

New records of *Macrobrachium digueti* (Bouvier, 1895) for Colombia (Crustacea: Decapoda: Palaemonidae)

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Abstract

New records of *Macrobrachium digueti* (Bouvier, 1895) from Acandí, corregimiento Sapzurro and inspección Capurganá, department of Chocó, Colombia, are presented. The diagnosis, description and illustrations of this species, based on the morphology of the rostrum, the telson and the second pair of pereopods, are included. The geographical distribution of *M. digueti* is analyzed taking into account that the new records extend the distribution from the Pacific to the Caribbean region.

Key words: Freshwater shrimp, *Macrobrachium digueti*, new registers, Caribbean region, Colombia.

Nuevos registros de *Macrobrachium digueti* (Bouvier, 1895) para Colombia (Crustacea: Decapoda: Palaemonidae)

Resumen

Se presentan nuevos registros de *Macrobrachium digueti* (Bouvier, 1895) de Acandí, corregimiento de Sapzurro e inspección de Capurganá, departamento de Chocó, Colombia. Se incluye la diagnosis, la descripción e ilustraciones de la especie con base en la morfología del rostro, el telson y el segundo par de pereopodos. Se analiza la distribución geográfica de *M. digueti*, teniendo en cuenta que los nuevos registros extienden su distribución desde la región Pacífica a la región Caribe.

Palabras clave: camarón de agua dulce, *Macrobrachium digueti*, nuevos registros, región Caribe, Colombia.

Introduction

The family Palaemonidae Rafinesque, 1815, belongs to one of the decapod shrimp groups that have colonized sea, estuary and river environments in subtropical and tropical regions. The family is composed of two subfamilies: Pontoniinae and Palaemoninae, the former includes only marine species and the latter, marine, estuarine and freshwater species. The subfamily Palaemoninae comprises 17 genera, 10 of which are present in the Americas. The genus *Macrobrachium* includes approximately 200 species and has the largest number of species of all Palaemonid genera. Its distribution is pantropical, covering the lowlands of Africa, Asia, Oceania, North, Central and South America. **Valencia & Campos** (2007) registered 20 species of this genus for Colombia.

M. digueti is distributed from Baja California to Perú (**Holthuis**, 1952; **Wicksten & Hendrickx**, 2003, **Hernández, et al.**, 2007), along the Pacific region. **Villalobos** (1969) considered *M. digueti* within the species-complex integrated by *Macrobrachium olfersii* (**Wiegmann**, 1836), *Macrobrachium crenulatum* Holthuis, 1950, *Macrobrachium hancocki* Holthuis, 1950 and *Macrobrachium acanthochirus* Villalobos, 1967, because they share similar morphological characters,

particularly in the second pair of pereopods. Based on this assumption, **Rossi** (2012) conducted a morphological and molecular analysis for this species-complex and she concluded that the identities of all the species are valid. **Holthuis** (1952) presented the first record of *M. digueti* for Colombia, at San José, southwest Colombia, but without giving a precise location. Later, **Prahl, et al.** (1984) recorded this species for the Calima River, department of Valle del Cauca, on the Pacific region. The material (2 males and 3 females) was deposited at the Museo de Biología Marina, Universidad del Valle, Cali (CRBMUV). **Valencia & Campos** (2007) examined the CRBMUV collection, but the specimens of *M. digueti* could not be found. The present contribution corresponds to new registers of *M. digueti* from Acandí, in Sapzurro, Capurganá, which is located on the north end of the department of Chocó, northwest of Colombia, and belong to the Caribbean region. These new records extend the distribution of *M. digueti* from the Pacific to the Caribbean region.

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Materials and methods

During surveys in Acandí, corregimiento Sapzurro, inspección Capurganá, department of Chocó, two specimens of *M. digueti* (Bouvier, 1895) were collected. The specimens were identified by using the key given by **Valencia & Campos** (2007), in which the taxonomic identification of species of *Macrobrachium* is based on morphological features of the rostrum, the telson and the second pair of pereopods of adult males.

The material recorded in this paper was deposited in the reference collection of the Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá (ICN-MHN). The abbreviations TL and CL stand for total length and carapace length, respectively. The total length was taken from the anterior extreme of the rostrum to the posterior extreme of the telson, and the carapace length, from the posterior margin of the orbit to the posterior margin of the carapace.

Results

Macrobrachium digueti (Bouvier, 1895)

Palaemon digueti Bouvier, 1895: 159.

Macrobrachium digueti, Holthuis, 1952: 103.— Rodríguez, 1981: 47.— Prah, *et al.*, 1984: 52.— Abele & Kim, 1989:9.— Wicksten, 1989: 13.— Wicksten & Hendrickx, 2003: 61.— Valencia & Campos, 2007: 18.— Hernández, *et al.*, 2007: 356.

Macrobrachium digueti, Méndez, 1981: 73.

(For detailed synonymy see **Holthuis**, 1952, **Hernández, et al.**, 2007).

Material examined

Chocó, Acandí, Corregimiento Sapzurro, quebrada del Acueducto, alt. 32 m, 8° 39' 13" N, 77° 21' 43.62" W, Sep 22 2013, leg. G. F. Medina, 1 male, ICN-MHN-CR 2749.

Chocó, Acandí, Inspección Capurganá, río Capurganá, alt. 45 m, 8° 37' 18.29" N, 77° 21' 34.62" W, Jun 23 2011, leg. C. Escobar, 1 male, ICN-MHN-CR 2757.

Diagnosis

Rather shallow rostrum, almost reaching the end of the antennular peduncle, upper margin with 13 to 18 teeth regularly spaced, including four to seven teeth, completely post orbital, lower margin with two to four teeth; carapace, smooth; abdomen, smooth; telson, terminal margin ending in sharp midpoint, flanked by two pairs of spinules, internal pair overreaching midpoint and external pair. First pair of pereopods overreaching scaphocerite with distal portion of carpus. Second pair of pereopods strongly different in shape and size; the larger second pereopod overreaching the

scaphocerite with distal portion of merus; merus as long as or slightly shorter than carpus; carpus more than two times as long as wide, shorter than palm length; palm, strongly compressed, the ventral margin straight or slightly convex, with large, thickly pubescent area on lateral surface, 1.7 times as long as high; fingers strongly gaping when closed, cutting edges thickly pubescent, as long as palm, with a prominent tooth on the proximal portion of each cutting edge, followed by one to two small teeth to base of finger, and nine to 12 placed up to tips. This diagnosis is based on **Holthuis**, 1952 and **Valencia & Campos**, 2007.

Description

Rostrum, shallow with distal portion slightly recurved upward, shorter than scaphocerite, as long as antennular peduncle, upper margin with 13 teeth regularly spaced, including four teeth completely post orbital, lower margin with four teeth; carapace, smooth; abdomen, smooth; pleura of fourth and fifth segments with semi-acute tips; pleura of sixth segment ends subtriangular with acute tip; the sixth segment corresponds to 1.7 times the length of the fifth and 0.7 times the telson length; terminal margin of telson rounded at end, flanked by two pairs of spinules, with numerous setae at posterior margin, external pair as long as terminal margin and internal pair widely overreaching the terminal margin; first pair of pereopods overreaching scaphocerite with 2/3 of carpus, fingers as long as palm; carpus 1.9 times the chela length and 1.1 times the merus length; scattered large setae in all segments; second pair of pereopods different in shape and size; the large second pereopod overreaches scaphocerite with distal portion of merus; merus slightly shorter than carpus, carpus 2.3 times as long as wide and shorter than palm length, internal surfaces of merus and carpus with rows of conspicuous acute spines, which increase in size distally, and external surfaces with irregular rows of acute spinules; palm 1.6 times as long as high, strongly compressed, dorsal margin nearly straight with a row of conspicuous acute spines, which decrease in size distally, convex ventral margin with rows of minute spinules, external surface with rows of conspicuous acute spines, central rectangular area devoid of spines, covered by short setae, internal surface with large thickly pubescent area and few rows of minute spinules; fingers as long as palm, strongly gaping when closed, each cutting edge with a prominent tooth on proximal portion of each cutting edge, behind which, three to four smaller teeth are placed, and distally of the large teeth are small rounded teeth placed from base to tips and tufts of conspicuous setae, external surface of fingers covered with numerous rows of conspicuous spinules; the smaller second pereopod overreaches scaphocerite with half portion of carpus; merus slightly longer than carpus; carpus 1.1 times the palm length, fingers 1.3 times the palm length, strongly gaping when closed, each cutting edge with three median teeth in

proximal portion followed by a series of smaller rounded teeth and tufts of conspicuous setae; the spinulation of the smaller second pereopod is similar to the larger second pereopod, but less conspicuous.

Size. Male, TL 42.5 mm, CL 14.8 mm, (ICN-MHN-CR 2749); male TL 53.5 mm, CL 17.0 mm, (ICN-MHN-CR 2757).

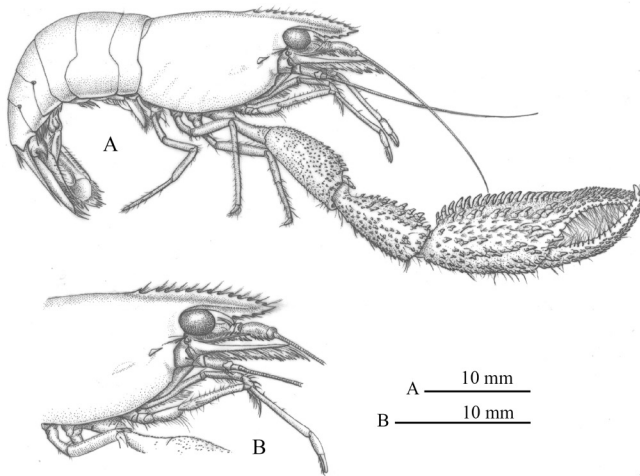


Figure 1. *Macrobrachium digueti* (Bouvier, 1895), male, ICN-MHN-CR 2749. **A.** Complete body, lateral view; **B.** Detail of anterior part of body, lateral view.

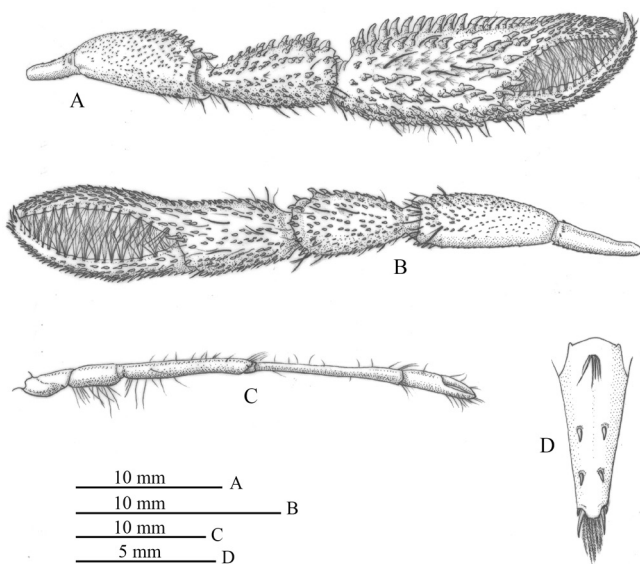


Figure 2. *Macrobrachium digueti* (Bouvier, 1895), male, ICN-MHN-CR 2749. **A.** Large second pereopod, lateral view; **B.** Small second pereopod, lateral view; **C.** First pereopod, lateral view; **D.** Telson, dorsal view.

Remarks

Holthuis (1952) based the description of *Macrobrachium digueti* on material examined at the U. S. National Museum, particularly from Mexico, Guatemala, Panamá, Colombia and Ecuador. The main differences among the specimens examined by **Holthuis** (1952), the ones registered by **Prahl, et al.** (1984), the specimen described herein (ICN-MHN-CR 2749) and the additional specimen examined (ICN-MHN-CR 2757) are the following:

(Holthuis, 1952), the upper margin of the rostrum displays 13 to 18 teeth, including four to seven teeth behind the orbit, the lower margin shows two to four teeth, generally three. Prahl, et al. (1984), the upper margin of the rostrum exhibits between 11 and 16 teeth, generally 15, including five to seven teeth behind the orbit, the lower margin shows two to four teeth. (ICN-MHN-CR 2749), the upper margin has 13 teeth, including four teeth behind the orbit, the lower margin shows four teeth, and in the specimen (ICN-MHN-CR 2757), the upper margin exhibits 12 teeth, including five teeth behind the orbit, and the lower margin shows four teeth.

The terminal margin of telson ends in sharp midpoint in (Holthuis, 1952), whereas in the specimens (ICN-MHN-CR 2749, 2757) it is rounded at the end.

In the specimens examined by **Holthuis** (1952), the fingers of the second pereopods are strongly gaping when closed, which are similar in the specimen described herein, while in the specimen (ICN-MHN-CR 2757), they are only slightly gaping when closed.

The fingers of the smaller second pereopod reached 0.75 of the length of the palm in (Holthuis, 1952), while in specimen (ICN-MHN-CR 2749) they surpass 1.3 times the palm length.

M. digueti closely resembles *M. olfersii* (Wiegmann, 1836). The two species can be distinguished in adult males by differences in the second pair of pereopods: (a) the largest second pereopod overreaches the scaphocerite with ca. 1/4 of the merus length in *M. olfersii*, whereas in *M. digueti* it overreaches the distal portion of merus; (b) the palms of the large chela are compressed in *M. digueti*, whereas they are strongly swollen in *M. olfersii*.

Discussion

Seven species are recorded for the Pacific region of Colombia: *Macrobrachium americanum* Bate, 1868, *M. digueti*, *Macrobrachium hancocki* Holthuis, 1950, *Macrobrachium panamense* Rathbun, 1912, *Macrobrachium rathbunae* Holthuis, 1950, *Macrobrachium tenellum* (Smith, 1871) and *Macrobrachium transandicum* Holthuis, 1950.

M. digueti is distributed from Baja California to Perú (**Wicksten & Hendrickx, 2003, Hernández, et al., 2007**). According to the literature, the records for Colombia are: San

José, Southwest Colombia, and Calima River, department of Valle del Cauca, Colombia (Holthuis, 1952, Prah, *et al.*, 1984). The new records included herein are: Acandí, corregimiento Sapzurro and inspección Capurganá, which are located in the north end of the department of Chocó, northwest of Colombia, Caribbean region. The Acandí region is characterized by a high diversity of shrimp species of the genus *Macobrachium*. According to Valencia & Campos (2007), three species are known from this region: *Macobrachium carcinus* (Linnée, 1758), *Macobrachium acanthurus* (Wiegmann, 1836) and *Macobrachium crenulatum* Holthuis, 1950. Thus, these species co-occur with *M. digueti*. The distribution of *M. digueti* can be explained by the fact that the Atrato River forms a natural canal between the Pacific Ocean and the Caribbean Sea during the rainy season.

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Disclosure

Author report no conflicts of interest in this work.

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