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Long time no see - 117 years after its first and only record *Praebebalia extensiva* Rathbun 1911 (Decapoda, Leucosiidae) was collected from Saya de Malha

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Abstract

The leucosiid crab *Praebebalia extensiva* Rathbun 1911 was formerly known from six specimens collected off Saya de Malha, Providence Island and Seychelles by the Sealark Expedition in 1905. More than a century later the Monaco Expedition in the Indian Ocean recovered 17 additional specimens. The species is redescribed and a colour photo provided.

Keywords: Brachyura, deep water, rare species, Western Indian Ocean, Mascarene Plateau

Introduction

The steep-sloped Saya de Malha Bank, the largest of several shallow banks of the Mascarene Plateau in the Western Indian Ocean, is one of the world's most remote and least studied deep-sea ecosystems. The study of its biota began with the Percy Sladen Trust Expedition, a six-month long expedition in the summer of 1905 to the Indian Ocean. The results of the cruise appeared in 141 reports and laid the groundwork for understanding the nature of this unique ecosystem. Thirty-five brachyuran species were identified from material collected off Saya de Malha Bank, of which six were collected at sites deeper than 200 m (Rathbun, 1911). Beginning in the 1960s Soviet fisheries expanded their operations in the unregulated fishing grounds of the western Indian Ocean outside exclusive economic zones (Vortsepneva, 2008). In the 1970s, the Indian Ocean Fishery Commission embarked on the International Indian Ocean Fishery Survey and Development Programme. These activities were supported by the United Nations Development Programme and carried out by the Department of Fisheries of the Food and Agriculture Organization of the United Nations and the Ministry of Fisheries of the Soviet Union (Ivanov and Averin, 1979; Birkett, 1979). The fishery resource surveys were coupled with exploratory studies of the biota on the shallow (<30 m) trawling grounds of the Saya de Malha Bank and resulted in additional information on the brachyuran biota (Neumann and Spiridonov, 1999; Spiridonov and Türkay, 2001). Visual observations of brachyuran crabs on the upper slopes of the Saya de Malha Bank obtained by the FAO EAF-Nansen Programme in May 2018 were few and "primarily noted as *Chaceon* sp." (Bergstad *et al*. 2021, plate e).

The Saya de Malha leg of the Monaco Expedition in the Indian Ocean, 2022 recovered specimens of the delicate-looking *Praebebalia extensiva* Rathbun, 1911 after more than a century since being collected in the course of the "Percy Sladen Trust Expedition" in 1905 and not encountered since. The species is redescribed with a colour description and photograph.

This serendipitous find sends a clear signal of the need to augment our meagre knowledge of the biota populating the immensity of the ocean world, a biota worth discovering and conserving.

Materials and methods

Carapace width measurements (CW) were taken using digital calipers. Abbreviations used: MNHN = Muséum national d'Histoire naturelle, Paris; ovig. = ovigerous; Stn = Station; USNM = National Museum of Natural History, Smithsonian Institution, Washington.

Taxonomy

Superfamily Leucosioidea Samouelle, 1819
Family Leucosiidae Samouelle, 1819
Subfamily Ebaliinae Stimpson, 1907
Genus *Praebebalia* Rathbun, 1911

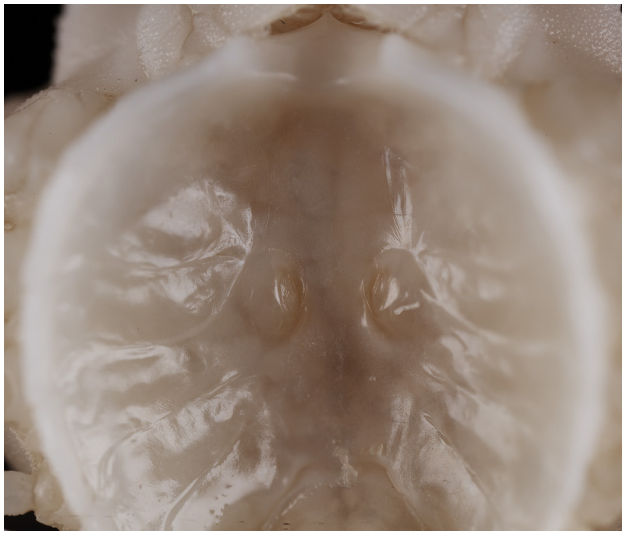

Figure 1. *Praebebalia extensiva* Rathbun, 1911, Stn DW5441, 305-300 m, 12°17'S 61°01'E, 15 November 2022, 1 ovig. female CW 9.6 mm (MNHN-IU-2022-746); sternal pleonal cavity sulcus, vulvae; ventral view. Photo: S. Soubzmaigne.

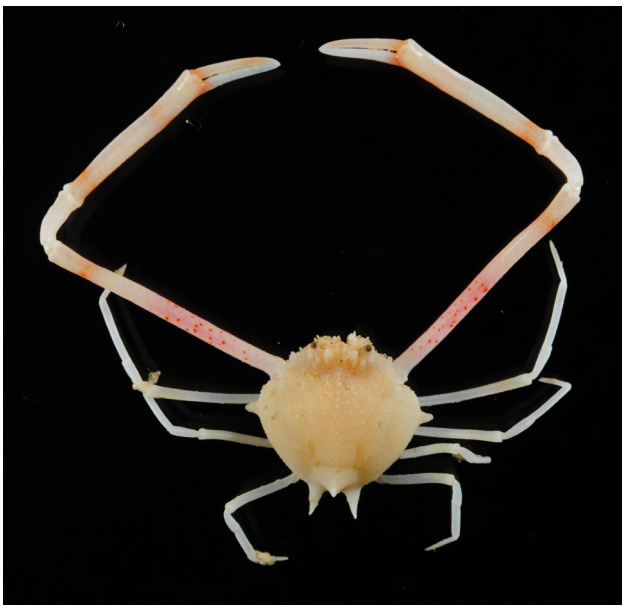

Figure 2. *Praebebalia extensiva* Rathbun, 1911, Stn CP5433, 234-235 m, 11°42'S 61°12'E, 15 November 2022, 1 male CW 8.7 mm (MNHN-IU-2022-265); dorsal view. Photo: L. corbari.

Praebebalia extensiva Rathbun, 1911: 200, pl. 15, fig. 5; Chen, 1989: 192 (list); Chen and Fang, 2000: 360 (list); Galil, 2001: 269, figs 3a-c, 5A; 2015: 5 (list).
Not *Praebebalia extensiva* Zarenkov, 1994: 106, figs 6, 8a = *Praebebalia magna* Galil, 2001.

TYPE MATERIAL — Holotype: Providence, Seychelles; male (USNM 41064).

MATERIAL EXAMINED — NW Saya de Malha, Stn DW5407, 193-198 m, 11°00'S 60°19'E, 6 November 2022, 1 male, CW 8.4 mm, 1 ovig. female CW 9.2 mm (MNHN-IU-2022-3437). SE Saya de Malha, Stn DW5420, 215-214 m, 11°25'S 62°11'E, 12 November 2022, 1 male CW 7.8 mm (MNHN-IU-2022-343); Stn CP5421, 215 m, 11°25'S 62°12'E, 12 November 2022, 1 female CW 9.2 mm (MNHN-IU-2022-887); Stn DW5423, 210-198 m, 11°27'S 62°01'E, 12 November 2022, 1 male CW 7.6 mm (MNHN-IU-2022-849; Stn DW5425, 230-229 m, 11°44'S 61°43'E, 13 November 2022, 1 male CW 9.0 mm (MNHN-IU-2022-822); Stn DW5425, 230-229 m, 11°44'S 61°43'E, 13 November 2022, 1 male CW 8.7 mm, 1 female CW 8.8 mm (MNHN-IU-2022-712). SW Saya de Malha, Stn CP5431, 264-261 m, 11°46'S 61°11'E, 15 November 2022, 2 males CW 9.2, 9.4 mm, 3 females CW 9.3-9.5 mm, 2 juveniles CW 6.7, 7.0 mm (MNHN-IU-2022-737); Stn CP5433, 234-235 m,11°42'S 61°12'E, 15 November 2022, 1 male CW 8.7 mm (MNHN-IU-2022-265). S Saya de Malha, Stn DW5441, 305-300 m, 12°17'S 61°01'E, 15 November 2022, 1 ovig. female CW 9.6 mm (MNHN-IU-2022-746).

DESCRIPTION. — (Male). Carapace subcircular, slightly wider than long, globose; regions ill-defined but for the intestinal prominence; dorsal surface closely paved with minute flattened granules interspersed with slightly larger raised granules; prominent, conic granules on gastric, hepatic regions. Front prominent, frontal margin medially notched, lobes anteriorly truncate. Basal antennular segment, furnished with long setae along spinulose anterior margin, occupies lower half of fossa, folded articles visible in upper antennular aperture. Basal antennal segment inserted in inner orbital hiatus. Eyes small with short ocular peduncle. Orbital margin bifissured dorsally, U-shaped fossa laterally on ventral margin; tuberculiform conical tooth on inner ventral margin. Anterior margin of efferent branchial channel lamellar, deeply fissured laterally; inner lobe subquadrate with finely granulated edge, visible in dorsal view; lateral margin furnished with conic granules, increasing in size posteriorly. Third maxilliped covered with closely set

granules; exopod slightly shorter, slimmer than endopod, vertically bisected by row of prominent conic spinules, increasing in size anteriorly.

Postfrontal region distinctly concave. Anterolateral margin bilobate, hepatic region slightly tumid. Subhepatic lobe prominent, margin visible in dorsal view, anteriorly with columnar granules, medially with granular tubercle. Epibranchial lobe convex, granulate, midlateral margin bearing minutely granulate triangular tooth. Posterolateral margin evenly convex. Posterior margin bearing two minutely granulate, slender, elongate conic spines, distally curved.

Cardiac region laterally edged by interrupted furrows. Intestinal region tumescent, tip bearing short carina, demarcated by shallow grooves.

Chelipeds exceedingly long, slender, paved with close-set minute granules. Merus in adult male about 1.5 times as long as carapace. Carpus with granular median carina on upper margin. Propodus somewhat thicker distally. Fingers nearly half as long as propodus, upper margin of dactyl densely set with minute granules, cutting edge minutely serrate, tips crossing when closed. Pereiopods slender, decreasing in length posteriorly, upper margin of dactyls setose.

Sternal pleonal cavity deep, elongate, nearly reaching buccal cavity, margins slightly raised. Thoracic sternites paved with minute granules. Pleonites granulate, pleonites 3-5 fused, narrowing distally; basio-lateral regions of fused pleonites somewhat inflated, lateral margin of sixth pleonite with triangular denticle medially, continuing interiorly as ridge, fitting into groove at seam between plastron and fifth pleonite; telson longer than sixth pleonite, laciniate. Male first pleopod long, sinuous, curved distally, tip set with long, curved setae; second pleopod short, distally scoop-like.

(Female). Cheliped merus is proportionally shorter in the female than in the male, about 1.2 times as long as carapace. Sternal cavity deep, rounded, nearly reaching buccal cavity, margins distinctly raised, lamellar. Pleon with pleonites 3-6 fused, greatly swollen, telson laciniate. Vulvae placed submedially on sternite 5, near suture 4/5; gonopore lozenge-shaped, directed medially, with raised, rounded hood-like sternal cover laterally (Fig. 1).

COLOUR — Dorsal surface of carapace pale buttery yellow save for the intestinal region and posterior spines, and orange postfrontal granules; pereiopods white; cheliped merus proximally pale pink scattered with red dots, subdistally with orange-colored band, propodus with similar band proximally, lower margin distally orange, fingers basally suffused with pale orange (Fig. 2).

DISTRIBUTION — Known from the type locality, Providence Island, Seychelles, and Saya de Malha Bank, 62-229 m (Rathbun, 1911). Present material extends the depth record to 305 m.

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