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New record of a crinoid symbiotic brachyuran crab, *Rhabdonotus pictus* A. Milne-Edwards, 1879 (Decapoda: Pilumnidae), from the Andaman and Nicobar Islands, India

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Short communication

Abstract

The feather star symbiotic brachyuran crab, *Rhabdonotus pictus* A. Milne-Edwards, 1879, is reported herein based on a single female specimen, collected off Nancowry, Andaman and Nicobar Islands. This species has previously been known from the Gulf of Mannar, India on Sea pen, *Virgularia* sp. This is the first record of this species from the Andaman and Nicobar Islands.

Keywords: *Andaman sea, association, biodiversity, echinoderm, eumedoninae*

Introduction

The family Pilumnidae is represented by 69 genera with 394 species belonging to five subfamilies worldwide (Davie *et al.*, 2015). Pilumnid crabs are characterized by their hexagonal carapace that is transversely oblong or transversely ovate (Davie *et al.*, 2015). In India, Pilumnidae is represented by 62 species in 29 genera (Trivedi *et al.*, 2018; Devi *et al.*, 2018; Prakash and Marimuthu, 2020; Mariyambi *et al.*, 2020; Jose and Kutty, 2020). Among them, are five symbiotic crabs *viz. Ceratocarcinus longimanus* White, 1847; *Echinoecus pentagonus* (A. Milne-Edwards, 1879); *Harrovia albolineata* Adams and White, 1849; *Harrovia elegans* De Man, 1887 and *Lissocarcinus orbicularis* Dana, 1852 were recorded associated with echinoderms from the Andaman and Nicobar Islands (Venkataraman *et al.*, 2004; Dev Roy and Nandi, 2012; Kumaralingam *et al.*, 2017; Trivedi *et al.*, 2018). The present study reports the occurrence of symbiotic brachyuran crab *Rhabdonotus pictus* from the Andaman and Nicobar Islands, which is a new record from the archipelago. *Rhabdonotus* sp. are obligate symbionts of comatulid crinoids (Chia and Ng, 1995).

Material and methods

One female sample was collected by FORV *Sagar Sampada* at 65 m depth (chain dredge) on 13 August 2019 from the Nancowry group of Islands, (Lat. 08° 07.434' N; Long. 93° 38.890' E) Nicobar, Andaman and Nicobar Islands, India (Fig. 1).

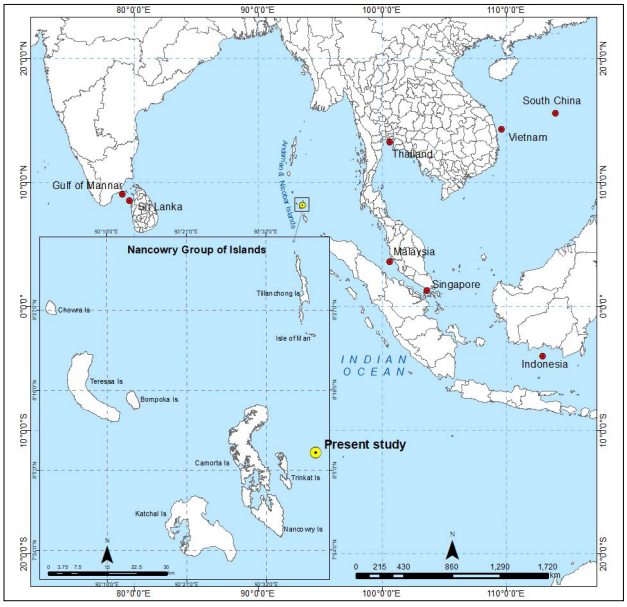

Fig. 1. Distribution of *R. pictus*. The red dots show previous locations and the yellow dot is the present location

The specimen was preserved in 90% ethanol for further studies. Identification was based on morphological characters (Chia and Ng, 1995) and the terminology used follows Ng *et al.* (2008). Photographs and measurements were taken using a Leica M205A Stereo Zoom Microscope. The specimen was deposited in the National Zoological Collection, Andaman Nicobar Regional Centre (ANRC), Zoological Survey of India (ZSI), Port Blair. Reg. No.- ZSI/ANRC/M/22894, (CL 5.8 mm, CW 6.9 mm). Abbreviations used are CL (carapace length), and CW (carapace width).

Results and discussion

Systematics

Order : Decapoda Latreille, 1802
Family : Pilumnidae Samouelle, 1819
Subfamily: Eumedoninae Dana, 1852
Genus : *Rhabdonotus* A. Milne-Edwards, 1879
Species : *Rhabdonotus pictus* A. Milne-Edwards, 1879 (Fig. 2).

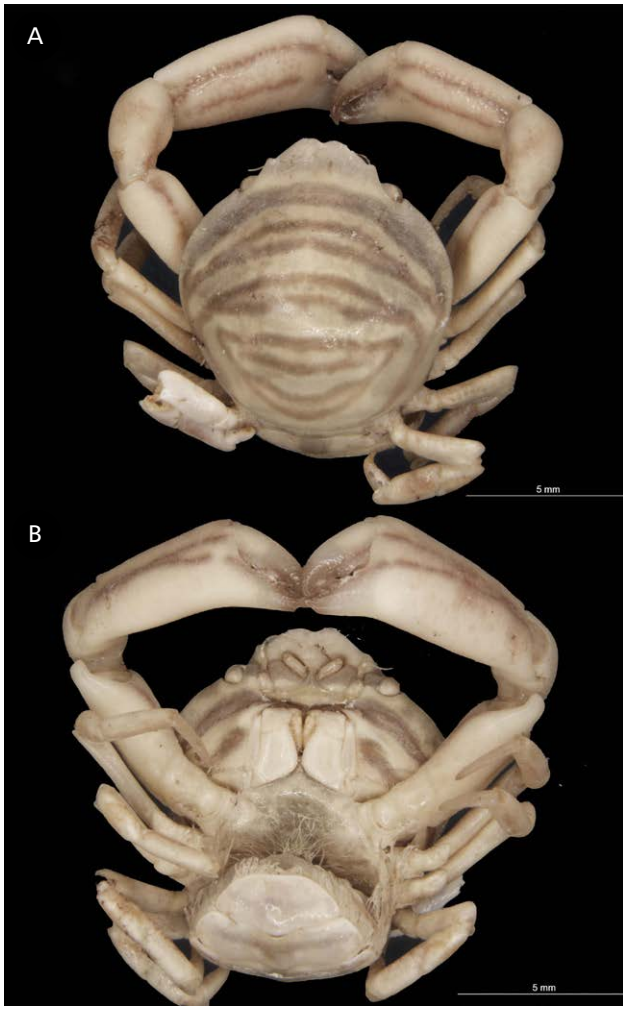

Fig. 2. Female *R. pictus.* A) Dorsal view B) Ventral view

Synonymy

Caphyra archeri Walker, 1887: 110, 116, pl. 9, figs. 4-5; Nobili, 1901: 11; Nobili, 1906: 188; Balss, 1934: 506; Leene, 1938: 144, 147; Stephenson and Campbell, 1960: 96, 105; Stephenson, 1962: 313; Crosnier, 1962: 27; Stephenson, 1972: 7, 25.

Diagnosis

Carapace smooth, except for anterior, frontal margin weakly tuberculated, bilobed, lobes rounded, cleft between lobes superficial. Anterolateral margin lined with flat, small granules. Epibranchial cleft and tooth small, weak. Posterolateral margin converging, smooth. Third maxilliped smooth, anterior and inner margins of merus and ischium tuberculated, external angle of merus quadrate, subequal, weakly tuberculated appear. Ambulatory legs are comparatively glabrous with only scattered setae, dorsal margins of meri end in curved lobe, outer margins of ambulatory carpus and propodus with low tubercles. Colour of the carapace when alive slightly brownish with transverse red stripes, chelipeds outer margins with two parallel lines.

Distribution

R. pictus has originally been described in Vietnam (Milne-Edwards, 1879), later it was recorded in Indonesia, Singapore, Malaysia, Thailand, South China and Sri Lanka (Man, 1888; Walker, 1887; Johnson, 1962; Serène and Romimohtarto, 1963; Lundoer, 1974; Shen *et al.*, 1982; Chia and Ng, 1995). In India, this species was previously reported from the Gulf of Mannar, Tamil Nadu (Sankarankutty, 1966; Thomas, 1969). The present study reports the crinoid associated symbiotic crab *R. pictus* for the first time from the Andaman and Nicobar Islands. The three species of *Rhabdonotus* from the Indo-West Pacific: *R. pictus* A. Milne-Edwards, 1879, *R. pilipes* Chia and Ng, 1995, and *R. xynon* Chia and Ng, 1995 are distinguished by the degree of tuberculation on the frontal margin and cheliped as well as the extent of setae on the ambulatory legs (Chia and Ng, 1995). All are obligate symbionts of crinoids (Chia and Ng, 1995) and *R. pictus* is a confirmed symbiont with feather star *Cyllometra manca*, (Colobometridae). Sankarankutty (1966) recorded the species from sea pen (*Virgularia* sp.) from the Gulf of Mannar (Tamil Nadu), southern India but he noted that this host record is not certain. In 1995, Chia and Ng (1995) studied the neotype specimen collected from Singapore and observed the first zoea of *R. pictus* in the aquarium, which was found on the oral surface of crinoid host species. *Rhabdonotus pictus* is distinguished from *R. pilipes* by the smoother appearance in general and on all surfaces, presence or absence of very weak epibranchial cleft and tooth, posterolateral margins more converging, and relatively fewer setae on the ambulatory legs, outer margins of the ambulatory carpus and propodus smooth or mildly

tuberculated, and the colour pattern in life see (Chia and Ng, 1995). *R. pictus* is newly recorded with a new host (crinoid) from Andaman and Nicobar Islands. This new record adds to the brachyuran crab database of the Andaman and Nicobar Islands. Further surveys and taxonomic studies are required to know the diversity of symbiotic brachyuran crabs from the Andaman and Nicobar Islands as well as India.

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