

Re-description and new records of a poorly known leucosiid crab, *Merocryptus boletisculpta* Zarenkov, 1994 (Crustacea, Decapoda, Brachyura)

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Abstract

Sixty-nine specimens of the rare leucosiid crab *Merocryptus boletisculpta* are reported from Walters Shoal, an isolated seamount in the southwestern Indian Ocean. The species has previously only been known from the type series collected during the R/V Vityaz 1988-1989 expedition. The species is re-described, illustrated, and colour photographs are provided.

Keywords: Leucosiidae; *Merocryptus*; Walters Shoal; southwestern Indian Ocean; rare species; seamount

Introduction

Walters Shoal is an isolated seamount in the southwestern Indian Ocean (about 400 and 600 nautical miles distant from Madagascar and South Africa, respectively) and reaching to within 18 m of the surface. Exploratory fishing on the seamounts of the southwestern Indian Ocean, including Walters Shoal, began in the 1970s, followed by frenetic commercial exploitation (Collette and Parin, 1991). Few decapod crustaceans were collected by previous expeditions to Walters Shoal. Five species, including an endemic snapping shrimp, *Alpheus waltervadi* Kensley, 1969, were described from the haul of a rock dredge taken at a single site (Stn 381, 33°13'S, 43°51'E, 38–46 m, 30.08.1964) by R/V Anton Bruun during the International Indian Ocean Expedition (Kensley, 1969, 1981). A leucosiid crab, *Merocryptus boletisculpta* Zarenkov, 1994, was described from material collected off Mozambique (Stn 2626, 24°39'S, 35°31'E, 22.11.1988) and on Walters Shoal (Stn 2753, 33°13'S, 43°53'E, 22.12.1988) by the R/V Vityaz 1988-1989 expedition to the western Indian Ocean, as well as a few other decapod species identified in stomach contents of fish collected during that expedition (Collette and Parin, 1991; Zarenkov, 1994). A serendipitous haul of 19 frozen spiny lobsters obtained from a Spanish trawler fishing

on Walters Shoal resulted in the description of *Palinyurus barbarae* Groeneveld, Griffiths and Van Dalsen, 2006 (Groeneveld *et al.*, 2006).

In 2017, the Muséum national d'Histoire naturelle, Paris (MNHN) and the Institut de Recherche pour le Développement (IRD) collaborated in the 'Walters Shoal' Expedition on board the R/V Marion Dufresne. This oceanographic expedition was a part of the project "Conservation and Sustainable Use of Underwater Mountain Ecosystems and Hydrothermal Sources in the South West Indian Ocean, beyond Areas of National Jurisdiction", led by the Global Program for the Marine and Polar Environment of the IUCN (International Union for the Conservation of Nature) and supported by the French Fund for the Global Environment (FFEM).

During this cruise, 69 specimens of a single species, *M. boletisculpta*, were collected in 15 hauls between 217 m and 668 m (37 were taken at one site alone). The species has not been recorded since Zarenkov's original description but proved to be ubiquitous on Walters Shoal. It is re-described and illustrated here. The specimens are deposited in the Muséum national d'Histoire naturelle, Paris (MNHN).

Material and methods

The specimens reported on here were collected by dredging on the summit and slopes of the seamount during the MD208-Walters Shoal expedition, on board R/V *Marion Dufresne* from 24 April to 18 May 2017 (see <https://expeditions.mnhn.fr/campaign/waltersshoal>). After sorting of the sampled material on board, some specimens were photographed to record their colour patterns, and the entire haul was preserved in 80% ethanol.

Measurements provided (in mm) are of the carapace length measured along the mid-line from the frontal margin to the posterior margin. The following abbreviations are used: G1 = gonopod 1; G2 = gonopod 2; DW = Warén dredge; Ph = photographed; and Stn = station.

Systematics

Family LEUCOSIIDAE Samouelle, 1819

Subfamily EBALIINAE Stimpson, 1871

Genus *MEROCRYPTUS* A. Milne-Edwards, 1873

Merocryptus boletisculpta Zarenkov, 1994

Ebalia tuberosa (Pennant)? var.; Stebbing, 1910: 337.

Ebalia tuberculata; Barnard, 1950: 367, fig. 70a-e. (Not *Ebalia tuberculata* Miers, 1881).

Merocryptus boletisculpta Zarenkov, 1994: 108-111, figs 8e, 9.

Material examined

Walters shoal, Indian Ocean. N.O. Marion-Dufresne Cruise MD208, Stn DW4877, 33°10'S, 43°49'E, 217–256 m, 01.05.2017, 1 male 5.0 mm (MNHN-IU-2016-9500); Stn DW4877, 33°10'S, 43°49'E, 217–256 m, 01.05.2017, 1 male 6.5 mm (MNHN-IU-2017-3471); Stn DW4877, 33°10'S, 43°49'E, 217–256 m, 01.05.2017, 1 female 5.6 mm, Ph (MNHN-IU-2016-9499); Stn DW4878, 33°09'S, 43°50'E, 221–256 m, 01.05.2017, 1 male 4.8 mm (MNHN-IU-2017-11340); Stn DW4880, 33°17'S, 43°51'E, 275–318 m, 01.05.2017, 1 male 5.0 mm (MNHN-IU-2017-3014); Stn DW4881, 33°16'S, 43°50'E, 377–382 m, 02.05.2017, 1 male 7.0 mm, Ph (MNHN-IU-2016-9496); Stn DW4881, 33°16'S, 43°50'E, 377–382 m, 02.05.2017, 1 male 6.3 mm, Ph (MNHN-IU-2016-9497); Stn DW4885, 33°17'S, 43°55'E, 272–380 m, 03.05.2017, 1 female 6.9 mm, Ph (MNHN-IU-2016-9490); Stn DW4885, 33°17'S, 43°55'E, 272–380 m, 03.05.2017, 1 female 6.6 mm (MNHN-IU-2017-3085); Stn DW4886, 33°17'S, 43°56'E, 573–582 m, 03.05.2017, 2 females 5.4, 7.7 mm (MNHN-IU-2017-3616); Stn DW4887, 33°17'S, 43°57'E, 599–640 m, 03.05.2017, 1 male 4.7 mm, Ph (MNHN-IU-2016-9500); Stn DW4887, 33°17'S, 43°57'E, 599–640 m, 03.05.2017, 1 male 8.1 mm, Ph (MNHN-IU-2016-9410); Stn DW4887,

33°17'S, 43°57'E, 599–640 m, 03.05.2017, 1 female 8.1 mm, Ph (MNHN-IU-2016-9409); Stn DW4887, 33°17'S, 43°57'E, 599–640 m, 03.05.2017, 2 females 7.2, 8.6 mm (MNHN-IU-2017-3325); Stn DW4887, 33°17'S, 43°57'E, 599–640 m, 03.05.2017, 1 female 3.8 mm (MNHN-IU-2017-11841); Stn DW4887, 33°17'S, 43°57'E, 599–640 m, 03.05.2017, 16 males 5.2–8.7 mm, 16 females 4.0–7.8 mm (MNHN-IU-2017-3084); Stn DW4888, 33°10'S, 43°57'E, 299–311 m, 03.05.2017, 1 female 7.8 mm (MNHN-IU-2017-11338); Stn DW4889, 33°09'S, 43°58'E, 353–465 m, 03.05.2017, 1 male 6.1 mm (MNHN-IU-2017-3315); Stn DW4890, 33°09'S, 43°59'E, 492–588 m, 04.05.2017, 1 male 7.9 mm, Ph (MNHN-IU-2016-9421); Stn DW4890, 33°09'S, 43°59'E, 492–588 m, 04.05.2017, 4 males 5.1–8.4 mm, 1 female 7.9 mm (MNHN-IU-2017-3322); Stn DW4891, 33°12'S, 44°01'E, 650–653 m, 04.05.2017, 3 males 8.0–9.0 mm, 1 female 4.6 mm (MNHN-IU-2017-3532); Stn DW4892, 33°12'S, 44°01'E, 624–646 m, 04.05.2017, 1 female 8.2 mm, Ph (MNHN-IU-2016-3721); Stn DW4894 33°09'S, 43°50'E, 199–261 m, 05.05.2017, 3 males 5.1–6.8 mm, 2 females 5.6, 6.1 mm (MNHN-IU-2017-3312); Stn DW4895, 33°09'S, 43°49'E, 238–283 m, 05.05.2017, 1 male 4.6 mm (MNHN-IU-2017-3080); Stn DW4898, 33°09'S, 44°01'E, 652–668 m, 06.05.2017, 1 ovigerous female 11.4 mm, Ph (MNHN-IU-2016-9465); Stn DW4898, 33°09'S, 44°01'E, 652–668 m, 06.05.2017, 1 female 5.5 mm, Ph (MNHN-IU-2016-9498).

Description

Carapace (Fig. 1, 2) subhexagonal in outline, slightly longer than wide in male, slightly wider than long in female; upper surface closely paved with flattened, round granules of various sizes; prominent, oblique epibranchial ridges intersecting at median ridge. Front produced, slightly concave medially, bilobed. Postfrontal section of median ridge concave; gastro-cardiac region raised, with 2 anteriorly bent conic tubercles on gastric region, 1 tubercle on cardiac region. Intestinal region markedly raised, well demarcated, rounded (Fig. 1G). Hepatic region markedly convex. Pterygostomian margin convex, with triangular median tooth, visible in dorsal view. Lateral margin projecting, bidentate bearing mushroom-like granules, more distinct in females. Epibranchial ridge conspicuous, running obliquely from gastric tubercle to posterolateral angle of epibranchial region, proximally lined with low granules, distally with mushroom-like granules. Metabranial region concave, paved with mushroom-like granules; margin concave. Posterior margin distinctly bilobed in males, lobes rounded, closely paved with flattened granules; only slightly

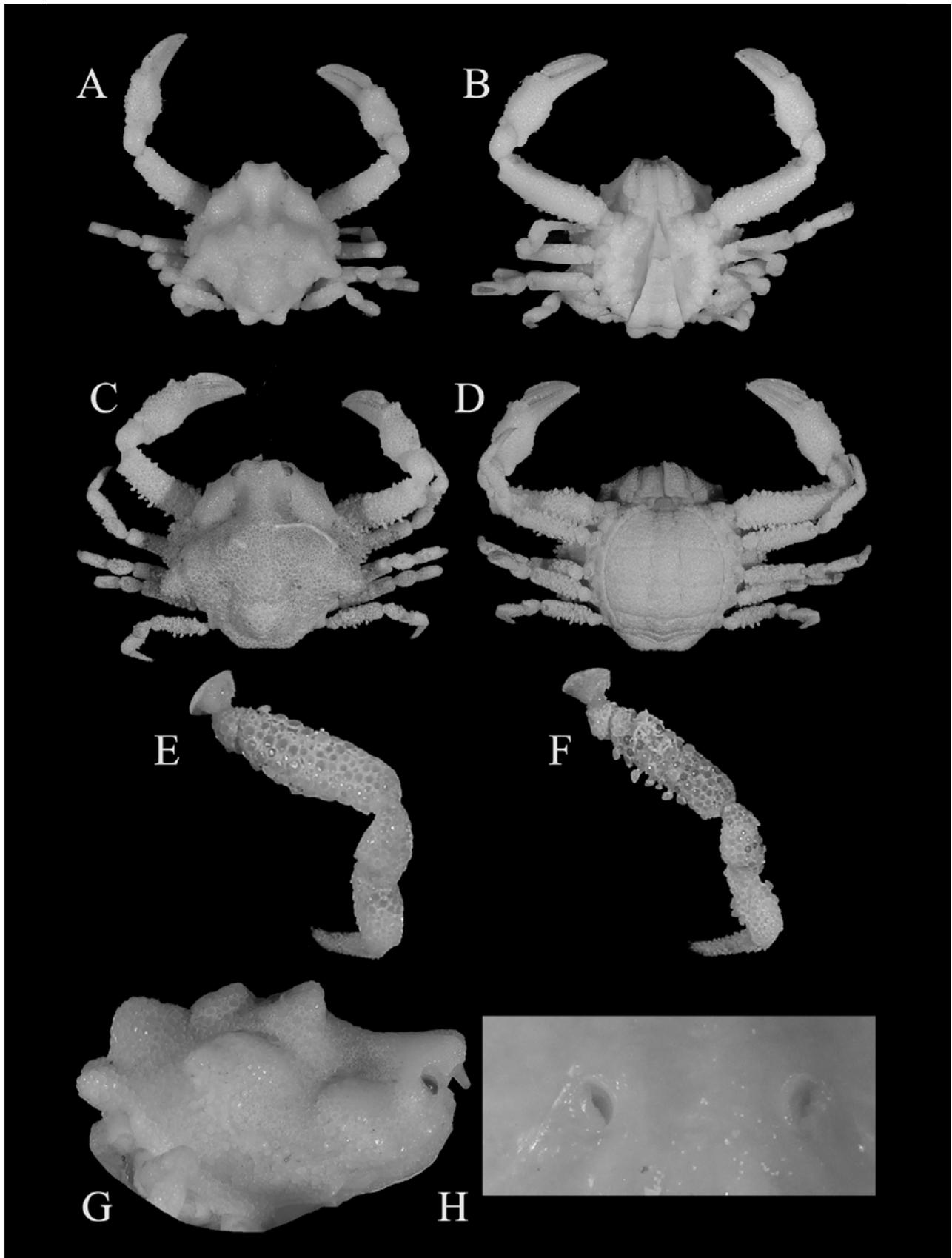


Figure 1. *Merocryptus boletisculpta* Zarenkov, 1994. A, B, E, G, male (4.0 mm) (9.0 mm), (MNHN-IU-2017-3532); C, D, F, H, female (9.0 mm), (MNHN-IU-2017-3532).

A, C, overall habitus; B, D, ventral view, E, F, last ambulatory leg; G, lateral view of carapace; H, female sternopleonal cavity and vulvae.



Figure 2. Colour in life. *Merocryptus boletisculpta* Zarenkov, 1994. A, male (6.3 mm) (MNHN-IU-2016-9497); B, ovigerous female (11.4 mm) (MNHN-IU-2016-9465).

concave in females (Fig. 1A, C). Ocular peduncle very short. Orbital margin trifissured. Antennule folded into oblique fossa; basal segment occupying lower part of fossa. Antennae small, slender, basal antennal article inserted in orbital hiatus. Anterior margin of efferent branchial channel produced, convex, laterally notched, separated by narrow groove from lower orbital margin. Third maxilliped (Fig. 1B, D) closely paved with flat-top mushroom-like granules of various sizes; exopod with narrow longitudinal groove.

Cheliped (Fig. 1A, C) entirely covered with granules of various sizes and shapes. Merus subcylindrical, elongate, with prominent, conic, mushroom-shaped granules on inner, outer margins, more numerous in females, scattered among flattened, rounded granules. Carpus rounded, paved with flattened granules. Palm rounded, slightly shorter than fingers, with conic granules on upper, lower margins; fingers with minute granules arranged in longitudinal rows, outer margins prominently cristate, cutting edges unevenly denticulate. Ambulatory legs slender; decreasing in size posteriorly; merus with prominent conic mushroom-shaped granules along upper, lower margins, more numerous in females; propodus with conic granules on margins; dactylus setose, covered with conic granules, tip corneous (Fig. 1E, F).

Male thoracic sternites covered with flattened granules of various sizes (Fig. 1B). Abdominal cavity not reaching to buccal cavern; sutures interrupted medially. Male pleon (Fig. 1B) paved with flattened granules;

fused somites, composed of third to sixth somites, elongate, distally convergent; telson elongate, triangular, proximally with triangular denticle. Female abdominal cavity reaching to buccal cavern; abdomen (Fig. 1D) entirely covered with closely set granules of various sizes; somites fused, rounded, convex, divided by pair of shallow longitudinal grooves; telson tongue-shaped. G1 slender, slightly sinuous, with short setae on distal half of both margins; tip acuminate, with short stiff setae on mesial margin. G2 short, convex, distally lanceolate, tip acute. Vulvae relatively large, obliquely placed next to mesial end of suture between sternites 5/6, almond-shaped, (Fig. 1H).

Colour

Carapace, chelipeds pale orange variously mottled with white, speckled with darker orange granules; ambulatory propodi, dactyls white (Fig. 2).

Remarks

Barnard (1950: 368) considered the specimen collected off 'Cape Natal' and listed by Stebbing (1910: 337) as *Ebalia tuberosa* (Pennant)? var., as the eastern Atlantic *Ebalia tuberculata* Miers, 1881 "Pending direct comparison of actual specimens". However, his description and illustrations conform to *Merocryptus boletisculpta* Zarenkov, 1994, described from several specimens collected on Walters Shoal and off Mozambique. The present material differs from the specimen depicted (Zarenkov, pl. 9, fig. 1) in having male lateral margin bidentate, and posterior margin distinctly bilobed but less produced in specimens of

comparable size. The specimens agree with the type description and illustrations in all other characters.

Geographical distribution

Known from the type series locations: Stns 2626 and 2753 (Mozambique and Walters Shoal, respectively), but presented as “Madagascar underwater ridge, depth 320-480 m” (Zarenkov, 1994: 111), and from Durban, South Africa, depth 86-155 m. Our material extends the depth range to 668 m.

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