New record of *Sarcophyton cornispiculatum* Verseveldt, 1971 (Octocorallia: Alcyonacea: Alcyoniidae) in India, from the Andaman Islands

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Abstract

Alcyonacean corals (Family Alcyoniidae) are represented by 153 species in seven genera in the Andaman and Nicobar Islands. Recent marine faunistic surveys revealed the presence of *Sarcophyton cornispiculatum* Verseveldt, 1971 from Oliver Island of Mayabunder, North Andaman, which is reported herein as a new distributional record in India, from the Andaman Islands. This species is characterised by the clubs of surface and coenenchyme of the capitulum; rami fi ed and bifurcated spindles in the interior of the capitulum; and oval, cylindrical sclerites in the interior of the stalk. Further, a few morphological variations, viz. distance between autozooids and siphonozooids, and length of sclerites in the colony, are also reported in the present study and discussed vis-à-vis the type specimens reported elsewhere.

Keywords: Sarcophyton, soft coral, new record, Alcyoniidae, Andaman Islands

Introduction

The soft corals are sedentary, mostly colonial forms belonging to the Subclass Octocorallia and the order Alcyonacea. They lack a hard exoskeleton and contain small calcareous elements called sclerites in their body, which is used in taxonomic identification (Fabricius & Alderstade 2001). The species of the family Alcyoniidae form fleshy colonies characterised by polyps with eight tentacles that are amassed into the polyparies (Breedy & Cortes 2008). Alcyoniidae is represented by seven genera – *Alcyonium*, *Anthomastis*, *Dompia*, *Sarcophyton*, *Lobophytum*, *Cladiella* and *Simularia* – and all are common in the Andaman and Nicobar Islands (Thomson & Simpson 1903, 1909; Jayasree et al. 1996). *Sarcophyton* often forms large monospecific mass colonies, which are conspicuous in intertidal, subtidal and near-shore reef flat habitats (Lien et al. 2015). A total of 51 valid species are described from the world oceans so far (van Ofwegen 2015), of which 14 have been known from these islands (Rao & Devi 2003). Recent marine faunistic surveys revealed the presence of *Sarcophyton cornispiculatum* Verseveldt, 1971 from Oliver Island of Mayabunder, North Andaman, which is reported herein as a distributional record new to India, from the Andaman Islands.

Materials and methods

Specimens of alcyonacean coral were collected at a depth of 15 m. All collected specimens were fixed in 4% formalin, rinsed with fresh water after 24 hours, and then preserved in 70% alcohol (Benayahu et al. 2002). Measurements of the colonies were taken in the laboratory using a Vernier calliper (Model: Aerospace 074 15376). Sclerites were extracted by dissolving in 5% sodium hypochlorite (Bayer 1961), and examined under a stereozoom microscope (LEICA M 205A) for taxonomic identification. Samples were identified based on morphological
characters and sclerite structures in conjunction with Verseveldt (1971). Identified specimens were registered and deposited at the National Zoological Collections, Zoological Survey of India, Port Blair.

**Taxonomic accounts**

*Systematics*

Phylum CNIDARIA Verrill, 1865  
Class ANTHOZOA Ehrenberg, 1834  
Sub-class OCTOCORALLIA Haeckel, 1866  
Order ALCYONACEA Lamourox, 1812  
Suborder ALCYONIINA  
Family ALCYONIIDAE Lamourox, 1812  
Genus *Sarcophyton* Lesson, 1834  
*Sarcophyton cornispiculatum* Verseveldt, 1971

**Taxonomic reference**

1971, *Sarcophyton cornispiculatum* Verseveldt, J, Octocorallia from North-Western Madagascar (Part II) Zoologische Verhandelingen 117 (figs 15, 16; pl. I, fig. 2).

**Material examined**

A colony was sampled at Oliver Island (13°00.038'N, 92°59.216'E), Middle Andaman, on 12 October 2015. The total length of the colony is 30 mm, length of the stalk is 16 mm, width is 24 mm, expanded length of the capitulum is 49 mm and width of the disc at the peripheral region is 0.3 mm to 0.4 mm in the preserved state. The identified sample was registered and deposited at the Zoological Survey of India, Port Blair (Reg. No. ZSI/ANRC- 15411).

**Diagnostic characters**

The colony is mushroom-shaped while underwater, and cup- or funnel-shaped after preservation (Figure 1). The capitulum of the colony is a smooth surface with dimorphic polyps; both autozooids and siphonozooids can easily be observed by visual inspection. Polyps are fully retracted except a few which are extended at the centre of the capitulum. The edge of the capitulum is thick and curled upwards, and seems to be funnel-shaped. The autozooids are well distributed in even rows on the surface of the capitulum. The distance between autozooids at the periphery of the capitulum is about 0.7 to 1.2 mm, and the distance between the siphonozooids is about 0.21 to 0.28 mm at the edge of the capitulum. The distance between autozooids and siphonozooids is about 0.31 to 0.4 mm. There are one to three siphonozooids present between two autozooids at the peripheral region of the disc, and three to four siphonozooids present between two autozooids at the centre of the capitulum. The surface layer of the capitulum contains club-shaped sclerites. There is a middle waist, and the head is above the waist, with more or less leaf-like prominences pointing up towards the head. There is a pointed handle below, with cone-shaped prominences; most of these clubs are 0.08 to 0.18 mm but larger clubs are also observed which are up to 0.32 mm with low head prominences (Figure 2A).

Figure 1. Preserved specimen of *Sarcophyton cornispiculatum* Verseveldt, 1971.
The interior of the capitulum contains spindles and needles, and sometimes curved spindles with spiny prominences on the surface of the body. These spindles are bifurcated at one end and some are branched forms; spindles measure about 0.72 mm (Figure 2B). The surface layer of the stalk contain clubs with warts which are arranged in girdles; the length is about 0.08 to 0.20 mm. The structure of the small clubs is the same as that of the surface layer of the capitulum, and the longer clubs are slightly wider prominences of the head above the middle waist (Figure 3A). In the coenenchyme of the stalk there are warty spindles with oval and cylindrical sclerites whose length is about 0.22 to 0.61 mm. The coarse warts are densely placed and irregularly distributed on the surface of the interior sclerites of the stalk (Figure 3B).

Figure 2. A, sclerites from capitulum exterior; B, sclerites from coenenchyme of capitulum.
**Colour.** The live colony is brown in colour, and it is light green to whitish brown in preservative.

**Distribution.** India: Andaman and Nicobar Islands; elsewhere: Madagascar, Tanzania.

**Remarks.** The remarkable characters of this species include branched and bifurcated sclerites in the interior of the capitulum; and broad oval and cylindrical spindles with high coarse warts on the surface sclerites on interior of the stalk.

This is a new distributional record for Indian waters.

**Conclusive remarks**

A perusal of the literature revealed that a total of 413 species of octocorals are known from India. Alcyonacean corals (Alcyoniidae) are represented by 153 species in seven genera in the Andaman and Nicobar Islands. The species *Sarcophyton cornispiculatum* was first described by Verseveldt (1971) from north-western Madagascar. The coenenchymal sclerites of stalk and capitulum examined in the present specimen are in accordance with the descriptions of the specimen reported from north-western Madagascar by Verseveldt (1971). However, a few morphological variations vis-à-vis the type specimen were observed (Table I), and this plasticity could be attributed to the ecological varieties.

The genus *Sarcophyton* is represented by 16 species from India, and it is also known from the Gulf of Mannar, Laccadives, and Andaman and Nicobar islands. Of these, seven species are reported from the Gulf of Mannar (Jayasree & Parulekar 1997; Sivaleela & Padmanaban 2015) and four species are from Laccadives (Alderslade & Shirwaiker 1991; van Ofwegen & Vennam 1991; Vennam & van Ofwegen 1996), whereas 14 species are from the Andaman and Nicobar islands (Thomson & Simpson 1909; Jayasree et al. 1994, 1996; Rao & Devi 2003).

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**Figure 3.** A, sclerites from stalk exterior; B, sclerites from coenenchyme of stalk.
The soft coral *Sarcophyton cornispiculatum* is rarely found and a poorly known species. The present report is only the third known record of this species subsequent to those from Madagascar (Verseveldt 1971) and Tanzania (van Ofwegen & Benayahu 1992). The present finding not only extends the distributional range of this rare species but also stresses the significance of periodic surveys and continuous monitoring for better understanding of the diversity of Alcyonacean corals, in general and in the Indian context.

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**Table I. Morphological variations of *Sarcophyton cornispiculatum*, Verseveldt, 1971; (Octocorallia: Alcyonacea: Alcyoniidae).**

| Attribute                                      | Type specimen (Verseveldt, 1971; RMNH Coel. No. 6644) | Presently observed specimen (Reg. No. ZSI/ANRC- 15411) |
|------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
| Distance between centres of autozooid (mm)     | 1.30–2.20                                            | 0.7–1.20                                              |
| Size of the clubs in the exterior of the capitulum (mm) | 0.08 0.12                                           | 0.08–0.18                                             |
| Size of the coenenchymal sclerites of the capitulum (mm) | Up to 0.85                                          | Up to 0.72                                             |
| Size of the sclerites in the exterior of the stalk (mm) | 0.11–0.20                                          | 0.08–0.20                                             |
| Size of the clubs in the exterior of the stalk (mm) | Up to 0.78                                           | Up to 0.61                                             |