

## CAPRELLIDS FROM THE CARIBBEAN COAST OF COLOMBIA, WITH DESCRIPTION OF THREE NEW SPECIES AND A KEY FOR SPECIES IDENTIFICATION

José M. Guerra-García<sup>1</sup>, Traudl Krapp-Schicke<sup>2</sup> and Hans G. Müller<sup>3</sup>

<sup>1</sup> Laboratorio de Biología Marina, Departamento de Fisiología y Zoología, Facultad de Biología, Universidad de Sevilla, Avda Reina Mercedes 6, 41012, Sevilla, Spain. E-mail: jmguerra@us.es

<sup>2</sup> Museum A. Koenig, Adenauerallee 160, D-53113 Bonn, Germany

<sup>3</sup> Institut für Allgemeine und Spezielle Zoologie der Justus-Liebig-Universität, Heinrich-Buff-Ring 29, D-6300 Giessen, Germany

### ABSTRACT

The Caprellidae (Crustacea: Amphipoda) of shallow waters of the Caribbean coast of Colombia, South America, are investigated. This is the first study dealing with the caprellidean fauna of this area. A total of 45 stations from Punta Brava to Punta Cañaveral, at Santa Marta region, Colombia, was selected, and samples of algae, coral rubble, sponges, hydroids, bryozoans and sediments were collected from the intertidal zone to 30 m depth. Ten species in seven genera were found (three of which are new to science): *Aciconula* sp., *Caprella* cf. *penantis* Leach, 1814, *Caprella danilevskii* Czerniavskii, 1868, *Deutella caribensis* n.sp., *D. incerta* (Mayer, 1903), *D. mayeri* Stebbing, 1895, *Hemiaegina minuta* Mayer, 1890, *Paracaprella pusilla* Mayer, 1890, *Pseudaeginella colombiensis* n.sp., and *Tritella chibcha* n.sp. All the species are fully illustrated, and a key to species level for all species is also provided.

**KEY WORDS:** Amphipoda, Caprellidae, Taxonomy, New species, Caribbean, Colombia

### RESUMEN

**Caprélidos de la costa Caribe de Colombia, con la descripción de tres especies nuevas y una clave para la identificación de las especies.** Se estudiaron los Caprellidae (Crustacea: Amphipoda) de las aguas someras de la costa Caribe de Colombia, Sudamérica. Este es el primer estudio sobre la fauna de caprélidos de la zona. Se seleccionaron 45 estaciones distribuidas desde Punta Brava hasta Punta Cañaveral y se recolectaron muestras de algas, corales, esponjas, hidrozoos, briozoos y sedimentos, desde el intermareal a los 30 m de profundidad. Se encontraron diez especies pertenecientes a siete géneros distintos (tres de las especies son nuevas para la ciencia): *Aciconula* sp., *Caprella* cf. *penantis* Leach, 1814, *Caprella danilevskii* Czerniavskii, 1868, *Deutella caribensis* n.sp., *D. incerta* (Mayer, 1903), *D. mayeri* Stebbing, 1895, *Hemiaegina minuta* Mayer, 1890, *Paracaprella pusilla* Mayer, 1890, *Pseudaeginella colombiensis* n.sp. y *Tritella chibcha* n.sp. Todas las especies se ilustran con detalle en el presente trabajo y se aporta una clave taxonómica a nivel de especie.

**PALABRAS CLAVE:** Amphipoda, Caprellidae, Taxonomía, Nuevas especies, Caribe, Colombia



## INTRODUCTION

There is a lack of studies dealing with the caprellid amphipods of Central and South America. In fact, McCain and Steinberg (1970) pointed out that these coasts are virtually unstudied and that undoubtedly many new records and species would be expected in these areas. However, there are recent attempts to improve the knowledge on caprellids along these coasts: Chile (Guerra-García, 2001a; Guerra-García and Thiel, 2001; Thiel *et al.*, 2003), Brazil (Wakabara *et al.*, 1991; Wakabara and Serejo, 1998), the Gulf of Mexico (Ortíz *et al.*, 2002; Escobar-Briones and Winfield, 2003; Winfield *et al.*, 2006), Venezuela (Díaz *et al.*, 2005). These studies are necessary to fill the gap in the knowledge of the biodiversity of caprellids in Central and South America, to properly address future biogeographical and ecological studies.

In general, the amphipods from Colombia are poorly studied, as pointed out by González and Watling (2003). The taxonomical studies dealing with peracaridean crustaceans from Colombia have been more focused on isopods (Müller, 1992, 1993a, 1993b; Kensley and Schotte, 1994) than in other groups such as amphipods. In fact, the present study represents the first comprehensive work about caprellids from Colombia.

## MATERIAL AND METHODS

### Sampling area

Samples were taken along the about 70 km long coast of Santa Marta, on the Caribbean coast of Colombia (11° 15' N - 74° 13' W) (Figure 1). The geomorphology is influenced by the Sierra Nevada de Santa Marta (SNSM), the highest coastal mountain range. In the West area, the rivers bring a rather estuarine character. The Tayrona National Natural Park in the North-East area has deep bays with a much less intense freshwater influence, except during the rainy period (between August and early December). According to measurements in Bahía de Santa Marta the salinity sinks in this time from 38 to 30 (Müller, 1979) and the water gets cloudy due to suspended particles of the rivers. During the dry period, between late December and May, a strong wind called “brisa” predominates, coming from the SNSM (Herrmann 1971), which drives away the warm surface waters into the open sea, and cooler waters from the depth surge in areas near the coast. At the end of the rainy period the seawater temperature drops from 29°C to 25°C in February within short time (Salzwedel and Müller, 1983). Thus temperature, salinity and light-transparency of the sea water are changing drastically throughout the year.

### Collection data

Collecting was carried out at the Instituto de Investigaciones Marinas de Punta de Betún (nowadays Instituto de Investigaciones Marinas y Costeras-INVEMAR) in

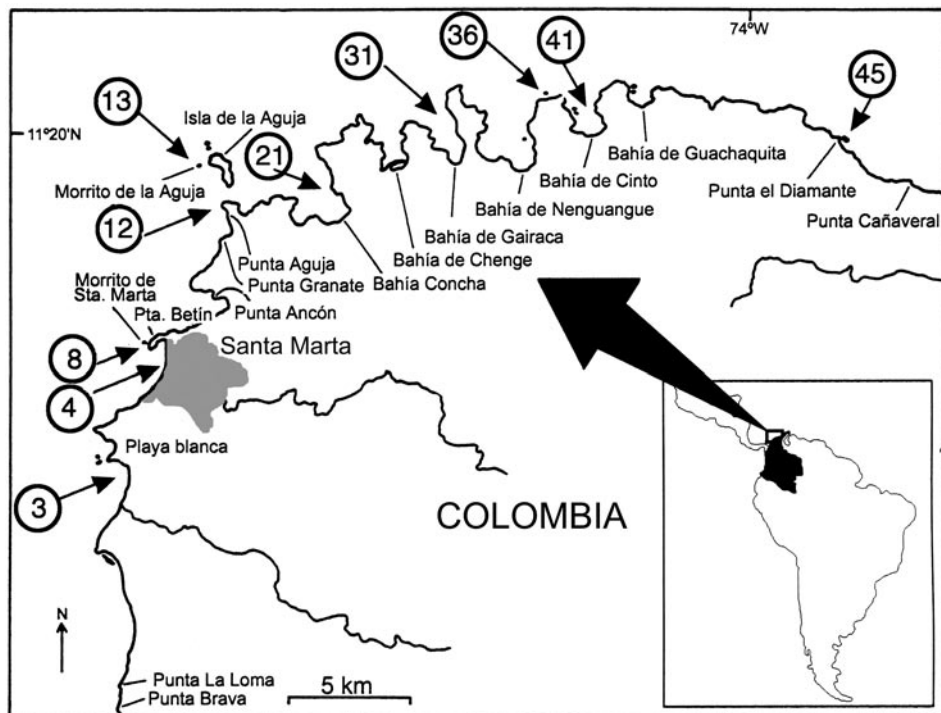


Figure 1. Map of the study area showing the sampling localities.

Santa Marta by the last author, from April 1985 to May 1986. The sampled material was roughly sorted into pycnogonids, amphipods, isopods, and tanaidacea at the Justus-Liebig-Universität, Giessen, Germany and partially also at the Laboratoire de Biologie marine et de Malacologie at Perpignan, France, again by the third author. Along the 70 km of the coast of Santa Marta 45 stations were chosen, the most Western one near the airport (Punta Brava), the last one at the East near Punta El Diamante on the East margin of Tayrona National Natural park. On three stations in Bahía Concha (Western Tayrona park) quantitative samples were monthly taken throughout the year in seagrasses (*Thalassia testudinum*, Station 19) and two adjacent weeds of brown algae on a dead reef of *Porites* (*Digenia simplex*, *Sargassum cymosum*, stations 20, 21). The sample volume was always 5 l, and the substrate was loosely stacked in wide containers. All other 42 stations were placed quite regularly throughout the described region, paying attention to substrates as diverse as possible, in a depth range of 0-30 m. For completing the species list and to get satisfactory ecological data the qualitative collections were as large as possible. Samples below 1 m depth were taken using SCUBA diving; snorkeling was used for samples in the first meter. Better results were obtained by swirling the substrates by hand: the light organic material suspended in the water could be collected with a net of 0.5 mm mesh width. For collecting the tiniest specimens, very fine nets were used to sweep or trail

along seagrass, hydroids or surface of sand. The material was fixed using 3-5% formalin. Then it was washed in freshwater, sorted under a dissecting microscope and preserved in 70% ethanol. Slides were prepared with glycerin and closed by heated paraffin. Pencil drawings were done using a compound microscope provided with camera lucida.

The examined material for the present study is deposited partly at the Instituto de Investigaciones Marinas y Costeras (INVEMAR) in Santa Marta, Colombia, partly at the Museo Civico di Storia Naturale di Verona, Italy. The symbols used in plates are (in alphabetic order): A1, 2 = Antenna 1, 2; Abd = Abdomen; Gn1, 2 = Gnathopod 1, 2; LL = Lower lip = labium; LMd = Left mandible; Mx1, 2 = Maxilla 1, 2; Mxp = Maxilliped; Oo3-4 = Oosteguite 3, 4; P3-7 = Pereopods 3-7; RMd = Right mandible; UL = Upper lip = labrum.

Although the phylogeny and higher classification of the caprellids is still under debate (Laubitz, 1993; Takeuchi, 1993), Myers and Lowry (2003) have recently proposed a new phylogeny and classification for the suborder Corophiidea Leach, 1814, which is divided into two infraorders, the Corophiida and the Caprellida, based on a hypothesis of the evolution of different feeding strategies. In their new classification, the superfamily Caprelloidea contains five families: Caprellidae, Caprogammaridae, Cyamidae, Dulichiidae and Podoceridae. The Caprellidae are subdivided into three subfamilies: Caprellinae, Paracercopinae and Phtisicinae. In the present paper we have adopted this classification and have focused our study on members of the family Caprellidae.

### Station list and caprellids found:

**Station 3:** Playa Blanca, near El Rodadero/Santa Marta. Under stones covered with algae, 0.5-1 m. 30.XII.1985. *Deutella mayeri*.

**Station 4:** Bahía de Santa Marta, Isla Morro Grande de Santa Marta, North side. Algae on rocks, coral rubble, porifera, and hydroids, 0-30 m. 24.V.1985, 18.IX.1985, 9.X.1985, 9.XII.1985, 12.XII.1985, 10.III.1986. *Caprella* cf. *penantis*, *Deutella incerta*, *Hemiaegina minuta*, *Tritella chibcha* n.sp.

**Station 8:** Punta Betún. Epiphytes on shadowy or light-exposed concrete piers; detritus, corallinacea, porifera, hydroids (mainly *Cnidoscypus*), bryozoa, and coral rubble, 0-28 m. 24.IV.1985, 25.IV.1985, 4.V.1985, 8.V.1985, 10.V.1985, 12.V.1985, 14.V.1985, 16.V.1985, 18.V.1985, 19.V.1985, 27.V.1985, 3.VI.1985, 17.VI.1985, 19.VI.1985, 21.VI.1985, 22.VI.1985, 1.VII.1985, 1.VIII.1985, 4.VIII.1985, 3.IX.1985, 15.IX.1985, 21.IX.1985, 1.XII.1985, 24.XII.1985, 29.XII.1985, 29.I.1986, 10.II.1986, 14.III.1986. *Deutella incerta*, *Deutella mayeri*, *Hemiaegina minuta*, *Paracaprella pusilla*.

**Station 12:** Punta Aguja. Coral rubble, porifera, hydroids, and bryozoans, 11-20 m. 16.IX.1985, 2.X.1985. *Aciconula* sp., *Caprella* cf. *penantis*, *Deutella incerta*.

**Station 13:** Isla Aguja. Coral rubble, 30 m, 18.II.86. *Deutella incerta*.

**Station 21:** Bahía Concha. Brown-algae *Digenia simplex* and *Sargassum cymosum* on dead *Porites* - reef; quantitative sample of 5 l each, cutting off the entire thallus; mesolitoral. *Thalassia* and *Halocordyle* and *Cnidoscypus* hydroids. 0-1 m. 22.V.1985, 7.VI.1985, 27.VI.1985, 5.VII.1985, 8.VII.1985, 15.VII.1985, 13.VIII.1985, 9.IX.1985, 2.X.1985, 28.X.1985, 8.XI.1985, 7.XII.1985, 12.II.1986, 3.III.1986, 2.IV.1986, 3.IV.1986. *Caprella danilevskii*, *Caprella* cf. *penantis*, *Hemiaegina minuta*, *Deutella mayeri*, *Deutella caribensis* n.sp.

**Station 31:** Eastern beach near Punta Gayraca. Under stones on sand and from algae like *Sargassum* or seagrass *Thalassia*, mesolitoral, 6.VI.1985, 12.VII.1985, 17.I.1986. *Caprella danilevskii*, *Deutella mayeri*, *Paracaprella pusilla*.

**Sample 36:** Bahía Nenguangue, Roca Ahogada NE of Punta del Esbarrancado. Brown algae such as *Cladophyllum schnetteri*, hydroids, and *Thalassia*, 0.5-2 m. 27.V.1985, 30.VII.1985, 20.XII.1985, 17.I.1986. *Caprella danilevskii*, *Deutella mayeri*, *Hemiaegina minuta*.

**Station 41:** Bahía Cinto, southern beach. Pure sand with little detritus, *Syringodium*-weed, 0-3 m. 20.XII.1985, 17.III.1986, 14.IV.1986. *Deutella mayeri*, *Tritella chibcha* n.sp.

**Station 45:** Punta El Diamante (Arrecifes/Cañaverales). Algae, hydroids, and bryozoans on rocky slope, 1-10 m. 26.IX.1985, 25.II.1986. *Deutella incerta*, *Deutella mayeri*, *Hemiaegina minuta*, *Pseudaeginella colombiensis* n.sp.

**Additional sample1:** Isla de Providencia, *Thalassia*, 5.XII.80, leg. INVEMAR: *Deutella mayeri*.

**Additional sample2:** From stomach of *Acanthurus coeruleus*; Sta. Marta area, 5 m, leg. Sergio Duarte, 1.VII.85: *Hemiaegina minuta*.

## SYSTEMATIC ACCOUNT

### Family Caprellidae Leach, 1814

### Subfamily Caprellinae Leach, 1814

### *Caprella* cf. *penantis* Leach, 1814

(Figures 2-4)

*Caprella Penantis* Leach, 1814: 404.

*Caprella acutifrons* Mayer, 1882: 48; Mayer, 1890 (included f. *neglecta*, *tabida*, *gibbosa*, *carolinensis*, *lusitanica*, *virginia*): 50, pl. 2, figs. 36-37, 39-41, pl. 4, figs. 52-53, 55, 57-61, 65-69; Mayer, 1903: 79, pl. 3, figs. 4-28; pl. 7, figs. 62-65.



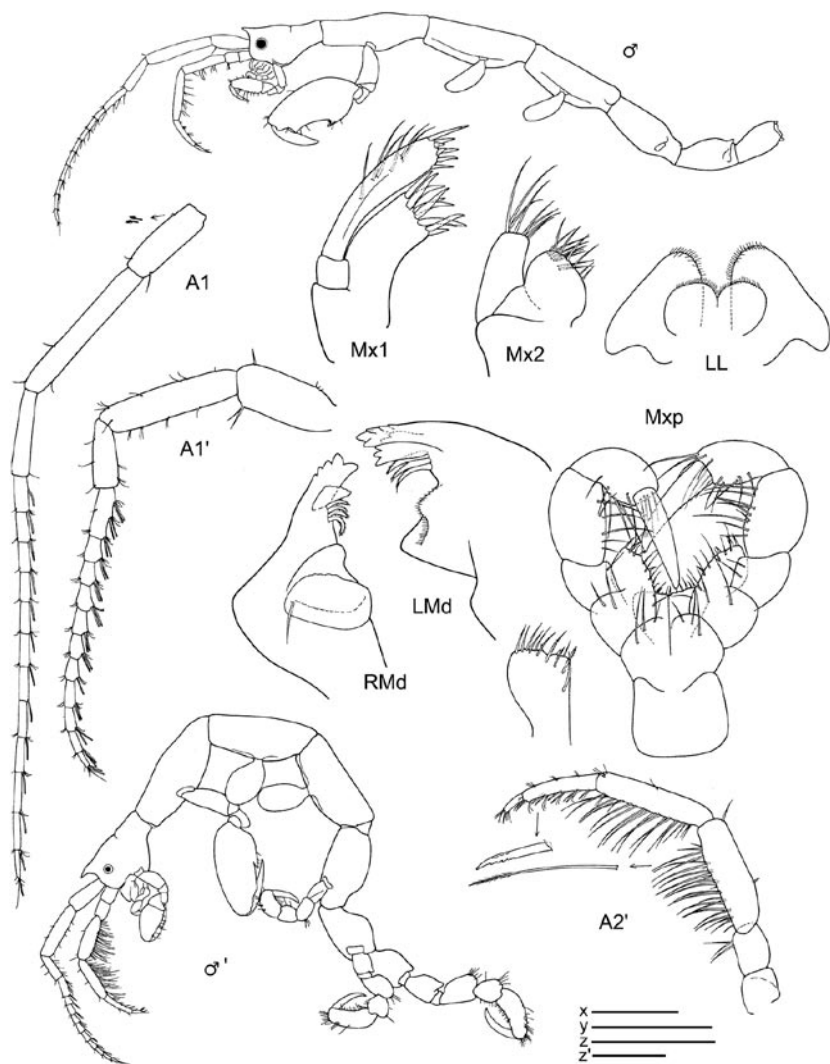


Figure 2. *Caprella cf. penantis*. Males of different robustness. Lateral views in scale  $x=1$  mm; A1, A1', A2' in scale  $y=0.5$  mm; RMd, LMd, Mx1 and Mx2 in scale  $z=0.1$  mm; LL, Mxp in scale  $z'=0.1$  mm.

*Caprella penantis* McCain, 1968: 33, figs. 15-16; McCain and Steinberg, 1970: 33; Cavedini, 1982: 508; Krapp-Schickel, 1993: 791-793; Guerra-García and Takeuchi, 2002: 692-693, fig. 12; Guerra-García, 2004: 30, 32, fig. 26; Guerra-García and Takeuchi, 2004: 1013-1015, fig. 35; Krapp-Schickel and Guerra-García, 2005: 48-49, fig. 2.

**Material examined:** 187 specimens

**St.4:** 3 males, 3 females, hydroids, 11-19 m, 9.X.1985. **St.12:** 1 male, hydroids and bryozoans, 11-15 m, 2.X.1985. **St.21:** 1 male, 2 females, from hydroids, 0-0.5 m,

7.VI.1985; 11 males, 10 females (1 ov.), 5 juveniles, from intertidal hydroids, 5.VII.1985; 8 males, 7 females (2 ov.), from hydroids under overhanging rocks, intertidal, 8.VII.1985; 26 males, 18 females (13 ov.), 17 juveniles, from hydroids, intertidal, 15.VII.1985; 2 males, 5 females (1 ov.), from hydroids, lower intertidal, 2.X.1985; 36 males, 31 females (25 ov.), 2 juveniles, from hydroids, lower intertidal, 8.XI.1985.

Figured specimens are from St. 21, 15.VII.1985 (males) and St. 4, 9.X.1985 (female).

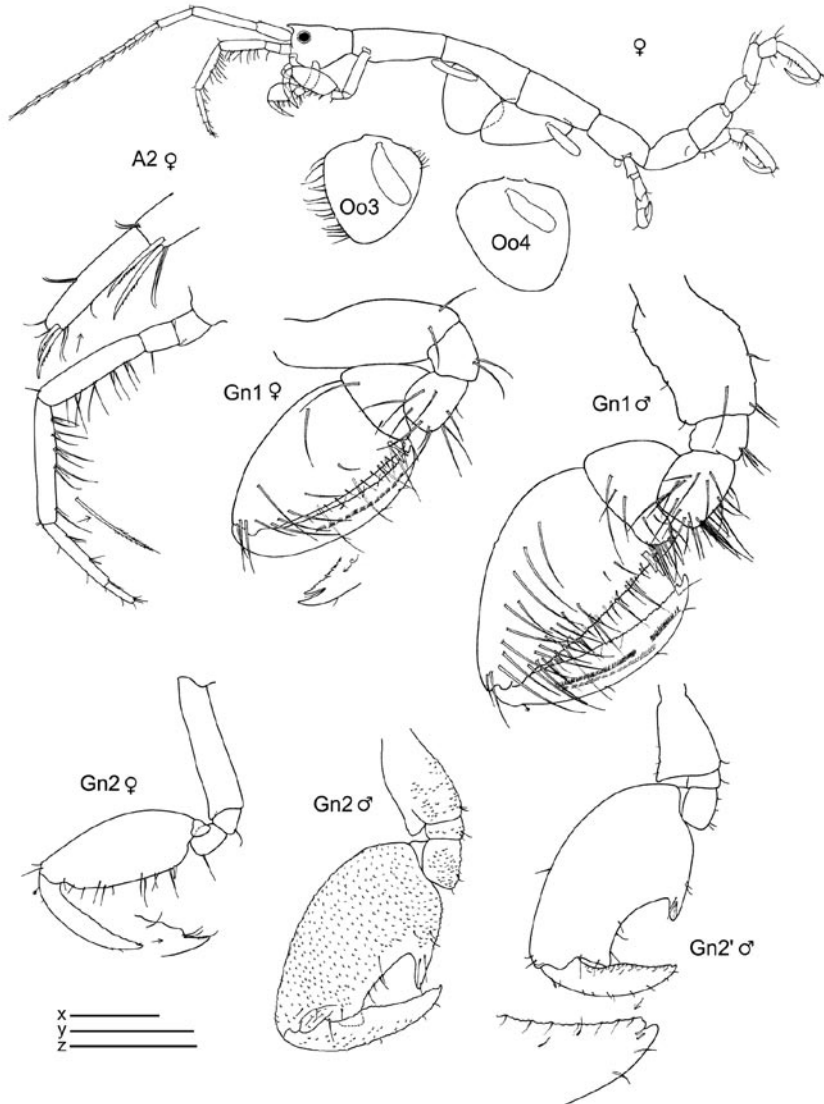


Figure 3. *Caprella cf. penantis*. Lateral view in scale  $x=1$  mm; A2♂, Gn2♂, Gn2'♂, Gn2♀ in scale  $y=0.5$  mm; Gn1♂, Gn1♀ in scale  $z=0.2$  mm

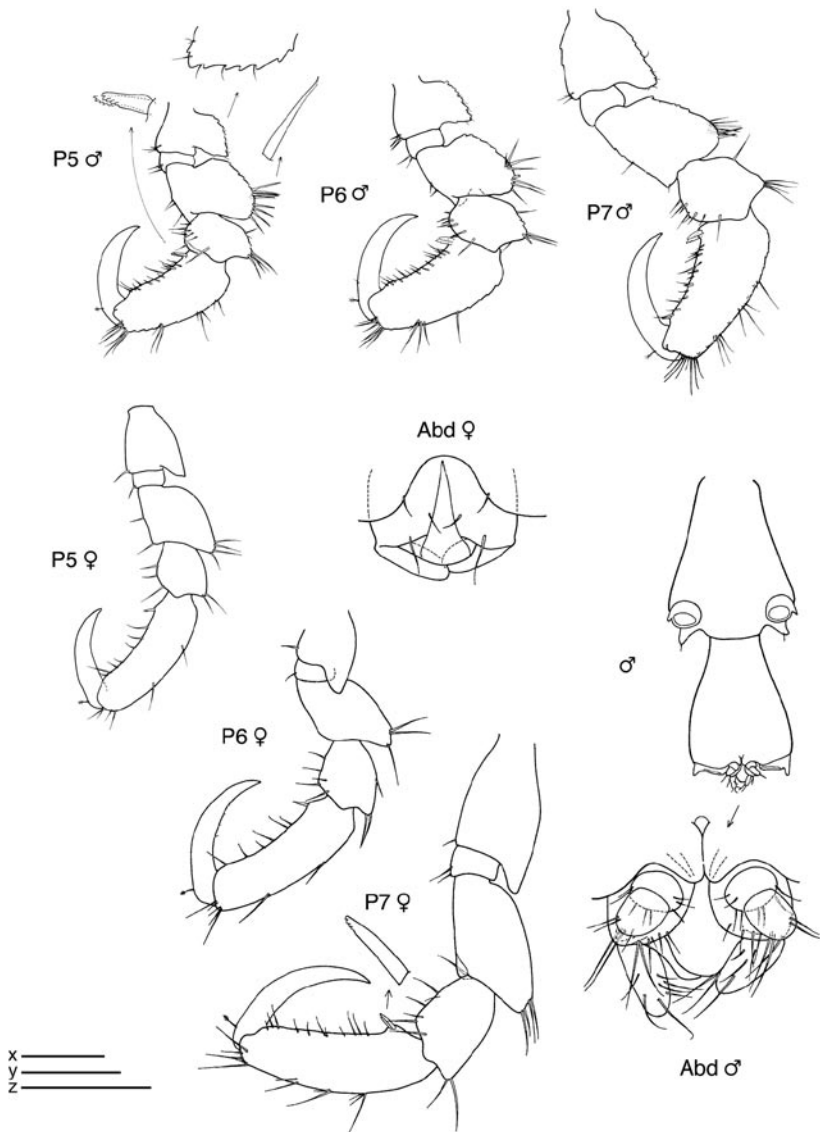


Figure 4. *Caprella cf. penantis*. P5-7♂ in scale  $x=0.3$  mm; P5-7♀ in scale  $y=0.3$ mm; Abd♂, Abd♀ in scale  $z=0.1$  mm.

### Remarks

The specimens collected from Colombian waters are close to *C. penantis*. At the moment, we have considered this species as *C. cf. penantis* since we have not been able to find constant morphological differences between the Colombian specimens and the Mediterranean and Atlantic *C. penantis* (Krapp-Schickel, 1993; Guerra-García and Takeuchi, 2002; Riera *et al.*, 2003; Guerra-García *et al.*, 2006.). Nevertheless,



the present material from Colombia show high degree of morphological variation in connection with the robustness of antennae and body, number and length of swimming setae in antenna 2, and shape of the gills. Some specimens even presented the gnathopod 2 provided with tiny tubercles. Recently, Díaz *et al.* (2005) figured *C. penantis* based on a specimen collected from the Caribbean coast of Venezuela and it is very similar to the material collected from the Caribbean coast of Colombia, probably belonging to the same species.

*Caprella penantis* has been recorded under several specific or subspecific names from temperate regions worldwide (McCain and Steinberg, 1970) and further morphological and molecular studies are required to evaluate the respective status of this species around the world (McCain, 1968; Laubitz, 1972; Takeuchi and Hirano, 1995). In this sense, Guerra-García *et al.* (2006) have used a preliminary molecular approach (RAPD analysis) to explore intraspecific variation among populations of *C. penantis* from the Strait of Gibraltar, showing that the different morphs of *C. penantis* in that biogeographical area seem to be ecotypes rather than different species.

### **Habitat**

This species was found nearly exclusively in Bahía Concha, and mainly on hydroid *Cnidoscypus* from the intertidal area.

*Caprella penantis* has been found living on red and brown algae, *Posidonia*, hydroids, Alcyonaria, Zoantharia, Bryozoa, sponges, *Arbacia* (Echinodermata) and *Libinia* (Decapoda) (Krapp-Schickel, 1993). Guerra-García (2001b) found the species in intertidal exposed areas and in infralittoral areas of high hydrodynamics, clinging onto different species of algae and hydroids. The species has been also found in sponges, ascidians, spirorbids, gorgonaceans and *Caulerpa* beds (Guerra-García, 2004), and among mussels (Díaz *et al.*, 2005)

### **Distribution**

Type locality: Devonshire Coast, England (McCain and Steinberg, 1970). Other records: Atlantic Ocean, Indian Ocean, Pacific Ocean and Mediterranean Sea (Krapp-Schickel and Guerra-García, 2005). Doubtfully considered cosmopolitan.

### ***Caprella danilevskii* Czerniavskii, 1868**

(Figures 5,6)

*Caprella Danilevskii* Czerniavskii, 1868: 92, pl. 6, figs. 21-34; Mayer, 1890: 58, pl. 5, fig. 44; pl. 7, figs. 12-13.

*Caprella inermis* Haswell, 1879: 319-351.

*Caprella Danilevskii* Chevreux and Fage, 1925: 454, fig. 432.



*Caprella danilevskii* McCain, 1968: 22, figs. 10-11; McCain and Steinberg, 1970: 16; Cavedini, 1982: 499; Krapp-Schickel, 1993: 779, fig. 531; Guerra-García and Takeuchi, 2002: 683-684, fig. 6; Guerra-García, 2004: 28-30, fig. 24; Guerra-García and Takeuchi, 2004: 1005-1007, figs. 28-29; Díaz *et al.*, 2005: 3,4,12, fig.3; Guerra-García, 2006.

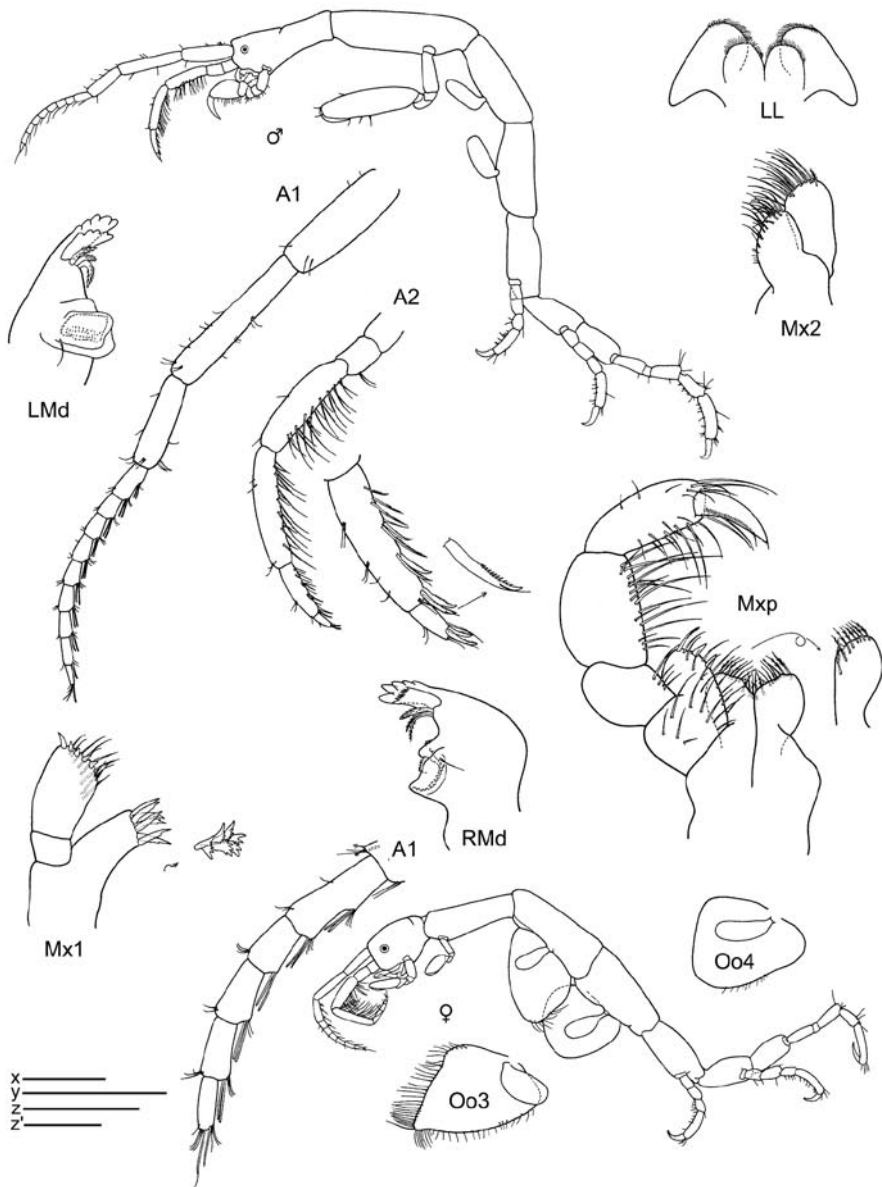


Figure 5. *Caprella danilevskii*. Male lateral view, antennae and mouthparts. Female lateral view and oosteguites. Lateral views in scale x=1mm; A1,A2 in scale y=0.5 mm; RMd, LMd, Mx1, Mx2, Mxp in scale z=0.1 mm; LL in scale z'=0.1 mm.

**Material examined:** 385 specimens

**St. 21:** 2 males, from hydroids, 0-0.5 m, 7.VI.1985; 6 males, 15 females, 14 juveniles, *S. cymosum*, 0-0.5 m, 7.VI.1985; 6 males, 2 females, 34 juveniles, hydroids, 0-0.5 m, 27.VI.1985; 5 males, 2 females (ov.), from intertidal hydroids, 5.VII.1985; 10 males, 6 females; from hydroids under overhanging rocks, 8.VII.1985; 18 males, 29 females (1ov.), 12 juveniles, from brown and red algae on rocky shore, intertidal, 15.VII.1985; 6 males, 1 ov.female, from s ? hydroids, intertidal, 15.VII.1985; 4 males, 6 females, 6 juveniles, from *S. cymosum* on dead *Porites* reef, 0-0.5m, 9.IX.1985; 1 male, hydroids, lower intertidal, 8.XI.1985; 2 males, 4 females, 2 juveniles, *S. cymosum*, 0-0.5 m, 7.XII.1985; 6 males, 20 females (10 ov.), 8 juveniles, *S. cymosum* on dead *Porites* reef, 0-0.5 m, 8.VII.1985; 1 male, 3 females (1 ov.), 1 juvenile, *Digenia simplex*, intertidal, 12.II.1986; 22 males, 20 females (4 ov.), 4 juveniles, *S. cymosum*, 0-0.5m, 3.IV.1986.  
**St. 31:** 17 females (5ov.), from *Sargassum* on rocky shore, lower intertidal, 12.VII.1985.  
**St. 36:** 18 males, 32 females, 40 juveniles, Punta Embestidero, from brown algae (*C. schnetteri*), 0.5 m, 23.IX.85.

Male and female figured from St. 21, 8.XI.1985.

### Remarks

The present specimens of *C. danilevskii* collected from Colombia are in agreement with other material distributed worldwide (Guerra-García and Takeuchi, 2002). The distinctive male abdomen, the absence of grasping spines in the pereopods and the short dactylus of male gnathopod 2 distinguish clearly this species from other species of *Caprella*. Nevertheless, this species also shows some intraspecific morphological variation; recently, Guerra-García and Takeuchi (2004) studied material from Tasmania and found some males showing very elongate antenna 1, pereonites 1 and 2, basis and propodus of gnathopod 2. As the distance to the type locality is quite long, it could well be that this Colombian material is another species, but morphologically it matches with the typical description.

### Habitat

The present material has been found attached mainly to *S. cymosum* and to the hydroid *Cnidoscypus*, widely distributed in shallow waters. In previous studies, the species has been found in *Cystoseira*, *Sargassum*, amongst *Bugula* (Krapp-Schickel, 1993). Guerra-García (2001b) collected specimens from different species of algae in areas of high hydrodynamics. In Australian waters, the species has been found on brown algae, seagrass, sponges and tunicates (Guerra-García, 2004). Recently, the species has also been found in Venezuela clinging to algae. *Caprella danilevskii* and also *C. penantis* appear to have acquired the ability of attaching to the substrate using gnathopod 1 in a “parallel” posture rather than in the “upright” posture used by species living in calmer



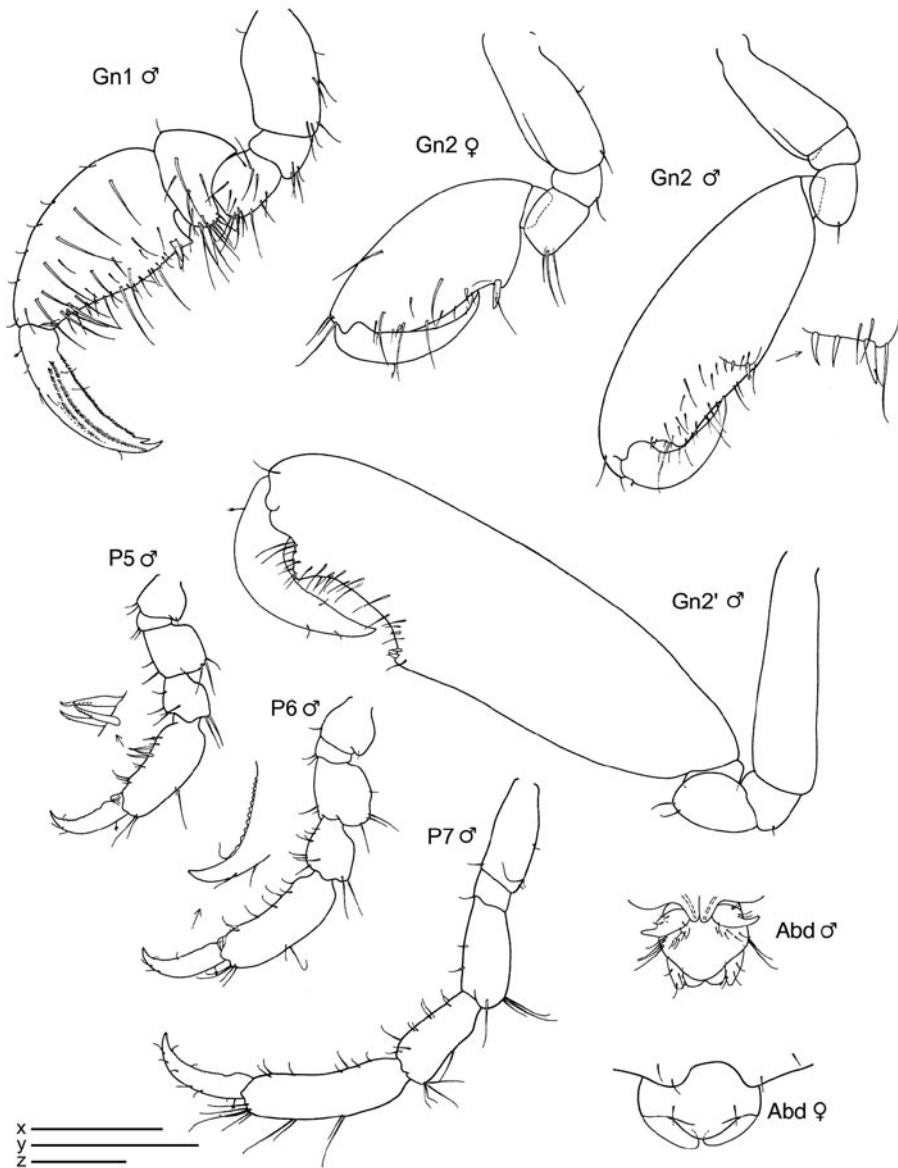


Figure 6. *Caprella danilevskii*. Gn1♂, Abd♂ in scale x=0.2 mm; Gn2♂, Gn2'♂, Gn2♀, P5-7♂ in scale y= 0.5 mm; Abd♀ in scale z=0.1 mm.

waters. These species feed mainly by scraping (Takeuchi and Hirano, 1995; Guerra-García *et al.*, 2002) and can be mainly found in very exposed areas, with high hydrodynamics and low values of sedimentation (Guerra-García and García-Gómez, 2001). *Caprella danilevskii* is one of the most studied caprellid species in respect of life history, based on Japanese specimens (Takeuchi and Hirano, 1991; 1992).

## Distribution

Type locality: Black Sea (McCain and Steinberg, 1970). Other records: Mediterranean, South Africa, South Arabian coast, Bermuda, Venezuela, Brazil, Hawaii, north eastern Pacific, and Australia (McCain and Steinberg, 1970; Krapp-Schickel, 1993; Arimoto, 1976; Guerra-García, 2004; Díaz *et al.*, 2005). Doubtfully considered cosmopolitan.

## *Deutella caribensis* n.sp

(Figures 7,8)

## Type material (9 specimens)

**St. 21:** Holotype male 2 slides (INV-CRU 5783) from *Thalassia*, 1 m, 27.VI.1985; Paratype female slide (INV-CRU 5784); additional paratype material in alcohol (MVRCr 450): 2 males, 2 females, 1 juvenile from *Thalassia*, 0.5-3 m, 9.IX.1985 and 2 males from *Thalassia*, 2-3 m, 7.XII.1985.

## Type locality

Bahía Concha, Colombia, 0.5-3 m, *Thalassia* beds.

## Etymology

Named *caribensis* alluding to the Caribbean Sea.

## Description

### Holotype male

Lateral view (Figure 7): Head with a pair of dorsal projections. Pereonite 1 fused with head, suture present. Pereonites 3 and 4 with a medial and a distal projection dorsally. Pereonite 4 with two medial projections dorsally. Pereonites 3 and 4 subequal. Pereonite 5 the longest. Pereonite 7 the shortest.

Gills (Figure 7): Elongate, length about four times width.

Mouthparts (Figure 7): Mandibles with 3-articulate palp; distal article of palp with a setal formula 1-6-1; second article provided with a simple setae; mandibular molar robust; left mandible with incisor and lacinia mobilis 5-toothed followed by three plumose setae; incisor of right mandible 5-toothed, lacinia mobilis serrate followed by 3 small plates; molar flake absent. Lower lip with well-demarcated inner lobes; outer lobes provided with setulae on apical margin. Maxilla 1 outer lobe with 6 robust setae. Maxilla 2 inner lobe triangular with 4 setae distally; outer lobe slightly larger than inner lobe, rectangular with 5 apical setae. Maxilliped inner plate rectangular with four setae and two robust and short seta (like “teeth”); outer plate about 1.5 times as large as inner plate, with six setae; palp 4-articulate, penultimate article of the palp without a distal projection, dactylus with two rows of setulae.



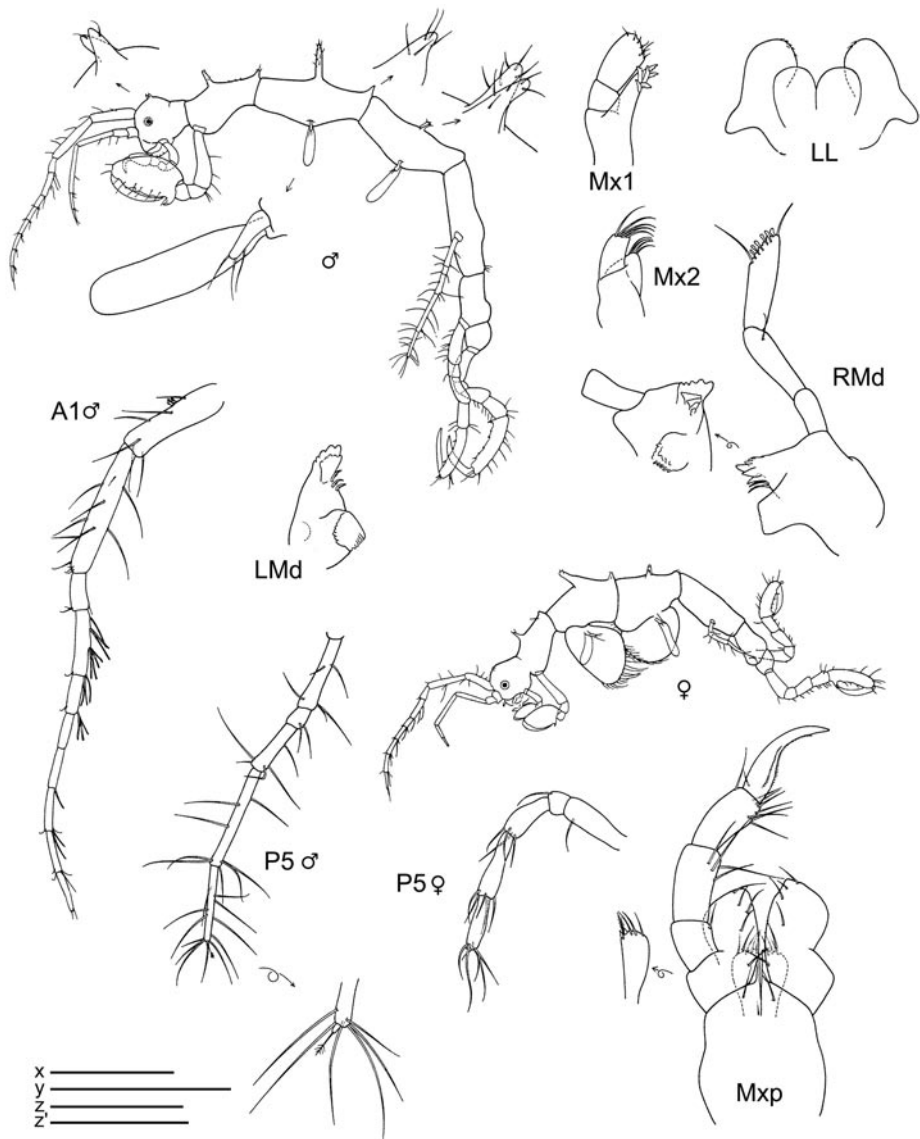


Figure 7. *Deutella caribensis* n.sp. Male holotype and female paratype. Lateral views in scale  $x=1\text{mm}$ ;  $A1\sigma$ ,  $P5\sigma$  in scale  $y=0.5\text{ mm}$ ;  $P5\text{♀}$  in scale  $z=0.2\text{ mm}$ ;  $RMd$ ,  $LMd$ ,  $Mx1$ ,  $Mx2$ ,  $Mxp$ ,  $LL$  in scale  $z'=0.1\text{ mm}$ .

Antennae (Figure 7): Antenna 1 about half of body length; flagellum 7-articulate. Antenna 2 with short setae (no swimming setae); basal article of the peduncle with a distal projection; flagellum 2-articulate.

Gnathopods (Figure 8): Gnathopod 1 basis as long as ischium, merus and carpus combined; propodus length about 1.5 times width, palm with two proximal grasping spines and denticulate margin. Gnathopod 2 inserted on the anterior half of pereonite 2;

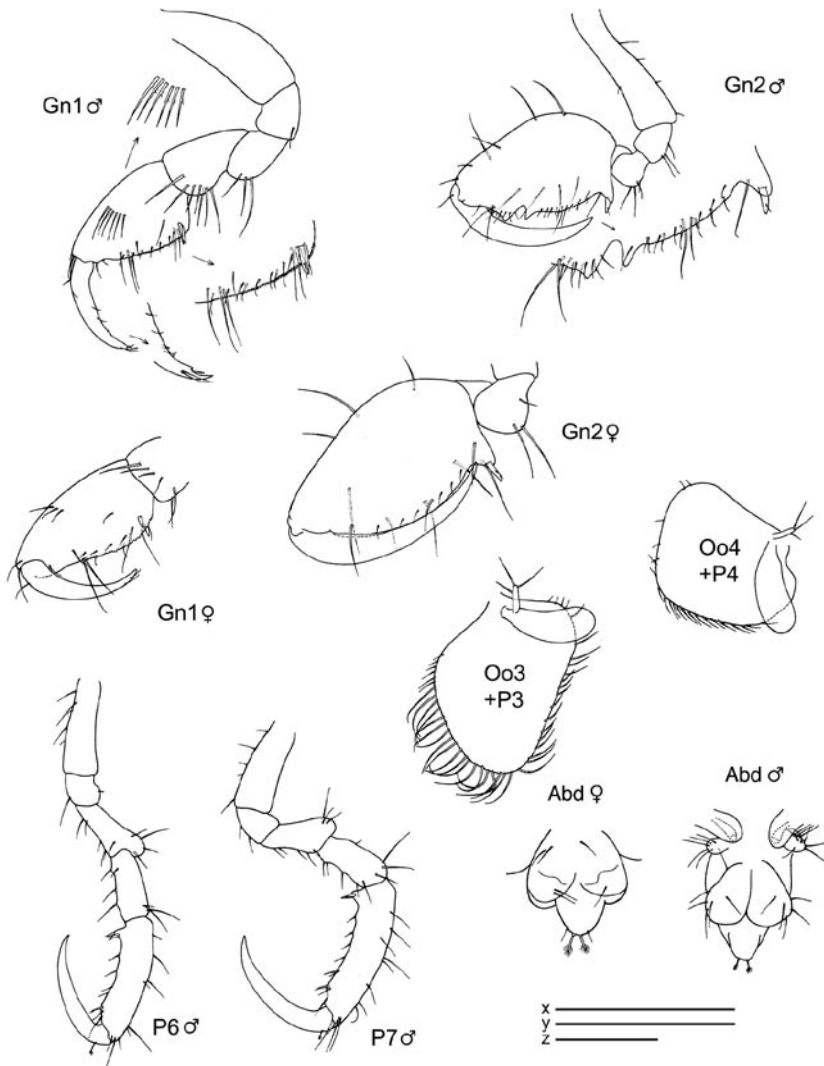


Figure 8. *Deutella caribensis* n.sp. Male holotype and female paratype. Gn1♂, Gn2♀ in scale x=0.2 mm; Gn1♀, Abd♀, ♀ in scale y=0.1 mm; Gn2♂, P6-7♂, Oo3-4♀ in scale z=0.3 mm.

basis almost as long as pereonite 2; ischium rectangular; merus rounded; carpus short and triangular; propodus elongate, about 1.2 times as long as the basis; palm with a proximal projection carrying one grasping spine and two more triangular projections distally; dactylus long.

Pereopods (Figures 7, 8): Pereopods 3 and 4 subequal, 1-articulate, length about 1/3 of gills. Pereopod 5 less robust than pereopods 6 and 7, 6-articulate, distal article extremely reduced with a plumose seta. Pereopod 6 and 7 similar in feature but increasing in size respectively, 6-articulate; propodus with 2 proximal grasping spines.

Penes (Figure 8) rounded, situated laterally.

Abdomen (Figure 8) with a pair of rounded appendages 1-articulate, a pair of lateral lobes and a single dorsal lobe with 2 plumose setae.

### **Paratype female**

Similar to the male holotype apart from the following characters: flagellum of antenna 1 with 6 articles; gnathopod 2 propodus smaller than in male, pereonite 5 also reduced with a tiny distal article but more robust than in male; oostegites on pereonite 3 very setose, on pereonite 4 scarcely setose; abdomen without appendages.

### **Remarks**

The genus *Deutella* was established by Mayer (1890) and has been recently reviewed (Guerra-García, 2002a, 2002b, 2003a). Eleven species of this genus have been described so far: *Deutella antonbruuni* Guerra-García, 2002 *D. aspiducha* Gable and Lazo-Wasem, 1987, *D. californica* Mayer, 1890, *D. incerta* (Mayer, 1903), *D. indica* Guerra-García, 2002, *D. margaritae* Guerra-García, 2002, *D. mayeri* Stebbing, 1895, *D. philippinensis* Guerra-García, 2002, *D. schieckei* Cavedini, 1981, *D. vema* (McCain and Gray, 1971) and *D. venenosa* Mayer, 1890.

*Deutella caribensis* n. sp. can be distinguished from the remaining species of *Deutella* mainly by the combination of the following characteristics: the arrangement of dorsal projections (2-1,1-1,1-2), which is unique in the genus; pereopods 3 and 4 uniaarticulate; pereopod 5 clearly less robust than pereopods 6 and 7 and provided with a tiny distal article which does not look like a dactylus; a pair of 1-articulate abdominal appendages in males.

### **Habitat**

Probably preferring shallow waters with *Thalassia* beds.

### **Distribution**

So far, the species is only known from the type locality.

### ***Deutella incerta* (Mayer, 1903)**

(Figures 9-11)

*Luconacia incerta* Mayer, 1903: 49-50, pl.2, figs. 11-14; pl.6, figs. 73-75; pl.9, figs. 21, 40, 57; McCain, 1968: 53-54, 68-72, figs. 33-35; McCain and Steinberg, 1970: 53.

*Protellopsis stebbingii* Kunkel, 1910: 11-113, fig. 43.

*Deutella incerta* Steinberg and Dougherty, 1957: 281, 285,286; Gable and Lazo-Wasem, 1987: 635-636, fig. 4; Guerra-García 2003a: 1062-1065, fig.3; Díaz *et al.* 2005: 4,5,15, fig.6.



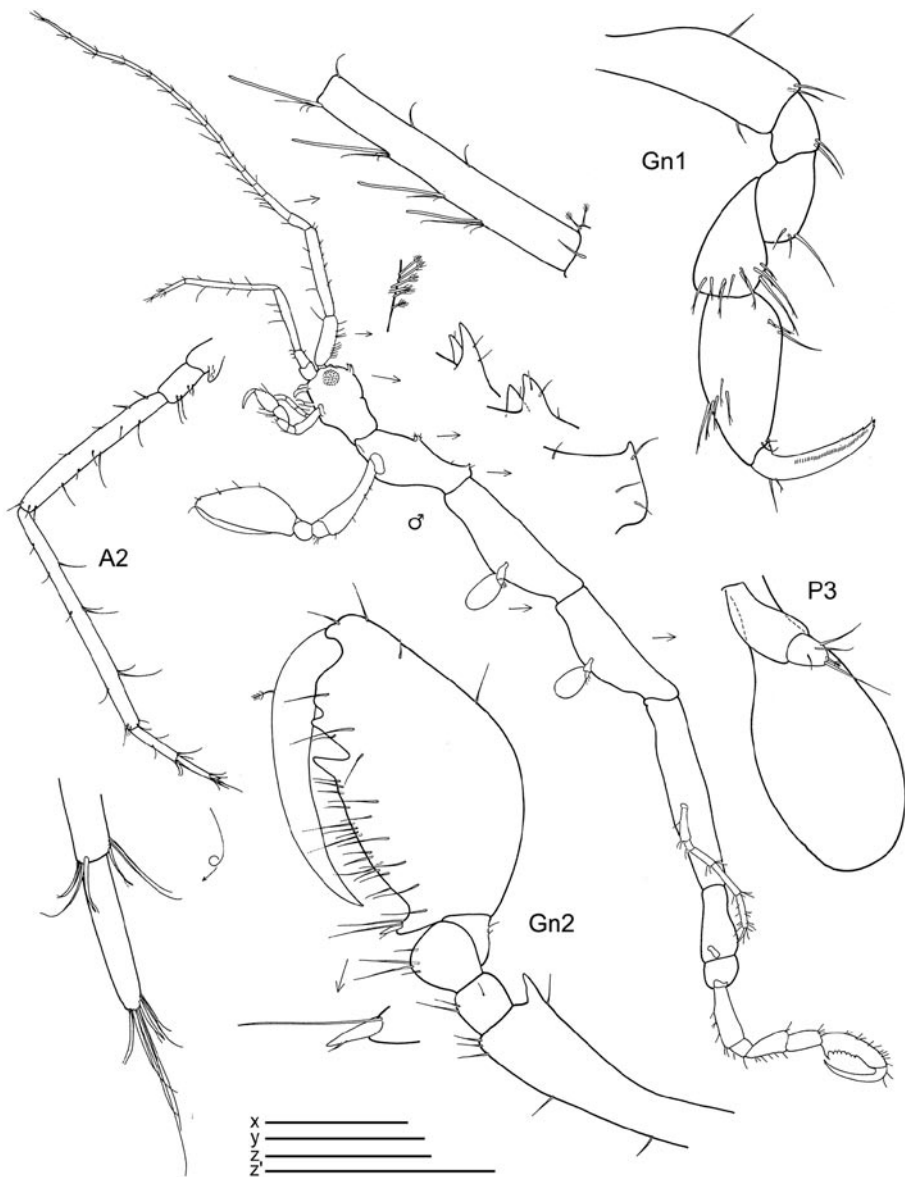


Figure 9. *Deutella incerta*. Male. Lateral view in scale  $x=1$  mm; A2 in scale  $y=0.5$  mm; Gn1, P3 in scale  $z=0.2$  mm; Gn2 in scale  $z'=0.5$  mm.

**Material examined:** 410 specimens

**St.4:** 15 males, 5 females, 7 juveniles, hydroids + sponges, 25-30 m, 18.IX.1985; 16 males, 18 females, 1 juv., hydroids, 11-19m, 9.X.1985; 6 males, 3 females, 9 juveniles, from hydroids, 21-22 m, 9.XII.1985; 8 males, 6 females, 6 juveniles, from coral rubble with hydroids and bryozoans, 19.III.1986. **St.8:** 1 male, from shaded pillars of mole in harbor,

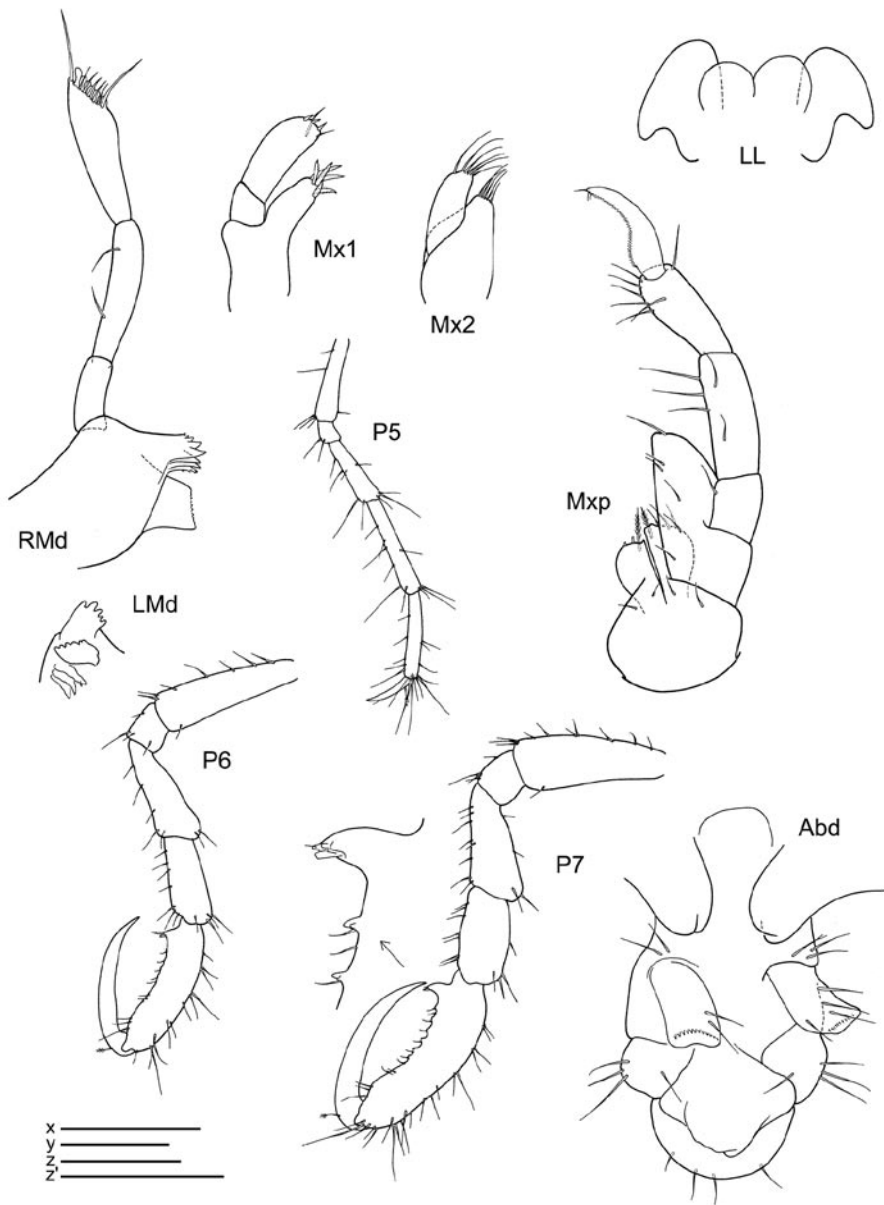


Figure 10. *Deutella incerta*. Male. RMd, LMd, Mx1, Mx2, Mxp in scale  $x=0.1$  mm; LL in scale  $y=0.1$  mm; P5-7 in scale  $z=0.3$  mm; Abd in scale  $z'=0.1$  mm.

5-7 m, debris, sponges, bryozoans, 27.V.1985; 1 male, 2 females, debris and hydroids on stones, 28m, 3.VI.1985; 15 males, 18 females, 21 juvenile, detritus, hydroids on coral rubble, 22-23m, 19.VI.1985; 8 males, 1 female, 24 juv., hydroids, 25-27m, 22. VI. 1985; 2 males, 7 females, 12 juvenile; coral rubble, 15m, 1.VII.1985; 1 male, *Thalassia*, 2 m,

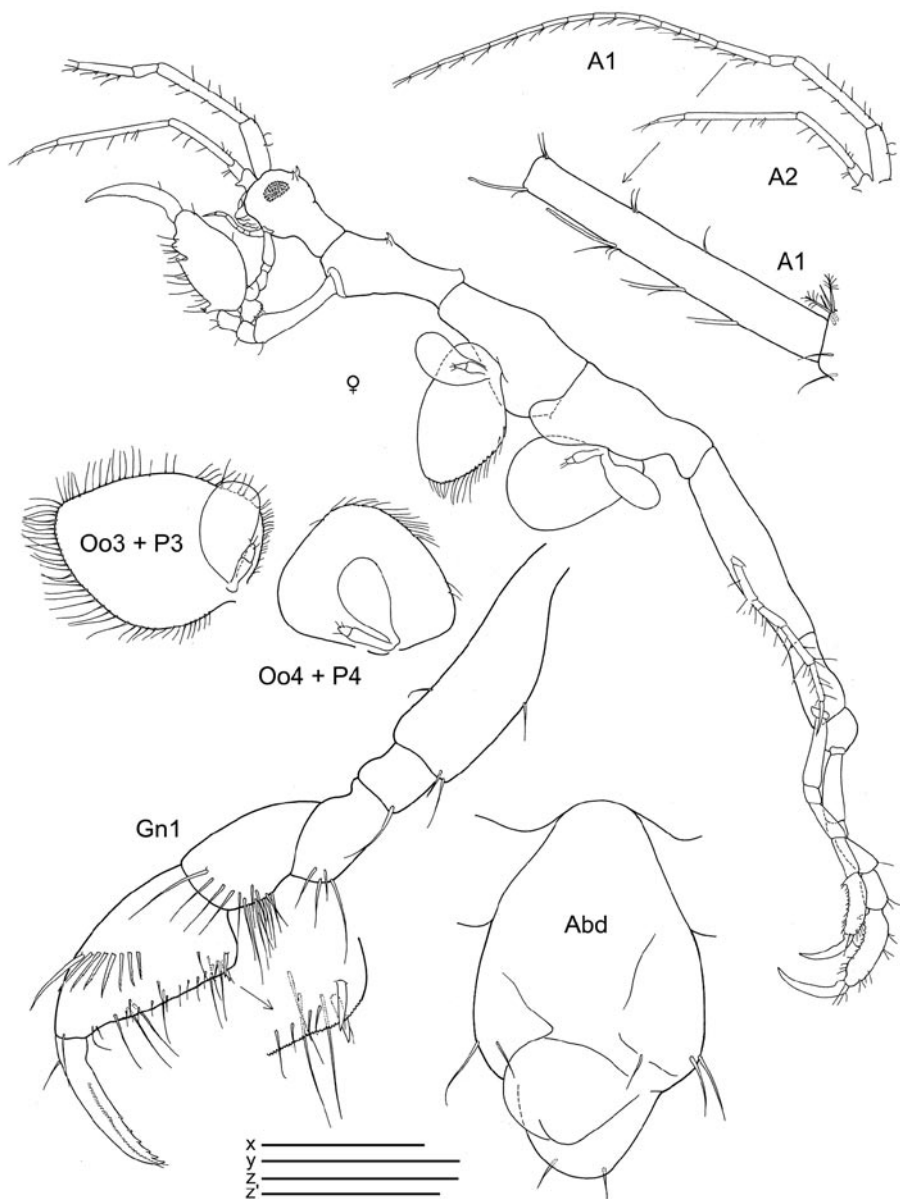


Figure 11. *Deutella incerta*. Female. Lateral view in scale  $x=1$  mm; Oo3-4 in scale  $y=1$  mm; Gn1 in scale  $z=0.2$  mm; Abd in scale  $z'=0.1$  mm.

1.VIII.1985; 8 males, 7 females (1 ov.), 2 juveniles, coral rubble with hydroids, 13-19 m, 4.VIII.1985; 22 males, 16 females, 12 juveniles, hydroids, 22-27 m, 15.IX.1985; 4 males, 3 females, 1 juvenile, hydroids, 20-28m, 21.IX.1985; 8 males, 4 females, 7 juveniles, coral rubble with hydroids, 22-27 m, 1.XII.1985; 2 males, coral rubble with hydroids and

bryozoans, 30m, 10.II.1986. **St. 12:** 1 male, coral rubble, 16-18m, 16.IX.1985; 1 male, 7 females, 11 juvenile, from hydroids and octocorals, 16.IX.1985; 20 males, 22 females, 21 juvenile, from hydroids and bryozoans, 11-15m, 2.X.1985. **St. 13:** 8 males, 5 females, 1 juvenile, coral rubble, 30m, 18.II.1986. **St. 45:** 3males, 1female; algae and hydroids on rocks, 6-10 m, 26.IX.1985.

The figured male and female are from St. 8, 1.XII.1985.

### Remarks

A detailed discussion regarding the status of *D. incerta* is included in Guerra-García (2003a). McCain (1968) pointed out that this species varies considerably in the degree of body spination; larger individuals bear dorsal projections while these are lacking in the smaller ones. The specimens of the present study are provided with the typical dorsal projections on the head and pereonite 2 and are in agreement with the material described and figured by McCain (1968) collected from the Western North Atlantic. The species has been recently collected also from the Venezuelan coast by Díaz *et al.* (2005).

### Habitat

The Colombian specimens have been collected from hydroids, sponges, bryozoans, detritus and coral rubble. The material was mainly found in greater depth, rarely in shallow water, distributed from Santa Marta in eastern direction to Cañaverales. Previously, *Deutella incerta* had been reported from mangrove roots, *Sargassum* sp., *Thalassia* sp., sponges, hydroids, alcyonarians and ascidians, sandy bottoms, and occasionally it has been taken in plankton tows (Guerra-García, 2003a; Díaz *et al.*, 2005). It has been recently reported inhabiting soft bottoms within a depth range of 116 to 1470 m (Winfield *et al.* 2006).

### Distribution

Type locality: off Mobile Bay, Alabama, 29° 24' N, 88° 04' W. Other records: Bermuda, east coast of North America from Woods Hole, Massachusetts to Straits of Florida; Gulf of Mexico from Cedar Keys, Florida to Yucatan; Virgin Islands; Barbuda; Barbados; Isla Margarita, Venezuela; Cuba (Guerra-García, 2003a; Ortiz and Lalana, 1998).

### *Deutella mayeri* Stebbing, 1895

(Figures 12,13)

*Deutella mayeri* Stebbing, 1895: 400-402, pl. 15a; Mayer, 1903: 44-45; McCain, 1968: 54-57, figs. 25,26,52; McCain and Steinberg, 1970: 48; Guerra-García, 2003a: 1070-1071, fig.8.

**Material examined:** 155 specimens

**St. 3:** 2 males, 4 females, 1 juveniles, from stones covered with algae, 0.5-1 m, 30.XII.1985. **St. 8:** 6 males, 4 females (3 ov.), from short algae on rocks, 2-3 m, 24.XII.85; 7 males, 7 females, from algae on rocky shore, 0.5-1 m, 29.XII.1985; 4 males, 3 females, 4 juveniles, from algae on rocks, 0-1 m, 29.I.1986. **St. 21:** 16 males, 3 females (1 ov.), from *Halocordyle*-hydroids on rocks, 1 m, 23.VI.1985; 2 males, 1 female, *Thalassia*, 2-3 m, 7 XII.1985; 2 males, 5 females, 1 juvenile, *Thalassia*, 1-2 m, 2.IV.1986. **St.31:** 5

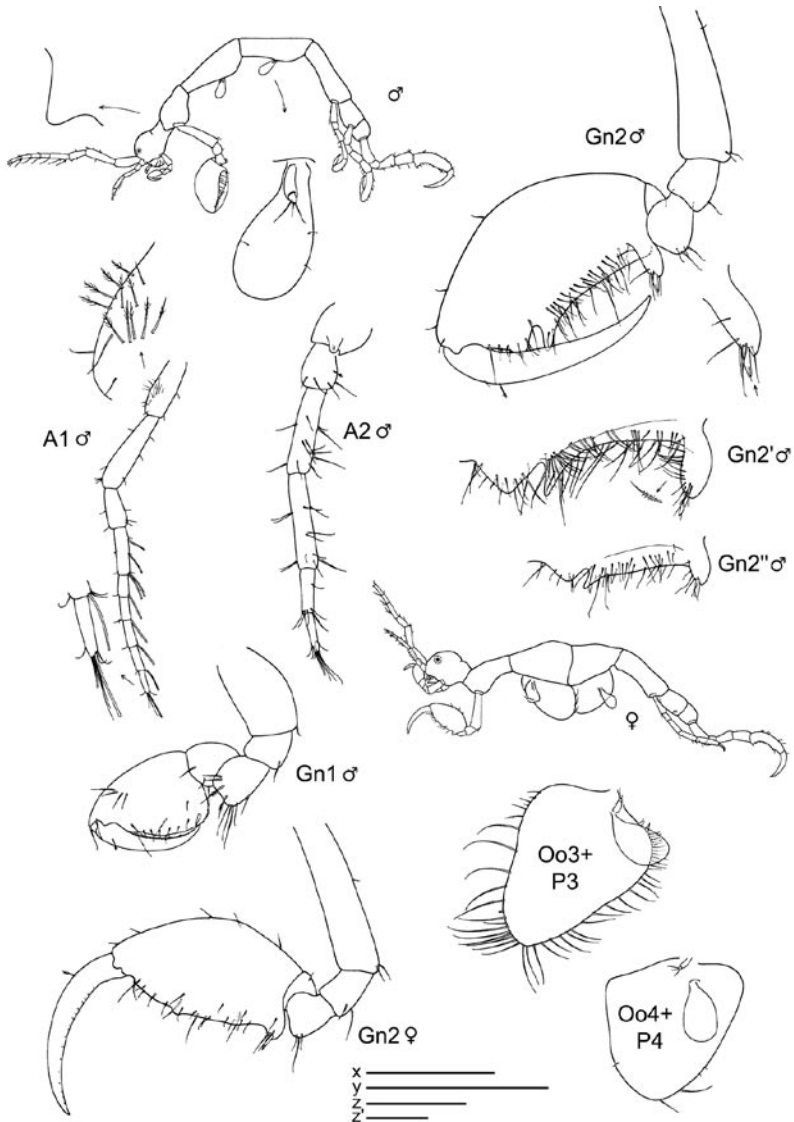


Figure 12. *Deutella mayeri*. Lateral views in scalex=1 mm; A1♂, Gn2♂, Gn2'♂, Gn2''♂, Gn2♀ in scale y=0.3 mm; Gn1♂, A2♂ in scale z=0.1 mm; Oo3-4♀ in scale z'=0.2 mm.

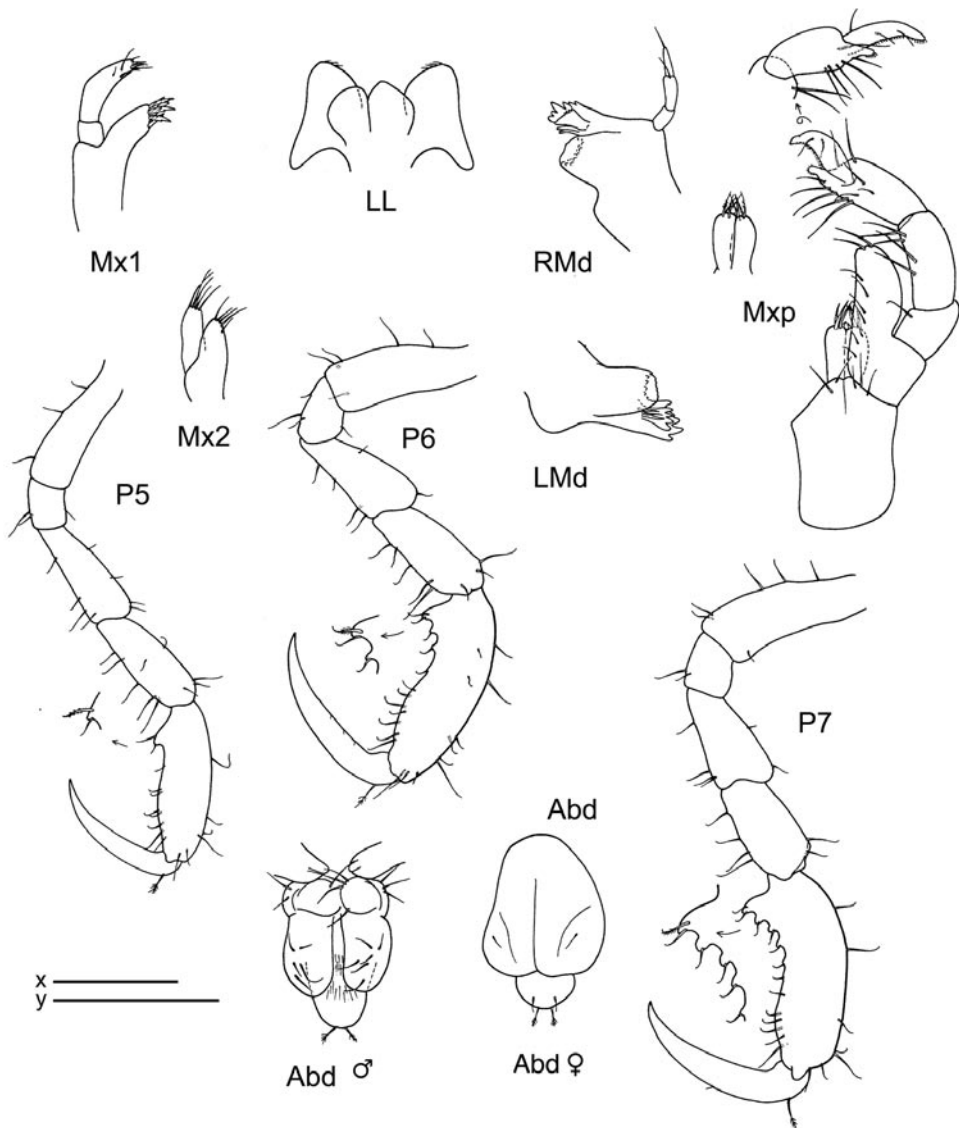


Figure 13. *Deutella mayeri*. Male mouthparts, pereopods and abdomen; female abdomen. RMd, LMd, Mx1, Mx2, Mxp, LL, Abd♂, ♀ in scale  $x=0.1$  mm; P5-7 in scale  $y=0.2$  mm.

males, *Thalassia*, 2 m, 6.VI.1985. **St. 36:** 8 males, 5 females, 4 juveniles, *Thalassia*, 0.5 m, 27.V.85; 7 males, 5 females (1 ov.), 4 juveniles, *Thalassia*, 0.5 m, 20.XII.85; 2 males, 2 females, *Thalassia*, 0.5 m, 17.I.86. **St. 41:** 8 males, 8 females, from stones, intertidal-0.5 m, 17.III.86; 3 males, 9 females, from stones covered with algae, 0-0.5 m, 14.IV.86. **St. 45:** 7 males, 4 females, *Thalassia*, 1-1.5 m, 25.II.86. **Isla de Providencia:** 2 males, 1 female (ov.), *Thalassia*, 5.XII.80, leg. INVEMAR.

## Remarks

*Deutella mayeri* was redescribed and illustrated in detail by McCain (1968). The material from Colombia matches material figured by McCain (1968). The gnathopod 2 of males is very characteristic; it has a triangular elongate process proximally, provided with a grasping spine.

## Habitat

The present material was found in shallow waters at many of the sampling stations, mainly clinging on *Thalassia*, but also living on hydroids and algae. The extant ecological information about this species is very scarce (Guerra-García, 2003a).

## Distribution

Type locality: Antigua (Caribbean Sea). Other records: Bahía Fosforescente, Puerto Rico (Guerra-García, 2003a).

### *Hemiaegina minuta* Mayer, 1890

(Figures 14-16)

*Hemiaegina minuta* Mayer, 1890: 40, pl. 1, figs. 25-27, pl. 3, figs. 32-35, pl. 5, figs. 52-53, pl. 6, figs. 13, 33-34, pl. 7, fig. 4; McCain, 1968: 61-64, figs. 29-30; McCain and Steinberg, 1970: 51; Gable and Lazo-Wasem, 1987: 637; Müller, 1990: 836; Serejo, 1997: 630-632, fig. 1; Guerra-García, 2003b:105-106, fig. 10; Guerra-García 2003c: 6-7, fig. 3; Guerra-García, 2004: 39-40, fig. 32; Díaz *et al.*, 2005: 5,6,18, fig.9; Krapp-Schickel and Guerra-García, 2005: 50,51, fig. 3.

*Hemiaegina quadripunctata* Sundara Raj, 1927, p. 126-127, pl. 18.

*Hemiaegina costai* Quitete, 1972: 165-168, pls. 1-2.

## Material examined: 67 specimens

**St. 4:** 2 males, 1 female, from algae on rocks, intertidal, 24.V.1985. **St. 8:** 1 male, 1 juvenile, algae on rocks, lower intertidal, 12.V.1985; 1 male, 2 females, 2 juveniles, from *Sargassum* on rocky shore, 0.5 m, 15.IX.1985; 1 male; from algae on rocks, 0.5-1 m, 29.XII.1985. **St. 21:** 2 males, 1 female, from algae, intertidal, 22.V.1985; 1 male, *Thalassia*, 1 m, 27.VI.1985; 2 males, from *D. simplex*, lower intertidal, 8.VII.1985; 1 female, 2 juveniles, from *D. simplex*, lower intertidal, 13.VIII.1985; 1 female, *S. cymosum*, lower intertidal-0.5 m, 9.IX.1985; 1 male, *Thalassia*, 2-4 m, 28.X.1985; 2 males, 4 females (1ov.), 3 juveniles, from *S. cymosum* on dead *Porites* reef, 0-0.5 m, 8.XI.1985; 4 males, 5 females, 5 juveniles, *S. cymosum* on dead *Porites* reef, 0-0.5 m, 7.XII.1985; 4 males, 2 females, 1 juvenile; from *D. simplex* on dead *Porites*-reef, intertidal, 12.II.1986; 1 male, *D. simplex*, lower intertidal, 3.III.1986; 2 males, *D. simplex*, lower intertidal, 3.IV.1986;



1 male, 1 female, *S. cymosum*, 0-0.5 m, 3.IV.1986. **St. 36:** 1 male, 1 female, 5 juveniles, Playa del Muerto, *Thalassia*, hydroids and brown algae, 0.5-2 m, 30.VII.1985. **St. 45:** 2 males, from algae and hydroids on rocks, 6-10 m, 26.IX.1985. **Additional sample:** 1 female, from stomach of *Acanthurus coeruleus*; Santa Marta area, 5 m, leg. Sergio Duarte, 1.VII.1985.

The figured male and female come from St. 21, 8.XI.1985.

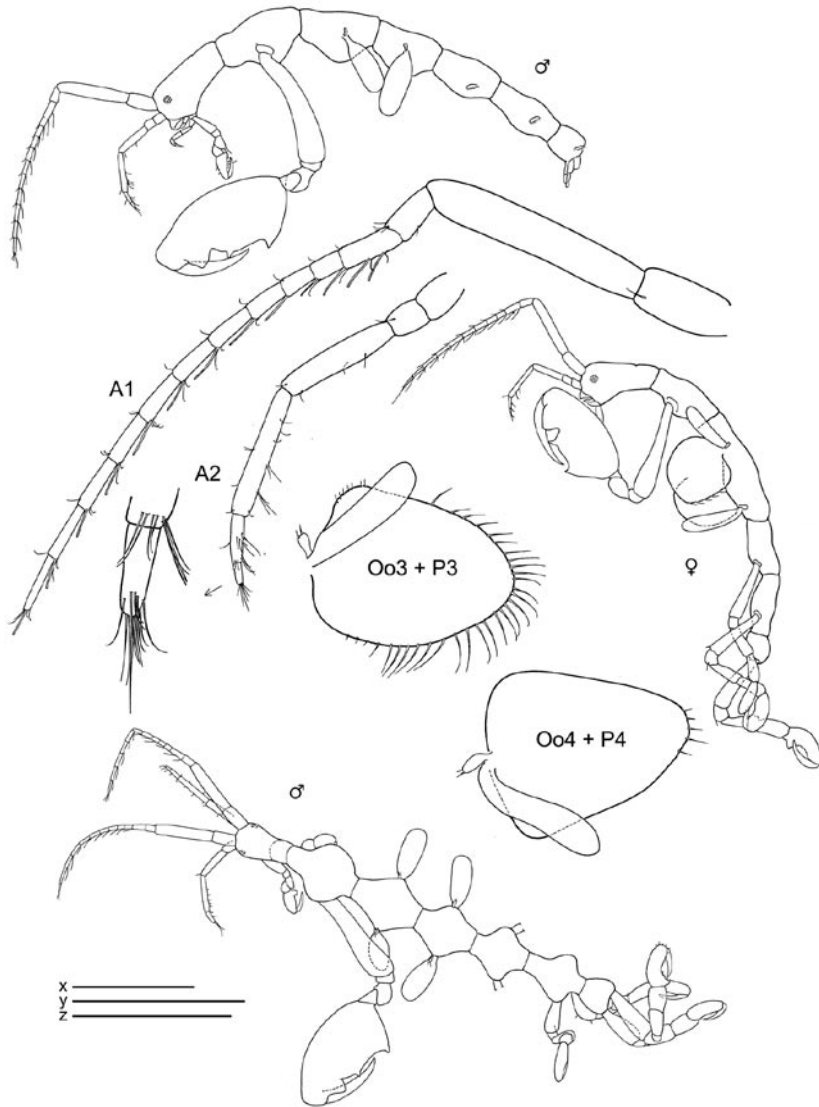


Figure 14. *Hemiaegina minuta*. Male lateral, dorsal view and antenna; female lateral view and oostegites. Lateral and dorsal views in scale  $x=1$  mm; A1,A2 in scale  $y=0.4$  mm; Oo3-4 in scale  $z=0.5$  mm.



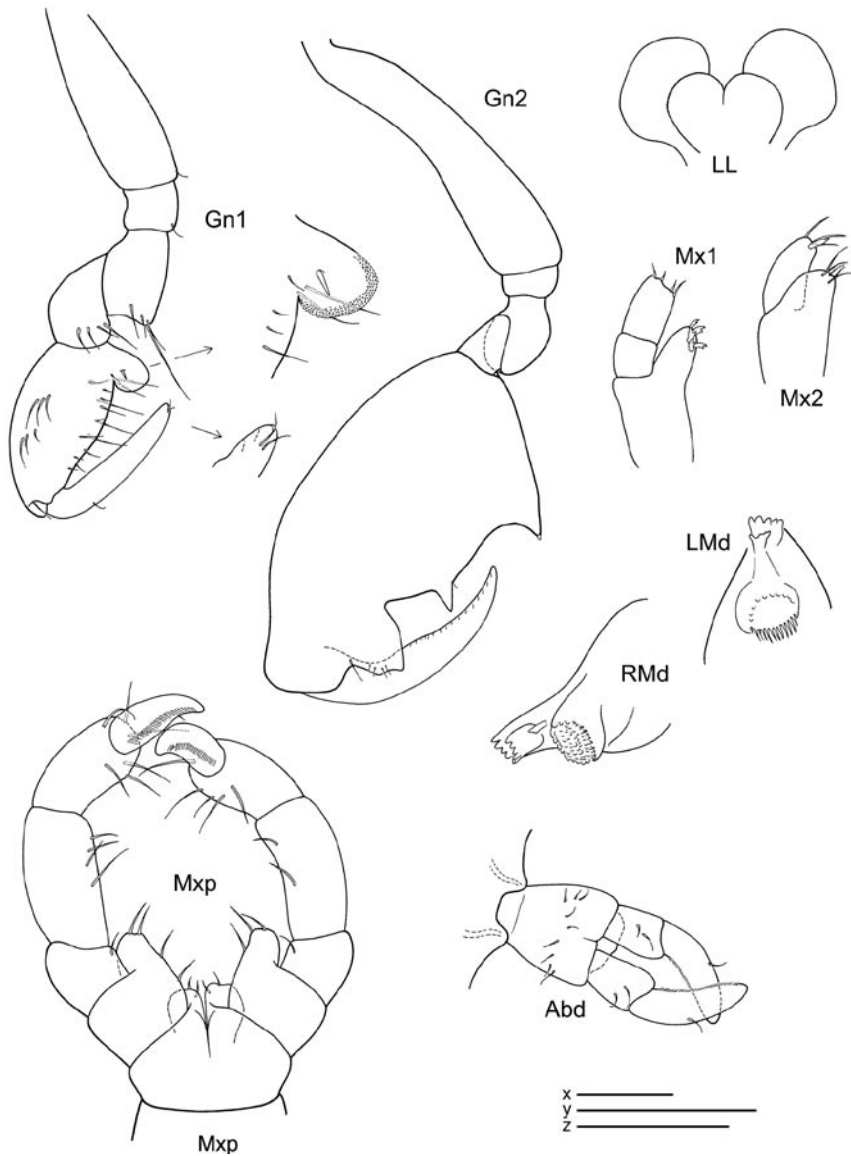


Figure 15. *Hemiaegina minuta*. Male. Gn1, Abd in scale  $x=0.1$  mm; Gn2 in scale  $y=0.5$  mm; RMd, LMd, Mx1, Mx2, LL in scale  $z=0.1$  mm.

### Remarks

The material of *Hemiaegina minuta* from Colombian waters agrees with the descriptions of specimens from other areas of the world. This species shows very distinctive and clear diagnostic characters which facilitate identification: third article of antenna 1 short, antenna 2 without swimming setae, gnathopod 1 propodus with a

round projection proximally, pereonites 3 and 4 rounded, small and abdomen provided with a very distinctive pair of two-articulate appendages. The pereopods 5-7, usually lost in material from previous studies, are fully figured here based on the material from Colombia.

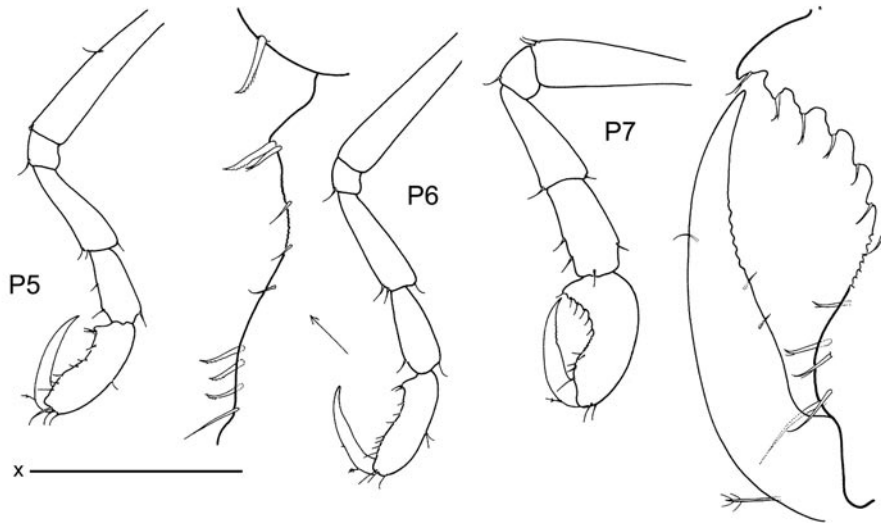


Figure 16. *Hemiaegina minuta*. Male pereopods. P5-7 in scale  $x=0.5$  mm.

### Habitat

The Colombian specimens were collected mainly from algae, specially *D. simplex* and *Sargassum*. *Hemiaegina minuta* has been previously collected from *Sargassum* sp. and taken in plankton tows (McCain and Steinberg, 1970). Müller (1990) reported *H. minuta* as preferring more or less exposed reef locations. Guerra-García (2003b and 2003c) found the species associated to algae in Papua New Guinea and Mauritius. This species was also found associated to many different substrata in Queensland: green, brown and red algae, sponges, tunicates, seagrass, dead corals encrusted with algal turf, and under small boulders (Guerra-García, 2006). This species has also been found on *Arca zebra* (Díaz et al., 2005).

### Distribution

Type locality: Off Amoy, China, 15-46 m. (McCain, 1968). Other records: West coast of United States, South Africa, Hawaii, Bora Bora, Japan, Papua New Guinea, Australia, India, Mauritius, Indonesia, Venezuela, South Arabian coast (McCain and Steinberg, 1970; Guerra-García, 2003b, 2003c, 2004, 2006; Díaz et al., 2005; Krapp-Schickel and Guerra-García, 2005). *Hemiaegina minuta* is widely distributed in tropical and temperate waters of the world oceans (McCain, 1968).

## Paracaprella pusilla Mayer, 1890

(Figures 17-19)

*Paracaprella pusilla* Mayer, 1890: 41, pl. 1, figs. 28-30; pl. 3; figs. 45-47; pl. 5, figs. 48-49; pl. 6, fig. 10; 1903: 67, pl. 2, figs. 36-37; pl. 7, fig. 52; Steinberg and Dougherty, 1957: 283-284, figs. 16, 19, 24, 30; McCain, 1968: 82-86, figs. 41-42; Wakabara *et al.*, 1991: 73; Camp, 1998: 132; Guerra-García and Thiel, 2001: 880, fig. 8; Díaz *et al.*, 2005: 6,7,22, fig. 13.

*Caprella nigra* Reid, 1951: 283-284, 289, fig. 58.

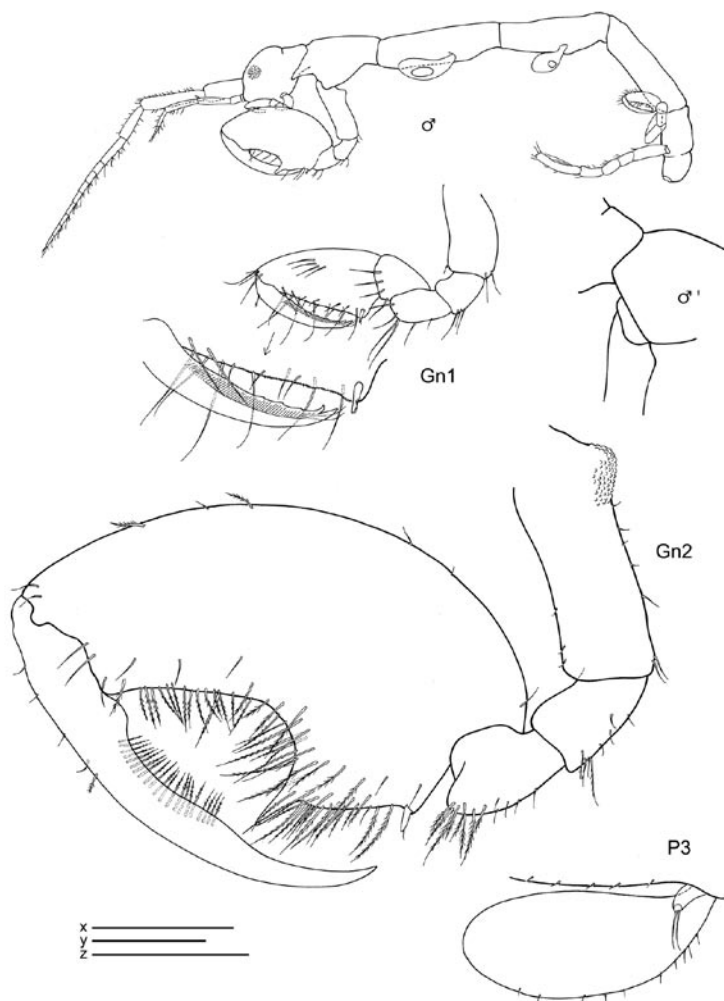


Figure 17. *Paracaprella pusilla*. Male. Lateral view in scale x=1 mm; Gn1 in scale y=0.3 mm; Gn2, P3 in scale z=0.2mm.

**Material examined:** 454 specimens

**St. 8:** 4 males, 2 females (1 ov.), 2 juveniles, sponges and hydroids on pillars, 0-1 m, 24.IV.1985; 22 males, 25 females (14 ov.), 8 juveniles, fouling on pilings, in darkness, 0-1 m, 25.IV.1985; 14 males, 19 females, 12 juveniles, sponges and hydroids on shaded mole pillars, 0-1 m, 4.V.1985; 3 males, 2 females, 5 juveniles, light-exposed mole pillars,

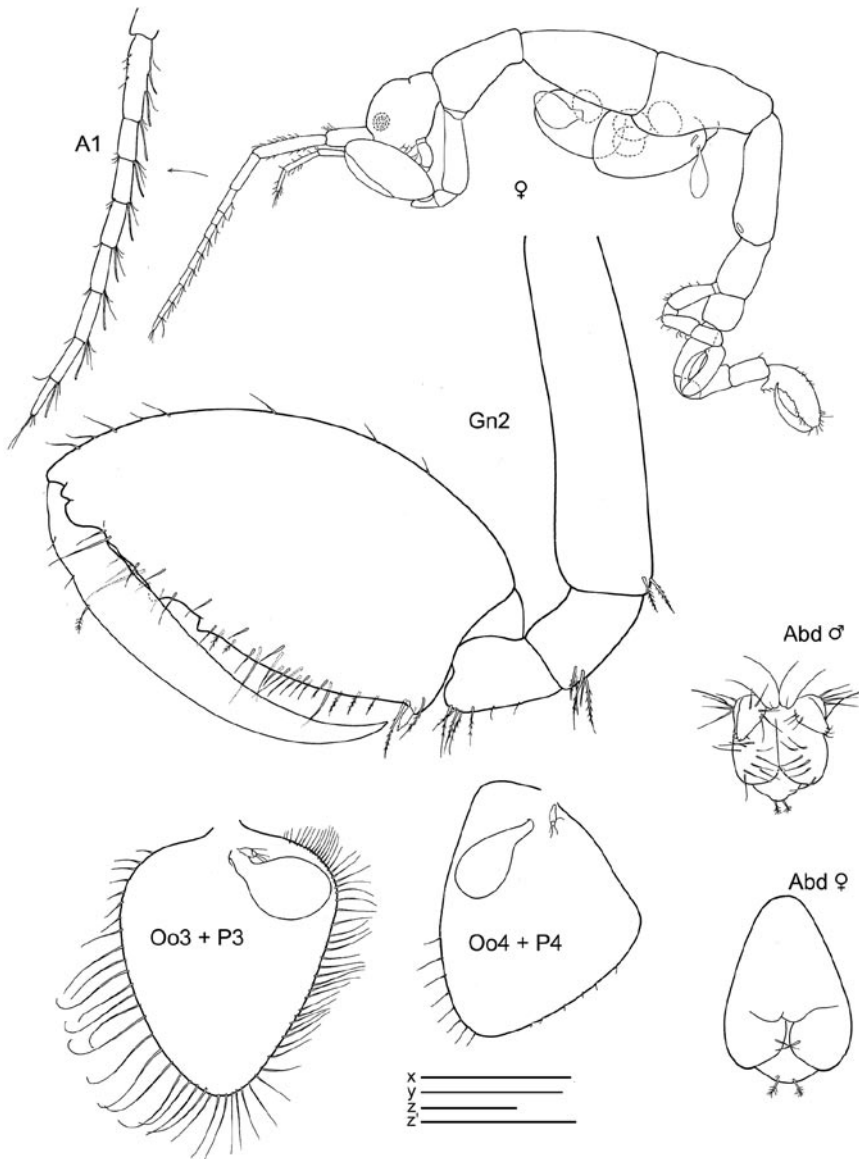


Figure 18. *Paracaprella pusilla*. Female; male abdomen. Lateral view in scale  $x=1$  mm; Gn2 in scale  $y=0.2$  mm; Oo3-4 in scale  $z=0.3$ mm; Abd♂, ♀ in scale  $z'=0.1$  mm.

0-1 m, 8.V.1985; 11 males, 16 females (5 ov.), 9 juveniles, light-exposed pillars, from algae, sponges and hydroids, 0-1 m, 10.V.1985; 5 males, 2 females (1 ov.), 1 juvenile, sponges and hydroids on light-exposed mole pillars, 0-1 m, 14.V.1985; 19 males, 25 females, from sponges and hydroids on pilings, in darkness, 0-1 m, 16.V.1985; 2 males, 17 females (5 ov.), 6 juveniles, sponges and hydroids on pillars, 0-1 m, 18.V.1985; 7

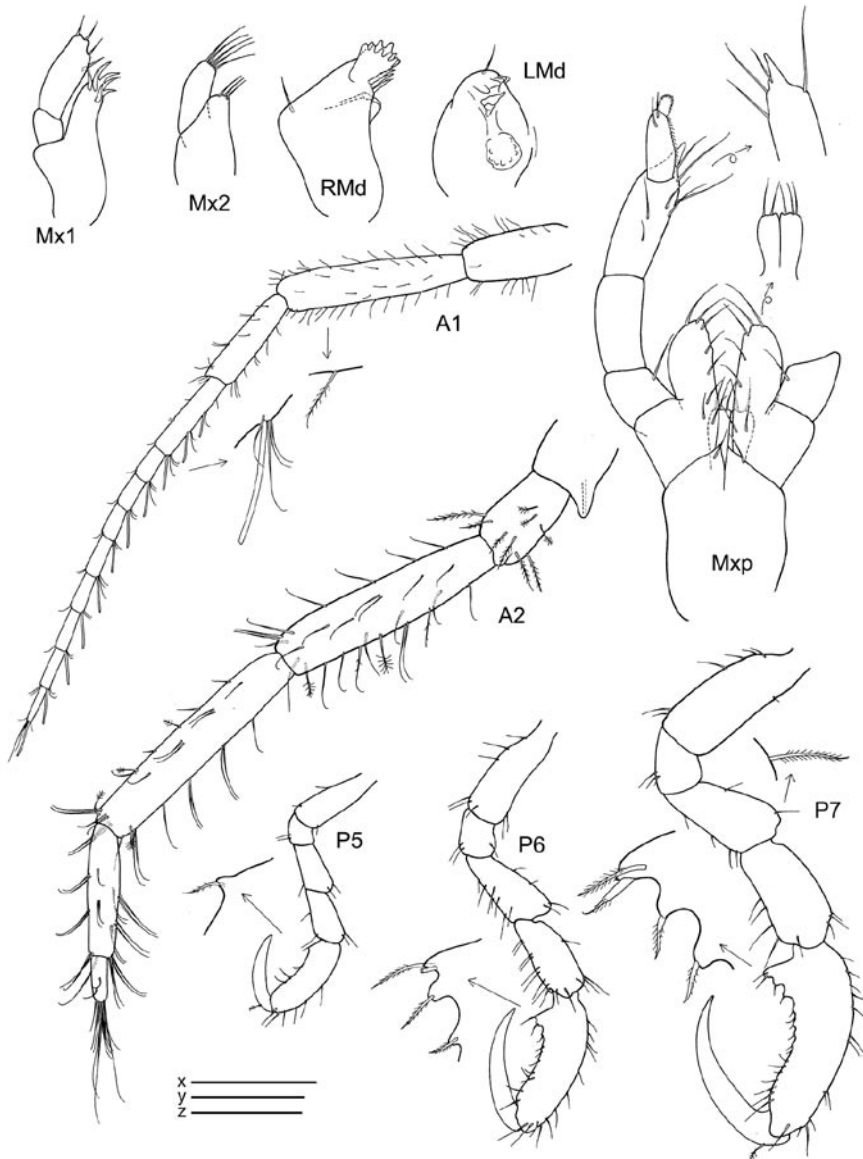


Figure 19. *Paracaprella pusilla*. Male. RMd, LMd, Mx1, Mx2, Mxp in scale  $x=0.1$  mm; A1 in scale  $y=0.1$  mm; A2, P5-7 in scale  $z=0.2$  mm.

males, 10 females (5 ov.), 7 juveniles, sponges and hydroids on pillars, 19.V.1985; 5 males, 2 females, 8 juveniles, pillars, from hydroids and bryozoans, 17.VI.1985; 31 males, 21 females (6 ov.), 7 juveniles, from hydroids and bryozoans on pilings, exposed to light, 0-1 m, 21.VI.1985; 27 males, 20 females (10 ov.), 26 juveniles, from sponges and hydroids on pilings, in darkness, 0-1 m, 21.VI.1985; 20 males, 12 females, fouling on pilings, exposed to light, 0.5 m, 3.IX.1985; 7 males, 6 females, sponges and hydroids on pillars, 14.III.1986. **St. 31:** 4 males, 3 females, *Thalassia*, 1-2m, 17.I.1986.

The figured male and female come from St. 31, 17.I.1986.

### Remarks

The material of *P. pusilla* from Colombia agrees completely with previous descriptions of material from the Caribbean coasts (Díaz *et al.*, 2005). *Paracaprella pusilla* is similar to *P. tenuis* Mayer, 1903; however, males of *P. pusilla* can be distinguished from those of *P. tenuis* by the large sharp-pointed projection on the anteroventral margin of pereonite 2, the proximal knob on the basis of gnathopod 2, and the presence of setae on the dactylus of gnathopod 2 (McCain, 1968). Large males of *P. pusilla* are very similar to large males of *P. barnardi* McCain, 1967 in that they both bear a small anterodorsal tubercle on pereonite 2; however, the tubercle is not as well developed in the former than in the later, and the ventrolateral projection on the anterior margin of pereonite 2 is much larger in *P. pusilla* (McCain, 1967).

### Habitat

The present specimens were mostly found in shallow waters, mainly near INVEMAR. *Paracaprella pusilla* has traditionally been collected from mangrove roots, seagrasses, hydroids and ascidians (McCain, 1968), but also on gravel bottoms, ropes, mussels and oysters (Díaz *et al.*, 2005).

### Distribution

Type locality: Rio de Janeiro, Brazil (McCain, 1968). Other records: Western North Atlantic, Suez Canal, tropical west Africa, South Africa, Tanzania, Hawaii, China, Gulf of Mexico, Cuba, Venezuela (McCain, 1968; Wakabara *et al.*, 1991; Ortiz and Lalana, 1998; Díaz *et al.*, 2005; Winfield *et al.*, 2006).

### *Pseudaeginella colombiensis* n.sp

(Figures 20-22)

#### **Type material** (19 specimens)

**St. 45:** Holotype male 2 slides (INV-CRU 5785), from algae, hydroids and bryozoans on rocks, 6-10 m, 26.IX.1985; Paratype female (ov.) slide (INV-CRU 5786),

collected together with the holotype; paratypes 10 males, 7 females in alcohol (MVRCr 449) from *Thalassia*, 1.5 m, 25.II.1986.

### **Type locality**

Punta El Diamante (Arrecifes/Cañaverales), Colombia, 1.5-10 m, algae, hydroids and bryozoans on rocky slope.

### **Etymology**

Named "*colombiensis*" after Colombia, the South American country where the specimens were collected.

### **Description**

#### **Holotype male**

Lateral view (Figure 20): Head with a dorsal acute projection; suture between head and pereonite 1 non-marked. Pereonite 1 and pereonite 2 with a dorsal hump distally. Pereonite 2 with an apical projection laterally near the insertion of gnathopod 2. Pereonites 3 and 4 with a pair of dorsomedial projections and laterally acute projections near the insertion of the gills. Pereonite 5 with a lateroventral acute projection near the insertion of pereopod 5.

Gills (Figure 20): Present on pereonites 3 and 4, oval, length 2 times width.

Mouthparts (Figure 21): Mandibles with no sign of mandibular molar; left mandible with incisor 5-toothed, lacinia mobilis 5-toothed followed by three plates minutely serrate; right mandible with incisor 5-toothed, lacinia mobilis transformed into a plate, followed by two other plates; molar flake absent; palp three-articulate, second article with a single seta, distal article with a distal robust setae and a row of three setae. Maxilla 1 outer lobe carrying 5 robust seta; distal article of the palp with 4 setae. Maxilla 2 inner lobe triangular, with 3 setae; outer lobe rectangular, about 1.5 times as long as inner lobe, with 4 setae. Maxilliped inner plate small and rounded with a setae; outer plate elongate, 2.5 times as long as the inner plate, with 5 setae; palp 4-articulate, dactylus curved, with row of setulae.

Antennae (Figure 21): Antenna 1 about 2/3 of body length; flagellum 7-articulate. Antenna 2 without swimming setae but provided with abundant short setae; flagellum two-articulate.

Gnathopods (Figure 20): Gnathopod 1 basis as long as the combination of ischium, merus and carpus; palm of propodus non-serrate, provided with two grasping spines; dactylus margin smooth. Gnathopod 2 inserted on the middle of pereonite 2; basis 1.2 times as long as pereonite 2, with a projection distally; ischium rectangular; merus rounded; carpus triangular; propodus rounded, 1.5 as long as wide, provided with a grasping spine proximally and three triangular projections medially and distally respectively; dactylus with minute setae on the margin.



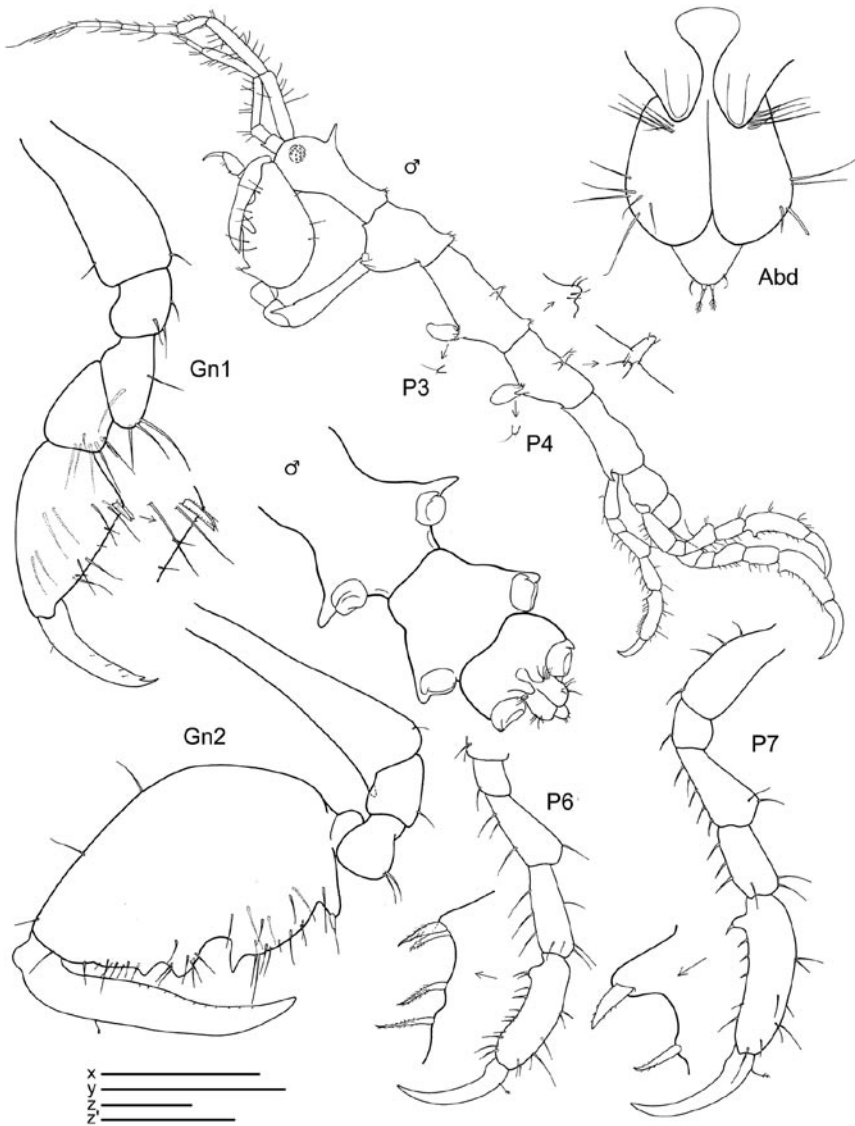


Figure 20. *Pseudaeginella colombiensis* n.sp. Male holotype. Lateral view in scale x=1 mm; Gn1 in scale y=0.2 mm; Gn2, P6-7 in scale z=0.2 mm; Abd in scale z'=0.1 mm.

Pereopods (Figure 20): Pereopods 3 and 4 minuscule, 1-articulate, triangular, provided with two distal setae. Pereopods 5, 6 and 7 similar in feature but increasing in size respectively; palm of propodus with a group of robust plumose setae proximally.

Penes (Figure 20) large, length about 2 times width.

Abdomen (Figure 20) without appendages, with a pair of lateral lobes and a single dorsal lobe provided with a pair of plumose setae.



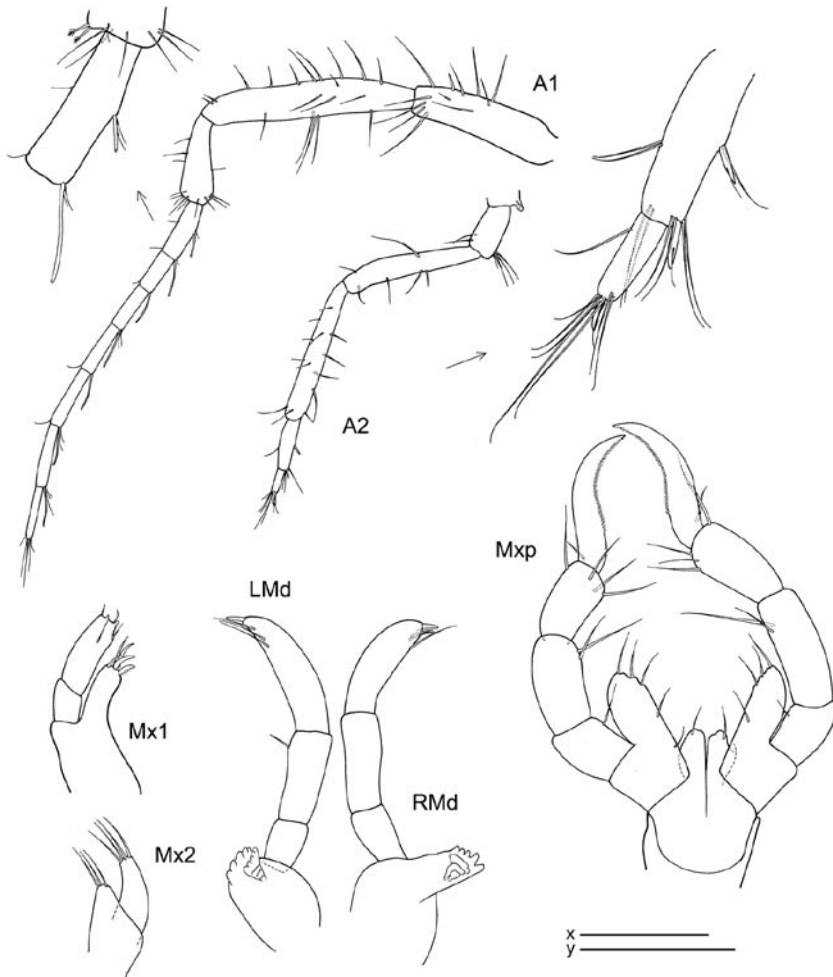


Figure 21. *Pseudaeginella colombiensis* n.sp. Male holotype. A1,A2 in scale  $x=0.3$  mm; RMd, LMd, Mx1, Mx2, Mxp in scale  $y=0.1$  mm.

### Paratype female

Similar to holotype male apart from the following characters: flagellum of antenna 1 with 5 articles; oostegites on pereonite 3 very setose, on pereonite 4 scarcely setose; abdomen without appendages.

### Remarks

The genus *Pseudaeginella* was composed of nine species before this study: *P. antiguae* Barnard, 1932 from Antigua, *P. biscayensis* (McCain, 1968) from Florida, *P. cambellensis* Guerra-García, 2003 from Subantarctica, *P. inae* Krapp-Schickel and Guerra-García, 2005 from Indonesia, *P. montoucheti* (Quitete, 1971) from Brazil, *P. polynesica*

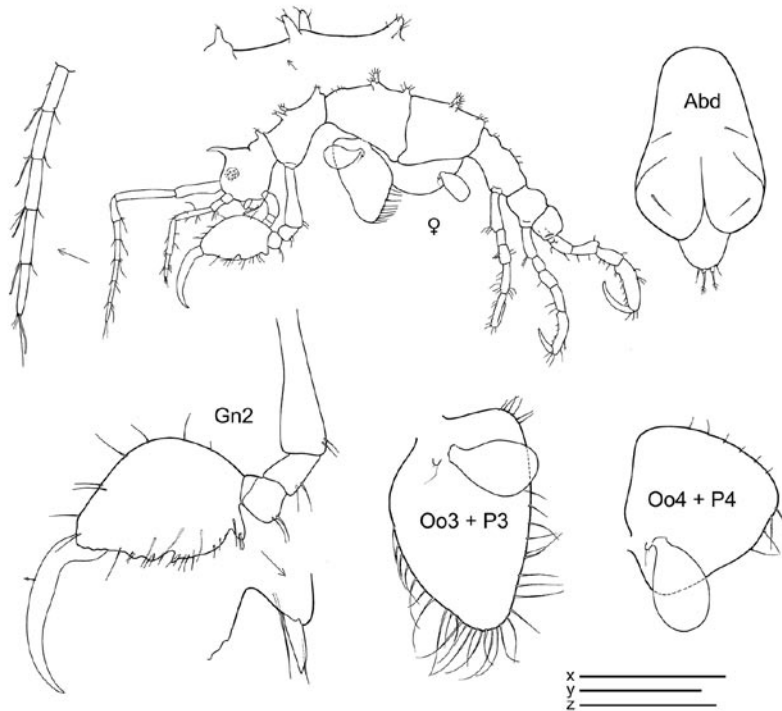


Figure 22. *Pseudaeginella colombiensis* n.sp. Female paratype. Lateral view in scale x=1 mm; Gn2, Oo3-4 in scale y=0.3 mm; Abd in scale z=0.1 mm.

(Müller, 1990) from Bora Bora and Moorea, Society Islands, *P. sanctipauli* Laubitz, 1995 from St Paul and Amsterdam Islands, *P. tristanensis* (Stebbing, 1888) from Tristan da Cunha, and *P. vaderi* Guerra-García, 2004 from the Indian Ocean. Laubitz (1995), after examination of specimens of *P. tristanensis* from Southern Indian Ocean, considered the genus *Falotritella* synonymous with *Pseudaeginella* mainly based on the presence of minute pereopods 3 and 4 in *Pseudaeginella*. Consequently, the species *P. byscaynensis*, *P. montoucheti* and *P. polynésica*, previously included in *Falotritella*, were transferred to *Pseudaeginella*. Species of *Pseudaeginella* are compared in Laubitz (1995).

*Pseudaeginella colombiensis* is very close to *P. byscaynensis* but these two species can be distinguished mainly by the arrangement of dorsal and lateral projections, the shape of gnathopod 2 and the structure of mandibular palp.

### Habitat

Probably preferring shallow waters. It is remarkable that it was found only in the eastern area of the studied region.

### Distribution

So far, the species is only known from the type locality.

## *Tritella chibcha* n.sp.

(Figures 23-25)

### **Type material** (5 specimens)

**St. 4:** Holotype male 2 slides (INV-CRU 5787), from *Syringodium*, 3 m, 12.XII.1985; Paratype female slide (INV-CRU 5788), collected together with the holotype; 3 males paratypes (MVRCr 451) from the same locality.

### **Additional material**

**St. 41:** 3 males, 1 female from *Syringodium*, 3 m, 20.XII.1985 (at MVR).

### **Type locality**

Bahía de Santa Marta, Colombia, 3 m, *Syringodium*.

### **Etymology**

When the Spanish conquered Colombia in the 15<sup>th</sup> century, the Chibcha culture was one of the three main civilisations in Colombia, together with Caribe and Arwac. Chibcha occupied the central part of the country and the Sierra Nevada de Santa Marta, the area in which this study was conducted.

### **Description**

#### **Holotype male**

Lateral view (Figure 23): Body smooth. Pereonite 1 fused with head, suture present. Pereonites 3, 4 and 5 subequal in length. Pereonite 7 the shortest.

Gills (Figure 23): Oval, length about 2 times width.

Mouthparts (Figure 23): Mandibles with 3-articulate palp; distal article of palp with 2 setae; second article provided with a simple seta; mandibular molar robust; left mandible with incisor and lacinia mobilis 5-toothed followed by a row of plumose setae; incisor of right mandible 5-toothed, lacinia mobilis serrate followed by another plate and three more setae. Lower lip with well-demarcated inner lobes; inner and outer lobes provided with setulae on apical margin. Maxilla 1 outer lobe with 7 robust setae; palp with four distal strong setae and 4 lateral setae. Maxilla 2 inner lobe triangular; outer lobe slightly larger than inner lobe, rectangular. Maxilliped inner plate rectangular with 7 plumose setae and 2 robust and short setae (like “teeth”); outer plate about 2 times as large as inner plate; palp 4-articulate, dactylus short and robust.

Antennae (Figure 24): Antenna 1 about half of body length; flagellum 7-articulate. Antenna 2 with short setae (no swimming setae); basal article of the peduncle with a distal projection; flagellum 2-articulate.

Gnathopods (Figure 24): Gnathopod 1 basis as long as ischium, merus and carpus combined; propodus length about 2 times width, palm with 1 proximal grasping



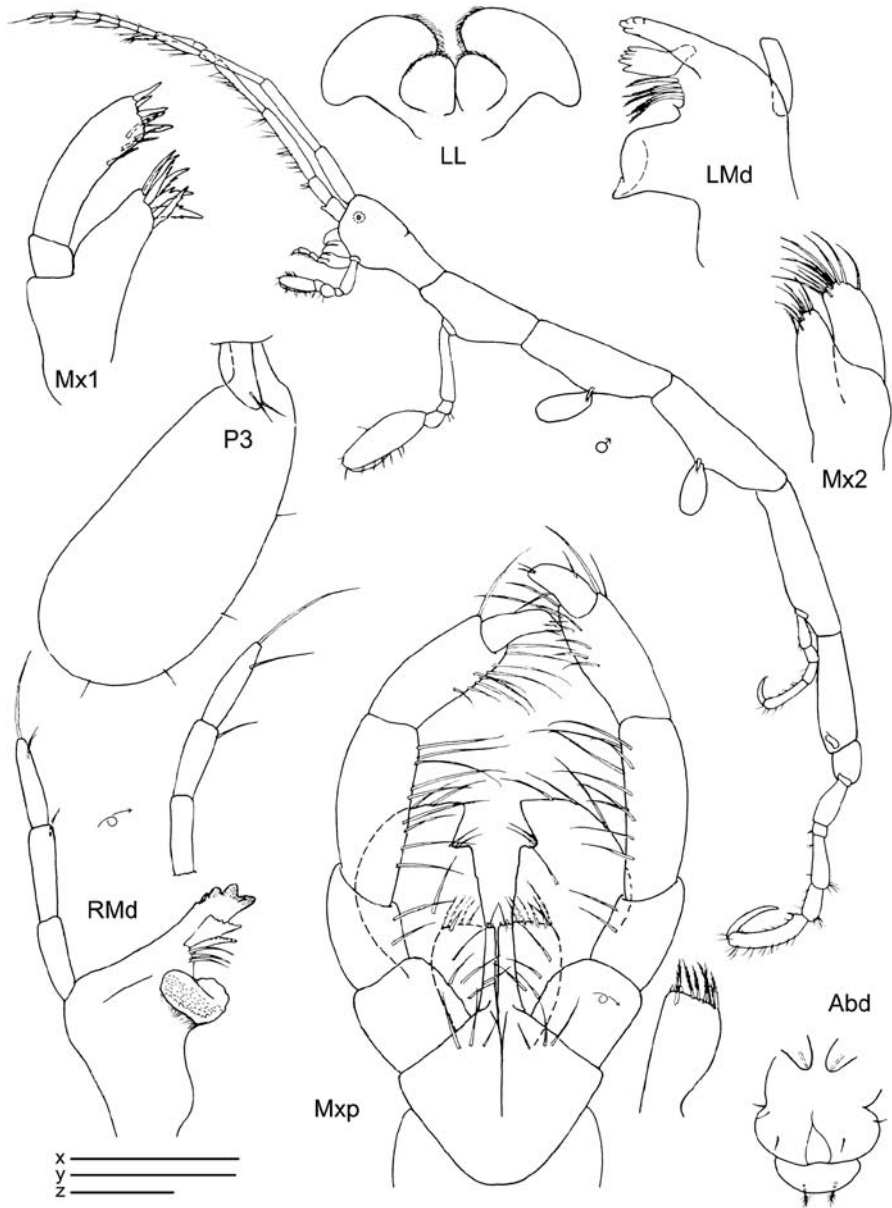


Figure 23. *Tritella chibcha* n.sp. Male holotype. Lateral view in scale  $x=1$  mm; RMd, LMd, Mx1, Mx2, Mxp in scale  $y=0.1$  mm; Abd in scale  $z=0.1$  mm.

spines and denticulate margin. Gnathopod 2 inserted on the anterior half of pereonite 2; basis about  $2/3$  as long as pereonite 2; ischium rectangular; merus rounded; carpus short and triangular; propodus elongate, about 1.2 times as long as the basis; palm with a proximal projection carrying one grasping spine and other projection distally.

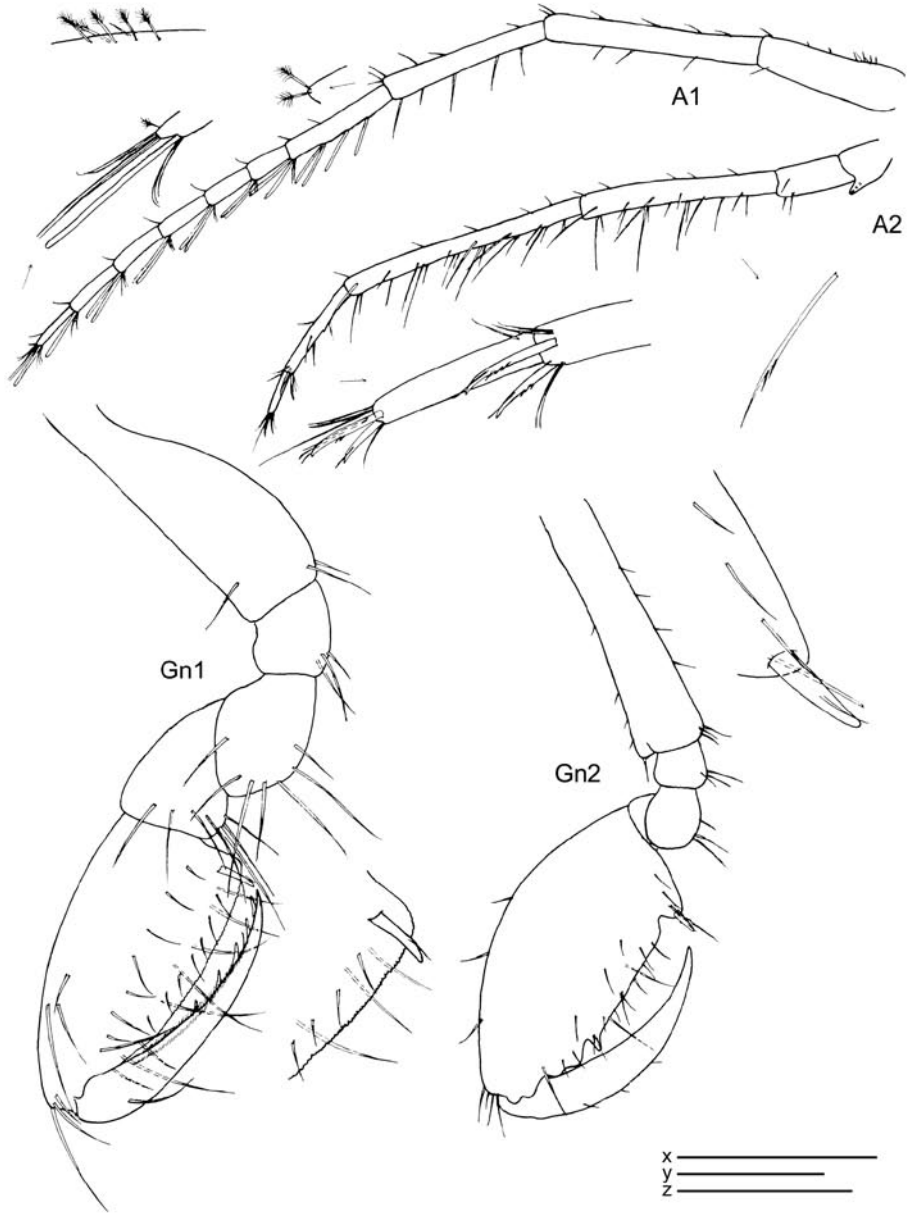


Figure 24. *Tritella chibcha* n.sp. Male holotype A1,A2 in scale  $x=0.5$  mm; Gn1 in scale  $y=0.1$  mm; Gn2 in scale  $z=0.3$  mm.

Pereopods (Figures 23,25): Pereopods 3 and 4 subequal, 1-articulate, length about 1/5 of gills. Pereopod 5 less robust than pereopods 6 and 7, 6-articulate, propodus without grasping spines. Pereopod 6 and 7 similar in feature but increasing in size respectively, 6-articulate; propodus with 1 proximal grasping spines.

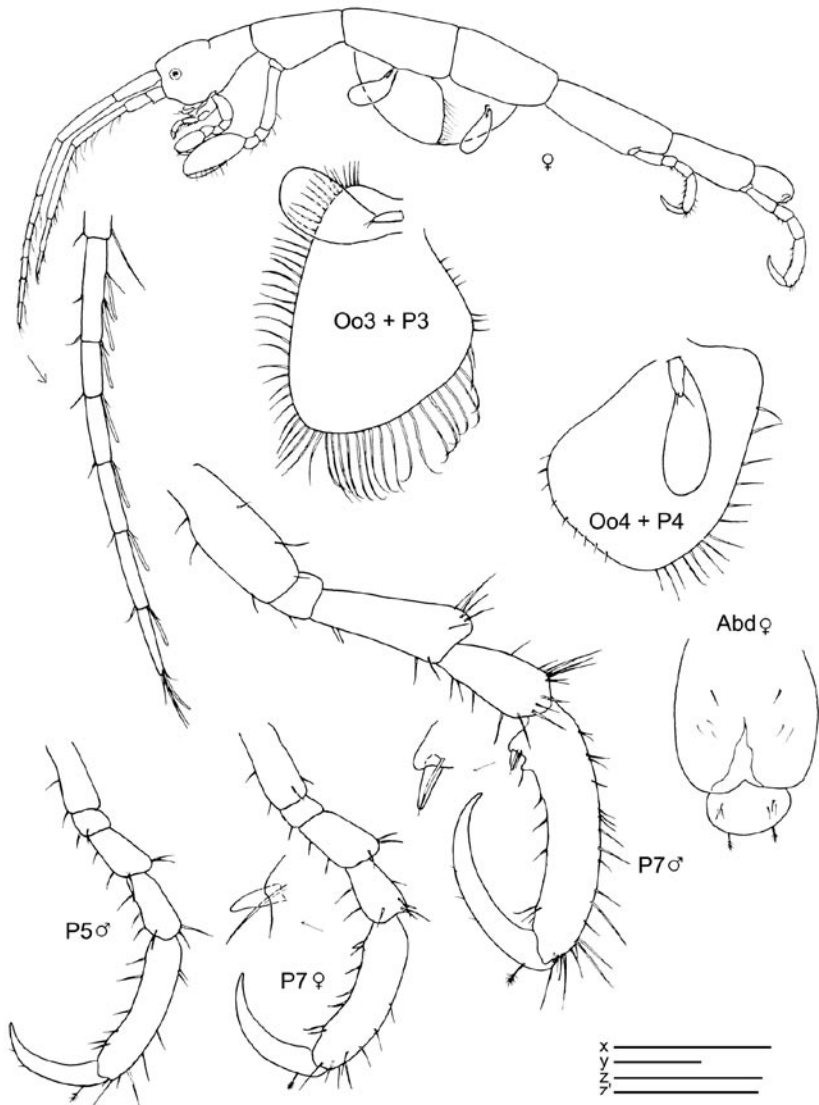


Figure 25. *Tritella chibcha* n.sp. Female paratype and male pereopods 5-7. Lateral view in scale  $x=1$  mm; Oo3-4 in scale  $y=0.2$  mm; P5♂, P7♂, ♀ in sclae  $z=0.3$ ; Abd in scale  $z'=0.1$  mm.

Penes (Figure 23) short and triangular, situated medially.

Abdomen (Figure 23) without appendages, a pair of lateral lobes and a single dorsal lobe with 2 plumose setae.

### Paratype female

Similar to holotype male apart from the following characters: flagellum of antenna 1 with 6 articles; oostegites on pereonite 3 very setose, on pereonite 4 scarcely setose.

## Remarks

Until now four species are described in the genus *Tritella*, distributed along the Pacific coast of North America: *T. laevis* Mayer, 1903, *T. ornata* Mayer, 1903, *T. pilimana* Mayer, 1890 and *T. tenuissima* Dougherty and Steinberg, 1953. *Tritella laevis* and *T. pilimana* have been fully redescribed by Laubitz (1970). *Tritella chibcha* clearly differs from these two species by the absence of lateral projections, the different shape of gnathopod 2, the different setal formula of the mandibular palp (being only 2 setae in *T. chibcha* and 1-x-1 in *T. laevis* and *T. pilimana*) and the swimming setae of antenna 2 being clearly shorter in *T. chibcha*. *Tritella ornata* can also be distinguished clearly from *T. chibcha* by the presence of abundant dorsal projections, which are lacking in *T. chibcha*. *Tritella tenuissima* seems to be the most similar species to *T. chibcha*, both species having an elongate and smooth body. However, in *T. tenuissima* the distal article of the mandibular palp has numerous setae, but only two are present in *T. chibcha*. Furthermore, a pair of grasping spines is present in pereopods 5, 6 and 7 in *T. tenuissima* and only one grasping spine can be found in pereopods 6 and 7 of *T. chibcha* (pereopod 5 has no grasping spine). The insertion of pereopod 5 is posterior in *T. chibcha* and at midlength in *T. tenuissima*. Dougherty and Steinberg (1953) described *T. tenuissima* on the basis of the absence of swimming setae, pointing out that the genus *Triliropus* Mayer, 1903 appeared to be almost identical to *Tritella*, except by the lack of swimming setae on the second antenna and the questionable presence of a vestigial pair of abdominal appendages in the female. Although *T. tenuissima* lacks swimming setae, Dougherty and Steinberg (1953) felt that this species was indeed a member of *Tritella* and suggested that *Triliropus* could be certainly a synonym of *Tritella*. On the other hand, McCain (1968) remarked that *T. tenuissima* differs from the other species of *Tritella* in lacking swimming setae and in having pereopod 5 inserted near midlength on pereonite 5 and suggested that this species should be probably transferred to the genus *Triliropus*. The material from Colombia is characterized by intermediate characters, since the swimming setae are very reduced in *T. chibcha*, but the pereopod 5 is inserted posteriorly on pereonite 5. At the moment we have preferred to include this new species in *Tritella* instead of *Triliropus*. Future studies dealing with the genus *Triliropus* should be conducted to clarify its taxonomic status and validity.

## Habitat

*Syringodium* is the preferred biotope of this species.

## Distribution

Bahías de Santa Marta and Cinto, Colombia.



**Incertae sedis**

***Aciconula* sp.**

(Figures 26-27)

**Material examined:** 1 specimen

**St. 12:** 1 female, hydroids and bryozoans, 2.X.1985.

**Remarks**

Three species of *Aciconula* have been reported so far: *Aciconula miranda* Mayer, 1903 from Malaysia and Thailand; *A. acanthosoma* Chess, 1989 from California, and *A. australiensis* Guerra-García, 2004 from Australia. As reported by Guerra-García

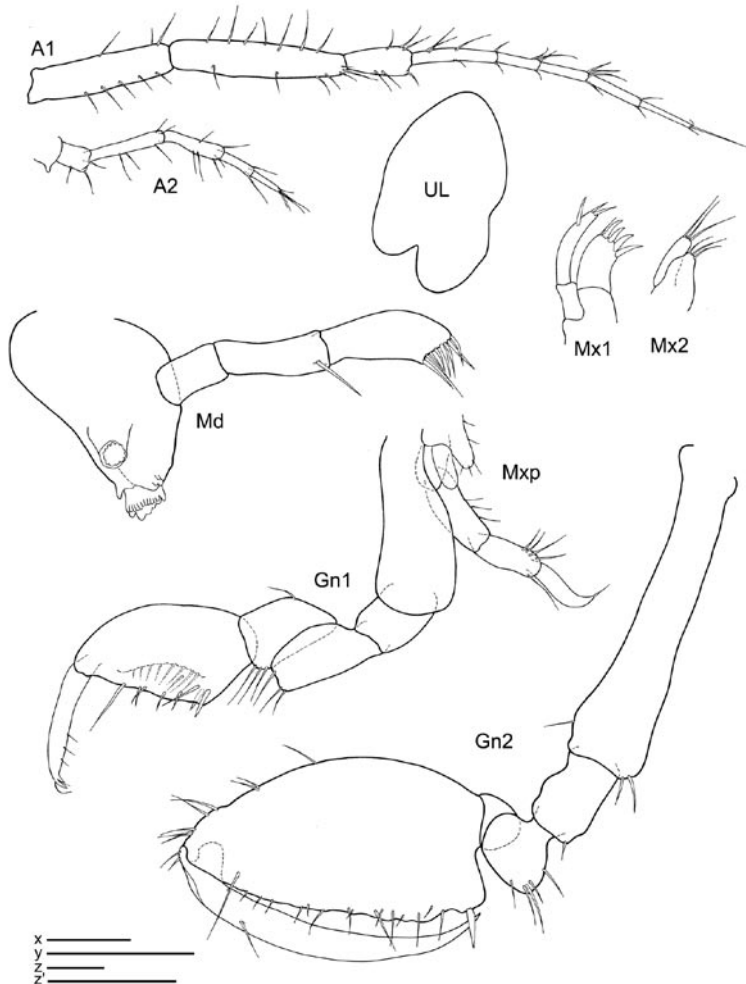


Figure 26. *Aciconula* sp. Female. A1,A2 in scale x=0.1 mm; Md, Mx1,Mx2, UL in scale y=0.05 mm; Gn1+Mxp in scale z=0.1 mm; Gn2 in scale z'=0.1 mm.



(2004), *A. acanthosoma* is considerably different from the two remaining *Aciconula* species, mainly on the spinose body and the presence of abdominal appendages, and could probably be transferred to a different genus. Comparison, discussion and remarks about *A. miranda* and *A. australiensis* can be found in Guerra-García (2004). The present material seems to belong to the genus *Aciconula*, mainly based on the structure of the mandibles and pereonites 3 and 4. However, because only one female was studied, it is not possible to identify the material as *A. miranda* or *A. australiensis* or assign it to a new species of *Aciconula*, so we have preferred to identify this specimen as *Aciconula* sp.

### Habitat

The specimen was found among hydroids and bryozoans.

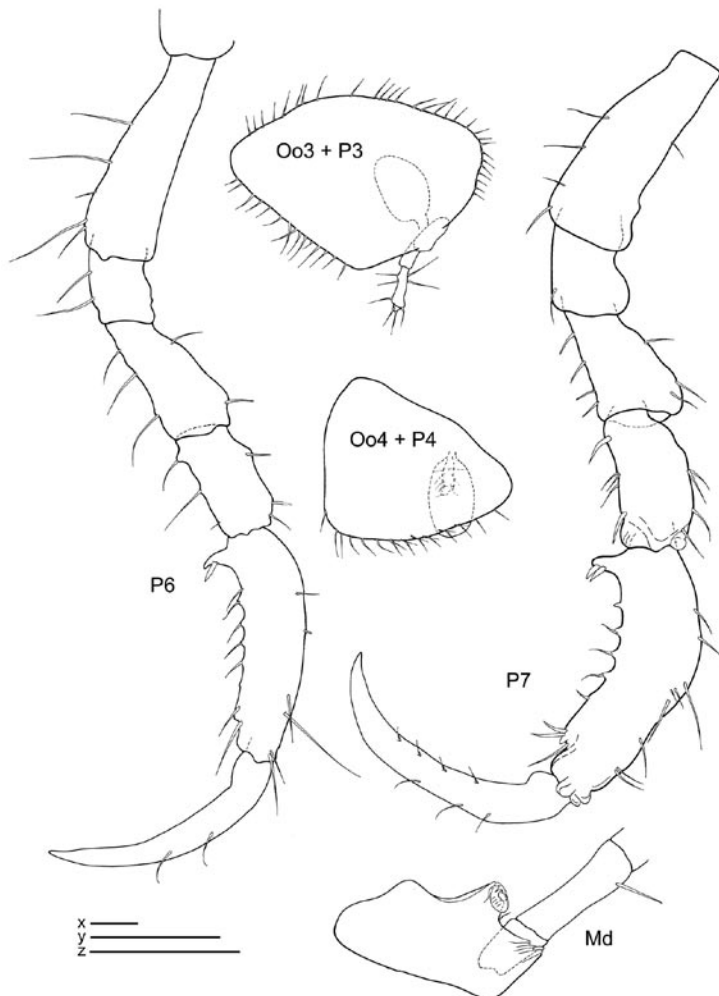


Figure 27. *Aciconula* sp. Female. Oo3-4 in scale x=0.1 mm; P6-7 in scale y=0.1 mm; Md in scale z=0.05 mm.

## KEY FOR COLOMBIAN CARIBBEAN CAPRELLIDS (based on adult specimens)

1. Pereopods 3 and 4 absent ..... 2  
- Pereopods 3 and 4 present ..... 3
2. Head with rostrum. Pereopods provided with a pair of grasping spines .....  
..... *Caprella penantis* (Figures 2-4)  
- Head without rostrum. Pereopods without grasping spines .....  
..... *Caprella danilevskii* (Figures 5,6)
3. Pereopods 3 and 4 1-articulate ..... 4  
- Pereopods 3 and 4 at least 2-articulate ..... 7
4. Body smooth ..... 5  
- Body with dorsal projections ..... 6
5. Abdomen with a pair of long 2-articulate appendages. Basis of gnathopod 2 longer than pereonite 2 ..... *Hemiaegina minuta* (Figures 14-16)  
- Abdomen without appendages. Basis of gnathopods 2 shorter than pereonite 2 .....  
..... *Tritella chibcha* (Figures 23-25)
6. Head with a dorsal projection. Lateral projections present. Pereopods 3 and 4 tiny, almost undistinguishable ..... *Pseudaeginella colombiensis* n.sp. (Figures 20-22)  
- Head with 2 dorsal projections. Lateral projections absent. Pereopods 3 and 4 clearly distinguishable ..... *Deutella caribensis* (Figures 7-8)
7. Pereopod 3 with 4 articles and pereopod 4 with 2 articles .....  
..... *Aciconula* sp. (Figures 26,27)  
- Pereopods 3 and 4 with 2 articles ..... 8
8. Head and pereonite 2 with dorsal projections ..... *Deutella incerta* (Figures 9-11)  
- Body smooth ..... 9
9. Propodus of gnathopod 2 with an elongate projection proximally (see Gn2 in Figure 12) ..... *Deutella mayeri* (Figures 12,13)  
- Propodus of gnathopod 2 with trapezoidal projection proximally (see Gn 2 in Figure 17) ..... *Paracaprella pusilla* (Figures 17-19)

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