

Discovery of the mud shrimp genus *Anacalliax* de Saint Laurent, 1973 (Decapoda: Callianassidae) in the Brazilian coast

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Abstract. Previously known only from Argentina and Uruguay, *Anacalliax argentinensis* is herein reported for the first time from Rio de Janeiro, representing the first occurrence of genus *Anacalliax* in the Brazilian coast and the northernmost record of the species in the Atlantic Ocean. Morphological variations on the third maxilliped and first pereopods are discussed based in our material.

Key-Words. Axiidea; *Anacalliax argentinensis*; Biodiversity; Ontogeny; Western Atlantic.

INTRODUCTION

Anacalliax de Saint Laurent, 1973 is currently composed of three Atlantic species. Among them, two are western Atlantic (*A. argentinensis* (Biffar, 1971) and *A. agassizi* (Biffar, 1971)) and one eastern Atlantic, *A. pixii* (Kensley, 1976) (Biffar, 1971; Kensley, 1976; Sakai, 1999, 2005).

The genus is characterized by several morphological features, including carapace with dorsal oval, rostral carina and cardiac prominence; third maxilliped pediform, without exopod, and dactylus more than twice longer than broad; uropodal exopod unilobed, with strong indentation; and first chelipeds slightly unequal (de Saint Laurent, 1973; Sakai, 1999, 2005).

Anacalliax argentinensis so far has been known to occur only from few localities in Argentina and Uruguay (Biffar, 1971; Sakai, 1999, 2005, 2011; Trinchin *et al.*, 2014). The species can be easily separated from *A. agassizi* by the telson with distal margin concave (vs. margin straight in *A. agassizi*; Biffar, 1971: figs. 2k, 3k), and from *A. pixii* by the antennular peduncle distinctly shorter than the antennal peduncle (vs. about as long as antennal peduncle in *A. pixii*; Biffar, 1971: fig. 2h; Kensley, 1976: fig. 4A).

Among the material collected during the "Ilha Grande" project conducted in Rio de Janeiro in 1969, a small female of *A. argentinensis* was identified. The specimen, collected off the Angra dos Reis coast at 22 meters depth, represents the first finding of *A. argentinensis* in Brazil and the northernmost record of the species in the Atlantic Ocean.

MATERIAL AND METHODS

The material is deposited in the carcinological collection of the Museu de Zoologia, Universidade de São Paulo (MZUSP). Drawings were made under a stereomicroscope equipped with a camera lucida. Carapace length (cl, in mm) was measured along the dorsal midline from the tip of the rostrum to the posterior margin of carapace.

Abbreviation included: Mxp3, third maxillipeds; P1-P3, pereopods 1-3; WA, western Atlantic Ocean; EA, eastern Atlantic Ocean.

RESULTS AND DISCUSSION

Order Decapoda Latreille, 1802
Infraorder Axiidea de Saint Laurent, 1979
Family Callianassidae Dana 1852

Genus *Anacalliax* de Saint Laurent, 1973

Anacalliax de Saint Laurent, 1973: 515; Ferrari, 1981: 17; Manning, 1987: 397; Manning & Felder, 1991: 786, figs. 2-3, 17; Sakai, 1999: 126, 2005: 210, 2011: 343.

***Anacalliax argentinensis* (Biffar, 1971)**
Fig. 1A-G

Callianassa argentinensis Biffar, 1971: 229, fig. 2.

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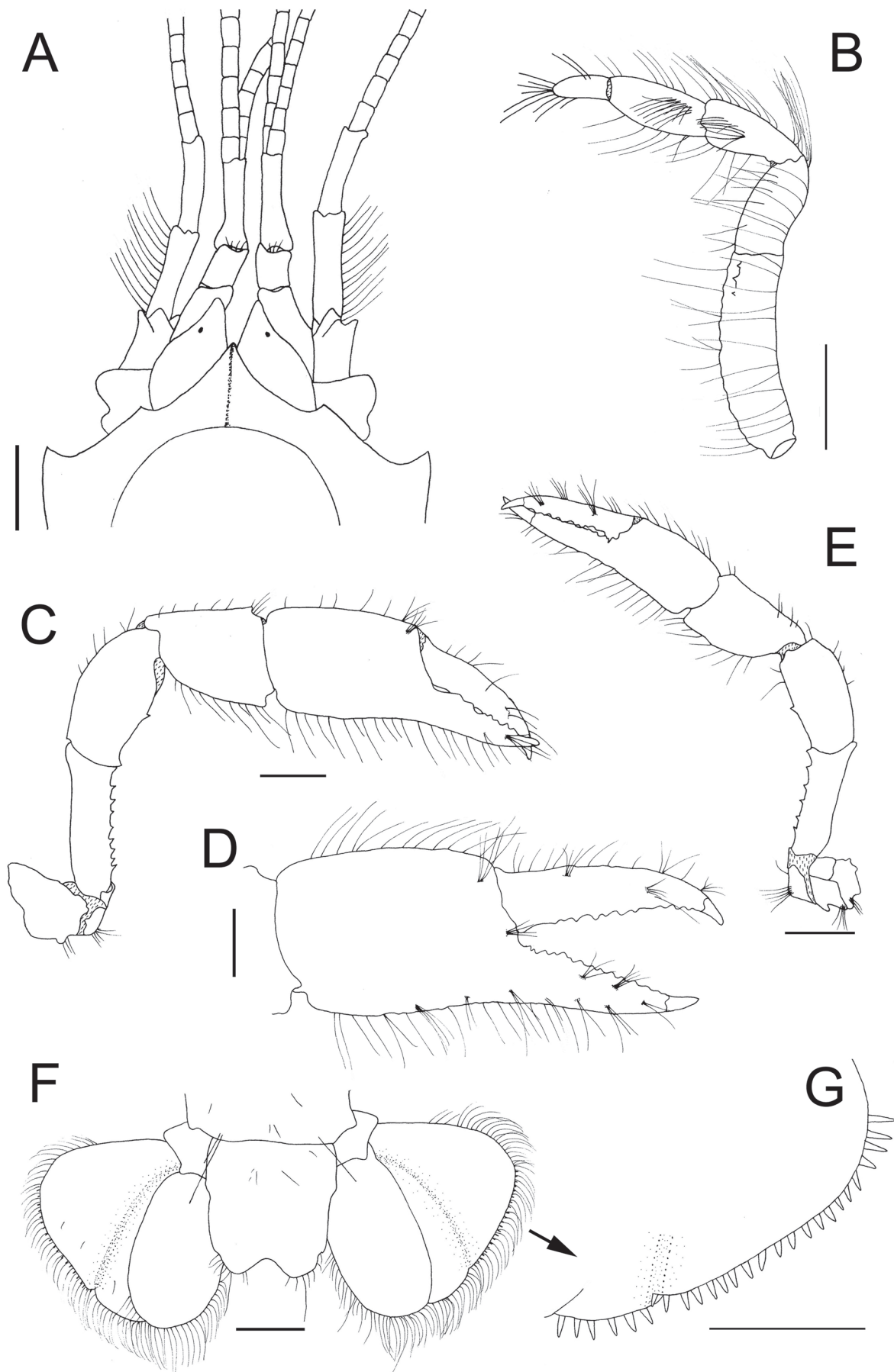


Figure 1. *Anacalliax argentinensis* (Biffar, 1971), female, cl 4.5 mm (MZUSP 31510). (A) Frontal margin and cephalic appendages, dorsal view. (B) Right Mxp3, mesial view. (C) Right major P1, lateral view. (D) Same, chela, lateral view. (E) Left minor P1, lateral view. (F) Sixth abdominal segment, uropods and telson, dorsal view. (G) Uropodal exopod, detail of the row of spinules on distal margin, plumose setae omitted. Scale bars = 0.5 mm.

Anacalliax argentinensis (Biffar, 1971); Boschi, 1979: 137, tab. 1; Ferrari, 1981: 17, pl. III; Manning, 1987: 397; Manning & Felder, 1991: 787 (list), figs. 2, 3, 17; Boschi *et al.*, 1992: 40, fig. 34; Sakai, 1999: 127; Tudge *et al.*, 2000: 142 (list); Thatje, 2003: 119 (tab. 1); Sakai, 2005: 211; Sakai, 2011: 343, fig. 63A-C; Spivak *et al.*, 2019: 51.

Material examined: female, cl 4.5 mm, MZUSP 31510, Brazil, Rio de Janeiro, Angra dos Reis, station 331, 21.iii.1969, 22 meters depth.

Distribution: Brazil: Rio de Janeiro, Angra dos Reis (23°S) (present study). Uruguay: Rocha, Cerro Verde (33°S) (Trinchin *et al.*, 2014). Argentina: Provincia Buenos Aires, Riacho Jabalí, Bahía San Blas and Los Pocitos (40°S); Provincia Río Negro, Golfo San Matías (41°S); Provincia Santa Cruz, Río Deseado, in front of Isla del Rey (47°S) (Biffar, 1971; Ferrari, 1981; Sakai, 1999, 2005, 2011).

Remarks: The morphological characters in the female from Brazil agree well with those described by Biffar (1971): (i) Rostral carina present (Fig. 1A); (ii) Mxp3 pediform, with ischium and merus narrow (Fig. 1B); (iii) P1 ischium with row of teeth on ventral margin (Fig. 1C, E); (iv) P1 fingers with cutting edges serrate (Fig. 1D); (v) telson subquadrate, shorter than uropods, with posterior margin medially concave (Fig. 1F).

In the original description, Biffar (1971) states that the Mxp3 ischium is unarmed, *i.e.*, without a crista dentata (cf. Biffar, 1971: fig. 2g). Subsequent studies also depicted the species with a smooth Mxp3 ischium (Ferrari, 1981: pl. III, fig. 7; Manning & Felder, 1991: fig. 3). However, the present specimen has a short crista dentata of 3 minute teeth on the Mxp3 ischium (Fig. 1B). The chelipeds (P1) also have a different number of teeth on the ventral margin of merus and ischium compared to that reported for the species. In the present specimen, the merus of both major and minor P1 bear only 1 tooth (vs. 2-3 teeth in Biffar, 1971), whilst the ischium has 8 teeth on major and 6 teeth on minor (vs. 5-6 teeth on major and 4-7 teeth on minor in Biffar, 1971). Ferrari (1981) also mentions a specimen with a single tooth on both P1 merus, but with no voucher reference to allow speculation. Nevertheless, the presence of a crista dentata on Mxp3 and the different armature on both P1 could be juvenile characters, thus changing during the ontogenetic development (note that Biffar (1971)'s types range from 143 to 24 mm of total length, whilst our specimen is less than 10 mm long).

Lastly, the presence of spinules on the uropodal exopod is not mentioned in Biffar (1971) nor in Ferrari (1981) (Fig. 1G). However, it is likely that these spinules are present, but were overlooked in both previous studies due to the thick fringe of plumose setae on distal margin (Fig. 1F; see a similar case in Pachelle *et al.* (2017: 348) for *Neocallichirus maryae* Karasawa, 2004).

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