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NOTE

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Balakrishna Meher & Ganesh Thiruchitrambalam

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A NEW DISTRIBUTION RECORD OF THE PENTAGONAL SEA URCHIN CRAB *ECHINOECUS PENTAGONUS* (A. MILNE-EDWARDS, 1879) (DECAPODA: BRACHYURA: PILUMNIDAE) FROM THE ANDAMAN ISLANDS, INDIA

Balakrishna Meher¹  & Ganesh Thiruchitrambalam² 

^{1,2} Department of Ocean Studies & Marine Biology, Pondicherry University, Brookshabad Campus, Port Blair, Andaman & Nicobar Islands 744112, India.

¹ bkmehher91@gmail.com, ² ganesh.t.omb@pondiuni.edu.in (corresponding author)

For the first time, the Pentagonal Sea Urchin Crab *Echinoecus pentagonus* (A. Milne-Edwards, 1879) is recorded from the rocky intertidal region of the Andaman Islands. It is a symbiotic crab that lives with sea urchins of the genus *Echinothrix*. This species is recorded from the Lakshadweep (Prakash et al. 2012) and Nicobar Islands (Sastry 1981) but there is no record from mainland India. A detailed description of the species, high quality photographs and line diagrams are provided.

All eumedonines (subfamily Eumedoninae, family Pilumnidae) are obligate symbionts of echinoderms (Castro 2015). Eumedoninae consists of a total of 33 species under 13 genera (WoRMS 2019). The genus *Echinoecus* under this subfamily contains three species, *Echinoecus nipponicus* Miyake, 1939, *E. pentagonus* (A. Milne-Edwards, 1879), and *E. sculptus* (Ward, 1934) (Ng et al. 2008). They are commonly called ‘sea urchin crabs’ as they are obligate symbionts of sea urchins. *Echinoecus pentagonus* has a wide distribution, from eastern Africa

to the Hawaiian Islands (Chia et al. 1999). Males and pre-adult females of *E. pentagonus* mostly live on the surface of sea urchins but sometimes they can be found near the rectum while adult females are restricted to the rectum in a calcified gall-like structure (Castro 1971, 2015). For the first time in India a berried female *E. pentagonus* was collected from the rectum of the sea urchin *Echinothrix diadema* (Linnaeus) from Malacca Beach, Car Nicobar in 1959 by Tiwari (see Sastry 1981). Later Prakash et al. (2012) reported a male *E. pentagonus* clinging on the ventral side of the sea urchin host *Echinothrix calamaris* from Agatti Island, Lakshadweep.

During the survey of brachyuran crabs in the intertidal regions of the South Andaman Islands, from December 2014 to September 2018, a single male specimen of *E. pentagonus* was collected in December 2015 at Corbyn’s Cove, Port Blair (Figure 1). The specimen was found in rocky substratum in a free-living state. After collection, it was preserved in 10% buffered formaldehyde. Standard literature (Chia et al. 1999; Ng & Jeng 1999) were referred for identification of the species. Photographs and morphological measurements were taken with the help of a stereo zoom microscope (Leica M 205A). The specimen was deposited in the Department Museum, at Pondicherry University, Port Blair.

Material examined: One male collected from Port Blair Coast, Andaman Islands; locality: rocky intertidal region, Carbyn’s Cove (11.657°N, 92.753°E); collected on 14 December 2015 by Balakrishna Meher and T. Ganesh; dt.02.i.2019, deposited at Museum of Department



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of Ocean Studies and Marine Biology, Pondicherry University, Port Blair (PU/MB/501).

Taxonomy

Order Decapoda Latreille, 1802
 Infraorder Brachyura Linnaeus, 1758
 Family Pilumnidae Samouelle, 1819
 Subfamily Eumedoninae Dana, 1852
 Genus *Echinoecus* Rathbun, 1894

Echinoecus pentagonus (A. Milne-Edwards, 1879) (Image 1, Figure 2)

Description: Carapace almost pentagonal in shape; length of carapace slightly more than width; surface without hairs, granules and very weakly punctuate when observed under microscope; anterior surface of carapace with white margin and two almost vertical white bands on the posterior surface (Image 1a, Figure 2a); different regions of carapace surface weakly marked; antero- and postero-lateral margins well defined. Rostrum elongated, bend downward and with a depression on centre of it (Figure 2c). Pterygostomial and sub orbital regions pitted in large amount (Figure 2b). Antennules obliquely folded (Figure 2b). Basal segment of antenna rectangular. External maxilliped quadrate; rectangular ischium and almost squarish merus; oblique suture

between the ischium and merus; a vertical groove on the ischium and a large pit on the merus (Figure 2b). Surface of chelipeds smooth; upper margin of palm with a blunt spine at its distal end; carpus with one inner and one outer spine, outer spine reduced; merus with a single spine (Figure 2f, g). Walking legs smooth to poorly pitted, unarmed and subcylindrical; dactylus thorny, inner margin with a small bunch of bristles (Figure 2h). Anterior portion of thoracic sternum comparatively narrow; sutures between sternites 1 and 2 indistinct, 2 and 3 well defined, between 3 and 4 interrupted (Figure 2d). Abdomen with seven distinct segments (Figure 2e). First gonopod stout and S-shaped.

Stevcic et al. (1988) established Eumedonidae Dana, 1853 as a distinct family whereas Ng & Clark (2000) recognized Eumedonine as a subfamily of Pilumnidae family.

In the present study, the classification of Eumedonine is based on recent standard literature (Ng & Clark 2000; Ng et. al. 2008) and considered as a subfamily of Pilumnidae. The three species of genus *Echinoecus* look very similar. Sharp and longer rostrum of *E. pentagonus* readily differentiates it from *E. nipponicus* and *E. sculptus*. *E. pentagonus* is the only member of its genus represented from the coastal waters of India. Though it is mostly exclusively obligate symbiont with diadematid sea urchins (Castro 2015), in the current

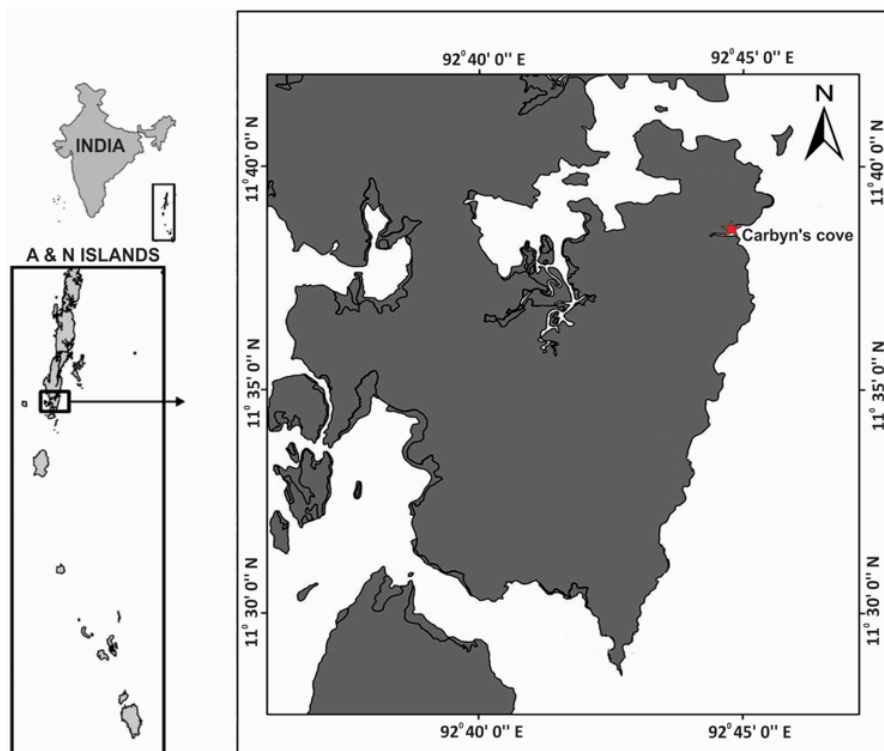


Figure 1. Sampling location of *Echinoecus pentagonus* (Herbst, 1801) at Carbyn's Cove, Port Blair, South Andaman Island.

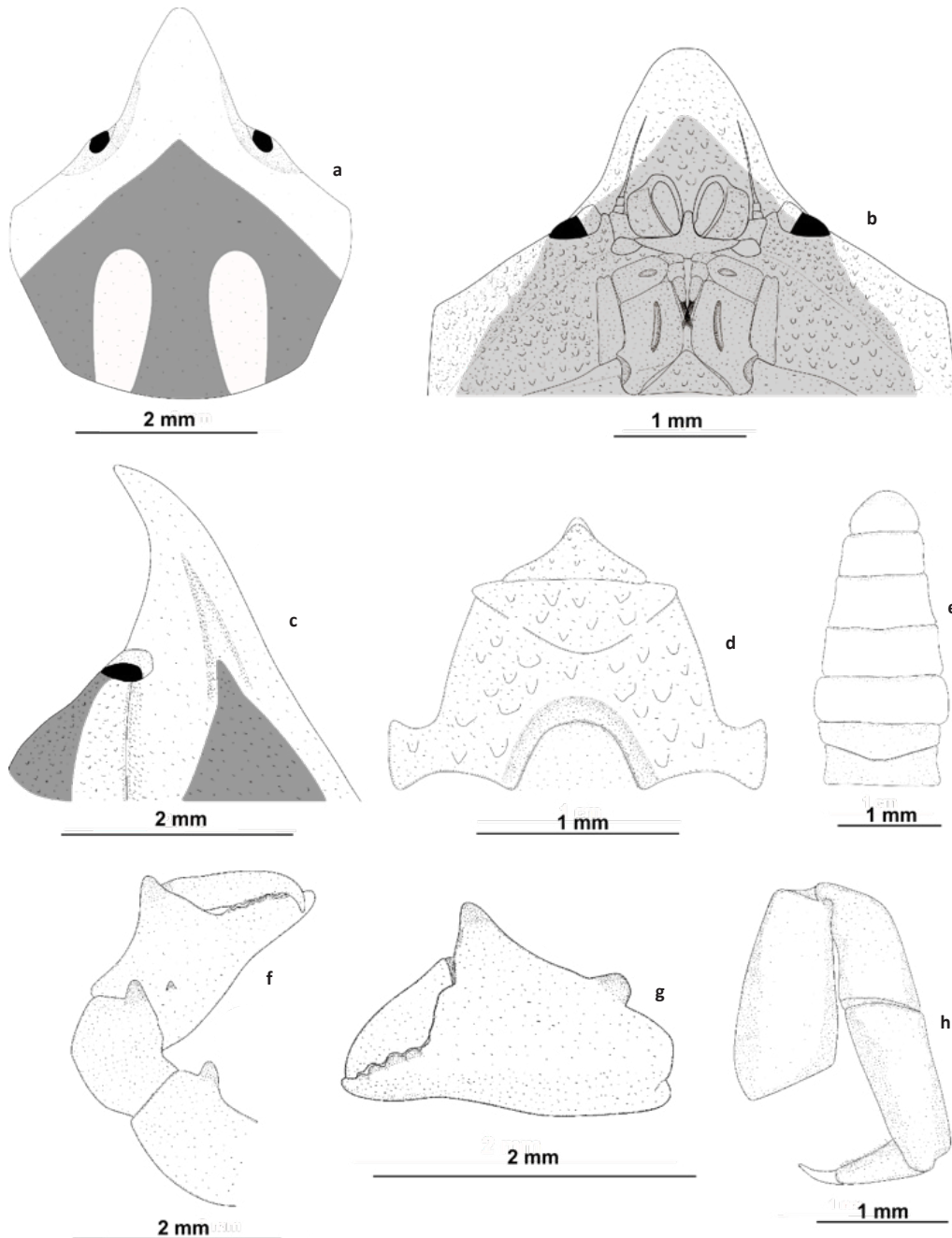


Figure 2. *Echinoecus pentagonus*: a—dorsal view | b—ventral view | c—lateral view of rostrum | d—anterior portion of thoracic sternum | e—abdomen | f—cheliped | g—palm of cheliped | h—walking leg.

study it was found in a free-living state, without a host, in the rocky intertidal region. It may be due to death of host or accidental separation from host. Symbiotic brachyurans can be rarely found on non-living substrates (Castro 2015).

There is almost no information on the ecology and behaviour of *E. pentagonus* from India; *E. pentagonus* sometimes shows parasitic behaviour and can be lethal to certain species of diadematid sea urchins (Castro

1971). Therefore, it is very important to understand their diversity, distribution, ecology and biology in the coast of Andaman Islands, where the sea urchin is a protected animal.

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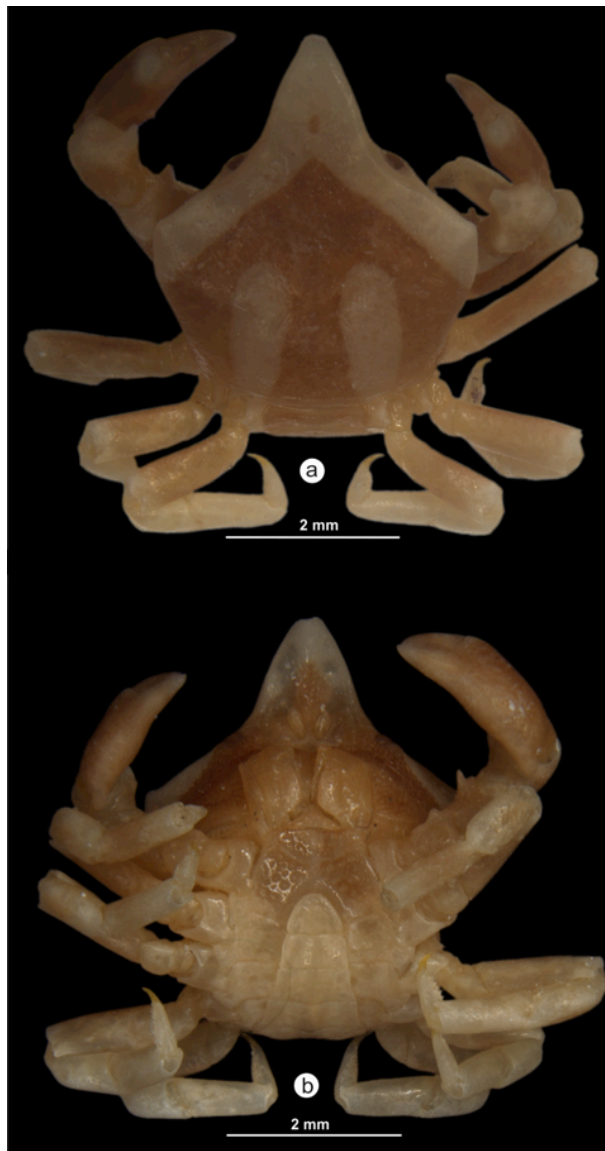


Image 1. *Echinoecus pentagonus*: a—dorsal view | b—ventral view. Scale 2mm. © Balakrishna Meher.

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