

New record of *Melithaea retifera* (Lamarck, 1816) from Andaman and Nicobar Island, India

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Alcyoniidae octocorals are represented by 405 species in India of which 154 are from Andaman and Nicobar Islands. Surveys conducted in Havelock Island, South Andaman and Shark Island, North Andaman revealed the occurrence of *Melithaea retifera* and is reported herein as a new distributional record to Andaman and Nicobar Islands. This species is characterised by the clubs of the coenenchyme of the node and internodes and looks like a flower-bud. The structural variations and length of sclerites in the samples are also reported in this manuscript.

[Keywords: Octocoral; Soft coral; Melithaeidae; *Melithaea retifera*; Havelock Island; Shark Island; Andaman and Nicobar; India.]

Introduction

The Alcyonacea are sedentary, colonial growth forms belonging to the subclass Octocorallia. The subclass Octocorallia belongs to Class Anthozoa, Phylum Cnidaria and is commonly called as soft corals (Alcyonacea), seafans (Gorgonacea), blue corals (Helioporacea), sea pens and sea pencil (Pennatulacea). Octocorallia are classified into three orders, eight suborders, 55 families with nearly 3200 species^{1,2}. They lack a hard exoskeleton and contain small calcareous elements called sclerites, which is used in taxonomic identification³. The species of the family Alcyoniidae from fleshy colonies are characterised by polyps with eight tentacles that are amassed into the polyparies⁴.

The genus *Melithaea* belongs to the order Alcyonacea, suborder Sleraxonia, family Melithaeidae and subfamily Melithaeinae. The family Melithaeidae is one of the 49 presently recognized families of octocorals^{5,6}. The genus *Melithaea* is distributed in the marine environment and are very common in warm and tropical waters from shallow to deep sea^{7,9}. One hundred and twenty one species of *Melithaea* have been reported by different researchers from different parts of the world East Africa and Red Sea¹⁰, Indian Ocean¹¹⁻¹⁴ and Indo-West Pacific^{7,8,13,15-17}. The genus *Melithaea* was placed on the official list and the node and internodes play a major role in the

identification¹⁵. The axis of Melithaeidae has short and long internodes; those sclerites are short, smooth, rod-shaped⁹. Recently the family Melithaeidae was recognized¹⁸ based on the DNA molecular phylogenetic relationship and synonymised *Acabaria*, *Clathraria*, *Melithaea*, *Mopsella*, *Wrightella* under this family.

In India, 15 species are reported under *Melithaea* of which four species (*M. variabilis*, *M. philippinensis*, *M. ornate*, *M. pulchella*) are reported from Andaman sea¹⁹, three species (*M. andamanensis*, *M. biserialis*, *M. squamata*) from Southeast coast of India²⁰, one species (*M. variabilis*) from Muttom Kerala coast²¹ and one species (*M. variabilis*) from Minicoy Atoll, Lakshadweep Islands²². Recently, eight species (*M. braueri*, *M. caledonica*, *M. cinquemiglia*, *M. delicata*, *M. ochracea*, *M. ouvea*, *M. rubeola*, *M. variabilis*) were reported under this genus from Andaman and Nicobar Islands^{23,24,25}. The present study gives a detailed description of *Melithaea retifera* reported from South and North Andaman Islands.

Materials and Methods

Samples were collected during June 2013 to May 2016 using SCUBA diving in Andaman and Nicobar Islands. The collected samples were maintained in dry condition and small bit of sample was preserved

in 70% ethanol²⁶. The specimens were identified based on the morphological characteristics of the colony and sclerites structure. Sclerites were extracted by 5% Sodium Hypochlorite²⁷ and probed under the compound and stereo microscope (Labovision AXR 20; Leica – DFC 500). The identified samples were deposited (ZSI/ANRC-13904; ZSI/ANRC-14291) in the National Zoological Collection of ZSI, Port Blair.

Results

The samples were collected from two different places, one from Havelock Island, South Andaman (Lat. 12°03'33.4 N; Long. 92°57'71.6 E) and second one from Shark Island, North Andaman (Lat. 13°12.064 N; Long. 92°45.255 E). The identification of species was made on the basis of the morphological variations, sclerites characters and size. The detailed morphological feature of *Melithaea retifera* is provided below (Figures 1-3).

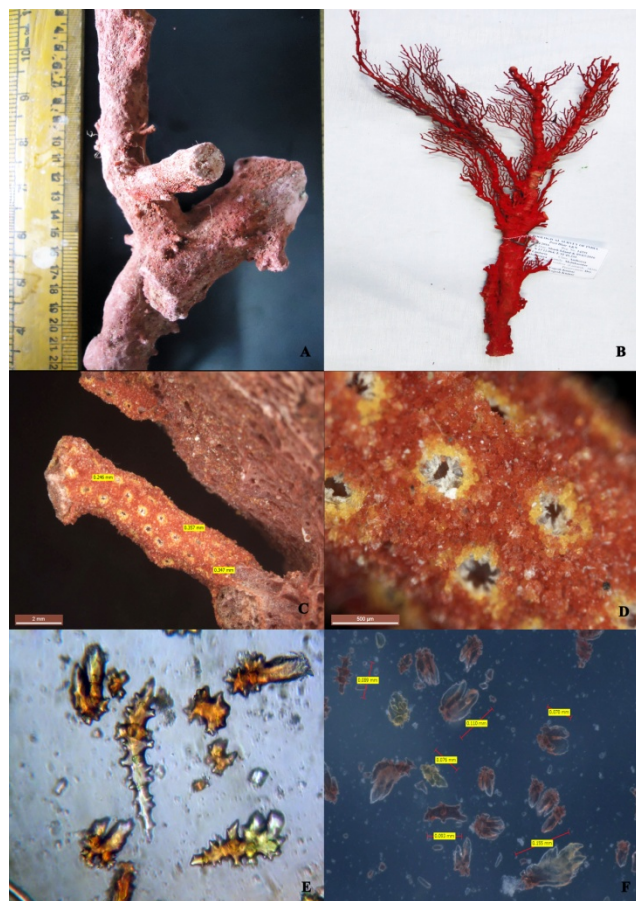


Fig. 1 — *Melithaea retifera*, A & B. Registered specimen, C. Branching type, D. Node examination (Leica – DFC 500), E-F. Sclerites examination (Labovision AXR 20; Leica – DFC 500).

Taxonomic Account

Phylum: Cnidaria Verrill, 1865

Class: Anthozoa Ehrenberg, 1834

Subclass: Octocorallia Haeckel, 1866

Order: Alcyonacea Lamouroux, 1812

Suborder: Scleraxonia Studer, 1887

Family: Melithaeidae Gray, 1870

Subfamily: Melithaeinae Alderslade, 2006

Genus: *Melithaea* Milne Edwards, 1857

Species: *Melithaea retifera* (Lamarck, 1816)²⁸

1816 *Melithaea retifera* Lamarck: 299.

1865 *Melithaea retifera* Kolliker: 142, pl. 19 figs. 38-39.

1996 *Mopsella retifera* Goh and Chou: 441, pl.2b.

1864 *Mopsella elongate* Verrill: 38

1937 *Mopsella aurantia* Hickson: 142 (re-examination of Verrill's *Mopsella elongate*); Stiasny, 1940:230.

1795 *Isis aurantia* Esper: 3, pl.9.

Material examined: ZSI/ANRC-13904, the sample was collected from 18 m depth Havelock Island (Lat. 12°03'33.4 N; Long. 92°57'71.6 E), South Andaman Islands on 26th March, 2014. ZSI/ANRC-14291, one

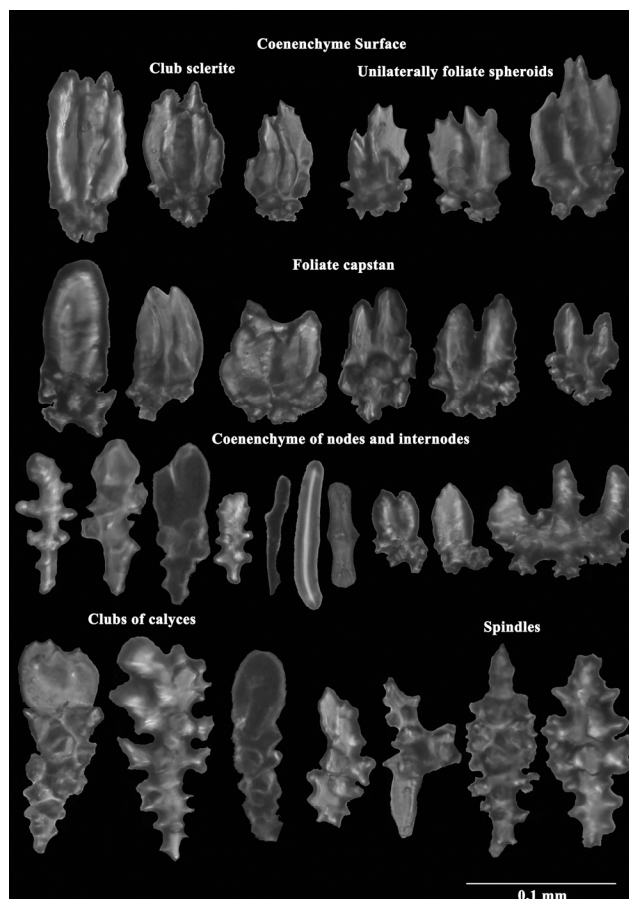


Fig. 2 — Sclerites of the coenenchyme surface of *Melithaea retifera* new report from the Andaman Islands.

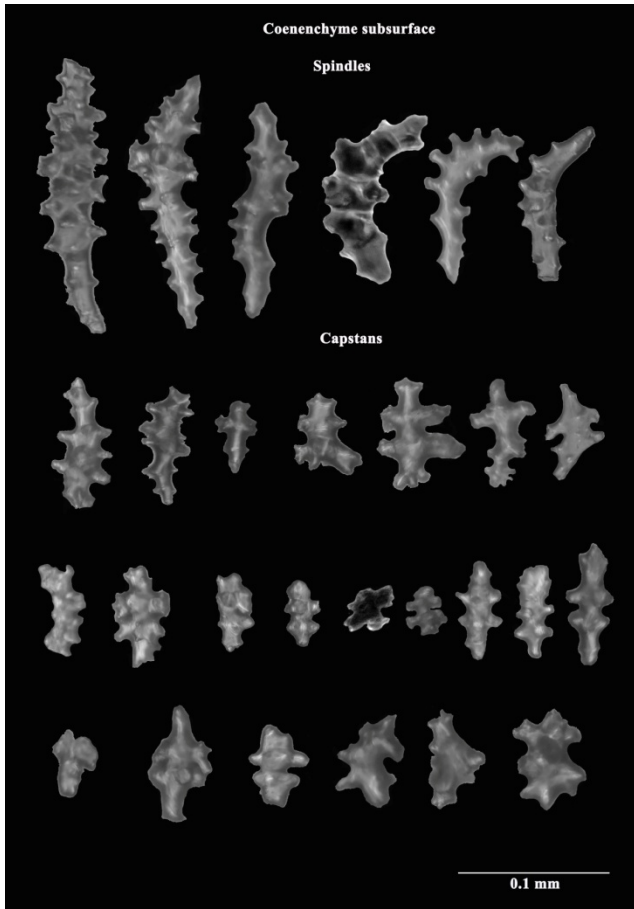


Fig. 3 — Sclerites of the coenenchyme sub surface of *Melithaea retifera* new report from the Andaman Islands.

more sample was collected from Shark Island, North Andaman Islands in 12 m depth (Lat. 13°12.064 N; Long. 92°45.255 E) on 9th March 2016.

Description: The collected sample was up to 21.0 cm long and 3.0 cm diameter cylindrical stems from Havelock Island and 28 cm long collected from Shark Island. Polyps elevated, biserially arranged or scattered around the branches and calyces are less than 0.5 mm diameter. The calyx wall is not projected above the coenenchyme layer and pale yellow colour sclerites are noted on the calyx. The red colour sclerites are presented in the coenenchyme surface and subsurface. The coenenchyme have leaf-clubs, capstans and spindles. The nodes and internodes have a small rod and irregular shaped sclerites with some leaf-clubs and spindles. In the calyx, foliate capstan spindle, simple irregular tuberculation in sclerites and club shaped sclerites present (Fig. 1).

Sclerites: These are exceedingly varied in shape. The surface of calyx has crown with slightly bent

thorny spindles up to about 0.10 mm to 0.35 mm long and irregular projections presented in the middle part of sclerites; the coenenchyme surface have 0.10 mm to 0.25 mm spindles sclerites and 0.05 mm to 0.20 mm clubs and rods sclerites on the nodes surface and subsurface (Figures 2 & 3).

Colour: The sample is red in colour with yellow colour calyces and polyps white in colour. The coenenchymal sclerites are red in colour, calyx sclerites are yellow in colour and in the polyps the sclerites are white colour or colourless.

Distributio n: Elsewhere: Pulau Subar Laut, Singapore; Present study: Havelock Island, South Andaman, India Shark Island, North Andaman Islands.

References: Ofwegen *et al.*,²⁹

Remarks: New distribution record for Andaman and Nicobar Islands, India.

Discussion

A survey of the literature revealed that a total of 462 species belonging to 92 genera, 30 families, eight suborders and three orders under the subclass octocorallia, class Anthozoa were reported from Indian waters^{30,25}, of which, 404 belong to the order Alcyonacean from Indian coast. The species of Melithaeidae are widespread in marine ecosystem in different depth from shallow to deeper areas and very common in warm and tropical waters³.

The genus *Melithaea* is represented by 121 species, of which, 15 species (*Melithaea andamanensis*, *M. biserialis*, *M. braueri*, *M. caledonica*, *M. cinquemiglia*, *M. delicata*, *M. hicksoni*, *M. maldivensis*, *M. ochracea*, *M. ornata*, *M. ouvea*, *M. philippinensis*, *M. rubeola*, *M. squamata*, *M. variabilis*) are from India. Of these, four species are reported from east coast of India³¹ and six are from Andaman and Nicobar Islands^{23,31}. Among them *Melithaea retifera* reported in this study from Andaman and Nicobar Islands, India is a new record for India.

The species *Melithaea retifera* was identified by the clubs (flower-buds) of coenenchyme of the node and internodes. The characteristic of clubs was drawn by Kolliker³². The original description was written in two different ways (var. *purpurea* and *lutea*) by Lamarck and Esper synonymised to *Isis aurantia*. However, *Isis aurantia* was re-examined by Grassoff³³ and reported that the sclerites are not related to the genus *Mopsella* and hence Lamarck's 1816 *Melithaea retifera* is retained for further research.

Conclusion

The soft coral *Melithaea retifera* is a rare and poorly known species. The present report is only the second known record from Singapore coast. The present finding not only extends the distributional range but also stresses the significance of periodic survey and monitoring for better understanding of the diversity of Octocorals, in general and in the Indian sub-continent.

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