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A NEW RECORD OF SCLERACTINIAN CORAL FROM A SUBMERGED REEF NEAR-SHORE CHENNAI COAST

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INTRODUCTION

Recent surveys to assess Scleractinian coral diversity in Indian reefs indicate that there could be many new records yet to be described (Turner et al., 2001), which means, the diversity recorded at par with other Southeast Asian reefs, and may represent species numbers nearing Global Maximum. Besides, there may also be new reef areas to be surveyed for Scleractinian diversity among other reef fauna, as with the recent findings of submerged reefs near Malvan, in Maharashtra coast, and in the coasts of Andhra, Orisssa and Kerala states. There was also an indication of a submerged reef near-shore Chennai (Gopala Aiyar, 1938), which is supported by the obtaining of a Scleractinian specimen, incidentally on a trawl net at ~2.5 km off Kovalam, Chennai coast.

The specimen obtained has been submitted by a fisherman to the National Zoological collection of Zoological Survey of India, Marine Biology Regional Centre, Chennai. Interestingly, the specimen, identified as *Coscinaraea crassa* Veron and Pichon, 1980, is a new-record to Indian waters, which is described in this paper. Biogeographically, this record is an important link, for this species has not so far been recorded from Indian waters, Srilanka and the Red Sea.

Key-words : Scleractinia, new record, Indian waters, submerged reefs, *Cosinaraea crassa.*

MATERIALS AND METHODS

The coral specimen which incidentally was grabbed in a trawl net by fishermen was submitted to the National Zoological Collections of Marine Biology Regional Centre, Zoological Survey of India, Chennai. By the fisherman's word it has been obtained at a depth of 20 m, of what seemed to be submerged reef/bank, ~ 2.5 km off Kovalam, Chennai Coast. The specimen was stored in freshwater for rotting the tissue, while periodically replacing the water, and was then cleaned with a strong water jet to remove any sticking gelatinous tissue.

Detailed skeletal structures were studied under Magnus MS 24, stereoscopic zoom microscope. Whole corallum photographs were taken using Canon G11 camera, and close-ups using macro option.

RESULTS

Family SIDERASTREIDAE Vaughan and Wells, 1943

Genus ***Coscinaraea*** Edwards and Haime, 1848

Coscinaraea crassa Veron and Pichon, 1980

Material examined : Corallum–a broken plate of ¼ of a centrally attached circular colony or 1/3 of a sideways grown semicircular colony–39.5 cm parallel to the plate margin on its widest part to 28.5 cm perpendicular to the plate margin on its widest part. India, ~2.5 km off Kovalam, Chennai, 12° 45' 50.12" N; 080° 17' 00.14" E, Depth 20 m, 2.II.2002, Reg. No. C1-1–NZC–MBRC (Plate-1-a).

Description : The skeletal characteristics of the corallum match the descriptions of Veron & Pichon (1980) for their holotype: The corallum is a large explanate plate, thick, heavily calcified, attached centrally to the substratum (the present specimen had

broken out from the perimeter of the central attachment), but free on most of its undersurface (Plate-1-b). The thickness of the plate gradually increases from 2 mm at the margin to 30 mm at the centre (In the holotype it is 5-40 mm). Corallites at the margin are arranged in concentric rows parallel to the perimeter; towards the center they are irregularly arranged and more or less compact. The series of corallites are 5-10 mm apart in most cases, but in areas the laminae fold downwards the distance is up to 15 mm. There are small raised collines of 1-2 cm across, in between the series, however they are absent near the central part and also in the growing margin. The calices are round to elliptical, and are 3-8.6 (5.49 ± 1.3) mm in diameter (Plate 1-c, d). The walls are strictly synapticulothecate. They are arranged in rings and a maximum of 4 rings are found.

There are about 15-32 septa in each calice with a majority having 19-26 (average: 23.6); as an average of 10 (1.3/3) of them reach the columella. Septa of the higher order fuse with the lower order, however unlike *Coscinaraea mcneilli*, it is not regular, and rare. Septal margins and sides are highly ornamented with granules. The septa are raised to a lobe before plunging towards the columella. The lobe thickened and flattened on its surface with reduced ornamentation has visible perforations.

The septocostae mostly alternate in height and thickness. As observed by Veron & Pichon (1980) slight contortions or zig-zag patterns are noticed at the raised collines in few septocostae. The columellae are usually deeply seated single structure formed by the fusion of septal margins. In cases where they are well developed, the columella fills the central fossa. The costae are very fine and are separated by grooves which bear fine slit like depressions. Costal spines are observed near the corallum margin. Towards the centre they become blunt and indistinguishable (Plate 1-e, f).

In addition to the above characteristics, the secondary septa fusing into and encircling the primaries at their distal ends, which is observed in other species of *Coscinaraea* (*C. wellsi*, and *C. mcneilli*) is clearly observed in the present species. The secondaries in these cases look like inverted 'Y' shaped forks if viewed from the calice centre. The same is also observed *vice-versa*, with a few primaries.

Affinities : As per Veron and Pichon (1980), this species is placed in *Coscinaraea* because of the septal ornamentation. The specimen described in the present study has more resemblance to *Coscinaraea wellsi* Veron and Pichon 1980 and to some extent *C. mcneilli* Wells, 1962 however, distinguished from both by the structure of columellae which is a single fused structure, whereas, in *C. wellsi* and *C. mcneilli*, they are composed of papillary trabeculae. The present species also has superficial resemblance (due to the thamnosteroid structure) to agaricids such as *Leptoseris explanata* Yabe and Sugiyama, 1941 and *Pavona explanulata* (Lamarck, 1816), and the fungid *Podabacia crustacea* (Pallas, 1766) however, could first be negated by the presence of siderasterid characters of septal ornamentation and fusion of septa. In addition, *Leptoseris explanata* has septocostae radiating from the centers which are always perpendicular to the plate margin, and *Pavona explanulata* has pillar-like columella, radially symmetrical corallites, and also has bifacial lamina, which are not typical of *C. crassa.* From *Podabacia crustacea*, it is clearly distinguished by the septal ornamentation, thick laminae and the absence of other fungid characters like perforate undersurface and alternating costae.

Distribution : Reported for the first time from Indian waters. Elsewhere, it is reported from reef areas World-wide, except Sri Lanka and Red-Sea.

DISCUSSION

The identification of this species is confounded by superficial similarity with species of other genera and families which have thamnosteroid skeletal structure, like Agariciidae and Fungidae. However, the siderastrid characters to look for are ornamentation of the septa, fusion of inner margins of septa, and the synapticulotheca. This specimen is also distinguished from other genera of Siderastriedae: from *Psammacora* by the formation of low collines and large corallites (also elliptical); both *Siderastrea* and *Pseudosiderastrea* have cerioid polygonal corallites.

The finding of this species for the first time from Indian waters in a so far unexplored reef makes an interesting observation. Though having rare abundance (Veron and Smith, 2000), this species has been reported from majority of the world reefs. The occurrence of this

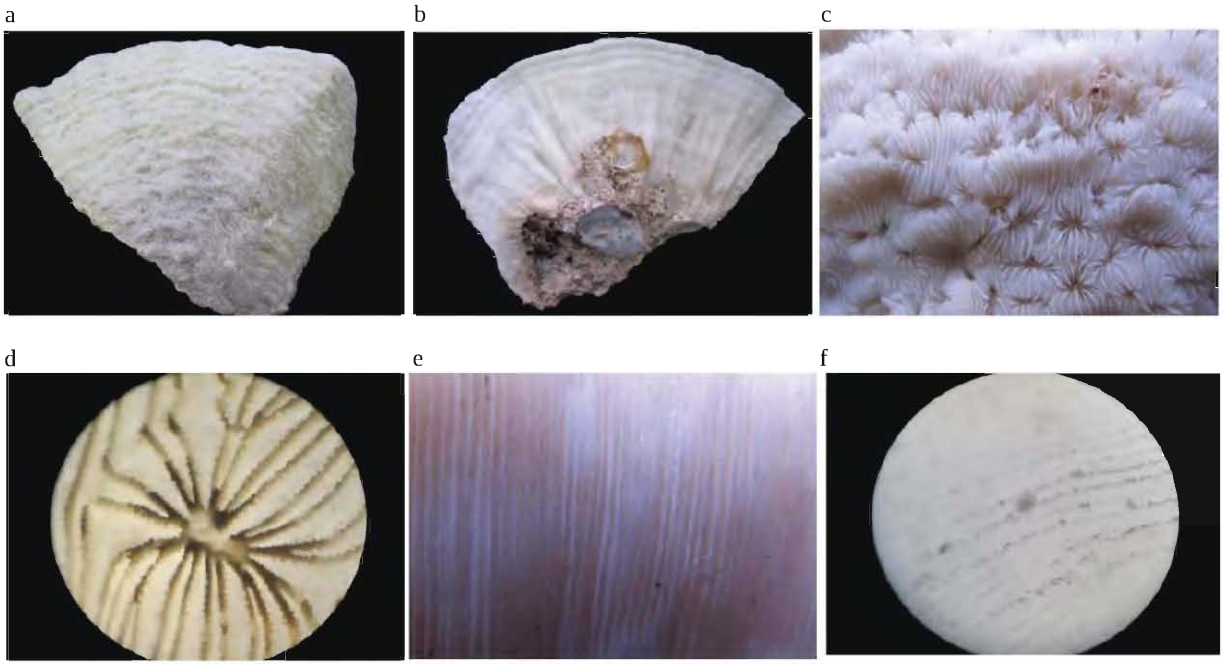

Plate 1. *Coscinaraea crassa* Veron and Pichon, 1980 : a. Dorsal view; b. Ventral view; c. Corallites; d. Details of septa and columella; e and f. Details of costae.

species in Indian waters makes an important link in the distribution of this species, which has also so far not been reported from Sri Lanka and Red Sea as well.

Prior to this description, *Coscinaraea monile* (Forskal, 1775), is the only species recorded so far from India, of the 8 species represented worldwide of *Coscinaraea* – interestingly from Gulf of Kachchh and Gulf of Mannar, leaving the diverse reefs of Andaman Nicobar and Lakshadweep Islands (Pillai, 1981; Pillai, 1983; Pillai and Patel, 1988). Other siderastrids have wider distribution in Indian waters: *Pseudosiderastrea* and *Siderastrea* – represented by one species each, and *Psammacora* – represented by 4 species, are found at least in 3 of the 4 reef areas (Matthai, 1924; Nagabushanam and Rao, 1972; Reddiah, 1977; Pillai, 1988; Pillai, 1983; Tikader *et al*., 1986; Pillai and Patel, 1988; Pillai and Jasmine, 1989; Venkataraman *et al.*, 2003). However, the irregularity of record of species from this family taking into account both species of common and rare occurrence from the four reef areas of India, and the low species representation point to the fact that this family and the genus *Coscinarea* in particular need revisionary studies for the Indian reefs. Further, this present finding is concurrent evidence that many species of uncommon, rare and cryptic occurrence could be found in all the Indian reefs with more extensive surveys.

SUMMARY

A specimen obtained from near shore Chennai coast has been studied. The skeletal characters confirm the species as *Coscinaraea crassa* Veron and Pichon, 1980, which is a new record to Indian waters. The finding of this species (at a depth of 20 m) from ~2.5 km off Kovalam, Chennai coast, allegedly of a sub-merged reef, confirms the occurrence of this species in coral reefs of the Indian waters, especially Gulf of Mannar and Andaman Nicobar Islands.

Key taxonomic characters: The corallum is a large, solid plate with compact corallites arranged in irregular concentric rows. The plate thickens gradually towards the centre. The corallite wall is synapticulothecate. The calices are 3-8.6 mm in diameter. The septal margins are covered with granules. The septal-lobe on the upper-side has small perforations. The columella is a deeply seated, single fused structure of septal margins. Differentiated from *C. mcneilli* Wells, 1962 by the columellar structure and grouping of septocostae in the latter. It has superficial resemblance to laminar forms of *Leptoseris explanata* (Yabe and Sugiyama, 1941), and *Pavona explanulata* (Lamarck, 1816).

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