

FIRST SPECIES OF *PARAGALENE* KOSSMANN, 1878 (DECAPODA, BRACHYURA, PROGERYONIDAE) FROM THE WESTERN ATLANTIC

BY

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ABSTRACT

A new species of deep-water crab, *Paragalene danieleae* (Progeryonidae), from the western Atlantic is described and illustrated. The new species can be easily separated from its eastern Atlantic and Mediterranean counterpart, *P. longicrura* (Nardo, 1868), by a suite of carapace and appendage characters.

RÉSUMÉ

Une nouvelle espèce de crabe d'eau profonde, *Paragalene danieleae* (Progeryonidae) de l'Atlantique occidentale est décrite et illustrée. La nouvelle espèce se sépare aisément de sa analogue de l'Atlantique orientale et Méditerranée, *P. longicrura* (Nardo, 1868), par divers caractères de la carapace et des appendices.

INTRODUCTION

For more than thirteen decades *Paragalene longicrura* (Nardo, 1868) has been the only valid species assigned to the genus *Paragalene* Kossmann, 1878. *Paragalene longicrura* is rare and has been known only from a small number of localities in the Mediterranean Sea and two localities in the eastern Atlantic (see d'Udekem d'Acoz, 1999). Its taxonomic position has long been controversial. The species was originally described in the genus *Eriphia* Latreille, 1817, and accordingly attributed to the Xanthidae (Nardo, 1868). It was later included in the Geryonidae (e.g., Guinot, 1969: 692, 696; 1971:

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1077-1078; Türkay, 1976a, b), until Manning & Holthuis (1989) restricted the Geryonidae to *Geryon* Krøyer, 1897, *Chaceon* Manning & Holthuis, 1989, and *Zariquieyon* Manning & Holthuis, 1989. Manning & Holthuis (1989: 51) also suggested that *Paragalene* could be included in a family of its own, along with *Progeryon* Bouvier, 1922. Instead of dealing with the uncertain taxonomic position of *Paragalene* as well as *Progeryon*, Števcíć (2005: 64) erected two intermediate categories, the redundant monotypic tribes Paragalenini Števcíć, 2005, and Progeryonini Števcíć, 2005, both included in the Geryoninae (Geryonidae). Karasawa & Schweitzer (2006) attributed full family status to the Progeryonini (as Progeryonidae), to which *Paragalene* was eventually transferred (Ng & Manuel-Santos, 2007; Ng et al., 2008).

Trapping operations recently conducted between 100 and 1000 m depth off the coast of Guadeloupe, West Indies, revealed a wealth of diversity of decapod crustaceans (Poupin, 1994; Tavares, 1994; Tavares & Guinot, 1996), and among them a western Atlantic counterpart of *P. longicrura*, herein described as new, *Paragalene danieleae* n. sp.

The following abbreviations are used: CBR (Colleccions Biològiques de Referència, Institut de Ciències del Mar, Barcelona); MZUSP (Museu de Zoologia, Universidade de São Paulo); cl, carapace length; cw, carapace width; P1, cheliped; P2-P5, pereopods 2 to 5.

SYSTEMATIC ACCOUNT

Family PROGERYONIDAE Števcíć, 2005

Paragalene Kossmann, 1878

Paragalene Kossmann, 1878: 253.

Type species. — *Paragalene neapolitana* Kossmann, 1878, by monotypy [= *Eriphia longicrura* Nardo, 1868]. Gender feminine.

Species included. — *Paragalene longicrura* (Nardo, 1868), eastern Atlantic and Mediterranean Sea (d'Udekem d'Acoz, 1999: 241, and references therein); *Paragalene danieleae* n. sp., western Atlantic.

Paragalene danieleae n. sp. (figs. 1, 3A, C)

Type material. — Holotype: female (cl 37 mm, cw 48 mm) (MZUSP 19938), Caribbean Sea, West Indies, Guadeloupe, west coast of Basse Terre, Mission ORSTOM-IRPM-SMCB, stn A210, 16°11.80'N 61°48.72'W, G. Leblond and J. Poupin leg., April 1993, 250 m.

Comparative material. — *Paragalene longicrura* (Nardo, 1868), western Mediterranean Sea, Balearic Is., Cape Freu, northeastern Mallorca, 39°45'N 03°26'E, La Salada cave, 1984, approximately 10 m, 1 female (cl 40 mm, cw 55 mm) (CBR).

Etymology. — The new species is named after our colleague and friend Danièle Guinot (Muséum national d'Histoire naturelle, Paris), whose carcinological oeuvre changed our understanding of brachyuran systematics worldwide.

Description of holotype female. — Carapace subpentagonal, slightly wider than long, cl/cw ratio 1.29 (figs. 1C, 3A). Front cut into 4 lamellar teeth, 2 mesial, 2 lateral, inner orbital teeth excluded. Median notch between mesial rostral teeth distinctly U-shaped; distance between mesial rostral teeth markedly greater than distance between mesial rostral tooth and lateral rostral

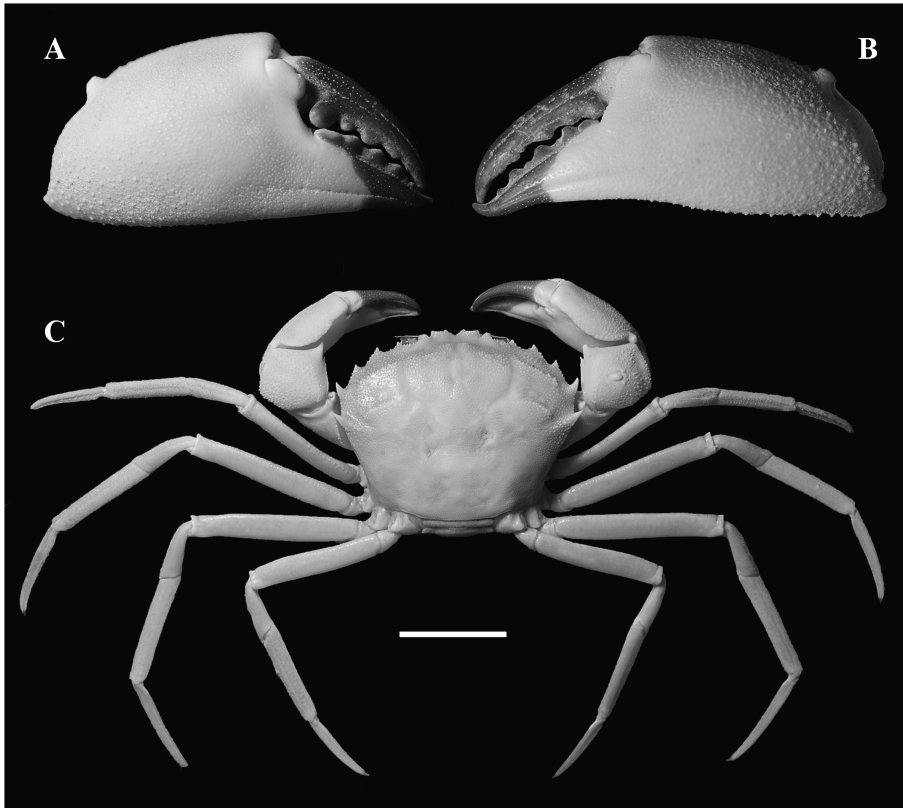


Fig. 1. *Paragalene danieleae* n. sp. female holotype cl 37 mm, cw 48 mm (MZUSP 19938). A, B, right and left cheliped propodus and dactylus, respectively; C, habitus, dorsal view. Scale bar: 20 mm.

tooth. Orbit circular, deep. Supraorbital border entire, narrow, semicircular, with large granules (figs. 1C, 3C). Inner supraorbital tooth triangular, stronger than outer tooth; inner suborbital tooth acute, much stronger than outer suborbital tooth. Infraorbital border incomplete. First antennal article short, mobile; article 2 + 3 closing infraorbital border; fourth longer than 2 + 3, reaching supraorbital border; fifth slender, oblique. Ocular peduncle short, cornea well formed, dark brown pigmented. Carapace anterolateral borders curved, each armed with 4 anterolateral teeth, outer supraorbital excluded. First, second teeth sharp, well defined; third anterolateral tooth strongest, acute, curved forward; fourth straight, outwardly directed, smooth acute apex. Posterolateral borders straight. Carapace dorsal surface strongly convex anteriorly, granules much larger, dense anteriorly. Granular ridge across hepatic region almost straight, well marked; granular ridge across mesobranchial region shorter. Progastric region with 2 weak, granular elevations, shallowly grooved medially. Urogastric region sided by distinct depression. Cardiac region slightly elevated, finely granular. Anterior border of buccal cavern smooth, prominent, clearly demarcating epi- and endostome; endostomial ridge strong, smooth. Third maxillipeds completely closing buccal frame; palp long, overreaching ischio-meral suture; anterolateral angle of merus expanded, wing-like; ischium much longer than merus.

Chelipeds (P1) moderately heterochelic, heterodont. Right cheliped strongest, massive. Dactylus slender, less than half propodus maximal length, dark brown coloured; cutting edge with strong, rounded proximal tooth, remaining teeth low (fig. 1A-C). Dorsal, lateral, ventral faces of propodus finely granular, mesial face smooth; carpus granular, with 2 acute teeth on inner margin, superior tooth much stronger than inferior. Left P1 distinctly less massive; dactylus, pollex slender, proximal tooth on cutting edge of dactylus lacking, left P1 otherwise similar to right cheliped. P2-P5 markedly long, slender, similar in shape (fig. 1C). Dactyli similar in shape, slightly curved, acute; upper, ventral surfaces densely setose; mesial, lateral surfaces, and tip devoid of setae. Dactyli of P2, P5 similar in size, distinctly shorter than those of P3, P4. Meri, carpi, propodi long, slender, similar in shape. Meri of P2, P5 similar in size, distinctly shorter than those of P3, P4; distal end of merus of P5 extending far beyond tip of the last anterolateral carapace tooth.

Female thoracic sternum wide, sterno-abdominal cavity shallow, formed by sternites 8-4. Sternal suture 2/3 distinct, uninterrupted; 3/4 faint, recognizable laterally only; 4/5, 5/6 deep, medially interrupted; 6/7, 7/8 deep, complete.

Female abdomen with 6 freely-movable somites plus telson. Somites 1, 2 completely covering thoracic sternum between P5 coxae, thoracic sternite 8 not visible; somite 3 very close to margin of sternite 7, small portion of thoracic sternite 7 visible only laterally. Abdominal somite 6 longest. Telson large, little wider than long, extending from thoracic sternite 5 to sternal sutures 2/3. Vulvae small, completely covered by abdominal somite 6, opening near thoracic sternal suture 5/6.

Male unknown.

Remarks. — *Paragalene* was until now known from one species, *P. longicrura* from the eastern Atlantic (Madeira and Canary Islands: Türkay, 1976a, b; González Pérez, 1995) and the Mediterranean Sea (Bouvier, 1940; Dieuzeide & Goëau-Brissonnière, 1955; Guinot, 1969; Gili & Macpherson, 1987; d'Udekem d'Acoz, 1999; Pallaoro, 2005; Castro & Ng, 2008; Ng et al., 2008). *Paragalene longicrura* occurs in dark caves and on hard bottoms with algal growth and shells, at depths between 30 and 160 m, and is considered to be rare (see d'Udekem d'Acoz, 1999: 241). The discovery of a congener, *P. danieleae* n. sp., after thirteen decades is quite a surprise. Although *Paragalene danieleae* n. sp. is represented by only one adult female, it can be easily distinguished from *P. longicrura* (figs. 2, 3B, D) by: (1) distal end of P5 merus extending far beyond the tip of the last (fourth) anterolateral carapace tooth (almost reaching to the tip of the tooth in *P. longicrura*); (2) distal end of merus of P4 extending far beyond the imaginary line connecting the tips of the third anterolateral carapace teeth (slightly overreaching that line in *P. longicrura*); (3) median notch between mesial rostral teeth clearly U-shaped (distinctly V-shaped in *P. longicrura*); (4) distance between the two mesial rostral teeth markedly greater than the distance between one mesial rostral tooth and its adjacent lateral rostral tooth (distance between mesial and adjacent lateral rostral teeth about the same in *P. longicrura*); (5) second anterolateral tooth sharp, well defined (broadly triangular in *P. longicrura*); (6) granular ridge across the hepatic region almost straight (distinctly convex in *P. longicrura*); (7) convexity of gastric regions of carapace more pronounced (gastric regions only slightly convex in *P. longicrura*); and (8) carapace subpentagonal, cl/cw 1.29 (carapace hexagonal, proportionally wider in relation to its length in *P. longicrura*, cl/cw 1.37). The above differences refer to the females only. These characters, however, are not known to vary between sexes (see also Castro & Ng, 2008) so the differences clearly suggest the West Atlantic species is new. The discovery of the male of

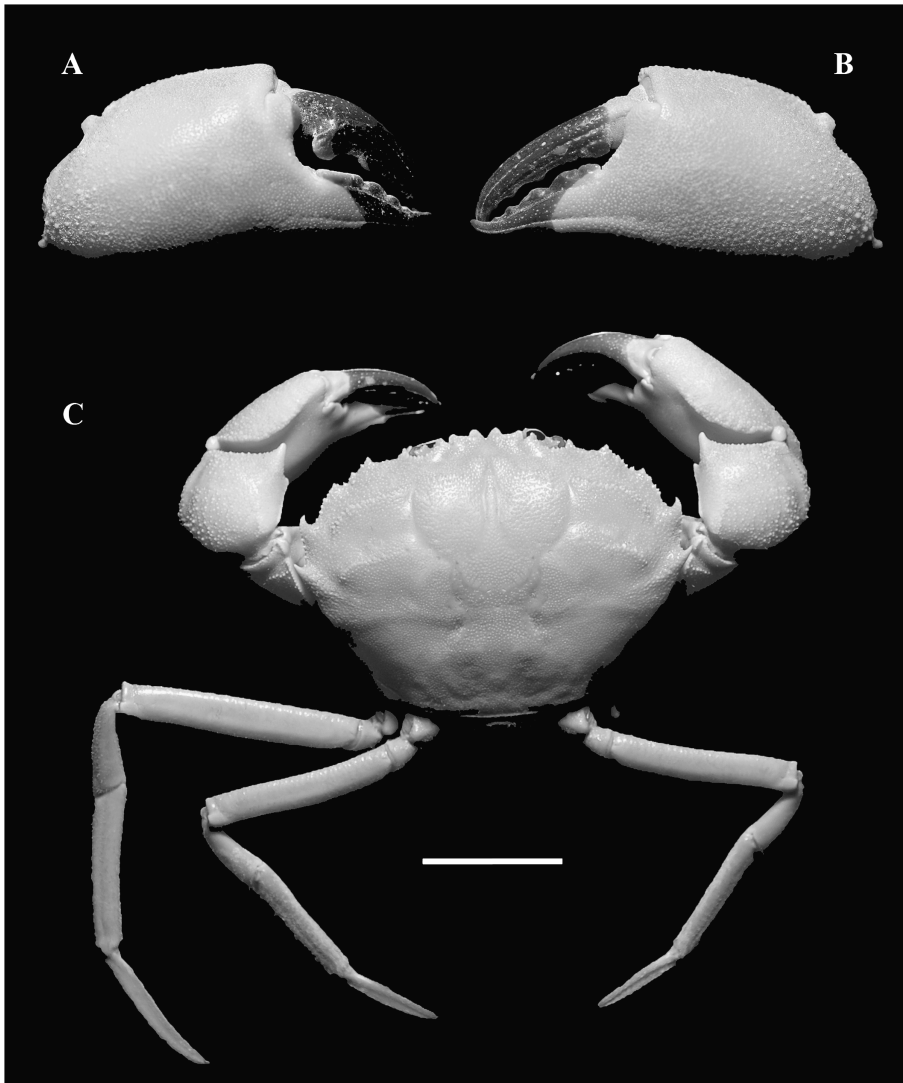


Fig. 2. *Paragalene longicrura* (Nardo, 1868) female cl 40 mm, cw 55 mm (CBR unnumbered). A, B, right and left cheliped propodus and dactylus, respectively; C, habitus, dorsal view. Scale bar: 20 mm.

P. danieleae n. sp. will permit additional taxonomic details to be added to the original description and probably show additional differences between the two species.

Distribution. — Known so far from the type locality, Guadeloupe in the Caribbean Sea.

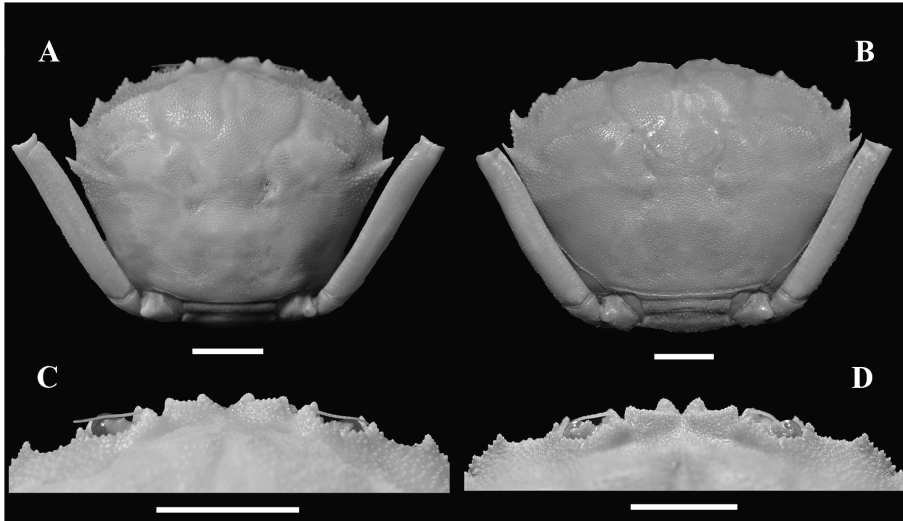


Fig. 3. A, C, *Paragalene danieleae* n. sp. female holotype cl 37 mm, cw 48 mm (MZUSP 19938). B, D, *Paragalene longicrura* (Nardo, 1868) female cl 40 mm, cw 55 mm (CBR unnumbered). A, B, dorsal view of carapace and merus of pereopod 5; part of pereopod 5 and remaining appendages removed electronically from figure; C, D, anterior border of carapace. Scale bars: 10 mm.

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