

Coastal Amphipods of Bahía Málaga and Bahía Buenaventura in the Colombian Eastern Tropical Pacific

Bellineth Valencia¹, Alba Marina Cobo-Viveros², Juan Felipe Lazarus³ y Alan Giraldo⁴

Abstract

Objectives: Characterize the amphipods collected at six coastal sites in the central Colombian Pacific. **Scope:** Increase biodiversity knowledge of a poorly studied group in the Colombian Pacific, but of great importance in benthic ecosystems. **Methodology:** Amphipod biodiversity was characterized in Bahía Málaga (intertidal and subtidal rocky shores, and sandy beaches) and Bahía Buenaventura (intertidal rocky shores, mangrove roots, and sandy beaches), two important estuaries in the central Pacific coast of Colombia. **Results:** Sixteen species in eleven families were found; *Hourstonius baciroa*, *Leptocheirus rhizophorae*, *Leucothoe alata*, *Elasmopus ocoroni*, *Melita bousfieldi*, and *Neomegamphopus beardi* represent new records for Colombia. **Conclusions:** This study significantly increases knowledge of amphipod biodiversity in coastal ecosystems of the Eastern Tropical Pacific, and highlights that systematic studies should be carried out to better understand the ecological function of this group in the Colombian Pacific.

Keywords: Crustacea, Peracarida, biodiversity, rocky shores, mangroves, sand beaches.

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¹ PhD Oceanografía Biológica. Universidad del Valle, Facultad de Ciencias Naturales y Exactas, Departamento de Biología, Grupo de Investigación en Ecología Animal. Cali, Colombia. Correo electrónico: bellineth.valencia@correounivalle.edu.co

 orcid.org/0000-0002-1471-8270 **Google Scholar**

² PhD Oceanografía. Universidad del Valle, Facultad de Ciencias Naturales y Exactas, Departamento de Biología, Grupo de Investigación en Ecología Estuarios y Manglares. Cali, Colombia. Centro Oceanográfico de Murcia (IEO-CSIC). Calle Varadero 1, 30740, San Pedro del Pinatar, Murcia, España. Correo electrónico: almacovi@gmail.com / alba.cobo@ieo.csic.es

 orcid.org/0000-0002-5468-1927 **Google Scholar**

³ PhD Ciencias del Mar. Universidad del Valle, Facultad de Ciencias Naturales y Exactas, Departamento de Biología, Grupo de Investigación en Ecología Estuarios y Manglares. Cali, Colombia. Correo electrónico: juan.lazarus@correounivalle.edu.co

 orcid.org/0000-0003-2121-3569 **Google Scholar**

⁴ PhD Oceanografía. Universidad del Valle, Facultad de Ciencias Naturales y Exactas, Departamento de Biología, Grupo de Investigación en Ecología Animal. Cali, Colombia. Correo electrónico: alan.giraldo@correounivalle.edu.co

 orcid.org/0000-0001-9182-888X **Google Scholar**

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Anfípodos costeros de Bahía Málaga y Bahía Buenaventura, Pacífico Oriental Tropical Colombiano

Resumen

Objetivo: Caracterizar los anfípodos recolectados en seis localidades costeras en el Pacífico central colombiano. Alcance: Incrementar el conocimiento sobre la biodiversidad de un grupo pobremente estudiado en el Pacífico colombiano, pero de gran importancia en los ecosistemas bentónicos. **Metodología:** La biodiversidad de los anfípodos fue caracterizada en Bahía Málaga (costas rocosas intermareales y submareales, playas arenosas) y Bahía Buenaventura (costa rocosa intermareal, raíces de manglares, playas arenosas), dos estuarios importantes de la costa central del Pacífico de Colombia. **Resultados:** Se encontraron 16 especies en once familias, de las cuales *Hourstonius baciroa*, *Leptocheirus rhizophorae*, *Leucothoe alata*, *Elasmopus ocoroni*, *Melita bousfieldi*, y *Neomegamphopus heardi* representan nuevos registros para Colombia. **Conclusión:** Este estudio incrementa significativamente el conocimiento sobre la biodiversidad de los anfípodos en ecosistemas costeros del Pacífico Oriental Tropical y resalta que estudios sistemáticos deben desarrollarse para un mejor entendimiento de función ecológica de este grupo en el Pacífico colombiano.

Palabras clave: biodiversidad, costas rocosas, crustáceos, manglares, Peracáridos, playas de arena.

Introduction

Amphipods are one of the most diverse peracarids with almost 10 700 described species (Horton et al., 2024). In shallow waters around the world, including tropical environments, amphipods constitute a major component of coastal communities in terms of species richness and abundance, and their prevalence is likely attributed to their diverse life history strategies (Barnard, 1979; Thomas, 1993).

Coastal amphipod diversity in the Eastern Tropical Pacific (ETP) comes primarily from the extensive scientific expeditions carried out in the 1920s–1950s such as the Allan Hancock Expeditions among others (Barnard, 1954, 1960, 1961, 1967A, 1972; Barnard & Barnard, 1981; Myers, 1968; Thomas & Barnard, 1983). In recent decades, efforts to characterize this taxonomic group in the region have become increasingly sporadic, leading to limited knowledge of their biodiversity in the Eastern Tropical Pacific (ETP) (Escobar-Briones & Winfield, 2003; Ortiz et al., 2004, 2007; García-Madrigal, 2007, 2010; FOSTER *et al.*, 2009; Winfield et al., 2020). The limited focus on benthic amphipods in biodiversity studies from tropical environments may be attributed to the absence of taxonomic keys, shortage of taxonomic expertise, and the challenges posed by their small size.

In Colombia, only six studies focused on amphipod biodiversity have been conducted on the Caribbean coast (Ortiz, 1983; Quintero et al., 1992; Ortiz & Lemaitre, 1994, 1997; Martín et al., 2013), while only two on the Pacific coast (Valencia & Giraldo, 2009; Valencia et al., 2018). However, several studies of macrobenthos diversity in different coastal ecosystems of the Colombian Pacific (rocky shores, sandy beaches, mangroves, and subtidal soft bottoms) have recognized their importance in terms of abundance and a wide array of morphotypes (Dexter, 1974; Herrera, 2002; Riascos, 2002; Lazarus-Agudelo & Cantera-Kintz, 2007; Valencia et al., 2014; Cobo-Viveros & Cantera-Kintz, 2015). To date in Colombia, 67 species of coastal amphipods have been recorded for the Caribbean coast (Ortiz & Lemaitre, 1994, 1997; Martín et al., 2013), while only 27 species for the Pacific coast (Barnard, 1954, 1960, 1961, 1967a, b, 1972; Barnard & Barnard, 1981; Thomas & Barnard, 1983; Valencia & Giraldo, 2009; Valencia et al., 2014, 2018). This result contrasts with the 253 and 278 species recorded by García-Madrigal (2007) for the Gulf of California and Baja California, respectively, in the northern Mexican Pacific.

In the Colombian Pacific, studies about macrofauna diversity in coastal environments have recorded amphipods mainly as “Amphipoda” whereas only a few studies have reached the family or genera level (Dexter, 1974; Riascos, 2002; Cobo-Viveros & Cantera-Kintz, 2015). Consequently, the information about amphipod fauna from the Pacific coast of Colombia is practically unknown and therefore, their ecological importance in coastal environments has been underestimated. In this study, we provide an updated checklist of amphipods from the central Pacific coast of Colombia (Bahía Málaga and Bahía Buenaventura), contributing to a better understanding of this taxonomic group in the Eastern Tropical Pacific (ETP).

Materials and methods

Samples were collected between 2005 and 2011 in six localities in the central zone of the Pacific coast of Colombia: Isla Palma, Islote Morro Chiquito, and Playa Chucheros in Bahía Málaga; and San Pedro, Pianguita, and Isla Cangrejo in Bahía Buenaventura (Fig. 1).

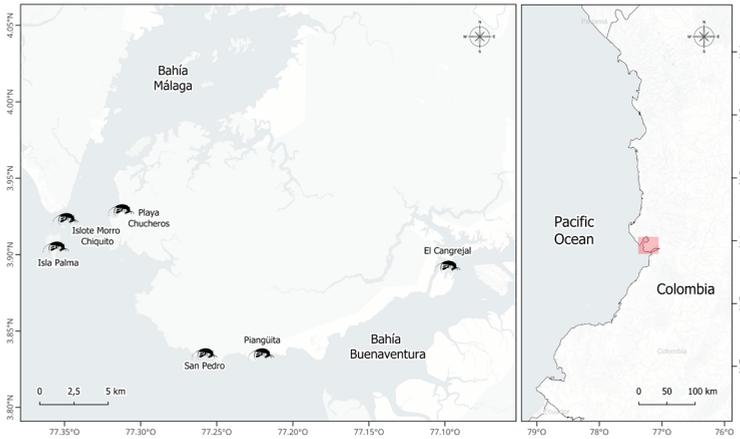


Figure 1. Location of sampling sites in Bahía Buenaventura and Bahía Málaga, Pacific coast of Colombia.
Source: map generated by the authors.

In the intertidal zone, specimens were captured during low tide in encrusting and filamentous algae using a spatula in Isla Palma; inside of rocks by breaking down the pieces in Isla Cangrejo and Pianguita; using artificial substrates made of *Piangüia* (*Anadara tuberculosa* Sowerby, 1833) shells that were placed between mangrove roots of *Rhizophora mangle* in Pianguita; and by removing beach litter (pieces of wood and leaf fragments) in Playa Chucheros, San Pedro, and Pianguita.

In the subtidal zone, samples were collected at 3 m depth using artificial substrates made of pieces of bricks in Islote Morro Chiquito. All specimens were initially preserved in 4% formalin. Amphipods were identified to the lowest taxonomic level possible and were deposited in 70% alcohol in the Marine Biology Reference Collection of Universidad del Valle, Cali, Colombia (CERBMcr-UV). The relevant literature reviewed to identify each species is listed in the remarks subsection. A general description of each species including the main characters for identification is provided, as well as illustrations made from high resolution images taken at the Image Laboratory of the Biology Department of Universidad del Valle (Cali, Colombia).

In addition, a dichotomous key is presented to facilitate the identification of these species in future studies conducted in the region, and based on a literature revision, a checklist of amphipods in the Colombian Pacific is included in the supplementary material (Table S1). Abbreviations in the text and figures are as follows: antennae 1 and 2: A1–A2, gnathopods 1 and 2: G1–G2, pereopods 3 to 7: P1–P7, uropods 1 to 3: U1–U3, telson: T.

Results and discussion

Sixteen species of benthic amphipods were identified from samples collected at Bahía Buenaventura and Bahía Málaga in the central zone of the Pacific coast of Colombia (Table 1). Among these, four are recorded to the genus level from individuals that were not possible to identify to the species level. Based on the literature review, 27 species of benthic amphipods have been recorded in the Colombian Pacific (Table S1). Adding the records from the present study, the total species richness reaches 40 species; therefore, our study represents an important contribution to the knowledge about amphipod biodiversity in Colombia and in the ETP.

Table 1. List of amphipod species recorded during this study from the coastal environments of Buenaventura Bay and Málaga Bay along the Colombian Pacific coast, Eastern Tropical

| Species | CR | PI | SP | PC | IMC | IP | Depth |
|---|----|----|----|----|-----|----|------------|
| Suborder Amphilocheida | | | | | | | |
| Family Amphilochidae | | | | | | | |
| <i>Hourstonius baciroa</i> (Barnard, 1979)* | | | | | X | | 3 - 5 m |
| Family Leucothoidae | | | | | | | |
| <i>Leucothoe alata</i> Barnard, 1959* | | | | | X | | 3 - 5 m |
| Suborder Senticaudata | | | | | | | |
| Family Ampithoidae | | | | | | | |
| <i>Ampithoe ramondi</i> Audouin, 1826* | | | | | X | | 3 - 5 m |
| Family Aoridae | | | | | | | |
| <i>Grandidierella</i> sp.* | | | | | | X | Intertidal |
| Family Corophiidae | | | | | | | |
| <i>Americorophium</i> sp.* | X | X | | X | | | Intertidal |
| <i>Leptocheirus rhizophorae</i> Ortiz & Lalana, 1980* | X | | | | | | Intertidal |
| Family Hyalidae | | | | | | | |
| <i>Parhyale fascigera</i> Stebbing, 1897* | | | | | | X | Intertidal |
| <i>Parhyale hawaiiensis</i> (Dana, 1853) * | X | X | | | | X | Intertidal |
| Family Ischyroceridae | | | | | | | |
| <i>Erichthonius brasiliensis</i> (Dana, 1853)* | | | | | X | | 3 - 5 m |
| <i>Erichthonius</i> spp. | | | | | X | | 3 - 5 m |
| Family Maeridae | | | | | | | |

| | | | | |
|---|---|---|---|---------------|
| <i>Elasmopus ocoroni</i> Barnard, 1979* | | | X | Intertidal |
| Family Melitidae | | | | |
| <i>Melita bousfieldi</i> * | | | X | 3 - 5 m |
| Family Neomegamphopidae | | | | |
| <i>Neomegamphopus heardi</i> Barnard & Thomas, 1987 | | | X | 3 - 5 m |
| Family Talitridae | | | | |
| <i>Chelorchestia colombiensis</i> Valencia & Giraldo (2009) | X | X | X | Supralittoral |
| <i>Chelorchestia</i> sp. | X | | | Supralittoral |
| <i>Cocorchestia fritzi</i> (Stebbing, 1903)* | X | X | X | Supralittoral |

Note. Pacific. CR: Cangrejal, PI: Piangüita, SP: San Pedro, PC: Playa Chucheros, IMC: Islote Morro Chiquito, IP: Isla Palma. Classification is based on the World Register of Marine Species – WoRMS (<http://www.marinespecies.org/>). *New records for the Colombian Pacific. Source: own creation.

Amphipoda Latreille, 1816

Suborder Amphilochidea Boeck, 1871

Amphilochidae Boeck, 1871

Hourstonius baciroa (Barnard, 1979) (Fig. 2)

Material examined. Bahía Málaga: 28 specimens, CERBMcr-UV 2005-067, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 25 July 2005; 4 specimens, CERBMcr-UV 2005-081, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 16 December 2005.

Description. Anterior head lobe rounded. Antennae 1–2 short, subequal. Coxa 1 reduced, distinctly shorter than, and mostly hidden by the following coxa. Coxa 2 rounded ventrally and with small ornamentations. G1 and G2 stout, strongly subchelate, propodus strongly inflated, dactyl slender, finely pectinate behind. Carpal lobe of G1 spinose, margin of palm with robust setae. Carpal lobe of G2 with three to four distal robust setae, elongated, extending fully to posterior angle of propodus, propodus with two robust setae on anterolateral surface and with paired robust setae defining the palm. Rami of U1 markedly unequal. U2 shorter than U1 and U3. U3 biramous, both rami 1-articulate. Telson longer than wide, but much shorter than peduncle of U3.

Remarks. *Hourstonius baciroa* resembles *H. vilordes* (Barnard, 1962) recorded for southern California, and *H. laguna* (McKinney, 1978) and *H. tortugae* (Shoemaker, 1942) recorded for the Caribbean coast of Colombia (Ortiz and Lemaitre 1994). *Hourstonius baciroa* has four robust setae on the carpal lobe of G2 which are lacking in *H. vilordes*. In *H. baciroa* the carpal lobe of G2 fully reaches the posterior margin of propodus, while in *H. laguna* it is short (three-fourths of the posterior margin of the propodus). In *H. baciroa*, coxa 2 is rounded, but it is quadrate in *H. laguna* and *H. vilordes*. *H. baciroa* differs from *H. tortugae* in that the propodus of G2 of the latter lacks submarginal robust setae on the anterolateral surface.

ETP distribution. Ecuador (Galapagos Islands) and Colombia (this study). This is the first record of the species for Colombia.

Habitat. Intertidal and subtidal (3 m).

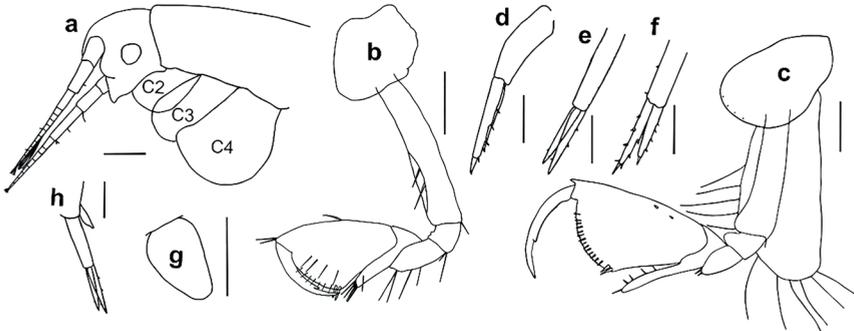


Figure 2. *Hourstonius baciroa* (Barnard, 1979), female, 2.2 mm, CERBMcr-UV 2005-067, Islote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). U1. e). U2. f). U3. g). T. h). U3 and T. Scale bar: a = 0.2 mm; b-f, h = 0.1 mm; g = 0.05 mm. C2-C4: coxa 2 to 4.
Source: Barnard (1979).

Leucothoidae Dana, 1852

Leucothoe alata Barnard, 1959 (Fig. 3)

Material examined. Bahía Málaga: 3 specimens, CERBMcr-UV 2005-061, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 09 April 2005; 2 specimens, CERBMcr-UV 2005-085, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 16 December 2005.

Description. A1 article 1 stout and longer than articles 2 and 3. A2 slightly shorter than A1. Coxa 1 with beveled anteroventral corner. Coxae 2 and 3 subquadrate, longer than wide. Coxa 4 posterior margin long and deeply excavated dorsally. G1 carpochele, carpus stout, propodus longer than wide, palmar margin with small serrations, dactyl very short. G2 carpal lobe spoon-like, setose and apically serrated, propodus robust, longer than wide, and with distal setae, palm slightly scalloped. Pleosome, epimeral plate 1 rounded, epimeral plate 2 posteroventrally extended, epimeral plate 3 subquadrate. U1 longer than U2, biramous, rami subequal in length. U2 biramous, outer ramus shorter than inner ramus. U3 missing. Telson longer than wide, apex with two-minute notches.

Remarks. The description provided by Barnard (1959) is very limited. Specimens found in this study have the propodus of G1 slenderer than in the original description. A similar variation in the G1 was found by Barnard (1962) in individuals from Monterey Bay, California. Furthermore, in the specimens examined in this study, the article bearing the outer plate of the maxilliped is expanded, but not as it is shown in the original description.

As mentioned by Barnard (1970), *L. alata* is very similar to *L. libue* Barnard, 1970; however, the palmar margin of propodus of G1 is smooth in *L. libue*, whereas it has small serrations in *L. alata*. Likewise, the basis of P7 has a concave posterior margin in *L. libue*, whereas it does not in *L. alata*. Based on the review of the family Leucothoidae made by White (2011), there are other three *Leucothoe* species in which the dactyl of G1 is also very short: *L. minima* (Schellenberg, 1925), *L. minuscula* Schellenberg, 1938, and *L. adelphe* White & Thomas, 2009. However, the propodus palm of G2 in these three species has strong dentitions, whereas these are small in *L. alata*.

ETP distribution. Ecuador (Galapagos Islands) and Colombia (this study). This is the first record of the species for Colombia.

Habitat. Subtidal (3–5 m).

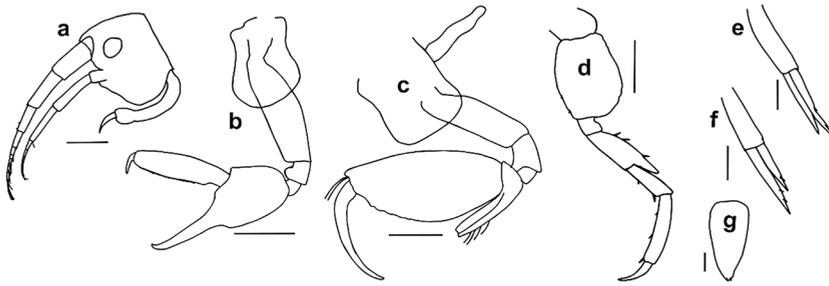


Figure 3. *Leucothoe alata* Barnard, 1959, female, 3.1 mm, CERBMcr-UV 2005-085, Islote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). T. Scale bar: a-d = 0.2 mm; e-f = 0.1 mm; g = 0.05 mm. Source: Barnard (1959).

Suborder Senticaudata Lowry & Myers, 2013

Ampithoidae Boeck, 1871

Ampithoe ramondi Audouin, 1826 (Fig. 4)

Material examined. Bahía Málaga: Adult male, CERBMcr-UV 2005-060, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 09 April 2005.

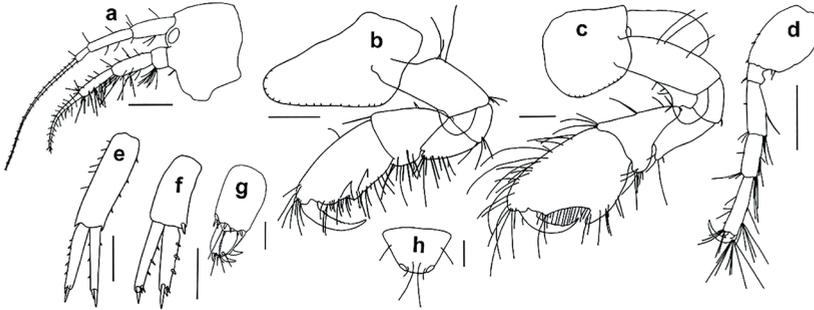
Description. A1 60% of total body length. A1 and A2 similar in length. G1 subchelate, basis with anterodistal lobe, carpus smaller or equal to propodus, palm weakly excavated and defined by a robust seta on the posterior margin. G2 subchelate, robust, basis with large anterodistal lobe, propodus densely setose on distal margin, propodus larger than carpus, palm deeply excavated defined by a protuberance. U1 and U2 biramous. U3 stout, peduncle two times longer than ramus, distal portion with three robust setae, outer ramus with two curved robust setae, inner ramus densely setose. Telson entire.

Remarks. *A. ramondi* differs from *A. hirsutimanus* Ortiz & Lemaitre, 1997, the other *Ampithoe* Leach, 1814 recorded in Colombia but on the Caribbean coast (Ortiz and Lemaitre 1997), in that in *A. ramondi*, the propodus of G2 is densely setose only on the distal portion, whereas in *A. hirsutimanus*, it has long and dense setae on the carpus and propodus.

ETP distribution. Ecuador (Galapagos Islands and coastal region) and Colombia (Pacific and Caribbean coasts). This is the first record of the species for the

Colombian Pacific coast; the species has been recorded on the Caribbean coast of Colombia (Shoemaker 1942, Ortiz 1983, Ortiz and Lemaitre 1994). In general, this is a circumtropical species.

Habitat. Intertidal and shallow subtidal.



Amphipoe ramondi Audouin, 1826, male, 5.7 mm, CERBMcr-UV 2005-060, Islote Morro Chiquito, Valle del Cauca

Figure 4.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. Scale bar: a, d = 0.5 mm; b-c, e-f = 0.2 mm; g = 0.1 mm; h = 0.05 mm.

Source: Audouin (1826).

Aoridae Stebbing, 1899

Grandidierella sp. Coutière, 1904 (Fig. 5)

Material examined. Bahía Málaga: Male, CERBMcr-UV 2006-111, Isla Palma, associated with encrusting algae, in the intertidal zone, leg. B. Valencia and A. Giraldo, 09 December 2006; Male, CERBMcr-UV 2007-067, Isla Palma, associated with encrusting algae, in the intertidal zone, leg. B. Valencia, 28 June 2007.

Remarks. Only two specimens were collected, but they lacked many appendages. *Grandidierella* sp. from the Pacific coast of Colombia is similar to *G. propodentata* Moore, 1986 from Queensland (Australia) and *G. koa* Barnard, 1977 from Hawaii. However, G1 of the specimen found in this study is slenderer, the carpus is triangular, being 5 times longer than wide, while in *G. propodentata* and *G. koa*, the carpus is also triangular but massive, being approximately 1.6 times longer than wide.

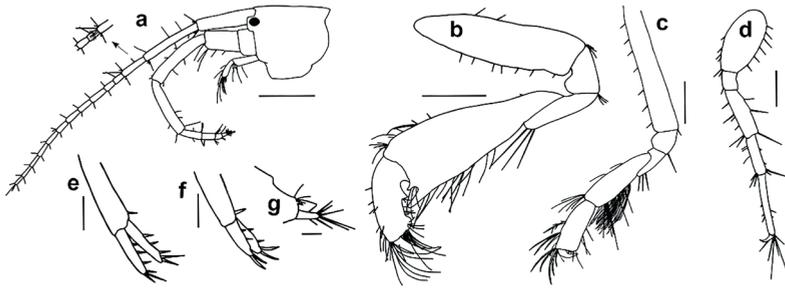


Figure 5. *Grandidierella* sp., male, 4.1 mm, CERBMcr-UV 2006-111, Isla Palma, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3 and T. Scale bar: a = 0.5 mm; b-d = 0.2 mm; e-g = 0.1 mm. Source: Coutière (1904).

Corophiidae Leach, 1814

Americorophium sp. Bousfield & Hoover, 1997 (Fig. 6)

Material examined. Bahía de Buenaventura: 142 specimens, CERBMcr-UV 2006-097, Piangüita, associated with hard artificial substrates attached to *R. mangle* roots in the intertidal zone, leg. J.F. Lazarus, 27 October 2006; 20 specimens, CERBMcr-UV 2008-179, Playa Chucheros, middle and lower zone of rocky cliffs, leg. B. Valencia and A. Giraldo, 28 January 2008.

Remarks. Individuals found in this study have characteristics similar to *A. rioplatense* (Giambiagi, 1929) from Argentina and *A. panamense* (Shoemaker, 1949) from Pearl Islands (Panama). *Americorophium* sp. from the Colombian Pacific has separate urosome segments, sexually dimorphic A2, two teeth on the posterior margin of the dactyl of G2, and the rami of the U2 lack robust setae on the outer margin (Bousfield and Hoover 1997). However, in *Americorophium* sp. from the Colombian Pacific, the peduncular segment 4 of A2 is sparsely setose, not lined with clusters of long setae as in *A. rioplatense* and *A. panamense*. This suggests that *Americorophium* sp. from the Colombian Pacific may correspond to a different species and possibly to an undescribed *Americorophium*.

Habitat. Intertidal.

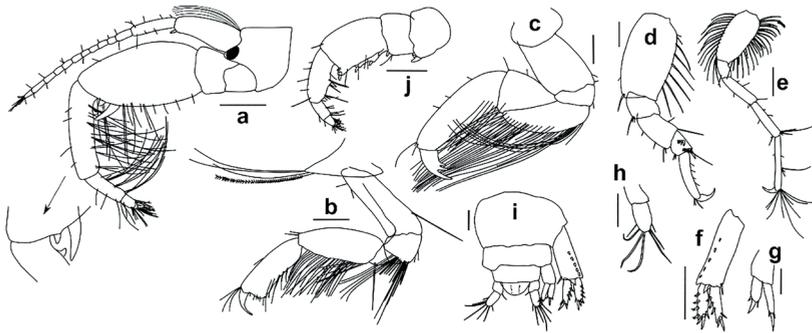


Figure 6. *Americorophium* sp., male, 2.5 mm, CERBMcr-UV 2006-097, Pianguita, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P5. e). P7. f). U1. g). U2. h). U3. i). Urosome. j). Female A2. Scale bar: a, e, j = 0.2 mm, b-d, f-i = 0.1 mm. Source: Bousfield & Hoover, (1997).

Leptocheirus rhizophorae Ortiz & Lalana, 1980 (Fig. 7)

Material examined. Bahía de Buenaventura: 18 specimens, CERBMcr-UV-UV 2006-093, Isla Cangrejo, inside tertiary rocky cliffs along the intertidal zone, leg. A.M. Cobo-Viveros, 24 September 2006; 6 specimens, CERBMcr-UV 2007-060, Isla Cangrejo, inside tertiary rocky cliffs along the intertidal zone, leg. A.M. Cobo-Viveros, 09 March 2007.

Description. A1 longer than A2, accessory flagellum vestigial. Coxa 1 very small and partially covered by coxa 2. Coxae 1 to 5 with setae in the ventral margin. G1 subchelate. G2 simple and slender, anterior margin of basis and propodus with long plumose setae. P3 to P7, basis with setae on the posterior margin. P6 and P7 propodus widened. U1 with interramal robust seta. U2, peduncle and ramus spinose. U3 outer ramus apically setose.

Remarks. Specimens found on the Pacific coast of Colombia agree with the original description by Ortiz and Lalana (1980) from Cuban waters. However, some differences were found in: 1) A1 is considerably longer than A2 (not similar in length); 2) G1 has a robust seta defining the palm; and 3) epimeral plate 3 has three robust setae on the anterior margin. These two last characteristics may be absent in specimens from Cuba because they are not specified in the original description. *Leptocheirus rhizophorae* differs from other species of *Leptocheirus* in its vestigial accessory flagellum, which is usually longer in the other species of the genus.

ETP distribution. Colombia (this study). This is the first record of the species for Colombia and for the ETP.

Habitat. Mangrove roots of *Rhizophora mangle* and intertidal rocky cliffs.

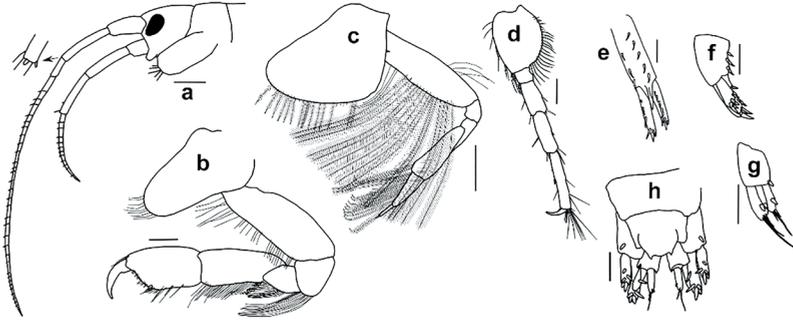


Figure 7. *Leptocheirus rhizophorae* Ortiz & Lalana, 1980, male, 7.6 mm, CERBMcr-UV 2006-093, Isla Cangrejo, Valle del Cauca

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). Urosome. Scale bar: a, c = 0.5 mm; b, d-h = 0.2 mm. Source: Ortiz & Lalana (1980).

Hyalidae Bulyčeva, 1957

Parhyale fascigera Stebbing, 1897 (Fig. 8)

Material examined. Bahía Málaga: 90 specimens, CERBMcr-UV 2007-089, Isla Palma, associated with filamentous algae in the intertidal zone, leg. B. Valencia and A. Giraldo, 30 June 2007.

Description. A1 about 50% of A2 length. A2, peduncle and flagellum weakly setose. Coxa 1 broadened distally and with a small shelf in posterior margin. Coxae 2 and 3 with distinct posterior marginal shelf. Coxa 4 with posterior margin excavated. G1, propodus short, palm defined with a paired of unequal robust setae. G2, basis anteroventral margin unproduced, palm spinose and defined by paired robust setae. P3 to P7, dactyls short with a distinct inner marginal seta. P6 and P7, propodus posterior margin without robust setae. U1 and U2, outer ramus without lateral robust setae. U3 biramous, peduncle with one distal robust seta, inner ramus very short, outer ramus shorter than peduncle and apically setose. Telson cleft.

Remarks. See comments for *Parhyale hawaiiensis* (Dana, 1853).

ETP distribution. Peru, Ecuador (Galapagos Islands), Colombia (this study), and Mexico. This is the first record of the species for Colombia.

Habitat. Tidepools, beaches, intertidal rocky cliffs in the high fringe associated with filamentous algae.

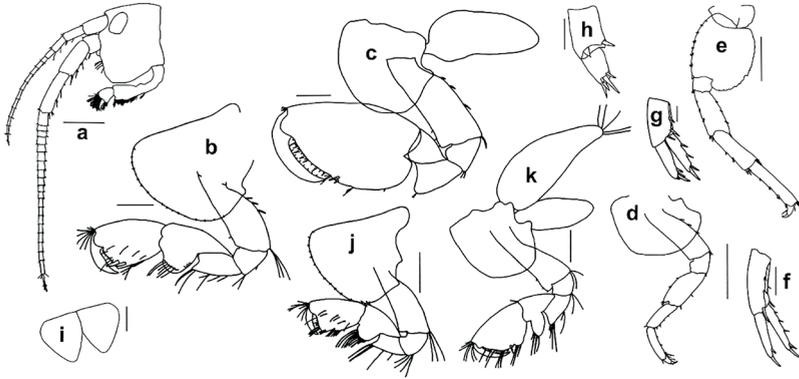


Figure 8. *Parhyale fascigera* Stebbing, 1897, male: 6.4 mm, female: 5.2 mm, CERBMcr-UV 2007-089, Isla Palma, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P4. e). P7. f). U1. g). U2. h). U3. i). T. j). female G1. k). female G2. Scale bar: a, d-e = 0.5 mm; b-c, f, j-k = 0.2 mm; g-i = 0.1 mm. Source: Stebbing (1897).

Parhyale hawaiiensis (Dana, 1853) (Fig. 9)

Material examined. Bahía de Buenaventura: 2 specimens, CERBMcr-UV 2006-089, Piangüita, inside tertiary rocks along the intertidal zone, leg. AM Cobo-Viveros, 12 June 2006; 8 specimens, CERBMcr-UV 2007-061, Isla Cangrejo, inside tertiary rocks along the intertidal zone, leg. A.M. Cobo-Viveros, 09 March 2007. Bahía Málaga: 3 specimens, CERBMcr-UV 2007-077, Isla Palma, associated with encrusting algae in the intertidal zone, leg. B. Valencia and A. Giraldo, 29 June 2007.

Description. Antennae, coxae, and G1 similar to *P. fascigera*. G2, basis anteroventral margin produced ventrally, palm spinose and defined by paired robust setae. P6 and P7, propodus posterior margin spinose. U1 and U2, outer ramus with a marginal robust seta. U3 biramous, inner ramus very small, outer ramus apically setose. Telson cleft.

Remarks. Variations in males of *P. hawaiiensis* were found depending on total body length. In specimens of 5.7 mm, the flagellum of A2 has 11 articles, while in specimens of 7.1–7.8 mm it has 20 to 22 articles. In addition, it is possible to observe the following in the smaller specimens: presence of a shelf in the posterior

margin of coxa 1 is ambiguous; U1, outer ramus has one robust seta instead of two and the inner ramus has two robust setae instead of three; the inner ramus of their U3 is fused to the peduncle.

Parhyale hawaiiensis differs from *P. fascigera* in that the former has robust setae in the posterior margin of P6 and P7, and has robust setae in the outer ramus of U1 and U2. These robust setae are absent in *P. fascigera*.

ETP distribution. Ecuador (Galapagos Islands and coastal region), Colombia (Pacific and Caribbean coasts), Panama, and Costa Rica. This is the first record of the species for the Colombian Pacific coast; the species has been recorded on the Caribbean coast of Colombia (Shoemaker 1956, Quintero et al., 1992). In general, this is a circumtropical species.

Habitat. Intertidal and shallow subtidal.

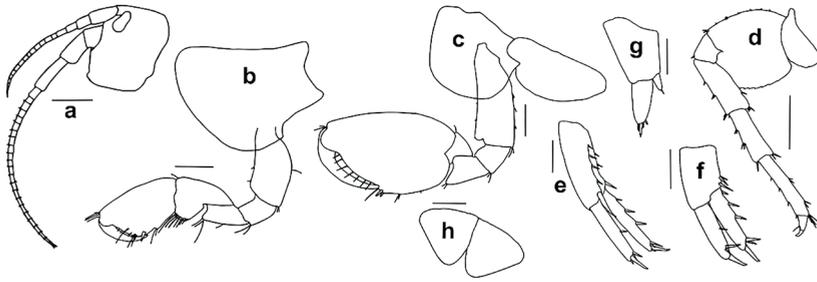


Figure 9. *Parhyale hawaiiensis* (Dana, 1853), male, 7.8 mm, CERBMcr-UV 2007-077, Isla Palma, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. Scale bar: Head, P7 = 0.5 mm; G1-G2, U1-U2 = 0.2 mm; U3, T = 0.1 mm. Source: Dana (1853).

Ischyroceridae Stebbing, 1899

Erichthonius brasiliensis (Dana, 1853) (Fig. 10)

Material examined. Bahía Málaga: Male, CERBMcr-UV 2005-069, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 25 July 2005.

Description. Lateral cephalic lobes subtriangular. Coxa 1 small and widely separated from Coxa 2. Coxa 2 deeper than broad, ventral margin with stridulating ridges. G1, basis expanded and with knob-like process on posterior margin, carpus longer than

propodus, propodus subovoid. G2 carpochele, basis elongate, broadened distally, carpus massive, posterodistal margin with two carpal teeth, propodus slender, dactylus with distal setae. P3 and P4, basis broadened distally. U3, peduncle longer than ramus, ramus curved. Telson entire.

Remarks. Adult males of *E. brasiliensis* are easily distinguished from other species of the genus by the expanded basis of G1, the presence of the knob-like process on the basis of G1, and the slender basis of G2. In this study only one adult male (4.9 mm) presented the characteristics described above. However, in this specimen the eyes were large and not small as it is characteristic of the species (Myers and McGrath 1984).

ETP distribution. Ecuador (Galapagos Islands and coastal region), Colombia (Pacific and Caribbean coasts), Panama, and Costa Rica. This is the first record of the species for the Colombian Pacific coast; the species has been recorded on the Caribbean coast of Colombia (Ortiz 1983, Ortiz and Lemaitre 1994). In general, this is a circumtropical species.

Habitat. From 0–171 m, but mostly in shallow waters.

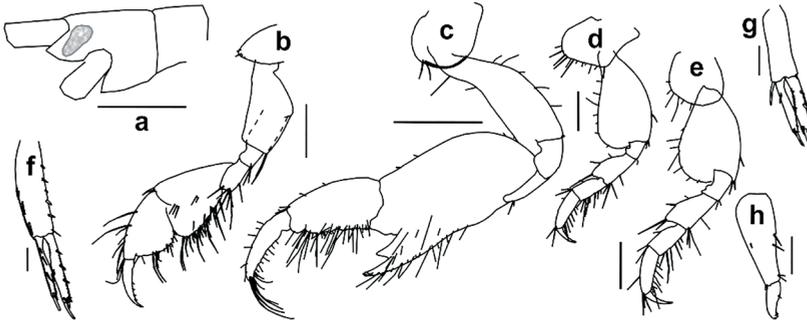


Figure 10. *Ericthonius brasiliensis* (Dana, 1853), male, 4.9 mm, CERBMcr-UV 2005-069, Isote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P3. e). P4. f). U1. g). U2. h). U3. Scale bar: a, c = 0.5 mm; b, d-e = 0.2 mm; f-h = 0.1 mm.

Source: Dana (1853).

***Erichthonius* sp. Milne Edwards, 1830 (Fig. 11)**

Material examined. Bahía Málaga: 116 specimens, CERBMcr-UV 2005-054, Islote Morro Chiquito, inside dwelling tubes, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 27 January 2005; 21 specimens, CERBMcr-UV 2005-059, Islote Morro Chiquito, inside dwelling tubes, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 09 April 2005; 89 specimens, CERBMcr-UV 2005-076, Islote Morro Chiquito, inside dwelling tubes, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 04 October 2005; 265 specimens, CERBMcr-UV 2005-083, Islote Morro Chiquito, inside dwelling tubes, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 16 December 2005.

Remarks. Several ovigerous females (2.9–3.4 mm) and smaller males (2.9–3.1 mm) differed from the male of *E. brasiliensis* described above. In these males, the basis of G1 is slender (not expanded) and the posterior margin lacks the knob-like process. In G2, the basis is considerably broad (not slender) and the dactyl lacks the distal setae. In P3 and P4, the basis is expanded and widened in the middle (not distally). In both males and females, the peduncle of U3 has two long setae, whereas in the male of *E. brasiliensis* the peduncle has four short setae. Because identification of the genus *Erichthonius* is problematical and the shape of G2 in males varies during development (Myers and McGrath 1984, see their Fig. 2A and 2H), it is difficult to know if the male of *E. brasiliensis* found in this study corresponds to a hyperadult and the smaller males correspond to juveniles or to another species. In a preliminary analysis of samples collected in Cabo Marzo, further north in the Colombian Pacific, several small and large males of *E. brasiliensis* were found. In both the small and large males found in Cabo Marzo, the shape of G1 and G2 were similar to the largest male found in Islote Morro Chiquito (Fig. 10, wide basis of G1, slender basis of G2), and none of them have the characteristics of the small males found in Islote Morro Chiquito (B.V. pers. obs.). This suggests that the small males of Islote Morro Chiquito may correspond to a different species and possibly to an undescribed *Erichthonius*.

ETP distribution. Ecuador (Galapagos Islands and coastal region), Colombia (this study), Panama, and Costa Rica. First record for the Colombian Pacific coast; the species has been recorded on the Caribbean coast of Colombia (Ortiz 1983, Ortiz and Lemaitre 1994). In general, this is a circumtropical species.

Habitat. From 0–171 m, but mostly in shallow waters.

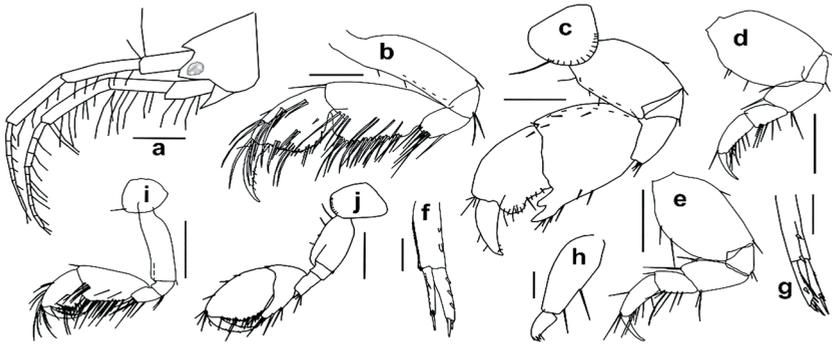


Figure 11. *Erichthonius* sp., male: 2.9 mm, CERBMcr-UV 2005-054, female: 3.2 mm, CERBMcr-UV 2005-076, Islote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P3. e). P4. f). U1. g). U2. h). U3. i). female G1. j). female G2. Scale bar: a = 0.5 mm; b, f-g = 0.1 mm; c-e, i-j = 0.2 mm; h = 0.05 mm. Source: Milne Edwards (1830).

Maeridae Krapp-Schickel, 2008

Elasmopus ocoroni Barnard, 1979 (Fig. 12)

Material examined. Bahía de Buenaventura: 1 specimen, CERBMcr-UV 2006-088, Piangüita, inside tertiary rocks along the intertidal zone, leg. A.M. Cobo-Viveros, 02 June 2006. Bahía Málaga: 46 specimens, CERBMcr-UV 2007-103, Isla Palma, intertidal zone, leg. B. Valencia and A. Giraldo, 30 November 2007.

Description. Mandibular palp deeply falcate. A1 longer than A2. G1 subchelate. G2, internal side of the palm with sharp falcate setose hump near dactylar hinge, palm short, middle tooth stout, palm defined by a broad conical tooth bearing a robust seta, palm and posterior margin of hand densely setose, setae highly elongated. P3 to P7, basis without long posterior setae. P6 and P7, basis normally serrated. U3 with shortened inner ramus, bearing one medial robust seta, outer ramus with two groups of lateral robust setae. Telson with apices rounded and protruded medially, bearing two apical and one marginal robust seta.

Remarks. Specimens found in this study agree with the original description by Barnard (1979) from the Galapagos Islands. Other three species of *Elasmopus* Costa, 1853, *E. brasiliensis* (Dana, 1853), *E. balkomanus* Thomas & Barnard, 1988, and *E. thomasi* Ortiz & Lalana, 1994, have been recorded for the Caribbean coast of Colombia (Ortiz 1983, Ortiz and Lemaitre 1994). *Elasmopus ocoroni* differs from *E. thomasi* in that the former has a strongly setose propodus of G2, while in the

latter the propodus is scarcely setose. The principal difference between *E. ocoroni*, *E. brasiliensis*, and *E. balkomanus* is the presence in the former of three prominences in the palm of G2 which are absent in the other two species.

ETP distribution. Ecuador (Galapagos Islands and coastal region), Colombia (this study), and Costa Rica. This is the first record of the species for Colombia. Habitat. Rocks in mangroves and in the middle fringe of intertidal rocky cliffs associated with filamentous algae.

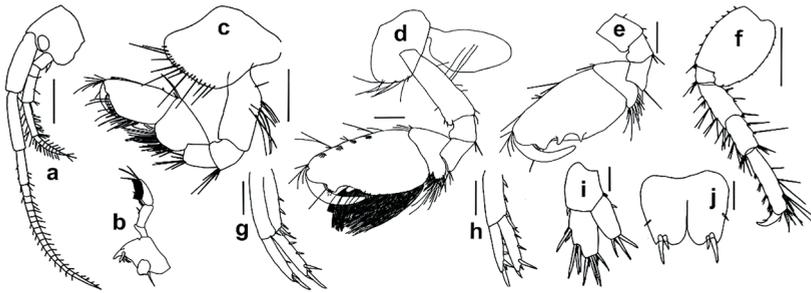


Figure 12. *Elasmopus ocoroni* Barnard, 1979, male, 4.8 mm, CERBMcr-UV 2007-103, Isla Palma, Valle del Cauca.

Note. a). Head. b). Mandible. c). G1. d). G2 external view. e). G2 internal view. f). P7. g). U1. h). U2. i). U3. j). T. Scale bar: a, f = 0.5 mm; c-e, g-h = 0.2 mm; i = 0.1 mm; j = 0.05 mm. Source: Barnard (1979).

Melitidae Bousfield, 1973

Melita bousfieldi García-Madrigrá, 2010 (Fig. 13)

Material examined. 42 specimens, CERBMcr-UV 2005-068, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 25 July 2005.

Description. A1 longer than A2. A1 accessory flagellum 3-articulate, third segment minute. G1 subchelate, carpus elongated, longer than propodus, propodus palm projected distally with two robust setae on inner surface. G2 subchelate, distal margin of carpus short and setose, propodus strongly setose, palm oblique, dactyl crossing palm. Pleons 1 to 3 weakly dorso-laterally toothed. Urosomal segment 1 with a mediodorsal tooth. Urosomal segment 2 with a pair of dorsolateral robust setae of similar length that have a simple seta between them. U3, inner ramus small, outer ramus long, with four and five clusters of robust setae on the margins. Telson

deeply cleft with truncated apices, outer margin with two setae, inner margin with one seta, apices with four robust setae and four simple setae.

Remarks. Specimens found in this study agree with the original description by García-Madrigal (2010) for the Gulf of Tehuantepec waters (Mexico). Differences were found in: 1) G1, the propodus palm projection has two robust setae on the inner surface instead of three; 2) U3, the margin of the outer ramus has four and five clusters of robust setae instead of five clusters on each side; and 3) T, the two plumose setae on the apices recorded in the original description were not visible in the specimens examined here.

Two other species of *Melita* Leach, 1814, *M. nitida* Smith, 1873 and *M. palmata* Montagn, 1804, have been recorded on the Caribbean coast of Colombia (Ortiz 1983, Ortiz and Lemaitre 1997). Specimens of *M. bousfieldi* have a dorsal tooth in the first urosomal segment, while it is smooth in *M. nitida*. *Melita palmata* has a massive, trapezoidal, and poorly setose propodus of G2, while the propodus is densely setose and ovate in *M. bousfieldi*.

ETP distribution. Colombia (this study) and Mexico. This is the first record of the species for Colombia.

Habitat. Intertidal and shallow subtidal in sediment with shells, coral rocks, and algae on coral.

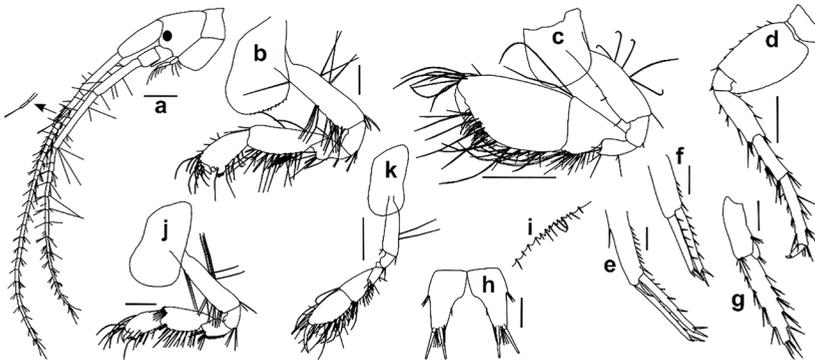


Figure 13. *Melita bousfieldi* García-Madrigal, 2010, male: 6.1 mm, female: 5.3 mm, CERBMcr-UV 2005-068, Islote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. i). Pleon segment 3. j). female G1. k). female G2. Scale bar: a, c-d, k = 0.5 mm; b, e-g, j = 0.2 mm; h = 0.1 mm. Source: García-Madrigal (2010).

Neomegamphopidae Myers, 1981***Neomegamphopus beardi* Barnard & Thomas, 1987 (Fig. 14)**

Material examined. Bahía Málaga: 27 specimens, CERBMcr-UV 2005-071, Islote Morro Chiquito, associated with hard artificial substrates in the subtidal zone (3 m), leg. J.F. Lazarus, 25 July 2005.

Description. A1, accessory flagellum half as long as article 1 of primary flagellum. G1 carpochele, carpus wider than long, margin with two teeth, inner tooth weakly palmate, about 1/3 of the dominant tooth and separated by a weak incision from propodus, propodus anteriorly setose, longer than wide. G2 subchelate. U1 with interamal robust seta. Telson with a small excavation, each lobe with two small robust setae and one long seta.

Remarks. Specimens found in this study agree with the original description by Barnard and Thomas (1987) for Bahía Honda waters (Panama). Differences were found in the accessory flagellum that is only half as long as article 1 of primary flagellum in the specimens examined in this study instead of “as long as article 1 of primary flagellum”. *Neomegamphopus beardi* differs from other species of the genus by the presence of two teeth on the carpus of G1 instead of one.

ETP distribution. Colombia (this study) and Panama. This is the first record of the species for Colombia.

Habitat. Shallow subtidal.

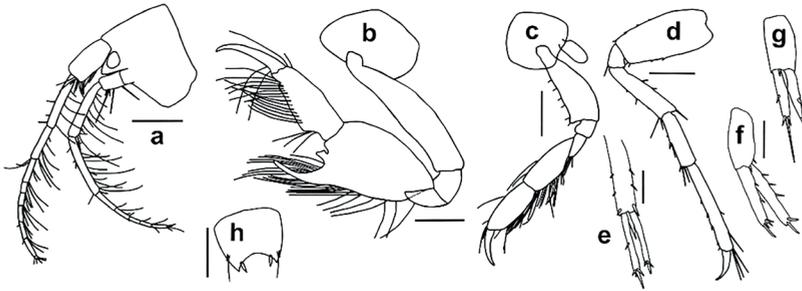


Figure 14. *Neomegamphopus beardi* Barnard & Thomas, 1987, male, 3.0 mm, CERBMcr-UV 2005-071, Islote Morro Chiquito, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. Scale bar: a-d = 0.2 mm; e-f = 0.1 mm; g-h = 0.05 mm. Source: Barnard & Thomas (1987).

Talitridae Rafinesque, 1815***Chelorchestia colombiensis* Valencia & Giraldo, 2009 (Fig. 15)**

Material examined. Bahía Málaga: 2 specimens, CERBMcr-UV 2006-109, Isla Palma, in the high and middle zones of rocky cliffs associated with filamentous algae, leg. B. Valencia and A. Giraldo, 08 December 2006; 6 specimens, CERBMcr-UV 2006-110, Isla Palma, in the high and middle zones of rocky cliffs associated with filamentous algae, leg. B. Valencia and A. Giraldo, 09 December 2006; 128 specimens, CERBMcr-UV 2007-075, Isla Palma, in the high and middle zones of rocky cliffs associated with filamentous algae, leg. B. Valencia and A. Giraldo, 29 June 2007; 1 specimen, CERBMcr-UV 2007-085, Isla Palma, in the high and middle zones of rocky cliffs associated with filamentous algae, leg. B. Valencia and A. Giraldo, 30 June 2007; 155 specimens, CERBMcr-UV 2008-180, Playa Chucheros, in the high and middle zones of rocky cliffs associated with filamentous algae, leg. B. Valencia and A. Giraldo, 28 January 2008.

Description. A1 reaching 2/3 of fourth peduncular article of A2. A2, 60% of body length. G1 subchelate, merus, carpus and propodus with well-developed posterior lobe. G2, basis with one tubercle on the anterior margin, ischium with a well-developed lobe on the anterior margin, palm with two well-developed round humps, dactyl robust, with broad medial expansion. U1, peduncle spinose and with interramal robust seta. U2, peduncle and ramus spinose. U3 uniramous, peduncle with a large robust seta on the distal portion, ramus shorter and with one terminal robust seta. Telson with a shallow apical notch.

Variations on G2 of juvenile males: In the smallest juvenile males (2.4–2.5 mm), the tubercle on the basis is absent and the propodus has a small rounded hump. In juvenile males of intermediate size (4.2–4.7 mm), the tubercle on the anterior margin of the basis is present, although small. Propodus with two rounded humps, but small and close to each other.

Females: G1 subchelate, without posterior lobes. G2 subchelate, with merus, carpus, and propodus with posterior lobes, propodus with small dactyl.

Remarks. *Chelorchestia colombiensis* can be easily distinguished from other species of the genus because its G2 has a palm with two well developed rounded humps in adult males that are absent in the other species.

ETP distribution. Colombia.

Habitat. High intertidal zone associated with encrusting and filamentous algae.

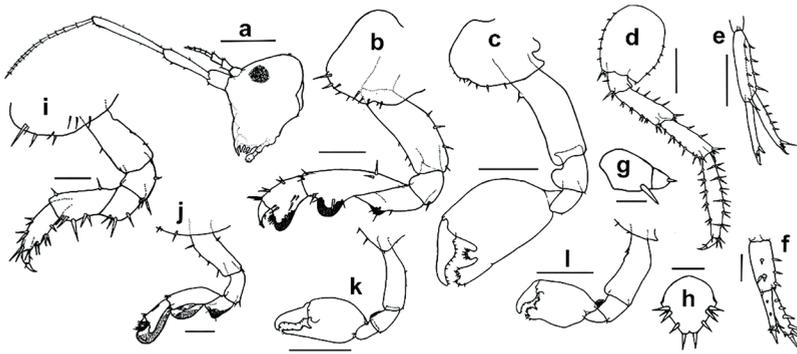


Figure 15. *Chelorchestia colombiensis* Valencia & Giraldo, 2009, male 8.6 mm, CERBMcr-UV 2007-085, female, 4.5 mm, CERBMcr-UV 2006-110, juvenile, 2.4 mm, CERBMcr-UV 2006-109, juvenile, 4.7 mm, CERBMcr-UV 2006-110, Isla Palma, Valle del Cauca.

Note. a. Head. b. G1. c. G2. d. P7. e. U1. f. U2. g. U3. h. T. i. female G1. j. female G2. k. G2 juvenile ♂ (2.4 mm). l. G2 juvenile ♂ (4.7 mm). Scale bar: a = 1.0 mm; b, f-h, i-j = 0.2 mm; c-e, k-l = 0.5 mm. Source: Valencia & Giraldo (2009).

***Chelorchestia* sp. Bousfield, 1984 (Fig. 16)**

Material examined. Bahía Buenaventura: 6 specimens, CERBMcr-UV 2007-062, Isla Cangrejo, as part of endofauna in tertiary rocky cliffs, leg. A.M. Cobo-Viveros, 09 March 2007; 12 specimens, CERBMcr-UV 2007-125, same collection data.

Remarks. Specimens of *Chelorchestia* sp. found during this study belong to two different morphotypes. Only one male of 12 mm in length was found. In this individual, the G2 has six tubercles on the anterior margin of the basis and the palm has a strong proximal process, being triangular and bigger than half of the length of the propodus. On the other hand, four males of 9.5 mm in length were found. In these individuals, A1 reaches $3/4$ of the fourth peduncular article of A2. Furthermore, A2 is 63% of body length, and G2 has four tubercles on the anterior margin of the basis, the palm is less developed, and the dactyl has a broad medial expansion. Within the genus *Chelorchestia* it is very common that males exhibit variations in the second gnathopod during development (Smith and Heard 2001, Serejo 2004, Valencia and Giraldo 2009). It is possible that these specimens correspond to a new species, where the second morphotype (specimens of 9.5 mm) belongs to a juvenile stage of the first morphotype (specimen of 12 mm). Future studies are necessary to elucidate the status of specimens from Isla Cangrejo.

The two morphotypes found during this study differ from other species of the genus *Chelorchestia* in the length of A2, the shape of G2, and the number of tubercles on the anterior margin of the basis of G2. The process of the palm of G2 in the male of 12 mm found in Isla Cangrejo is similar to the described for *C. darwini* (Müller, 1864) by Serejo (2004). However, specimens from Isla Cangrejo have a longer A2 (> 60% of body length) compared to *C. darwini* and *C. forceps* Smith & Heard, 2001, in which A2 reaches 40% of body length. Likewise, specimens from Isla Cangrejo have four to six tubercles on the anterior margin of the basis of G2, while *C. colombiensis* and *C. costaricana* (Stebbing, 1906) have one and two tubercles, respectively.

Habitat. High intertidal zones in rocky cliffs.

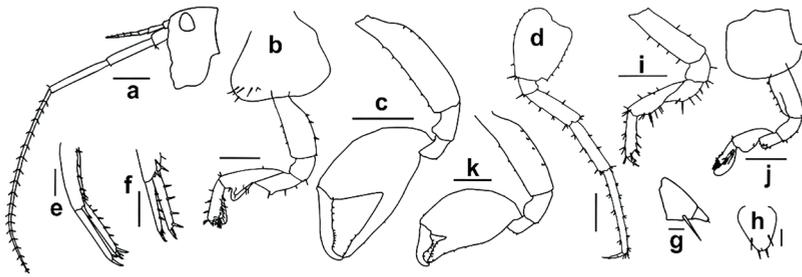


Figure 16. *Chelorchestia* sp., male, 14.0 mm, CERBMcr-UV 2007-062, female, 12.4 mm, CERBMcr-UV 2007-125, juvenile, 11.4 mm, CERBMcr-UV 2007-125, Isla Cangrejo, Valle del Cauca.

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. i). female G1. j). female G2. k). G2 juvenile ♂. Scale bar: a, c-d = 1.0 mm; b, e-f, i-k = 0.5 mm; g = 0.1 mm; h = 0.2 mm. Source: Bousfield (1984).

Cocorchestia fritzi (Stebbing, 1903) (Fig. 17)

Material examined. Bahía Buenaventura: 15 specimens, CERBMcr-UV 2008-178, Pianguüita, in beach litter in the supralittoral zone of sandy beaches, leg. B. Valencia and A. Giraldo, 249 specimens, CERBMcr-UV 2011-022, San Pedro, in beach litter in the supralittoral zone of sandy beaches, leg. A. Giraldo and B. Valencia, 13 July 2011; Bahía Málaga: 20 specimens, CERBMcr-UV 2008-184, Playa Chucheros, in beach litter in the supralittoral zone of sandy beaches, leg. A. Giraldo, 28 January 2008.

Description. A1 reaching 2/3 of fourth peduncular article of A2. G1 subchelate, carpus and propodus with well-developed posterior lobes. G2, anterior margin of basis spinose, ischium with a small lobe on the anterior margin, propodus large

and oval, palm oblique and spinose with a deep excavation near the hinge where a prominence of the dactylus fits. U1, peduncle and inner ramus spinose, outer ramus without robust setae. U2, peduncle and rami setose. U3 uniramous, ramus slightly shorter than peduncle, ramus and peduncle with small robust setae. Telson with a shallow apical notch and with five robust setae on each lobe.

Variations on G2 of juvenile males: in the smallest juvenile males examined (7.5–9.1 mm), the propodus is subquadrate with a small distal protuberance and a straight palm. In juvenile males of intermediate size (9.6–10.4 mm), the propodus is oval, but lacks the excavation near the hinge and the dactyl also lacks the prominence present on the adult males.

Females: G1 simple, without posterior lobes. G2 subchelate, anterior margin of basis expanded and spinose, propodus with a lobe that extends beyond dactyl, dactyl small.

Remarks. The genera of the family Talitridae have been under revision due to the difficulties in their identification (e.g., Bousfield 1982, Morino and Miyamoto 1988, Lowry and Myers 2019, 2022). In the most recent revision, Lowry and Myers (2022) reassigned some of the species to new genera and assigned *Talorchestia fritzi* as the type species of *Cocorchestia*. The authors based the diagnostic description of *C. fritzi* on the work by Shoemaker (1932), who revised additional males from Costa Rica and described a morphology of G2 that differed from the original description. Shoemaker (1932) stated that the propodus of G2 has a large sinus that occupies half the palm and that the prominence in the dactylus is absent in fully developed males. However, Shoemaker (1932) did not provide a reference of the size of the individuals he revised. In the larger males examined in this study (most 11–14 mm, the largest ~ 15 mm), the dactylus in all specimens has the prominence that fits the excavation of the propodus. Thus, the different morphologies of G2 in adult males of *C. fritzi* between the original description by Stebbing (1903), the revised description by Shoemaker (1932), and this study suggest that future revision is needed for this species, more importantly considering that Lowry and Myers (2022) assigned *T. fritzi* as the type species of *Cocorchestia*.

Characteristics of *C. fritzi* found in the Colombian Pacific agree well with the original description by Stebbing (1903) for Costa Rica. Differences were found in: 1) males, the dactylus of G1 is longer than the palm (not shorter than the palm); and 2) females, the basis of G2 is more expanded than in individuals illustrated in the original description. These two variations were also found by Monod (1970) in the Galapagos Islands (see Monod 1970, figures 59 and 67).

Males of *C. fritzi* differ from other species of the genus in that the propodus of G2 has an excavation near the hinge where a prominence of the dactylus fits, whereas

in *C. margaritae* (Stephensen, 1948) the excavation on the propodus is deeper, the palm has a large distal projection, and the dactylus lacks the prominence. Likewise, in males of *C. fritzi* only the anterior margin of the basis of G2 has robust setae (not both margins). Females of *C. fritzi* differ from *C. margaritae* by its elongated G2 propodus (not posteriorly rounded).

ETP distribution. Ecuador (Galapagos Islands), Colombia (Pacific and Caribbean coasts), Panama, and Costa Rica. This is the first record of the species for the Colombian Pacific coast; the species has been recorded on the Caribbean coast of Colombia (Stebbing 1903, Dexter 1974).

Habitat. Beach litter and under wood in the supralittoral zone of sandy beaches.

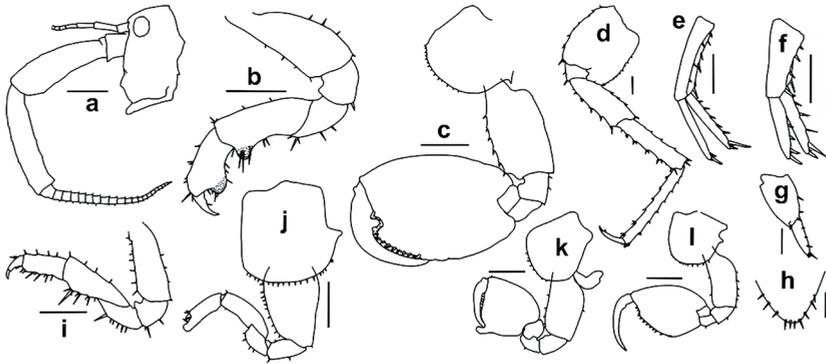


Figure 17. *Cocorchestia fritzi* (Stebbing, 1903), male, 14.2 mm, CERBMcr-UV 2008-178, Pianguíta, female, 12.0 mm, CERBMcr-UV 2011-022, San Pedro, juvenile, 7.5 mm, CERBMcr-UV 2008-184, Playa Chucheros, juvenile, 9.4 mm, CERBMcr-UV 2008-184, Playa Chucheros, Valle del Cauca

Note. a). Head. b). G1. c). G2. d). P7. e). U1. f). U2. g). U3. h). T. i). female G1. j). female G2. k). G2 juvenile ♂ (7.5 mm). l). G2 juvenile ♂ (9.4 mm). Scale bar: a = 1.0 mm; b-f, i-j; l = 0.5 mm; g-h, k = 0.2 mm. Source: Stebbing (1903).

A dichotomous key (Table 2) has been developed to facilitate the identification of coastal amphipods in future regional studies. This key delineates diagnostic morphological characteristics, enabling researchers to distinguish taxa with precision. Its inclusion strengthens biodiversity assessments and comparative analyses, contributing to a more comprehensive understanding of amphipod diversity along the Colombian Pacific coast.

Table 2

Key to the species of coastal amphipods (adult males) from the Pacific coast of Colombia

| | |
|---|-----------------------------------|
| ¹ G1 carpocheleate | 2 |
| - G1 subcheleate | 4 |
| ² U3 uniramous | <i>Grandidierella</i> sp. |
| - U3 biramous | 3 |
| ³ G1 stout, carpus with two teeth at apex, propodus densely setose; T tiny | <i>Neomegamphopus heardi</i> |
| - G1 slender, carpus and propodus longer than wide, propodus without setae, dactyl very short; T longer than wide | <i>Leucothoe alata</i> |
| ⁴ G2 coxa with stridulating ridges; G2 carpocheleate, carpus with two teeth; U3 outer ramus curved | 5 |
| - G2 coxa without stridulating ridges; G2 simple, subcheleate or cheleate; U3 outer ramus not curved | 6 |
| ⁵ G1, posterior margin of basis with knob-like process; G2 coxa deeper than broad; G2 basis elongate, dactyl with long distal setae | <i>Erichthonius brasiliensis</i> |
| - G1, posterior margin of basis without knob-like process; G2 coxa broader than deep; G2 basis massive, dactyl without distal setae | <i>Erichthonius</i> sp. |
| ⁶ A1 shorter than A2 | 7 |
| - A1 and A2 similar in length, or A1 longer than A2 | 12 |
| ⁷ A1 about 10% of A2 | 8 |
| - A1 about 50% or 80% of A2 | 10 |
| ⁸ G2 basis spinose, propodus large and oval, palm spinose; U3 peduncle and ramus with small robust setae, ramus similar in size to peduncle | <i>Cocorchestia fritzi</i> |
| - G2 basis with tubercles, propodus large and cheleate, palm without robust setae; U3 peduncle and ramus with only one robust seta on the distal portion, ramus shorter than peduncle | 9 |
| ⁹ G2, palm with two well developed rounded humps | <i>Chelorchestia colombiensis</i> |
| - G2, palm deeply excavated | <i>Chelorchestia</i> sp. |
| ¹⁰ A1 about 80% of A2; A2, pediform; G2 simple, dactyl with three marginal teeth | <i>Americorophium</i> sp. |
| - A1 about 50% of A2; A2 not pediform; G2 subcheleate | 11 |
| ¹¹ P6 and P7, posterior margin of propodus without robust setae; U1 and U2, outer ramus without lateral robust setae | <i>Parhyale fascigera</i> |
| - P6 and P7, posterior margin of propodus spinose; U1 and U2, outer ramus spinose laterally | <i>Parhyale hawaiiensis</i> |
| ¹² Coxa 1 very small and partially covered by coxa 2 | 13 |
| - Coxa 1 not covered by coxa 2 | 14 |
| ¹³ U1 with interramal robust seta; G1 subcheleate; G2 simple and elongate, anterior margin of basis with long setae | <i>Leptocheirus rhizophorae</i> |
| - U1 without interramal robust seta; G1 and G2 stout, strongly subcheleate, propodus strongly inflated almost triangular | <i>Hourstonius baciroa</i> |
| ¹⁴ U3 inner ramus short, outer ramus very long; pleon with several small dorsal teeth; urosomal segment 1 with one dorsal tooth | <i>Melita bousfieldi</i> |
| - U3 rami subequal or inner ramus longer than outer ramus; pleon without dorsal teeth; urosomal segment 1 without dorsal teeth | 15 |

- ¹⁵ U3 outer ramus stout, inner and outer rami with apical robust setae; A2 shorter than peduncle of A1; G2, inner face of propodus with a subquadrate process, and with a medial and a distal tooth *Elasmopus ocoroni*
 - U3 rami very short and subequal in size, outer ramus with two curved robust setae, inner ramus densely setose;
 A2 longer than peduncle of A1; G2 robust, palm deeply excavated, inner face of propodus without teeth
 *Ampithoe ramondi*

Source: own creation.

Conclusions

Based on the analysis of a limited number of samples from various substrate types in the intertidal and subtidal zones of the central Colombian Pacific, this study substantially enhances the understanding of amphipod biodiversity in benthic ecosystems of the Eastern Tropical Pacific (ETP). The findings underscore the need for further research to systematically characterize the spatiotemporal variability in the community structure of this group in Colombia. Additionally, studies focusing on the natural history and ecological functions of benthic amphipods are essential to improve knowledge of their taxonomy, biodiversity, and ecological roles across diverse environments along the Colombian Pacific coast, including sandy beaches, coral reefs, mangroves, mud flats, and rocky subtidal zones.

Declaration of conflict of interest

The authors states there are no economic conflicts of interest, or of any other kind, that may indicate this research has been biased in any way.

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