



Freshwater prawns of the genus *Macrobrachium* Bate, 1868 (Crustacea: Decapoda: Palaemonidae) of Colombia

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Abstract

A review of the species of freshwater prawns belonging to the genus *Macrobrachium* in Colombia is presented. According to the study, the genus *Macrobrachium* comprises 20 species for Colombia. The species *Macrobrachium cortezi* Rodríguez, 1982, *M. ferreirai* Kensley & Walker, 1982 and *M. reyesi* Pereira, 1986 are recorded for the first time in the country. Geographical species distributions are updated with basis on new material. Diagnoses, illustrations and a key for Colombian *Macrobrachium* species are included.

Key words: Freshwater prawns, *Macrobrachium*, taxonomy, distribution, Colombia.

Introduction

The family Palaemonidae Rafinesque, 1815 represents one of the few decapod groups that has successfully colonized oceans, estuaries and rivers in the subtropics and tropics. The family is made up of two subfamilies: Pontoniinae, containing only marine prawns and Palaemoninae, including marine, estuarine and freshwater species in the Americas. The subfamily Palaemoninae is made up of 17 genera, 10 of which occur in the Americas: *Brachycarpus* Bate, 1888, *Creaseria* Holthuis, 1950, *Cryphiops* Dana, 1852, *Leander* Desmarest, 1849, *Macrobrachium* Bate, 1868, *Nematopalaemon* Holthuis, 1950, *Palaemon* Weber, 1795, *Palaemonetes* Heller, 1869, *Pseudopalaemon* Sollaud, 1911 and *Troglocubanus* Holthuis, 1949 (Holthuis, 1993, Martin & Davis, 2001).

The genus *Macrobrachium* includes approximately 200 species of prawns 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. Most of the species are freshwater species, although some are found near the coast in brackish water. According to Magalhães & Walker (1988), several authors have observed that extended metamorphosis is typical for species of brackish water, which is rich in primary production, whereas abbreviated metamorphosis with direct development is associated with species in inland waters, as consequence of the selection pressure of plankton-poor waters.

An important review of the family Palaemonidae by Holthuis (1951, 1952) included 13 species of *Macrobrachium* for Colombia: *M. acanthurus* (Wiegmann, 1836), *M. americanum* Bate, 1868, *M. brasiliense* (Heller, 1862), *M. carcinus* (Linnée, 1758), *M. digueti* (Bouvier, 1895), *M. hancocki* Holthuis, 1950, *M. olfersii* (Wiegmann, 1836), *M. panamense* Rathbun, 1912, *M. praecox* (Roux, 1928), *M. rathbunae* Holthuis, 1950, *M. surinamicum* Holthuis, 1948, *M. tenellum* (Smith, 1871) and *M. transandicum* Holthuis, 1950. Since then, new taxonomic studies have recorded additional species for Colombia: Martínez (1973) listed 2 species: *M. crenulatum* Holthuis, 1950, and *M. faustinum* (De Saussure, 1857); Medina & Sobrino (1975) recorded the species *M. amazonicum* (Heller, 1862) and presented larval development under laboratory conditions; Escobar (1979) recorded the species *M. heterochirus* (Wiegmann, 1836) and Campos (1997) recorded the species *M. nattereri* (Heller, 1862).

Species of the genus *Macrobrachium* are an important element of the food chain of aquatic ecosystems because they make up part of the diet of numerous fish, alligators, turtles, mammals and aquatic birds (Magalhães, 2001). Kensley & Walker (1982) established that most of the prawn species of the Amazon basin feed on the aquatic larvae of arthropods, especially Diptera, Plecoptera, Ephemeroptera and Trichoptera. In addition, stomach analysis of prawns reveals that they consume cladocera, ostracoda, oligochaetae, fungi, vegetable material and sponges.

Species of the genus *Macrobrachium* are also of economic importance, for example, *M. rosenbergii* (De Man, 1879) native to the Indo - Pacific region, has been introduced in many countries of the world, including North, Central and South America as a result of aquaculture. In some regions of Colombia, the species of this genus are caught for food, representing an important part of the diet of many families (Prahl *et al.*, 1984; Cam-

pos, 1997). In certain regions within the departments of Córdoba, Cauca and Valle del Cauca they are also of economic importance.

The rostrum and the second pair of pereopods are the main morphological features used for the taxonomic identification of species within the genus *Macrobrachium*.

Material recorded in this article was deposited in the Reference Collection of the Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá (ICN-MHN); Instituto de Investigaciones Marinas y Costeras José Benito Vives De Andrés, INVEMAR (INV); Instituto Colombiano de Desarrollo Rural, Cartagena (INCODER); Museo de La Salle, Bogotá (MLS); Museo de Biología Marina, Universidad del Valle, Cali (CRBMUV); Universidad de Antioquia and Universidad de Los Andes. The abbreviations TL and CL stand for total length and carapace length, respectively. The total length is taken from the anterior extreme of the rostrum to the posterior extreme of the telson; the carapace length is taken from the posterior margin of the orbit to the posterior margin of the carapace. The key and species' diagnoses are based on completely developed adult males due to the difficulty in identifying juvenile, immature and adult female specimens.

Family Palaemonidae Rafinesque, 1815
Subfamily Palaemoninae Rafinesque, 1815
Genus *Macrobrachium* Bate, 1868

Macrobrachium Bate, 1868: 363

Macrobrachium, Holthuis, 1952: 10.— Chace & Hobbs, 1969: 89.— Rodríguez, 1980: 113.— Williams, 1984: 66.— Melo, 2003: 334.

(For detailed synonymy refer to Holthuis, 1952, and Holthuis, 1993).

Diagnosis. Rostrum well developed, compressed with teeth on upper and lower margins; carapace with antennal and hepatic spines; branchiostegal groove present; telson with two pairs of spines dorsally, and two pair of spines on posterior margin; mandible with three-joint palp; dactylus of the last three pairs of pereopods simple.

Type species. *Macrobrachium americanum* Bate, 1868.

Key to species of *Macrobrachium* from Colombia

1. Second pair of pereopods different in shape (Fig. 7 C, D).....2
— Second pair of pereopods similar in shape (Fig. 6 C, D).....6
2. Larger second pereopod with carpus shorter than merus (Fig. 7 C)3
— Larger second pereopod with carpus as long as or longer than merus (Fig. 9 C).....4
3. External surface of palm of large chela of second pair of pereopods with rectangular space densely pubescent (Fig. 11 C) *M. hancocki*
— External surface of palm of large chela of second pair of pereopods without densely pubescent rectangular space (Fig. 7 C)..... *M. crenulatum*
4. Ventral margin row of palm of larger second pereopod with smaller spines on the base of finger (Fig. 8 C)5
— Ventral margin row of palm of larger second pereopod with smaller spines on midpalm length (Fig. 9 C).. *M. faustinum*
5. Palm of larger second pereopod swollen with ventral margin strongly convex with external and internal surfaces of palm thickly pubescent (Fig. 14 C) *M. olfersii*

- Palm of larger second pereopod compressed with ventral margin straight or nearly convex with external and internal surfaces of palm less pubescent (Fig. 8 C) *M. digueti*
- 6. Second pair of pereopods with merus longer than palm (Fig. 2 C).....7
- Second pair of pereopods with merus shorter than palm (Fig. 3 C).....10
- 7. Rostrum as long as or longer than scaphocerite (Fig. 15 A, 2 A).....8
- Rostrum shorter than scaphocerite (Fig. 16A)..... *M. praecox*
- 8. Merus shorter than carpus (Fig. 2 C) 9
- Merus same length as carpus (Fig. 18 C)..... *M. reyesi*
- 9. Upper margin of rostrum convex on orbital region (Fig. 2 A) *M. amazonicum*
- Upper margin of rostrum straight on orbital region (Fig. 15 A)..... *M. panamense*
- 10. Second pair of pereopods with carpus shorter than merus (Fig. 3 C)..... 11
- Second pair of pereopods with carpus longer than merus (Fig. 1 C).....12
- 11. Fingers of second pair of pereopods longer than palm (Fig. 5 C).....*M. carcinus*
- Fingers of second pair of pereopods as long as or shorter than palm (Fig. 3 C) *M. americanum*
- 12. Fingers of second pair of pereopods thickly pubescent (Fig. 1 C).....13
- Fingers of second pair of pereopods slightly pubescent or without pubescence (Fig. 4 C)15
- 13. Fingers of second pair of pereopods less than half of palm length (Fig. 17 C)*M. rathbunae*
- Fingers of second pair of pereopods more than half of palm length (Fig. 1 C).....14
- 14. Carpus of second pair of pereopods less than 10 times as long as wide (Fig. 1 C)..... *M. acanthurus*
- Carpus of second pair of pereopods more than 10 times as long as wide (Fig. 20 B)..... *M. tenellum*
- 15. Cutting edge of fingers of second pair of pereopods with row of small teeth of similar size from base to midportion or beyond (Fig. 12 C).....16
- Cutting edge of fingers of second pair of pereopods without row of teeth of similar size (Fig. 4 C)17
- 16. Palm of second pair of pereopods less than 4.5 times as long as wide (Fig. 21 C)..... *M. transandicum*
- Palm of second pair of pereopods more than 4.5 times as long as wide (Fig. 12 C)..... *M. heterochirus*
- 17. Palm of second pair of pereopods more than 9 times as long as wide (Fig. 10 C).....*M. ferreirai*
- Palm of second pair of pereopods less than 7 times as long as wide (Fig. 4 C)18
- 18. Carapace without spinules on anterolateral surface (Fig. 6 A)..... *M. cortezi*
- Carapace with spinules on anterolateral surface (Fig. 4 A)19
- 19. Palm of second pair of pereopods strongly swollen, less than 3 times as long as high and with spines of different size on internal margin (Fig. 13 C, D) *M. nattereri*
- Palm of second pair of pereopods subcylindrical, more than 3 times as long as high and with spines of similar size on internal margin (Fig. 4 C, D).....*M. brasiliense*

***Macrobrachium acanthurus* (Wiegmann, 1836)**

Fig. 1 A–C

Palaemon acanthurus Wiegmann, 1836: 150.

Macrobrachium acanthurus, Holthuis, 1952: 45.— Chace & Hobbs.— 1969: 89.— Chace, 1972: 20.— Martínez, 1973: 5.— Escobar, 1979: 105.— Rodríguez, 1980: 119.— Rodríguez, 1981: 45, 47.— Williams, 1984: 66.— Abele & Kim, 1989: 5.— Nizinski, 2003: 103.— Melo, 2003: 338.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Atlántico: **Ciénaga El Totumo**, 18 Feb 1989, 1 female, Universidad de Antioquia.

Bolívar: **María La Baja**. 23 Apr 2001, leg. A. Celis, 1 female, 4 juveniles, Universidad de Los Andes.

Córdoba: **Pueblo Nuevo**, Corregimiento Puerto Santo, Ciénaga El Porro, 120 m asl, 9 Jun 2004, leg. M.

R. Campos, 3 females, 19 juveniles, ICN-MHN-CR 2137. — **San Bernardo del Viento**, Isla Queso, sea level, 7 Jun 2004, leg. M. R. Campos, 1 male, ICN-MHN-CR 2132.

Chocó: **Acandí**. Acandí River, 1986, 2 males, 1 ovigerous female, INV 4613.—Monomacho stream, 15 m asl, 29 Sep 1996, leg. S. Usme, 1 female, ICN-MHN-CR 1630.

La Guajira: **Riohacha**. Guerrero River, 47 m asl, 27 Aug 1972, leg. P. Cala, 2 males, ICN-MHN-CR 0042.—Ranchería River, Nov 1975, 1 male, 3 females, 1 ovigerous, INV 978.—Ranchería River mouth, 40 m asl, 29 Nov 2003, leg. C. Castellanos, 2 males, 3 ovigerous females, ICN-MHN-CR 2165.—Ranchería River, 40 m asl, 6 Oct 2004, leg. P. Sánchez, 3 males, 3 females, 11 juveniles, ICN-MHN-CR 2208.—Riohacha - Maicao Highway, 50 m asl, 26 Aug 1972, leg. P. Cala, 30 males, 17 females, ICN-MHN-CR 0038, 0039.—Riohacha 3 km southern, 50 m asl, 27 Aug 1972, leg. P. Cala, 2 females, ICN-MHN-CR 0040.—Riohacha 20 km southern, 50 m asl, 27 Aug 1972, leg. P. Cala, 3 males, 6 females, 2 ovigerous, ICN-MHN-CR 0041.

Magdalena: **Ciénaga**, 21 Nov 1998, leg. R. Casallas & A. J. Bernal, 9 males, 14 females, 13 ovigerous, MLS 20, 21. — **Santa Marta**. Buritaca, 20 m asl, 17 Nov 1998, leg. R. Casallas & A. J. Bernal, 5 males, 6 females, 1 ovigerous, MLS 23.—Nenguange stream, Dec 1976, 2 males, 4 females, 2 ovigerous, INV 972.—Nenguange, 10 Apr 1979, leg. M. M. Criales, 1 male, INV 1444.—Parque Nacional Natural Tayrona, Los Cedros, 10 Jul 1985, leg. G. Galvis, 5 males, 3 females, ICN-MHN-CR 0627. — Pozo Colorado, 29 Aug 1972, leg. J. Thomerson & P. Cala, 3 males, ICN-MHN-CR 0048.

Sucre: Between **Tolú and Coveñas**, Ciénaga La Caimanera, 24 May 1986, leg. M. López, 1 male, 10 females, 1 ovigerous, ICN-MHN-CR 1466.—**Toluviejo**, Pechilín River, 60 m asl, 17 Jul 1986, leg. A. Rocha, 2 males, ICN-MHN-CR 0646.

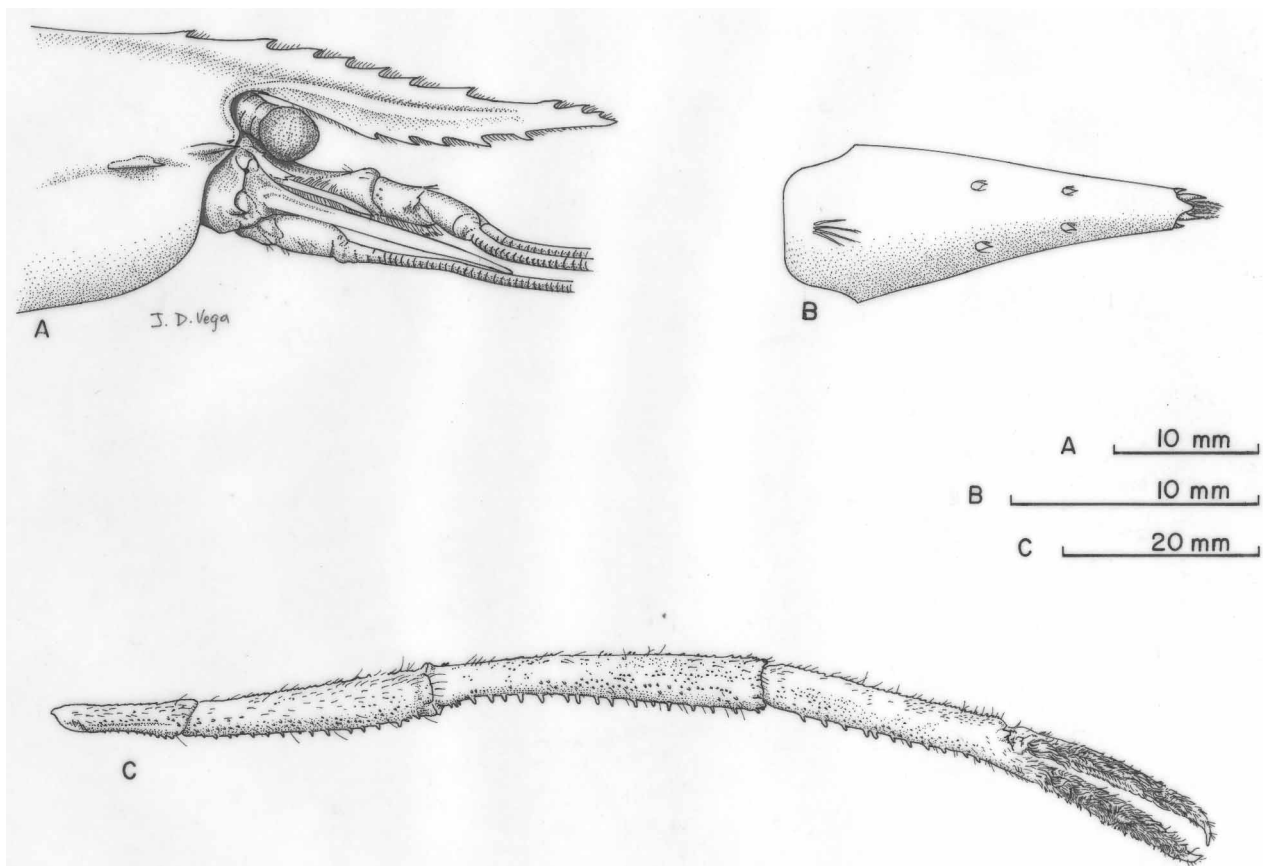


FIGURE 1. *Macrobrachium acanthurus* (Wiegmann, 1836), male, ICN-MHN-CR 0038: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Diagnosis

Rostrum nearly sinuous, apex slightly curved upward, usually overreaching scaphocerite, upper margin with 8 to 12 teeth, proximal teeth with less recess between them than the distal ones, including 1-3 teeth completely post orbital, lower margin 4 to 7 teeth; 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 elongated, prominent, similar in shape and size, overreaching scaphocerite with total length of carpus, longitudinal rows of spines from ischium to palm; merus 0.70 to 0.73 x carpus length and 0.89 to 0.96 x palm length; carpus 6.85 to 7.34 x as long as wide and 1.26 to 1.31 x palm length; palm elongated, cylindrical, 5.62 to 6.26 x as long as wide; fingers thickly pubescent, 0.75 to 0.87 x palm length, not gaping when closed, a proximal tooth on each cutting edge of fingers, and series of denticles on each base of finger.

Size. The largest male TL 126.6 mm, CL 34.5 mm; the largest female TL 121.4 mm, CL 30.3 mm; 28 ovigerous females were examined: TL 40.7 to 119.1 mm, CL 9.7 to 27.9 mm, with small and numerous eggs.

Remarks

This species is most similar to *Macrobrachium rathbunae* Holthuis, 1950. The two can be distinguished by differences in the rostrum and the second pair of pereopods. The rostrum in *M. acanthurus* overreaches the scaphocerite, whereas it is usually shorter than the scaphocerite in *M. rathbunae*. The palm of the second pair of pereopods in *M. acanthurus* is 5.62 to 6.26 x as long as wide, and the fingers 0.75 to 0.87 x the palm length, whereas the palm is 7.76 to 9.33 x longer than wide and the fingers are 0.43 to 0.47 x the palm length in *M. rathbunae*. In adult females and immature males the carpus of the second pair of pereopods is usually longer than the chela length. Some specimens of *Macrobrachium acanthurus* were found at INCODER collection: 9 males, the largest male was TL 167.2 mm, CL 43.8 mm; 7 females, 4 of them were ovigerous, the range of the ovigerous females are: TL 62.7 to 121.1 mm, CL 15.0 to 31.3 mm. These specimens were not included in this article because they lack location data. They may correspond to specimens reported by Martínez (1973) and deposited at INCODER.

Macrobrachium amazonicum (Heller, 1862)

Fig. 2 A–C

Palaemon amazonicus Heller, 1862: 418.

Macrobrachium amazonicum, Holthuis, 1952: 18.— Medina & Sobrino, 1975: 40.— Rodríguez, 1980: 115.— Rodríguez, 1981: 45, 47.— Rodríguez, 1982: 379.— Kensley & Walker, 1982: 3.— Magalhães, 1985: 247.— Magalhães & Walker, 1988: 279.— López & Pereira, 1996: 48.— Magalhães, 2002: 1092.— Melo, 2003: 340.— García - Dávila & Magalhães, 2004: 666.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Amazonas: **Puerto Nariño**, May 1957, leg. Nicéforo María, 4 males, 2 females, MLS 9.— Amazon River, 85 m asl, 1 Jan 1972, leg. H. Hasima & H. T. Boschung, 12 males, 18 females, 2 ovigerous, ICN-MHN-CR 0033.— Patrullero Island, Amazon River, 4 Jan 1972, leg. H. T. Boschung, 1 male, 2 females, ICN-MHN-CR 1796.

Arauca: **Caño Limón**, Agua Verde Lake, 15 Jul 1991, leg. G. Galvis, 61 males, 89 females, 15 ovigerous, ICN-MHN-CR 1793.— **Tame** Highway, Fortúl creek, 6 Mar 1977, leg. P. Cala, 2 females, ICN-MHN-CR 1817.— **La Saya**, Cabuyare creek, 10 Mar 1987, leg. P. Cala, 2 males, 2 females, 1 ovigerous, ICN-MHN-CR 1739.

Casanare: Without precise locality, 19 Feb 1974, leg. P. Cala, 7 males, 27 females, 11 ovigerous, ICN-MHN-CR 0058.— Guachiría River, 12 Feb 1974, leg. P. Cala, 2 males, 4 females, 1 ovigerous, 1 juvenile,

ICN-MHN-CR 1801.— **Maní**. Charté River, 175 m asl, Feb 1971, leg. P. Cala, 17 males, 14 females, ICN-MHN-CR 0027.— Curital creek, 175 m asl, 19 Feb 1971, leg. P. Cala, 9 males, 5 ovigerous females, ICN-MHN-CR 0028.— **Paz de Ariporo**. Boquerón, Garza creek, 275 m asl, 12 Feb 1974, leg. P. Cala, 5 males, 5 females, 4 ovigerous, ICN-MHN-CR 0054.— Cantagallo creek, affluent of Ariporo River, 14 Feb 1974, leg. P. Cala, 1 male, 1 ovigerous female, ICN-MHN-CR 1802.— Hato Corozo, Aguas Verdes creek, 275 m asl, 15 Feb 1974, leg. P. Cala, 1 male, ICN-MHN-CR 0056.— Hato Las Canarias, La Hermosa creek, 275 m asl, 17 Feb 1974, leg. P. Cala, 12 males, 3 females, 1 ovigerous, ICN-MHN-CR 0057.— **San Luis de Palenque**, Hato Altamira, Suárez creek, 200 m asl, 13 Feb 1974, leg. P. Cala, 4 males, 3 females, 2 ovigerous, ICN-MHN-CR 0055. — Between **Trinidad** and **Rondón**, Guachiría River, 20 Feb 1974, leg. P. Cala, 1 male, 3 females, 2 ovigerous, ICN-MHN-CR 1805.

Guaviare: Guaviare River, 17 Aug 1989, 7 males, 5 females, Universidad de Antioquia.— **San José del Guaviare**. Barranco, La Sal creek, 200 m asl, 20 Jun 1997, leg. N. C. Garzón, 1 male, 5 females, 1 ovigerous, 14 juveniles, ICN-MHN-CR 1677.— Flauta creek, 15 Aug 1989, 1 male, 3 females, Universidad de Antioquia.

Meta: **La Macarena**, Vereda Alto Raudal, in lake affluent of Santo Domingo River, 490 m asl, 15 Feb 1988, leg. P. Cala, 5 males, 3 females, 2 ovigerous, ICN-MHN-CR 0881.— **Puerto Gaitán**, Vereda San Miguel, Meta River, 150 m asl, 20 Aug 1984, leg. J. Madrid, 5 females, ICN-MHN-CR 1379.— **Puerto López**. El Picacho creek, affluent of Meta River, 450 m asl, 21 Sep 1989, leg. M. Morales, 9 males, 8 females, ICN-MHN-CR 1130.— Vereda Bajo Menegua, Lagunazo Farm, 290 m asl, 18 Apr 1984, leg. R. Restrepo, 1 male, 1 ovigerous female, ICN-MHN-CR 0572.— Guachiría River, Curimira creek, affluent of Meta River, 6 Feb 1974, leg. P. Cala, 4 males, 2 females, 1 ovigerous, 1 juvenile, ICN-MHN-CR 1797.— Guayuriba River, 2 Jul 1971, leg. P. Cala, 1 male, 5 females, 1 ovigerous, 1 juvenile, ICN-MHN-CR 0030.— Vereda Menegua, 200 m asl, 27 Feb 1990, leg. G. Galvis, 8 males, 10 females, 4 ovigerous, ICN-MHN-CR 1468.— Cafam Llanos, Mata-Mata Lake, 180 m asl, 20 Mar 2004, leg. M. Leyva, 1 male, ICN-MHN-CR 2182.— Mozambique, Humacita Lake, 184 m asl, 2 Jul 1971, leg. P. Cala, 7 males, 48 females, 19 ovigerous, 3 juveniles, ICN-MHN-CR 0031.— Mozambique, Humacita Lake, 200 m asl, 23, 24 Jun 1972, leg. F. Flórez, 3 males, 24 females, 19 ovigerous, ICN-MHN-CR 0956, 0957.— Mozambique, Humacitas Lake, 184 m asl, 6 Nov 1972, leg. F. Flórez, 17 males, 80 females, 14 ovigerous, ICN-MHN-CR 0052.— **Puerto Rico**, Vereda Caño Alfa, Matecaña Lake, Parque Natural de la Macarena, 225 m asl, 18 Jan 1985, leg. C. Useche, 4 females, ICN-MHN-CR 0610.

Diagnosis

Rostrum sinuous, convex on orbital region, distal portion directed upward, overreaching scaphocerite, upper margin with 7 to 14 teeth, the proximal teeth with less recess between them than the distal ones, including 1 tooth completely post orbital, lower margin 5 to 10 teeth; carapace smooth; abdomen smooth; telson terminal margin ending in sharp midpoint, flanked by two pairs of spinules, internal pair not overreaching midpoint. First pair of pereopods overreaching scaphocerite with distal portion of fingers. Second pair of pereopods elongated and slender, similar in shape and size, longitudinal rows of spinules from ischium to palm, overreaching scaphocerite with 1/2 to 3/4 of carpus; merus 0.60 to 0.68 x carpus length, and 1.28 to 1.92 x palm length; carpus 1.10 to 1.67 x chela length; fingers 0.75 to 0.89 x palm length; fingers pubescent, not gaping when closed, a proximal tooth on in each cutting edges, and series of denticles on each base of finger.

Size. The largest male TL 78.8 mm, CL 17.8 mm; the largest female TL 88.8 mm, CL 16.7mm; 103 ovigerous females were examined, TL 35.8 to 88.8 mm, CL 7.6 to 16.7 mm, with small and numerous eggs.

Remarks

This species is most similar to *Macrobrachium panamense* Rathbun, 1912. The two can be distinguished

by differences in the rostrum. The rostrum in *M. amazonicum* is low and strongly convex on the orbital region; in contrast, it is high and slightly convex on the orbital region in *M. panamense*. In some females and immature males, the chelae of the second pair of pereopods have the same carpus length and the internal pair of espinules is overreaching the telson's midpoint.

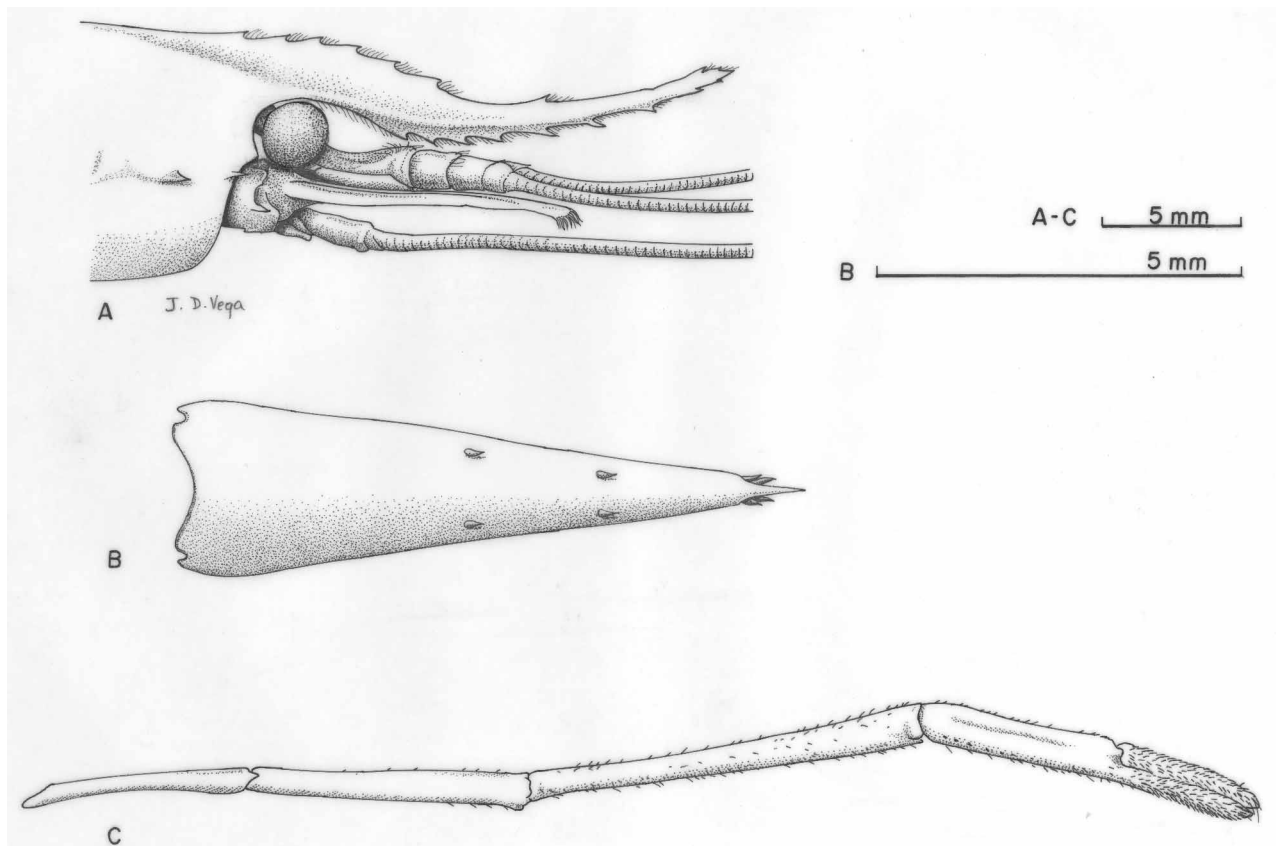


FIGURE 2. *Macrobrachium amazonicum* (Heller, 1862), male ICN-MHN-CR 0054: **A**, anterior part of body, lateral view; **C**, second pereopod, lateral view. Male, ICN-MHN-CR 0033: **B**, telson, dorsal view.

Macrobrachium americanum Bate, 1868

Fig. 3 A-C

Macrobrachium americanum Bate, 1868: 363.

Macrobrachium americanum, Holthuis, 1952: 128.— Prahll *et al.*, 1978: 55.— Méndez, 1981: 73.— Rodríguez, 1981: 47.— Prahll *et al.*, 1984: 47.— Abele & Kim, 1989: 5.— Wicksten, 1989: 13.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Cauca: **Guapi**. Gorgona Island. Jan - Feb 1961, leg. F. Medem, 2 males, 3 females, 1 ovigerous, ICN-MHN-CR 0001 - 0005.— Gorgona Island, 20 May 1979, 1 male, CRBMUV 79034.— Gorgona Island, 15, 18, 20 May 1986, leg. P. Cala, 3 males, 3 females, 1 ovigerous, ICN-MHN-CR 1807, 1808, 2116.— Gorgona Island, Airport, in creek, 28 Mar 1980, 1 ovigerous female, CRBMUV 80001.— Gorgona Island, La Azufrada stream, 25 May 1978, 1 male, 2 females, CRBMUV 78005.— Temuey, Guapi River, 21 Oct 2004, leg. D. M. Valencia & M. R. Campos, 4 males, 9 females, ICN-MHN-CR 2185, 2186.

Chocó: **Ensenada de Utría**. La Aguada, 17 Dec 1979, 2 ovigerous females, CRBMUV 79030.— **Bajo Baudó**, Pepe River, 17 Jun 1979, leg. H. Prahll, 1 male, CRBMUV 79019.— **Pizarro**, 8 Jul 1981, leg. N. Toro & M. Marín, 1 male, CRBMUV 81084.

Valle del Cauca: **Bahía Málaga**. in stream, 29 Dec 1985, leg. D. Garcés, 1 male, CRBMUV 85197.— La Alegría stream, 24 Dec 1985, 1 male, 3 females, CRBMUV 85068.— Las Tres Marías, 30 Aug 1980, 1 male, 3 females, CRBMUV 80005.— Las Tres Marías, 25 Nov 1985, leg. G. Ramos, 6 males, 2 females, CRBMUV 85182.— Las Tres Marías, in creek, 8 Dec 1985, 3 females, CRBMUV 85067.— **Buenaventura**, Dagua River, 19 Apr 2003, 3 males, 2 females, Universidad de los Andes.— Cajambre River, Caimancito, 12 Aug 1983, 2 males, 3 females, CRBMUV 83004.— **Dagua**, Dagua River, 750 m asl, 22 Nov 1995, 2 males, ICN-MHN-CR 1597.

Diagnosis

Rostrum lanceolate, apex curved upward, as long as or shorter than antennular peduncle, upper margin with 10 to 13 teeth spaced regularly, including 3-5 teeth completely post orbital, lower margin 2 to 5 teeth; carapace smooth; abdomen smooth; telson terminal margin ending semicircular with one pair of internal and external reduced spines, not overreaching terminal margin of telson. First pair of pereopods overreaching scaphocerite with 3/4 of carpus. Second pair of pereopods elongated, prominent, similar in shape and size, overreaching scaphocerite with 1/3 to 1/2 of merus; merus 1.09 to 1.12 x longer than carpus, and 0.53 to 0.62 x palm length; carpus 2.04 to 2.34 x as long as wide and 0.50 to 0.55 x palm length; palm prominent, 3.25 to 4.74 x as long as wide, 2.60 to 3.54 x as long as high; fingers 0.87 to 1.0 x palm length, gaping when closed, a prominent tooth on midcutting edge of mobile finger, and another one on proximal portion of cutting edge of fixed finger, usually followed by 3 to 4 denticles on each base of finger.

Size. The largest male TL 220.7 mm, CL 68.4 mm; the largest female, TL 152.1 mm, CL 47.6 mm; 5 ovigerous females were examined: TL 75.0 to 152.1 mm, CL 21.6 to 47.6 mm, with small and numerous eggs.

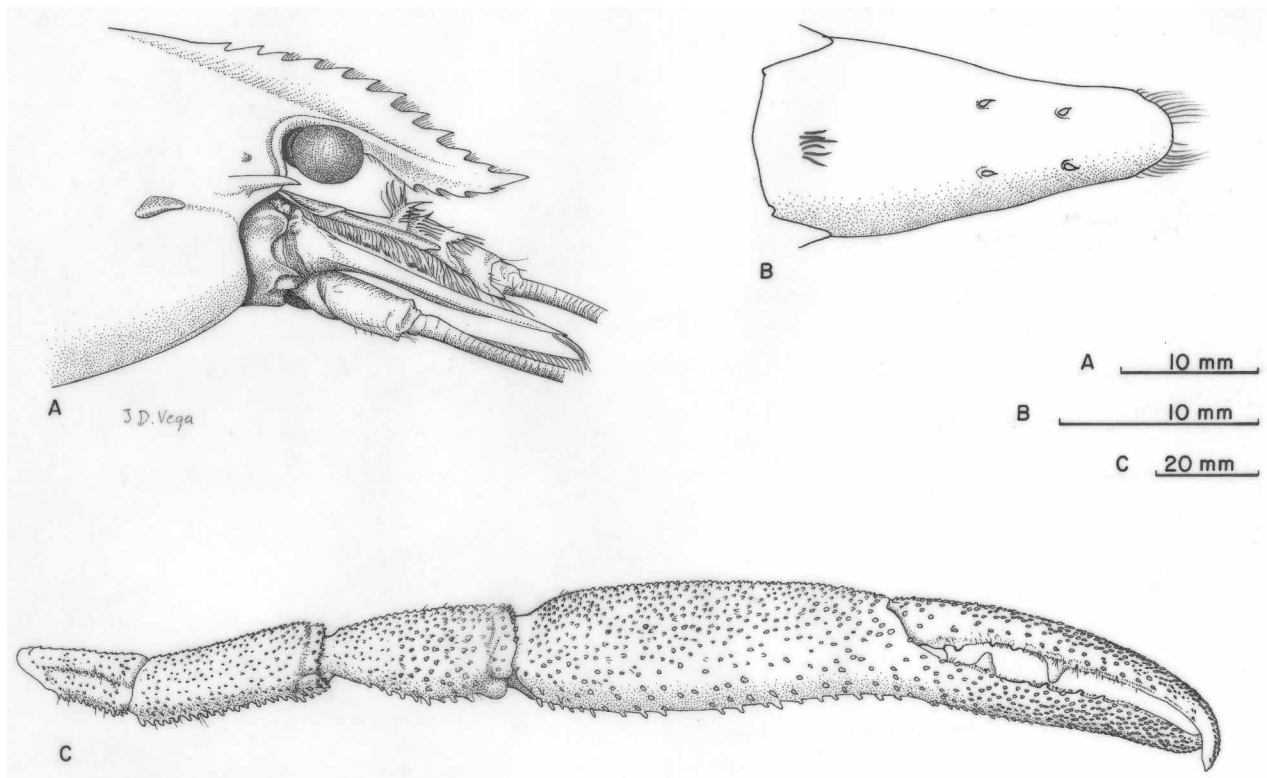


FIGURE 3. *Macrobrachium americanum* Bate, 1868, male, ICN-MHN-CR 1808: **A**, anterior part of body, lateral view. Male, ICN-MHN-CR 1807: **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Remarks

This species is most similar to *Macrobrachium carcinus* (Linnée, 1758), sometimes it is difficult to differentiate specimens of these two species. For this reason, Holthuis (1952) suggested that these two species should be considered as subspecies. However, in the Colombian material we found that these two species have differences in the length of the fingers of the second pair of pereopods: the fingers in *M. americanum* are as long as or slightly shorter than the palm, whereas they are slightly longer than the palm in *M. carcinus*. The species *M. americanum* was reported from Escalerete River, department of Valle del Cauca and the specimens were deposited at the CRBMUV by Prahel *et al.* (1984). In a recent examination of Prahel *et al.*'s material at the CRBMUV the specimens could not be found.

Macrobrachium brasiliense (Heller, 1862)

Fig. 4 A–D

Palaemon brasiliensis Heller, 1862: 419.

Macrobrachium brasiliense, Holthuis, 1952: 79.— Rodríguez, 1981: 47.— Rodríguez, 1982: 382.— Magalhães & Walker, 1988: 279.— Pereira, 1993: 343.— López & Pereira, 1996: 53.— Campos, 1997: 237.— Magalhães, 2002: 1096.— Melo, 2003: 346.— García - Dávila & Magalhães, 2004: 667.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Amazonas: **Leticia**. Corregimiento La Pedrera, Chorro de Córdoba, 100 m asl, 8 Nov 1994, leg. M. R. Campos, 60 males, 27 females, 2 ovigerous, 16 juveniles, ICN-MHN-CR 1395.— Leticia - Tarapacá, km 11, in creek, 30 Apr 1999, leg. F. Arbeláez, 11 males, 6 females, ICN-MHN-CR 1791.— Leticia-Tarapacá, Tacana stream, affluent of Amazon River, 80 m asl, 10, 14 Dec 2003, leg. C. Pinto, 8 males, 9 females, 30 juveniles, ICN-MHN-CR 2205. — **Puerto Nariño**. in creek, 3 Jan 1972, leg. H. Harima & H. T. Boschung, 7 males, 8 females, 1 ovigerous, 2 juveniles, ICN-MHN-CR 0034.— May 1957, leg. Nicéforo María, 5 males, 1 female, MLS 10.— Amacayacu Park, 1 female, Universidad de los Andes.

Arauca: **Caño Limón**, Agua Verde Lake, 125 m asl, 15 Aug 1991, leg. G. Galvis, 11 males, 7 females, ICN-MHN-CR 1755.

Boyacá: **San Luis de Gaceno**, Sardinita stream, 300 m asl, 28 - 29 Dec 1996, leg. R. Casallas & A. J. Bernal, 2 males, MLS 16.

Caquetá: **Araracuara**, Administración stream, 19 Nov 1982, leg. M. R. Campos, 2 males, ICN-MHN-CR 0097.— **Montañitas**, Vereda Palma Azul, near School, 320 m asl, 9 Apr 1990, leg. R. Restrepo, 2 specimens without pleopods, ICN-MHN-CR 1197.

Casanare: **Agua Azul**. Cayaguaro stream, 20 Nov 1982, leg. M. R. Campos, 4 males, 1 ovigerous females, ICN-MHN-CR 0502.

Cundinamarca: **Medina**. Vereda Brisas del Humea, Choopal stream, affluent of Humea River, 350 m asl, 21 Oct 1989, leg. M. R. Campos, 7 males, 7 females, 4 ovigerous, ICN-MHN-CR 1137.— Gazamancito River, 500 m asl, 27 Jul 1986, leg. R. Restrepo, 1 male, 1 female, ICN-MHN-CR 0647.— La Arenosa creek, 300 m asl, 29 Jul 1986, leg. R. Restrepo, 2 males, 2 females, 1 without pleopods, ICN-MHN-CR 0648.— Vereda La Sarza, La Sarza stream, 400 m asl, 21 Oct 1989, leg. M. R. Campos, 22 males, 22 females, 8 ovigerous, ICN-MHN-CR 1138.

Meta: **Acacías**. Castilla, stream, Castilla-Chidrimene Highway, 510 m asl, 20 Apr 2004, leg. E. Flórez, 20 males, 15 females, 5 juveniles ICN-MHN-CR 2178.— Centro Araganey, Siete Vueltas stream, 514 m asl, 22 Apr 2004, leg. E. Flórez, 15 males, 5 females, 5 juveniles ICN-MHN-CR 2179.— Acacías River, 500 m asl, 18 Apr 2004, leg. E. Flórez, 2 females, ICN-MHN-CR 2180.— **Cumaral**. Carnicerías creek, 400 m asl, 30 Apr 1995, leg. G. Galvis, 1 male, 1 female, ICN-MHN-CR 1463.— Pacuca creek, 400 m asl, 23 Oct 1994, leg.

M. R. Campos, 1 male, 1 ovigerous female, ICN-MHN-CR 1364.— El Paraiso farm, 450 m asl, 6 May 1988, leg. M. R. de Campos, 23 males, 9 females, 2 juveniles, ICN-MHN-CR 0866.— El Paraiso Farm, in creek, 450 m asl, 7 May 1988, leg. G. Galvis, 21 males, 35 females, 1 ovigerous, ICN-MHN-CR 0868.— La Y stream, 550 m asl, 9 Oct 1990, leg. M. R. Campos, 4 males, 7 females, 4 oviferous, ICN-MHN-CR 1212.— Vereda El Palmar, Caibe creek, 550 m asl, 25 Oct 1994, leg. M. R. Campos, 8 males, 2 females, 1 ovigerous, ICN-MHN-CR 1368.— Vereda El Palmar, Mata de Guadua creek, 400 m asl, 27 Oct 1994, leg. M. R. Campos, 2 males, 2 females, ICN-MHN-CR 1372.— **El Dorado**, Inspección San Isidro del Ariari, Vereda La Isla, Aguas Arcas stream, 470 m asl, 21 Nov 1995, leg. M. R. Campos, 8 males, 6 females, 2 ovigerous, ICN-MHN-CR 1543.— Vereda Santa Rosa, Paujil creek, 530 m asl, 11 Jun 1996, leg. M. R. Campos, 4 males, ICN-MHN-CR 1591.— **La Uribe**, La Cunsia stream, 480 m asl, 25 Nov 1987, leg. P. Cala, 12 males, 25 females, 1 juvenile, ICN-MHN-CR 0876.— **Mesetas**, Jardín de las Peñas, Las Peñas stream, affluent of Sausa River, 24 Nov 1987, leg. P. Cala, 59 males, 47 females, 22 ovigerous, 6 juveniles, ICN-MHN-CR 1745, 1746, 1820.— Vereda San Isidro, El Almendro Farm, Pailas creek, affluent of Duda River, 480 m asl, 9 Feb 1988, leg. P. Cala, 2 males, ICN-MHN-CR 0879.— **Puerto Gaitán**, Vereda. San Miguel, Miti-Miti creek, 130 m asl, 17 Jun 1996, leg. M. R. Campos, 14 males, 8 females, 3 ovigerous, ICN-MHN-CR 1592.— **Puerto López**, Cafam Llanos, Mata-Mata Lake, 180 m asl, 20 Mar 2004, leg. M. Leyva, 1 male, 11 juveniles, ICN-MHN-CR 2181, 2206.— **Restrepo**, Vereda Caney Alto, El Horizonte Farm, 750 m asl, 12 Oct 1990, leg. M. R. Campos, 8 males, 4 females, ICN-MHN-CR 1216.— Vereda Caney Alto, dike in Seminar, 700 m asl, 11 Oct 1990, leg. M. R. Campos, 14 males, 7 females, 1 ovigerous, ICN-MHN-CR 1214.— Vereda Caney Bajo, 480 m asl, 29 Oct 1994, leg. M. R. Campos, 6 males, 5 females, 1 ovigerous, ICN-MHN-CR 1375.— Vereda Caney Bajo, San Ignacio creek, affluent of Caney River, 300 m asl, 31 Oct 1997, leg. J. Alvarez, 6 males, 1 female, ICN-MHN-CR 1672.— Vereda Caney Bajo, San Miguel creek, 450 m asl, 29 Apr 1988, leg. M. R. Campos, 30 males, 25 females, 14 juveniles, ICN-MHN-CR 0857.— Vereda Caney Bajo, San Miguel creek, 350 m asl, 20 Apr 1989, leg. M. R. Campos, 13 males, 8 females, ICN-MHN-CR 0952.— Vereda Caney Bajo, Pilatos stream, 350 m asl, 24 Mar 1984, leg. M. R. Campos, 1 male, 3 females, 1 ovigerous, ICN-MHN-CR 0556.— **San Juan de Arama**. Vereda La Curía, Estación del Inderena, La Curía creek, 500 m asl, 20, 21, 23 Sep 1987, leg. M. R. Campos, 30 males, 16 females, ICN-MHN-CR 0809, 0811, 0814.— **Serranía La Macarena**, Duda Canyon, 1990, 1 male, Universidad de los Andes. — **Villavicencio**. San Antonio creek, alt 450 m asl, 24 Mar 1974, leg. I. Berrío, 27 males, 16 females, 5 ovigerous, ICN-MHN-CR 0059.— South of Villavicencio, 1 male, MLS 3.— Villavicencio, Jan 1930, 1 male, 4 females, 3 ovigerous, MLS 5.— Villavicencio, Jul 1935, 5 males, 10 females, 1 ovigerous, MLS 6.— Villavicencio, Jan 1953, leg. Nicéforo María, 1 male, MLS 7.

Norte de Santander: **Toledo**, El Sarare, El Porvenir Farm, 1600 m asl, 15 Dec 1971, leg. A. Rodriguez, 1 male, 3 females, 2 oviferous, ICN-MHN-CR 1471.— El Sarare, El Porvenir Farm, 15 Dec, 1971, leg. A. Rodríguez & R. Güevara, 4 males, 8 females, 1 ovigerous, MLS 11.

Putumayo: **Orito**, 800 m asl, 15 May 2004, leg. C. A. Cipamocha, 4 males, 1 juvenil, ICN-MHN-CR 2207.— **Villagarzón**, Alto de Chalguayaco, 400 m asl, 15 May 1998, leg. L. A. Núñez, 1 male, ICN-MHN-CR 1707.

Diagnosis

Rostrum straight, distal portion slightly curved downward, as long as or slightly shorter than scaphocerite, upper margin with 7 to 12 teeth regularly spaced, including 1-4 teeth completely post orbital, lower margin 2 to 5 teeth; carapace covered with spinules on anterolateral surface; abdomen with low region of pleurae pubescent; 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 1/2 to 3/4 of carpus. Second pair of pereopods elongated, covered with spines, which are prominent on ventral surface, similar in shape, slightly different in size, the larger pereopod overreaching scaphocerite with 1/4 of merus; merus 0.75 to 0.81 x carpus length, 0.52 to 0.57 x palm length; carpus, 2.73 to 4.24 x as long as wide and 0.66

to 0.75 x palm length; palm subcylindrical with rows of spines, of similar size, on internal margin, 3.95 to 6.30 x as long as wide, 3.44 to 4.63 x as long as high; fingers gaping when closed, 0.45 to 0.63 x palm length, prominent tooth on midcutting edge of mobile finger, and another one on its proximal portion, between them usually a denticle; a tooth on midcutting edge of fixed finger usually followed by 5 denticles on its base.

Size. The largest male TL 77.2 mm, CL 26.3 mm; the largest female TL 70.2 mm, CL 22.3 mm; 66 ovigerous females were examined: TL 34.1 to 61.6 mm, CL 9.1 to 18.4 mm, with large and few number of eggs.

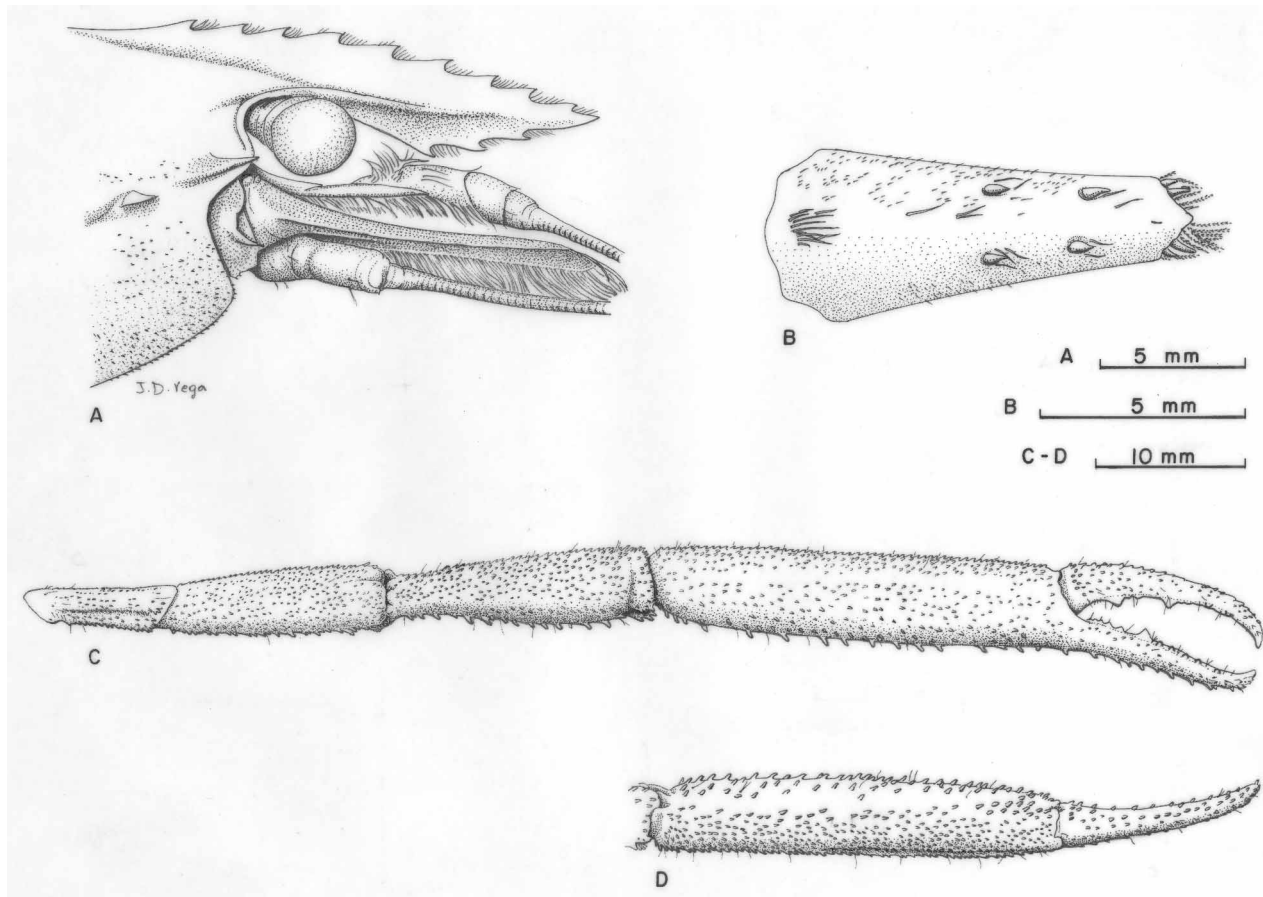


FIGURE 4. *Macrobrachium brasiliense* (Heller, 1862), male, ICN-MHN-CR 1137: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view; **D**, chela of second pereopod, dorsal view.

Remarks

This species is most similar to *Macrobrachium nattereri* (Heller, 1862). The two can be distinguished by differences in the second pair of pereopods in adult males. The palm in *M. brasiliense* is subcylindrical, more than 3 times as long as high, and the spines on the internal margin are of similar size, whereas it is swollen laterally, less than 3 times as long as high and the spines on the internal margin are of irregular size in *M. nattereri*; the fingers in *M. brasiliense* are usually less than 0.6 times the palm length, but they are longer than 0.6 times in *M. nattereri*. *Macrobrachium brasiliense* is also similar to *M. ferreirai* Kensley & Walker, 1982. The two can be distinguished by differences in the carapace and the second pair of pereopods in adult males. The anterolateral surface of the carapace in *M. brasiliense* is covered by spinules; to the contrary, it is smooth in *M. ferreirai*. The second pair of pereopods in *M. brasiliense* is more prominent than in *M. ferreirai*; the palm in *M. brasiliense* is less or equal to 6.3 times as long as wide, whereas it is more than 9 times as long as wide in *M. ferreirai*; the fingers in *M. brasiliense* are equal or more than 0.45 times the palm length, whereas in *M.*

ferreirai they are shorter than 0.45 times the palm length. In some females, immature males and juveniles the fingers of the second pair of pereopods are reaching 0.7 times the palm length, and the palm is less than 3 times as long as high.

***Macrobrachium carcinus* (Linnée, 1758)**

Fig. 5 A–C

Cancer carcinus Linnée, 1758: 631.

Macrobrachium carcinus, Holthuis, 1952: 114.— Chace & Hobbs, 1969: 93.— Chace, 1972: 20.— Martínez, 1973: 3.— Escobar, 1979: 107.— Rodríguez, 1980: 123.— Rodríguez, 1981: 45, 47.— Williams, 1984: 68.— Galvis, 1986: 447.— Abele & Kim, 1989: 6.— López & Pereira, 1996: 48.— Nizinski, 2003: 103.— Melo: 2003: 348.
(For detailed synonymy refer to Holthuis, 1952).

Material examined

Atlántico: **Piojó**, Ciénaga El Totumo, 10 Apr 1970, leg. L. E. Martínez, 5 males, 2 females, INCODER, Cartagena.— **Tubará**, El Corral de San Luis, 1 Apr 1980, leg. F. Flórez, 1 male, 1 female, ICN-MHN-CR 0852.

Bolívar: Ciénaga de Turbaco, 28 Aug 1980, leg. H. Prah, 1 ovigerous female, CRBMUV 80030.

Córdoba: **Lorica**. Sinú River, 20 m asl, 5, 7 Jun 2004, leg. M. R. Campos, 4 males, 3 females, 1 ovigerous, ICN-MHN-CR 2125, 2129, 2130.— Sinú River, La Playa, 20 m asl, 6 Jun 2004, leg. M. R. Campos, 3 males, 6 females, 3 ovigerous, ICN-MHN-CR 2126, 2127.

Chocó: **Acandí**. Monomacho stream, 15 m asl, 22 Aug 1995, leg. S. Usma, 2 males, ICN-MHN-CR 1594.— Sapzurro 50 m asl, 6 Aug 2004, leg. F. Jiménez, 1 female, ICN-MHN-CR 2183.

La Guajira: **Barrancas**. Calabazo, near Cerrejón Mine, 600 m asl, 7 Jan 2004, leg. J. I. Mojica, 1 female, ICN-MHN-CR 2161.— Oreganal, Ranchería River, 200 m asl, 22 May 2004, leg. C. Castellanos, 8 males, 2 females, 25 juveniles, ICN-MHN-CR 2167.— **Riohacha**. south of Mingueo, 45 m asl, 27 Aug 1972, leg. J. Thomerson, 6 males, 5 females, ICN-MHN-CR 0045.— Ranchería River, 40 m asl, 9 Oct 2004, leg. C. Castellanos, 1 ovigerous female, 2 juveniles, ICN-MHN-CR 2210.— Ranchería River mouth, 40 m asl, 29 Nov 2003, leg. C. Castellanos, 1 ovigerous female, ICN-MHN-CR 2166.— Riohacha-Santa Marta, Highway, 50 m asl, 27 Aug 1972, leg. P. Cala, 1 ovigerous female, ICN-MHN-CR 0046.— Riohacha, km 20 southern, 50 m asl, 27 Aug 1972, leg. P. Cala, 2 males, 3 females, ICN-MHN-CR 2090.— Guerrero River, 47 m asl, 27 Aug 1972, leg. P. Cala, 10 males, 5 females, ICN-MHN-CR 2091.— **Uribia**, Cabo de la Vela, 22 May 1986, leg. E. Burbano, 9 juveniles, ICN-MHN-CR 1699.

Magdalena: Without precise locality, 60 m asl, 17 Jul 1982, 3 males, INV 775.— **Ciénaga Grande de Santa Marta**, Estación Boquerón, 21 Mar 1989, leg. R. Reyes, 1 juvenile, ICN-MHN-CR 1174.— **Santa Marta**. Buritaca, 20 m asl, 20 Nov 1998, leg. R. Casallas & A. J. Bernal, 1 male, 1 ovigerous female, MLS 19.— Don Diego River, 1 female, 1 juvenile, INV 976.— Gaira River, 24 Jun 1971, leg. L. E. Martínez, 2 ovigerous females, INCODER, Cartagena.— Gaira River, Apr 1977, leg. Vásquez & Parody, 2 females, ICN-MHN-CR 0492.— Parque Nacional Natural Tayrona, Los Cedros, 3 - 7 Jul 1983, leg. G. Galvis, 4 males, 3 females, ICN-MHN-CR 0531, 0536, 0537.— Pozo Colorado, km 14. from Santa Marta, 29 Aug 1972, leg. J. Thomerson & P. Cala, 1 male, 3 females, ICN-MHN-CR 2092.— Pueblito, in stream, 27 Aug 1976, 1 male, 1 female, 1 juvenile, INV 980

Sucre: **Colosó**, Colosó creek, 150 m asl, 14 Nov 1985, leg. C. Román, 6 males, 1 female, ICN-MHN-CR 1470.— **Toluviejo**. Arroyo Pechilín, 13 Nov 1985, leg. C. Román, 1 male, ICN-MHN-CR 1732.— Arroyo Pechilín, 60 m asl, 17 Jul 1982, leg. A. Rocha, 2 female, 1 ovigerous, ICN-MHN-CR 2093.

Diagnosis

Rostrum lanceolate, apex curved upward, as long as or shorter than antennular peduncle, upper margin with 11 to 14 teeth regularly spaced, including 4-5 teeth completely post orbital, lower margin 3 to 5 teeth; carapace smooth; abdomen smooth; telson terminal margin ending semicircular with one pair of internal and external reduced spines, not overreaching terminal margin of telson. First pair of pereopods overreaching scaphocerite with $2/3$ to $3/4$ of carpus. Second pair of pereopods elongated and prominent, similar in shape and size, overreaching scaphocerite with $1/3$ of merus; merus 1.13 to 1.20 x longer than carpus, and 0.63 to 0.65 x palm length; carpus 1.74 to 2.20 x as long as wide and 0.53 to 0.57 x palm length; palm prominent, 2.90 to 3.57 x as long as wide, and 2.41 to 2.80 x as long as high; fingers 1.03 to 1.09 x longer than palm, gaping when closed, a prominent tooth on midcutting edge of mobile finger, and another one on proximal cutting edge of fixed finger, usually followed by 3 to 4 denticles on each base of finger.

Size. The largest male, TL 193.7 mm, CL 62.7 mm; the largest female TL 155.9 mm, CL 51.4 mm; 8 ovigerous females were examined: TL 33.9 to 148.7 mm, CL 9.7 to 49.0 mm, with small and numerous eggs.

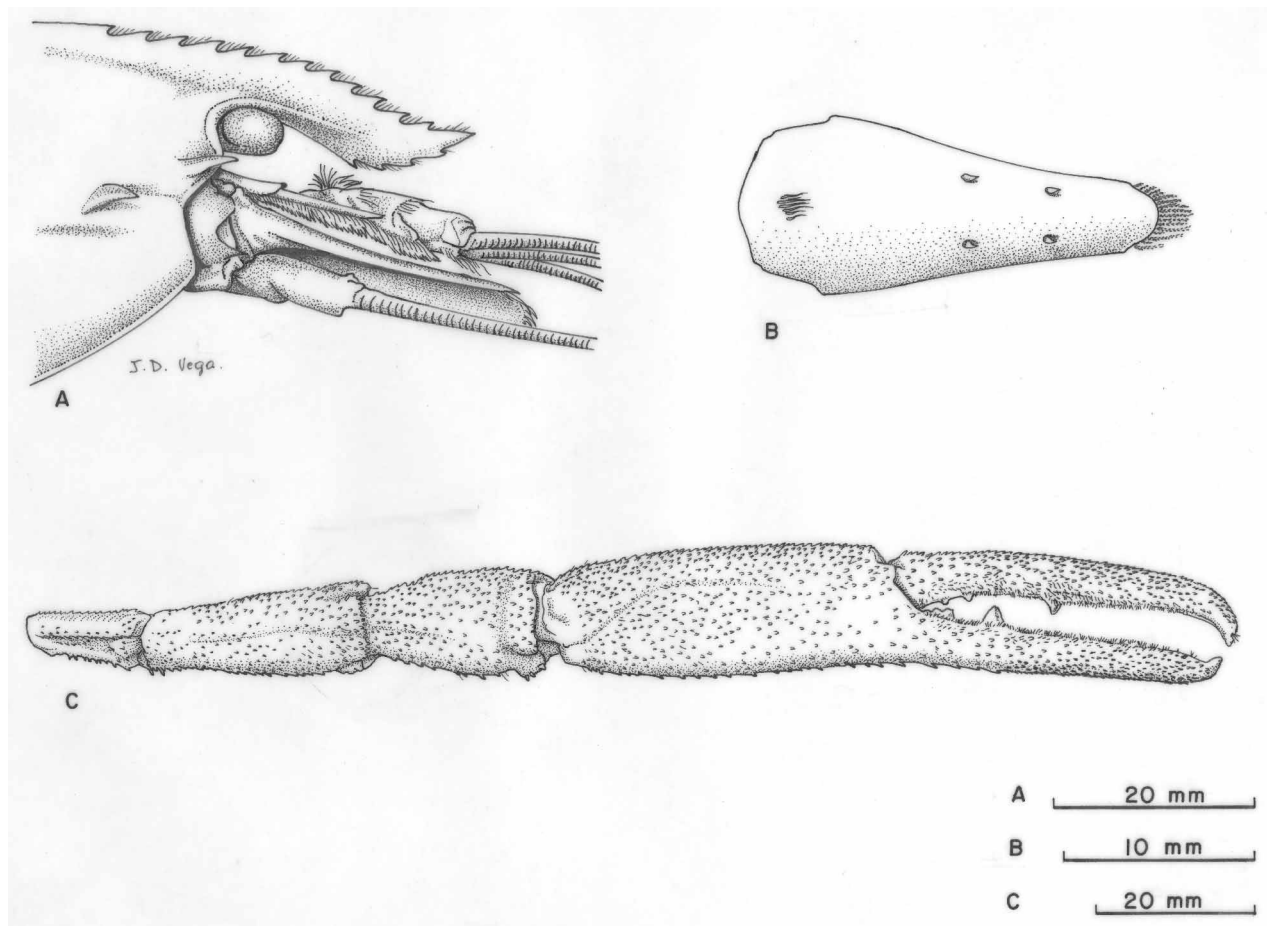


FIGURE 5. *Macrobrachium carcinus* (Linnée, 1758), male, ICN-MHN-CR 0536: **A**, anterior part of body, lateral view; **B**, telson, dorsal view. Male, ICN-MHN-CR 0531: **C**, second pereopod, lateral view.

Remarks

This species is most similar to *Macrobrachium americanum* Bate, 1868, sometimes it is difficult to differentiate specimens of these two species. For this reason, Holthuis (1952) suggested that these two species should be considered as subspecies. However, in the Colombian material we found that these two species have differences in the length of the fingers of the second pair of pereopods: the fingers in *M. carcinus* are slightly

longer than the palm, whereas they are as long as or slightly shorter than the palm in *M. americanum*. Some specimens of *Macrobrachium carcinus* were found at INCODER collection: 2 males, the largest male was TL 176.5 mm, CL 57.1 mm; 5 females, 3 of them ovigerous, the range of the ovigerous females were: TL 108.0 to 123.6 mm, CL 34.0 to 37.7 mm. These specimens were not recorded in this article because they lack location data. They may correspond to specimens reported by Martinez (1973), deposited at INCODER. In the material identified by Galvis (1986) as *M. carcinus* (ICN-MHN-CR 0535), we identified two specimens of *M. heterochirus* (Wiegmann, 1836) and one specimen of *M. crenulatum* Holthuis, 1950, the last one is actually labeled as ICN-MHN-CR 2118.

***Macrobrachium cortezi* Rodríguez, 1982**

Fig. 6 A–D

Macrobrachium cortezi Rodríguez, 1982: 383.

Material examined

Amazonas: **Leticia**, Corregimiento La Pedrera, La Tonina stream, 120 m asl, 6 Nov 1994, leg. M. R. Campos, 1 female, ICN-MHN-CR 2188.

Guainía: **Inírida**, Agujón creek, 70 m asl, 23 - 25 Mar 1998, leg. M. R. Campos, 11 males, 13 females, 7 ovigerous, 24 juveniles, ICN-MHN-CR 1691.— Pajarito creek, 70 m asl, 21 Mar 1998, leg. M. R. Campos, 11 males, 8 females, 7 ovigerous, ICN-MHN-CR 1688.— La Ceiba Community, Seje creek, 80 m asl, 18 Mar 1998, leg. M. R. Campos, 1 male, 1 ovigerous female, ICN-MHN-CR 1680.— Mañoco creek, 75 m asl, 25 Mar 1998, leg. M. R. Campos, 1 male, 4 females, 1 ovigerous, ICN-MHN-CR 1695.— Yucuta creek, 70 m asl, 24 Mar 1998, leg. M. R. Campos, 3 males, 7 females, 1 ovigerous, ICN-MHN-CR 1693.

Vaupés: **Taraira**, Serranía Taraira, 185 m asl, 22 Nov 1994, leg. M. R. Campos, 16 males, 21 females, 10 ovigerous, ICN-MHN-CR 1444.

Diagnosis

Rostrum nearly straight, slightly curved downward, overreaching with distal portion scaphocerite, upper margin with 10 to 12 teeth regularly spaced, including 2-4 teeth completely post orbital, lower margin 2 to 3 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 2/3 of carpus. Second pair of pereopods elongated, similar in shape, different in size, covered with spines, which are prominent on ventral and internal surfaces; the larger pereopod overreaching scaphocerite with 1/3 to 1/4 of merus; merus 0.71 to 0.73 x carpus length, 0.56 to 0.66 x palm length; carpus 3.45 to 3.57 x as long as wide and 0.79 to 0.91 x palm length; palm subcylindrical, 3.34 to 3.81 x as long as wide, and 2.95 to 3.28 x as long as high; fingers strongly gaping when closed, 0.72 to 0.77 x palm length, prominent tooth on midcutting edge of mobile finger, followed by 3 small teeth to its base; cutting edge of fixed finger with a prominent tooth just behind of prominent tooth of mobile finger, followed by 3 small teeth to its base.

Size. The largest male TL 52.6 mm, CL 14.5 mm; the largest female TL 40.5 mm, CL 11.4 mm; 27 ovigerous females were examined: TL 26.6 to 37.0 mm, CL 6.9 to 10.5 mm, with large and few number of eggs.

Remarks

These are the first records of *Macrobrachium cortezi* for Colombia. This species is most similar to *M. nattereri* (Heller, 1862). The two can be distinguished by differences in the carapace and the size of the adult males. The anterolateral surface of the carapace in *M. cortezi* is smooth; whereas it is covered by spinules in

M. nattereri. The total length of the adult males in *M. cortezi* is shorter than 52.6 mm, whereas it reaches 70 mm in *M. nattereri*.

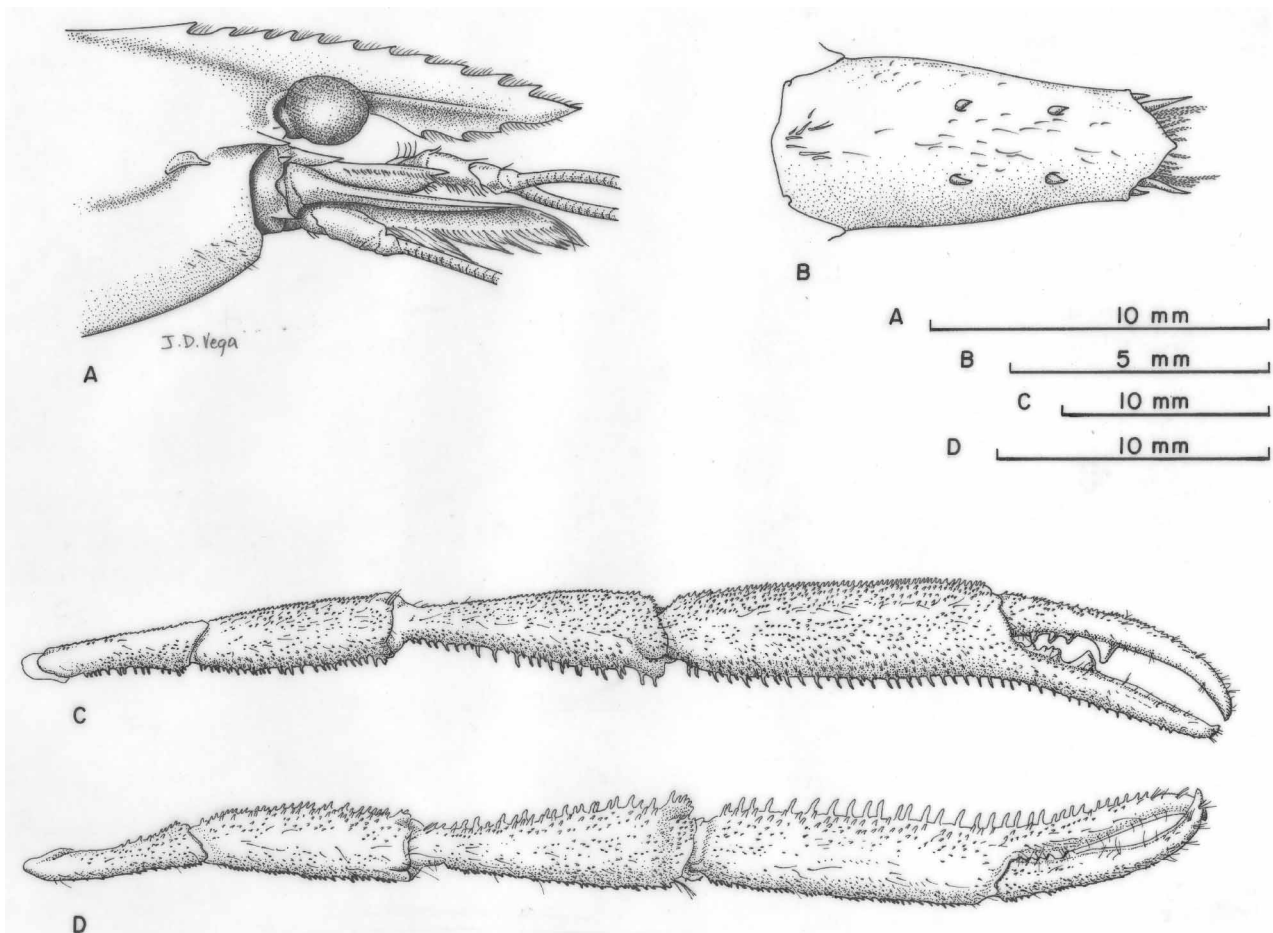


FIGURE 6. *Macrobrachium cortezi* Rodríguez, 1982, male, ICN-MHN-CR 1691: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, large second pereopod, lateral view; **D**, small second pereopod, lateral view.

***Macrobrachium crenulatum* Holthuis, 1950**

Fig. 7 A–D

Macrobrachium crenulatum Holthuis, 1950: 95.

Macrobrachium crenulatum, Holthuis, 1952: 107.— Chace & Hobbs, 1969: 99.— Chace, 1972: 20.— Martínez, 1973: 11.— Escobar, 1979: 120.— Rodríguez, 1980: 123.— Abele & Kim, 1989: 8.

Macrobrachium carcinus, Galvis, 1986: 447.

Macrobrachium olfersi, Galvis, 1986: 448.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Bolívar: Between **Matute - Turbaco**, 6 May 1972, leg. L. E. Martínez, 1 female, INCODER, Cartagena.

Chocó: **Acandí**, Monomacho stream, 15 m asl, 22 Aug 1995, leg. S. Usma, 2 males, ICN-MHN-CR 1595.— Sapzurro, 50 m asl, 6 Aug 2004, leg. F. Jiménez, 1 male, ICN-MHN-CR 2184.

La Guajira: **Riohacha**, Negro River, 50 m asl, 27 Aug 1972, leg. P. Cala, 2 males, 1 female, ICN-MHN-CR 0044.— Km 3 south Riohacha, 50 m asl, 27 Aug 1972, leg. P. Cala, 2 males, ICN-MHN-CR 2117.

Magdalena: **Santa Marta**, Parque Nacional Natural Tayrona, Los Cedros, 5 - 6 Jul 1983, leg. G. Galvis, 2 males, ICN-MHN-CR 0532, 2118.— Parque Nacional Natural Tayrona, Piedras River, 1999, 1 male, Universidad de los Andes.

Diagnosis

Rostrum straight, apex nearly curved downward, shorter than scaphocerite, as long as antennular peduncle, upper margin with 11 to 14 teeth regularly spaced, including 4-5 teeth completely post orbital, lower margin 2 to 4 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 1/2 of carpus. Second pair of pereopods prominent, different in shape and size, covered with conspicuous spines; the larger second pereopod overreaching scaphocerite with ca. 1/3 of merus; merus 1.03 to 1.19 x carpus length, 0.86 to 1.0 x palm length; carpus 1.61 to 2.14 x as long as wide, and 0.72 to 0.89 x palm length; palm prominent with rows of spines, and slightly pubescent on external surface, ventral margin with row of spines, which decreasing in size to base of finger, 2.06 to 2.38 x as long as wide, 1.30 to 1.47 x as long as high; fingers strongly gaping when closed, cutting edges thickly pubescent, 0.98 to 1.21 x palm length, a prominent tooth on 1/4 of proximal portion of each cutting edge, followed by 2 to 3 small teeth on its base.

Size. The largest male TL 81.0 mm, CL 26.5 mm; the largest female TL 48.8 mm, CL 13.8 mm; non ovigerous females were examined. According to Holthuis (1952) the eggs of this species are small and numerous.

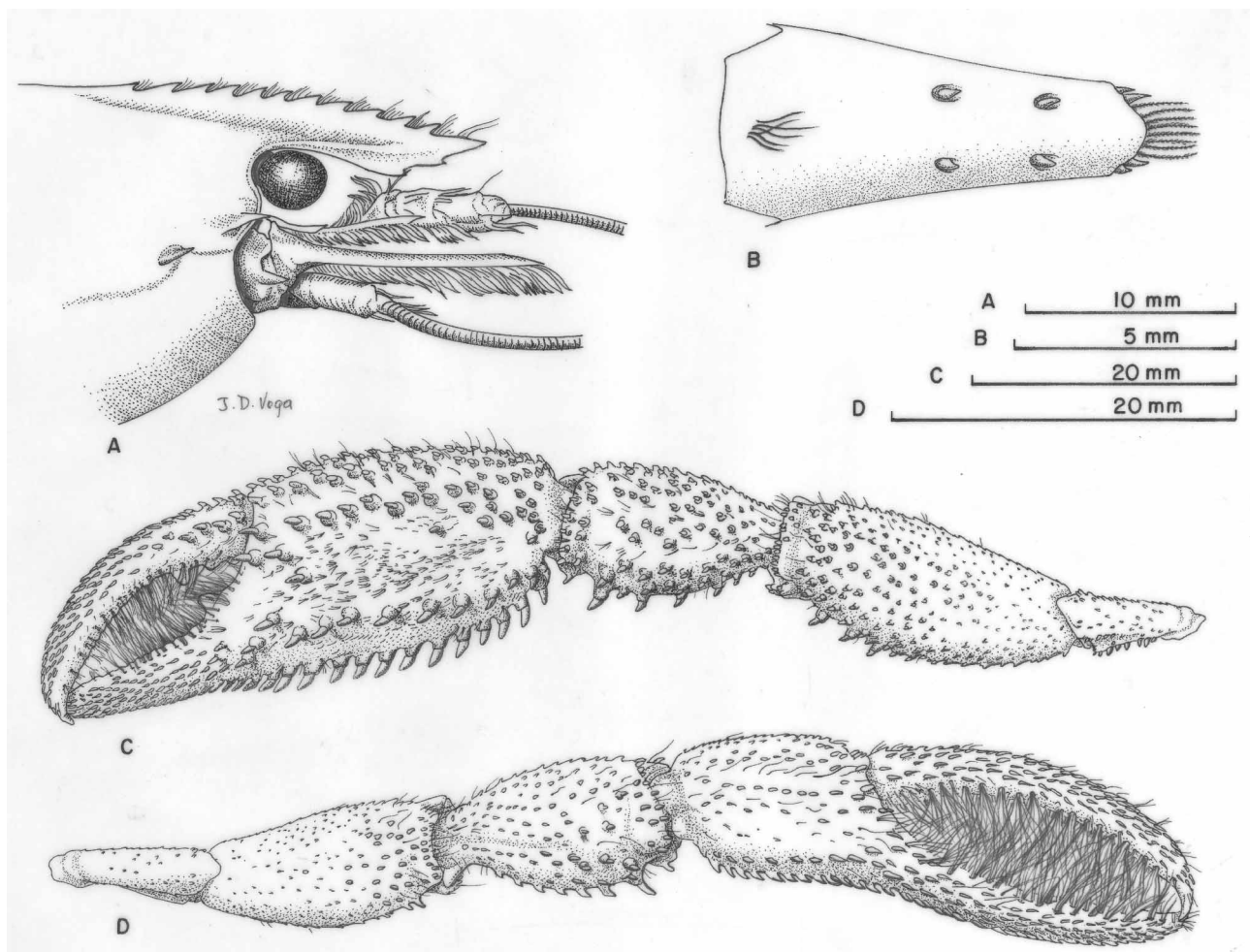


FIGURE 7. *Macrobrachium crenulatum* Holthuis, 1950, male, ICN-MHN-CR 0532: **A**, anterior part of body, lateral view; **C**, large second pereopod, lateral view; **D**, small second pereopod, lateral view. Male, ICN-MHN-CR 1595: **B**, telson, dorsal view;

Remarks

This species is most similar to *Macrobrachium hancocki* Holthuis, 1950. The two can be distinguished by differences in the second pair of pereopods in adult males. The external surface of the palm of the large chela of the second pair of pereopods in *M. hancocki* has a clearly differentiated pubescent rectangular space, devoid of spinulation, which is not present in *M. crenulatum*. One male of *Macrobrachium carcinus* (Linnée, 1758) (ICN-MHN-CR 0535), and one male of *M. olfersii* (Wiegmann, 1836) (ICN-MHN-CR 0532) from Santa Marta, Parque Nacional Natural Tayrona, Los Cedros, department of Magdalena, reported by Galvis (1986) are actually *M. crenulatum* (ICN-MHN-CR 2118, 0532).

Macrobrachium digueti (Bouvier, 1895)

Fig. 8 A–C

Palaemon digueti Bouvier, 1895: 159.

Macrobrachium digueti, Holthuis, 1952: 103.— Rodríguez, 1981: 47.— Prahel *et al.*, 1984: 52.— Abele & Kim, 1989: 9.— Wicksten, 1989: 13.

Macrobrachium digueti, Méndez, 1981: 73.

(For detailed synonymy refer to Holthuis, 1952).

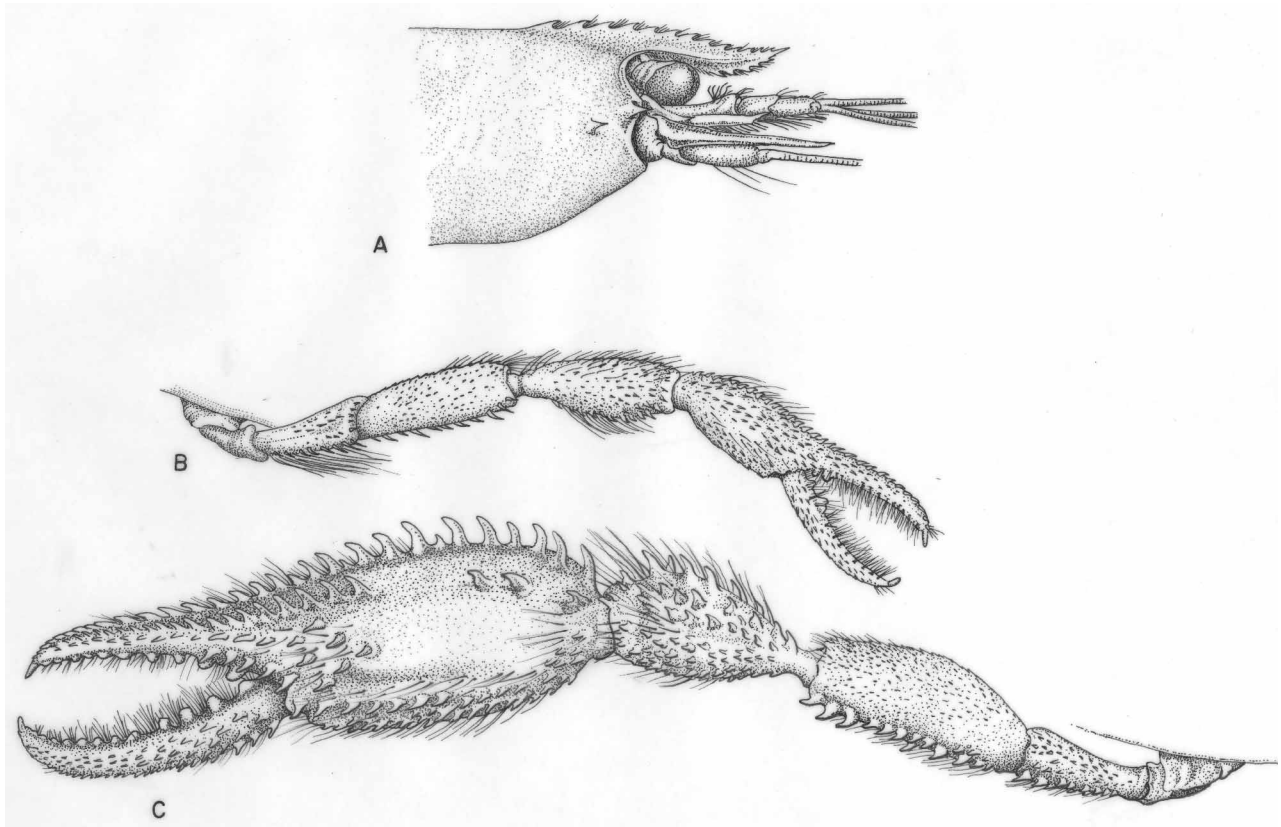


FIGURE 8. *Macrobrachium digueti* (Bouvier, 1895), male: **A**, anterior part of body, lateral view; **B**, small second pereopod, lateral view; **C**, large second pereopod, lateral view. Modified from Holthuis (1952).

Diagnosis

Rostrum rather shallow, almost reaching end of antennular peduncle, upper margin with 13 to 18 teeth regularly spaced, including 4-7 teeth completely post orbital, lower margin 2 to 4 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 scaphocerite with distal portion of merus; merus as long as or slightly shorter than carpus; carpus more than 2 x 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 x as long as high; fingers strongly gaping when closed, cutting edges thickly pubescent, as long as palm, a prominent tooth on proximal portion of each cutting edge, followed by 1 to 2 small teeth to base of finger, and 9 to 12 placed up to tips. The females present small and numerous eggs. The diagnosis is based on (Holthuis, 1952).

Remarks

The species *Macrobrachium digueti* was reported from the Calima River, department of Valle del Cauca, and the specimens were deposited at the CRBMUV by Prah *et al.* (1984). In a recent examination of Prah *et al.*'s material at the CRBMUV the specimens could not be found. Unfortunately, there are no additional specimens in other collections. The illustrations are taken from Holthuis (1952).

***Macrobrachium faustinum* (De Saussure, 1857)**

Fig. 9 A–D

Palaemon faustinus De Saussure, 1857: 505.

Macrobrachium faustinum, Holthuis, 1952: 88.— Chace & Hobbs, 1969: 102.— Chace, 1972: 20.— Martínez, 1973: 9.— Escobar, 1979: 116.— Pereira, 1991: 80.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Archipielago de San Andres y Providencia: Providencia Island, Pueblo Viejo stream, 4 Dec 1980, 3 males, 5 females, 2 ovigerous, INV 1232.

Magdalena: **Santa Marta**. Mamatoco stream, 18 Mar 1976, 1 male, 3 females, 1 ovigerous, INV 974.— Mamatoco stream, 18 Mar 1976, leg. G. Manjarréz, 2 males, 1 female, INV 4876.

Diagnosis

Rostrum nearly straight, apex curved downward, shorter than scaphocerite, slightly shorter or as long as antennular peduncle, upper margin with 12 to 14 teeth regularly spaced, including 4-5 teeth completely post orbital, lower margin with 3 to 4 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 1/3 of carpus. Second pair of pereopods prominent, different in shape and size, covered with conspicuous spines and long setae; the larger second pereopod overreaching scaphocerite with 1/3 of merus; merus 0.79 to 0.85 x carpus length, 0.76 to 0.84 x palm length; carpus 3.02 to 3.64 x as long as wide, and 0.97 to 0.98 x palm length; palm prominent with ventral margin convex, external and internal surfaces with conspicuous setae, ventral margin with row of spines, which are larger proximal and distally, smaller on the midportion; palm 3.32 to 3.86 x as long as wide; fingers strongly gaping when closed, thickly pubescent on recess, 0.93 to 1.19 x palm length, 1 or 2 prominent teeth on each proximal portion of cutting edge, followed by distal denticles.

Size. The largest male TL 44.7 mm, CL 14.1 mm; the largest female TL 57.2 mm, CL 17.4 mm; 3 ovigerous females were examined: TL 44.4 to 48.8 mm, CL 12.3 to 14.2 mm, with small and numerous eggs.

Remarks

This species is most similar to *Macrobrachium olfersii* (Wiegmann, 1836). The two can be distinguished

by differences in the second pair of pereopods in adult males. The proximal and distal spines of the ventral margin row of the palm are larger, whereas they are smaller on the midportion in *M. faustinum*, however, they are of diminishing size distally in *M. olfersii*; the spines and the pubescence on the external and internal surfaces of the palm, and the pubescence of the cutting edge of the fingers are less conspicuous in *M. faustinum* than in *M. olfersii*. The species *Macrobrachium faustinum* was reported from Arroyo Coquito, Parque Natural, Nacional Tayrona, and Córdoba River, department of Magdalena, and the specimens were deposited at INCODER by Martínez (1973). In a recent examination of Martínez's material at INCODER, the specimens could not be found.

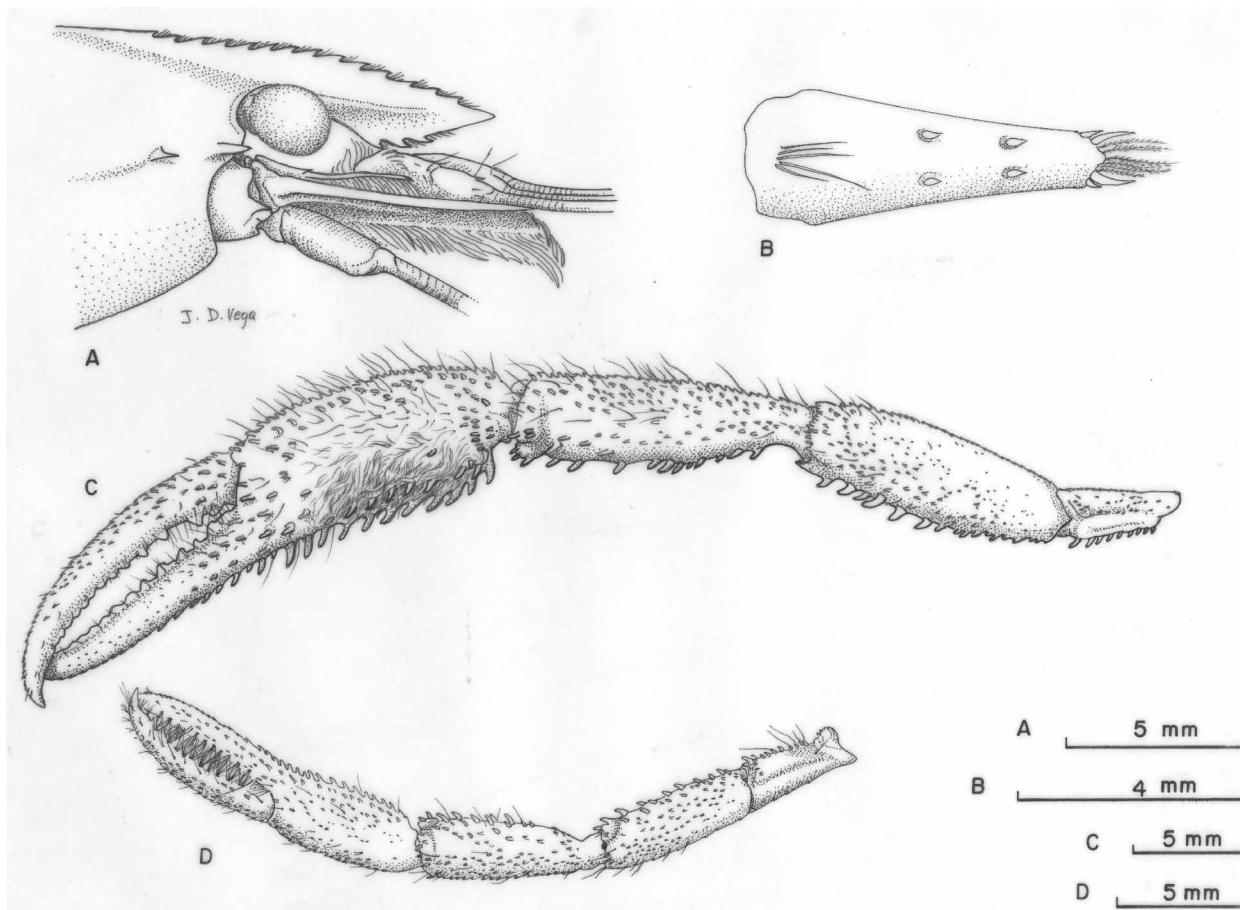


FIGURE 9. *Macrobrachium faustinum* (De Saussure, 1857), male, INV 1232: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, large second pereopod, lateral view; **D**, small second pereopod, lateral view.

***Macrobrachium ferreirai* Kensley & Walker, 1982**

Fig. 10 A–C

Macrobrachium ferreirai Kensley & Walker, 1982: 4.

Macrobrachium ferreirai, Magalhães & Walker, 1988: 288.— Melo, 2003: 352.

Material examined.

Amazonas: **Leticia**. Corregimiento La Pedrera, Angostura 120 - 130 m asl, 11 - 12 Nov 1994, leg. M. R. Campos, 31 males, 31 females, 5 ovigerous, ICN-MHN-CR 1406, 1416.— Corregimiento La Pedrera, Yupatí Hill, Comeyafú Community, Guacaperiyá stream, 120 m asl, 7 Nov 1994, leg. M. R. Campos, 11 males, 7 females, 2 ovigerous, ICN-MHN-CR 1394.— Corregimiento La Pedrera, Yupatí Hill, Quebradón del Tío

Ramón, 180 m asl, 11 Nov 1994, leg. M. R. Campos, 13 males, 22 females, 5 juveniles, ICN-MHN-CR 1404.— Corregimiento La Pedrera, Chorro de Córdoba, Amerú stream, 120 m asl, 8 Nov 1994, leg. M. R. Campos, 28 males, 32 females, 6 ovigerous, ICN-MHN-CR 1397.— Corregimiento La Pedrera, La Tonina stream, 120 m asl, 6 Nov 1994, leg. M. R. Campos, 4 males, 1 ovigerous female, ICN-MHN-CR 2190.— Corregimiento La Pedrera, Makuna Community, Centro Providencia, 180 m asl, 14 Nov 1994, leg. M. R. Campos, 44 males, 30 females, 4 ovigerous, ICN-MHN-CR 1421, 1424.— Corregimiento La Pedrera, Mirití River, El Puerto, 180 m asl, 16 Nov 1994, leg. M. R. Campos, 10 males, 12 females, 3 ovigerous, ICN-MHN-CR 1434.— Corregimiento La Pedrera, Mirití River, 1 km from Puerto Lago, 150 m asl, 19 Nov 1994, leg. M. R. Campos, 9 males, 13 females, 1 ovigerous, ICN-MHN-CR 1441.— Corregimiento La Pedrera, Mirití River, Puerto Lago, 170 m asl, 17 Nov 1994, leg. M. R. Campos 34 males, 34 females, 12 ovigerous, ICN-MHN-CR 1436.— Corregimiento La Pedrera, Mirití River, Puerto Lago, Yukuna Community, 160 - 170 m asl, 19 Nov 1994, leg. M. R. Campos, 28 males, 28 females, 2 ovigerous, ICN-MHN-CR 1440, 1442.— Corregimiento La Pedrera, Tamaritagua Community, 120 - 150 m asl, 10 - 12 Nov 1994, leg. M. R. Campos, 9 males, 5 females, 2 ovigerous, ICN-MHN-CR 1407, 2191, 2193.— Corregimiento La Pedrera, Tamaritagua Community, El Remanso stream, 120 m asl, 12 Nov 1994, leg. M. R. Campos, 20 males, 33 females, 8 ovigerous, ICN-MHN-CR 1414.— Corregimiento La Pedrera, Tamaritagua Community, La Tonina stream, 120 m asl, 12 Nov 1994, leg. M. R. Campos, 3 males, ICN-MHN-CR 2192. — Mirití-Paraná River, Dec 1980, leg. T. Walshbursen 17 males, 10 females, CRBMUV 80170.

Casanare: Without precise locality, 19 Feb 1974, leg. P. Cala, 1 male, ICN-MHN-CR 2189.

Vaupés: **Taraira**, Reserva Natural Caparú, 150 m asl, 23 Nov 1994, leg. M. R. Campos, 19 males, 24 females, 5 ovigerous, ICN-MHN-CR 1445, 1446.

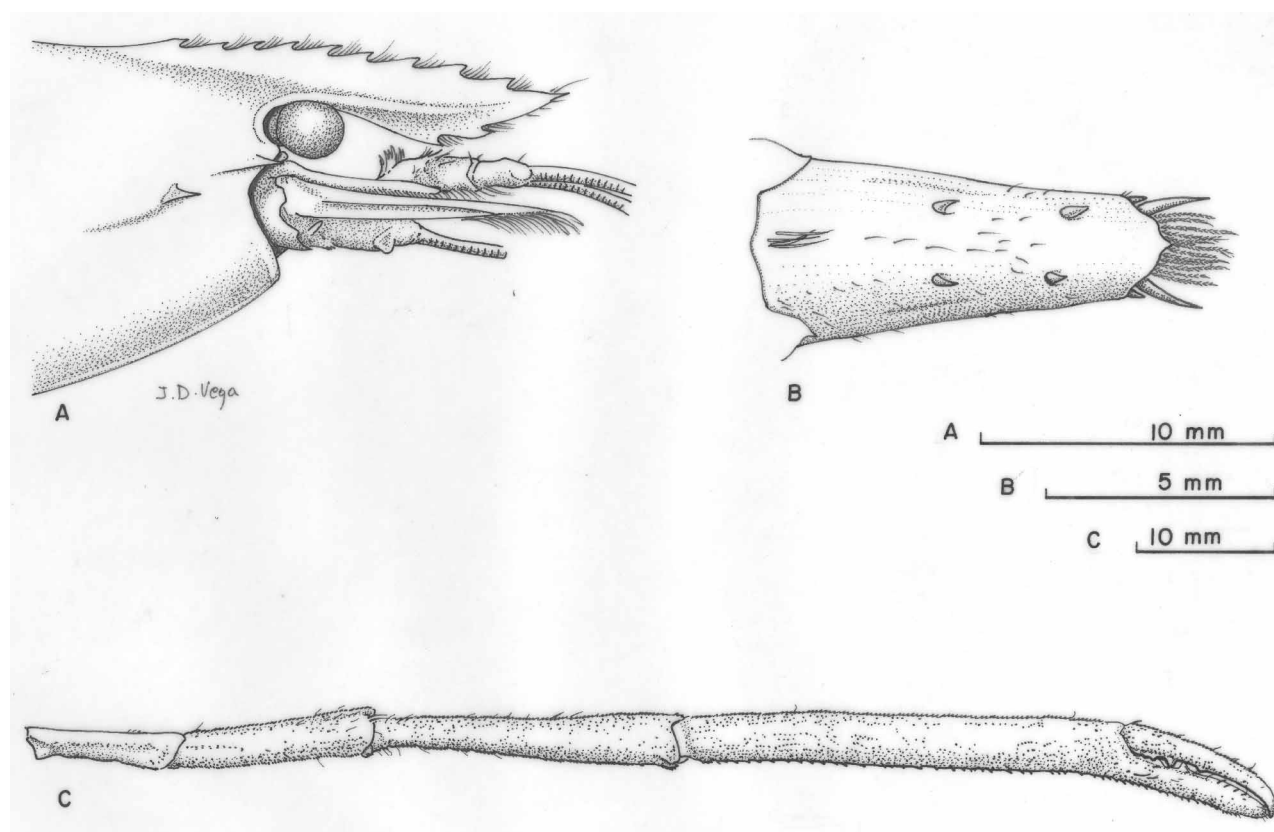


FIGURE 10. *Macrobrachium ferreirai* Kensley & Walker, 1982, male, ICN-MHN-CR 1436: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Diagnosis

Rostrum nearly straight, distal portion slightly curved downward, overreaching with distal portion scaphocerite, upper margin with 9 to 14 teeth regularly spaced, including 2-4 teeth completely post orbital, lower margin 1 to 4 teeth; carapace smooth; abdomen slightly pubescent; telson terminal margin ending with sharp midpoint, flanked by two pairs of spinules, internal pair overreaching midpoint and external pair. First pair of pereopods overreaching scaphocerite with 1/2 of carpus. Second pair of pereopods elongated, similar in shape and size, covered with spines, which are more conspicuous on ventral surface of palm and fingers, overreaching with 2/3 of merus scaphocerite; merus 0.62 to 0.64 x carpus length, 0.44 to 0.47 x palm length; carpus 5.81 to 7.48 x as long as wide, and 0.68 to 0.76 x palm length; palm cylindrical, 9.10 to 10.17 x as long as wide; fingers slightly gaping when closed, 0.40 to 0.43 x palm length, mobile finger on mid-proximal portion of cutting edge with 2 to 4 teeth, which diminishing in size to base of finger, fixed finger with a prominent tooth on proximal portion, followed by 3 denticles to its base.

Size. The largest male TL 62.9 mm, CL 19.2 mm; the largest female TL 45.4 mm, CL 12.7 mm; 51 ovigerous females were examined: TL 28.5 to 45.4 mm, CL 7.9 to 12.7 mm, with large and few number of eggs.

Remarks

These are the first records of *Macrobrachium ferreirai* for Colombia. This species is most similar to *Macrobrachium brasiliense* (Heller, 1862). The two can be distinguished by features of the carapace and the second pair of pereopods in adult males. The anterolateral portion of the carapace in *M. ferreirai* is smooth; whereas it is covered in spinules in *M. brasiliense*. The second pair of pereopods in *M. ferreirai* is more slender than in *M. brasiliense*, the palm in *M. brasiliense* is less or equal to 6.3 times as long as wide; in contrast in *M. ferreirai* it is more than 9.0 times as long as wide; the fingers in *M. brasiliense* are 0.45 times or more the palm length, whereas in *M. ferreirai* they are less than 0.45 times the palm length.

Macrobrachium hancocki Holthuis, 1950

Fig. 11 A–D

Macrobrachium hancocki Holthuis, 1950: 96.

Macrobrachium hancocki, Holthuis, 1952: 111.— Prahel et al., 1978: 55.— Méndez, 1981: 73.— Rodríguez, 1981: 47.—

Prahel et al., 1984: 51.— Wicksten, 1989: 12.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Chocó: **Bahía Solano**, 22 May 1995, leg. F. Montoya, 2 males, ICN-MHN-CR 1794.

Cauca: **Guapi**. Gorgona Island. 13 Feb 1983, leg. M. Alberico, 1 female, CRBMUV 83077.— Gorgona Island, 22 May 1986, leg. P. Cala, 5 males, ICN-MHN-CR 1810.— Gorgona Island, La Azufrada stream, 27 May 1978, leg. P. Cala, 3 males, 1 female, CRBMUV 78006.— Gorgona Island, in small creek at loading platform, 20 Jun 1979, 1 male, CRBMUV 79017.— Gorgona Island, in small creek, 6 Aug 1979, leg. H. Prahel, 1 male, CRBMUV 79033.— Gorgona Island, in south creek, 29 Mar 1980, 2 males, CRBMUV 80032.

Diagnosis

Rostrum straight, distal portion slightly curved downward, shorter than scaphocerite, as long as antennular peduncle, upper margin with 13 teeth regularly spaced, including 3-4 teeth completely post orbital, lower margin with 4 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 1/2 of carpus. Second pair of pereopods prominent, different in shape and

size, covered with conspicuous spines; the larger second pereopod overreaching scaphocerite with 1/3 to 1/2 of merus; merus 1.24 to 1.31 x carpus length, and 0.84 to 0.96 x palm length; carpus 1.74 to 1.80 x as long as wide, and 0.64 to 0.77 x palm length; palm prominent, 2.01 to 2.49 x as long as wide, and 1.36 to 1.55 x as long as high, with rows of spines on external surface, between them a rectangular space thickly pubescent, in addition, a row of spines on lower margin which are smaller on base of finger, internal surface thickly pubescent; fingers strongly gaping when closed, cutting edges thickly pubescent, 0.86 to 1.0 x palm length, prominent tooth on each midportion of proximal cutting edge, usually followed by 2 small teeth on its base.

Size. The largest male TL 60.2 mm, CL 20.9 mm; the largest female TL 50.9 mm, CL 14.5 mm. Oviparous females were not examined. According to Holthuis (1952) the females present numerous and small eggs.

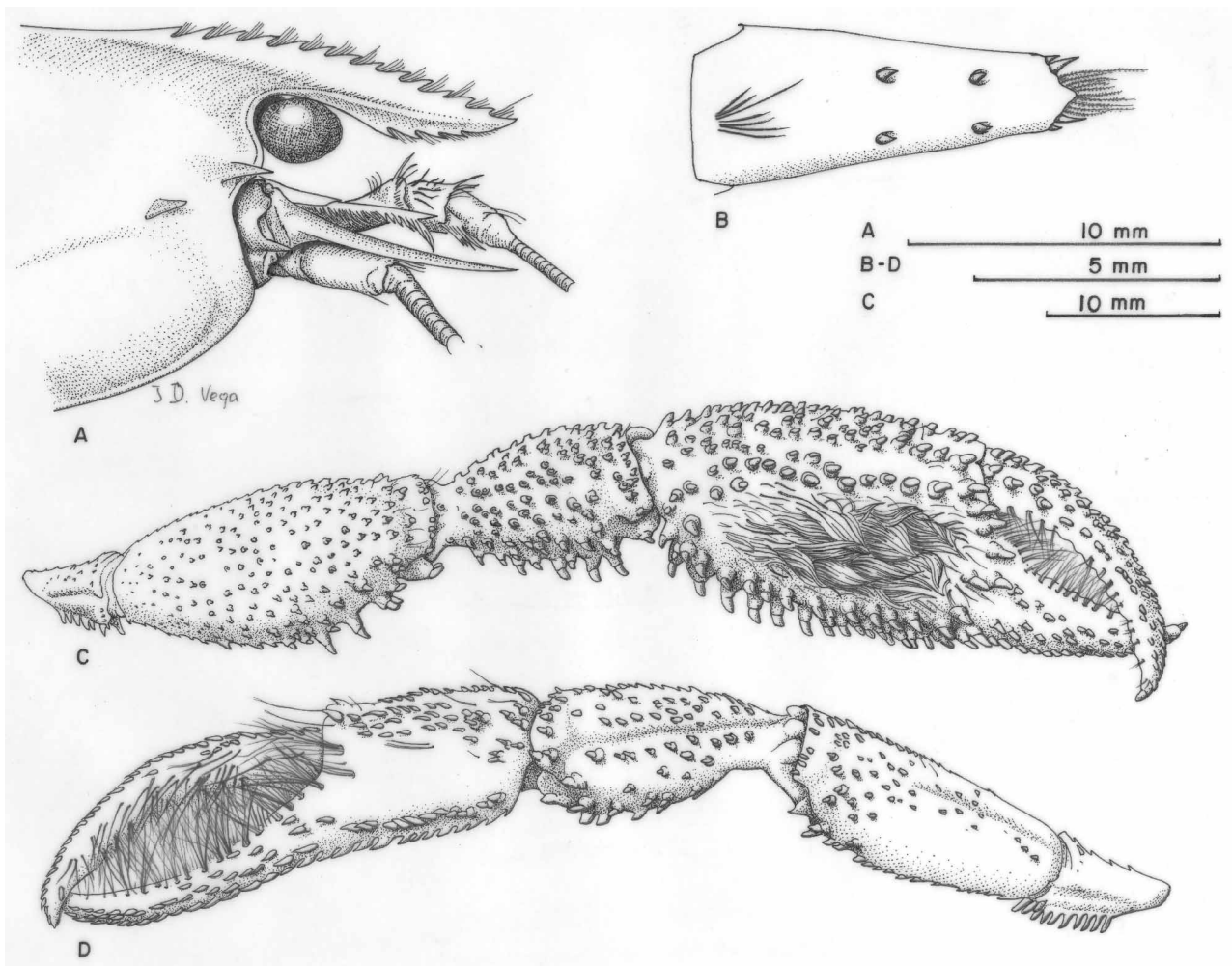


FIGURE 11. *Macrobrachium hancocki* Holthuis, 1950, male, ICN-MHN-CR 1810: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, large second pereopod, lateral view; **D**, small second pereopod, lateral view.

Remarks

This species is most similar to *Macrobrachium crenulatum* Holthuis, 1950. The two can be distinguished by differences in the second pair of pereopods in adult males. The external surface of the palm of the large chela of the second pair of pereopods in *M. hancocki* has a clearly differentiated pubescent rectangular space, without spinulation, whereas the palm lacks this rectangular space in *M. crenulatum*. The species *Macrobrachium hancocki* has been recorded from Calima River, department of Valle del Cauca, and specimens were deposited at CRBMUV by Prah *et al.* (1984). In a recent examination of Prah *et al.*'s material at the CRBMUV the specimens could not be found.

***Macrobrachium heterochirus* (Wiegmann, 1836)**

Fig. 12 A–C

Palaemon heterochirus Wiegmann, 1836: 149.

Macrobrachium heterochirus, Holthuis, 1952: 69.— Chace & Hobbs, 1969: 106.— Chace, 1972: 20.— Escobar, 1979: 110.— Rodríguez, 1980: 122.— Rodríguez, 1981: 47.— Abele & Kim, 1989: 10.— Melo, 2003: 354.

Macrobrachium carcinus, Galvis, 1986: 447.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Caldas: **La Dorada**. Corregimiento Guarinocito, 300 m asl, 19 Nov 1987, leg. S. Prada, 1 male, ICN-MHN-CR 0819.— Guarinó River, 170 m asl, 17 Dec 2002, leg. G. Galvis, 1 female, ICN-MHN-CR 2082.— **Samaná**, Corregimiento Norcasia, La Miel River, 560 m asl, 22 May 1992, leg. G. Galvis, 1 male, ICN-MHN-CR 1469.

Cundinamarca: **Puerto Salgar**, Negro River, 150 m asl, 14 Mar 1992, leg. P. Cala, 1 male, ICN-MHN-CR 2204.— **Yacopí**, Guaguaquí River, 360 m asl, 29 Sep 1997, leg. G. Galvis, 1 male, ICN-MHN-CR 1668.

Chocó: **Acandí**, Acandí River, 1 ovigerous female, 2 juveniles, INV 768.

La Guajira: **Riohacha**, south of Mingueo, 45 m asl, 27 Aug 1972, leg. J. Thomerson, 1 female, ICN-MHN-CR 2119.

Magdalena: **Santa Marta**, Parque Nacional Natural Tayrona, Los Cedros, 6 Jul 1983, leg. G. Galvis, 2 males, ICN-MHN-CR 0535.

Santander: **Simacota**. Suárez River, 2 Mar 1973, leg. J. Vega, 1 male, ICN-MHN-CR 0053.— Santa Rosa stream, affluent of Suárez River, 22 May 1981, leg. P. Cala, 2 males, ICN-MHN-CR 1742.

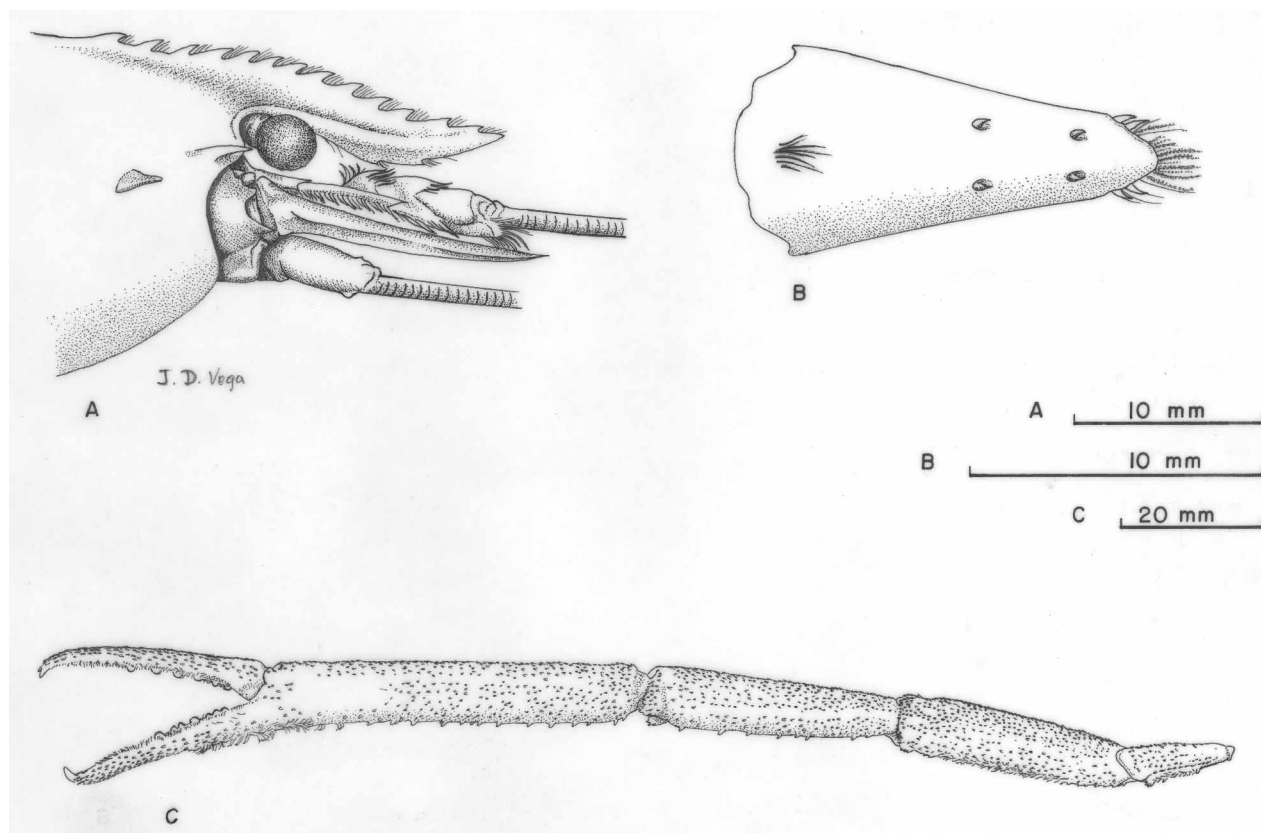


FIGURE 12. *Macrobrachium heterochirus* (Wiegmann, 1836), male, ICN-MHN-CR 1742: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Diagnosis

Rostrum sinuous, apex curved upward, shorter than scaphocerite, as long as or shorter than antennular peduncle, upper margin with 11 to 13 teeth, including 4-5 teeth completely post orbital, the 3 to 4 distal teeth straight and with more recess between them than rest of teeth, lower margin with 2 to 3 teeth; carapace smooth; abdomen smooth; telson terminal margin ending in midspine, flanked by two pairs of spinules, internal pair about same length as midpoint, external pair shorter than midpoint. First pair of pereopods overreaching scaphocerite with total length of carpus. Second pair of pereopods elongated, prominent, similar in shape and size, with conspicuous spines and thickly pubescence on ventral margin from ischium to merus, palm on distal portion, ventral and internal base of fixed finger; overreaching scaphocerite with 1/2 of merus, merus 0.81 to 0.85 x carpus length, 0.59 to 0.63 x palm length; carpus 3.13 to 4.23 x as long as wide, 0.72 to 0.75 x palm length; palm prominent, 4.76 to 6.28 x as long as wide, and 4.0 to 5.60 x as long as high; fingers 0.63 to 0.71 x palm length, cutting edges pubescent with series of small, similar size teeth from their base to midportion.

Size. The largest male TL 113.4 mm, CL 38.4 mm; the largest female TL 83.9 mm, CL 26.1 mm; 1 ovigerous female was examined: TL 58.4 mm, CL 17.8 mm, with small and large number of eggs.

Remarks

Two males identified as *Macrobrachium carcinus* (Linnée, 1758) from Santa Marta, Parque Nacional Natural Tayrona, Los Cedros, department of Magdalena (ICN-MHN-CR 0535) by Galvis (1986) are actually *M. heterochirus*.

***Macrobrachium nattereri* (Heller, 1862)**

Fig. 13 A–D

Palaemon nattereri Heller, 1862: 414.

Macrobrachium nattereri, Holthuis, 1952: 83.— Rodríguez, 1981: 45, 47.— Rodríguez, 1982: 386.— Kensley & Walker, 1982: 9.— Magalhães & Walker, 1988: 285.— Magalhães, 1989: 79.— Campos, 1997: 232.— Melo, 2003: 364.

(For detailed synonymy refer to Holthuis, 1952).

Material examined.

Amazonas: **Leticia**. Corregimiento La Pedrera, Angostura, 130 m asl, 12 Nov 1994, leg. M. R. Campos, 1 male, 1 ovigerous female, ICN-MHN-CR 1417.— Corregimiento La Pedrera, La Tonina stream, 120 m asl, 6 Nov 1994, leg. M. R. Campos, 1 male, ICN-MHN-CR 1391.— Corregimiento La Pedrera, Makuna Community, Centro Providencia, in stream, 180 m asl, 14 – 15 Nov 1994, leg. M. R. Campos, 15 males, 5 females, 2 ovigerous, ICN-MHN-CR 1423, 1428, 1432.— Corregimiento La Pedrera, Tamaritagua Community, in stream, 120 - 150 m asl, 10, 12 Nov 1994, leg. M. R. Campos, 4 males, 2 ovigerous females, ICN-MHN-CR 1402, 1419.— Corregimiento La Pedrera, Tamaritagua Community, La Tonina stream, 120 m asl, 12 Nov 1994, leg. M. R. Campos, 11 males, 2 females, 1 ovigerous, ICN-MHN-CR 1411.

Diagnosis.

Rostrum nearly straight, distal part slightly curved downward, as long as or slightly shorter than scaphocerite, upper margin with 9 to 13 teeth regularly spaced, including 3–4 teeth completely post orbital, lower margin 3 to 4 teeth; carapace covered with spinules on anterolateral surface, low extreme of abdominal pleurae with some spinules; telson terminal margin ending with sharp midpoint, flanked by two pairs of spinules, internal pair overreaching midpoint and external pair. First pair of pereopods overreaching scaphocerite with total length of carpus. Second pair of pereopods elongated, prominent, similar in shape, different in size, covered with spines, which are prominent on ventral and internal surfaces, the larger second pereopod overreach-

ing scaphocerite with total length of carpus or with distal portion of merus; merus 0.82 to 0.86 x carpus length, 0.55 to 0.63 x palm length; carpus 2.31 to 2.41 x as long as wide, 0.65 to 0.76 x palm length; palm protuberant laterally, 3.28 to 3.80 x as long as wide, 2.37 to 2.66 x longer than high with spines of different size on internal margin; fingers gaping when closed, 0.63 to 0.77 x palm length, a prominent tooth on midcutting edge of mobile finger, followed by 1 to 3 small teeth on its proximal portion; a prominent tooth on midcutting edge of fixed finger, followed by 2 to 3 small teeth on its base.

Size. The largest male TL 71.5 mm, CL 21.0 mm; the largest female TL 43.6 mm, CL 12.0 mm; 6 ovigerous females were examined: TL 33.4 to 41.2 mm, CL 9.4 to 11.0 mm, with large and few number of eggs.

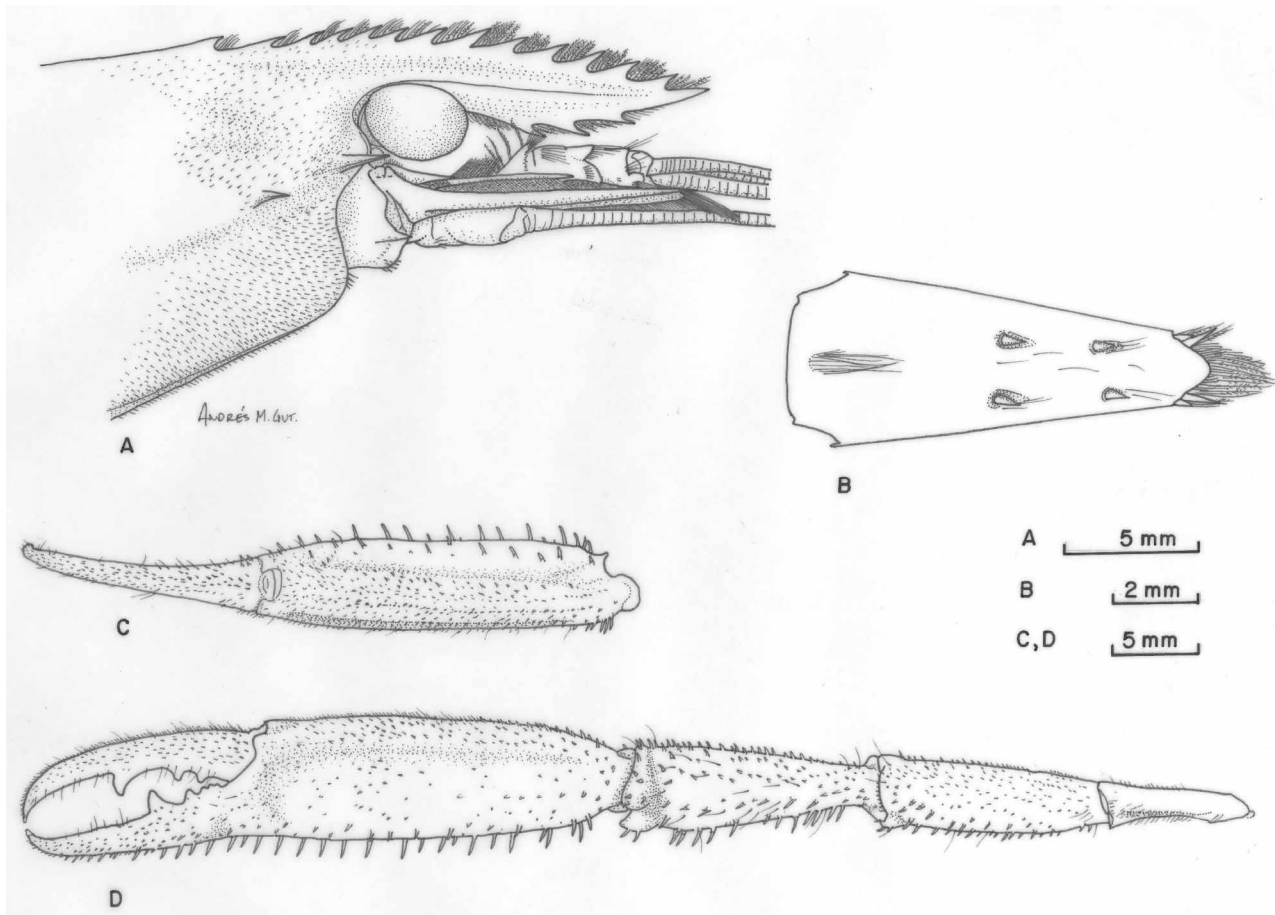


FIGURE 13. *Macrobrachium nattereri* (Heller, 1862) male, ICN-MHN-CR 1428: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, chela of second pereopod, dorsal view; **D**, second pereopod, lateral view.

Remarks

This species is most similar to *Macrobrachium brasiliense* (Heller, 1862). The two can be distinguished by differences in the second pair of pereopods in adult males. The palm in *M. brasiliense* is subcylindrical, more than 3 times longer than high, and shows spines of similar size on internal margin, whereas it is swollen laterally, less than 3 times longer than high and presents spines of different size on internal margin in *M. nattereri*; the fingers in *M. brasiliense* are usually less than 0.6 times the palm length, whereas it is more than 0.6 times in *M. nattereri*.

Macrobrachium nattereri is also similar to *M. cortezi* Rodríguez, 1982. The two can be distinguished by differences in the carapace and the size of the adult males. The anterolateral surface of the carapace in *M. cortezi* is smooth; whereas it is covered by spinules in *M. nattereri*. The total length of the adult males in *M. nattereri* reaches 70 mm, whereas it is shorter than 52.6 mm in *M. cortezi*.

Escobar (1979) recorded *Macrobrachium nattereri* from NE of the Sierra Nevada de Santa Marta, from the Manzanares, Piedras, Mendiguaca and Machaca Rivers. However, this species is known from the Orinoco and Amazon basins, corresponding to continental rivers. A characteristic of *M. nattereri* is its low fecundity and abbreviate larval development, which corresponds exclusively to continental species (Magalhães & Walker, 1988, Magalhães, 1989). Thus, it appears that the Escobar's localities may have been misreported.

***Macrobrachium olfersii* (Wiegmann, 1836)**

Fig. 14 A–D

Palaemon olfersii Wiegmann, 1836: 150.

Macrobrachium olfersii, Escobar, 1979: 118.— Williams, 1984: 70.— Abele & Kim, 1989: 10.— Nizinski, 2003: 103.

Macrobrachium olfersii, Holthuis, 1952: 95.— Martínez, 1973: 7.— Rodríguez, 1980: 120.— Rodríguez, 1981: 45, 47.— Melo, 2003: 366.

(For detailed synonymy refer to Holthuis, 1952).

Material examined.

Magdalena: **Santa Marta.** Buritaca, 20 m asl, 17 Nov 1998, leg. R. Casallas & A. J. Bernal, 9 males, 2 females 1 ovigerous, 1 juvenile, MLS 18.— SW, Guachaca River, 10 - 30 m asl, Dec 1993, leg. R. Contreras, 1 male, 10 juveniles, CRBMUV 93005. — Parque Nacional Natural Tayrona, Gayraca stream, 1 male, INV 771.— Parque Nacional Natural Tayrona, Nenguange, 2 males, 1 ovigerous female, INV 773, 979.— Mamatoco stream, 18 Feb 1976, 3 males, 10 females, 5 ovigerous, INV 772.— Mamatoco stream, 18 Mar 1976, leg. G. Manjarréz, 5 males, 1 ovigerous female, INV 975.

La Guajira: **Riohacha.** Ranchería River, 40 m asl, 7 Oct 2004, Leg. C. Castellanos, 5 males, 3 ovigerous females, ICN-MHN-CR 2209.

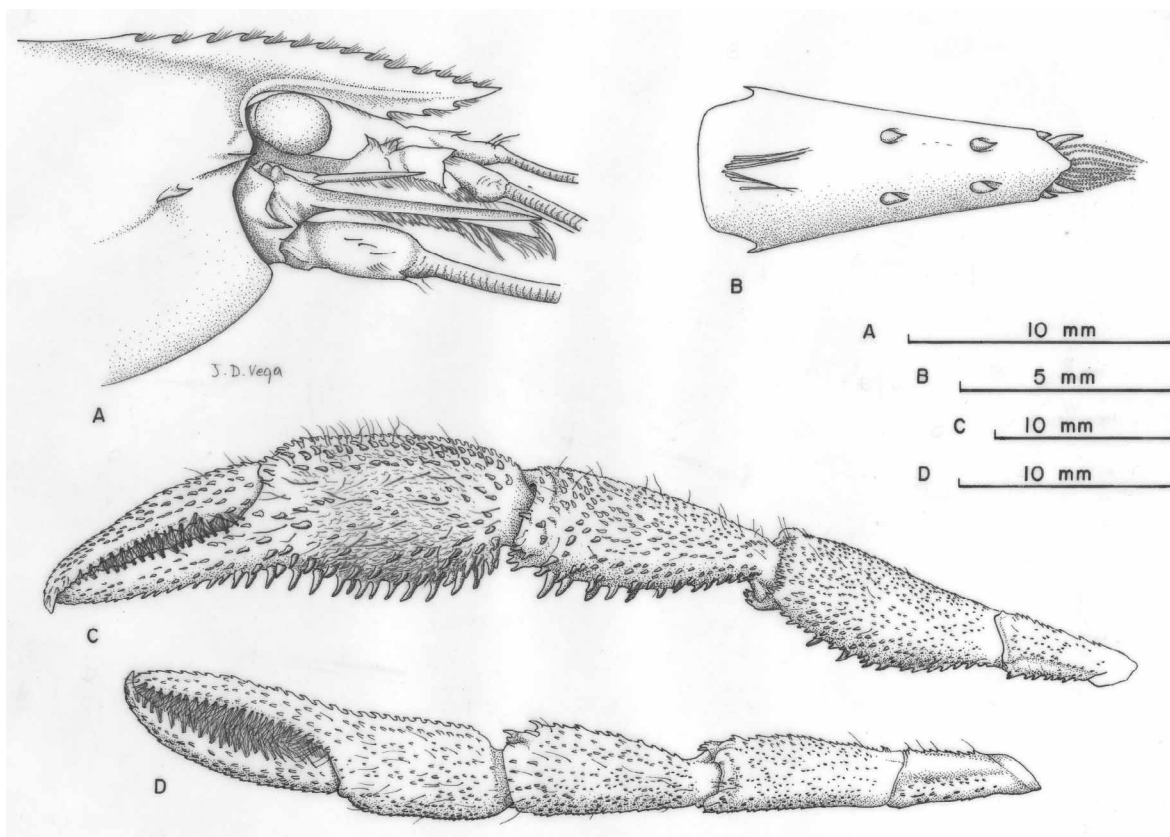


FIGURE 14. *Macrobrachium olfersii* (Wiegmann, 1836), male, INV 975: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, large second pereopod, lateral view; **D**, small second pereopod, lateral view.

Diagnosis

Rostrum nearly straight, distal part slightly recurved downward, shorter than scaphocerite, as long as antennular peduncle; upper margin with 11 to 14 teeth regularly spaced, including 4-5 teeth completely post orbital, lower margin with 2 to 4 teeth; carapace smooth; abdomen smooth; telson terminal margin ending in sharp midpoint, flanked by two pairs of spinules, inner pair overreaching midpoint and external pair. First pair of pereopods overreaching scaphocerite with distal portion of carpus. Second pair of pereopods prominent, different in shape and size, covered with conspicuous spines and long setae, the larger second pereopod overreaching scaphocerite with ca. 1/4 of merus; merus 0.94 to 0.95 x carpus length, and 0.72 to 0.95 x palm length; carpus 2.45 to 2.57 x as long as wide, and 0.76 to 1.0 x palm length; palm prominent with ventral margin convex, external and internal surfaces with rows of spines and conspicuous setae, ventral margin with row of spines which are decreasing in size distally, 2.61 to 3.15 x as long as wide; fingers gaping when closed, thickly pubescent in recess, 0.91 to 1.04 x palm length, cutting edge of each finger with a tooth on midproximal portion, followed by denticles to its distal portion.

Size. The largest male TL 88.9 mm, CL 29.4 mm; the largest female TL 62.3 mm, CL 17.6 mm; 11 ovigerous females were examined: TL 36.7 to 50.0 mm, CL 9.6 to 14.9 mm, with small and numerous eggs.

Remarks

This species is closely related to *Macrobrachium faustum* (De Saussure, 1857). The two can be distinguished by differences in the second pair of pereopods in adult males. The spines of the ventral margin's row of the palm in *M. faustum* are larger proximal and distally but smaller on the midportion; to the contrary, they diminish in size distally in *M. olfersii*. In addition, the spines and pubescence on the external and internal surface of the palm and on the cutting edge of the fingers are more conspicuous in *M. olfersii* than in *M. faustum*. Some specimens of *Macrobrachium olfersii* were found at INCODER collection: 4 males, the largest male was LT 72.0 mm, CL 24.4 mm. These specimens were not recorded in this article because they lack location data. They may correspond to specimens reported by Martínez (1973) and deposited at INCODER. The male of *Macrobrachium olfersii*, from Santa Marta, Parque Nacional Natural Tayrona, Los Cedros, department of Magdalena (ICN-MHN-CR 0532), reported by Galvis (1986) are actually *M. crenulatum*.

Macrobrachium panamense Rathbun, 1912

Fig. 15 A–C

Macrobrachium acanthurus panamense Rathbun, 1912: 1.

Macrobrachium panamense, Holthuis, 1952: 23.— Prael et al., 1978: 50.— Méndez, 1981: 73.— Rodríguez, 1981: 47.— Abele & Kim, 1989: 11.— Wicksten, 1989: 13.

Macrobrachium panamensis, Prael et al., 1984: 49.

(For detailed synonymy refer to Holthuis, 1952).

Material examined

Cauca: **Guapi**, Temuey, Guapi River, 50 m asl, 24 Oct 2004, leg. D. M. Valencia & M. R. Campos, 3 males, 12 females, 4 ovigerous, ICN-MHN-CR 2187.

Chocó: **Bajo Baudó**, Ensenada Catripe, 22 May 2005, leg. C. Rincón, 2 ovigerous females, ICN-MHN-CR 2263.— **Palestina**, Calima - San Juan Rivers, 20 m asl, 18 Mar 1990, leg. G. Galvis, 2 females, 25 juveniles, ICN-MHN-CR 1196.

Valle del Cauca: **Buenaventura**. Veneno creek, 13 Nov 1981, 2 males, 5 females, 3 ovigerous, CRBMUV 81085.— Bahía Málaga, 10 Mar 1980, 2 males, 2 females, CRBMUV 80003.— Buenaventura Bay, Pianguüita, 16 Apr 2004, leg. R. Neira 1 male, 6 females, 16 juveniles, CRBMUV 004001.— Dagua River mouth, 0.60 m deep, 4 Jun 1983, 1 male, 4 females, 1 ovigerous, CRBMUV 83038.

Diagnosis

Rostrum sinuous, straight on orbit region, distal portion directed upward, overreaching scaphocerite, upper margin with 10 to 12 teeth, including 2 teeth completely post orbital, proximal teeth with less recess between them than distal ones, lower margin 6 to 9 teeth; carapace smooth; abdomen smooth; telson terminal margin ending in sharp midpoint, flanked by two pairs of spinules, internal pair overreaching external pair, and overreaching or not the midpoint of telson. First pair of pereopods overreaching scaphocerite with chelae. Second pair of pereopods elongated, slender, similar in shape and size, with longitudinal rows of spinules, overreaching scaphocerite with 1/2 of carpus; merus 0.61 to 0.74 x carpus length, and 1.09 to 1.36 x palm length; carpus 0.72 to 1.18 x chela length; fingers not gaping when closed, slightly pubescent, 0.85 to 1.08 x palm length, a tooth on proximal portion in each cutting edge of fingers.

Size. The largest male TL 86.3 mm, CL 19.8 mm; the largest female TL 88.5 mm, CL 19.3 mm; 10 ovigerous females were examined: TL 57.5 to 97.8 mm, CL 13.8 to 21.3 mm, with small and numerous eggs.

Remarks

This species is most similar to *Macrobrachium amazonicum* (Heller, 1862). The two can be distinguished by differences in the rostrum. The rostrum in *M. amazonicum* is lower and strongly convex on the orbital region; in contrast, it is high and slightly convex on the orbital region in *M. panamense*.

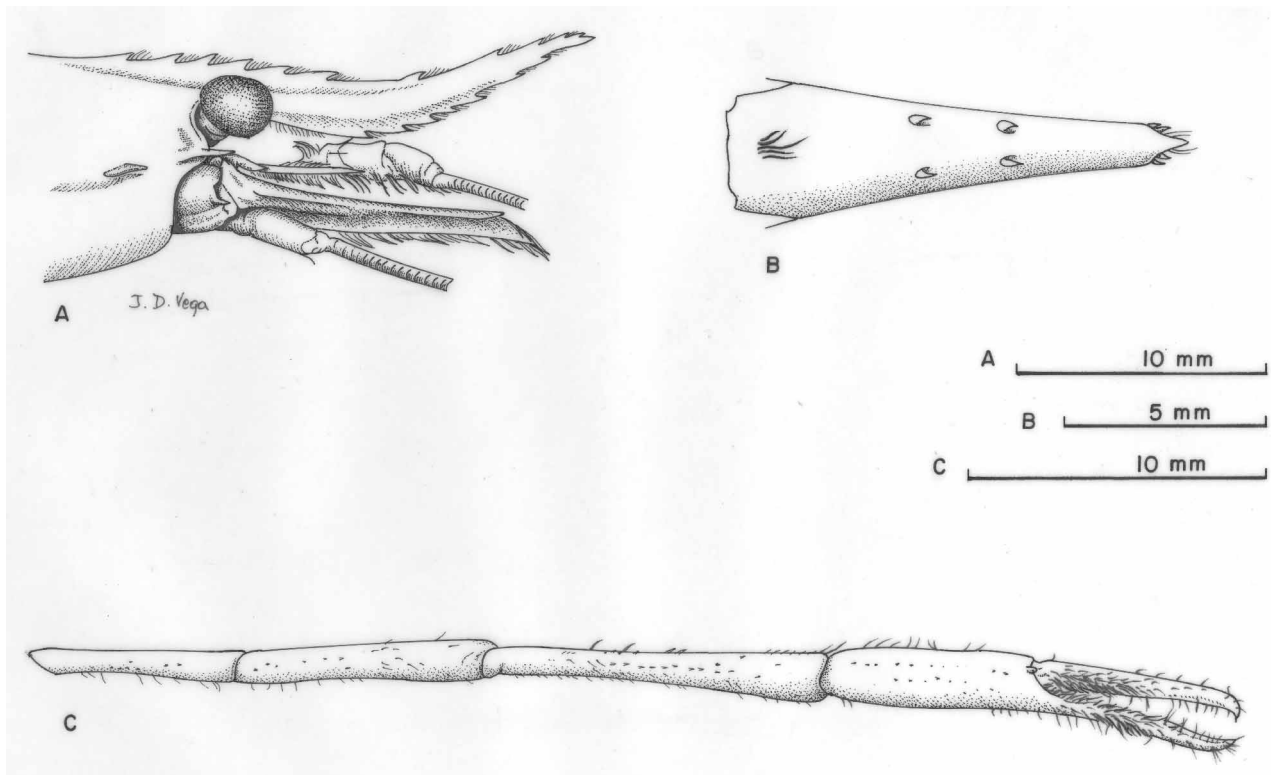


FIGURE 15. *Macrobrachium panamense* Rathbun, 1912, male, CRBMUV 81085: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Macrobrachium praecox (Roux, 1928)

Fig. 16 A–C

Palaemon (*Eupalaemon*) *praecox* Roux, 1928: 43.

Macrobrachium praecox, Holthuis, 1952: 39.— Rodríguez, 1980: 118.— Rodríguez, 1981: 47.

Material examined

Norte de Santander: **Cúcuta**. 1955, leg. Nicéforo María, 9 males, 5 females, MLS 8.— Cúcuta, 300 m asl, 17 Apr 1991, leg. S. Blanco, 5 males, 5 females, 3 ovigerous, 1 juvenile, ICN-MHN-CR 1472.— Camilo Daza Airport, 200 m asl, 18 Apr 1991, leg. S. Blanco, 3 males, 7 females, ICN-MHN-CR 1473.— Pamplonita River, 22 Mar 1985, leg. J. A. Selma, 1 female, 3 juveniles, ICN-MHN-CR 0609.

Diagnosis

Rostrum nearly straight, distal part slightly recurved, shorter than scaphocerite, as long as antennular peduncle, upper margin with 7 to 9 teeth regularly spaced, including 1-2 teeth completely post orbital, lower margin 2 to 3 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 1/4 of carpus. Second pair of pereopods elongated and slender, similar in shape and size, usually overreaching scaphocerite with total length of carpus, but in some cases, only with part; merus 0.86 x carpus length, and 1.12 x palm length; carpus 1.3 x palm length, shorter than chela; palm cylindrical; fingers thickly pubescent, not gaping when closed, 0.85 x palm length, a tooth on proximal portion in each cutting edge of fingers, followed by series of denticles to base of finger.

Size. The largest male TL 54.5 mm, CL 14.7 mm; the largest female TL 55.7 mm, CL 13.6 mm; 3 ovigerous females were examined: TL 45.5 to 55.7 mm, CL 11.4 to 13.6 mm, with small and numerous eggs.

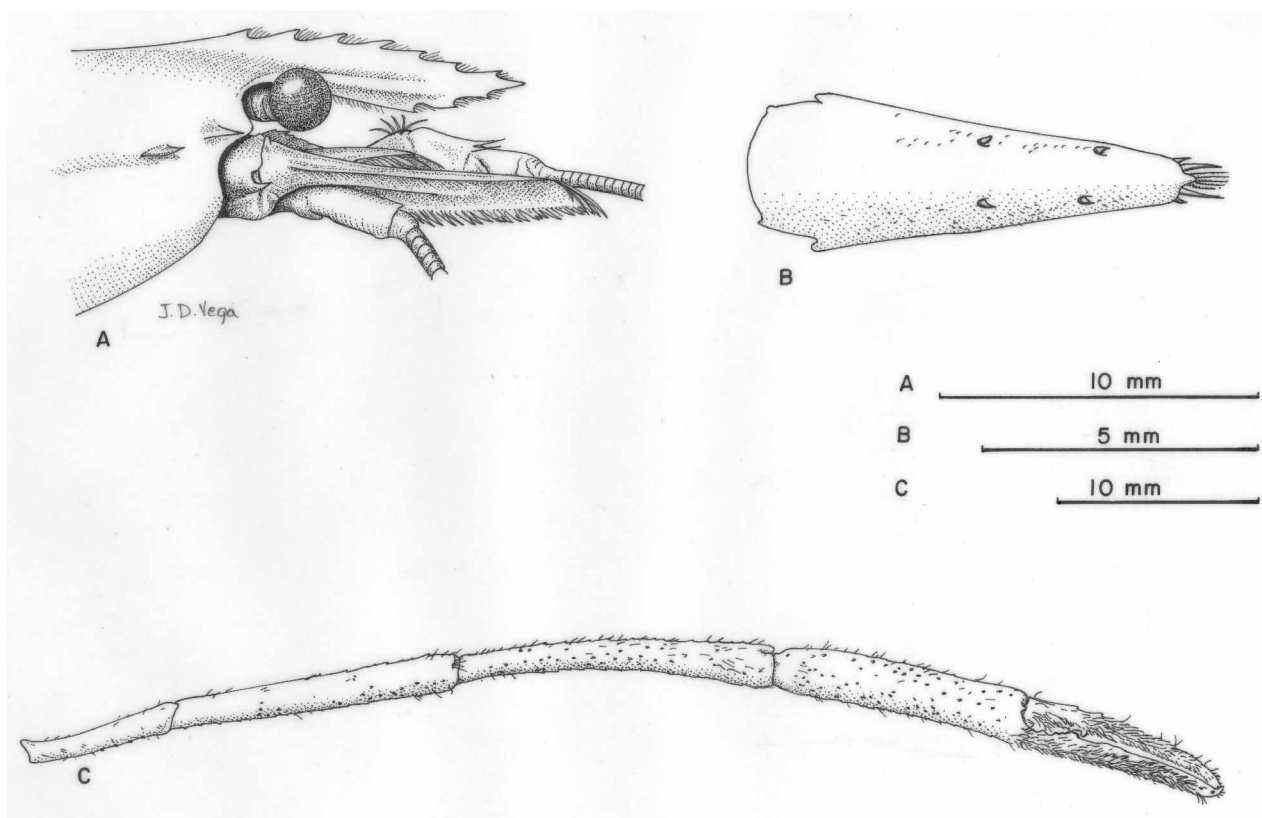


FIGURE 16. *Macrobrachium praecox* (Roux, 1928), male, ICN-MHN-CR 1472: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Remarks

This species differs from others within the genus in the shape and length of the rostrum and the segment proportions of the second pair of pereopods. Nevertheless, in juvenile specimens these characters show great variation, thus, they can be confused with juveniles of *Macrobrachium acanthurus* (Wiegmann, 1836).

***Macrobrachium rathbunae* Holthuis, 1950**

Fig. 17 A–C

Macrobrachium rathbunae Holthuis, 1950: 94.

Macrobrachium rathbunae, Holthuis, 1952: 42.— Rodríguez, 1981: 47.— Abele & Kim, 1989.— Wicksten, 1989: 13.

Macrobrachium tenellum, Prael *et al.*, 1984: 48.

Material examined.

Cauca: **Guapi**. Gorgona Island, 20 May 1986, leg. P. Cala, 1 male, ICN-MHN-CR 1809.

Chocó: **Condoto**, Vereda El Aguacate, La Vaca stream, affluent of San Juan River, N 5° 5' 28.6", W 76° 37' 33.5", 77 m asl, 20 Mar 2006, leg. M. R. Campos, 1 male, ICN-MHN-CR 2254.— **Istmina**. San Juan River, 250 m asl, 10 Mar 1994, leg. G. Galvis, 3 males, 1 female, ICN-MHN-CR 1199, 2120.— Vereda San Antonio, La Isidra stream, affluent of San Juan River, N 5° 7' 57.8", W 76° 42' 3.8", 56 m asl, 16 Mar 2006, leg. M. R. Campos, 1 male, ICN-MHN-CR 2245.— Vereda San Antonio, Los Pachos stream, affluent of San Juan River, N 5° 8' 16.8", W 76° 41' 42.4", 63 m asl, 16 Mar 2006, leg. M. R. Campos, 15 males, 4 ovigerous females, ICN-MHN-CR 2246, 2258.— Entre **Istmina y Tadó**, río Profundó, afluente del río San Juan, 200 m asl, 5 Mar 1994, leg. G. Galvis, 3 males, 2 females, 1 ovigerous, ICN-MHN-CR 1474.— Between **Istmina and Tadó**, Profundó River, affluent of San Juan River, 200 m asl, 5 Mar 1994, leg. G. Galvis, 3 males, 2 females, 1 ovigerous, ICN-MHN-CR 1474.

Valle del Cauca: Llano Bajo, Aribí stream, 12 Oct 1982, leg. C. Caicedo, 2 males, 5 females, 2 ovigerous, CRBMUV 82006.— **Buenaventura**. Highway, Sabaleta Alto River, Jan 1980, 1 male, CRBMUV 80034.— Cajambre River, Caimancito, 12 Aug, 1983, leg. C. Caicedo 8 males, 1 female, CRBMUV 83004 A, 83006.— Málaga Bay, Tres Marías, 25 Nov 1985, leg. G. Ramos, 2 females, CRBMUV 85182 A.— **Calima**. Calima River, 15 Aug 1981, leg. R. Neira, 1 male, CRBMUV 81083.— Creek near Agroforestal Farm, 22 - 23 Oct 1982, leg. C. Caicedo, 12 males, 14 females, 5 ovigerous, CRBMUV 82005, 82011.— **Palma Island**, in creek, 20 Jun 2003, leg. N. Bolaños & J. F. Lazarus, 4 males 1 ovigerous female, CRBMUV 003009.

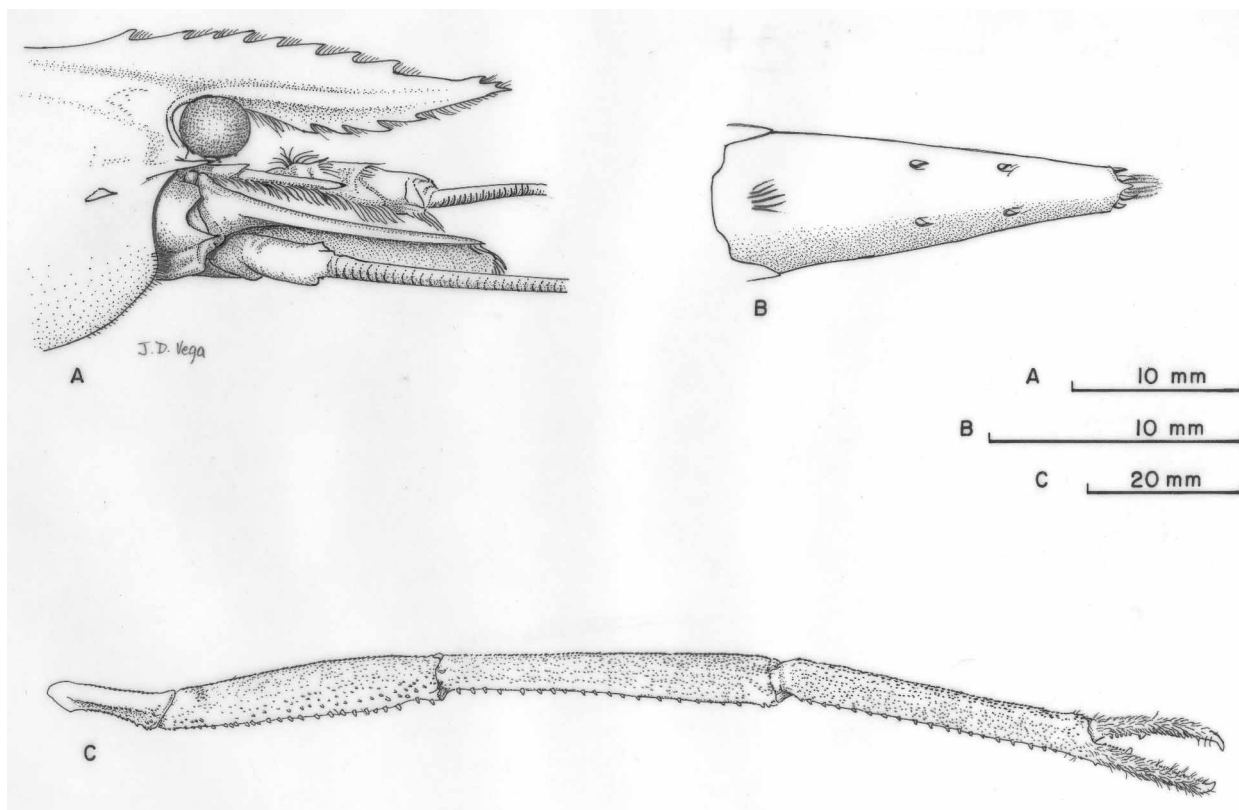


FIGURE 17. *Macrobrachium rathbunae* Holthuis, 1950, male, ICN-MHN-CR 1199: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Diagnosis

Rostrum nearly straight, with distal portion directed downward, apex directed slightly upward, usually shorter than scaphocerite, upper margin with 9 to 13 teeth, including 1-2 teeth completely post orbital, first proximal tooth separated from the second one by a large recess, lower margin 3 to 6 teeth; carapace usually smooth, some large specimens slightly pubescent on anterolateral region; abdomen usually smooth, some large specimens slightly pubescent on pleurae, telson and uropoden; 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 1/3 of carpus. Second pair of pereopods elongated, prominent, similar in shape and size, with longitudinal rows of spines, overreaching scaphocerite with 1/2 of merus; merus 0.73 to 0.77 x carpus length and 0.83 to 0.91 x palm length; carpus 7.16 to 9.52 x as long as wide, and 1.14 to 1.19 x palm length; palm elongated, cylindrical, 7.76 to 9.33 x as long as wide; fingers thickly pubescent, not gaping when closed, 0.43 to 0.47 x palm length, a tooth on proximal portion in each cutting edge of fingers, followed by denticles to base of finger.

Size. The largest male TL 116.4 mm, CL 30.6 mm; the largest female TL 80.1 mm, CL 20.3 mm; 9 ovigerous females were examined: TL 39.5 to 63.9 mm, CL 8.9 to 15.3 mm, with small and numerous eggs.

Remarks

This species is most similar to *Macrobrachium acanthurus* (Wiegmann, 1836). The two can be distinguished by differences in the rostrum and the second pair of pereopods. The rostrum in *M. rathbunae* is usually shorter than the scaphocerite, whereas it overreaches the scaphocerite in *M. acanthurus*. The palm of the second pair of pereopods in *M. rathbunae* is 7.76 to 9.33 times longer than wide and the fingers are 0.43 to 0.47 times the palm length, whereas the palm in *M. acanthurus* is 5.62 to 6.26 times longer than wide and the fingers are 0.75 to 0.87 times the palm length. The specimens reported by Prahl, *et al.* (1984), as *Macrobrachium tenellum* (Smith, 1871), CRBMUV, 82006, are determined as *M. rathbunae*.

Macrobrachium reyesi Pereira, 1986

Fig. 18 A–C

Macrobrachium reyesi Pereira, 1986: 198.

Material examined

Casanare: Cusiana River, 19 Oct 1995, leg. U. Buitrago, 1 male, 1 ovigerous female, MLS 12.— Between **Trinidad** and **Rondón**, Guachiría River, 20 Feb 1974, leg. P. Cala, 9 males, 13 females, 2 ovigerous, ICN-MHN-CR 1806.— **Yopal**. Aguazula stream, 30 Nov - 4 Dic 1995, leg. U. Buitrago, 3 males, 1 ovigerous female, MLS 13, 15.— Streams affluent of Meta River, 30 Nov 1995, leg. U. Buitrago, 1 male, 3 females, 1 ovigerous, MLS 14.

Cundinamarca: **Medina**, La Arenosa creek, 300 m asl, 29 Jul 1986, leg. R. Restrepo, 3 females, ICN-MHN-CR 2202.

Meta: **Mesetas**, Negro creek, affluent of Duda River, 500 m asl, 8 Feb 1988, leg. P. Cala, 1 ovigerous female, ICN-MHN-CR 2203.

Diagnosis

Rostrum straight, as long as or slightly longer than scaphocerite, upper margin with 7 to 11 teeth, including 2-3 teeth completely post orbital, first proximal tooth separated from the second one by large recess, lower margin with 3 to 5 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 fingers or total length of chelae. Second pair of pereopods elongated, smooth, similar in shape and size, overreaching scaphocerite with 1/2 of carpus; merus as long as carpus, 1.2 x palm length, and shorter than chelae; palm 2.4 to 2.6 x as long as high; fingers not gaping when closed, 1.1 x palm length.

Size. The largest male TL 29.5 mm, CL 8.3 mm; the largest female, TL 38.2 mm, CL 9.6; 6 ovigerous females were examined: TL 29.2 to 38.2 mm, CL 6.8 to 9.6 mm, with large and few number of eggs.

Remarks

These are the first records of *Macrobrachium reyesi* for Colombia.

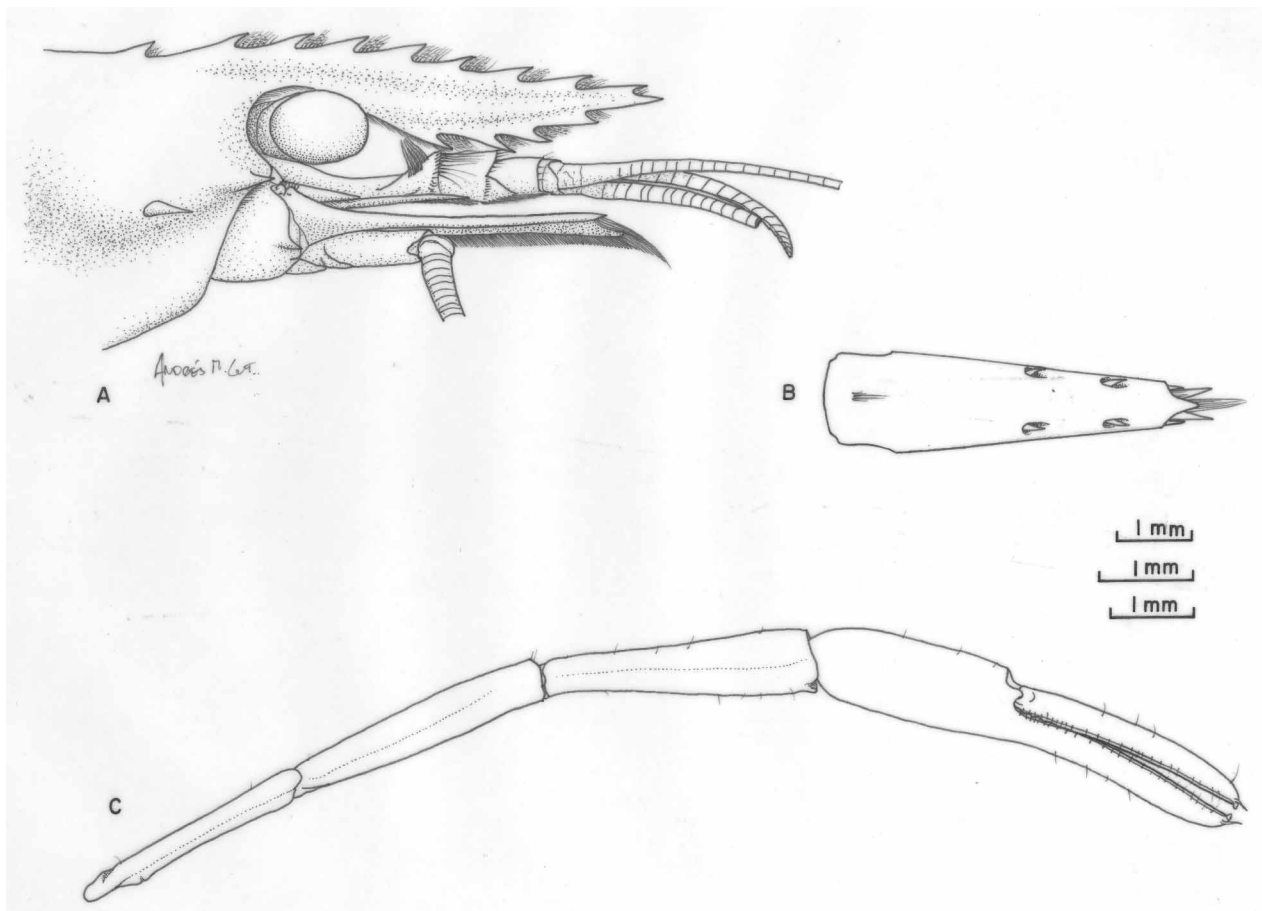


FIGURE 18. *Macrobrachium reyesi* Pereira, 1986, male, MLS 15: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

***Macrobrachium surinamicum* Holthuis, 1948**

Fig. 19 A–C

Macrobrachium surinamicum Holthuis, 1948: 24.

Macrobrachium surinamicum, Holthuis, 1952: 57.— Rodríguez, 1980: 124.— Rodríguez, 1981: 47.— Rodríguez, 1982: 390.— López & Pereira, 1996: 52.— Melo, 2003: 372.

(For detailed synonymy refer to Holthuis, 1952).

Diagnosis

Rostrum straight with apex directed slightly upward, as long as scaphocerite, upper margin with 13 to 16 teeth, including 3-4 teeth completely post orbital, proximal teeth with less recess between them than distal

ones, lower margin 4 to 6 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 extreme of carpus or total length of chela. Second pair of pereopods prominent, similar in shape and size, overreaching scaphocerite with total length of carpus; merus slightly shorter than carpus; carpus 0.5 x chela length; palm elongated and cylindrical, more than 5 x as long as wide; fingers thickly pubescent, not gaping when closed, 0.57 x palm length, two prominent teeth on proximal portion of cutting edge of mobile finger, followed by denticles to distal extreme; a prominent tooth on cutting edge of fixed finger, located between mobile finger teeth's, followed by denticles to distal extreme. The females have small and numerous eggs. The diagnosis is based in (Holthuis, 1952).

Remarks

We did not find specimens of this species in the museums examined in this study. The only record for Colombia in literature is “from the neighbourhood of Bogotá” and is deposited at United States National Museum at Washington (USNM) (Holthuis, 1952). This species has only been found in freshwater near the coast, but Bogotá is far away from the coast and at an elevation of 2600 m. Thus, it seems that the Holthuis locality is misreported. The illustrations are taken from Holthuis (1952).

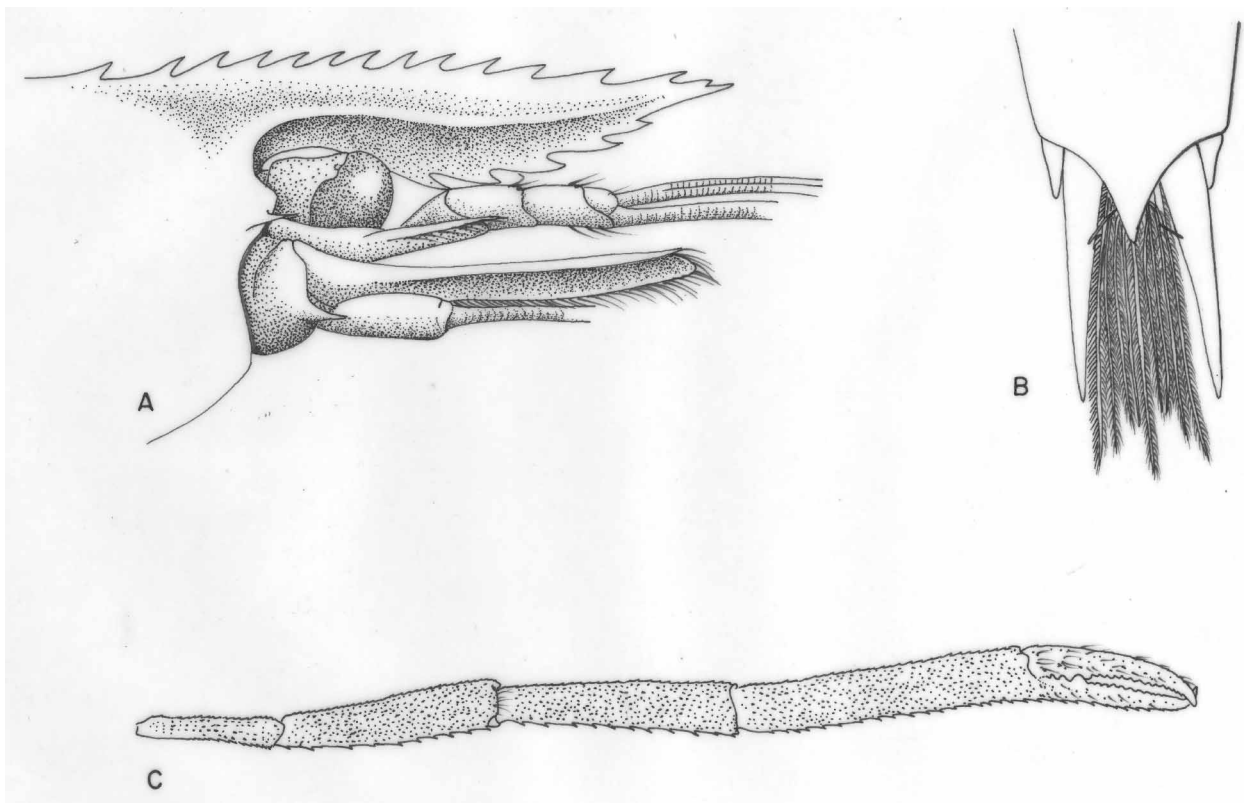


FIGURE 19. *Macrobrachium surinamicum* Holthuis, 1948, male, **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view. Modified from Holthuis (1952).

***Macrobrachium tenellum* (Smith, 1871)**

Fig. 20 A–B

Palaemon tenellus Smith, 1871: 98.

Macrobrachium tenellum, Holthuis, 1952: 54.— Méndez, 1981: 73.— Rodríguez, 1981: 47.— Abele & Kim, 1989: 13.— Wicksten, 1989: 13.

(For detailed synonymy refer to Holthuis, 1952).

Diagnosis

Rostrum nearly sinuous with distal portion directed upward, usually overreaching scaphocerite, upper margin with 8 to 12 teeth, including 1 tooth completely post orbital, proximal teeth separated from each other by small recess than distal ones, lower margin 4 to 7 teeth; 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 similar in shape and size with longitudinal row of spines, overreaching scaphocerite with distal portion of merus or with total length of carpus; merus 0.67 x carpus length; carpus 13 to 15 x as long as wide; palm elongated, cylindrical; fingers thickly pubescent, slightly shorter than palm, a tooth on 1/4 proximal in each cutting edge of fingers, followed by denticles to base of finger. The females present small and numerous eggs. The diagnosis is based on (Holthuis, 1952).

Remarks

Prahl *et al.* (1984) recorded the species *Macrobrachium tenellum* from Calima River and Aribí stream, department of Valle del Cauca, and the specimens are deposited at the CRBMUV. Only the Aribí stream specimens were found at the CRBMUV collection. After examination they were determined as *M. rathbunae*. Unfortunately, there are no specimens of *Macrobrachium tenellum* in the collections visited. The illustrations are taken from Holthuis (1952).

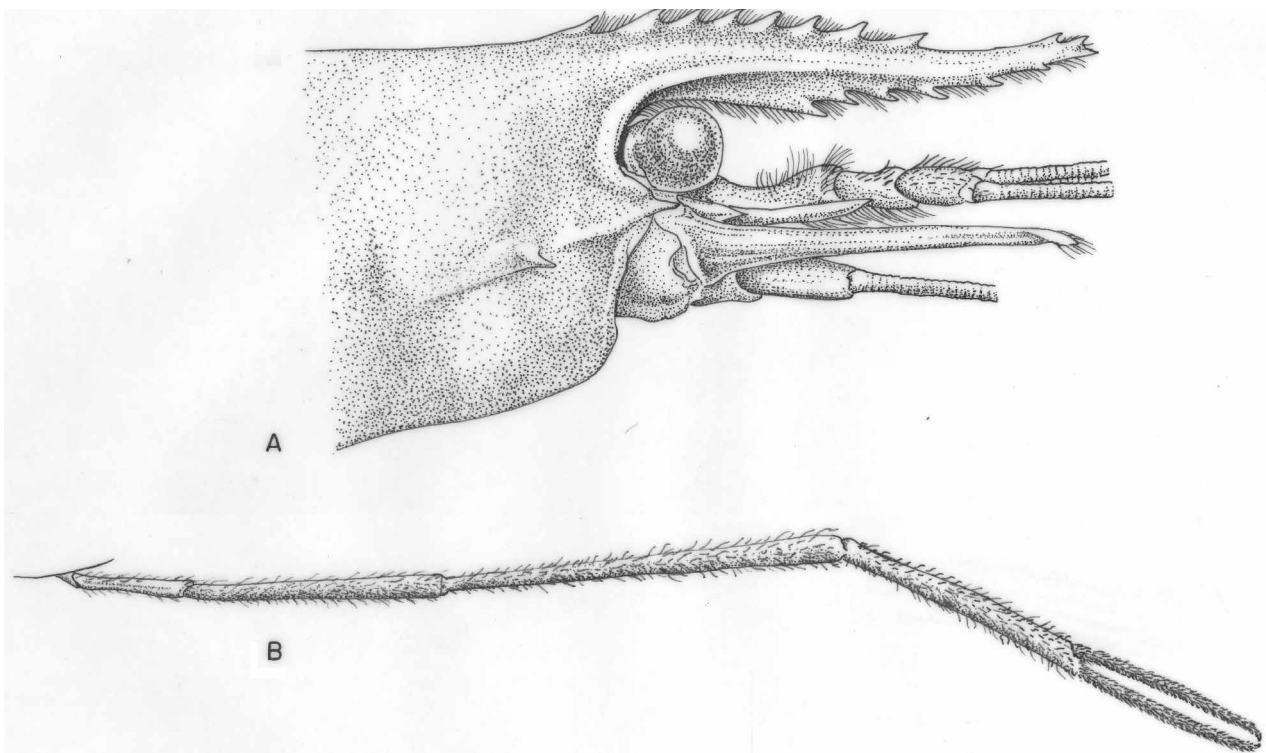


FIGURE 20. *Macrobrachium tenellum* (Smith, 1871), male, **A**, anterior part of body, lateral view; **B**, second pereopod, lateral view. Modified from Holthuis (1952).

Macrobrachium transandicum Holthuis, 1950

Fig. 21 A–C

Macrobrachium transandicum Holthuis, 1950: 94.

Macrobrachium transandicum, Holthuis, 1952: 59.— Méndez, 1981: 73.— Rodríguez, 1981: 47.— Prahl *et al.*, 1984: 53.— Wicksten, 1989: 13.

Material examined

Chocó: **Nuquí**: Tribugá, Las Animas Highway, 1994, leg. E. Realpe, 2 males, 1 juvenile, Universidad de los Andes.

Diagnosis

Rostrum slightly sinuous, shorter than scaphocerite and antennular peduncle, upper margin with 9 to 11 teeth regularly spaced, including 5 teeth completely post orbital, lower margin 2 to 3 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 total length of carpus. Second pair of pereopods similar in shape, different in size, covered with spines, the larger second pereopod overreaching scaphocerite with large portion of merus; merus 0.87 x carpus length and 0.80 x palm length; carpus 3.70 x as long as wide and 0.93 x palm length; palm 4.1 x as long as wide and 3.0 x longer than high; fingers not gaping when closed, cutting edge of fingers thickly pubescent, 0.67 x palm length, mobile finger with a prominent tooth on proximal portion of cutting edge, followed by 4 denticles distributed beyond midcutting edge, fixed finger with a series of 7 denticles of similar size, since proximal portion beyond midcutting edge.

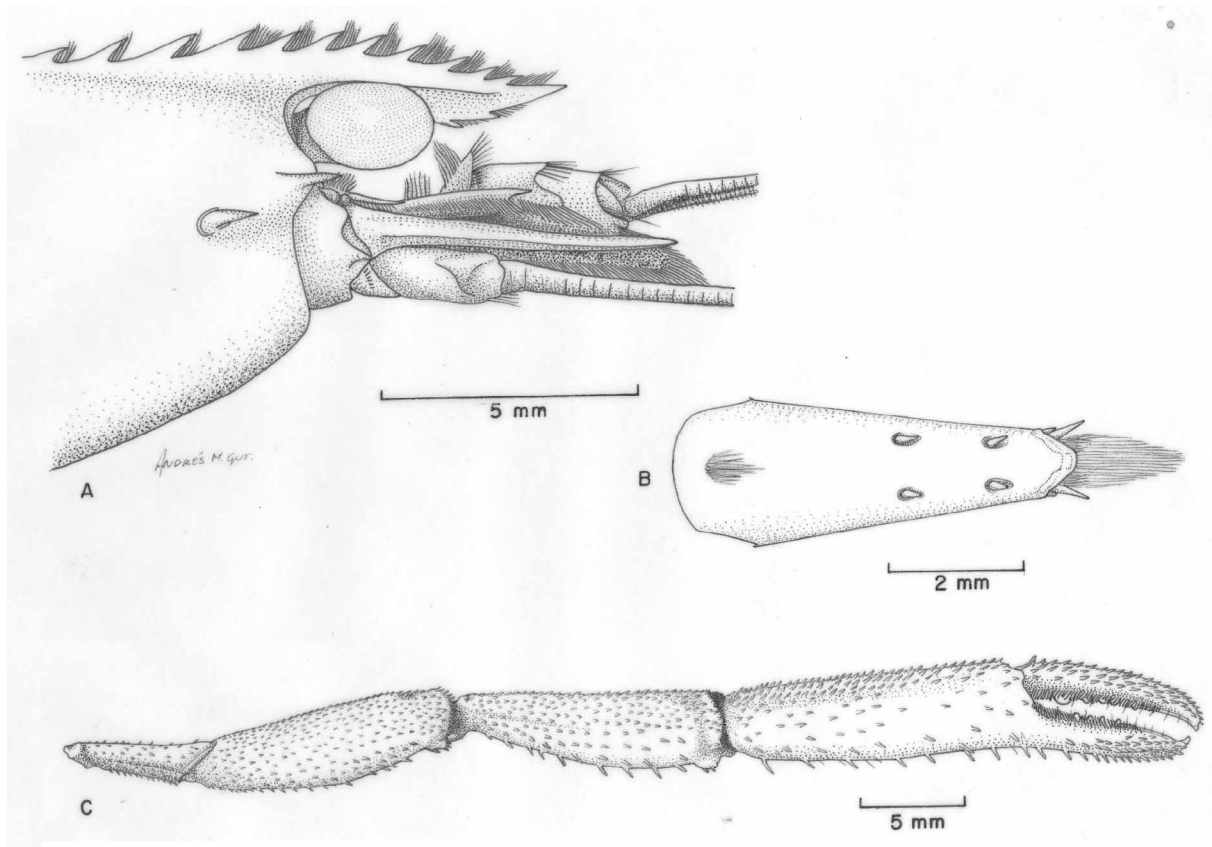


FIGURE 21. *Macrobrachium transandicum* Holthuis, 1950, male, Universidad de los Andes: **A**, anterior part of body, lateral view; **B**, telson, dorsal view; **C**, second pereopod, lateral view.

Size. A male TL 62.9 mm, CL 20.9 mm; non-ovigerous females were examined. The females present small and numerous eggs (Holthuis, 1952).

Remarks

The diagnosis is based on one adult male. The specimen almost agrees with Holthuis's (1952) description. The differences are in the length of the rostrum and in the number of denticles on the cutting edge of the sec-

ond pair of pereopods. The rostrum in Hothuis's description is as long as or longer than scaphocerite, whereas it is shorter in the examined specimen. The cutting edge of fingers of the second pair of pereopods in Hothuis's description have between 12 and 20 denticles, whereas they only show between 4 and 7 denticles in the examined specimen. Let us point out that Hothuis's illustration and his description do not match exactly each other, because the rostrum of his illustration is shorter than scaphocerite, similar to the by us examined specimen.

The species *Macrobrachium transandicum* was recorded from Cisneros, Dagua River, department of Valle del Cauca, and the specimens were deposited at the CRBMUV by Prah *et al.* (1984). In a recent examination of Prah *et al.*'s material at the CRBMUV, the specimens could not be found.

Discussion

According to the present study, the genus *Macrobrachium* is now represented by 20 species in Colombia. The species *Macrobrachium cortezi* Rodríguez, 1982, *M. ferreirai* Kensley & Walker, 1982, and *M. reyesi* Pereira, 1986 are new records for Colombia.

Summary of Distribution

This review of the genus *Macrobrachium* in Colombia has made a study of its geographic distribution possible. However, some species are known from few localities, and additional sampling is needed.

Species of *Macrobrachium* occur in three lowland regions: the Caribbean, Pacific, and Orinoco-Amazon, which include the major river basins of Colombia (Fig. 22). The following summary of *Macrobrachium* species' distribution in Colombia is set out according to these three regions.

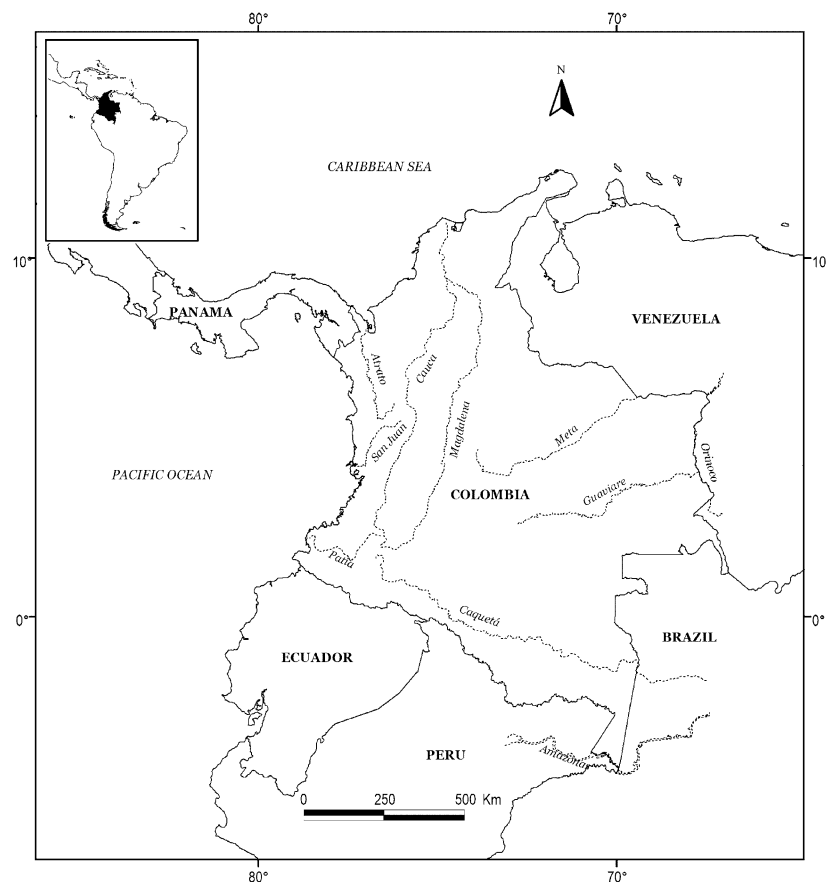


FIGURE 22. Colombia's lowland regions: Caribbean, Pacific, Orinoco-Amazon and major river basins.

Caribbean region

Macrobrachium acanthurus is distributed from North Carolina to Rio Grande do Sul, Brazil (Holthuis, 1952; Chace, 1972; Williams, 1984; Nizinski, 2003; Melo, 2003). The records for Colombia in literature are: Fundación, Magdalena Department (Pearse, 1915); Puerto Colombia, Sabanilla, Atlántico Department (Holthuis, 1952). Córdoba and Gaira Rivers, Magdalena Department; Ciénaga El Totumo, Atlántico Department; Arroyo Matute, Bolivar Department; Caño Pechilín and Ciénaga La Caimanera, Sucre Department (Martínez, 1973). NE of the Sierra Nevada de Santa Marta: Manzanares, Piedras and Buritaca Rivers, Magdalena Department (Escobar, 1979). The new records including herein, extend its range of distribution to the Ranchería, Pechilín, Sinú, San Jorge and Acaudí River basins, which drain into the Caribbean Sea (Fig. 23 A).

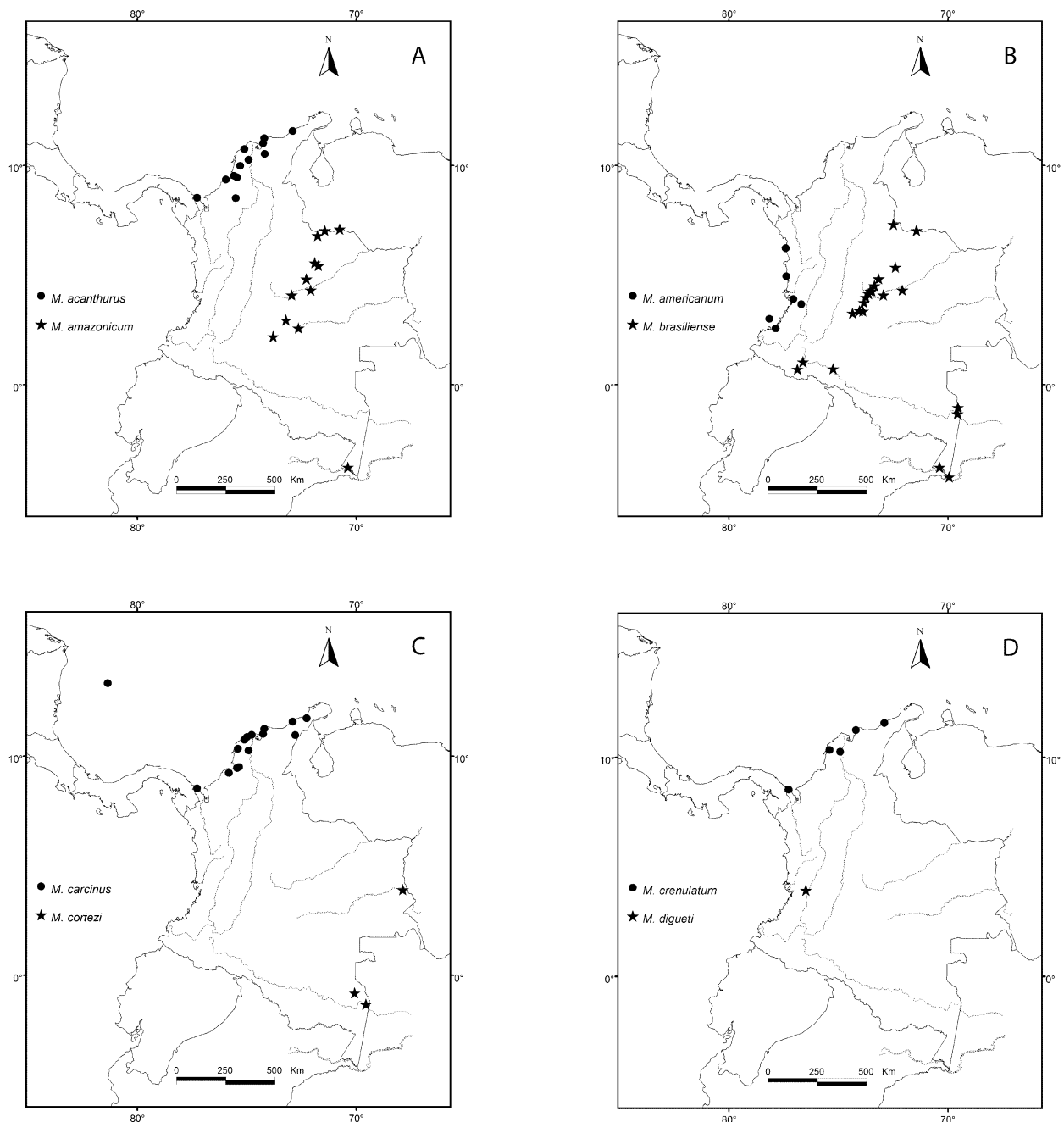


FIGURE 23. Distribution of *Macrobrachium* species for Colombia: **A**, *M. acanthurus* (Wiegmann, 1836) and *M. amazonicum* (Heller, 1862); **B**, *M. americanum* Bate, 1868 and *M. brasiliense* (Heller, 1862); **C**, *M. carcinus* (Linnée, 1758) and *M. cortezi* Rodríguez, 1982; **D**, *M. crenulatum* Holthuis, 1950 and *M. digueti* (Bouvier, 1895).

Macrobrachium carcinus is distributed from Florida to Río Grande do Sul, Brazil, including the Gulf of Mexico and the Caribbean Sea (Holthuis, 1952; Nizinski, 2003). The records for Colombia in literature are: Providencia Island (Benedict, 1893, Coventry, 1944). La Rosa, near Santa Marta, Magdalena Department (Pearse, 1915). Barranquilla, Atlántico Department; Santa Marta, Magdalena Department (Holthuis, 1952). Ranchería River, Guajira Department; Tayrona and Cañaveral creeks, Buritaca, Fundación, Aracataca, Sevilla, Córdoba and Gaira Rivers, Magdalena Department; Ciénaga El Totumo, Atlántico Department; Arroyo Matute, Bolivar Department; Pechilín creek, Sucre Department (Martínez, 1973). NE Sierra Nevada de Santa Marta, Manzanares, Piedras, Mendiguaca, Guachaca and Buritaca Rivers, Magdalena Department (Escobar, 1979). Parque Nacional Natural Tayrona, Magdalena Department (Galvis, 1986). The new records included herein are for the Don Diego, Sinú and Acandí Rivers (Fig. 23 C).

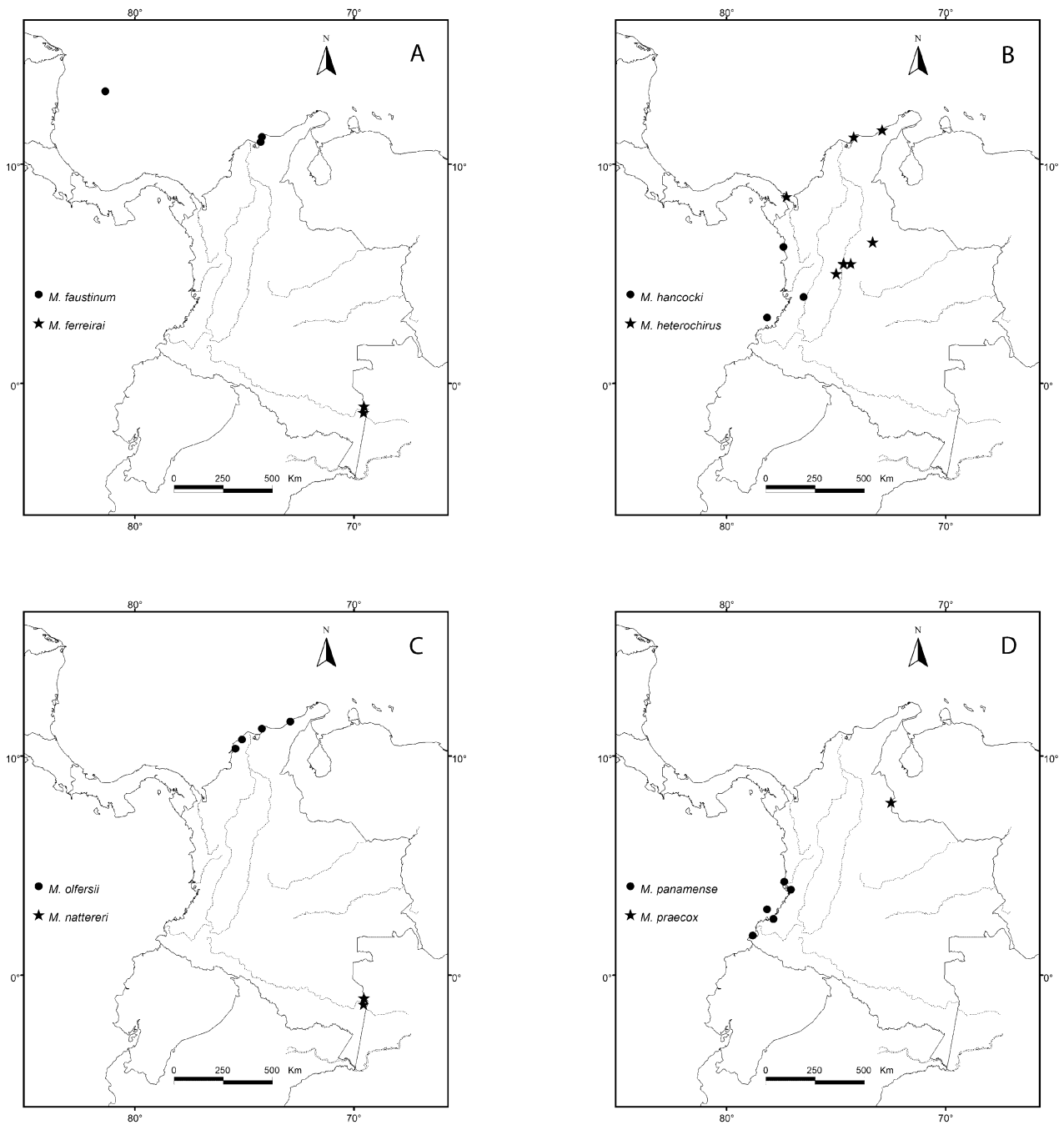


FIGURE 24. Distribution of *Macrobrachium* species for Colombia: **A**, *M. faustinum* (De Saussure, 1857) and *M. ferreirai* Kensley & Walker, 1982; **B**, *M. hancocki* Holthuis, 1950 and *M. heterochirus* (Wiegmann, 1836); **C**, *M. olfersii* (Wiegmann, 1836) and *M. nattereri* (Heller, 1862); **D**, *M. panamense* Rathbun, 1912 and *M. praecox* (Roux, 1928).

Macrobrachium crenulatum is distributed from Panama to Venezuela (Martínez, 1973; Abele & Kim, 1989). The records for Colombia in literature are: Arroyo de Matute, Turbaco, Bolivar Department (Martínez, 1973). NE Sierra Nevada de Santa Marta: Manzanares, Piedras, Mendiguaca, Guachaca and Buritaca Rivers, Magdalena Department (Escobar, 1979). The new records included herein extend the species' distribution to the Negro River and the Acañí River, which drains into the Caribbean Sea (Fig. 23 D).

Macrobrachium faustinum is distributed in Colombia and Venezuela (Holthuis, 1952; Martínez, 1973; Pereira, 1991). The records for Colombia in literature are: Arroyo Coquito, Parque Natural Nacional Tayrona, and Córdoba River, Magdalena Department (Martínez, 1973). NE Sierra Nevada de Santa Marta, Manzanares, Piedras, Guachaca and Buritaca Rivers, Magdalena Department (Escobar, 1979). A new record included in the present article extends the distribution to Providencia Island (Fig. 24 A).

Macrobrachium heterochirus is distributed from Mexico to south Brazil, including the Greater Antilles (Holthuis, 1952; Rodríguez, 1981). The records for Colombia in literature are: NE of the Sierra Nevada de Santa Marta, in the Manzanares, Piedras, Guachaca, and Buritaca Rivers, Magdalena Department (Escobar, 1979). The records included herein extend the species' distribution to the Acañí, Guaguaquí, Guarinó, La Miel and Suárez Rivers, which drain into the Caribbean Sea (Fig. 24 B).

Macrobrachium olfersii is distributed from North Carolina to Río Grande du Sul, Brazil (Holthuis, 1952; Nizinski, 2003; Melo, 2003). The records for Colombia in literature are: near Santa Marta, Magdalena Department (Pearse, 1915). Guajira Department (Chace & Holthuis, 1948). Cañaveral and Coquito creeks, Parque Nacional Natural Tayrona, Gaira River, Magdalena Department; Ciénaga El Totumo, Atlántico Department; Arroyo Matute-Turbaco, Bolivar Department (Martínez, 1973). NE of Sierra Nevada de Santa Marta, the Manzanares, Piedras, Mendiguaca, Guachaca and Buritaca Rivers, Magdalena Department (Escobar, 1979) (Fig. 24 C).

Macrobrachium praecox has only been found in freshwater from northern Colombia to eastern Venezuela (Holthuis, 1952; Rodríguez, 1980). The only record in literature for northern Colombia is: Santander (Roux, 1928). The new records included herein extend the species' distribution to Cúcuta, Norte de Santander Department, which corresponds to the Catatumbo River basin (Fig. 24 D).

Pacific region

Macrobrachium americanum is distributed from Baja California to Peru, including Galápagos Islands (Holthuis, 1952; Wicksten, 1989). The records for Colombia in literature are: Puerto Utría, Chocó Department (juveniles, incertae identification); Gorgona Island, Cauca Department (Holthuis, 1952, Prahel *et al.*, 1978). Escalere River, Valle del Cauca Department (Prahel *et al.*, 1984). The new records extend its distribution to the Pepe and Guapi river basins (Fig. 23 B).

Macrobrachium digueti is distributed from Baja California to Peru (Holthuis, 1952; Wicksten, 1989). The records for Colombia in literature are: San José, SW Colombia (Holthuis, 1952). Calima River, Valle del Cauca Department (Prahel *et al.*, 1984) (Fig. 23 D).

Macrobrachium hancocki is distributed from Costa Rica to Peru, including Galapagos Islands (Holthuis, 1952; Méndez, 1981). The records for Colombia in literature are: Bahía Cubita; Gorgona Island, Cauca Department (Holthuis, 1952). Gorgona Island, Cauca Department (Prahel *et al.*, 1978). Calima River, Valle del Cauca Department (Prahel *et al.*, 1984). The new records included herein extend the species' distribution to Bahía Solano, Chocó Department (Fig. 24 B).

Macrobrachium panamense is distributed from Honduras to Peru (Holthuis, 1952; Méndez, 1981). The records for Colombia in literature are: Rosario River, western Colombia (Holthuis, 1952). Gorgona Island, Cauca Department (Prahel *et al.*, 1978). Veneno creek, Buenaventura Bay, Valle del Cauca Department (Prahel *et al.*, 1984). The new records extend its distribution to the Dagua, Calima-San Juan and Guapi river basins (Fig. 24 D).

Macrobrachium rathbunae has been recorded from Panama to Ecuador (Holthuis, 1952, Abele & Kim,

1989). The records for Colombia in literature are: Istmina, Alto San Juan River, Chocó Department; Buenaventura, Dagua River, Valle del Cauca Department; San Lorenzo, Telembí River, Nariño Department (Holthuis, 1952). Valle del Cauca Department (Prahl *et al.*, 1984). The new records included herein extend the species' distribution into the Profundó, Cajambre, Sabaleta Alto Rivers, and Gorgona Island (Fig. 25 A).

Macrobrachium tenellum is distributed from Baja California to Peru (Holthuis, 1952, Weicksten, 1989). The records for Colombia in literature are: Puerto Negría, San Juan River, near Buenaventura, Valle del Cauca Department; Telembí River, near San Lorenzo, Nariño Department; between Magdalena and Cartagena (Holthuis, 1952). Calima River (Prahl *et al.*, 1984). The last record by Holthuis (1952) is misreported because this species belongs to the Pacific coast (Fig. 25 B).

Macrobrachium transandicum is distributed from Colombia to Peru (Holthuis, 1952; Méndez, 1981). The records for Colombia in literature are: Puerto Negría, San Juan River, north of Buenaventura, Valle del Cauca Department; Telembí River, affluent of Patía River, near San Lorenzo, Nariño Department (Holthuis, 1952). Cisnero (= Juntas), Dagua River, 33 miles inland from Buenaventura, Valle del Cauca Department (Holthuis, 1952; Prahl *et al.*, 1984). The new record herein extends its distribution to Tribugá, Chocó Department (Fig. 25 B).

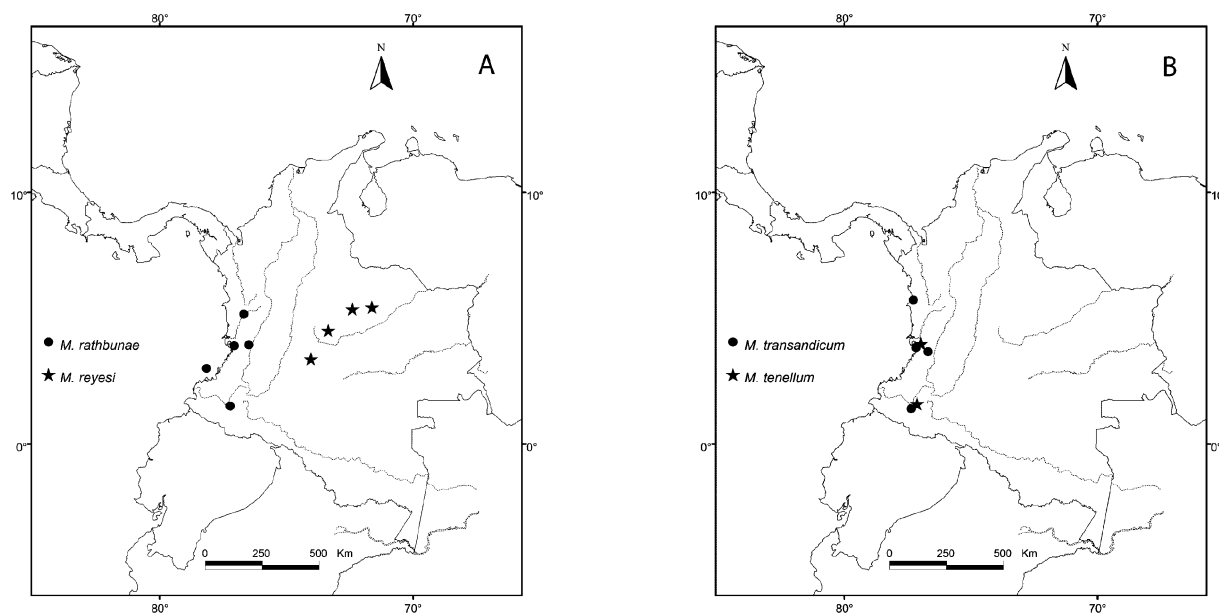


FIGURE 25. Distribution of *Macrobrachium* species for Colombia: A, *M. rathbunae* Holthuis, 1950 and *M. reyesi* Pereira, 1986; B, *M. transandicum* Holthuis, 1950 and *M. tenellum* (Smith, 1871).

Orinoco-Amazon region

Macrobrachium amazonicum has been recorded for Venezuela, Surinam, Guianas, Brazil, Ecuador, Peru, Bolivia and Paraguay. It is widely distributed in the Orinoco, Amazon, Parana river basins and the Guianas Rivers that drain into the Atlantic Ocean (Holthuis, 1952; Rodríguez, 1982). Medina & Sobrino, (1975) recorded this species for Colombia from Humacita Lake, which belongs to the Meta River basin. The new records for Colombia included herein, extend its distribution to the Guaviare River, tributary of the Orinoco River and also the Amazon River basin (Fig. 23 A).

Macrobrachium brasiliense has an extensive distribution in freshwater in Colombia, Ecuador, Peru, Brazil, Guianas, Surinam and Bolivia in the Orinoco and Amazon basins and Guianas Rivers that drain into the Atlantic Ocean (Holthuis, 1952; Rodríguez, 1982; Magalhães, 2002). The records for Colombia in literature

are: Villavicencio, Meta Department (Holthuis, 1952). Mirití River tributary of Caquetá River, La Pedrera, between Centro Providencia and Puerto Lago, Amazonas Department; Apaporis River, between Serranía de Taraira and Reserva Natural Caparú, Vaupés Department (Campos, 1997). The new records extend its distribution in Colombia to the Arauca, Casanare, Humea, Gazamancito Rivers, which are affluents of the Orinoco River and the Amazon River basin (Fig. 23 B).

Macrobrachium cortezi is known from freshwater of the Orinoco and the Negro Rivers of Venezuela (Rodríguez, 1982; Pereira, 1989). These are the first records for Colombia. The new records presented herein extend its distribution to eastern Colombia, to the basins of the Taraira River, affluent of the Apaporis River, and the Inírida River (Fig. 23 C).

Macrobrachium ferreirai has only been found in freshwater of Amazon basin, Brazil (Kensley & Walker, 1982; Melo, 2003). These are the first records for Colombia. The new records presented herein extend its distribution to south-eastern Colombia, to the Mirití-Paraná River, affluent of the Caquetá River, which drain into the Amazon (Fig. 24 A).

Macrobrachium nattereri has an extensive distribution in freshwater from Venezuela and Brazil in the Orinoco and Amazon basins and French Guiana (Holthuis, 1952; Rodríguez, 1982). The records for Colombia in literature are: the Mirití-Apaporis River, which drains into the Caquetá River, between Centro Providencia and Puerto Lago, La Pedrera, Leticia, Amazonas Department; the Apaporis River between Serranía de Taraira, and Reserva Natural Caparú, Vaupés Department (Campos, 1997) (Fig. 24 C).

Macrobrachium reyesi is known from freshwater in Venezuela (Pereira 1986). These are the first records for Colombia. The new records included herein extend its distribution to eastern Colombia, to the Guachiría, Duda and Cusiana Rivers, which drain into the Meta River (Fig. 25 A).

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