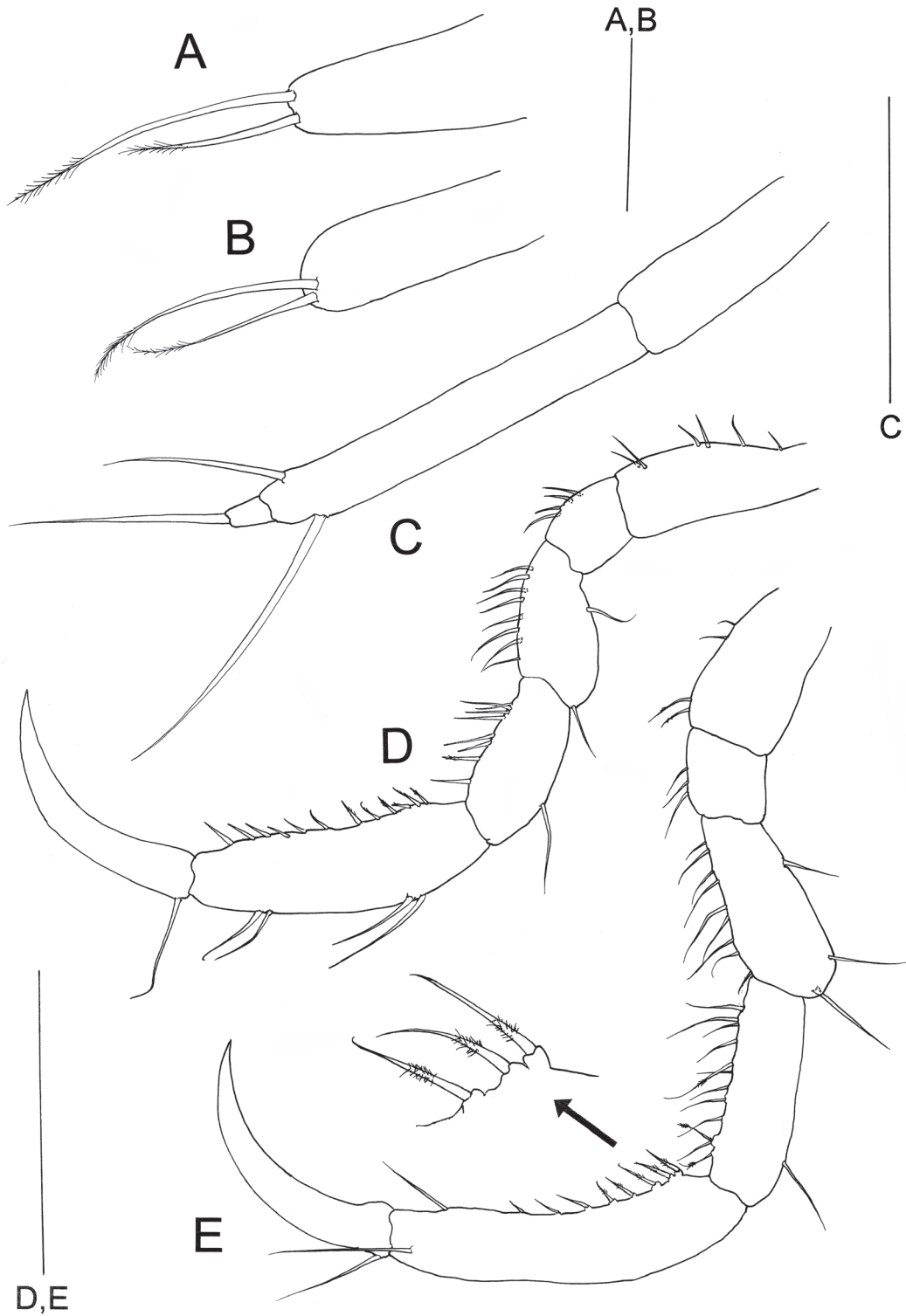
**Figure 2.** *Liropus nelsonae* sp. nov. Male A-H. A. upper lip; B. lower lip; C. maxilliped; D. right mandible; E. left mandible; F. maxilla 2; G. maxilla 1; H. abdomen. I. female abdomen. Scale bars: 0.05 mm.

**Figure 2.** *Liropus nelsonae* sp. nov. Mâle A-H. A. lèvre antérieure ; B. lèvre postérieure ; C. maxillipède ; D. mandibule droite ; E. mandibule gauche ; F. maxille 2 ; G. maxille 1 ; H. abdomen. I. abdomen femelle. Echelles : 0.05 mm



**Figure 3.** *Liropus nelsonae* sp. nov. **A.** male antenna 1; **B.** male antenna 2; **C.** male gnathopod 2; **D.** female gnathopod 2; **E.** male gnathopod 1. Scale bars: A, 0.3 mm; B, 0.2 mm; C,D, 0.5 mm; E, 0.1 mm.

**Figure 3.** *Liropus nelsonae* sp. nov. **A.** antenne 1 mâle ; **B.** antenne 2 mâle ; **C.** gnathopode 2 mâle ; **D.** gnathopode 2 femelle ; **E.** gnathopode 1 mâle. Echelles : A, 0.3 mm ; B, 0.2 mm ; C,D, 0.5 mm ; E, 0.1 mm.



**Figure 4.** *Liropus nelsonae* sp. nov. Male. **A.** pereopod 3; **B.** pereopod 4; **C.** pereopod 5; **D.** pereopod 6; **E.** pereopod 7. Scale bars: A, B, 0.03 mm; C, 0.1 mm; D,E, 0.4 mm.

**Figure 4.** *Liropus nelsonae* sp. nov. Mâle. **A.** péréiopode 3; **B.** péréiopode 4; **C.** péréiopode 5; **D.** péréiopode 6; **E.** péréiopode 7. Echelles: A, B, 0.03 mm; C, 0.1 mm; D,E, 0.4 mm.

proximal end; grasping margin of dactylus smooth. Gnathopod 2 (Fig. 7D) inserted on proximal end of pereonite 2; basis about three-fourth length of pereonite 2; ischium and merus rectangular; carpus short and triangular; propodus elongate, a little shorter than basis; palm with proximal projection provided with single spine; small triangular projection distally; dactylus elongate and curved, with smooth margin.

*Pereopods.* Pereopod 3 and 4 absent. Pereopod 5 (Fig. 8A) six-articulate, attached to posterior end of pereonite 5; propodus with robust seta (grasping spine) distally; dactylus 1.2 times as long as propodus, with plumose seta proximally, grasping margin smooth. Pereopod 6 (Fig. 8B) morphologically similar to pereopod 5, but without distal

grasping spine on propodus palm. Pereopod 7 missing in holotype male (morphologically similar to pereopod 6 in the paratype males).

*Penes* (Fig. 8C) large, oval, length about twice width, with suture distally.

*Abdomen* (Fig. 8C) with pair of long appendages carrying simple setae proximally, one pair of lateral lobes provided with simple seta, and single dorsal lobe with two plumose setae.

*Allotype female* (Premature)

Body length 5.2 mm. Pereonite 3 without anteroventral acute projection (Fig. 5B). Pereonite 6 longer than in male, twice as long as pereonite 7. Abdomen (Fig. 8D) without appendages.

Key to the world species of *Parvipalpus* (see also Table 1)

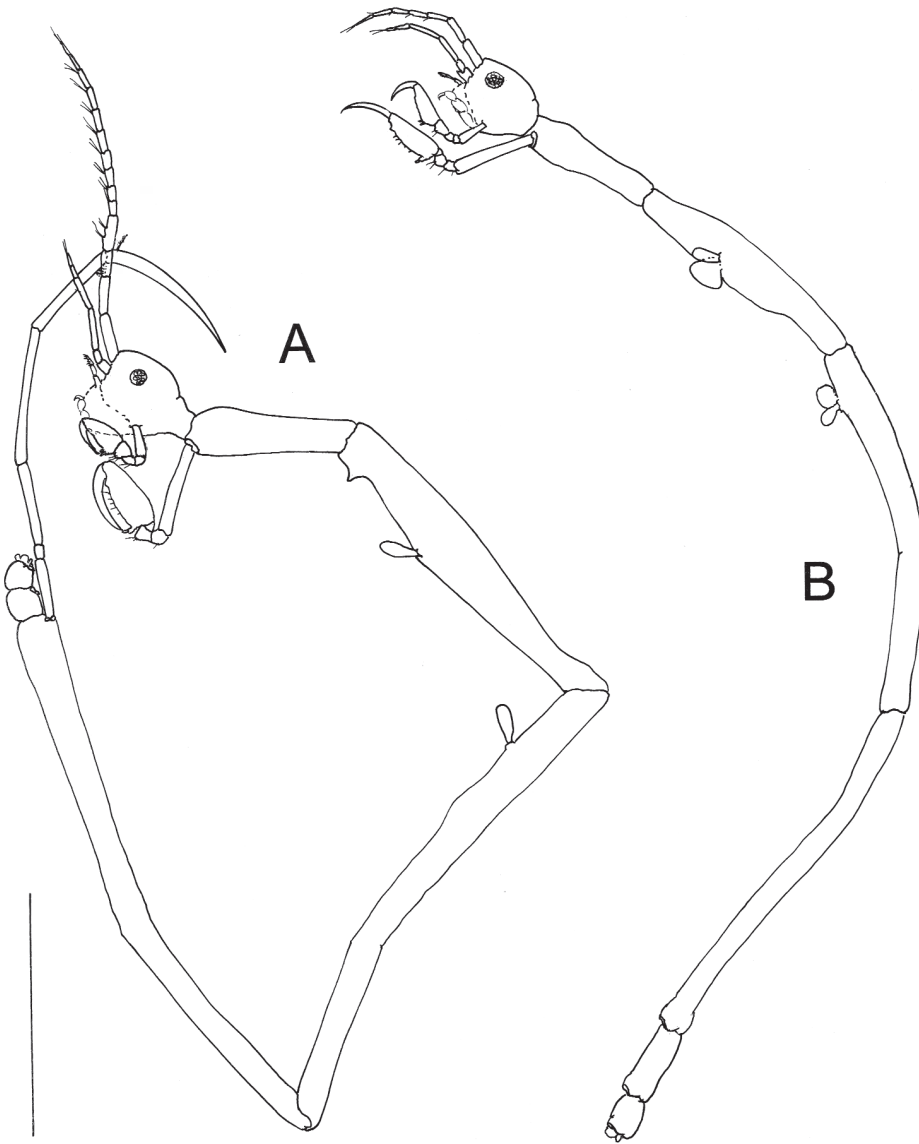
- 1. Head with rostrum ..... 2
- Head without rostrum ..... 3
- 2. Body smooth, shorter than 5 mm. Flagellum of antenna 1 less than six-articulate ..... *P. onubensis*
- Body with tubercles, larger than 5 mm. Flagellum of antenna 1 six- or more than six-articulate ..... *P. major*
- 3. Flagellum of antenna 2 two-articulate ..... *P. colemani* sp. nov.
- Flagellum of antenna 2 three-articulate ..... 4
- 4. Mandibular palp three-articulate and with two apical setae. Incisor eight-toothed ..... *P. capillaceus*
- Mandibular palp two-articulate and with one apical seta. Incisor five-toothed ..... *P. linea*

**Table 1.** Comparison of selected characters between *Parvipalpus colemani* sp. nov. and the other species in the genus: *P. capillaceus* (Chevreux, 1888), *P. linea* Mayer, 1890, *P. major* Carausu, 1941, and *P. onubensis* Guerra-García, García-Asencio & Sánchez-Moyano, 2001.

**Tableau 1.** Comparaison de quelques caractères chez *Parvipalpus colemani* sp. nov. et les autres espèces du genre: *P. capillaceus* (Chevreux, 1888), *P. linea* Mayer, 1890, *P. major* Carausu, 1941 and *P. onubensis* Guerra-García, García-Asencio & Sánchez-Moyano, 2001.

	<i>P. capillaceus</i>	<i>P. linea</i>	<i>P. colemani</i> sp. nov.	<i>P. major</i>	<i>P. onubensis</i>
Body length (maximum)	7 mm	10 mm	7.2 mm	29 mm	3 mm
Ornamentation	Body smooth	Body smooth	Body smooth except for an anteroventral acute projection in males	Pereonites 1-7 with rows of tubercles in females. Pereonites 5-7 with tubercles in males	Body smooth
Axillary tooth near the insertion of gnathopod 2	Present	Present	Absent	Absent	Absent
Rostrum	Absent	Absent	Absent	Present	Present
Articles in the flagellum of antenna 1	9(males), 5(females)	7-9(males), 5(females)	10-12(males), 4-5(females)	22(males), 12 (females)	5(males), 3(females)
Articles in the flagellum of antenna 2	3	3	2	2	2
Carpus of gnathopod 1	Normal	Normal	Normal	Distally slim	Normal
Mandibular palp	3-articulate, 2 apical setae	2-articulate, 1 apical setae	3-articulate, 7-10 apical setae (formula 1-x-1, x=5-8)	3-articulate 2 apical setae	2-articulate, 1 apical setae
Incisor	8-toothed	5-toothed	5-toothed	5-toothed	4-toothed
Lacinia mobilis	5-toothed	5-toothed	4-5-toothed (left mandible) deeply serrate (right m.)	5-toothed	4-toothed
Abdominal appendages	Absent	Absent	Present	Absent	Absent
Penes	Short	Short	Large	Short	Large





**Figure 5.** *Parvipalpus colemani* sp. nov. Lateral view. **A.** male; **B.** female. Scale bar: 1 mm.  
**Figure 5.** *Parvipalpus colemani* sp. nov. Vue latérale. **A.** mâle ; **B.** femelle. Echelle : 1 mm.

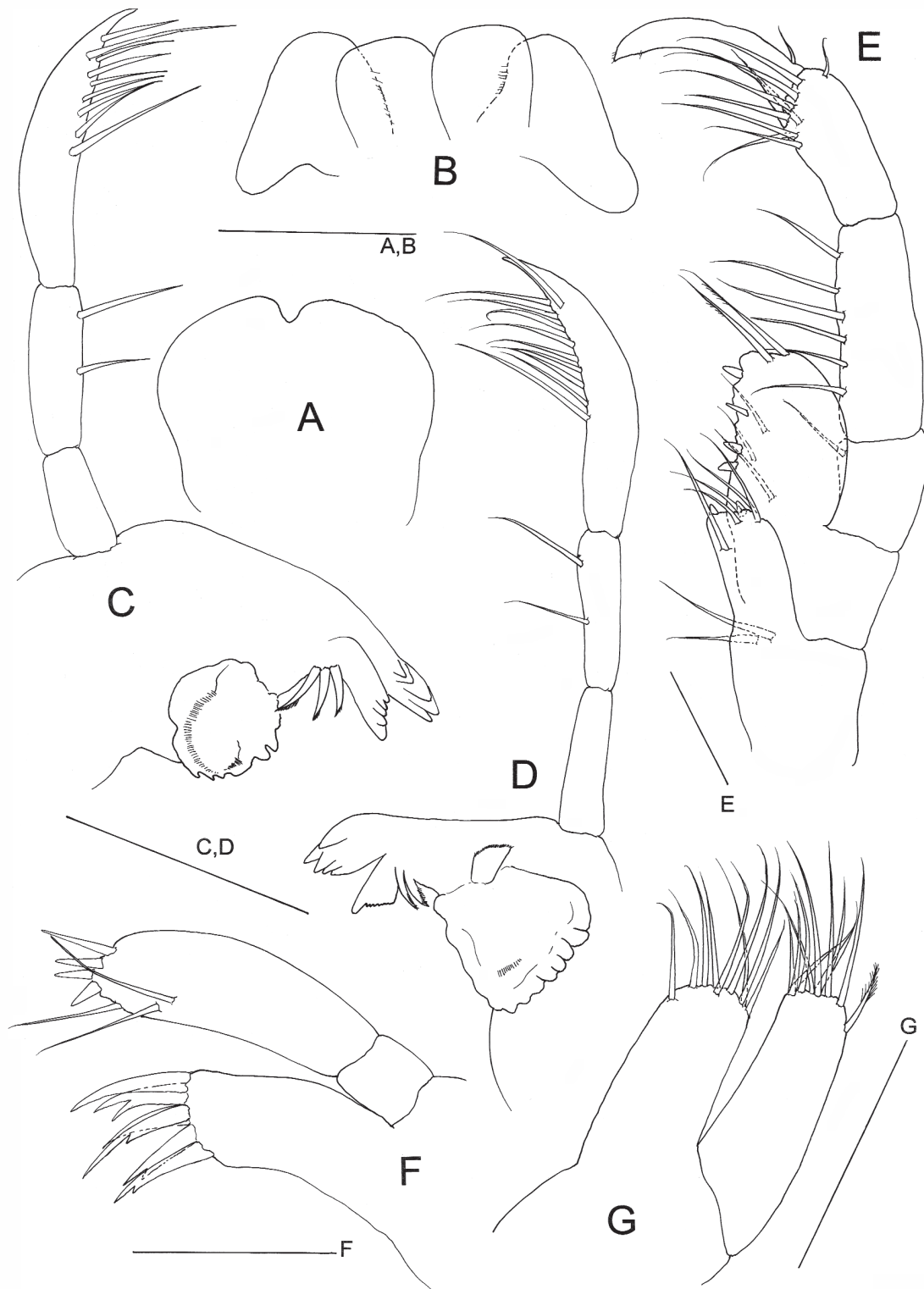
### Discussion

The genus *Liropus* was established by Mayer (1890) and presently includes the following species: *Liropus elongatus* Mayer, 1890, *L. minimus* Mayer, 1890, *L. africanus* Mayer, 1920, *L. gracilis* Chevreux, 1927, *L. japonicus* Mori, 1995 and *Liropus nelsonae* sp. nov. The genus *Liropus* was erected on the basis of the following diagnostic characters (Mayer, 1890, 1903; Krapp-Schickel, 1993; Mori, 1995): second antenna with 2-articulate flagellum; mandible with molar process and 3-articulate palp; pereopods 3 and 4 one-articulate; pereopod 5 two-articulate; abdomen with pair of appendages, extremely reduced in some species. The

specimens of *Liropus nelsonae* sp. nov. are in agreement with the diagnosis of the genus apart from pereopods 5 being three-articulate (with a tiny distal appendage) instead of two-articulate and the vestigial abdominal appendages which are degenerated into setae. The pereopod 5 character expands the diagnosis of the genus and can be used to distinguish *L. nelsonae* sp. nov. from its congeners. Regarding the geographic distribution, *Liropus elongatus* and *L. minimus* are, so far, Mediterranean endemic (Krapp-Schickel, 1993) and *L. africanus* and *L. gracilis* were found along the Atlantic coast of North Africa (McCain & Steinberg, 1970). Mori (1995), with the description of *L. japonicus*, extended the distribution of the genus to the Pacific Ocean. The specimens of *L. nelsonae* collected from the Brazilian coast represent the first record of the genus in the Southern Hemisphere and the East Atlantic coast.

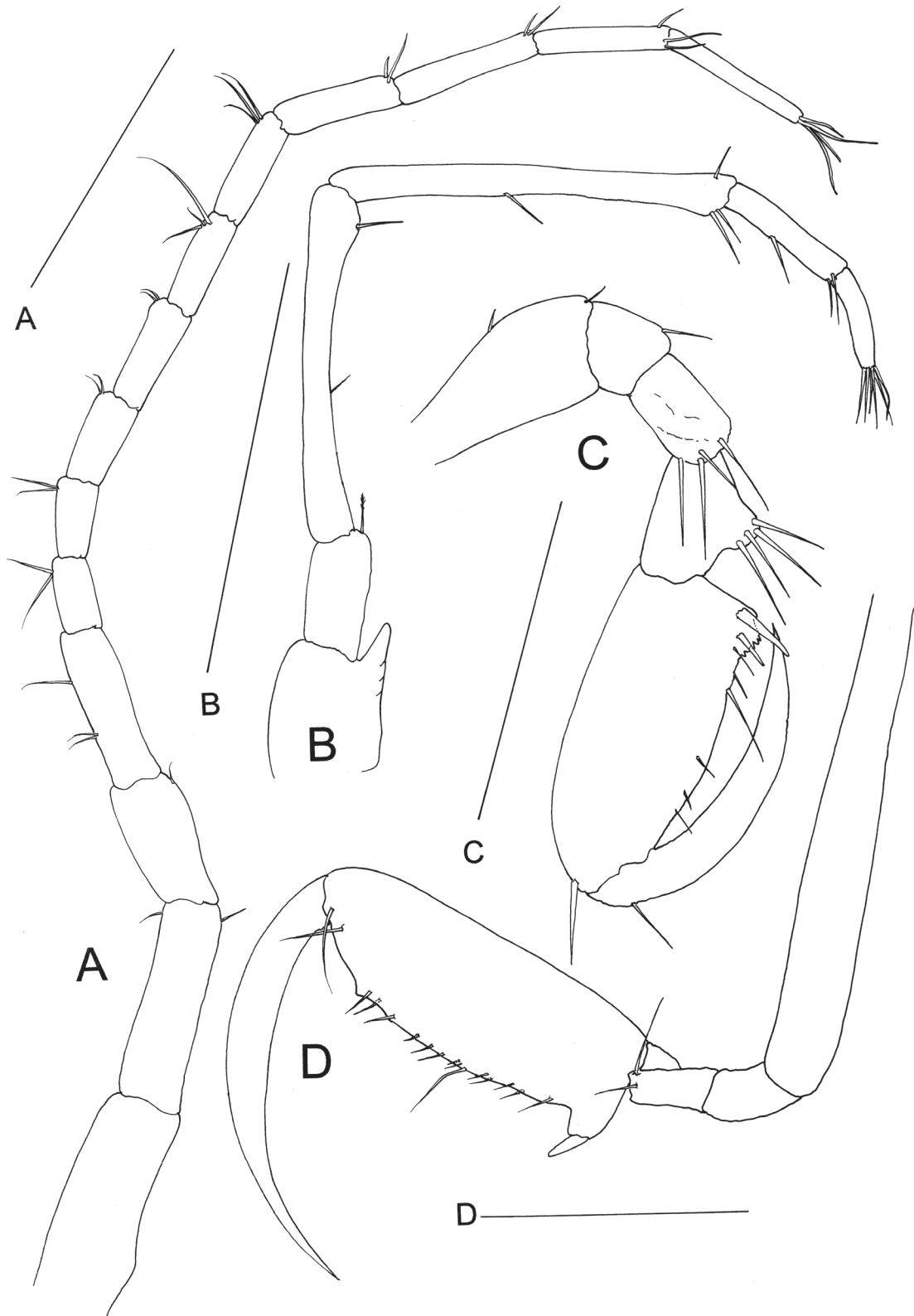
The genus *Parvipalpus* was established by Mayer (1890) and includes five species: *P. capillaceus* (Chevreux, 1888), *P. linea* Mayer, 1890, *P. major* Carausu, 1941, *P. onubensis* Guerra-García et al., 2001, and *P. colemani* sp. nov. The species of *Parvipalpus* are morphologically compared in Guerra-

García et al. (2001) and a comparison with *P. colemani* is given in Table 1. *Parvipalpus colemani* sp. nov. differs from the other species of *Parvipalpus* mainly by the setal formula of the mandibular palp and the structure of the abdomen. *Parvipalpus colemani* possesses 7-19 setae in the mandibular palp, whereas there are only one or two apical setae in the remaining species of the genus *Parvipalpus*. Regarding the abdomen, *P. colemani* has one pair of appendages, while these appendages are lacking in the other species of *Parvipalpus*. Taking into consideration the difference in the abdomen we could erect a new genus based on the present specimens. However, the remaining characters in the mouthparts, antennae and pereopods agree with the diagnosis of the genus *Parvipalpus*. Although the

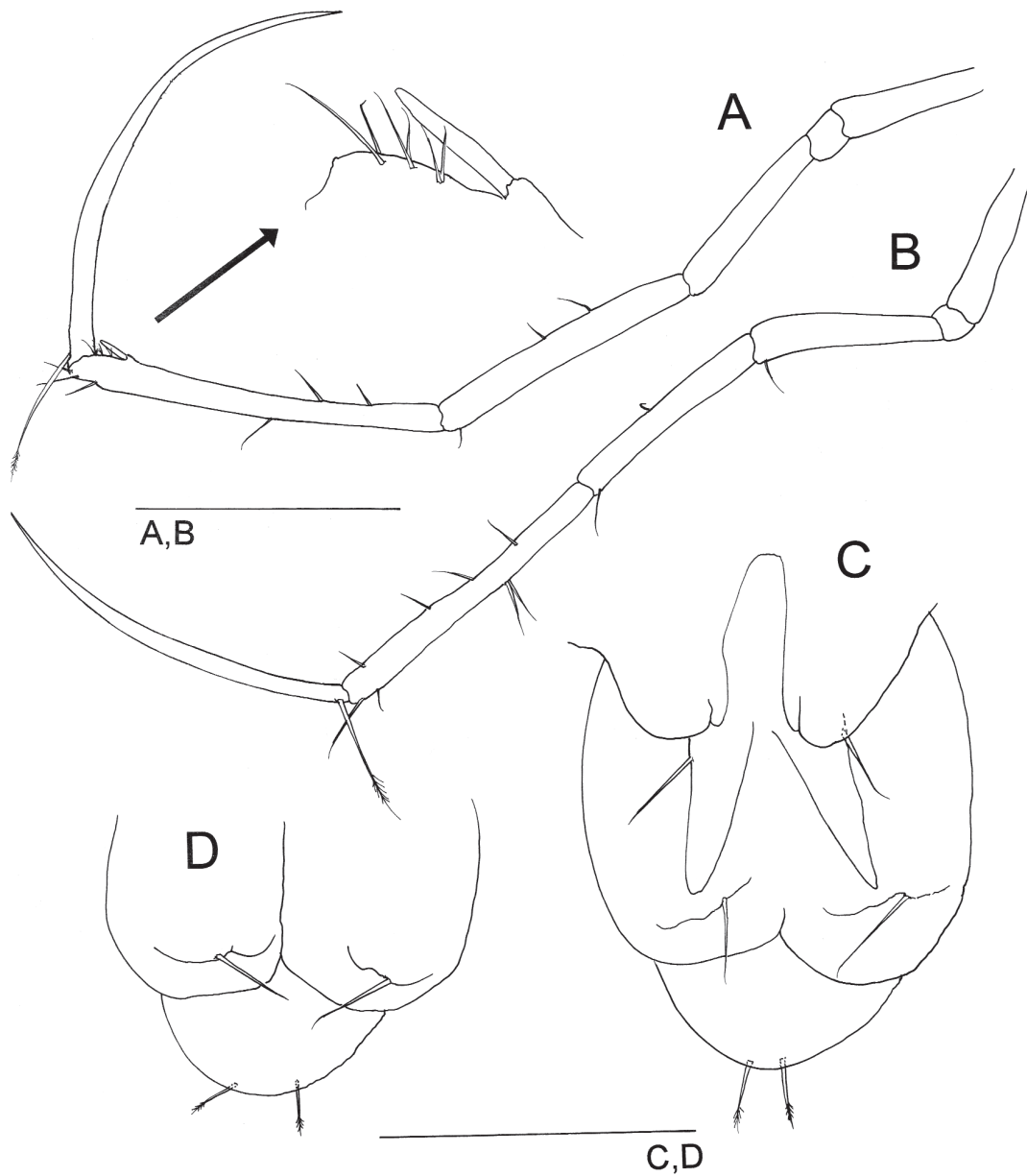


**Figure 6.** *Parvipalpus colemani* sp. nov. Male. **A.** upper lip; **B.** lower lip; **C.** left mandible; **D.** right mandible; **E.** maxilliped; **F.** maxilla 1; **G.** maxilla 2. Scale bars: A-D, 0.1 mm; E-G, 0.05 mm.

**Figure 6.** *Parvipalpus colemani* sp. nov. Mâle. **A.** lèvre antérieure ; **B.** lèvre postérieure ; **C.** mandibule gauche ; **D.** mandibule droite ; **E.** maxillipède ; **F.** maxille 1 ; **G.** maxille 2. Echelles : A-D, 0.1 mm ; E-G, 0.05 mm.



**Figure 7.** *Parvivalpus colemani* sp. nov. Male. **A.** antenna 1; **B.** antenna 2; **C.** gnathopod 1; **D.** gnathopod 2. Scale bars: 0.2 mm.  
**Figure 7.** *Parvivalpus colemani* sp. nov. Mâle. **A.** antenne 1; **B.** antenne 2; **C.** gnathopode 1; **D.** gnathopode 2. Echelles : 0.2 mm.



**Figure 8.** *Parvipalpus colemani* sp. nov. A-C, male. **A.** pereopod 5; **B.** pereopod 6; **C.** abdomen. **D.** female abdomen. Scale bars: A,B, 0.5 mm; C,D, 0.1 mm.

**Figure 8.** *Parvipalpus colemani* sp. nov. A-C, mâle. **A.** péréiopode 5 ; **B.** péréiopode 6 ; **C.** abdomen. **D.** abdomen femelle. Echelles : A,B, 0.5 mm ; C,D, 0.1 mm.

distribution of abdominal appendages and number of articles have been traditionally considered as generic criteria (Mayer, 1903; Arimoto, 1976), Mori (1999) emphasized that in some cases the external morphology of abdominal appendages seem no to be an ontogenetically and morphologically stable character enough to characterize a genus and its taxonomic value could be relatively low. So, for example in the genus *Protoaeginella*, females of *P. spinipoda* have abdominal appendages while these are lacking in *P. muricata* (Laubitz & Sorbe, 1996). At the

moment it seems preferable not to erect a new genus for the specimens of *P. colemani* sp. nov. On the other hand, the features of *Liropus nelsonae* sp. nov. agree with the generic diagnosis of *Liropus*, but the appendages in the male abdomen are vestigial, almost absent, degenerated into setae, whereas the appendages (although small in some species) are present in the remaining species of *Liropus*. It seems preferable, here also, not to erect a new genus for *L. nelsonae* sp. nov. at present.

**Table 2.** Caprellidea reported below 400 m.  
**Tableau 2.** Caprellidea récoltés au-dessous de 400 m.

Species	Depth	Distribution	References
<i>Abyssicaprella galathea</i> McCain, 1966	3501-4004 m	East Pacific	McCain, 1966
<i>Aeginella spinosa</i> Boeck, 1861	0-1026 m	Arctic, North Atlantic	Stephensen, 1944; Laubitz, 1972
<i>Aeginina longicornis</i> (Krøyer, 1843)	0-2258 m	Arctic, North Atlantic	Stephensen, 1944; Laubitz, 1972
<i>Aeginoides gausi</i> Schellenberg, 1926	20-1501 m	Circumantarctic	Laubitz, 1991a
<i>Caprella bathytatos</i> Martin & Pettit, 1998	2201 m	North Pacific	Martin & Pettit, 1998
<i>Caprella ciliata</i> Sars, 1883	70-1838 m	Arctic, North Atlantic	Larsen, 1998
<i>Caprella equilibra</i> Say, 1818	0-3000 m	Cosmopolitan	McCain & Steinberg, 1970
<i>Caprella horrida</i> Sars, 1877	0-1359 m	Arctic	McCain & Steinberg, 1970
<i>Caprella microtuberculata</i> Sars, 1879	0-1026 m	Arctic	Stephensen, 1944; Laubitz, 1972
<i>Caprella rinki</i> Stephensen, 1916	180-1416 m	Arctic, North Atlantic	Stephensen, 1944; Larsen, 1998
<i>Caprella septentrionalis</i> Krøyer, 1879	0-1026 m	Arctic, North Atlantic	McCain & Steinberg, 1970; Larsen, 1998
<i>Caprella unguina</i> Mayer, 1903	7-1602 m	Pacific, South Atlantic	Mayer, 1903; Griffiths, 1977; Takeuchi et al., 1989
<i>Caprellinoides mayeri</i> (Pfeffer, 1880)	22-1153 m	Subantarctic	McCain & Gray, 1971; Laubitz, 1991a
<i>Caprellinoides tristanensis</i> Stebbing, 1880	10-1245 m	Subantarctic	McCain & Gray, 1971; Laubitz, 1991a
<i>Dodecas elongata</i> Stebbing, 1883	15-930 m	Subantarctic	Laubitz 1991a
<i>Dodecas eltaninae</i> McCain & Gray, 1971	248-604 m	Subantarctic	McCain & Gray, 1971
<i>Dodecasella georgiana</i> (Schellenberg, 1931)	75-1475 m	Subantarctic	McCain & Gray, 1971; Laubitz, 1991a
<i>Liropus gracilis</i> Chevreux, 1927	698 m	North Atlantic	Chevreux, 1927
<i>Liropus nelsonae</i> sp. nov.	943-1007 m	South Atlantic	Present study
<i>Mayerella limicola</i> Huntsman, 1915	9-713 m	Western North Atlantic	Laubitz, 1972
<i>Mayerella magellanica</i> McCain & Gray, 1971	50-676 m	Subantarctic, Southeastern Pacific	McCain & Gray, 1971
<i>Metaproto novaehollandiae</i> (Haswell, 1880)	0-790 m	Western Pacific	Laubitz, 1991b
<i>Orthoprotella mayeri</i> Barnard, 1917	0-570 m	Southwestern Pacific, South Africa	Laubitz, 1991b
<i>Paedadirium miserum</i> Mayer, 1903	920-2081 m	Westen Pacific	Mayer, 1903
<i>Paradeutella spinosa</i> Mayer, 1903	0-700 m	Southwestern Pacific	Laubitz, 1991b
<i>Parvipalpina verrucosa</i> Stephensen, 1944	1505 m	Southern Arctic	Stephensen, 1944
<i>Parvipalpus major</i> Carausu, 1941	1-924 m	North Atlantic, Mediterranean	Laubitz & Sorbe, 1996
<i>Parvipalpus colemani</i> sp. nov.	943-1007 m	South Atlantic	Present study
<i>Phtisica marina</i> Slabber, 1769	0-1392 m	Cosmopolitan	Larsen, 1998
<i>Proaeginina norvegica</i> (Stephensen, 1931)	174-2702 m	Arctic, Western North Atlantic	Larsen, 1998
<i>Protella trilobata</i> McCain & Gray, 1971	646-845 m	Subantarctic	McCain & Gray, 1971
<i>Protellina ingolfi</i> Stephensen, 1944	630-1435 m	Arctic	Stephensen, 1944; Larsen, 1998
<i>Protoaeginella muricata</i> Laubitz & Mills, 1972	1330-4970 m	North Atlantic	Laubitz & Mills, 1972
<i>Protoaeginella spinipoda</i> Laubitz & Sorbe, 1996	2990-3070 m	North Atlantic	Laubitz & Sorbe, 1996
<i>Protoplesius enigma</i> Mayer, 1903	2081-2798 m	Western Pacific	Mayer, 1903; Laubitz, 1991b
<i>Protoplesius falx</i> Mayer, 1903	2796 m	Western Pacific	Mayer, 1903
<i>Pseudododecas bowmani</i> McCain & Gray, 1971	769 m	Subantarctic	McCain & Gray, 1971
<i>Pseudoprotella phasma</i> (Montagu, 1804)	0-983 m	Cosmopolitan	McCain & Steinberg, 1970
<i>Pseudoprotomima hedgpethi</i> McCain & Gray, 1971-	41-403 m	Subantarctic	McCain & Gray, 1971
<i>Pseudoprotomima hurleyi</i> McCain, 1969	788-1609	Subantarctic, Soth Pacific	McCain, 1969
<i>Thorina elongata</i> Laubitz & Mills, 1972	1500-4892 m	North Atlantic	Laubitz & Mills, 1972
<i>Thorina spinosa</i> Stephensen, 1944	900 m	Arctic, North Atlantic	Stephensen, 1944
<i>Tritella tenuissima</i> Dougherty & Steinberg, 1953	252-1166 m	Northeastern Pacific	McCain & Steinberg, 1970

*Parvipalpus colemani* sp. nov., being found in the South Atlantic, represents the most southern record of the genus. The remaining species of *Parvipalpus* have been found in the North Atlantic; *P. linea* and *P. major* are also distributed in the Mediterranean (Krapp-Schickel, 1993; Laubitz & Sorbe, 1996).

Table 2 includes a list of the species of Caprellidea

reported below 400 meters depth. Most of the deep-sea caprellids have been collected from Arctic and Subantarctic areas (McCain & Gray, 1971; Laubitz, 1991a); some of them are known from Western Pacific areas (Laubitz, 1991b) and the North Atlantic (Laubitz, 1972; Larsen, 1998). *Abyssicaprella galathea* McCain, 1966 have been found in Costa Rica, East Pacific coast. Apart from the

cosmopolitan species, only *Caprella unguina* Mayer, 1903 had been reported from the South Atlantic deep-sea before this study. This species had been reported from West of Cape Point of South Africa (Griffiths, 1977) and off Tierra del Fuego, Argentina (McCain & Gray, 1971). The lack of knowledge of deep-sea caprellids is evidenced by the fact that the two species found in the samples from the deep-sea off the northeast Brazilian coast and described in the present paper are new. More caprellid collections from the deep-sea, especially from the South Atlantic but also from the Pacific and Indian Oceans, are necessary to evaluate caprellid biodiversity in the deep-sea ecosystems, and to determine the faunistic relations among biogeographic areas.

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