



NEW ADDITION OF FEATHER STARS, *COLOBOMETRA PERSPINOSA* (CARPENTER, 1881) AND *PETASOMETRA CLARAE* (HARTLAUB, 1890) TO INDIAN ECHINODERMS FROM ANDAMAN & NICOBAR ISLANDS

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ABSTRACT

Crinoidea belonging to phylum Echinodermata is distributed in World Oceans up to the abyssal zone. Two species of crinoids viz. *Colobometra perspinosa* (Carpenter, 1881) and *Petasometra clarae* (Hartlaub, 1890) are recorded as new to Indian waters. This paper presents detailed taxonomic characters and morphological features of these species in addition to their geographical distribution.

KEY WORDS: *Colobometra perspinosa*, *Petasometra clarae*, New record, Andaman and Nicobar Islands.

INTRODUCTION

Crinoidea is one of the five classes under the phylum Echinodermata and has a single subclass Articulata. Out of the 4 living orders of Articulata, order Comatulida is the only group comprising of feather stars (Messing, 1997). The rest make up the sea lilies. The feather stars live in depths ranging from the intertidal zone to abyssal zone (Oji *et al.*, 2009). Crinoids represent 700 extant species in World's Oceans while India represents 86 species (James, 2008; Sadhukhan and Raghunathan 2012, 2013) of which 58 species are reported from Andaman and Nicobar Islands (Venkataraman *et al.*, 2004; Sastry, 2005; James, 2008; Sadhukhan and Raghunathan 2012, 2013; Raghunathan *et al.*, 2013; Nigam *et al.*, 2015). The genus *Colobometra* A.H. Clark, 1912 includes four species namely *Colobometra discolor* AH Clark, 1909, *C. arabica* AH Clark, 1937, *C. suavis* (Clark, 1908) and *C. perspinosa* (Carpenter, 1881), the genus *Petasometra* AH Clark, 1912 includes two species *Petasometra clarae* (Hartlaub, 1890) and *Petasometra helianthoides* AH Clark, 1912 in the world. The presently recorded crinoid species *Colobometra perspinosa* (Carpenter, 1881) and *Petasometra clarae* (Hartlaub, 1890) are new additions to India reported from Andaman and Nicobar Islands.

MATERIALS & METHODS

A study was carried out at Andaman and Nicobar Islands by employing Self Contained Underwater Breathing Apparatus (SCUBA) to explore the species diversity of reef associated faunal communities up to the depth of 20 m during November and December 2015. The crinoid specimens were collected by hand picking and kept in polythene bags. The specimens were fixed in 95% ethanol and preserved in 70% ethanol following standard methods (Hendler, 2004; Messing, 2006). Examination of the morphological characters was done using Labomed CZM4 microscope and measurements were made under a stereo

zoom (Leica M 205 A) microscope. Identification of the feather stars was made using the keys given by Clark and Rowe (1971). Examined specimens are deposited in the National Zoological Collections at Zoological Survey of India, Port Blair.

RESULTS

Order- COMATULIDA A.H. Clark, 1908

Family - COLOBOMETRIDAE A.H. Clark, 1908

Genus- *Colobometra* A.H. Clark, 1912

***Colobometra perspinosa* (Carpenter, 1881) Figure 1**

Material examined: Five specimen were observed at the Nancowry, Nicobar Islands (Lat: 07°59.465'N and Long: 93°30.210'E). Two samples were collected in December 2015, at the depth of 15 m. (Reg. No.: ZSI/ANRC-14150) and two specimens were observed at Andaman Islands (Pongibalu) (Lat.: 11°30.958'N and Long.: 93°39.201'E) of which one sample was collected (Fig. 1a) on November 2015 at the depth of 20 m (Reg. No.: ZSI/ANRC-14837).

Key Characters: P_a absent on all of the arms Cirri long and comparatively slender with 24 or more segments, the more proximal with spinous distal ends, the distal with paired dorsal spines, proximal pinnule segments slightly longer than the distal; all the pinnules, especially the proximal, stiffened, with very spinous distal ends to the component segments; none of the lower pinnules greatly longer than the others.....

Genus: *Colobometra*
Size up to 170 mm. arm length; cirri with 35 - 65 segments, usually at least 45.....***Colobometra perspinosa***
Description

The arms 10 in numbers, measure 110-140 mm in length. P_a is absent (Figure 1b). The cirri are XX, 51, 57 and 59 segments and comparatively slender, 35-41 mm. long, with terminal claw (Figure 1c). The I Br₁ is broad and long; the IBr₂ (axillary) is twice as broad, tapering slightly in the distal half; the longer proximal segments are slightly longer than broad both these segments are comparatively

undersized (Figure 1d). No comb on the proximal pinnules; P₁ is slightly stiffened, about two thirds the length of P₂, P₃ is enlarged and greatly stiffened; P₃ is slightly larger than P₂, but similar (Figure 1b). Syzygies are present at Br₃₊₄ in all the division arms series (Figure 1e). The other pinnules like P₃ or P₄ are similar, but slowly decrease in length and thickness; the following are only slightly stiffened (Figure 1f). The distal pinnules are long and slender with about eighteen segments.

Colour: Commonly black in live condition and in preservation also it retains the black colour.

Habitat: The specimen was found attached to soft coral (Gorgonian) at the depth of 15 meters.

Distribution: *India:* Andaman and Nicobar Islands (present report), *Elsewhere:* Australia, Indonesia, New Guinea, Queensland, Red Sea and South China and Sumatra.

Remarks This species is recorded for the first time from both Andaman and Nicobar group of Islands and also new addition to Indian waters.

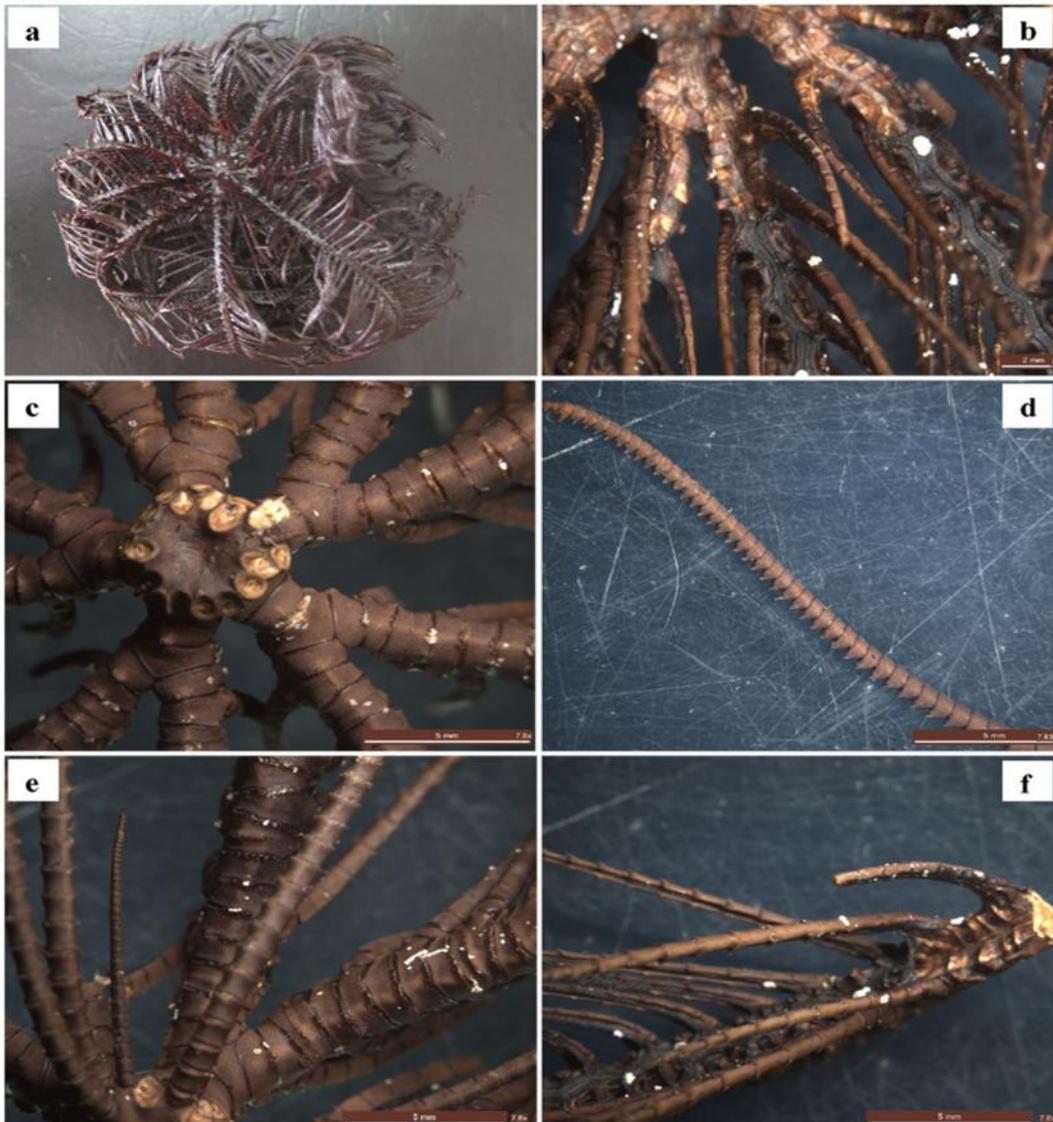


Figure: 1. a- *Colobometra perspinosa* (Carpenter, 1881); b- Proximal pinnules- P₁,P₂; c- Cirri ventral view; d- Centrodorsal with division series IB; e- Syzygies at Br₃₊₄; f- Pinnules P₃ or P₄ similar

Genus-*Petasometra* A.H. Clark, 1912

***Petasometra clarae* (Hartlaub, 1890) Figure 2**

Material examined: Two specimens collected from Pongibalu (Fig. 2a), South Andaman (Lat.: 11°30.958'N and Long.: 93 °39.201'E) in November 2015, at the depth of 10 m (Reg. No.: ZSI/ANRC-14149).

Key Characters: First and second pinnules are similar, some time third pinnules similar; when more than 10 arms

are present the II Br series are four.. .. .

Genus: *Petasometra*

15-31 arms are present; all the division series of the arms composed of two brachials joined by synarthry... ..

Petasometra clarae

Description

There are 27 arms present which range from 85 to 110 mm in length. The cirri are XXVII, 11 mm in length, comprising of 19-31 segments. The centrodorsal disk is

large and thick disk. The cirri and centrodorsal disk are light yellow-brown in color. The cirrus sockets are arranged in single marginal rows (Figure 2b). The proximal half of the cirri has a rather broad dorsal surface, but in the distal half the cirri become more compressed laterally (Figure 2c); in the distal more compressed half cirri pass over into a single small spine, opposing spine is stout (Figure 2d). The radials are slightly visible. The IBr, are entirely free laterally, pentagonal and rather short. The outer borders of the division series are smooth, without lateral processes. Syzygies occur in between brachials 3+4. There are one or two distinct patches on individual arms (Figure 2e). P_1 is 11 mm. long with 21 segments of

which the gradually in length. P_2 is similar, but slightly longer and stouter. P_3 is similar; the pinnules following are similar (Figure 2f).

Colour: The arms are yellow in colour and the pinnules are gray and white in live form. After preservation the colour of the entire specimen turns brown.

Habitat: The specimen was found attached to soft coral (Gorgonian species) at the depth of 10 m.

Distribution: *India:* Andaman Islands (present report). *Elsewhere:* Australia, Indonesia and Papua New Guinea.

Remarks: This is a new record from Andaman Islands and also from Indian waters.

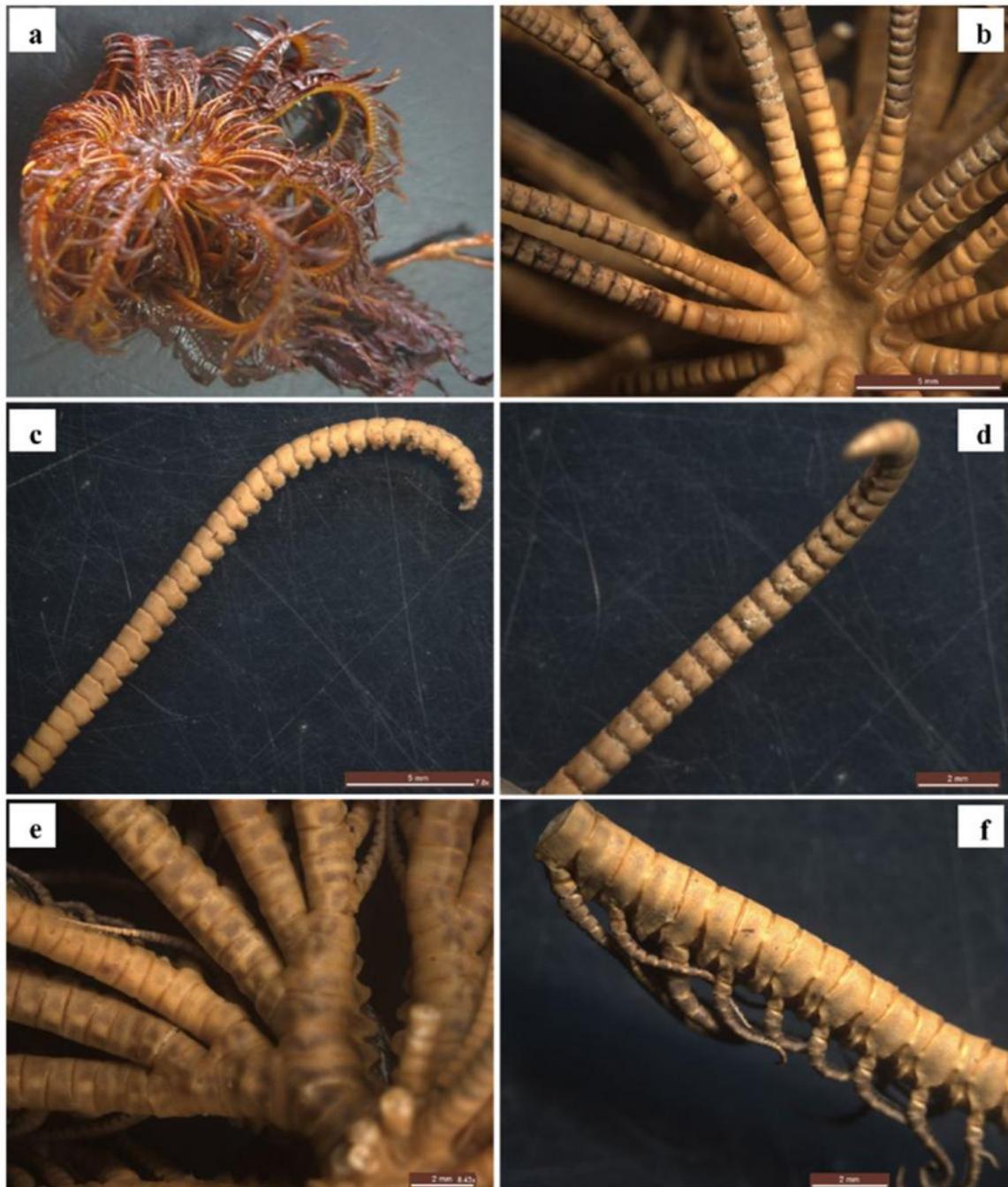


Figure: 2. a- *Petasometra clarae* (Hartlaub, 1890); b- Centrodorsal with cirri; c- Cirri dorsal view; d- Cirri ventral view; e- Br division series with syzygy; f- Proximal pinnules

DISCUSSION

Colobometridae is a scarcely studied family belonging to the class Crinoidea across the Indo-West Pacific region (Clark and Rowe 1971; Clark, 1947; Sastry 2007). Two species *Colobometra brevicirra* and *C. discolor* from Genus *Colobometra* were reported earlier in India by (Clark, 1912). The species *Colobometra brevicirra* is now included in the Genus *Decametra*, as *D. brevicirra* leaving *C. discolor* as the only validated species from the Andaman Islands, included in the annotated list given by (Sastry 2005). Very less data is available with respect to the biogeographic distribution (Clark and Rowe 1971) of *Colobometra perspinosa* and *Petasometra clarae* probably due to their limited occurrence. The present report demonstrates the occurrence of these two species for the first time in the Indian waters. The detailed taxonomical documentation of the crinoids is comparatively less than that of other Echinoderms. Limited literature published so far illustrates the need for in depth studies on crinoids in near future with through exploration to obtain the comprehensive picture of crinoid diversity in India.

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