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The fiddler crabs (Crustacea: Brachyura: Ocypodidae: genus *Uca*) of the South Atlantic Ocean

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Abstract

The taxonomy of the 11 species of fiddler crabs [*Uca (Uca) maracoani* (Latreille, 1802-1803), *U. (U.) tangeri* (Eydoux, 1835), *U. (Minuca) burgersi* Holthuis, 1967, *U. (M.) mordax* (Smith, 1870), *U. (M.) rapax* (Smith, 1870), *U. (M.) thayeri* Rathbun, 1900, *U. (M.) victoriana* von Hagen, 1987, *U. (M.) vocator* (Herbst, 1804), *U. (Leptuca) cumulanta* Crane, 1943, *U. (L.) leptodactyla* Rathbun, 1898 and *U. (L.) uruguayensis* Nobili, 1901] of the South Atlantic Ocean is reviewed. Keys for identification, updating the keys for the Atlantic Ocean are proposed, including the species recently described. Comments reporting morphological variations among types and additional material and among populations of different localities are included. The Atlantic species are divided into three subgenera: *Uca* s. str., *Minuca* and *Leptuca*. The eastern Atlantic species *U. (U.) tangeri* is included in subgenus *Uca* s. str. due to the presence of a proximal spine opposing the spoon-tipped setae of the second maxilliped, which is considered an apomorphic character of the subgenus *Uca* s. str.

Key words: Genus *Uca*, South America, taxonomy

Introduction

Since the monumental work of Crane (1975), several taxonomic changes have been proposed in the taxonomy of fiddler crabs (*Uca* Leach, 1814). Crane (1975) listed 92 species and subspecies. Due to problems of the subspecies concept adopted (von Hagen, 1976), however, the subsequent authors treated all morphs as valid species. Most of Crane's (1975) subgeneric names are nevertheless junior synonyms of taxa that Bott (1973a) described only a few years earlier (von Hagen, 1976; Rosenberg, 2001; Beinlich and von Hagen, 2006). Beinlich and von Hagen (2006) recognized some supraspecific

taxa and synonymized others, while Ng *et al.* (2008) listed all species and allocated them to nomenclaturally valid subgenera following the subgeneric system proposed by Beinlich and von Hagen (2006). Nardeloo *et al.* (2010) recently studied the subgenus *Austruca* (Bott, 1973a) to accommodate the species of the *U. lactea* (de Haan, 1835) -complex, removing them from the subgenus *Paraleptuca*.

Crane's (1975) monograph revised the taxonomy of *Uca* around the world, and remains a landmark reference for all students of the group. Nine new species were described after Crane's (1975) work: *U. panacea* Novak and Salmon, 1974; *U. marguerita* Thurman, 1981 and *U. victoriana* von Hagen, 1987 in

the Western Atlantic; *U. intermedia* von Prael and Toro, 1985 and *U. osa* Landstorfer and Schubart, 2010 in the Eastern Pacific; *U. elegans* George and Jones, 1982 and *U. hirsutimanus* George and Jones, 1982 in the Indo-Pacific; *U. jocelynae* Shih, Naruse and Ng, 2010 and *U. cryptica* Naderloo, Türkay and Chen, 2010 belonging to the *U. vocans* (Linnaeus, 1758) complex in the Western Pacific and to the *U. lactea* complex in the Indo-West Pacific, respectively, and two morphs, *U. albimana* (Kossmann, 1877) and *U. iranica* Pretzmann 1971 have been suggested by Lewinsohn (1977) and Shih *et al.* (2009) as being separate from *U. annulipes* (H. Milne Edwards, 1837). Four species were also suggested to be invalid: *U. australiae* (Crane, 1975), which is a doubtful taxon described based on a single male specimen (George and Jones, 1982: 36); *U. minima* Crane, 1975, found to be a juvenile of *U. signata* (Hess, 1865) (George and Jones, 1982: 47); *U. virens* Salmon and Atsides, 1968 was suggested to be synonymous with *U. rapax* (Smith, 1870) by von Hagen (1980) and Barnwell and Thurman (1984), and *U. salsititus* Oliveira, 1939 was suggested to be synonymous with *U. rapax* and *U. vocator* (Herbst, 1804) by Crane (1975) and Tavares and Mendonça Jr. (2003), respectively; and *U. leptochela* Bott, 1954, proposed as *U. festae* Nobili, 1902 juveniles by Beinlich and von Hagen (2006).

After Crane's (1975) monograph, taxonomic studies of species of *Uca* were limited to specific regions, such as Australia (George and Jones, 1982). Regarding the Western Hemisphere species, von Hagen (1980) provided new keys for the identification to the "x" species of North America [*U. pugnax*, *U. rapax* and *U. minax* (LeConte, 1855)] and Barnwell and Thurman (1984) dealt with the taxonomy and biogeography of the Gulf of Mexico species. The taxonomy of particular Atlantic faunas was given by Abele and Kim (1986) for the Florida species, Rodriguez (1980) for those of Venezuela and Melo (1996) for those of Brazil. However, these contributions are related to several groups of decapods, and not only fiddler crabs. As

consequence, the identification of the South Atlantic species of *Uca*, especially those from Brazil, is still difficult due to the lack of specific keys and figures.

Moreover, the species of the genus *Uca* are very variable within and among populations, but there is no recent papers dealing with these morphological variations. In the same way, some morphological structures of fiddler crabs are difficult to check and the lack of detailed figures showing these characteres make the identification of some species a challenge.

In this way, new keys of identification and figures for the species of the South Atlantic Ocean are presented herein. Species from the whole distribution range were examined to check morphological variations along the populations. This contribution does not intend to present an exhaustive description of the South Atlantic species of *Uca*, but to provide an updated summary of the species in order to facilitate their identification, especially from Brazilian species.

Material and Methods

The material examined is deposited in the National Museum of Natural History (Smithsonian Institution), Washington DC, USA (USNM), American Museum of Natural History, New York City, USA (AMNH), Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZUSP), Departamento de Oceanografia, Universidade Federal de Pernambuco, Recife, Brazil (DOUFPE), Crustacean Collection of the Universidade Estadual de Santa Cruz, Ilhéus, Brazil (UESC), and Zoologischen Museums Hamburg, Hamburg, Germany (ZMH).

The morphological characters of fiddler crabs are extremely variable both within and among populations, and therefore the diagnoses and identification keys are based on type specimens when available. The gonopods morphology is used by many authors to distinguish between species. However, the character of the gonopods

appendages were omitted in the keys and in the diagnosis whenever feasible because of the inconvenience and sometimes difficulty of adequate examination. Figures 1, 2 and 3 shows the mainly characteres used in the keys. Figures of the carapace, major and minor chelipeds, and ambulatory legs are provided for each species in order to help in their identification. The subgenera are presented following the phylogenetic order proposed by Beinlich and von Hagen (2006) and the species are arranged alphabetically. The classification scheme was based on Ng *et al.* (2008). The lists of references are limited to the synonymies.

Other abbreviations used are m (male), f (non-ovigerous female), ovf (ovigerous females), CW (carapace width), MNHN (Muséum national d'Histoire naturelle, Paris, France), ANSP (Philadelphia Academy of Natural Sciences, Philadelphia, USA), RMNH (Naturalis Biodiversity Center, previously Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands), and MCZ (Museum of Comparative Zoology, Harvard University, Cambridge).

Systematics

Order Decapoda Latreille, 1802

Suborder Pleocyemata Burkenroad, 1963

Infraorder Brachyura Linnaeus, 1758

Section Eubrachyura de Saint Laurent, 1980

Superfamily Ocyropodoidea Rafinesque, 1815

Family Ocyropodidae Rafinesque, 1815

Subfamily Ucininae Dana, 1851

Genus *Uca* Leach, 1814

Uca Leach, 1814: 430; 1815: 323; Rathbun, 1897: 154; 1918: 374; Stebbing, 1905: 39; Barnard, 1950: 89; Holthuis, 1962: 239, 240, 245, 246, 251; Crane, 1975: 15; Manning and Holthuis, 1981: 220, 221; Ng *et al.*, 2008: 240.

Gelasimus Latreille, 1817: 517; Demarest, 1825: 122; de Man, 1891: 20; Alcock, 1900: 350.

Gelasima Latreille, 1817: 519 (misspelled).

Acanthoplax H. Milne Edwards, 1852: 151.

Eurychelus Rathbun, 1914: 126.

Minuca Bott, 1954: 155.

Mesuca Bott, 1973a: 316.

Latuca Bott, 1973a: 317.

Tubuca Bott, 1973a: 322.

Austruca Bott, 1973a: 322.

Paraleptuca Bott, 1973a: 322.

Heteruca Bott, 1973a: 323.

Planuca Bott, 1973a: 324.

Leptuca Bott, 1973a: 324.

Type locality: "Cayenne" [see Remarks].

Type species: *Uca una* Leach, 1814 (junior synonymy of *Cancer vocans major* Herbst, 1782).

Remarks: The history of the type species of the genus *Uca* is somewhat confusing and has been discussed by some authors including Crane (1975), Holthuis (1979), and Manning and Holthuis (1981). However, the matter deserves comment herein. Seba (1759, pl. 18, fig. 8) presented a figure of a specimen that he named *Cancer Uka una, Brasiliensis*. Based on this figure, Lamarck (1801) described *Ocyropoda heterochelos*. A few years later, H. Milne Edwards (1837), when describing a new species of fiddler crab from Cayenne, French Guyana, to which he gave the name *Gelasimus platydactylus*, expressed the opinion that the species was that illustrated by Seba (1759). Finally, Herbst (1782) reproduced Seba's figure under the name *Cancer vocans major*. Subsequently, both names (*platydactylus* and *heterochelos*) were used for this taxon, until Rathbun (1918), in her monograph of American grapsoid crabs, reported the species as *U. heterochelos*.

The decision of Holthuis (1962) to reject the epithet *heterochelos* given by Lamarck (1801), replacing it by its senior objective synonym *major*, and the selection by Holthuis (1962) of the specimen illustrated by Seba (1759) as the lectotype of *Cancer vocans major*, *Ocyropoda heterochelos*, and *U. una* Leach, 1814, resulted in *U. major* as the correct name of the type species (because *U. una* is the type species, by monotypy, of the genus *Uca*).

However, the discovery of Bott (1973a) that the specimen figured by Seba (1759) is

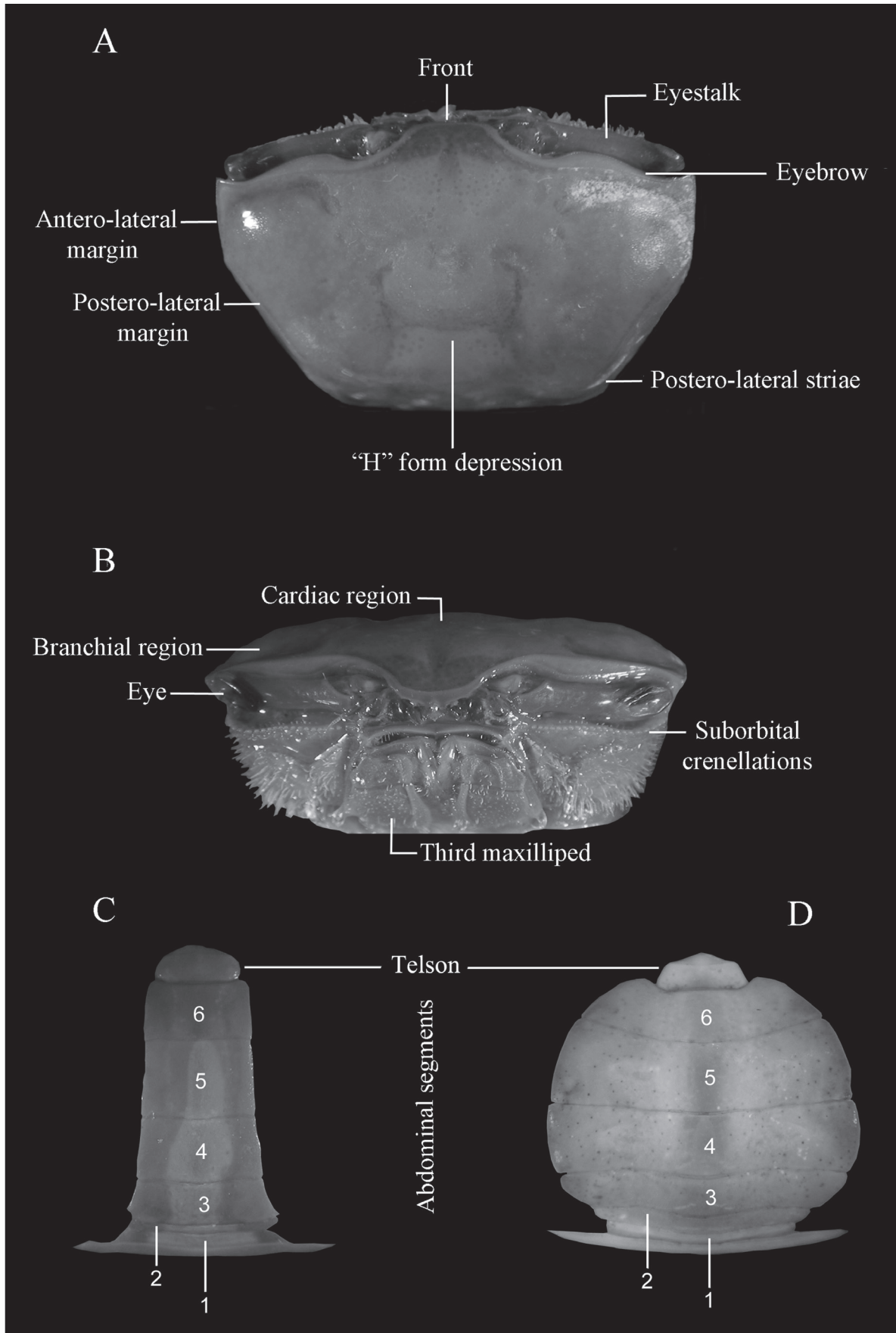


Figure 1. Morphological characters of carapace of genus *Uca*.

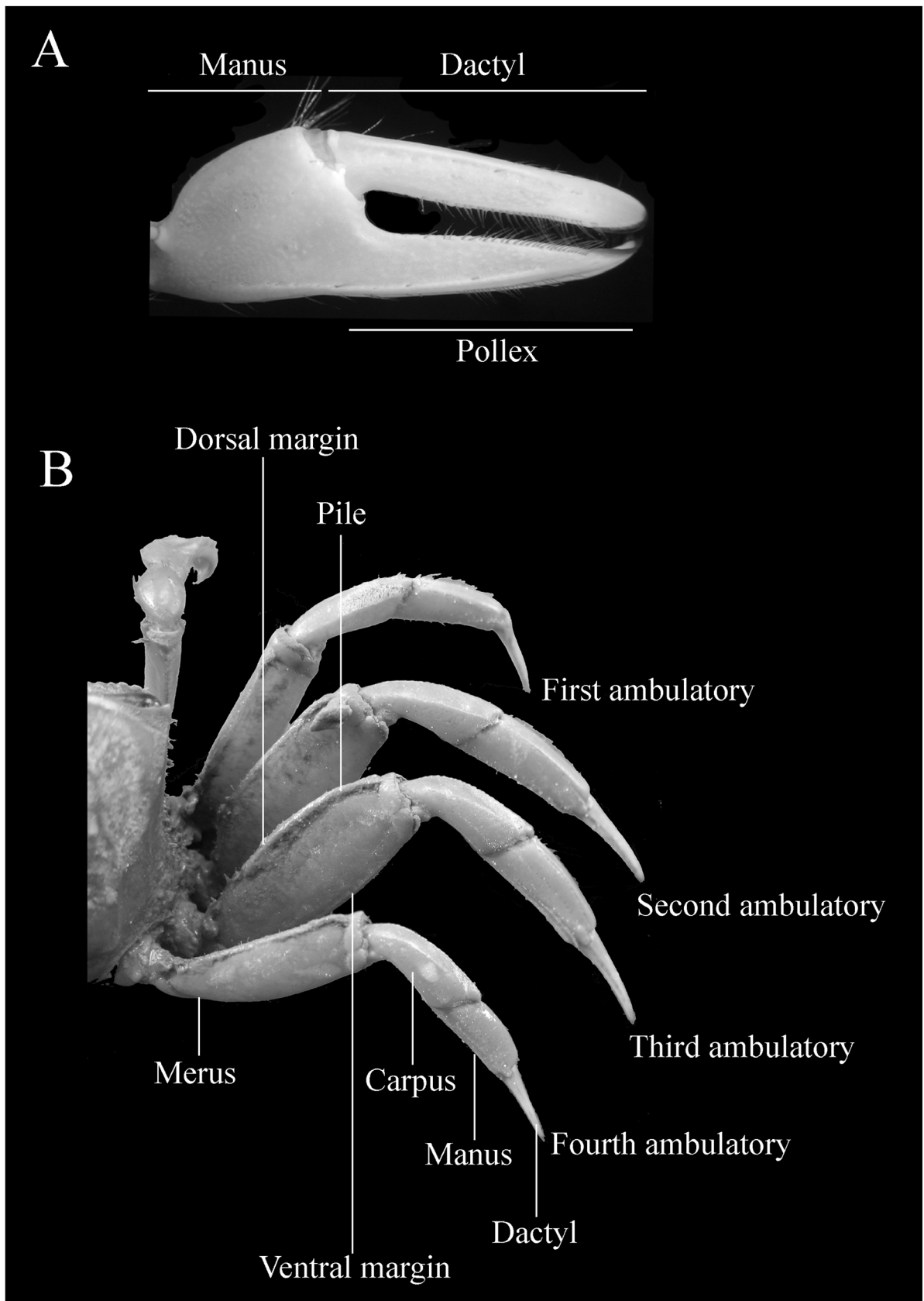


Figure 2. Morphological characters of genus *Uca*: (A) minor cheliped; (B) ambulatory legs.

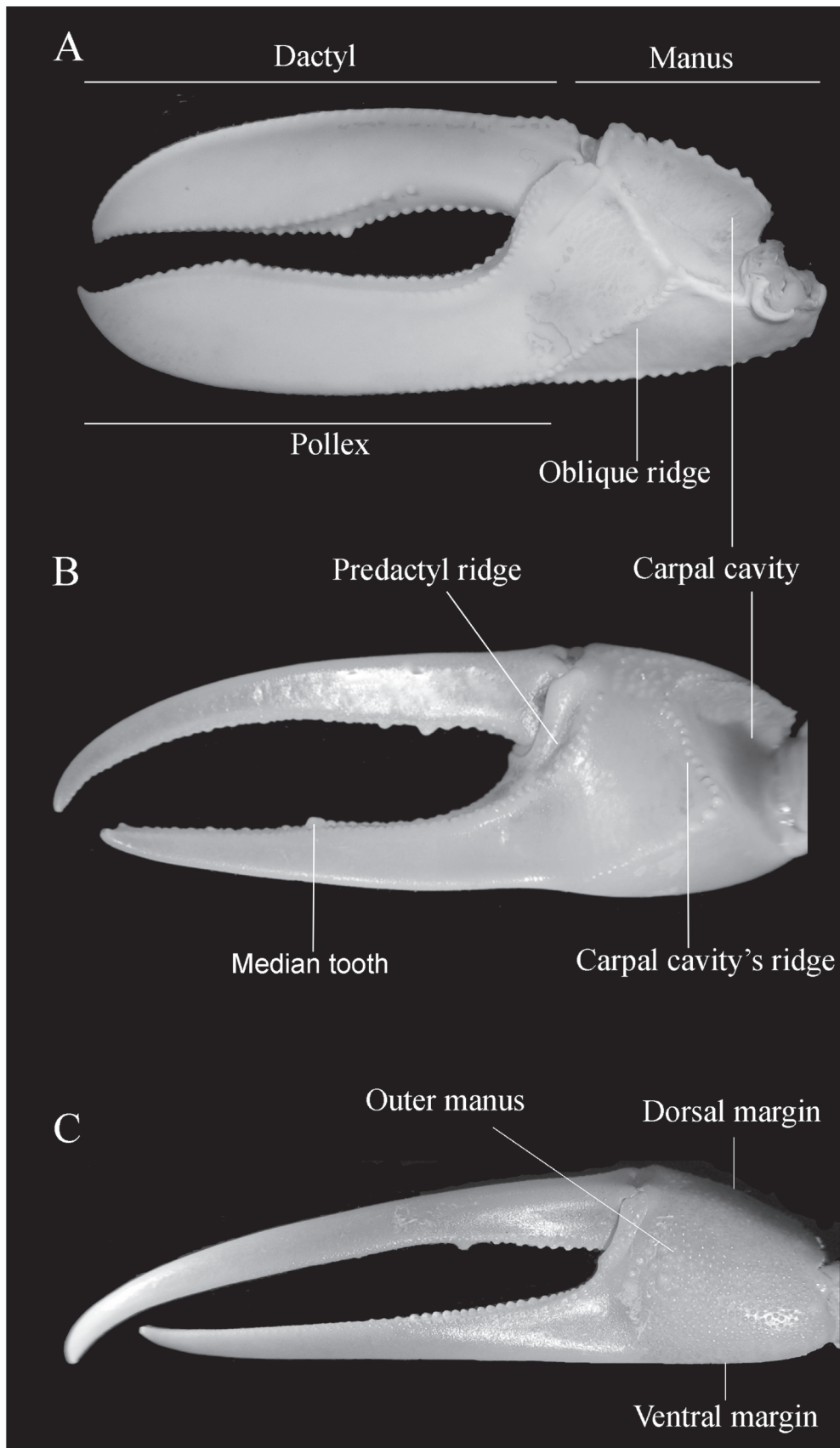


Figure 3. Morphological characters of major cheliped of genus *Uca*: (A) subgenus *Uca*; (B) subgenus *Minuca*; (C) subgenus *Leptuca*.

not the Western Atlantic *U. major* but the European and West African *U. tangeri* (Eydoux, 1835) indicated that the species *U. major* should be named *U. platydactylus*. Further, the species known as *U. tangeri* should be given the name *U. major* (Holthuis, 1979). This change would cause considerable confusion in the nomenclature because, as pointed out by Holthuis (1979) and Manning and Holthuis (1981), the epithet *tangeri* has been mostly used for the Eastern Atlantic species since 1900 and has been cited by many European zoologists, and also the literature, especially the non-taxonomic literature, is quite extensive. In addition, it was adopted by Crane (1975) in her fundamental monograph, which became at that time and still is today the basis for all taxonomic and ethological studies of *Uca*.

To avoid this possible confusion, Holthuis (1979) suggested to the International Commission of Zoological Nomenclature (ICZN): "to make use of its plenary powers and designate for *Cancer vocans major* and all its junior objective synonyms a neotype specimen which belongs to the species that H. Milne Edwards (1837) described as "*Gelasimus platydactylus*". As a neotype, Holthuis (1979) designated the male from Cayenne, deposited in the Muséum national d'Histoire naturelle, Paris, because the original type material of *Cancer vocans major*, like most of Seba's dry material, could not be traced. The suggestion made by Holthuis (1979) was followed by the ICZN (ICZN, 1983). With this decision, *U. major* is the type species of the genus, but *U. tangeri* is, technically, the species for which the genus was described.

Regarding the type locality, Crane (1975) pointed out that, in conformance with the suggestion by Holthuis (1962), the adoption by the ICZN of *Cancer vocans major* as the lectotype of *U. (U.) major* resulted in an erroneous designation of Brazil as the type locality, because several localities given by Seba have proved to be uncorrected, and no confirmed records of *U. (U.) major* south of Cayenne are known. Judging by the presently known range of the species, the correct type locality is either the southwest coast of the

Iberian Peninsula or the west coast of Africa. At that time, Crane (1975) agreed with the statement of Chace and Hobbs (1969) that "the only change to correct the type locality is erecting a neotype, but as the species identity is not in question, there is no reason to do this". However, with the solution proposed by Holthuis (1979) to adopt the holotype of *Gelasimus platydactylus* as the neotype of *Cancer vocans major* and thus avoid the painful change of names between *major* and *tangeri*, the type locality of the genus is designated as Cayenne, French Guyana.

Key to the South Atlantic subgenera of the genus *Uca*

- 1 A proximal spine opposing the spoon-tipped setae of the second maxilliped. Front exceedingly narrow, less than 1/10 of carapace width, or moderate tending toward narrow in the Eastern Atlantic species *Uca* s. str.
 - Proximal spine opposing the spoon-tipped setae of the second maxilliped absent. Front broader, more than 1/10 of carapace width... 2
- 2 Carapace with two pairs of postero-lateral stria *Minuca*
 - Carapace with a single pair of postero-lateral stria..... *Leptuca*

Diagnosis of South Atlantic subgenera of the genus *Uca*

Subgenus *Uca* s. str. Leach, 1814

Diagnosis: Species of moderate to large size, with heavy major cheliped. Spoon-tipped setae of second maxilliped with proximal spine opposing the spoon. Antero-lateral margins short, sometimes almost lacking. Eyebrows not provided with lower margin. Front exceedingly narrow, less than 1/10 of carapace width [except *U. (U.) tangeri*]. Carpus of major chela with large tubercles.

Subgenus *Minuca* Bott, 1954

Diagnosis: Rather homogeneous species of small to large size. Second maxilliped with

few spoon-tipped setae, without a proximal spine opposing the spoon. Antero-lateral margins long and convex. Lower margin of eyebrows well developed. Front wide, more than 1/10 of carapace width. Carapace with a fixed pattern of two postero-lateral striae.

Subgenus *Leptuca* Bott, 1973a

Diagnosis: Species of very small to moderate size. Spoon-tipped setae of second maxilliped moderate to numerous, without proximal spine opposing the spoon. Antero-lateral margins short, well defined. Front moderate to wide, more than 1/10 of carapace width. About one third with pleon segments (3–6 or 4–6) partly or completely fused. Carapace strongly arched, with one postero-lateral stria.

Key to the South Atlantic species of the genus *Uca*

- 1 Front extremely narrow, lesser than 1/4 of front-orbit distance [exception: *U. (U.) tangeri*] 2
 - Front moderately narrow to wide, more than 1/4 of front-orbit distance 3
- 2 Orbital floor with a larger spinous tubercle near inner corner *U. (U.) tangeri*
 - Orbital floor without a larger spinous tubercle near inner corner *U. (U.) maracoani*
- 3 Carapace with two pairs of postero-lateral striae 4
 - Carapace with a single pair of postero-lateral striae 9
- 4 Merus of second and third ambulatory legs enlarged. Pubescence on dorsal margin of carapace *U. (M.) thayeri*
 Merus of second and third ambulatory legs slender. No pubescence on dorsal margin of carapace 5
- 5 Major palm with oblique tuberculate ridge absent. Female gonopore with edge raised, with

3 unequal tubercles, without pubescence on ambulatory legs *U. (M.) vocator*
 - Major palm with oblique tuberculate ridge present. Female gonopore with edge raised or not and a single tubercle present or absent....6

6 Ambulatory legs with pubescence on dorsal margin of carpus and on both dorsal and ventral margins of propodus, covering its entire surface *U. (M.) mordax*
 - Ambulatory legs with pubescence on dorsal margin of carpus and propodus, absent on ventral margins of propodus 7

7 Tubercles of suborbital crenulations well separated throughout in both sexes; orbits oblique on males. Outer major manus with pubescence near pollex *U. (M.) victoriana*
 - Tubercles of suborbital crenulations close-set on inner margin, becoming separated only near outer orbital margin; orbits straight in males. Outer major manus without pubescence near pollex 8

8 Semicircular divergence of proximal pre-dactyl tuberculate ridge present. Female gonopore with posterior margin slightly raised, variable, but not forming a definite tubercle....
 *U. (M.) burgersi*
 - Semicircular divergence of proximal pre-dactyl tuberculate ridge absent. Female gonopore with a larger tubercle.....
 *U. (Minuca) rapax*

9 Distinct ridge on lower anterior manus of first ambulatory on both sides in males. Fourth to sixth or fifth and sixth abdominal segments fused in both sexes *U. (L.) uruguayensis*
 - Distinct ridge on lower anterior manus of first ambulatory on both sides in males absent. Female with third to sixth abdominal segments fused or not fused 10

10 Antero-lateral margins short, slightly convex, angling bluntly into dorso-lateral margin. Abdominal segments fused
 *U. (L.) leptodactyla*

- Antero-lateral margins straight, angling sharply into dorso-lateral margins. Abdominal segments not fused *U. (L.) cumulanta*

South Atlantic species of subgenus *Uca* s. str.

***Uca (Uca) maracoani* (Latreille, 1802–1803)**

(Figs. 4A–H, 15A)

Maracoani Marcgrave, 1648: 184, 1 fig.

Cancer palustris cuniculos sub terra agens Sloane, 1725: 260.

Ocypode maracoani Latreille, 1802–1803: 46.

Ocypode heterochelos Olivier, 1811: 417.

Gelasimus maracoani – Latreille, 1817: 519.

Gonoplax maracoani – Lamarck, 1818: 254.

Gelasima maracoani – Latreille, 1818: 3, pl. 296, fig. 1.

Gelasimus maracoani – Demarest, 1825: 123; Dana, 1852: 318; H. Milne Edwards, 1852: 144, pl. 3, figs. 1, 1a, 1b; Smith, 1869: 35; Kingsley, 1880: 136; Cano, 1889: 92; Aurivillius, 1893: 35; Ortmann, 1894: 756; Bott, 1973b.

Uca maracoani – Moreira, 1901: 52; Rathbun, 1918: 378; Oliveira, 1939: 123, pl. 1, 4, 6, 7, figs. 4, 17, 18, 33, 39; Crane, 1943b: 35; Fausto Filho, 1966: 34; Coelho, 1969: 235; 1995: 139; Coelho and Ramos, 1972: 198; Coelho and Ramos-Porto, 1980: 137; Melo, 1996: 490; 1998: 503; Távora, 2001: 100; Almeida and Coelho, 2008: 26; Almeida *et al.*, 2006: 15.

Uca (Uca) maracoani – Holthuis, 1959b: 260, pl. XIII; Crane, 1975: 143, pl. 21A–D, 44B, 45B; figs. 28, 33A–FF, 36C, 37G, 34B, 53A, B, 55, 56D, 60F–G, 65B, 78, 79, 80, 81H, 82C, 83C, 84, 88, 89, 94, 99; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 242; Coelho *et al.*, 2008: 43; Almeida *et al.*, 2010: 355.

Uca maracoani antiqua Brito, 1972: 95, figs. 1–8 (fossil).

Type locality: Cayenne, French Guyana.

Type material: Lectotype male (MNHN-IU-2011-5566) (proposed by Crane, 1975), and Paralectotype male (MNHN-IU-2011-5567) (picked up by D. Guinot, pers. comm.). Not examined.

Material examined: 120 males, 65 females and 4 ovigerous females. **Venezuela:** Margarita Island (USNM 134717, 1m); Amacuro Delta, Pedernales (USNM 138583, 14m, 3f); **Trinidad and Tobago:** Caroni swamp (USNM 137749, 2m, 1f); Cocorite (USNM 138578, 16m); Cocorite, Port-of-Spain (138579, 15f, 1ovf); **Guyana:** Georgetown, foot of Kitty village (USNM 138580, 26m); Georgetown (USNM 138581, 15f, 3ovf); Georgetown, mouth of Demerara River (USNM 138582, 3m, 2f); **Brazil:** Amapá: Jipioca (MZUSP 12871, 4m, 1f; MZUSP 13134, 1f); Pará: Aruperé (MZUSP 12307, 1f), Vigia (MZUSP 4564, 1m, 2f), Salinópolis (MZUSP 12058, 3m); Maranhão: Estiva (MZUSP 6218, 2m), São Luís, mangue do Merck (MZUSP 6219, 1m, 1f), São Luís (DOUFPE 2235, 3m), Tibiri (DOUFPE 2225, 1m); Rio Grande do Norte: Natal (USNM 25697, 6m, 1f), Rio Galinhos (DOUFPE 2237, 1m, 1f); Paraíba: Mamanguape (MZUSP 13259, 1m, 1f), Rio Paraíba do Norte (DOUFPE 2215, 3m, 1f); Pernambuco: Itamaracá, Vila Velha (DOUFPE 13203, 2m, 3f), Itamaracá, Rio Jaguaribe (DOUFPE 2234, 2m), Jaboatão dos Guararapes, Barra de Jangadas (DOUFPE 2205, 2m), Recife, Rio Pina (DOUFPE 2212, 3f), Cabo de Santo Agostinho, Gaibu (DOUFPE 2235, 1m), Ipojuca, Suape (DOUFPE 2209, 5m, 3f), Tamandaré, Rio Formoso (DOUFPE 2229, 1m); Alagoas: Maceió, Praia do Sobral (MZUSP 11778, 1m); Sergipe: Aracajú, Rio Sergipe (DOUFPE 2208, 1m); Bahia: Ilha de Itaparica (USNM 138584, 1m, 1f), Ilha de Itaparica, Vera Cruz, Caixa Pregos (MZUSP 9965, 1m); Salvador, “Plataforma” (USNM 40614, 7m, 2f); Rio de Janeiro: Angra dos Reis (MZUSP 3058, 4m, 5f); São Paulo: Ubatuba, Mar Pequeno (MZUSP 7358, 2m, 2f), Cananéia, Rio Baguassu (MZUSP 3993,

1m); Paraná: Paranaguá (USNM 71177, 1m).

Diagnosis: Male. Front extremely narrow; orbits straight; dorsal margin of carapace without granules or tubercles; antero-lateral margins very short, straight, marked by close-set tubercles, angling moderately sharp into dorso-lateral margins, where the tubercles are

less developed than on antero-lateral, ending in single relatively larger tubercle; eyebrow reduced, not provided with lower margins (Fig. 4A). Suborbital crenulations usually larger, increasing in size toward outer orbital margin (Fig. 4B); no tubercles or spines on orbital floor; postero-lateral stria absent. Fingers of

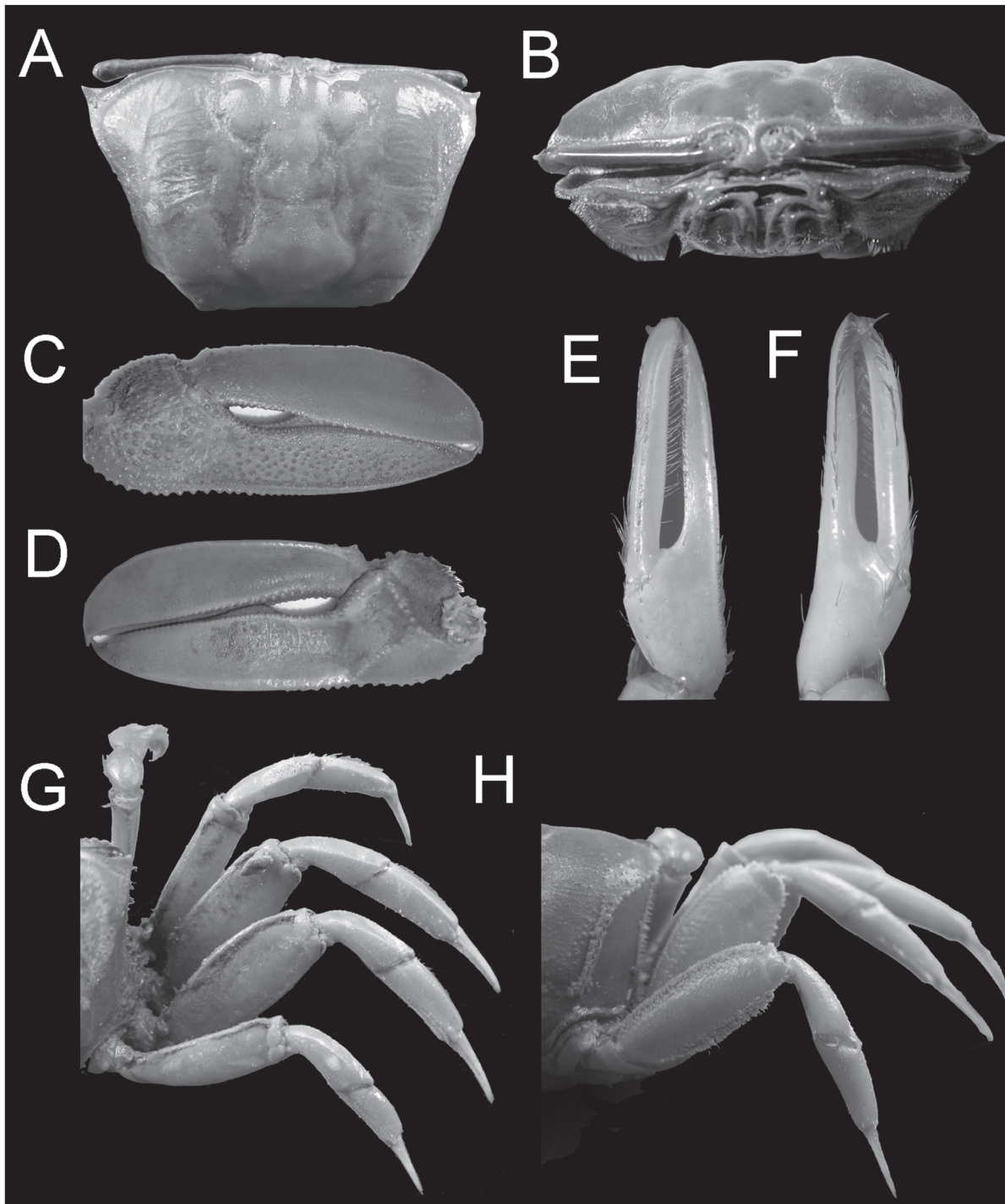


Figure 4. *Uca (Uca) maracoani* (DOUFPE 13203): (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (30 mm CW).

minor cheliped very long, without serrations, with long hair throughout their length (Figs. 4E, F). Antero-dorsal margins of major merus with row of well separated tubercles or blunt spines, running its entire length; no tubercles or spines on inner margin of carpus; outer manus extremely short, covered by larger, well separated blunt tubercles, increasing in size near ventral margin (Fig. 4C); oblique tuberculate ridge on palm strong throughout, higher at apex, continuing upward by a row of low, flat tubercles along carpal cavity (Fig. 4D); pollex and dactyl much longer than manus, broad, strong compressed; dactyl broader than pollex; narrow gap present proximally (Figs. 4C, D); gap pubescence absent. Merus of ambulatory legs moderately slender, dorsal surface of carpus and propodus of first 2 ambulatory legs densely pilous (Fig. 4G). Abdominal segments not fused.

Females. Dorsal margin of carapace rough with tubercles and small granules mainly near antero- and postero-lateral margins which are stronger than in males, armed with more developed tubercles. Merus broader than in males, its ventral margin, including minor cheliped merus, armed with well developed blunt tubercles; plentiful pubescence on proximal end of dorsal margin of merus of first 3 ambulatory legs; pubescence on both dorsal and ventral margins of merus of fourth ambulatory (Fig. 4H). Gonopore with larger, outer tubercle.

Distribution: Western Atlantic – West Indies, northern South America to Brazil (Paraná).

Remarks: The antero- and dorso-lateral margins of carapace are slightly better developed in specimens from Guyana (USNM 138580) and from Amapá, Brazil (MZUSP 12871). In specimens from other localities, the antero- and dorso-lateral margins are undeveloped, with small granulations. In females from Guyana (USNM 138581) and from Amapá, Brazil (MZUSP 12871; MZUSP

13134), the ornamentation of the carapace and ambulatory legs is stronger than in females from other localities, and numerous tubercles can be found on the dorsal margin of the carapace. However, the plentiful pubescence on the proximal dorsal margin of the merus of the first three ambulatory legs is sparse to absent.

Regarding the geographical distribution, Sloane (1725) recorded *U. (U.) maracoani* in Jamaica, but no later records for this locality are known. Barnwell (1986) reported for the first time the occurrence of *U. (U.) major* in Kingston Harbor, Jamaica, which suggests that the species reported by Sloane (1725) may have been *U. (U.) major*. In fact, Sloane (1725) based his identification on the figures and descriptions from Maracoani, of Marcgrave (1648). In view of the similarities between the two species, Sloane may have confused them. Moreover, these two species are sympatric only in Trinidad and Tobago (von Hagen, 1970). Crane (1975) reported the occurrence of a female of *U. (U.) maracoani* in Santo Domingo, extending the sympatric area of the two species. This specimen should be deposited in the AMNH (AMNH 2466), but it could not be located in the course of this revision.

With regard to the type specimen, Crane (1975) designated a lectotype from among four males deposited in Paris, which are, according to D. Guinot (pers. comm.), Latreille's original specimens. The specimens were deposited in a box labeled "*Gelasimus maracoani* Margr. M. Leprieur. Cayenne". The specimen selected by J. Crane is the only one in almost perfect condition (Crane, 1975: 146). The original species of Marcgrave was probably collected in Brazil. In the original description, Latreille (1802–1803) mentioned as the type locality "Le continent de l'Amérique Meridionale". Rathbun (1918: 378) restricted the species to Brazil; however, Crane (1975) pointed out that, because Latreille was the first author to mention the species after Linnaeus (1758), he stands as species authority, and since the material in Muséum national d'Histoire

naturelle, Paris appears to be authentically his, it has seemed appropriate to consider Cayenne as the type locality.

***Uca (Uca) tangeri* (Eydoux, 1835)**
(Figs. 5A–H, 15B)

Cancer Uka una, *Brasiliensis* Seba, 1759: 44, pl. 18, fig. 8.

Cancer vocans major Herbst, 1782: 83, pl. 1,

fig. 11.

Ocypoda heterochelos Lamarck, 1801: 150; Bosc, 1802: 197.

Cancer Uka Shaw and Nodder, 1802: pl. 588.

Uca una Leach, 1814: 430.

Gelasimus tangeri Eydoux, 1835: pl. 14.

Gelasimus perlatus H. Milne Edwards, 1852: 151; Kingsley, 1880: 153; Aurivillius, 1893: 31; 1898: 862.

Gelasimus tangeri – Heller, 1863: 101; Kingsley,

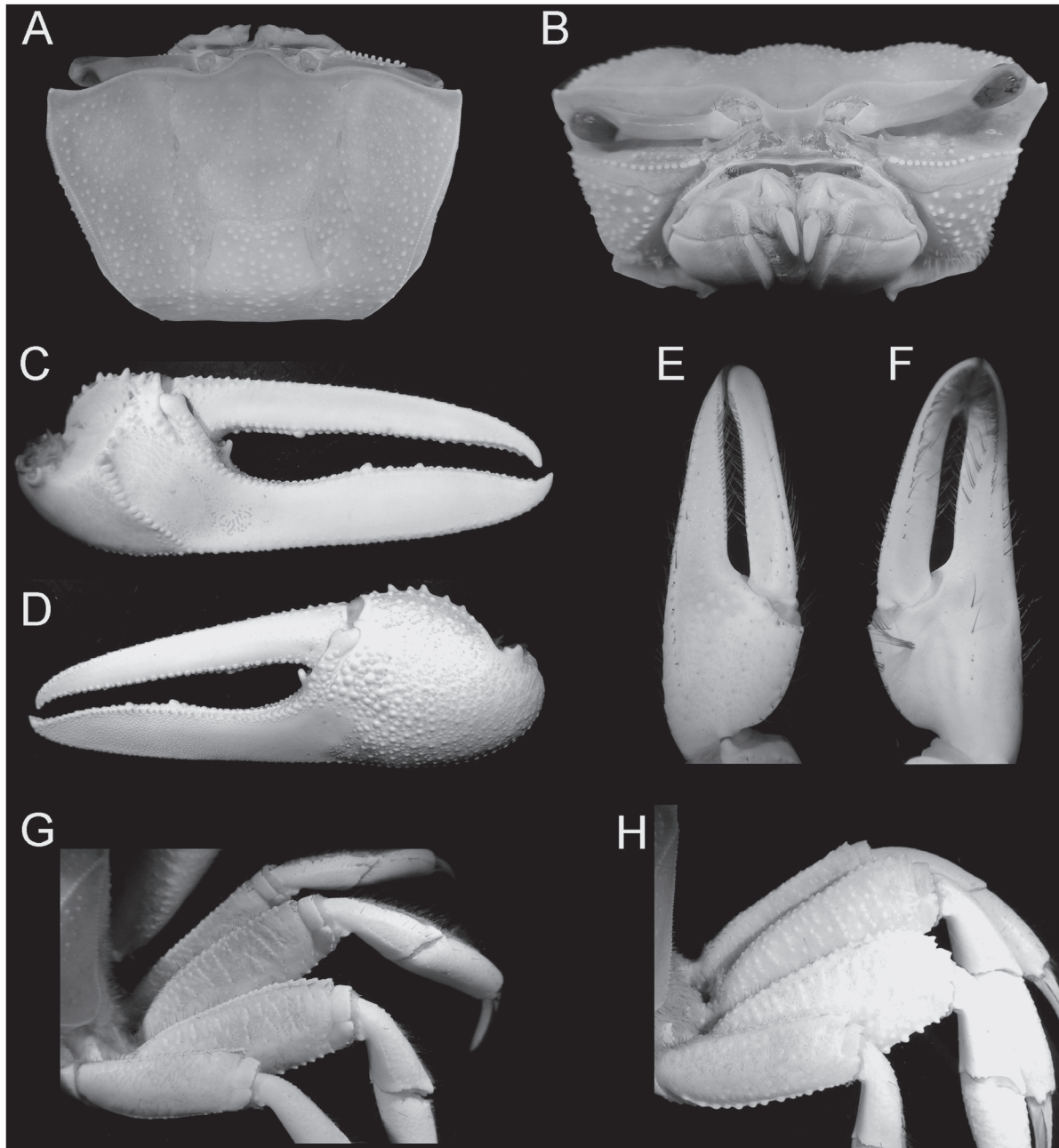


Figure 5. *Uca (Uca) tangeri*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. A, B, E–G: USNM 138109, 36.3 mm CW; C–D: USNM 20575, manus+pollex = 17.2 mm; H: USNM 138109, 29 mm CW.

1880: 153; Miers, 1881: 262; Hilgendorf, 1882: 24; Aurivillius, 1893: 34; Ortmann, 1894: 760; Nobre, 1931: 179.

Gelasimus cimatodus Rochebrune, 1883: 171.

Uca tangeri – Rathbun, 1918: 387, pl. 135, 136; Bott, 1973b; Powell, 1979: 127; Manning and Holthuis, 1981: 221

Goneplax speciosus Monod, 1933: 548 (*nomem nudum*).

Gelasimus (Uca) tangeri – Bruce-Chwatt and Fitz-John, 1951: 117.

Uca tangeri matadensis Monod and Nicou, 1959: 988, figs. 1, 3, 6.

Uca (Minuca) tangeri Bott, 1968: 168.

Uca (Afruca) tangeri Crane, 1975: 118, pl. 18A–D, figs. 27D–F, 37E, 45E–H, 46F, 63D, 63D, 81E, 82F, 99.

Uca (Uca) tangeri – Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 242.

Type locality: Tangiers, Morocco.

Type material: Holotype male. Philadelphia Academy of Natural Sciences, Philadelphia (ANSP 9-3028). Not examined.

Material examined: 129 males, 151 females, and 9 ovigerous females. **Portugal:** Algarve, Rio de Faro (USNM 258251, 1f; USNM 138105, 66f, 9ovf; USNM 138106, 4m); **Morocco** Mohamedia, Qued Nefifikh (USNM 258252, 1f); **Senegal:** Dakar (USNM 21387, 4m, 1f); **Liberia:** Monrovia (USNM 29576, 1m), Monrovia, Rock Spring (USNM 20575, 4m, 2f), Twe's farm (USNM 97876, 2m); **Nigeria:** Lagos, Tarkwa Bay (USNM 138107, 28m, 17f), Haven Van (USNM 120897, 2m, 1f); **Republic of Congo:** St. Antonio, mouth of Congo River (USNM 54233, 1m), Banana (AMNH 3073, 2m, 2f; AMNH 3275, 2f), mouth of Congo River (USNM 54232, 4m, 3f; USNM 54231, 6m, 6f); **Angola:** (AMNH 5933 part, 1m; AMNH 5933 part, 13m, 4f; AMNH 5935 part, 10m, 8f; AMNH 5922, 2m); Luanda, Samba Pequena (USNM 138110, 33m; USNM 138109 part, 34f; USNM 138109 part, 8m),

Lobito (AMNH 5917, 3m, 2f), St. Antonio of Zaire (AMNH 3072, 1m, 1f).

Diagnosis: Male. Front moderately wide; orbits straight; carapace profile arched, not semi-cylindrical; dorsal margin of carapace covered by well separated, larger, rounded tubercles; antero-lateral margins very short, straight, reduced on major side; dorso-lateral margins of carapace beaded with close-set small tubercles; eyebrow absent (Fig. 5A). Suborbital crenulations strong throughout, increasing little in size toward outer orbital margin; orbital floor near inner corner with a larger, sharp tubercle (Fig. 5B). Mound of moderately tubercle external to sharp tubercle, immediately above crenulations on inner margin; postero-lateral striae absent. Fingers of minor cheliped long, without serrations on inner margins (Figs. 5E, F). Major merus with larger blunt tooth fringed with long setae distally on dorso-lateral margin; carpus with strong, blunt tubercle on inner margin; outer manus rough with larger tubercles (Fig. 5D); oblique tuberculate ridge on palm strong (Fig. 5C); pollex and dactyl longer than manus, both flatted, moderately slender; pollex broad; dactyl oblique, little shorter than pollex; gap narrow, pubescence absent (Figs 5C, D). Merus of ambulatory legs moderately broad, armed with serrations in both antero- and postero-ventral margins, not blunt and restricted to the postero-ventral margin of the first 3 pairs; distal end of carpus and propodus with a row of setae on dorsal margin; no pubescence on ambulatory legs (Fig. 5G). Abdominal segments not fused.

Female. Tubercles on dorsal margin of carapace more homogeneous than in males. Tubercles on dorsal and ventral margin of merus of ambulatory legs stronger than in males; posterior surface roughened by moderately tubercles; carpus and propodus roughened by moderately tubercles (Fig. 5H). Gonopore with small tubercle, with apex antero-inner, the rest of its surface marked by several longitudinal creases.

Distribution: Eastern Atlantic – Portugal

to Angola (Lobito).

Remarks: In juveniles, the granulations on the dorsal margin of carapace are sparse, but the inner corner orbital tubercle as well as the tubercle on the inner margin of the major carpus are well developed. The gap pubescence on major chela was present in 53 males examined (USNM 138106, 4m; USNM 120897, 2m; USNM 97876, 2m; USNM 20575, 4m; USNM 21387, 1m; USNM 138107, 28m; USNM 20575, 1m; AMNH 5933 part, 5m; AMNH 5917, 3m; AMNH 5935 part, 4m), all of them small to medium-sized specimens (13.3 mm to 23.2 mm CW), and in 33 juveniles (USNM 138110). Larger specimens (above 24.8 mm CW) do not have gap pubescence. The catalogue number USNM 21387 has one male with 23.2 mm CW with gap pubescence, and another with 24.83 mm CW without gap pubescence. Pubescence on the dorsal margin of the carpus and manus of the ambulatory legs was present in 29 males and 15 females examined (AMNH 5933 part; AMNH 5917; AMNH 5935 part; AMNH 5922). The largest known specimen of *U. (U.) tangeri* is a male from Angola (CW 33 mm, CL 47 mm) deposited in the American Museum of Natural History (AMNH 5933 part).

Crane (1975) created the monospecific subgenus *Afruca* to hold the species *U. (U.) tangeri*, on the basis of adult morphology, allied with its aberrant front width and geography. However, molecular analyses by Levinton *et al.* (1996) and Sturmbauer *et al.* (1996), and a phenetic analysis by Rosenberg (2001), grouped *U. (U.) tangeri* with the species of *Uca* s. str., suggesting the abandonment of *Afruca* and classification of this species as a member of the subgenus *Uca* s. str. Recently, a morphological phylogenetic analysis performed by Beinlich and von Hagen (2006) showed that *U. (U.) tangeri* has the major defining apomorphy of the subgenus *Uca* s.str., i.e., the proximal spine on its spoon-tipped setae, and should be placed in the subgenus *Uca* s. str. On the other hand, Spivak and Cuesta (2009), based on larval morphology, proposed that the differences between *U. (U.) tangeri* and the other species of *Uca* should be highlighted,

and that it should be placed in its own genus as *Afruca tangeri*. I follow herein the classification proposed by Beinlich and von Hagen (2006), but phylogenetic analyses should clarify this issue.

South Atlantic species of subgenus *Minuca*

Uca (Minuca) burgersi Holthuis, 1967

(Figs. 6A–H, 16A)

Gelasimus affinis Streets, 1872: 131.

Gelasimus vocator Kingsley, 1880: 147.

Uca mordax – Rathbun, 1900c: 276; 1918: 391 (part); Oliveira, 1939: 138; Buitendijk, 1950: 279; Salmon, 1967; Crane, 1957 (part).

Uca affinis Holthuis, 1959a: 76; 1959b: 265.

Uca burgersi Holthuis, 1967: 51.

Uca burgersi – Chace and Hobbs, 1969: 207, figs. 70, 71a–d; Powers, 1977: 142; Abele and Kim, 1986: 709, 715; Thurman, 1987; Coelho, 1995: 138; Melo, 1996: 487; Almeida and Coelho, 2008: 26.

Uca panema Coelho, 1972.

Minuca burgersi Bott, 1973b: 323.

Uca (Minuca) burgersi – Crane, 1975: 168, pl. 24 E–H, figs. 26F, 31H, 54G, 66F, 100; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.* 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 354.

Uca burgersie – Melo, 1998: 503 (misspelled).

Type locality: Plantation “Knip” by Westpoint, Curaçao, Netherlands Antilles.

Type material: Holotype male. Naturalis Biodiversity Center, Leiden (RMNH Crust. D. 23012). Not examined. Male and female paratype. National Museum of Natural History, Washington, DC.

Material examined: 353 males, 60 females, and 12 ovigerous females. Paratype (USNM 121099, 1m, 1f); **United States:** Florida: Broward County, Danis Beach (USNM 138488, 3m); **Mexico:** Vera Cruz: La Barra, mouth of Río Tuxpan (USNM 180176, 1m), Laguna La Mancha (USNM 180177, 1m); Campeche: mouth of Río Champoton

(USNM 180178, 1m); Quintana Roo: Isla de Cozumel (USNM 210469, 8m, 2f); **Guatemala:** Puerto Barrios (USNM 138489, 12m, 2f); **Honduras** (USNM 139173, 2ovf); **Cuba:** Isla Turigano (USNM 138491, 10m); **Jamaica:** Saint Ann Parish, Pear Tree

River (USNM 210465, 22m, 9f); Kingston, Kingston Harbor (USNM 155542, 3m); **Haiti:** Etang Saumatre, near Port-au-Prince (USNM 138492, 1m); **Dominican Republic:** Mero River (USNM 126956, 1m); Portsmouth, Indian River (USNM 126959, 5m; USNM

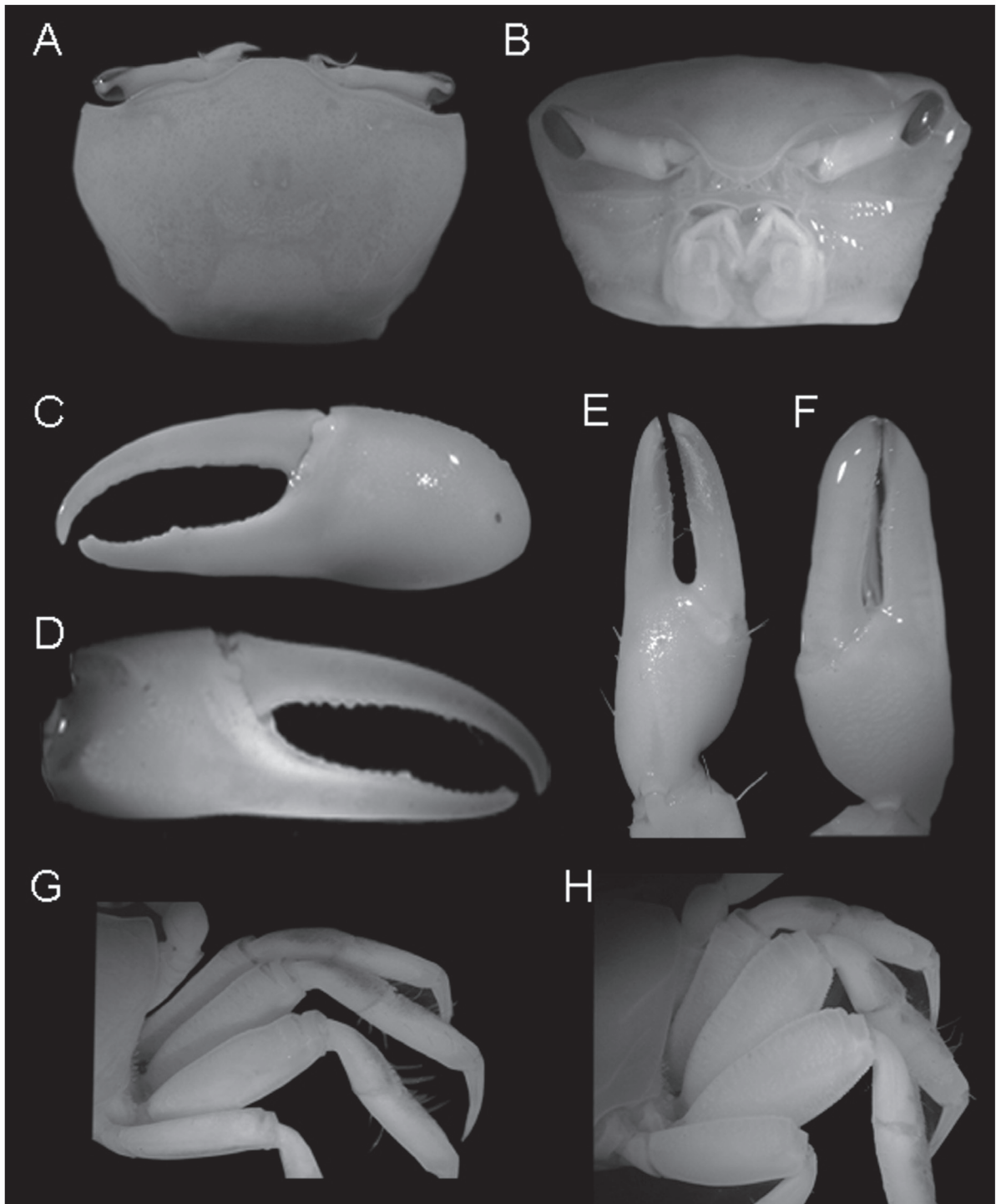


Figure 6. *Uca (Minuca) burgersi* (USNM 121099): (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F), inner face of minor cheliped; (G), general view, male ambulatory legs; (H), general view, female ambulatory legs. (16.5 mm CW); (C, D): manus + pollex = 17.2 mm.

126960, 16m, 7f, 1ovf); **Virgin Islands:** St. Thomas (USNM 138494, 13m); St. Thomas, Red Hook (USNM 138495, 81m); Guaná Island (USNM 240210, 17m); **Guadeloupe:** St. Martin, Pond of Point Blanche (USNM 138499, 2m); St. Martin, East Little Bay (USNM 138498, 4m, 4ovf); St. Martin, Crab Hole Cistern (USNM 138497, 2m, 2ovf); **Barbados:** Payne's Bay (USNM 138500, 40m, 9f); **Aruba:** Baldshi, Spaans Lagoen (USNM 138503, 1f); **Venezuela:** Aragua: Turiamo Bay (USNM 138507, 7m); Miranda: Laguna de Tacargua (USNM 138508, 1m); **Trinidad and Tobago:** Pigeon Plint Swamp (USNM 138504, 28m, 5f, 1ovf); El Socorro, Canal of Caroni River (USNM 123420, 1f); **Brazil:** Pará: Auruça, Curuperé (MZUSP 12313, 1m, 1f, as *U. cumulanta*); Ceará: Fortaleza (USNM 138509, 30m, 8f); Rio Grande do Norte: Galinhos, Rio Galinhos (DOUFPE 2374, 1m, 1f); Pernambuco: Goiana, Atapuz (DOUFPE 2073 1m, 1f; DOUFPE 2064, 1ovf), Itamaracá, Vila Velha (DOUFPE 2077, 1m, 1f), Tamandaré, Rio Mamucaba (DOUFPE 2117, 3m, 2f); Sergipe: Crasto, Rio Sergipe (DOUFPE 2119, 3m, 1f); Bahia: Baía de Todos os Santos, Itaparica (USNM 138510, 5m, 1f), Maraú, Ilha do Campinho (UESC 852, 2m, 1f), Ilhéus, Rio Mamoá (UESC 546, 1m, as *U. rapax*), Alçoçaba, Rio Itanhem (UESC 1035, 6m, 1f), Nova Viçosa, Rio Peruípe (UESC 848, 1m, 1ovf); Espírito Santo: Anchieta, Mangue do Rio Benevente (MZUSP 18638, 1m), Conceição da Barra (MZUSP 18650, 8m, as *U. vocator*); Rio de Janeiro: Mangue de Itacuruça (MZUSP 17201, 2m, 2f, as *U. uruguayensis*), Ilha Pinheiro (USNM 138511, 4m); São Paulo: Ubatuba, Itamambuca (MZUSP 14515, 3m, 4f).

Diagnosis: Male. Front wide; orbits almost straight; no pubescence on dorsal margin of carapace; antero-lateral margin long, straight to slightly convex, roundly into dorso-lateral margins; eyebrow moderately narrow, lower margin slightly beaded (Fig. 6A). Suborbital crenulations formed by small, close-set tubercles on inner margin, increasing in size, well separated toward outer orbital

margins (Fig. 6B); row of setae running above and bellow crenulations; upper postero-lateral striae long. Fingers of minor cheliped with small, blunt serration on their inner margins (Figs. 6E, F). Antero-dorsal margin of major merus with small serrations on distal end; major carpus with moderately pubescence on dorsal surface; outer manus covered by larger, well separated tubercles on upper margin, reduced toward ventral margin (Fig. 6C); oblique tuberculate ridge on palm high at apex, ill-defined to absent on distal end, continuing upward along carpal cavity; semicircular divergence of proximal pre-dactyl tuberculate ridge (Fig. 6D); pollex as long as manus, dactyl longer than manus, the former straight, with well developed tooth in halfway to its tip, the latter oblique, strongly curved down on tip, below pollex tip; gap pubescence absent (Figs. 6C, D). Merus of ambulatory legs slender; pubescence strongly attached on dorsal margin of carpus and propodus of first 3 ambulatory legs (Fig. 6G). Abdominal segments not fused.

Female. Merus of ambulatory legs broader than in males, with pubescence strongly attached on dorsal margins of carpus and propodus (Fig. 6H). Gonopore posterior margin raised but not forming a definite tubercle.

Distribution: Western Atlantic – United States (Florida), Gulf of Mexico, West Indies to Brazil (São Paulo).

Remarks: *Uca (M.) burgersi* is very close to *U. (M.) mordax* in morphology. The two species can be distinguished by the presence of pubescence on the ventral margin of the propodus in *U. (M.) mordax*, which is absent in *U. (M.) burgersi*. For additional diagnostic differences between *U. (M.) mordax* and *U. (M.) burgersi*, see Holthuis (1959b) and Crane (1975: 170).

Uca (M.) burgersi is also very similar to *U. (M.) rapax*, and misidentifications between them are very common. In males and females of *U. (M.) burgersi* the carapace is more arched than in *U. (M.) rapax*; while in males of *U. (M.) burgersi*, the pre-dactylar ridge on the inner

palm is more arched than in *U. (M.) rapax*. For more details, see Barnwell and Thurman (1984: 156) and Castiglioni *et al.* (2010).

The description of *U. (M.) burgersi* by Holthuis (1967) was based on a male specimen. Females are labeled as paratypes in the USNM collection, but they are not mentioned in the original description. However, according to the article 72.4.1.1 of the ICZN (ICZN 1999), for a nominal species published before 2000, any evidence, published or unpublished, may be taken into account to determine what specimens constitute the type series (ICZN, 1999 art. 72.4.1.1). Therefore, the female specimens deposited in USNM collections can be considered as paratypes.

Uca (Minuca) burgersi was first recognized as a new taxon by Streets (1872), who gave the name *Gelasimus affinis* and deposited the types in the Academy of Natural Sciences, Philadelphia, USA [with some duplicates sent to the Naturalis Biodiversity Center, Leiden, The Netherlands (RMNH)], although the type material is restricted, according to Crane (1975), to the syntypes deposited in the RMNH. Kingsley (1880), studying the material for his revision of the genus *Uca*, removed the label, and replaced it with another one on which was written "*G. vocator*," because he believed that *G. affinis* was a synonym of *G. vocator* (Holthuis, 1967). Rathbun (1918) suggested *G. affinis* as a junior synonym of *U. mordax* and, due to the change of labels made by Kingsley, assumed that the type of *G. affinis* was not extant.

With the rediscovery of the name designated by Streets (1872), Holthuis (1959a) mentioned *G. affinis* in his treatise on the crustaceans of St. Martin. Subsequently, Holthuis (1967) found that the name designated by Streets was preoccupied by *G. affinis* designated by Guérin-Méneville (1829), who, in 1838 (Guérin-Méneville, 1838), mentioned in the synonymy of *G. tetragonon* [actually *U. (Gelasimus) tetragonon* (Herbst, 1790) from the Indo-West Pacific, although Crane (1975) pointed out that this species should be, in fact, *U. (Paraleptuca) chlorophthalmus* (H. Milne Edwards, 1837) or

U. (Paraleptuca) lactea (De Haan, 1835)] thus becoming a homonym of *G. affinis* of Streets (Holthuis, 1967). Therefore, due to the lack of another name, Holthuis (1967) proposed the name *burgersi* for the species, in honor of Dr. A. C. J. Burges, who worked with him collecting crustaceans in Curaçao, including the holotype of *U. (M.) burgersi*.

Uca (Minuca) mordax (Smith, 1870)

(Figs. 7A–H, 16B)

Gelasimus mordax Smith, 1869: 35; 1870: 135, pl. 2, fig. 3; pl. 4, figs. 4, 4a.

Uca minax – Pearse, 1916: 532, 554 (part).

Uca mordax – Rathbun, 1918: 391 (part); Oliveira, 1939: 138; Crane, 1943a: 31, figs. 1a–c, pl. 1, figs. 1–3; 1943b: 37; 1957 (part); Powers, 1977: 144; Coelho and Ramos-Porto, 1980: 137; Coelho, 1995: 139; Melo, 1996: 491; 1998: 504; Almeida *et al.*, 2006: 16 (part); Almeida and Coelho, 2008: 26.

Uca (Minuca) mordax – Bott, 1954: 165, Pl. 15, 16, fig. 7a, b; Holthuis, 1959b: 262, fig. 64a–c, pl. XIV fig 2, pl. XV figs. 2; Crane, 1975: 173, pl. 25A–D, figs. 67F, 100; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 354.

Minuca mordax Bott, 1973b: 323.

Type locality: Belém, Pará, Brazil.

Type material: Seven male and five female syntypes. Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZ 5882). Not examined.

Material examined: 419 males, 234 females and 6 ovigerous females. **Guatemala**: Puerto Barrios (USNM 138588, 3m, 2f); **Porto Rico** (USNM 24545, 4m); **Venezuela**: Zulia: Lagunillas (USNM 138595, 1m); Sucre: Guanoco Lake (USNM 138591, 35m, 29f); Monagas: Caripito (USNM 138589, 8m, 1f), Mouth of San Juan River (USNM 138590, 26m, 17f); Delta Amacuro (USNM 138593, 74m, 43f, 40vf; USNM 138594, 2m, 1f); **Trinidad and Tobago**: Oropouche River (USNM

138597, 3m, 1f); Blanchisseuse (USNM 138596, 1m, 1f); **Guyana:** Georgetown (USNM 138598, 2m), Georgetown, near foot of Kitty Village (USNM 138599, 2m,

2f); **Suriname:** Paramaribo (USNM 138601, 18m, 9f); Marawyne River (USNM 138602, 41m, 12f); **Brazil:** Amapá: Jipioca (MZUSP 13135, 6m, 3f, as *U. leptodactyla*; MZUSP

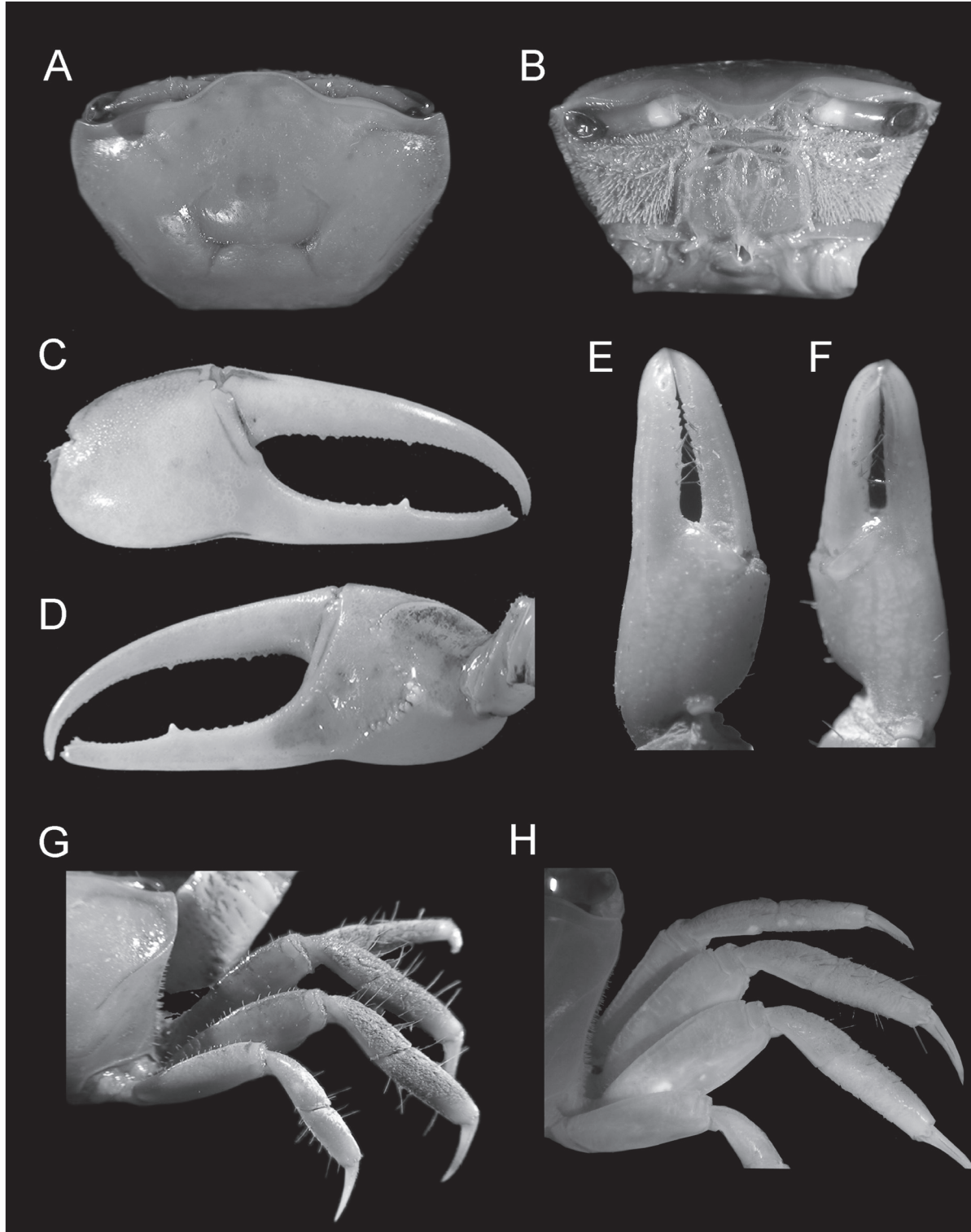


Figure 7. *Uca (Minuca) mordax*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (A, B, E–G): USNM 138588, 18.3 mm CW; (C, D): USNM 138593, manus + pollex = 37.07 mm; H: USNM 138593, 15.5 mm CW.

12212, 4m, 2f, as *U. cumulanta*); Pará: Ilha Maruim (DOUFPE 2244, 4m, 1f), Vigia (MZUSP 11971, 2f; MZUSP 11974, 2ovf; MZUSP 11975, 1m, as *U. burgersi*; MZUSP 11977, 1m, 3f; (MZUSP 11979, 2m; MZUSP 11991, 3m, as *U. burgersi*; MZUSP 11992, 2f, as *U. burgersi*; DOUFPE 2243, 13m, 5f), Baía do Sol (MZUSP 11973, 3m; MZUSP 11976, 2m, as *U. burgersi*), Belém (USNM 81394, 2m, 1f; DOUFPE 2246, 11m, 3f), Ananindeua (MZUSP 8210, 1m), Ilha Canela (MZUSP 16864, 5m, 3f), Rio Urindina (MZUSP 4818, 3m, 1f); Maranhão: Estiva (DOUFPE 2245, 7m, 2f); Pernambuco: Jaboatão dos Guararapes, Barra de Jangadas (DOUFPE 2241, 3m); Sergipe: Estância, Rio Sergipe (DOUFPE 2240, 1m, 1f); Bahia: Ilhéus, Rio Almada (UESC 573, 4m, 7f); Rio de Janeiro: Angra dos Reis (MZUSP 3679, 2m, 1f), Macaé (MZUSP 1023, 1m); São Paulo: Ubatuba (MZUSP 9828, 2m, 2f), Itamambuca (MZUSP 14516, 4m, 4f), Cananea, Rio das Minas (MZUSP 4166, 54m, 16f, as *U. cumulanta*; MZUSP 4167, 27m, 30f, as *U. cumulanta*; MZUSP 4168, 26m, 19f, as *U. cumulanta*); Santa Catarina: Itajaí (MZUSP 668, 1m, 7f); Rio Grande do Sul: Torres, Rio Mampituba (MZUSP 11844, 2m, 2f; MZUSP 12641, 4m, 1f).

Diagnosis: Male. Front wide; orbits straight; dorsal margin of carapace with very finely setae near antero-lateral margins; antero-lateral margins weakly convex, not beaded roundly into dorso-lateral margins; eyebrow moderately broad, lower margin beaded (Fig. 7A). Suborbital crenulations formed by small, close-set tubercles on inner margin, becoming larger, well separated on outer orbital margin; row of setae running immediately above and below crenulations (Fig. 7B); upper postero-lateral striae long. Fingers of minor cheliped armed with small, acute and distinct serrations on their distal end (Figs. 7E, F). Upper margin of outer manus covered by moderately tubercles, minute downward, absent near ventral margin (Fig. 7C); tubercles of oblique ridge on major palm never in linear order, largely lacking (Fig. 7D); pollex as long as manus, with enlarged

tooth in halfway to its tip; dactyls longer than manus, curving downward on their tips; gap pubescence absent (Figs. 7C, D). Merus of ambulatory legs moderately broad; pubescence strongly attached on dorsal margin of carpus and propodus and ventral margin of propodus (Fig. 7G).

Females. Small tubercles present on the dorsal margin of carapace, behind each antero-lateral angle. Merus of ambulatory legs broader than in males; pubescence on ventral margin of propodus seems more conspicuous than in males (Fig. 7H). Gonopore with small tubercle.

Distribution: Western Atlantic – Gulf of Mexico, Central America, northern South America to Brazil (Rio Grande do Sul).

Remarks: In four males examined (USNM 24545), the oblique ridge of the major palm was absent; and pubescence was present on the dorsal margin of the carapace; however, the pubescence covering the entire propodus confirms the identification as *U. (M.) mordax*. *Uca (M.) mordax* can be distinguished from *U. (M.) vocator* by the presence of pubescence on both dorsal and ventral margins of the propodus. In Crane's (1975) key for identification, it is pointed out that *U. (M.) mordax* has pubescence on the ventral sides of the carpus and propodus (Crane, 1975: 631); however, in all the specimens examined for this contribution, the pubescence was restricted only to the ventral margin of the propodus, being absent from the ventral margin of the carpus. Twelve specimens examined (USNM 138588, 3 m; USNM 138589, 8 m and 1 f) had pubescence on the ventral margin of the merus; this is not consistent enough to make it a reliable diagnostic character.

Uca (Minuca) rapax (Smith, 1870)
(Figs. 8A–H, 17A)

Gelasimus palustris Stimpson, 1859: 62 (part).
Gelasimus rapax Smith, 1870: 134.
Gelasimus vocator – Kingsley, 1880: 147 (part);
Ortmann, 1894: 757 (part).

Uca pugnax rapax Rathbun, 1900a: 585; 1918: 397; Oliveira, 1939: 134, pls. 1, 7, 10, figs. 3, 34, 35, 37, 38, 55, 56; Crane, 1943b: 40.

Uca salsisitus Oliveira, 1939: 131, pls. 3, 4, 5, 7, 8, 11, figs. 7–15, 19–21, 23, 24, 40, 43, 44, 57, 58.

Uca pugnax brasiliensis Oliveira, 1939: 131,

pls. 6, 7, 10, 11, 12, figs. 29–32, 36, 56, 57, 59, 60.

Uca rapax – Tashian and Vernberg, 1958; Fausto-Filho, 1966: 34; Chace and Hobbs, 1969: 214, figs. 73a, b; Coelho and Ramos, 1972: 199; Felder, 1973: 84, 86; Powers, 1977: 147; Abele and Kim, 1986: 66; Coelho, 1995:

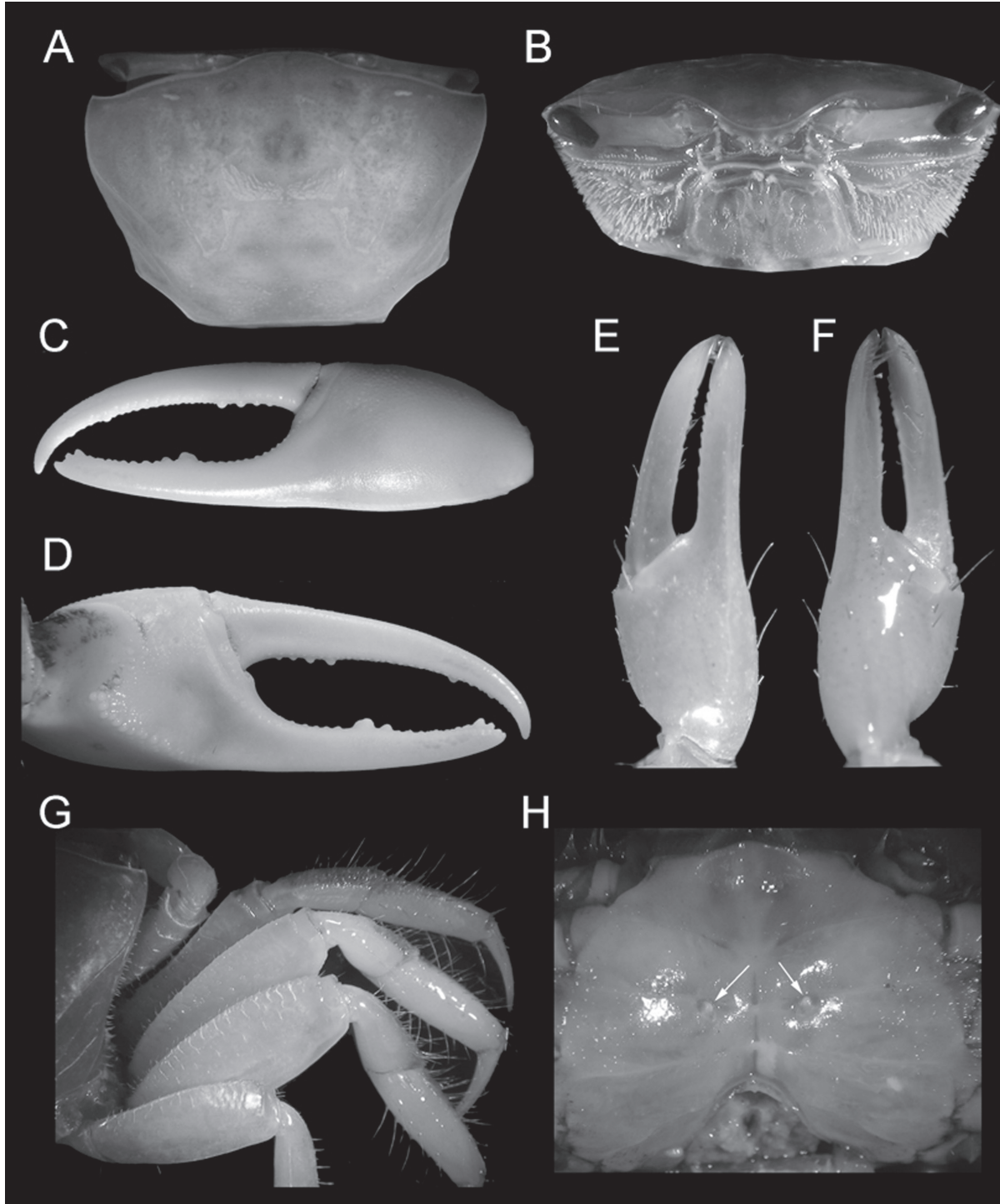


Figure 8. *Uca (Minuca) rapax*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female gonopore tubercles (arrows). (A–G): USNM 170173, 18.3 mm CW; (H): USNM 138772, 16 mm CW.

140; Melo, 1996: 492; 1998: 504; Almeida *et al.*, 2006: 16 (part); Almeida and Coelho, 2010: 26.

Uca virens Salmon and Atsides, 1968: 281, figs. 5A–F, 6.

Minuca rapax Bott, 1973b: 323.

Uca (Minuca) rapax – Holthuis, 1959b: 266, figs 64d–f, 65, pl. XIV figs. 4–6, pl. XV fig. 3; Crane, 1975: 190, pls. 27A–D, 45C–F, figs. 52C–DD, 54F, 67C, 86, 91E, F, 100; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 355.

Uca (Minuca) pugnax virens Crane, 1975: 203 (part).

Type locality: Near Colon, Aspinwall, Panama.

Type material: Not extant. Peabody Museum, Yale University, New Haven.

Material examined: 797 males, 275 females, and 15 ovigerous females. **United States:** Florida: Brevard County, Sebastian Inlet (USNM 170173, 6m), Broward County, Fort Lauderdale (USNM 138767, 3m), Dade County, Key Biscayne (USNM 138768, 2m), Dade County, South of Miami (USNM 138770, 18m, 8f), Key West (USNM 15055, 1m, 5f); Alabama: Mobile County, Bayou La Batre, Point Aux Pins (AMNH A9030 part, 8m, 4f as *Uca* sp.); Louisiana: Saint Bernard County, Lake Borgne (USNM 64155, 1m); Mississippi: (USNM 180191, 1m, 1f); Texas: Matagorda County, Colorado River Mouth (USNM 180192, 1m, 1f), Nueces County, Corpus Christi Bay (USNM 180193, 1m, 1f), Cameron County, Boca Chica (USNM 180194, 1m, 1f); **Mexico:** Tamaulipas: La Pesca, Laguna Larga (USNM 180195, 1m, 1f); Veracruz: Laguna La Mancha (USNM 180196, 1m, 2f); Tabasco: Puerto Seiba, Río Seco (USNM 180197, 1m, 1f); Campeche: Zacatal (USNM 180198, 1m, 1f), Champoton (USNM 180199, 1m, 1f); **Guatemala:** Puerto Barrios (USNM 138772, 4f); **Honduras:** Yarborough, Loyola Park (USNM 138773, 23m, 6f); **Jamaica:** Saint Catherine Parish,

Dawkins Lagoon (USNM 210462, 60m, 19f); **Puerto Rico:** San Juan (USNM 138777, 6f, 8ovf); **Virgin Islands:** St. Thomas (USNM 138778, 100m, 17f); **Colombia:** Cartagena (USNM 138794, 14m, 9f); **Aruba:** Catashi (USNM 138793, 3m, 1f); **Curaçao:** Carmabi (USNM 138792, 3m, 1f); **Venezuela:** Zulia: Maracaibo (USNM 138797, 48f); Yaracuy: month of Yaracuy River (USNM 138800, 1m); Aragua: Turiamo (USNM 138802, 31m, 10f, 1ovf); Islas Los Roques (USNM 138803, 4m, 3f); Miranda: Laguna de Tacarigua (USNM 138805, 11m); Anzoátegui: Puerto La Cruz (USNM 138806, 2m); Sucre: San Juan River (USNM 138807, 8m, 7f, 2ovf); Delta Amacuro, Pedernales (USNM 138808, 73m, 31f, 1ovf); **Guyana:** Georgetown, Kitty Village (USNM 138810, 128m); **Suriname:** Paramaribo (USNM 138813, 13m, 2f); **Brazil:** Pará: Curupeté, Auruçá (MZUSP 12310, 9m, 3f), Península Bragantina (MZUSP 16863, 6m), Marapanim (MZUSP 4732, 1m, as *U. leptodactyla*); Maranhão: São Luís (USNM 138814, 36m, 2f), Coqueiro, Estreito dos Mosquitos (DOUFPE 2273, 1m, 1f), Tibiri (DOUFPE 2266, 1m); Piauí: Praia de Macapá (MZUSP 18606, 2m); Ceará: Fortaleza (USNM 138815, 4f), Fortaleza, Rio Cocó (DOUFPE 2281, 8m); Rio Grande do Norte: Amarra Negra (DOUFPE 2264, 7m, 6f); Paraíba: Rio Paraíba do Norte (DOUFPE 2270, 1m); Pernambuco: Itamaracá, Vila Velha (DOUFPE 2248, 2m), Recife (USNM 138816, 11m, 4f, 1ovf), Jaboatão dos Guararapes, Barra de Jangadas (DOUFPE 2261, 2m), Cabo de Santo Agostinho, Pontezinha (DOUFPE 2268, 5m, 1ovf), Tamandaré, Rio Mamucaba (DOUFPE 2280, 28m, 20f); Sergipe: Estância, Rio Piauí (DOUFPE 2271, 5m, 1f), Estância, Rio Piauí, Ilha da Tartaruga (DOUFPE 2275, 3m); Bahia: Baía de Todos os Santos, Ilha de Itaparica (USNM 138817, 4m, 1f), Maraú, Ilha do Campinho (UESC 764, 16m, 1f), Ilhéus, Rio Acuípe (UESC 137, 3m, 2f), Prado, Rio Jucuruçu (UESC 1041, 2f), Prado, Barra do Cahy (UESC 1053, 2f), Caravelas, Pontal do Sul (UESC 1025, 4m, 3f), Caravelas, Rio Caravelas (UESC 1003, 6m, 1f), Mucuri, Rio Mucuri (UESC

811, 12m, 4f); Espírito Santo: Conceição da Barra (MZUSP 18494, 11m, as *U. vocator*); Itapemirim, Praia Aghá (MZUSP 18639, 1m, 4f); Rio de Janeiro: Lagoa de Itaipu (MZUSP 17226, 1m), Mangue de Itacuruça (MZUSP 17200, 4m, 2f), Macaé (MZUSP 4217, 2m), Lagoa Araruama (MZUSP 9367, 1m), Angra dos Reis (MZUSP 3059, 1m, 1f, as *U. mordax*; MZUSP 18648, 1m, as *U. leptodactyla*), Ilha Pinheiro (USNM 138818, 59m); São Paulo: Ubatuba, Mangue do Rio Escuro (MZUSP 4139, 3m, 3f, as *U. cumulanta*), Ubatuba (MZUSP 9829, 2m, 2f), Ubatuba, Rio Ribeira (MZUSP 7355, 2m, 2f, as *U. mordax*), Cubatão, Rio Cubatão (MZUSP 13095, 1m), Cubatão, Rio Piaçaguera (MZUSP 18646, 7m, 4f, as *U. vocator*).

Diagnosis: Male. Front wide; orbits straight; antero-lateral margins long, straight, divergent, turning roundly into dorso-lateral margins, both beaded; eyebrow broad, inclined, its lower margins beaded (Fig. 8A). Suborbital crenulations very small on inner margins, larger and well separated on outer orbital margins; row of setae running above and below crenulations (Fig. 8B). Fingers of minor cheliped armed with very small, distinct serrations on their distal end (Figs. 8E, F). Outer manus covered by moderately tubercles on upper margins, small to absent toward ventral margin (Fig. 8C); oblique tuberculate ridge on palm high, marked with larger tubercles, not continuing upward along carpal cavity (Fig. 8D); pollex and dactyl longer than manus, the former straight, slightly curved upward on its tip, the last straight, strongly curved down on its distal end, below pollex tip (Figs. 8C, D); gap pubescence present or absent. Merus of ambulatory legs moderately enlarged; dorsal margin of carpus and propodus covered by pubescence and by numerous and long setae (Fig. 8G).

Female. Gonopore with distinct tubercle (Fig. 8H).

Distribution: Western Atlantic – United States (Florida), Gulf of Mexico, West Indies, northern South America to Brazil (Santa

Catarina).

Remarks: The oblique tuberculate ridge on major palm is high and marked with larger tubercles in the most of examined specimens. However, Crane (1975: 192) pointed out that the degree of regularity of the arrangement of the oblique ridge in *U. (M.) rapax* is extremely variable both within and among populations. Moreover, few individuals examined show a breakage in the distal part of the oblique ridge. The antero- and dorso-lateral margins of some specimens (USNM 138808) were not beaded, as observed in most specimens examined, and sparse pubescence was present on the dorsal margin of the carapace in some specimens.

***Uca (Minuca) thayeri* Rathbun, 1900b**
(Figs. 9A–H, 17B)

Ciecie Ete Marcgrave, 1648: 185; 1 fig.

Gelasimus palustris Stimpson, 1859: 61 (part); Smith, 1870: 127 (part).

Gelasimus vocator Kingsley, 1880: 147 (part).

Uca thayeri Rathbun, 1900b: 134.

Uca (Minuca) thayeri – Bott, 1954: 163, pl. 15, fig. 5a, b; Holthuis, 1959b: 275, fig. 68b, c, pl. XVI; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 355.

Uca thayeri – Crane, 1957; Fausto Filho, 1966: 34; Salmon, 1967: 451; Chace and Hobbs, 1969: 216; Powers, 1977: 148; Coelho and Ramos-Porto, 1980: 137; Abele and Kim, 1986: 67; Coelho, 1995: 140; Melo, 1996: 493; 1998: 504; Almeida *et al.*, 2006: 16; Almeida and Coelho, 2010: 26.

Planuca thayeri Bott, 1973b: 325.

Uca (Boboruca) thayeri Crane, 1975: 112; pl. 17, figs. 46K, 56E, 60H, I, 73A, B, 81I, 82I, 99.

Type locality: Rio Paraíba do Norte, Cabedelo, Paraíba, Brazil.

Type material: Seven male and one female syntypes. National Museum of Natural History, Washington, DC.

Material examined: 88 males, 48 females, and 5 ovigerous females. Syntypes: Brazil: Paraíba: Cabedelo, Rio Paraíba do Norte (USNM 23753, 7m, 1f); **United States:** Florida: St. Lucia County (USNM 122236, 7m, 7f), Saint Johns County, Marineland (USNM 90884, 2m, 2f), Dade

County, Miami (USNM 138122, 1m), St. Augustine (USNM 138121, 3m, 2f), Marco-Coxambas County (USNM 74493, 1m, 1f), Collier County, Everglades (USNM 62847, 1m); **Mexico:** Campeche: mouth of Champoton River (USNM 171531, 1m); **Guatemala:** Gulf of Honduras, Puerto Barrios

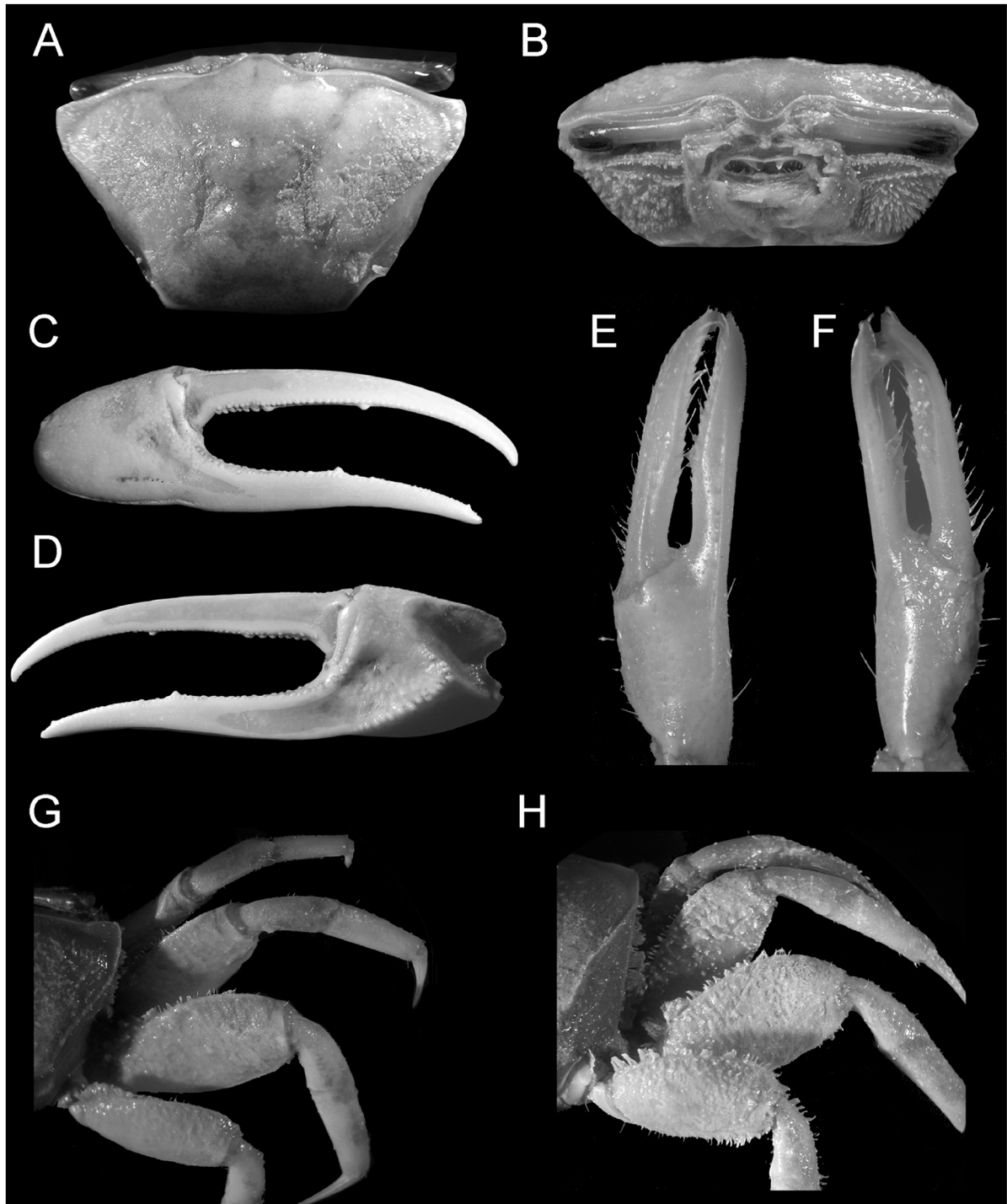


Figure 9. *Uca (Minuca) thayeri*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (A, B, G): USNM 23753, 25 mm CW; (C, D): USNM 23753, manus + pollex = 42.5 mm; (E–H): DOUFPE 2294, 28 mm CW.

(USNM 138123, 1m); **Cuba**: Río Colto Delta Oriente (USNM 93082, 1m); **Jamaica**: Saint Catherine, Parish-Port Henderson (USNM 210463, 1m, 2f); **Puerto Rico**: Palo Seco, Río Bayamón (USNM 24541, 2m, 1f), Magueyes Island, Parguera (USNM 112852, 2m, 2f, 3ovf), Fajardo (USNM 24542, 1m, 1f); **Venezuela**: Aragua: Turiamo (USNM 138127, 2m), Delta Amacuro: Pedernales (USNM 138128, 3f); **Trinidad and Tobago**: Pigeon Point (USNM 138125, 3m), Cocorite Swamp (USNM 137752, 5m, 1f); **Brazil**: Pará: Curupá, Curupere (MZUSP 12306, 1m), Maranhão: São Luís, Tibiri (MZUSP 6226, 1m), São Luís, Coqueiro, Estreito dos Mosquitos (DOUFPE 2293, 8m, 1f), São Luís, Mangue do Merck (MZUSP 6225, 1m, 1f), Alcântara, Ilha Cajuel (MZUSP 12857, 2m, 1f); Ceará: Fortaleza, Barra do Rio Cocó (DOUFPE 2297, 2m); Paraíba: Mamanguape (MZUSP 13258, 1m) (MZUSP 13299, 2m); Pernambuco: Itamaracá, Vila Velha (DOUFPE 12243, 2m, 4f), Recife (USNM 138129, 9m, 1f), Jaboatão dos Guararapes, Barra de Jangadas (DOUFPE 2311, 2m), Ipojuca, Suape (DOUFPE 2294, 2m, 7f); Bahia: Ilha de Itaparica (USNM 138130, 9m, 4f); Espírito Santo: Vitória (USNM 22193, 2f); Rio de Janeiro: Ilha Pinheiro (USNM 138131, 2m, 1f), Serra de Macaé (MZUSP 1024, 1m); São Paulo: Ubatuba, Itamambuca (MZUSP 3m, 3f), Ubatuba, Mangue do Rio Escuro (MZUSP 18645, 1m, 2f, as *U. cumulanta*), Cubatão, Piaçaguera (MZUSP 18647, 1f, 2ovf, as *U. vocator*); Paraná: Paraná-Açu (MZUSP 12640, 1m), Pontal do Sul (MZUSP 11879, 1m, as *U. leptodactyla*).

Diagnosis: Male. Front moderately narrow; orbits almost straight; dorsal margin of carapace with pubescence on branchial region and in H-form depression; antero-lateral margins short, slightly convex, turning in an obtuse angle to form the dorso-lateral margins, which are slightly beaded; eyebrow narrow (Fig. 9A). Suborbital crenulations formed by moderately tubercles throughout, increasing little in size toward outer orbital margin, with row of setae running above and below

crenelations (Fig. 9B); upper postero-lateral striae long, strong, beaded. Fingers of minor cheliped armed with moderately serrations on their third distal end (Figs. 9E, F). Antero-dorsal margins of major merus armed with weak rugosities; outer manus moderately smooth, covered by small to very small flattened tubercles (Fig. 9C); oblique tuberculate ridge on palm of moderate height, continuing upward, not reaching the middle of carpal cavity (Fig. 9D); pollex and dactyl very long, slender, the former sinuous, the latter curving down on its distal end, below pollex tip (Figs. 9C, D); gap pubescence absent. Merus of ambulatory legs broader, the third merus extremely broad; posterior surface of all legs covered by pubescence (Fig. 9G). Abdominal segments not fused.

Females. Pubescences on carapace and ambulatory legs more dense than in males. Merus, carpus and entire propodus covered by pubescence (Fig. 9H). Gonopore without tubercle on margin.

Distribution: Western Atlantic – United States (Florida), Gulf of Mexico, Central America, Venezuela to Brazil (Santa Catarina).

Remarks: In one male examined (USNM 138125), the row of setae below the orbital crenulations was absent. Gap pubescence was present in middle-sized males (USNM 171531; 16.74 mm; USNM 138121; 13.86 mm, 16.64 mm; USNM 122236; 16.70 mm CW), and absent in larger specimens (above 17 mm), differing from the types examined.

As *U. (U.) tangeri*, *U. (M.) thayeri* was classified in its own subgenus, *Boboruca*, created by Crane (1975) based on the front with intermediate width and waving behavior, which has no special components during high intensity courtship, among others. However, in molecular and morphological analyses (Albrecht and von Hagen, 1981; Levinton *et al.*, 1996; Rosenberg, 2001), *U. (M.) thayeri* with its sister species from the eastern Pacific *U. (M.) umbratila* Crane, 1941 falls within the subgenus *Minuca*, suggesting that both should be referred as members of this subgenus.

Beinlich and von Hagen (2006) also suggested abandoning the subgenus *Boboruca* and classifying both species as members of *Minuca*.

***Uca (Minuca) victoriana* von Hagen, 1987**
(Fig. 10A–H)

Uca victoriana von Hagen, 1987: 81, pls. 1–4; Coelho, 1995: 140; Melo, 1996: 495; 1998: 505; Bedê *et al.*, 2007.

Uca rapax – Almeida *et al.*, 2006: 16 (part).

Uca mordax – Almeida *et al.*, 2006: 16 (part).

Uca (Minuca) victoriana – Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Castiglioni *et al.*, 2010: 2, figs. 1B, D, 3A–H.

Type locality: Vitória, Espírito Santo, Brazil.

Type material: One male holotype. Four males and ten females paratypes. Zoologisches Museums Hamburg, Hamburg.

Material examined: 103 males, 30 females, and 1 ovigerous female. Holotype (ZMH K-28888, 1m); Paratype (ZMH K-28887, 3m, 8f); Paratype (ZMH K-2999, 1m, 2f). **Brazil**: Bahia: Ilhéus, Parque Municipal Boa Esperança (UESC 124, 3m, 2f), Rio Acuípe (UESC 1198, 2m, as *U. rapax*), Rio Almada (UESC 1199, 2m, 2f, as *U. mordax*; UESC 391, 2m, 2f, as *U. rapax*; UESC 255, 4m, 4f, as *U. rapax*); Prado, Barra do Cahy (UESC 1200, 4m, 3f, as *U. rapax*), Rio Jucuruçu (UESC 1201 2m, 3f, as *U. rapax*); Alcobaca, Rio Itanhem (UESC 1037, 2m, as *U. rapax*); Mucuri (MZUSP 18641, 4m); Espírito Santo: Serra, Lagoa do Baú (MZUSP 18640, 6m), Vitória (MZUSP 18642, 2m; MZUSP 16292, 16m, as *U. uruguayensis*), Anchieta, Manguezal do Rio Benevente (MZUSP 18571, 49m, 4f, 1ovf, as *U. cumulanta*; MZUSP 18568, 2m, as *U. thayeri*).

Diagnosis: Male. Front wide; orbits oblique; carapace strongly arched, not semi-cylindrical; no pubescence or granulations on dorsal margin of carapace; antero-lateral

margins short, straight, better defined on major side where they turn moderately sharply into dorso-lateral margins, on minor side, the antero-lateral margins turn roundly into dorso-lateral margins; eyebrow broad, lower margin slightly beaded (Fig. 10A); suborbital crenulations formed by well defined, well separated tubercles throughout, increasing in size toward outer orbital margins (Fig. 10B); row of setae above and below crenulations sparse, reduced; upper postero-lateral striae long. Fingers of minor cheliped long, with very small serrations on their inner margins, hairs on tip sparse (Figs. 10E, F). Antero-dorsal margins of major merus straight, oblique, arching on distal end, where small serrations can be found. Upper margin of outer major manus covered by moderate granulations, decreasing in size toward ventral margin; shorter straight depression filled with pubescence near ventral margin, on beginning of pollex (Fig. 10C); oblique tuberculate ridge on palm high at apex, decreasing in size toward distal end (Fig. 10D); pollex as long as manus, with enlarged tooth halfway to its tip; dactyl longer than manus, oblique, strongly curved down on tip, below pollex tip; gap narrow, pubescence present (Figs. 10C, D). Merus of ambulatory legs moderately broad; pubescence on dorsal margins of carpus and propodus of 3 first pairs; no setae on ambulatory legs (Fig. 10G). Abdominal segments not fused.

Female. Dorsal margin of carapace with very minute granulations near antero-lateral margins, which turns roundly into dorso-lateral margins (as in the minor side in males); orbits almost straight. Merus of ambulatory legs enlarged, dorsal and ventral margins armed with moderate serrations; pubescence on dorsal margin of carpus and propodus; setae absent on all ambulatory legs (Fig. 10H). Gonopore slightly raised, without tubercles.

Distribution: Western Atlantic – Brazil (Pernambuco, Bahia, Espírito Santo and Rio de Janeiro).

Remarks: The setae on ambulatory legs in *U. (M.) victoriana* are absent; however, in

female paratypes examined (ZMH K28887), 1–5 setae can be found on the ventral margin of the manus in some ambulatory legs, but never on all, and are always absent on the dorsal margin of all segments in the ambulatory legs.

Uca (M.) victoriana has been reported until recently, only from the type locality at

Vitória, state of Espírito Santo, Brazil. However, Bedê *et al.* (2007) reported this species from the state of Rio de Janeiro, extending its southern distribution. Castiglioni *et al.* (2010) extended the occurrence of this species to northeastern Brazil and provided morphological characters to help distinguish it from similar species such

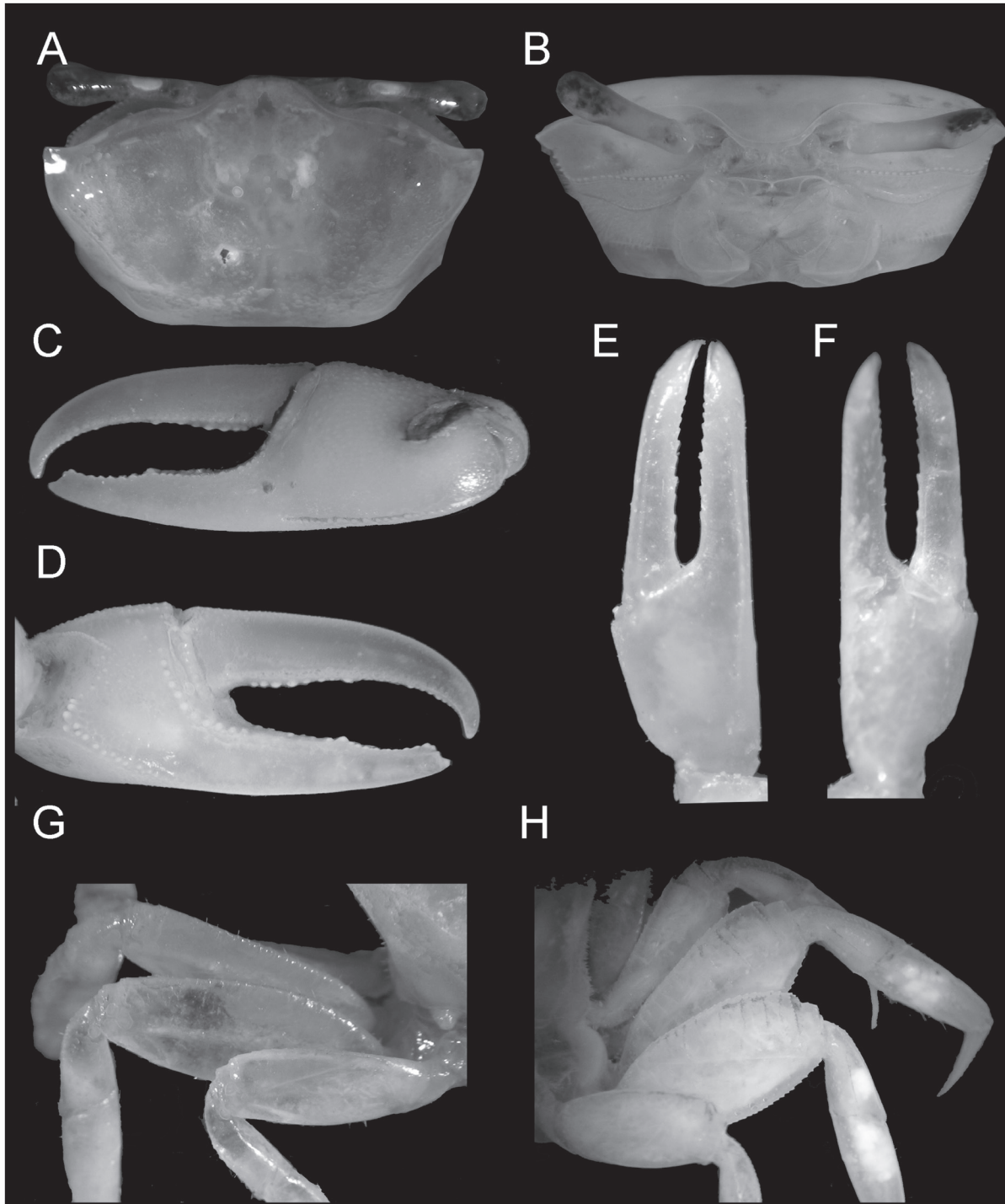


Figure 10. *Uca (Minuca) victoriana*: **A**, dorsal view of carapace; **B**, frontal view of carapace; **C**, outer face of major cheliped; **D**, inner face of major cheliped; **E**, outer face of minor cheliped; **F**, inner face of minor cheliped; **G**, general view, male ambulatory legs; **H**, general view, female ambulatory legs. **A–G**: ZMH-K 28887, 11 mm CW; **H**: ZMH-K 28887, 10 mm CW.

as *U. (M.) burgersi* and *U. (M.) rapax*, besides reporting on some aspects of its population biology. According to Castiglioni *et al.* (2010), the similar morphology with *U. (M.) burgersi* and *U. (M.) rapax*, as reflected in the large number of misidentified specimens found in Brazilian collections, was the main factor in the scarcity of records of *U. (M.) victoriana*.

***Uca (Minuca) vocator* (Herbst, 1804)**

(Figs. 11A–H, 18A)

Cancer vocator Herbst, 1804: 1, pl. 59, fig. 1; von Martens, 1869: 6; Kingsley, 1880: 147 (part).

Goneplax vocator Latreille, 1817: 17.

Gelasimus palustris Stimpson, 1859: 62 (part); Smith, 1870: 127 (part).

Uca vocator Rankin, 1898: 226; Moreira, 1901: 52; Luederwaldt, 1919a: 370, 384, 398; 1919b: 435; 1929: 54; Chace and Hobbs, 1969: 217, fig. 73, 74; Coelho and Ramos, 1972: 200; Powers, 1977: 149; Abele and Kim, 1986: 67; Coelho, 1995: 140; Melo, 1996: 496; 1998: 505; Almeida *et al.*, 2006: 16 (part); Almeida and Coelho, 2008: 26.

Uca mordax Rathbun, 1902: 7; 1918, pl. 134, figs. 3,4 (part).

Uca salsisitus Oliveira, 1939: 131. (part).

Uca murifecenta Crane, 1943b: 38, pl. 1, figs. 1–3.

Uca pugnax rapax Crane, 1943b: 40.

Uca (Minuca) vocator – Holthuis, 1959b: 269, figs. 66, 67, pl. XIV fig. 1, pl. XV fig 1; Crane, 1975: 163, pl. 23, 24A–D, fig. 16, 66A–D, 100; Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 355.

Minuca murifecenta Bott, 1973b.

Type locality: Near plantation “Purmerend”, north of Paramaribo, shore of Suriname River, Suriname.

Type material: Neotype male (proposed by Holthuis, 1959b). Naturalis Biodiversity Center, Leiden (RMNH D 12329). Not examined.

Material examined: 64 males and 42 females and 4 ovigerous females. **United States** Texas: San Patricio County (USNM 180214, 1m), Nueces County, Soto La Marina River (USNM 171537, 1m, 1f); **Mexico:** Tamaulipas: La Pesca, Laguna Larga (USNM 180215, 1m, 1f), Tampico (USNM 139175, 1m); Veracruz: Tributary of Río Tonchochapa (USNM 138855, 1m); Tabasco: Puerto Ceiba, Río Seco (USNM 180216, 1m, 1f); Campeche: Champoton, Río Champoton, Arroyo de La Renal (USNM 180217, 1m, 1f); Quintana Roo: Yucatan, Río Lagartos, Laguna Lagartos (USNM 171538, 1m, 1f); Quintana Roo: Punta San, near Coconut Grove (USNM 180218, 2m); **Guatemala:** Puerto Barrios (USNM 138856, 3m, 2f); **Honduras:** (USNM 21373, 1m); **Puerto Rico:** San Juan (USNM 138857, 2m, 1f), San Juan, Cairo de Martin Rena (AMNH 2690, 1m); **Guadeloupe:** (USNM 138858, 1m); **Dominica:** Santo Domingo, Sanchez (AMNH 14467, 1m, 2f); Portsmouth, Indian River (USNM 126962, 4m, as *Uca* sp.); **Venezuela:** Zulia: Lagunillas (USNM 138865, 4m, 4f), Maracaibo (USNM 138866, 2f); Sucre: near mouth of San Juan River (USNM 138868, 25m, 17f, 3ovf); **Trinidad and Tobago:** Caroni Swamp (USNM 138862, 5m), Lavantile Swamp (USNM 138863, 4m), Manzanillo (USNM 138864, 2m), Blanchisseuse (USNM 138859, 1m); **Guyana:** Georgetown, Kitty Village (USNM 138869, 10m, 4f, 1ovf) (USNM 138870, 1f); **Brazil:** Paraíba: Cabedelo, Rio Paraíba do Norte (DOUFPE 2333, 1m); Pernambuco: Itamaracá, Rio Paripe (DOUFPE 2331, 1m), Itapissuma (DOUFPE 2334, 1m), Jaboatão dos Guararapes, Lagoa Olho D’agua (DOUFPE 2328, 1m), Jaboatão dos Guararapes, Barra de Jangadas (DOUFPE 2330, 2m); Sergipe: Rio Piauí, Ilha das Tartarugas (DOUFPE 2329, 1m); Bahia: Ilha de Boipeba, Rio Catu (MZUSP 13603, 2m); São Paulo: Ubatuba, Itamambuca (MZUSP 14519, 4m, 4f), Cubatão, Rio Piaçaguera (MZUSP 301, 1m).

Diagnosis: Male. Front very broad; orbits almost straight; dorsal margin of carapace with pubescence, mainly along the antero- and

postero-lateral margins, filling the H-form depression; eyebrow narrow, almost vertical, lower margin beaded (Fig. 11A). Suborbital crenulations reduced on inner margin, slightly more developed near outer orbital margin, with row of setae below and above crenulations

(Fig. 11B); upper postero-lateral striae long, with pubescence along its length. Fingers of minor cheliped with small blunt serrations near tip (Figs. 11E, F). Major carpus with row of blunt tubercles on antero-dorsal margin; outer manus smooth, upper margin flattened

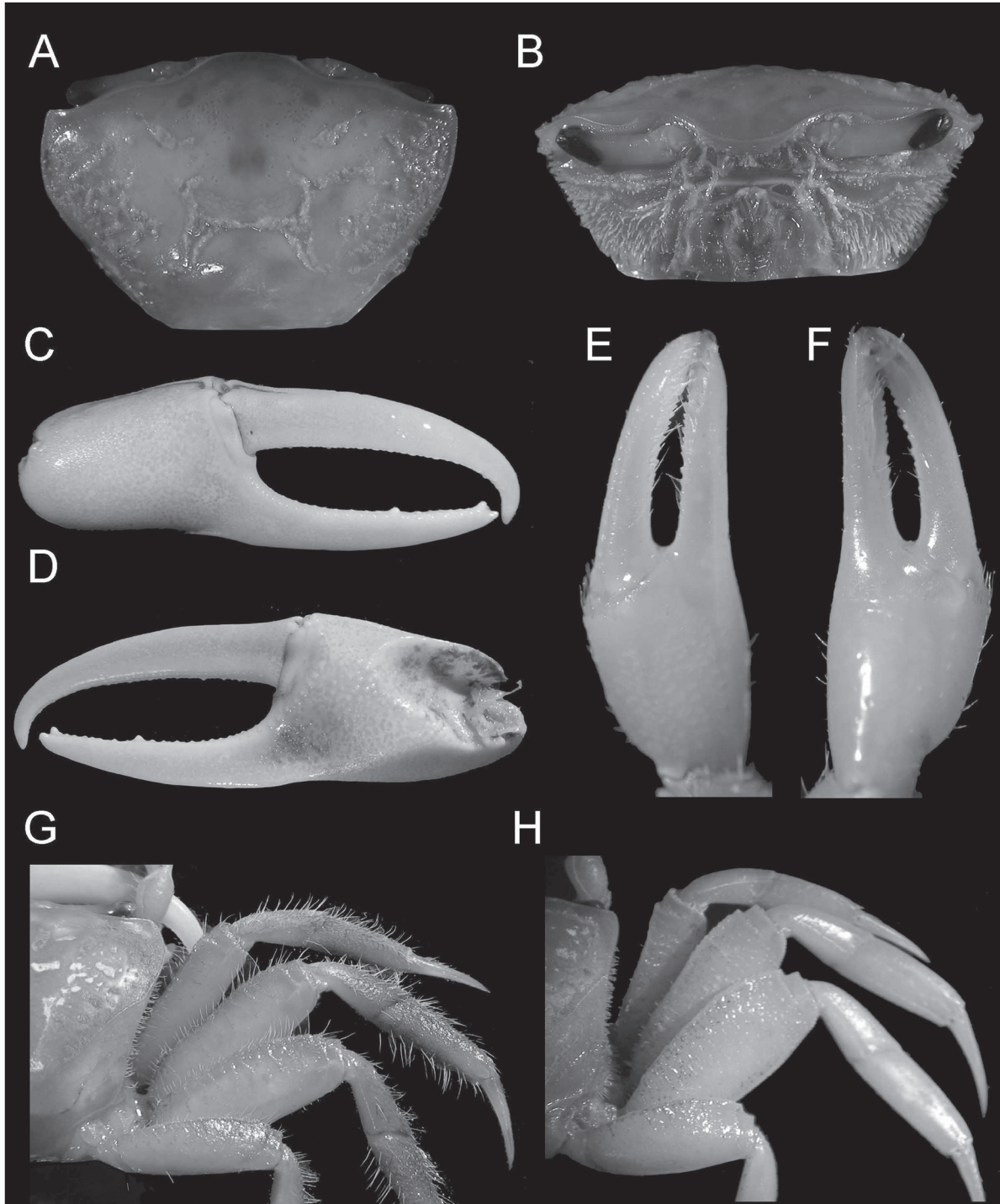


Figure 11. *Uca (Minuca) vocator*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (A–G): USNM 180217, 20 mm CW; (C, D): manus + pollex = 42.5 mm; H: USNM 180217, 15 mm CW.

(Fig. 11C); oblique tuberculate ridge on palm absent; small tubercles on the lower edge of carpal cavity; upper margin of carpal cavity with very small, poorly defined tubercles (Fig. 11D). Ambulatory legs with pubescence strongly attached on dorsal margins of merus, carpus and propodus (Fig. 11G).

Female. Pubescence on dorsal margin of carapace scant, almost absent. Merus of ambulatory legs broader than in males, no pubescence on merus, carpus and propodus (Fig. 11H). Gonopore with central tubercle surrounded by two smaller tubercles.

Distribution: Western Atlantic – Gulf of Mexico, Central America, northern South America to Brazil (Santa Catarina).

Remarks: Sparse pubescence on the ventral propodus may be present in some specimens, but the pubescence does not cover the entire surface of the propodus as in *U. (M.) mordax*. However, of 61 males examined at the Smithsonian Institution, only 15 had pubescence on the ventral propodus, and therefore this feature is not consistent enough to make it a reliable diagnostic character.

Uca (Minuca) vocator was described by Herbst (1804) as *Cancer vocator*, but according to Holthuis (1959b: 273) the type of this species is not extant. Holthuis (1959b), on the basis of the figures provided by Herbst (1804), pointed out that there was no doubt that *C. vocator* is identical to *U. murifecenta* described by Crane (1943b). In order to settle the identity of *C. vocator*, it was necessary to select a neotype from the series collected in Suriname, which forms part of the collection of the Naturalis Biodiversity Center at Leiden under the register number Crustacea D 12329 (a well preserved male, of 26 mm CW). Holthuis' (1959b) decision restricted the name *vocator* for the species to which probability was given by its original author, and replaced the name *murifecenta* given by Crane (1943b), thus avoiding confusion between these two names.

Uca salsisitus was described by Oliveira, 1939 from Guanabara Bay, Rio de Janeiro.

Latter, Crane (1975: 196) synonymized with *U. rapax*, but the synonym with also *U. vocator* was not discarded by her. Recently, one male paratype of *U. salsisitus* was retrieved by Tavares and Mendonça Jr. (2003), and compared with species of *U. rapax* and *U. vocator*, showing that Oliveira's original description was based on *U. vocator*, while the illustrations correspond to *U. rapax*.

South Atlantic species of subgenus *Leptuca*

Uca (Leptuca) cumulanta Crane, 1943b

(Figs. 12A–H, 18B)

Uca speciosa Rathbun, 1918: 408 (part); 1924: 19 (part).

Uca cumulanta Crane, 1943b: 42, pl. 1, figs. 1g–i, 4–6; 1957;

Uca (Minuca) cumulanta Holthuis, 1959b: 274, fig 68a, pl. XIV fig. 3, pl. XV fig. 4.

Uca cumulanta – Chace and Hobbs, 1969: 211, fig. 71e, f; Coelho, 1969: 235; 1995: 138; Coelho and Ramos, 1972: 200; Barnwell, 1986: 157; Melo, 1996: 488; 1998: 503.

Uca (Celuca) cumulanta Crane, 1975: 240. pls. 32A–D, 47B, figs. 37N, 56G, 60J, K, 70L, 101; Rosenberg, 2001.

Uca (Leptuca) cumulanta – Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 353, figs 5A–F.

Type locality: Delta Amacuro, Pedernales, Venezuela.

Type material: Male holotype. Seven male and six female paratypes. National Museum of Natural History, Washington, DC.

Material examined: 263 males, 65 females, and 6 ovigerous females. Holotype (USNM 137402, 1m); Paratypes (USNM 137403, 7m, 6f). **Jamaica:** Saint Catherine Parish, Port Henderson (USNM 210464, 76m, 9f, 5ovf); **Curaçao:** (USNM 22310, 7m, 1ovf), Curaçao Bay (USNM 56909, 1m); **Venezuela:** Aragua: Turiamo (USNM 138519, 34m, 12f); Delta Amacuro, Pedernales (USNM 138518,

30m, 20f); **Trinidad and Tobago**: Levantille (USNM 138516, 5m); Cocorite, Port of Spain (USNM 138517, 4m); Diego Martins River (USNM 137746, 5m, 4f), (USNM 138515, 53m); **Guyana**: Georgetown (USNM 138520, 13m, 8f); **Brazil**: Pará: Península Bragantina (MZUSP 16869, 5m, 2f); Paraíba: Cabedelo,

Ilha da Restinga (MZUSP 8023, 1m, 1f); Bahia: Caravelas, Rio Caravelas (UESC 979, 6m); Rio de Janeiro: Paquetá (USNM 138875, 1m; USNM 71171, 2m, 1f); Angra dos Reis (MZUSP 3062, 1m, 1f); Parati, Mangue do Cais (MZUSP 11663, 1m, 1f, as *U. leptodactyla*).

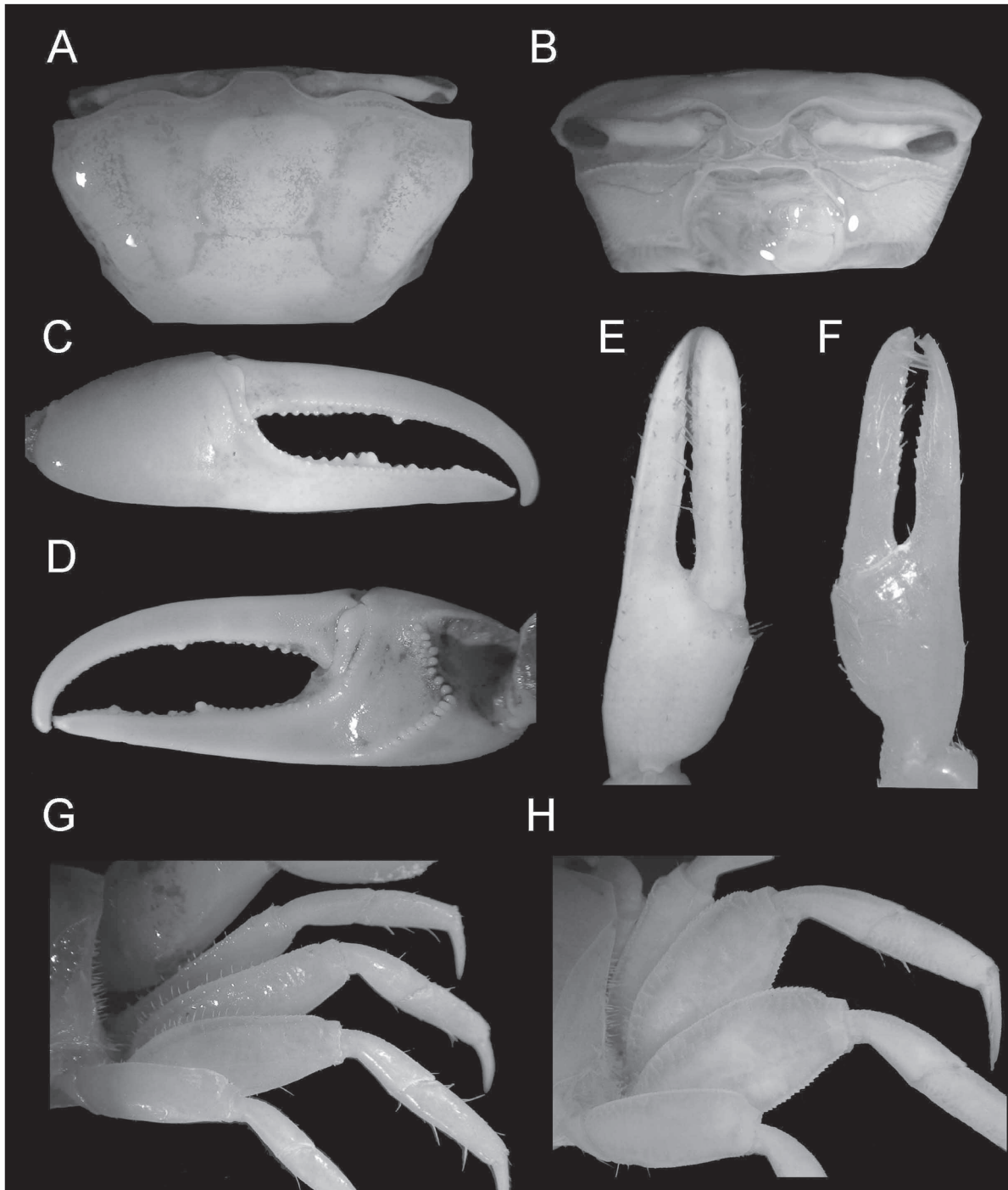


Figure 12. *Uca (Leptuca) cumulanta*: (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (A–G): USNM 137402, 15 mm CW; (C, D): manus + pollex = 42 mm; H: USNM 137402, 11.5 mm CW.

Diagnosis: Male. Front moderately broad; orbits not oblique, two patches of pubescence present in H-form depression on dorsal margin of carapace; antero-lateral margins straight, not beaded, angling sharply into dorso-lateral margin (Fig. 12A). Suborbital crenulations weak internally, straight and well separated externally, not continuing around outer orbital margin (Fig. 12B). Postero-lateral striae curve inward to parallel in posterior margin of carapace. Fingers of minor cheliped with well developed serrations, not in contact (Figs. 12E, F). Major merus with antero-lateral margin arched throughout; inner surface of major manus with indistinct oblique tuberculate ridge; oblique ridge on major manus high, tubercles larger, sometimes bicuspid, continuing upward along carpal cavity edge (Fig. 12D); dactyl long, curving down on its distal end; pollex slender, straight; gap pubescence absent (Figs. 12 C, D). No pubescence on ambulatory legs; merus of second and third ambulatory legs moderately enlarged (Fig. 12G). First carpus on major side with short longitudinal row of minute tubercles along middle of anterior surface. Abdominal segments not fused.

Female. Antero- and dorso-lateral margins beaded; pair of patches of pubescence on dorsal posterior part of carapace present or absent as well as the pubescence on H-form region; suborbital crenulations stronger than in males. Merus of second and third ambulatory legs more enlarged than in males, dorsal, ventral margins convex, armed with small serrations (Fig. 12H). Gonopore without tubercle.

Distribution: Western Atlantic – Central America, northern South America, Guyanas to to Brazil (Rio de Janeiro).

Remarks: The diagnosis is based on the holotype male, deposited in the Smithsonian Institution (USNM 137402). When the paratypes and additional material were examined, some variability was observed. In seven male paratypes examined (USNM 137403), the H-form pubescence was present

in all of them, but the gap pubescence was absent in three specimens (42.8%). In female paratypes (USNM 137403), the pair of pubescence patches on the dorsal posterior margin of the carapace was absent in all specimens, while the H-form pubescence was absent in 4 of 6 paratype specimens examined (66.6%). In additional material examined, the H-form pubescence was present in 175 of 228 males (76.7%), and in females, the H-form pubescence was present in only 42 of 109 (30.5%). The gap pubescence was present in 108 of 182 males (59.3%) and the pair of pubescence patches on the dorsal posterior margin of the carapace was absent in 81 of 109 additional females (74.3%). So, the H-form pubescence and the presence of gap pubescence are variable characters, but useful to recognize the species.

***Uca (Leptuca) leptodactyla* Rathbun, 1898**
(Figs. 13A–H, 19A)

Gelasimus stenodacylus Kingsley, 1880: 154 (part); Ortmann, 1894: 760 (part).

Uca leptodactyla Rathbun, 1898: 227; 1902: 7; 1918: 420, pl. 156; Rankin, 1898: 227; Luederwaldt, 1919a: 384, 400; 1919b: 435; Oliveira, 1939: 126, pl. 5, 6, 8, 13, figs. 25–28, 29, 47, 61, 62; Crane, 1957; Chace and Hobbs, 1969: 212, figs. 71g–h; Coelho, 1969: 235; 1995: 139; Coelho and Ramos, 1972: 199; Powers, 1977: 143; Coelho and Ramos-Porto, 1980: 137; Abele and Kim, 1986: 66; Melo, 1996: 489; 1998: 503; Almeida *et al.*, 2006: 15; Almeida and Coelho, 2008: 26.

Leptuca leptodactyla Bott, 1973b: 324.

Uca (Celuca) leptodactyla – Crane, 1975: 304, pl. 41A–D, figs. 37M, 56F, 60N, O, 69K, L, 101; Barnwell and Thurman, 1984: 50.

Uca (Leptuca) leptodactyla – Rosenberg, 2001; Beinlich and von Hagen, 2006; Coelho *et al.*, 2008: 42; Almeida *et al.*, 2010: 353.

Uca (Leptuca) leptodactylus – Ng *et al.*, 2008: 241.

Type locality: Fort Montague, Nassau, New Providence, Bahamas.

Type material: Holotype male. Paratype female. National Museum of Natural History, Washington, DC.

Material examined: 379 males, and 186 females. Holotype (USNM 22315, 1m); Paratype (USNM 22315, 1f); **United**

States: Florida: Dade County, Virginia Key (USNM 180180, 2f); **Mexico:** Quintana Roo: Isla de Cozumel (USNM 210467, 1f), Punta Nisuc, near Cancun (USNM 171529, 2m); **Bahamas:** San Salvador Island, Pigeon Creek (USNM 1085632, 3m, 1f); **Jamaica:** Saint Ann Parish, Pear Tree River (USNM

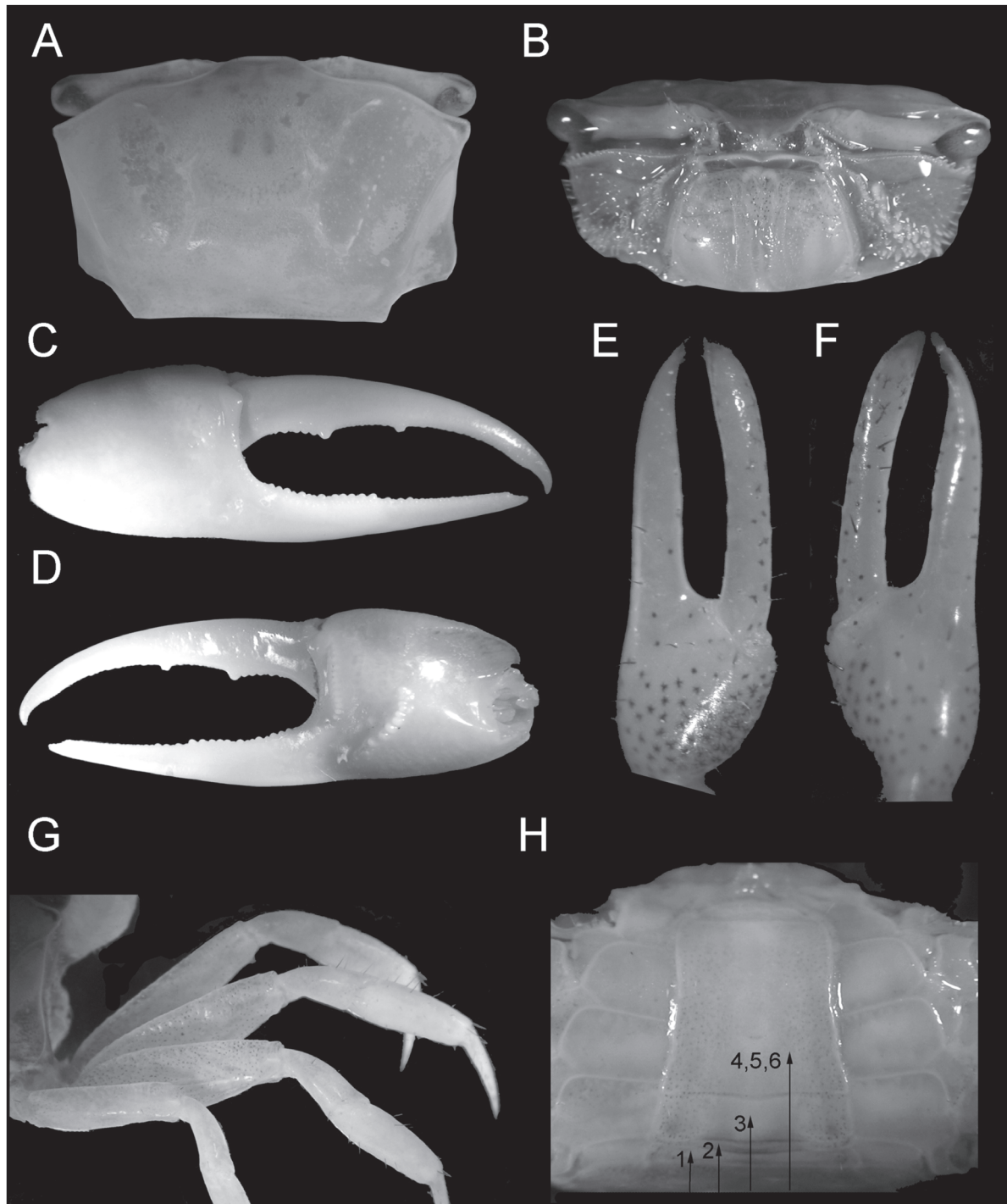


Figure 13. *Uca (Leptuca) leptodactyla* (USNM 210466): (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) male, abdominal somites (arrows). (A–H): 11 mm CW; (C, D): manus + pollex = 42 mm.

210466, 21m); **Cuba** (USNM 25548, 20m, 2f); **Puerto Rico**: San Juan (USNM 24546, 13m, 9f); Pueblo Viejo (USNM 67767, 4m); **Virgin Islands**: St. Croix (USNM 106139, 3m); **Venezuela**: Aragua: Turiamo (USNM 138569, 14m, 9f); **Trinidad and Tobago**: Blanchisseuse (USNM 137747, 2m, 1f); **Brazil**: Maranhão: São Luís (DOUFPE 2189, 2m); Piauí: Amarração (probably Luis Correia) (MZUSP 558, 2m; MZUSP 559, 2m); Ceará: Fortaleza, Rio Cocó mouth (DOUFPE 2129, 3m, 4f); Rio Grande do Norte: Amarra Negra (DOUFPE 2152, 11m, 2f); Paraíba: (USNM 25701, 1m); Mamanguape (MZUSP 13298, 4m); Pernambuco: Goiana, Atapuz (DOUFPE 2202, 82m, 98f); Tamandaré, Praia dos Carneiros (DOUFPE 2193, 2m, 4f); Itapissuma (DOUFPE 2177, 2m, 2f); Paulista, Maria Farinha (DOUFPE 2153, 4m, 1f); Olinda (USNM 138570, 5m, 5f); Recife (USNM 40617, 14m, 3f); Recife, Ponte do Motocolombó (DOUFPE 2182, 2m); Cabo de Santo Agostinho, Gaibu (DOUFPE 2121, 6m, 1f); Sergipe: Aracajú, Rio Sergipe (DOUFPE 2143, 4m); Bahia: Baía de Todos os Santos, Ilha de Itaparica (USNM 138572, 80m, 24f); Prado, Rio Jucuruçu (UESC 1081, 1m); Nova Viçosa, Praia Pontal da Barra (UESC 828, 5m, 5f); Ilha de Boipeba (MZUSP 13602, 1m); Espírito Santo: Conceição da Barra (MZUSP 18649, 3m, 1f, as *U. vocator*); Rio de Janeiro: Lagoa Araruama (MZUSP 9370, 1m); Rio de Janeiro (MZUSP 419, 29m, 4f; MZUSP 18635, 2m, 1f); Paquetá (USNM 71183, 11m); Niterói (USNM 74438, 1m, 1f); São Paulo: Caraguatatuba, Praia da Enseada (MZUSP 9685, 1m, as *U. uruguayensis*); São Sebastião (MZUSP 894, 1m, as *U. uruguayensis*; MZUSP 323, 2m; USNM 47850, 1m); Paraná: Santa Antonina (nowadays Antonina) (MZUSP 324, 2m); Santa Catarina: Itajaí (MZUSP 677, 1m); São Miguel, Praia da Armação (MZUSP 6453, 1m, 1f, as *U. burgersi*); Florianópolis, Balneário Daniela (MZUSP 6457, 7m, 3f, as *U. burgersi*).

Diagnosis: Male. Front moderately wide; orbits oblique; carapace strongly arched, neither pubescence nor tubercles on dorsal

margin; antero-lateral margins short, slightly convex, beaded, angling bluntly into dorso-lateral margin; eyebrow shorter than usual, its breadth slightly less than diameter of adjacent part of depressed eyestalk (Fig. 13A). Suborbital crenulations reduced internally, continuing around outer orbital margin where they became strength, well separated (Fig. 13B). Row of setae on the floor of the orbit, immediately above sub-orbital crenulations; postero-lateral striae short, weak. Fingers of minor cheliped with weak serrations on their inner margins, not in contact, or absent (Figs, 13E, F). Major merus long, slender, antero-dorsal margin moderately arched; outer manus with minute tubercles except on bent-over region, where they are large (Fig. 13C); oblique tuberculate ridge higher (Fig. 13D); pollex and dactyl slender, longer than manus, the former curved throughout, slightly deeper than pollex, the latter straight, with tip weakly bifid, or sometimes, almost trifid (Figs. 13C, D); gap pubescence sparse. Ambulatory legs slender, without pubescence (Fig. 13G); First ambulatory without ridge on anterior margin. Third to sixth abdominal segments incompletely fused (Fig. 13H).

Female. Suborbital crenulations better developed than in males on inner half. Gonopore without tubercle.

Distribution: Western Atlantic – United States (Florida), West Indies, Venezuela to Brazil (Santa Catarina).

Remarks: The number of fused abdominal somites is extremely variable, either from third to sixth, fourth to sixth, or fifth and sixth. Crane (1975) pointed out that the abdominal segments in *U. (L.) leptodactyla* are incompletely fused. However, all variations examined herein were completely fused.

Uca (L.) leptodactyla is the smallest species inhabiting the western Atlantic coast, and is often confused with *U. (L.) cumulanta*, which occurs in sympatry along the South American coast. These two species can be distinguished by examining the abdominal segments, which are fused in *U.*

(*L.*) *leptodactyla* and free in *U. (L.) cumulanta*. *Uca (L.) leptodactyla* occurs in sympatry with another similar species in southern Brazil, *U. (L.) uruguayensis*. Both species have the abdominal segments fused; however, *U. (L.) uruguayensis* has a ridge on the propodus of the first ambulatory on the major side. For more details useful in distinguishing these two species, see Crane (1975: 305).

The first mention of *U. (L.) leptodactyla* was made by Guérin-Méneville (1838) based on three males deposited at the Academy of Natural Sciences, Philadelphia, labeled as *Gelasimus leptodactylus*. However, Guérin-Méneville never published a formal description of this species (Crane, 1975: 306, 307). The first formal description was provided by Rathbun (1898). Regarding the name *leptodactyla*, Chace and Hobbs (1969: 212) suggested that it seems obvious that the selection of the specific name of this species was intended as an adoption of Guérin's manuscript name, a noun in apposition to the generic name, which therefore should have been spelled "*leptodactylus*". However, as there is no absolute proof from the original description that this was the intention, Chace and Hobbs (1969: 212) advised by L.B. Holthuis, decide to use the original spelling of the name. This advice was also followed by Crane (1975: 306).

Ng *et al.* (2008) used the name "*leptodactylus*", believing that the name "*leptodactyla*" was used in apposition to the generic name *Uca*. Informed about the above arguments and in agreement with them, Dr. Peter Ng will correct the spelling of the name in further corrigenda of the Systema Brachyurorum (Peter Ng, pers. comm.).

***Uca (Leptuca) uruguayensis* Nobili, 1901**
(Figs. 14A–H, 19B)

Uca uruguayensis Nobili, 1901: 14.

Uca uruguayensis – Rathbun, 1918: 413, pl. 150; Luederwaldt, 1919a: 384, 400; 1919b: 435; 1939: 54; Maccagno, 1928: 38; Oliveira, 1939: 130, pl. 8, figs. 45, 46; Boschi, 1964:

68, pl. 3, 20, 21; Coelho and Ramos, 1972: 199; Melo, 1990: 80; 1996: 494; 1998: 504; Boschi *et al.*, 1992: 84, fig. 98; Coelho, 1995: 140.

Uca olympioi Oliveira, 1939: 128, pl. 8, 14, figs. 41, 42, 48, 63, 64; Lacerda, 1975.

Uca (Celuca) uruguayensis Crane, 1975: 229, pl. 30A–D, figs. 68I, 101.

Uca (Leptuca) uruguayensis Rosenberg, 2001; Beinlich and von Hagen, 2006; Ng *et al.*, 2008: 241.

Type locality: La Sierra, Uruguay.

Type material: Male holotype. Regio Museo Zoologico di Torino, Torino. Not examined.

Material examined: 105 males and 18 females. **Brazil:** Rio de Janeiro: Paquetá (USNM 71181, 23m; USNM 138876, 4m); Ilha Pinheiro (USNM 138841, 11m, 2f; USNM 138842, 14m, 7f); Angra dos Reis (MZUSP 3063, 1m, as *U. leptodactyla*; MZUSP 3064, 2m); Laguna Araruama (MZUSP 11711, 1m); São Paulo: Ubatuba, Mar Pequeno (MZUSP 7356, 5m); Santos (USNM 138877, 15m); Paraná: Santa Antonina (nowadays Antonina) (MZUSP 423, 1m); Pontal do Sul (MZUSP 9638, 1m, 1f, as *U. leptodactyla*); Santa Catarina: Itajaí (MZUSP 678, 8m, 1f); Florianópolis (USNM 138844, 5m, 3f); Rio Grande do Sul: Lagoa de Tramandaí (MZUSP 6660, 7m, 3f); **Uruguay:** Montevideo (MZUSP 415, 1m, 1f); **Argentina:** Buenos Aires (USNM 54716, 6m).

Diagnosis: Male. Front moderately wide; antero-lateral margins short, straight or slightly concave; carapace practically semi-cylindrical, without pubescence or tubercles (Fig. 14A). Suborbital margin with crenulations not well developed on inner margin, larger, separated near antero-external angle, continuing as separated tooth along outer orbital margin (Fig. 14B); postero-lateral striae weak, close behind ends of dorso-lateral margins. Fingers

of minor cheliped with few serrations, strong in middle portion, not in contact (Figs. 14E, F). Major merus with weak rugosities except on posterior convexity. Outer manus with small tubercles, increasing slightly in size upward, abruptly enlarged near its dorsal margin (Fig. 14C). Oblique tuberculate ridge high (Fig.

14D); dactyl and pollex much larger than manus; gap pubescence present (Figs. 14C, D). Ambulatory legs without pubescence. Second and third merus moderately broad, with dorsal margin almost straight (Fig. 14G). First ambulatory in both sides with distinct ridge on lower anterior margin of manus. Fourth to

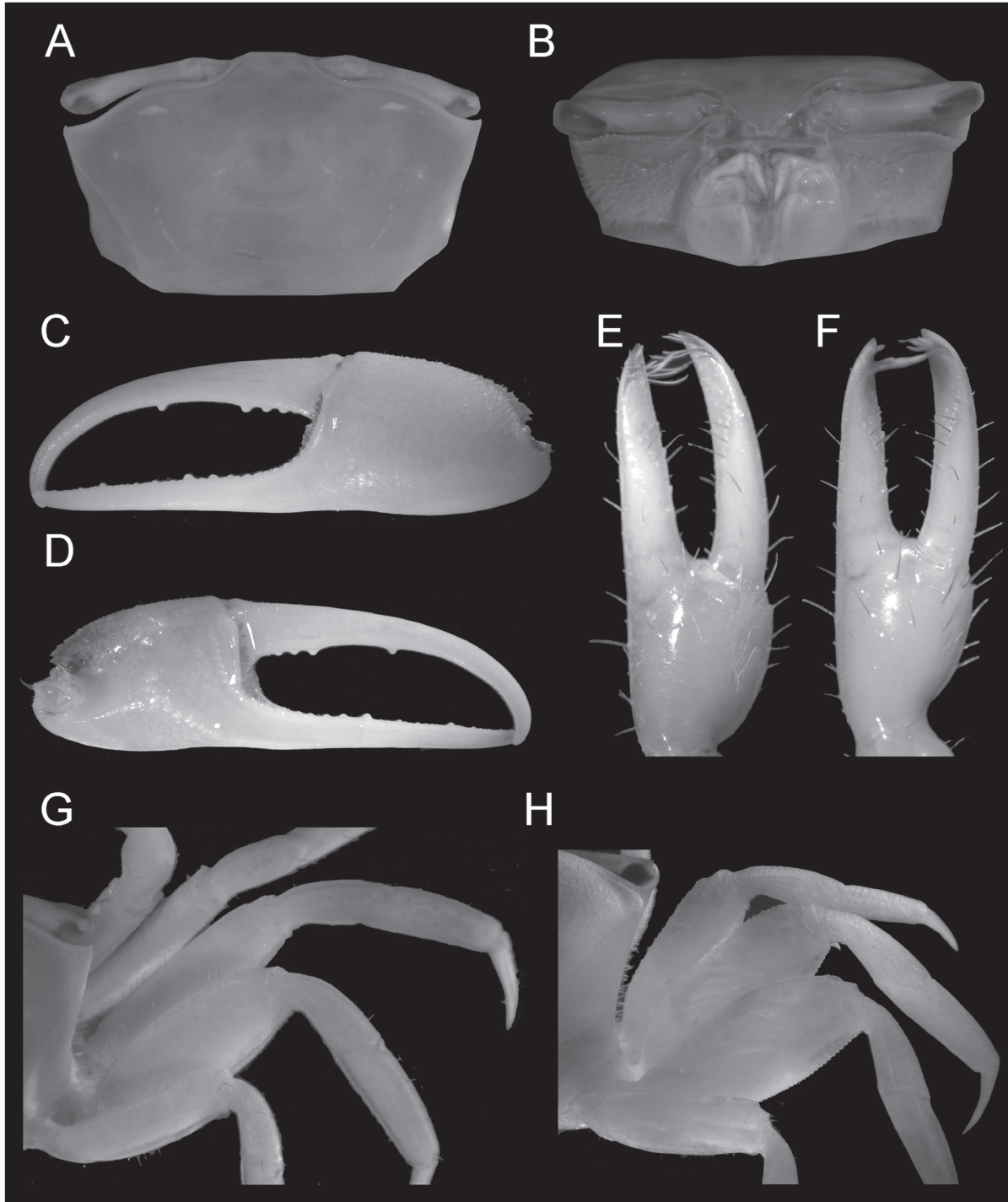


Figure 14. *Uca (Leptuca) uruguayensis* (USNM 138877): (A) dorsal view of carapace; (B) frontal view of carapace; (C) outer face of major cheliped; (D) inner face of major cheliped; (E) outer face of minor cheliped; (F) inner face of minor cheliped; (G) general view, male ambulatory legs; (H) general view, female ambulatory legs. (A, B, E–G): 8 mm CW; (C, D): manus + pollex = 20 mm; H: 6 mm CW.

sixth abdominal segments fused.

Female. Suborbital crenulations more defined on inner margin than in males. Postero-ventral margins of merus of first 3 ambulatory legs armed with serrations, wider than in males (Fig. 14H).

Distribution: Western Atlantic – Brazil (Rio de Janeiro) to Argentina (Mar Chiquita).

Remarks: Crane (1975: 230) was unable to distinguish between preserved specimens of *U. (L.) uruguayensis* and *U. (L.) leptodactyla*, specially the females. In her attempt in distinguishing the species, she pointed out that the carapace of *U. (L.) uruguayensis* presents an intermediate degree of arching between that of *U. (L.) leptodactyla* and *U. (L.) cumulanta*.

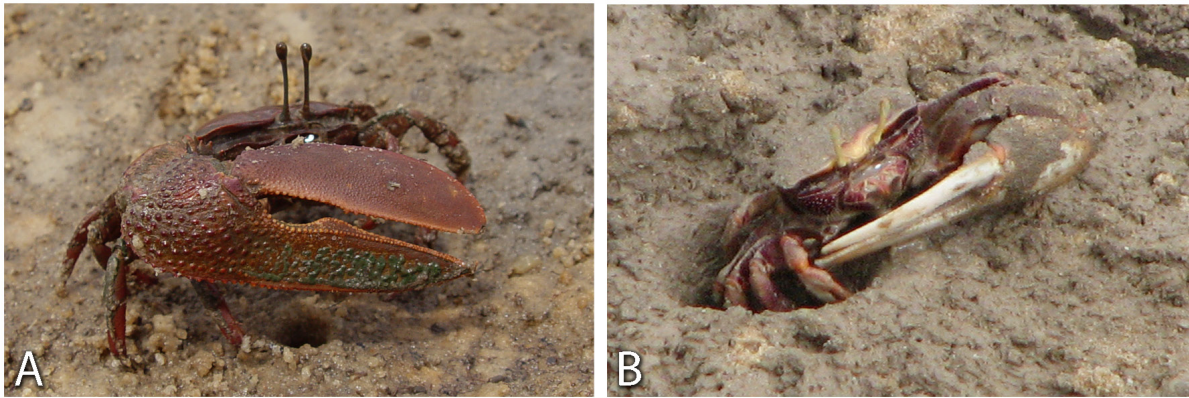


Figure 15. (A) *Uca (Uca) maracoani* from Brazil*; (B) *Uca (Uca) tangeri* from South Spain**. *Photo by D. Loebman, **Photo by Cedric D'Acoz.

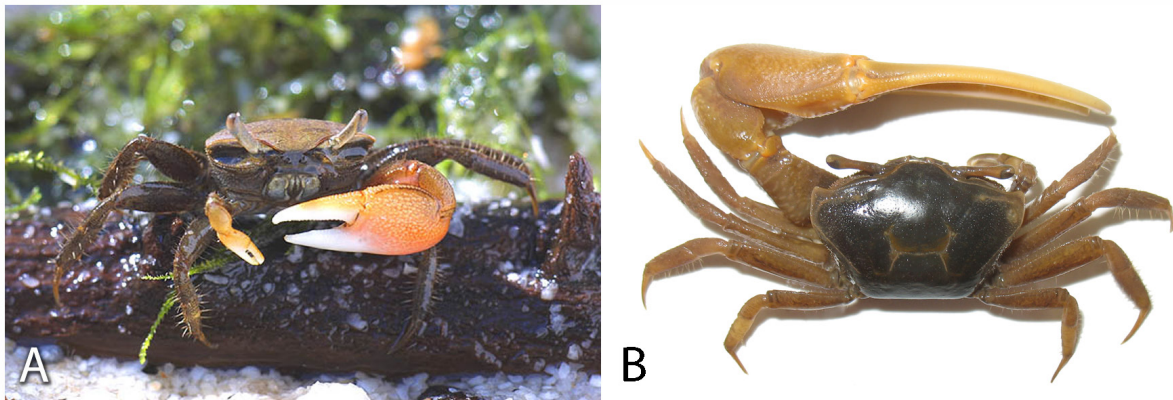


Figure 16. (A) *Uca (Minuca) burgersi* from Florida*; (B) *Uca (Minuca) mordax* from Brazil**. *Photo by Chris Lukhaup, **Photo by L.E.A. Bezerra.

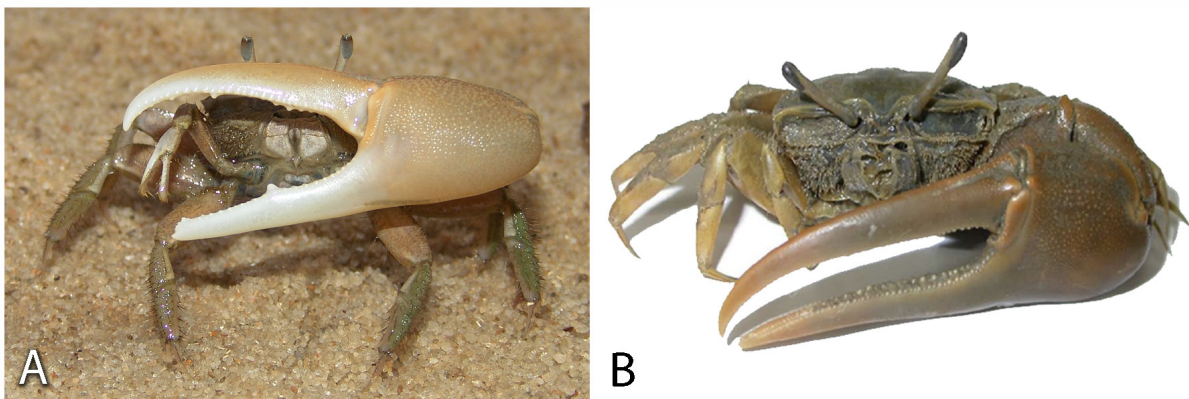


Figure 17. (A) *Uca (Minuca) rapax* from Brazil*; (B) *Uca (Minuca) thayeri* from Brazil**. *Photo by D. Loebman, **Photo by L.E.A. Bezerra.

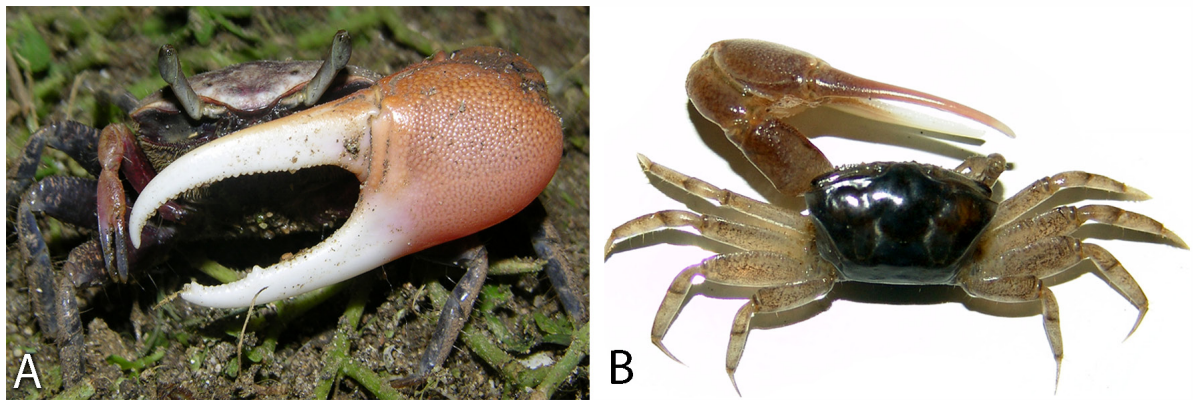


Figure 18. (A) *Uca (Minuca) vocator* from Panama*; (B) *Uca (Leptuca) cumulanta***.*Photo by Arthur Anker, **Photo by L.E.A. Bezerra.

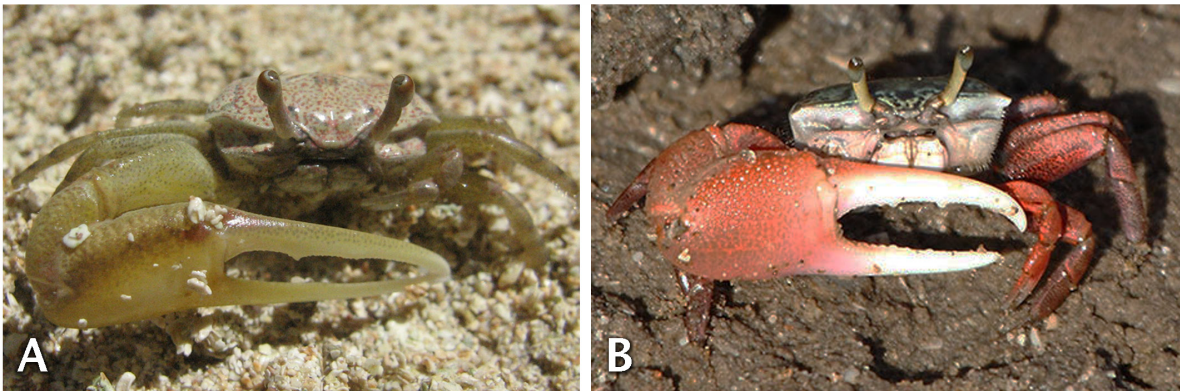


Figure 19. (A) *Uca (Leptuca) leptodactyla* from Brazil*; (B) *Uca (Leptuca) uruguayensis* from Argentina**.*Photo by D. Loebman, ** Photo by Jorge Groterria.

However, the carapace arching in all three species are very similar. She concluded “there is, however, no substitute, in attaining certain identifications, for familiarity with the females of all three species” (Crane, 1975: 230).

The boundaries among the abdominal somites are the best way to distinguish among these three species. In *U. (L.) uruguayensis*, the 4th to 6th or 5th and 6th segments are fused, whereas in *U. (L.) leptodactyla* the 3rd to 6th are fused and in *U. (L.) cumulanta* the abdominal segments are not fused. According to Crane (1975: 230), the boundaries between segments are sometimes only faintly indicated. Crane (1975) mentioned the fusion of abdominal segments in *U. (L.) uruguayensis* only in males, but the fusions are present in both males and females.

Uca (L.) uruguayensis extends its distribution farther south than any other fiddler crab in the Atlantic Ocean, reaching

northern Argentina.

Acknowledgements

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