

The Caprellidea (Crustacea: Peracarida: Amphipoda) from the Gulf of Mexico with a description of a new species of *Paracaprella*

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SUMMARY: A new species of caprellid amphipod of the genus *Paracaprella* is described and illustrated in detail. All the material reported was collected from coral rubble samples from the Arrecife Tuxpan/Lobos Protected Natural Area, off Veracruz State, Mexico, WSW Gulf of Mexico. The new species is characterized by large eyes; article 2 of peduncle of antenna 2 with a distoventral process; body dorsally setose; large subrectangular projection on the anteroventral margin of pereonite 2; basis of gnathopod 2 elongate and thin with a proximal knob on posterior margin, propodus longer than broad, with a robust grasping spine, and a large and robust tooth distally; and pereopods 5, 6 and 7 with several long plumose setae. The new species increases the numbers of *Paracaprella* species recorded around the world to 8, and the caprellid species from the Gulf of Mexico to 16. All caprellid amphipod species documented from this gulf inhabit the coastal zone and six in the deep sea. In addition, the number of caprellid species decreases along the bathymetric gradient: 15 species on the littoral zone, 6 on the continental shelf, 5 on the continental slope, and 3 on the abyssal plain.

Keywords: Crustacea, *Paracaprella*, new species, coral reef, Mexico, taxonomy.

RESUMEN: CAPRELLIDEA (CRUSTACEA: PERACARIDA: AMPHIPODA) DEL GOLFO DE MÉXICO CON LA DESCRIPCIÓN DE UNA ESPECIE NUEVA DE *PARACAPRELLA*. – Se describe e ilustra con detalle una especie nueva de anfípodo caprellídeo del género *Paracaprella*. Todo el material estudiado fue encontrado en muestras de restos de coral del Área Natural Protegida Lobos/Tuxpan, Estado de Veracruz, SO del Golfo de México. La especie nueva se caracteriza por tener ojos grandes; artejo 2 del pedúnculo de la antena 2 con un proceso distoventral; cuerpo setoso dorsalmente, proyección subrectangular larga sobre margen anteroventral de pereonite 2; basis del gnatópodo 2 alargada y delgada con una protuberancia proximal sobre margen posterior, propodus más largo que ancho, con una espina robusta raspadora, y un diente robusto y largo distalmente; pereiópodos 5, 6 y 7 con algunas setas plumosas largas. La especie nueva incrementa el número de especies del género *Paracaprella* registradas en el mundo a ocho, y a 16 las especies de caprellídeos para el golfo de México. Todas las especies documentadas para el golfo habitan en la costa y seis especies en el mar profundo. Además, el número de especies de caprellídeos decrece a lo largo del gradiente batimétrico: 15 especies en la zona litoral, seis en la plataforma continental, cinco en el talud continental, y tres en la planicie abisal.

Palabras clave: Crustacea, *Paracaprella*, especie nueva, arrecife de coral, México, taxonomía.

INTRODUCTION

Caprellids are benthic amphipods distributed from the intertidal zone to abyssal depths (Guerra-García *et al.* 2008) and associated with algae, seagrasses, sponges, hydroids, bryozoans, tunicates, shell debris, coral rubbles, and soft bottoms (McCain 1968). These small marine crustaceans (millimetres to a few centimetres)

are a food resource for some invertebrates and fish in coastal ecosystems (Guerra-García 2004, Woods 2009) and are considered excellent bioindicators (Guerra-García and García-Gómez 2001).

So far, 401 caprellid species grouped into 88 genera have been recorded worldwide (Ahyong *et al.* 2011). Caprellid amphipods have been subjected to various controversial phylogenetic analyses (Laubitz 1976,

1993, Takeuchi 1993, Myers and Lowry 2003, Ito *et al.* 2008, 2011), showing the acquisition of a single body plan with a reduction of the posterior body segments and the thoracic legs. It includes a cylindrical and elongated body, head and pereonite 1 fused, rudimentary coxae, two pairs of gills, oostegites on pereonites 3 and 4, pereopods 3 and 4 absent, reduced or well developed, and a degenerative abdomen and abdominal appendages (Ito *et al.* 2011). The genus *Paracaprella* Mayer, 1890 is characterized by a reduction to 2 articles in pereopods 3 and 4, antenna 2 has a 2-articulated flagellum, mandibular palp is reduced to one seta, or when present it has 2 or 3 minute segments, and the abdomen of the male has one pair of appendices and one pair of lobules (McCain 1968, Guerra-García 2003a).

Prior to this study, seven nominal *Paracaprella* species had been described worldwide. *Paracaprella pusilla* Mayer, 1890 and *P. tenuis* Mayer, 1903 are recorded from the Gulf of Mexico as epibiotic organisms associated with hard substrates, seagrasses and macroalgae (McCain 1968, Escobar-Briones and Winfield 2003, Winfield *et al.* 2006, LeCroy *et al.* 2009).

During a general research project focused on recording the biodiversity of the amphipod crustaceans associated with the coral reefs of the Veracruz State, Mexico, SW Gulf of Mexico, some specimens of *Paracaprella* were collected in the Arrecife Tuxpan/Lobos Protected Natural Area, off Veracruz State (WSW Gulf of Mexico), associated with coral rubble *Acropora cervicornis* (Lamarck 1816). This study describes a new species of *Paracaprella* and updates the caprellid amphipod checklist from the Gulf of Mexico occurring from the littoral zone to the abyssal plain, and provides the geographic distribution pattern of the genus *Paracaprella* around the world.

MATERIALS AND METHODS

The Tuxpan-Lobos reef system is located on the continental shelf of Veracruz State, Mexico, WSW Gulf of Mexico, at 21°00'55.59" to 21°33'08.47"N and 97°10'30.85" to 97°18'00.23"W (Fig. 1). The reef system includes six reefs grouped into two sectors: Lobos, with the Blanquilla, Medio and Lobos reefs; and Tuxpan, with the Tanhuijo, Enmedio and Tuxpan reefs, all characterized as shelf-type with a maximum depth of 25 m (Chávez *et al.* 1970).

Samples of coral rubble were collected manually using SCUBA diving at a depth of 16 m. On board, 5.0 ml of an alcohol/formalin (1:1) solution was added to make the crustaceans leave the coral surface, and then the specimens were sieved through a 0.4 mm mesh and conserved in 70% ethanol. Specimens of *Paracaprella* were examined, dissected and illustrated in detail using a MOTIC SMZ-168 dissecting microscope equipped with a camera lucida. Bucal parts and small appendages were illustrated using a MOTIC BA-210 compound-microscope, also equipped with a camera lucida. Illustrations were completed using the

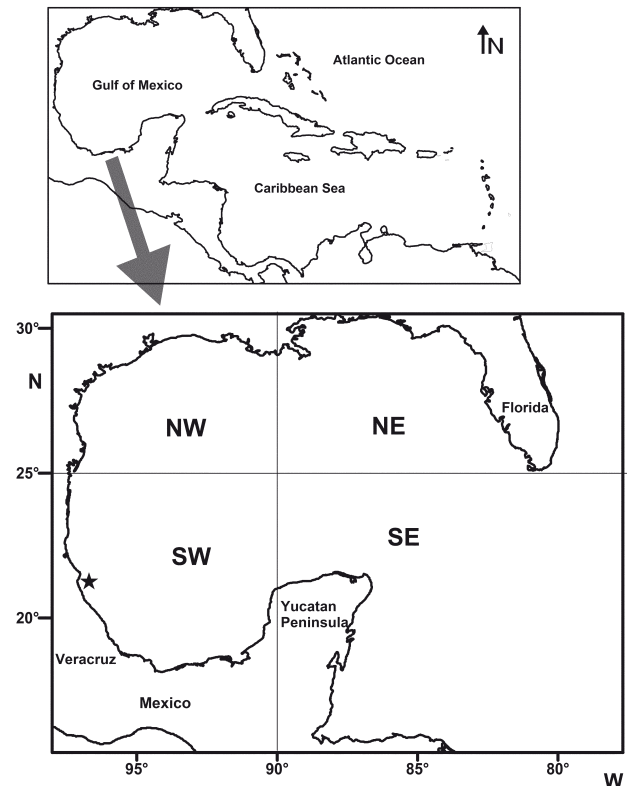


FIG. 1. – Map of the Gulf of Mexico showing the four sectors and the sampling locality.

Corel Draw V.12 program. All measurements of type material (holotype and paratype) were made with the MotiC Images Plus V.2 program. The names used for the structures, setae/spines, descriptions, remarks, and morphological comparisons were based on McCain (1968), Quitete (1971), Guerra-García (2002, 2004), Diaz *et al.* (2005) and Guerra-García *et al.* (2006). The classification system of Myers and Lowry (2003), considering Superfamily Caprelloidea, Family Caprellidae, and Subfamily Caprellinae, was adopted in this study. The type material of the caprellid amphipods is deposited in the Colección Nacional de Crustáceos (CNCR), Instituto de Biología, UNAM, Mexico City.

SYSTEMATICS

Order AMPHIPODA Latreille, 1816
 Suborder COROPHIIDEA Leach, 1814
 Infraorder CAPRELLIDA Leach, 1814
 Superfamily CAPRELLOIDEA Leach, 1814
 Family CAPRELLIDAE Leach, 1814
 Subfamily Caprellinae Leach, 1814
 Genus *Paracaprella* Mayer, 1890
Paracaprella guerragarciai n. sp. (Figs 2-5)

Material examined. Holotype: adult male (used for drawings), 3.6 mm total length (CNCR#26736), collected from the type locality, June 13, 2011, coll. I. Winfield. Paratype: 1 female (used for drawings), 2.8 mm total length (CNCR#26737), collected from the type locality, June 13, 2011; coll., I. Winfield.

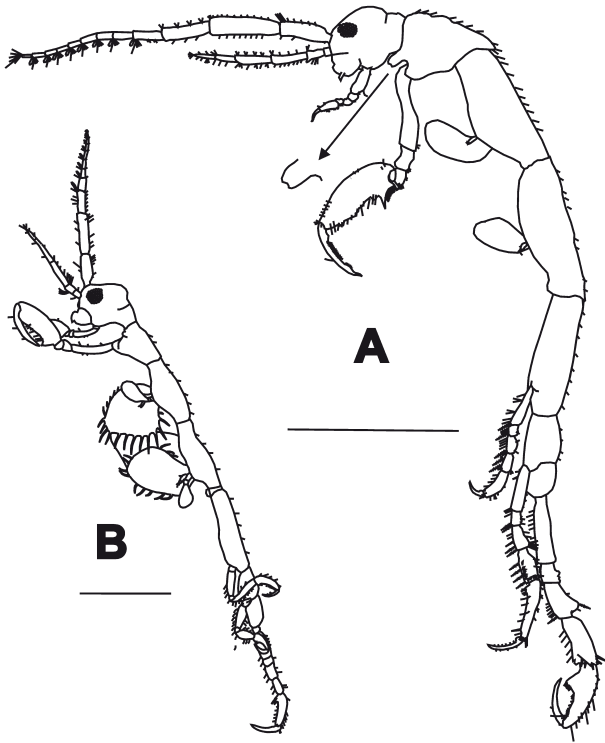


FIG. 2. – *Paracaprella guerragarciai* n. sp., holotype male (3.6 mm total length): A, habitus; paratype female (2.8 mm total length): B, habitus. Scale bars: A, 1.0 mm; B, 0.7 mm.

Additional material examined: two males (3.1 mm total length; 2.9 mm total length), two females (2.1 mm total length; 2.0 mm total length) (CNCR#26738); all material was collected from the type locality; June 13, 2011; coll., I. Winfield.

Type locality. All the material was collected from coral rubble (*Acropora cervicornis*) at 16 m depth in the Lobos Coral Reef (Lobos zone), Arrecife Tuxpan/Lobos Protected Natural Area, off Veracruz State, Mexico (21°28'20.5"N, 97°13'52.4"W), WSW Gulf of Mexico, June 13, 2011.

Diagnosis. Head 4× length of pereonite 1; large eyes, almost 1/3× length of head, compound, 35–37 ommatida; article 2 of antenna 2 with a distoventral process; suture between head and pereonite 1 present; body dorsally setose; large subrectangular projection on anteroventral margin of pereonite 2; basis of gnathopod 2 elongate and thin with a proximal knob on posterior margin, propodus longer than broad, with a robust grasping spine, and a large and robust tooth distally; pereopods 3 and 4 short, both 2-articulated; pereopods 5, 6 and 7 with several long plumose setae.

Description. Holotype, adult male (CNCR#26736), total length 3.6 mm.

Lateral view (Fig. 2A). Head rounded, broader than large, 4× length of pereonite 1; eyes rounded, large, 35–37 ommatida; suture between head and pereonite 1

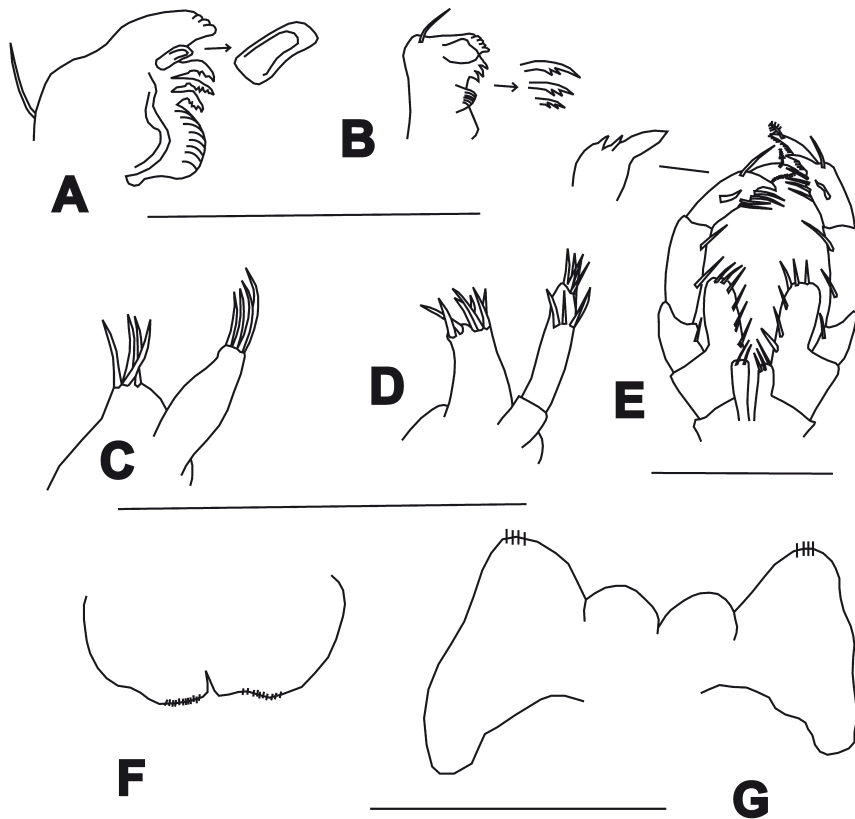


FIG. 3. – *Paracaprella guerragarciai* n. sp., holotype male (3.6 mm total length): A, right mandible; B, left mandible; C, maxilla 1; D, maxilla 2; E, maxilliped (detail of article 3); F, upper lip; G, lower lip. Scale bars: A, B, 0.25 mm; C, D, E, 0.15 mm; F, G, 0.08 mm.

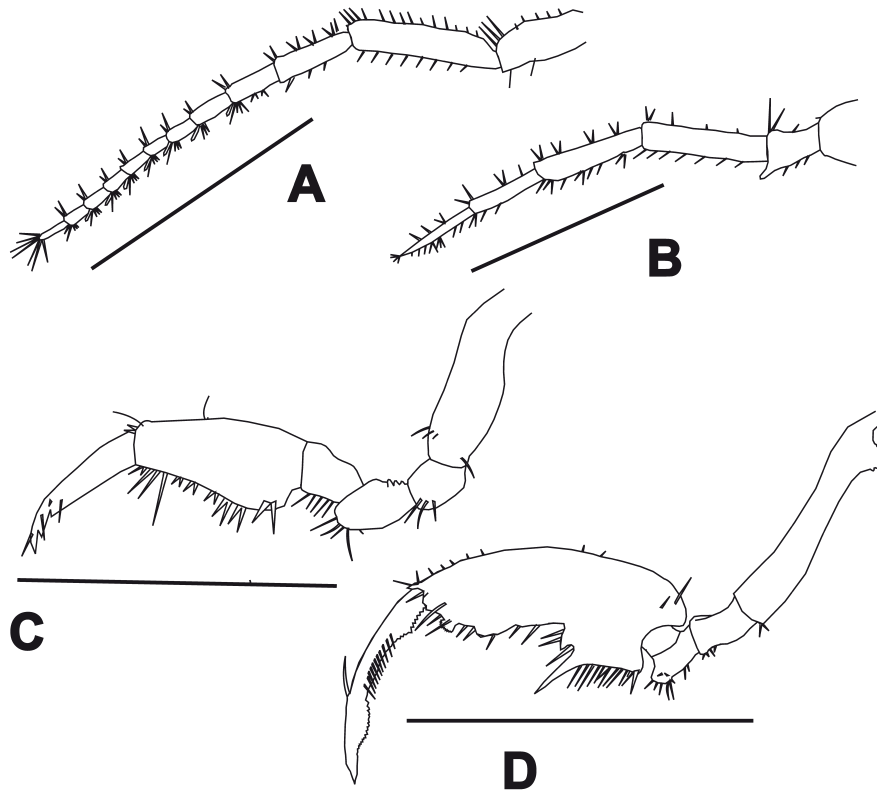


FIG. 4. – *Paracaprella guerrargarcai* n. sp., holotype male (3.6 mm total length): A, antenna 1; B, antenna 2; C, gnathopod 1; D, gnathopod 2. Scale bars: A, 0.9 mm; B, 0.4 mm; C, 0.2 mm; D, 0.7 mm.

present; body dorsally setose without tubercles or process; large subrectangular projection on anteroventral margin of pereonite 2; pereonites 3, 4 and 5 subequal in length and broad; pereonite 7 the shortest.

Gills (Fig. 2A). Gills on pereonites 3–4 elongate, almost 3× longer than wide.

Mouthparts (Fig. 3). Mandible palp (Fig. 3A, B) represented by a simple seta; molar process present; lacinia mobilis smooth; incisor 4-toothed (right), 5-toothed (left); 3 setal row. Maxilla 1 (Fig. 3C) outer lobe with seven robust-stout setae, proximal article of palp without setae, distal article with three distal and three medial robust-stout setae. Maxilla 2 (Fig. 3D) inner lobe oval and outer lobe elongate, both carrying four setae apically. Maxilliped (Fig. 3E) inner plate lobated with two subdistal robust setae; outer plate lobated with seven submarginal robust setae; palp 4-articulated, article 3 with a large process and two minute ones distally, article 4 with a row of setulae on grasping margin, and a large plumose seta subdistally. Upper lip (Fig. 3F) bilobated, with a row of minute setae distally. Lower lip (Fig. 3G) smooth, inner and outer lobes well-marked, outer lobe with four short setae distally.

Antennae (Fig. 4A, B). Antenna 1 (Fig. 4A) as long as the combined lengths of head and pereonites 1–3; peduncle 3-articulated, setose; flagellum 9-articulated. Antenna 2 (Fig. 4B) a little shorter than peduncle of antenna 1; swimming setae absent; peduncle 4-articulated, article 2 with a short process distal ventrally;

flagellum 2-articulated, the two articles subequal in length.

Gnathopods (Figs 2A, 4C, D). Gnathopod 1 (Fig. 4C), basis as long as ischium, merus and carpus combined; merus with three proximal short processes on dorsal margin; propodus with two proximal-submarginal grasping robust setae; grasping margin of propodus with several robust setae; ventral margin of dactylus with three distal teeth. Gnathopod 2 inserted in the middle of pereonite 2 (Fig. 2A), basis elongated (Fig. 4D), longer than ischium, merus and carpus combined, with a proximal serrated knob on ventral margin; propodus with a quadrate projection proximally, carrying a distal long-robust tooth, a notch, and proximal grasping seta, grasping margin setose; dactylus thickened medially and setose, a short knob subdistally, grasping margin serrated.

Pereopods (Fig. 5A–E). Pereopods 3 and 4 (Fig. 5A, B) 2-articulated, basal article with a simple seta, distal article with three setae, subapically. Pereopods 5, 6 and 7 (Fig. 5C–E) increasing in length in posterior direction, ventral margins setose with several plumose setae; carpus of pereopod 7 (Fig. 5C) with two distal notches and three robust setae; propodus expanded proximally, first half of palm serrated with three grasping setae, distal half with six short grasping setae, another longer, two small distal knobs; palm of pereopod 6 (Fig. 5D) with two short proximal knobs, each bearing a pair of simple grasping setae; other three robust

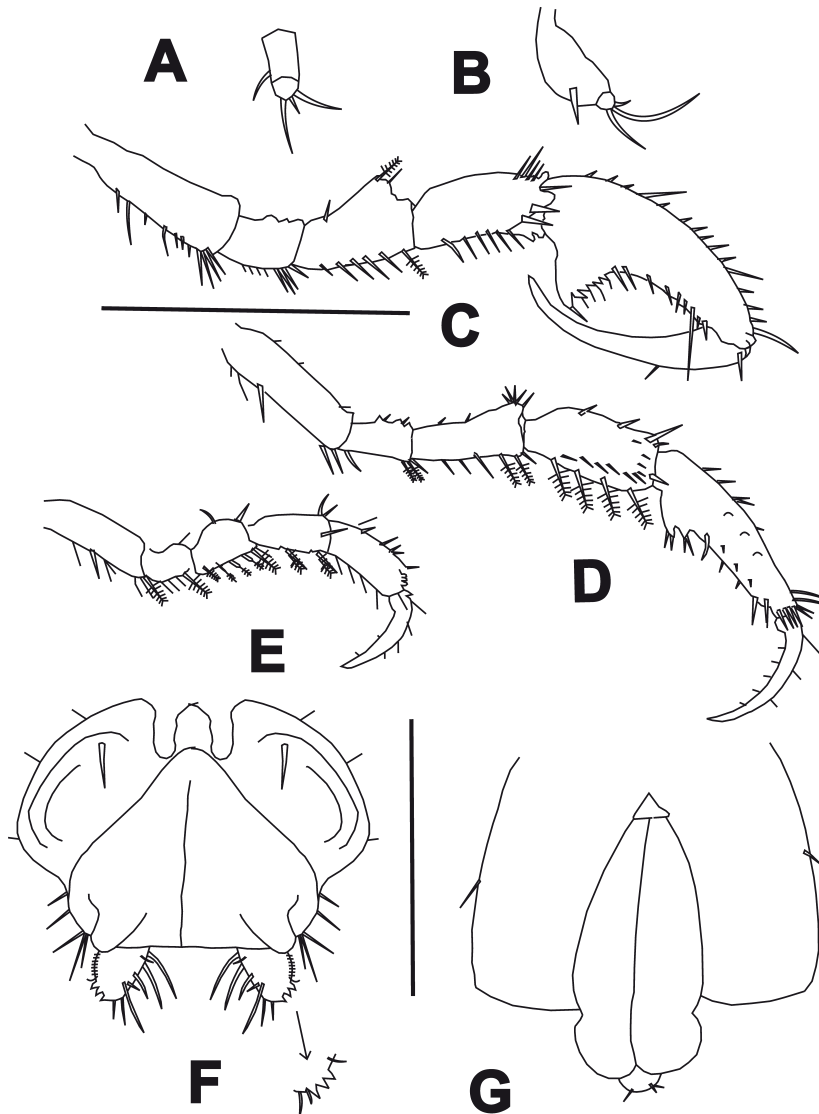


FIG. 5. – *Paracaprella guerrargarcai* n. sp., holotype male (3.6 mm total length): A, pereopod 3; B, pereopod 4; C, pereopod 7; D, pereopod 6; E, pereopod 5; F, abdomen male (detail of distal margin); G, abdomen female. Scale bars: A, B, 0.35 mm; C, D, E, 0.5 mm; F, G, 0.03 mm.

grasping setae, and a row of five robust setae distally; propodus of pereopod 5 (Fig. 5E) with three small sub-distal knobs on dorsal margin.

Abdomen (Fig. 5F). Male with a pair of short penes, a pair of uni-articulate appendages and a pair of lateral lobes, each bearing several simple setae and three short processes, marginally.

Paratype female (CNCR#26737). Mature female (Fig. 2B), total length 2.8 mm. Similar to male, except for the following morphological characters: flagellum of antenna 1 6-articulated; oostegites present on pereonites 3 and 4, setose marginally; gnathopod 2 inserted on the anterior half of pereonite 2, basis elongate; subequal to propodus in length; subrectangular projection on anter-ventral margin of pereonite 1 minute; abdomen (Fig. 5G) with a pair of lateral lobes, longer than wide; and a single dorsal lobe carrying three simple setae.

Habitat. All specimens of *Paracaprella guerrargarcai* n. sp., (3 males and 3 females) were collected from coral rubble (*Acropora cervicornis*) at 16 m depth. The sampling site is dominated by the following corals: *Acropora palmata* Lamarck, 1816, *A. cervicornis*, *Diploria clivosa* (Ellis and Solander, 1786), *Porites astreoides* Lamarck, 1816, and *Montastraea cavernosa* Linnaeus, 1767, and algal mats (such as *Halimeda opuntia* (Linnaeus) J.V. Lamouroux, 1816, *Dictyota dichotoma* (Hudson) J.V. Lamouroux, 1809, and *Ulva reticulata* Forsskål, 1775).

Etymology. This new species is named in honour of Dr. José Manuel Guerra-García, a renowned carcinologist of the University of Seville, Spain, for his valuable contribution to the study of taxonomy and phylogeny of caprellids worldwide.

TABLE 1. – Main morphological differences between males of *Paracaprella guerrargarcai* n. sp. and the three closely related species *P. digitimanus*, *P. pusilla* and *P. tenuis*.

	<i>P. guerrargarcai</i> n. sp.	<i>P. digitimanus</i>	<i>P. pusilla</i>	<i>P. tenuis</i>
Eye	Large, multi-ommatida	Minute	Small	Small, multi-ommatida
Dorsal margin	Setose, except pereonite 7	Smooth	Smooth, two proximal process on pereonite 2	Smooth
Anteroventral projection on pereonite 2	Large and subquadrate	Small and subtriangular	Large and sharp-pointed	Small and triangular
Pereonites 3, 4 and 5	Subequal in length	3 and 4 subequal in length, 5 larger and more elongate than 3 and 4	Subequal in length	3 and 4 subequal in length, 5 larger and more elongate than 3 and 4
Antenna 1	Flagelum 9-articulated	Flagellum 9-articulated	Flagelum 8-articulated	Flagellum 7-articulated
Antenna 2	Article 2 of peduncle with a distoventral process	Without distoventral process	Article 1 of peduncle with a distoventral process	Article 1 of peduncle with a distoventral process
Gnathopod 2	Basis elongate, a serrated proximal knob; propodus thin and large, a proximal quadrate projection carrying a proximal grasping spine and a distal very large robust tooth; dactylus with serrated inner margin	Basis elongate, without a proximal knob; propodus expanded, a proximal quadrate projection carrying a proximal grasping spine and a distal short robust tooth, a striking projection on palm; dactylus smooth and two proximal process on inner margin	Basis short and expanded, a small proximal knob; propodus expanded, a proximal quadrate projection carrying a proximal grasping spine and a distal short robust tooth; dactylus smooth on inner margin	Basis elongate, without a proximal knob; propodus large, a proximal rectangular projection carrying a proximal small grasping spine and a distal short robust tooth; dactylus smooth with diminutive setae on inner margin
Pereopods 5-7	Several long plumose setae	No plumose setae	No plumose setae	No plumose setae
Abdomen	Penes elongate and short, appendages short, lateral lobes with three subdistal processes	Penes short, appendages large and serrated apically, lateral lobes setose	Penes expanded and short, appendages short, lateral lobes setose	Penes short, appendages elongate, lateral lobes with two setae, each one
Substrates	Coral rubble	Hydroids, mussels	Mangrove roots, seagrasses, hydroids, ascidians, gravel bottoms, ropes, bivalves, polychaetes	Red and brown algae, sea grasses, sponges, hydroids, alcyonarians, bryozoans, corals

Distribution. *Paracaprella guerrargarcai* n. sp., is only known from the Lobos Coral Reef, Lobos/Tuxpan Marine Protected Area, off Veracruz State, Mexico.

Remarks. *Paracaprella guerrargarcai* n. sp. is morphologically most similar to *Paracaprella digitimanus* Quitete, 1971, *P. pusilla* and *P. tenuis*; however, males of *Paracaprella guerrargarcai* n. sp. can be easily distinguished from those three *Paracaprella* species by the following characters: (1) *P. guerrargarcai* n. sp. has eyes large and multi-ommatida, while eyes are minute to small in the other three species; (2) the dorsal margin is setose in *P. guerrargarcai* n. sp., but smooth in the other three species; (3) anteroventral projection on pereonite 2 is large and subquadrate in *P. guerrargarcai* n. sp., but small to large and subtriangular to sharp-pointed in the other three species; (4) gnathopod 2 with a very large robust tooth on proximal quadrate projection and dactylus with inner margin serrate in *P. guerrargarcai* n. sp., but with a short robust tooth and smooth inner margin in the other three species; and (5) several long plumose setae are present on pereopods 5-7 in *P. guerrargarcai* n. sp., but setae are longer and simpler in the other three species. The main differences are summarized in Table 1.

DISCUSSION

The genus *Paracaprella*, established by Mayer (1890), presently includes eight species: *Paracaprella alata* Mayer, 1903; *Paracaprella barnardi* McCain, 1967; *Paracaprella crassa* Mayer, 1903; *Paracaprella digitimanus*; *Paracaprella insolita* Arimoto, 1980; *Paracaprella pusilla*; *Paracaprella tenuis*; and *Paracaprella guerrargarcai* n. sp.

The global geographic distribution of the genus *Paracaprella* is mostly from 40°N to 20°S, corresponding to temperate, subtropical and tropical seas (Fig. 6). Based on this geographic pattern, five species (*P. alata*, *P. digitimanus*, *P. pusilla*, *P. tenuis* and *P. guerrargarcai* n. sp.) are recorded from the western Atlantic coasts, in contrast with the shallow waters of the Indian Ocean and the western Pacific (the latter including the Sea of China, the Sea of Japan and the eastern coast of Australia), with four species each (Fig. 6); only *Paracaprella alata* and *P. pusilla* are distributed worldwide, even at higher latitudes, with the exception of polar zones. Ros and Guerra-García (2012) reported *P. pusilla* as tropical caprellid amphipod with most of the records from the Gulf of Mexico and the Caribbean Sea.

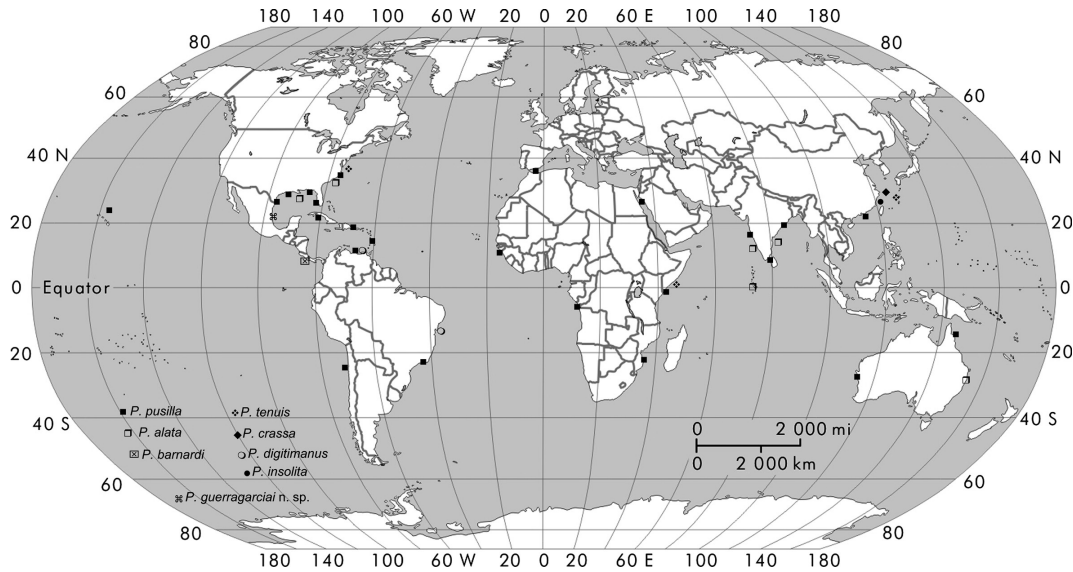


FIG. 6. – Current global distribution of all species of genus *Paracaprella*. Marks indicate the records where *Paracaprella* species have been found. Information based on Mayer 1890, 1903; McCain 1967, 1968, Arimoto 1980, Guerra-García 2002, 2003b, Díaz *et al.* 2005, Guerra-García *et al.* 2006, 2010, Winfield *et al.* 2006, 2007, Winfield and Escobar-Briones 2008, Ortiz *et al.* 2009, Ros and Guerra-García 2012.

So far, 16 species of caprellids (including *Paracaprella guerrargarcai* n. sp.) belonging to eight genera have been documented from the Gulf of Mexico: *Caprella* Lamarck, 1801 (5 species), *Paracaprella* (3 species), *Deutella* Mayer, 1890 (3 species), *Hemiaegina* Mayer, 1890, *Hemiproto* McCain, 1968, *Metaprotella* Mayer, 1890, *Phtisica* Slabber, 1769 and *Pseudaeginella* Mayer, 1890 (1 species each) (McCain 1968, Escobar-Briones and Winfield 2003, Guerra-García 2003b, Winfield *et al.* 2006, 2007, Winfield and Escobar-Briones 2008, LeCroy *et al.* 2009) (Table 2). All caprellid amphipod species from the Gulf

of Mexico inhabit the coastal zone (0–200 m depth), and six species in the deep sea (201–3800 m depth) (Table 2). The number of species decreases along the bathymetric gradient, with the greatest number (15 species) on the littoral fringe (0-20 m depth), six species on the continental shelf (21-200 m depth), five on the continental slope (201-2000 m depth), and three on the abyssal plain (2001-3800 m depth); only *Caprella equilibra* Say, 1818 inhabits depths from 1 to 3800 m (Table 2). The species *Caprella penantis* Leach 1814, *Deutella incerta* (Mayer, 1903), *Hemiaegina minuta* Mayer, 1890 and *Paracaprella pusilla* are distributed

TABLE 2. – Number of caprellid species from the Gulf of Mexico. Depth, habitat and geographic sectors in the Gulf of Mexico (see Fig. 1) are included. Information based on McCain 1968, Escobar-Briones and Winfield 2003, Guerra-García 2003a, Winfield *et al.* 2006, 2007, Winfield and Escobar-Briones 2008, LeCroy *et al.* 2009. GM, Gulf of Mexico; LF, littoral fringe; CSH, continental shelf; CSL, continental slope; AP, abyssal plain.

Name of species	Depth	Habitat	Sector of GM
<i>Caprella andreae</i> Mayer, 1890	LF	Epibiotic on floating objects, hard substrate, algal mats	SE
<i>C. danilevskii</i> Czerniavski, 1868	LF, CSL, AP	Epibiotic, soft bottom, seagrass, <i>Sargassum</i> , algal mats, bryozoans	NE, SE, SW
<i>C. equilibra</i> Say, 1818	LF, CSH, CSL, AP	Soft bottoms, seagrass, algal mats, sponges, hydroids, bryozoans, tunicates	NE, NW, SW
<i>C. penantis</i> Leach, 1814	LF, AP	Hard substrate, soft bottoms, seagrass, algal mats, sponges, hydroids, bryozoans	ENTIRE
<i>C. scaura</i> Templeton, 1836	LF	Epibiotic, hard substrate, seagrass, algal mats	NE
<i>Deutella californica</i> Mayer	LF	Epibiotic, hard substrate, algal mats, soft bottoms	NW, SW
<i>D. incerta</i> (Mayer, 1903)	LF, CSH, CSL	Epibiotic, hard substrate, seagrass, soft bottoms	ENTIRE
<i>D. mayeri</i> Stebbing, 1895	LF	Unknown	NE
<i>Hemiaegina minuta</i> Mayer, 1890	LF, CSH, CSL	Epibiotic, hard substrates, soft bottoms, <i>Sargassum</i> ,	ENTIRE
<i>Hemiproto wigleyi</i> McCain, 1968	CSH	Soft bottoms	NE, SW
<i>Metaprotella hummelincki</i> McCain, 1968	LF	Macrofoulers, hard substrates	SW
<i>Paracaprella pusilla</i> Mayer, 1890	LF, CSH	Soft bottoms; mangrove roots, seagrass, hydroids, tunicates	ENTIRE
<i>Paracaprella guerrargarcai</i> n. sp.	LF	Coral rubble	SW
<i>Paracaprella tenuis</i> Mayer, 1903	LF	Epibiotic, hard substrate, seagrass, algal mats, sponges, bryozoans, hydroids	NE, NW
<i>Phtisica marina</i> Slabber, 1769	LF, CSH, CSL	Epibiotic, seagrass, algal mats, soft bottoms, sponges, hydroids, bryozoans	NE, SW, SE
<i>Pseudaeginella biscaynensis</i> (McCain, 1968)	LF	Epibiotic, seagrass, algal mats	SE

throughout the four sectors of the Gulf of Mexico (Table 2). The northeastern and southwestern sectors have been studied intensively with the greatest number of benthic caprellid species (seven each), in comparison with the less studied southeastern (four species) and northwestern (three species) sectors (Table 2).

Summarizing, the numbers of caprellid amphipods known to inhabit the shallow waters and deep sea in the Gulf of Mexico will increase with further sampling, especially from soft bottoms, hard substrates, algal mats, seagrasses, sponges, hydroids, bryozoans, and shell debris, on oceanographic cruises to be carried out in the coming years in this Large Marine Ecosystem.

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