Report on one caryophylliid and two dendrophylliid corals in Indian water from Andaman and Nicobar Islands

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Diversity of Scleractinian of Andaman and Nicobar Islands has been showing a wide range of species composition of azooxanthallate corals. Thirteen species of azooxanthallate corals belonging to two families have been reported so far from these islands. Paracyathus caeruleus Duncan, 1889 belonging to family Caryophylliidae, Balanophyllia merguiensis Duncan, 1889 and Balanophyllia vanderhorsti Cairns, 2001 belong to Dendrophylliidae family have been identified and reported as new record to Indian water from Andaman and Nicobar Islands. Detailed taxonomic description of these three new records of azooxanthallate corals is discussed this paper.

[Keywords: New record of Azooxanthallate, Andaman and Nicobar Islands]

Introduction

Coralla of azooxanthallate species are usually small, solitary and do not contribute to reef structure. Azooxanthallate belongs to an ecological class of scleractinian corals and does not show symbiosis with dinoflagellate algae. Majority of these corals occur in deeper water with the depth range of 200 m to 6328 m. One third of the recent genera is colonial and occurs below the euphotic zone at temperatures of -1 to 29°C and at latitudes from Arctic Circle to continental Antarctica. Some families are exclusively azooxanthallate where as some are predominantly azooxanthallate such as Caryophylliidae and Dendrophylliidae. Present study depicts the taxonomical description of three species of azooxanthallate corals belonging to Caryophylliidae and Dendrophylliidae families. These are new record to Indian waters from Andaman and Nicobar Islands.

Material and Methods

An undersea faunal survey was carried out at different islands of Andaman and Nicobar Islands during December 2011 and January 2012 by employing Self Contained Underwater Breathing Apparatus (SCUBA) to the maximum depth of 43 m.

Material Examined—Two corallum were observed at North Passage Island (Lat. 12°17.410’N and Long. 092°55.603’ E) on 11.12.2011 at a depth of

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Sampling of corals was made to examine detailed morphological characters for taxonomical study. Collected specimens were kept in freshwater for few days and washed thoroughly with running water and dried. Taxonomic identification was carried out as described by Duncan and Cairns. Corallite of the specimens were examined to study the key taxonomical features under the stereo zoom microscope (Leica, M 205 A). On the completion of study, the specimens were registered in National Zoological Collections and deposited at Zoological Survey of India, ANRC, Port Blair.

Results

Taxonomic descriptions of the newly recoded three azooxanthallate are given below.

Order: SCLERACTINIA Bourne, 1900
Suborder: CARYOPHYLLIINA Vaughan and Wells, 1943
Family: CARYOYLLIIDAE Milne Edwards and Haime, 1848
Genus: Paracyathus Wood, 1844

1. Paracyathus caeruleus Duncan, 1889 (Fig. 1)
A corallum was sampled for detailed taxonomic study (Reg. No.: ZSI/ANRC-7491).

**Description—** The corallum is low with a broad base, a much constricted stem and a large shallow elliptical calice with a slightly everted margin and with marginal axes nearly in the same plane. Septa are in incomplete five cycles, very unequal, the primaries, secondaries and tertiaries are being exert; none project much into the wide open calice. The sides of the septa are roughly and largely papillose. The pali are variable in number, those before the first orders are double, one high and narrow and rounded, the others are small or absent. The pali before the combined higher orders are usually in multiple series. Columella very large, concave, processes numerous and united, the outer not to be distinguished from pali. Costae are low, subequal, narrow and distinctly granular. The colour of the septa, columella and pali are blue while the costae are usually dull white or brown.

**Distribution—** India: Andaman and Nicobar Islands; Elsewhere: Mergui Archipelago.

Order: SCLERACTINIA Bourne, 1900
Suborder: DENDROPHYLLIINA Vaughan and Wells, 1943
Family: DENDROPHYLLIIDAE Gray, 1847
Genus: *Balanophyllia* Wood, 1844

2. *Balanophyllia merguiensis* Duncan, 1889 (Fig.2)

**Material Examined—** Sixty seven corallum were observed at Rutland Island (Lat. 11°30.109’ N and Long. 092°37.123’ E) on 24.01.2012 at a depth of 14 to 29 m. A corallum was sampled for detailed taxonomic study (Reg. No.: ZSI/ANRC-7489).

**Description—** The corallum is small, short, rather higher than broad, nearly cylindrical, being slightly compressed. Calice are elliptical and larger than the base and deep. Septa numerous and crowded in incomplete five cycles. Primaries and secondaries are equal, thin, and plain at the margin of the calice and with ragged edges elsewhere and near the columella. The tertiaries have a tall, stout, serrated swelling near the columella, joined higher orders. These large projection form as it was a paliferous crown around the columella, and this is deeply seated, long and narrow, and trabeculate. Costae nearly equal with a single row of short rounded granulations, often wavy, narrow, bifurcating and not much projecting. Intercostal spaces minutely and regularly perforated. Epitheca is rudimentary.

**Distribution—** India: Andaman and Nicobar Islands; Elsewhere: Mergui Archipelago, Cedros Island to Punta Abreojos, Pacific coast of Baja California Sur, off Tiburon Island, Gulf of California; and the Bay of Panama.

Order: SCLERACTINIA Bourne, 1900
Suborder: DENDROPHYLLIINA Vaughan and Wells, 1943
Family: DENDROPHYLLIIDAE Gray, 1847
Genus: *Balanophyllia* Wood, 1844
3. *Balanophyllia vanderhorsti* Cairns, 2001 (Fig.3)

**Material Examined**—Forty one corallum were observed at Rutland Island (Lat. 11°30.109’ N and Long. 092°37.123’ E) on 24.01.2012 at the depth of 12 to 29 m. A corallum was sampled for detailed taxonomic study (Reg. No.: ZSI/ANRC-7490).

**Description**—The specimen is cylindrical in shape. A thick, horizontally striate epitheca covers lower half

![Fig. 2—Balanophyllia merguiensis Duncan, 1889 a-Septa of corallum; b-Costae of corallum; c-Septal arrangement; d-Collumela](image1)

![Fig. 3—Balanophyllia vanderhorsti Cairns, 2001 a-Septa of corallum; b-Costae of corallum; c-Septal arrangement; d-Collumela](image2)
of corallum, the upper synapticulotheca consisting of finely granular, convex costae 0.4-0.6 mm wide separated by very narrow striae. Septa hexamerally arranged in 5 cycles, only 1 pair of fifth cycle septa is lacking, for a total of 94 septa. The first and second cycle are equal in size and have straight, vertical, entire inner edges. Third cycle septa about half width of a first and second having similar inner edges, all 24 septa of first, second and third are reaching the columella. Fourth cycle is the smallest septa. Each pair of fifth cycle septa fuses before a fourth cycle and extends to the columella, where it fuses to the inner edges of adjacent third order. Inner edges of fourth and fifth order are finely dentate. All septa are nonexsert. Fossa deep, containing a large, elliptical columella that is virtually flat on top. The columella consists of numerous small, flattened elements weakly swirled in a clockwise direction and tightly fused to one another.

**Distribution**- India: Andaman and Nicobar Islands; Elsewhere: Japan and Maldives.

**Discussion**

Documentation of taxonomical works on zooxanthallate corals in Indian waters indicated the presence of enormous diversification of species. Recently, ecological class i.e. azooxanthallate corals are focused for species exploration at various depth ranges in Andaman and Nicobar Islands. Among the 8 species of dendrophylliids, 2 have been described as new record to Indian waters. Earlier studies made by Zoological Survey of India in Andaman and Nicobar Islands documented the occurrence of *Caryophyllia spinigera* Saville-Kent, 1871 under the family Caryophylliiidae and *Rhizopsammia verrilli* van der Horst, 1922 of the family Dendrophylliidae. With the reports of additional species of azooxanthallate corals, increases diversity of Indian Scleractinian corals. Further more extensive studies are required to understand the azooxanthallate species of corals in deep sea regions of continental shelf of these islands.

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**References**