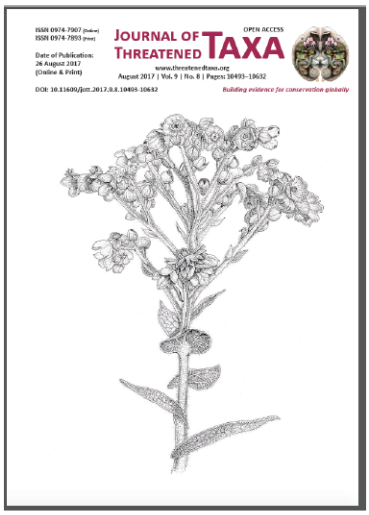

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Short Communication

First report of soft coral *Sarcophyton birkelandi* Verseveldt, 1978 (Anthozoa: Alcyonacea) in Indian waters from Andaman Islands

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First report of soft coral *Sarcophyton birkelandi* Verseveldt, 1978 (Anthozoa: Alcyonacea) in Indian waters from Andaman Islands

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Abstract: *Sarcophyton birkelandi* Verseveldt, 1978 is reported as a new record to Indian waters from Andaman Islands. Colony morphology, sclerite structures and measurements were extracted and examined from the surface and coenenchyme of both capitulum and stalk for confirmation of species. Structural differentiation was observed in sclerite shape such as club shaped, needle shaped and spindle shaped with a variety of sizes and orientation pattern.

Keywords: Alcyoniidae, Andaman & Nicobar Islands, Craggy Island, new record, Octocorralia

Andaman & Nicobar Islands consist of 572 islands, islets and rocky outcrops. The islands are geographically located between 6.750–13.683N & 92.200–693.950E surrounded by Coco Channel to the north, Andaman Sea to the east, Great Channel to the south and Bay of Bengal on the west side with a long coast line of about 1,962km. These islands represent one of the richest coral reef ecosystems in the Indo-Pacific region (Jayasree et al. 1996). Soft corals belong to the order Alcyonacea of phylum Cnidaria, class Anthozoa and subclass Octocorallia. They are soft bodied, leathery, zooxanthellates or azooxanthellates and some are mushroom like and do not produce any calcified exoskeleton. They are well diversified as equal as scleractinian corals in reef ecosystem at par with scleractinian corals in reef ecosystem (Dinesen 1983) and are an important ecological unit due to contributors of coral reef biomass especially of Indo-Pacific region (Tursch & Tursch 1982). Soft corals have a wide distribution: they inhabit the tropics, the sub-tropics, the intertidal zone, the subtidal regions, the reef slope region and the abyssal depths. The species belonging to the family Alcyoniidae are fleshy masses, leathery, stiff hard and flexible and contain clubs, spindles, ovals, barrel shaped, capstans, dumbbells, radiate shaped sclerites as skeletal material and support of the colony and also useful for taxonomic identification. This note describes an alcyonacean coral from the reef ecosystem of the Andaman and Nicobar Islands as a new record to Indian waters.

Materials and Methods

Studies on coral reef ecosystem was carried out at Craggy Island (13.225N & 93.056E), North Andaman by employing a self-contained underwater breathing apparatus (SCUBA) diving down to a depth of 15m

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in March 2015. A small portion of the colony was sampled for taxonomic study. The specimen was fixed in 4% formalin for 24 hours and preserved in 70% ethyl alcohol after washing under running tap water (Fabricius & Alderslade 2001). Measurement of the colony was taken using Vernier calliper scale (Model: Aerospace 074 15376). Sclerites were extracted by dissolving in 5% sodium hypochlorite (NaClO) (Bayer 1961) and examined under stereo zoom microscope LEICA M 205A for taxonomic analysis. The sample was identified based on morphological characters and sclerite structures in conjunction with Verseveldt (1978).

Results

One species of alcyonacean coral was identified as the new distribution record to Indian waters from the North Andaman Island on the basis of taxonomical attributes. The detailed morphological features are described below.

Systematics

Phylum: Cnidaria Verrill, 1865
Class: Anthozoa Ehrenberg, 1834
Subclass: Octocorallia
Order: Alcyonacea Lamourox, 1812
Suborder: Alcyoniina
Family: Alcyoniidae Lamouroux, 1812
Genus: *Sarcophyton* Lesson, 1834
Species: *birkelandi* Verseveldt, 1978

Sarcophyton birkelandi

(Fig. 1, Images 1 & 2)

J. Verseveldt, 1978, 50.

Material examined: ZSI/ANRC-12100, 09.iii.2015, Craggy Island (13.225 N & 93.056 E) North Andaman, coll. Seepana Rajendra.

The length of the stalk is 5.8cm, and the width is 3.9cm. The expanded length of the capitulum is 9.4cm, the length of the larger lobe in the colony is 4cm and width is 2.4cm (Fig. 1). The identified samples were registered as National Zoological Collections and deposited at Zoological Survey of India, Port Blair.

Diagnostic characters: It was a mushroom-shaped colony with both autozooids and siphonozooids. Edges of the capitulum are strongly flattened. The lobes are erect, flat and narrow edges curled towards the outside. The colony is firm but slightly flexible. The centres of the disc have completely retracted (Image 1) autozooids which are 0.70–1.20 mm apart. The distance between edges of the capitulum autozooids are 0.6–1.10 mm and space between autozooids and siphonozooids is 0.4–0.7 mm. The surface layer of the disc contains clubs measuring 0.09–0.19 mm in length. The smaller sclerites are with a central wart on pointed handles with girdles and blunt spines. Some club shaped sclerites have a length of 0.28mm. These longer sclerites have heads compressed of warts and form a bigger structure, and slender handles have conical, spiny prominences (Image 2 A–G). Coenenchymal sclerites of the disc have slender needle shaped sclerites measuring upto 0.47mm. These are pointed at the end, contain spiny structures on body of sclereites (Image 2 H–K). The clubs on the surface layer of the stalk are slightly stronger than the surface layer of the capitulum. The warts are arranged in distinct girdles of 0.09–0.30 mm long (Image 2 H–Q). Interior of the stalk contains wider spindle shaped sclerites measuring

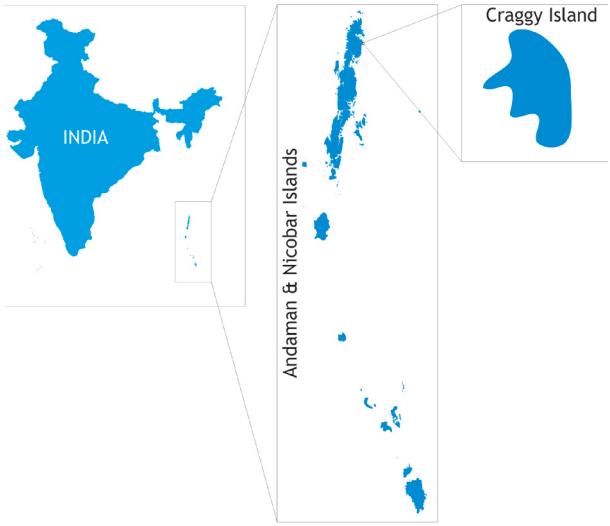

Figure 1. Map showing sampling site at Craggy Island off the North Andaman Island

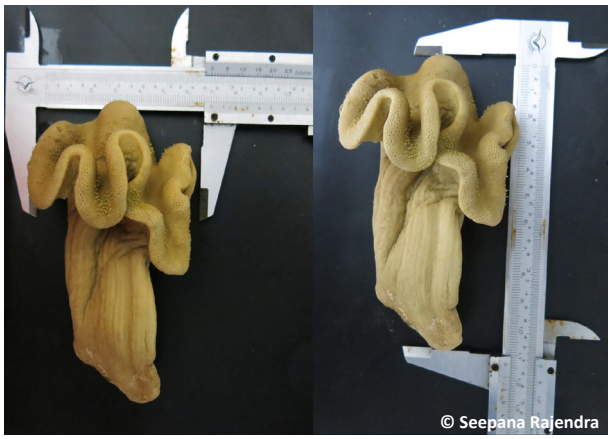

Image 1. Preserved sample of *Sarcophyton birkelandi* Verseveldt, 1978

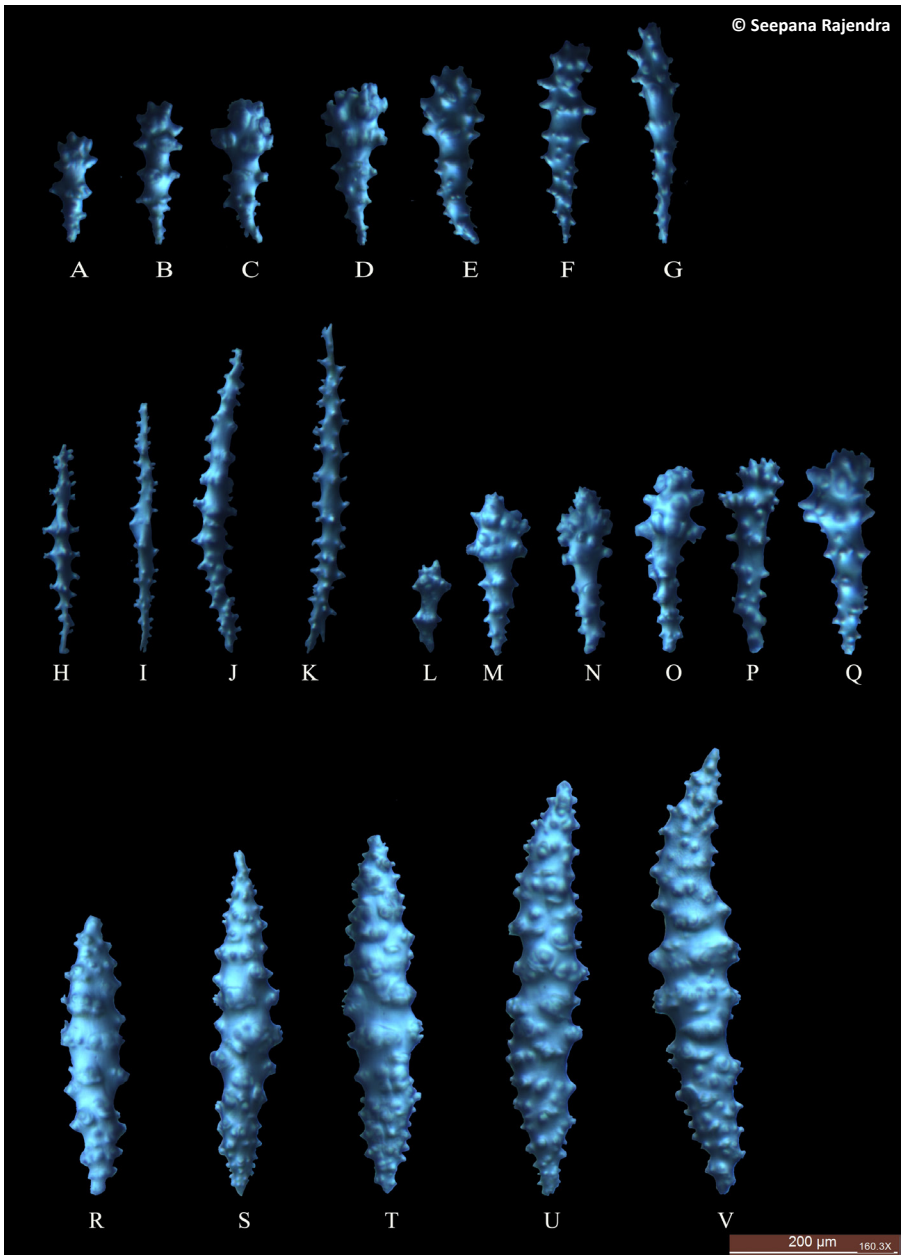

Image 2. *Sarcophyton birkelandi* Verseveldt, 1978.
A–G - sclerites of capitulam exterior;
H–K - sclerites of capitulam interior;
L–Q - sclerites of stalk exterior;
R–V - sclerites of stalk interior.

0.27–0.53 mm in length with slightly wider spiny warts (Image 2 R–V). The living colony was brown in colour, light greenish to creamy whitish after preservation in 70% alcohol.

Distribution: Micronesian Islands; India (Andaman Islands)

Discussion

The studies on soft corals in the Indian Ocean were started during the last century and have been continued in recent times with scanty of knowledge. The studies on Alcyonacean octocorals from the Indian reefs were initiated since the last century as Thomson and Simpson made an account on collected alcyonarians by the 'RIMS Investigator' in the Indian Ocean (Thomson & Simpson 1903, 1909) followed by Thomson & Henderson (1906). The first endeavour on the studies of soft corals of the Laccadives was made by van Ofwegen & Vennam (1991) reporting 19 species. Alderslade & Shirwaiker 1991 described a new species *Sarcophyton spinospiculatum* along with 17 species. Vennam & Ofwegen (1996) reported 11 species from Lakshadweep Islands. Jayasree & Parulekar (1997) reported 27 species of Alcyonacean corals from the Gulf of Mannar while George et al. (2007) reported three new records to the Gulf of Mannar. In 2015, Sivaleela & Padmanaban

(2015) added seven species of Alcyonacean corals to the records from the Gulf of Mannar. Jayasree et al. (1994) described *Sarcophyton andamanensis* from the Andaman & Nicobar Islands. The preliminary survey on soft coral distribution was conducted in 1996, and reported 26 new distributional records to Indian waters (Jayasree et al. 1996). Rao & Devi (2003) published the taxonomic account of 54 species belonging to the family of Alcyoniidae and gave a checklist consisting of 221 species of Octocorals from the Andaman & Nicobar Islands. Venkataraman et al. (2004) listed a total of 63 species under the said family. Rajendra & Raghunathan (2016), and Rajendra et al. (2017b,c) reported six new records from the Andaman & Nicobar Islands. Recently, Rajendra et al. (2017a) provided current status of Octocorals in India.

The present work reports one species of Alcyoniidae soft coral, i.e., *Sarcophyton birkelandi* from the North Andaman Island as a new record to Indian waters. This species is closely related to the *Sarcophyton mililatensis* Verseveldt & Tursch, 1979 and readily differentiated from *Sarcophyton stolodotum* Verseveldt, 1971. The structure and measurements of sclerites of *Sarcophyton stolodotum* are different from *S. birkelandi* and *S. mililatensis.* In *S. mililatensis,* the folds of capitulum are pointed and with secondary folds but in *S. birkelandi* the folds are flat, with a relatively rectangular tip. In *S. mililatensis,* clubs are strong up to 0.45mm in length, internal sclerites have antler like prominences, sclerites of internal stalk have high spiny warts, but in *S. birkelandi* internal sclerites are cone like process, internal sclerites of stalk are needle or spindle like.

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