

SCLERACTINIA

of Andaman and Nicobar Islands

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ZOOLOGICAL SURVEY OF INDIA



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NATIONAL CORAL REEF RESEARCH INSTITUTE

- CITATION:** Venkataraman, K., Raghunathan, C., Raghuraman, R., Sivaperuman, C., Sreeraj, C. R., Titus Immanuel. and Yogesh Kumar. J.S. 2012. Scleractinia of Andaman and Nicobar Islands. *Rec. Zool. Surv. India*. (Published by the Director, *Zool. Surv. India*, Kolkata).
- PUBLISHED:** November, 2012
- ISBN:** 978-81-8171-316-2
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 - The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.
- PRICE:** ₹: 7200/-; \$ 400.00; £ 275.00
- PUBLISHED BY:** The Publication Division by the Director, Zoological Survey of India, M-Block, New Alipore, Kolkata 700 053.
- PRINTED AT:** Shiva Offset Press, 14 Old Connaught Place, Dehra Dun - 248 001 (Uttarakhand).

Preface

Unstinted, incredible organisms with a high magnitude of interconnectedness are concealed beneath the vast expanse of the unspoilt ocean that surrounds the Emerald Islands, among which corals and their prismatic reef associates are one of the most fascinating components. Works to inventorize the corals found in the entire archipelago is still wanting. Realizing this constraint, we intend to invest our earnest attempts to document the sedentary splendors of the sea.

This book, ***SCLERACTINIA OF ANDAMAN AND NICOBAR ISLANDS***, explores the underwater wonders, widely covering about 334 Scleractinian species with perfect photographs that unveil their biology. All the species are strongly supplemented with brief taxonomic notes. Comprising of striking morphological characters and the inevitable role they play in the reef ecology, this book would serve as a comprehensive field guide to marine biologists, scholars, reef watchers, naturalists and resource managers in the allied field who dedicate themselves to conserve and redeem the reef from degrading activities.

It is highly probable that this edition would leave a profound impression even on a prosaic person's mind with its spectacular underwater photographs. By making this valiant effort, we hope that this edition would go in a long way in the bio-diversity studies.

July, 2011
Authors

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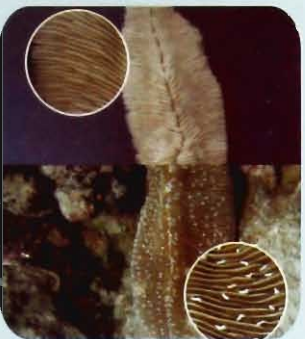
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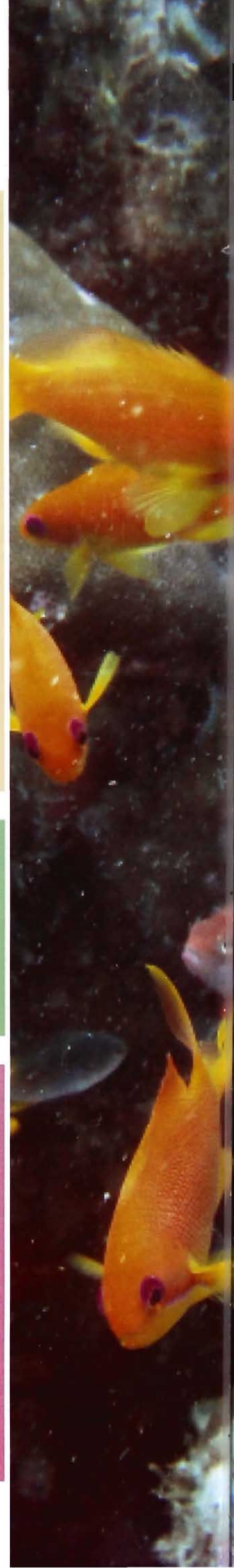


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INTRODUCTION

Coral reefs are marine ridges or mounds, which have formed over millennia as a result of the deposition of calcium carbonate by living organisms, predominantly corals, but also a rich diversity of other organisms such as fin fishes and shell fishes. Coral reefs provide a unique habitat able to support a high diversity and density of life. Coral reefs are ecologically important fragile ecosystem restricted to warm seas, essentially between the tropics of Cancer and Capricorn, where minimum water temperature do not fall below 20°C. Although coral reefs are geographically restricted to tropical seas and their occurrence limited to 0.2% of the ocean area on the earth's surface (Smith, 1978), have globally important implication for their amazing marine bio-diversity. They occur globally in two distinct marine environments; deep, cold water (3–14°C) coral reefs, and shallow, warm water (21–30°C) coral reefs in tropical latitudes. Cold-water corals have been recorded in 41 countries worldwide (Freiwald *et al.*, 2004), but they are most likely distributed throughout the World's oceans. They occur wherever the environmental conditions (cold, clear, nutrient-rich waters) are present, from Norwegian fjords in 39 meters depth to several thousand metres in the deep-sea.

Warm-water coral reefs are found in circum-tropical shallow waters along the shores of islands and continents. Here, corals feed by ingesting plankton, which the polyps catch with their tentacles, and also through the association with symbiotic algae called zooxanthellae. Stony corals deposit calcium carbonate, which over time forms the geological reef structure. Many other invertebrates, vertebrates, and plants live in close association to the Scleractinian corals, with tight resource coupling and recycling, allowing coral reefs to have extremely high biodiversity in nutrient poor waters, so much so that they are referred to as the 'Tropical Rainforests of the Oceans'. Corals have certain ranges of tolerance to water temperature, salinity, UV radiation, opacity and nutrient quantities. Seawater quality and human impacts are particularly critical to coral reefs when they are exposed to other stressors or when they are recovering from storms or bleaching events (Burke *et al.*, 2002; Wilkinson, 2002; Brown *et al.*, 2006; UNEP, 2006).

Coral reefs represent some of the most biologically diverse ecosystem on the earth providing critical habitats to approximately 25% of marine organisms. It offers many values to human society and to the health of the biosphere. Reef protects the shoreline and supports faunal and floral components, recycling nutrients, providing food and shelter and nursery habitat for many other species. Coral reef supports most of the coastal fishery in tropics upon which a large number of people depend of their supply of animal protein. It is estimated that the world production potential in terms of fish catch has been 5-25 tons per sq km of the reef per year. Coral reef fisheries have also been estimated to yield at least 10% of the world's fish catches and 25% of the fish catches in developing countries (Munro, 1996; Roberts *et al.*, 1998).

Coral reefs are highly productive marine ecosystem in the world with annual gross production rates in the range of 2000-5000g Cm⁻² through efficient retention and recycling of nutrients (Mann, 1982). Coral reefs of the world cover an estimated area of 600,000 km² (Smith, 1978; Klepays, 1997). Over half of this (54%) lies in the Mediterranean Indian Ocean. Of the remaining, Pacific reefs account for 25%, Atlantic reefs for 6%, Caribbean reefs

for 9%, Red Sea reefs for 4% and Persian Gulf reefs for 2%. Majority of the coral reef areas are concentrated on western sides of these oceans (Scheer, 1985). The growth rate of coral and a coral reef depends on the factor such as light intensity, water temperature, salinity, turbidity, food availability, competition for space and predation. Upward growth of coral colonies is generally between 1 and 10 cm per year under favourable conditions (Lalli and Parsons, 1997).

Review of literature

Indian subcontinent with its coastline extending over 7,600 km and subtropical climate condition has very few coral reef areas when compared to other regions of the world. In India, the reefs are distributed along the east and west coasts at restricted places. It covers approximately 5,790 km² and is divided into 3 major zones: the Andaman and Nicobar Islands; the coral reefs of the mainland; and the Lakshadweep Islands. All the major reef types are represented in India (Venakataraman, 2003). Fringing reefs are found in Gulf of Mannar and Palk Bay. Platform reefs are seen along the Gulf of Katchchh. Patchy reefs are present near Ratnagiri and Malvan coasts. Fringing and barrier reefs are found in Andaman and Nicobar Islands. Atoll reefs are found in Lakshadweep Islands. These regions exhibit most diverse, extensive and least disturbed reefs in the Indian Ocean. To this day, many of these reefs are largely unstudied. Among the reefs of India, Andaman and Nicobar Islands have fringing reefs around many Islands, and a long Barrier reef (329 km) on the west coast. Reef structure and species diversity vary considerably between these areas due to differences in size and prevailing environmental conditions. More than 400 hard coral species, 145 soft coral species, and 1,400 fish species have been recorded from Indian coral reefs.

Studies on the coral reefs in India started in mid 19th century. The earliest coral reef study in the Indian waters was a brief account of the Nicobar Islands by Rink (1847), who pointed out the various adverse effects of siltation in the inshore waters on coral growth and gave an account on deep sea corals of the seas around Andaman. Lt. Col. R.B.S. Sewell was the first person in India to conduct studies on corals of India (Sewell, 1922; 1935). Taxonomic studies of Indian corals were restricted to the pioneering works of Pillai (1971a, 1971b, 1972), Scheer and Pillai (1974), Reddiah (1977), Pillai and Patel (1988), Pillai and Jasmine (1989) during the late 20th century. The total number of 199 species of scleractinian corals recorded in the eighties remains unchanged since then; only recently, when extensive collections were made in Andamans, nearly 100 new records were found (Venkataraman *et al.*, 2003). In the past few decades many coral reef surveys have been conducted by the scientific team of Zoological Survey of India (Reddiah, 1970, 1970a, 1977; Venkataraman and Rajan, 1998; Jayabaskaran, 1999; Turner *et al.*, 2001; Venkataraman, 2003; Turner *et al.*, 2009; Raghunathan *et al.*, 2009a; 2009b; Madhan Chakravarthy *et al.*, 2010). Among the four major reef areas of India, Andaman and Nicobar Islands are rich in coral species diversity whereas those of Gulf of Katchchh are poorer. Lakshadweep Islands have more number of species than the Gulf of Mannar. Among the deepwater (Ahermatypic) corals, so far 686 species belonging to 110 genera and 12 families have been reported from the world of which only 44 species are known from Indian Seas.

The Andaman and Nicobar archipelago consists of 572 islands, islets and rocky out crops and have an aggregate coastline of 1,912 km, which is about a fourth of the coastline of India (ANDFISH, 2006). The continental shelf area is very limited with an estimated area of 16,000 km² and the sea is very deep within a few kilometers from the shore. The Exclusive Economic Zone (EEZ) around the Islands encompasses around 0.6 million km², which is 30 percentage of the EEZ of India. The coral reef biodiversity data for Andaman and Nicobar Islands available at present are sporadic. Nevertheless, there are already 6,440 marine species, of which 834 are endemic, so far reported under

different groups (ZSI, 2009). The faunal studies in these Islands began centuries ago. During 1902 a reprint of the work by Dampier (1688) was published which is the pioneer study from this Archipelago. The reports during the 18th and 19th centuries are also provides sufficient information (Dalrymple, 1784; Colebrooke, 1795, 1795a, 1799; Blyth, 1846, 1863; Smith, 1894; Anon 1959). The fishery research was also gained momentum during the same period (Blyth, 1861; Day, 1870, 1888) along with the studies on the Echinodermata (Bell, 1887) during the late 19th century.

Reef ecology and structure in varied reef areas of these islands have been described by several authors (Sewell, 1922, 1925; Reddiah, 1977; Pillai, 1983; Mahadevan and Easterton, 1983; Wood, 1989; Arthur, 1996; Soundararajan, 1997; Venkataraman and Rajan, 1998; Jeyabaskaran, 1999; Kulkarni et al., 2001; Turner *et al.*, 2001; Venkataraman, 2003; Turner *et al.*, 2009; Raghunathan *et al.*, 2009a, 2009b). Published literatures available are mostly on qualitative assessment of corals, however for studies pertaining to taxonomy of corals of Andaman and Nicobar Islands were given by Pillai, 1972 and Reddiah, 1977. Sewell (1922, 1925) described the morphology, community ecology and formation of the reefs of Nicobar. The reefs in these regions have dominance of *Acropora* sp, on exposed reef regions and *Porites* sp, on protected reefs (Sewell, 1922).

Among the Asian countries, India is perhaps the only one that has a long record of inventories of coastal and marine biodiversity dating back to at least two centuries. The coastal and marine biodiversity of India shows that many groups that are commercially and tropically important are the ones that have been extensively inventorised, leaving several groups, notably the minor phyla grossly understudied (Venkataraman and Wafar, 2005). In terms of spatial coverage, probably only two-thirds of the total marine habitat has been covered till today and the remote islands and other minor estuaries still virtually remain untouched. It is, therefore, likely that true inventory of coastal and marine biodiversity could be several times higher than what is known today. Study of marine fauna in India has drawn greater attention from the 18th century onwards. This was achieved due to many surveys and expeditions conducted in the county by westerners in particular by British. The introduction of Surgeon Naturalist in the expedition ships helped the marine research to flourish in varied fields of fauna and flora.

Thorough literature consultation revealed that earlier studies on coral reefs of Indian waters were restricted to intertidal as well as infra littoral zone only due to limited logistics and technical know-how. Since from the inception of National Coral Reef Research Institute at Zoological Survey of India, the utilization of modern gears such as SCUBA, underwater camera enables the researchers to explore the underwater life to greater extent and also to record them in the field in natural conditions also.

This study includes a total of 334 species of scleractinian corals under 68 genera and 15 families. Turner et al. (2001) reported 181 species of hard corals from these Islands, Subsequently Venkataraman et al. (2003) published as much as 194 species of scleractinian corals from these Islands in the book of hard corals of India. *Dendrophyllia miniscula* was identified from the collections of Zoological Survey of India by Sudarsan and Mukhopadhyay (1967). The recent surveys conducted by the National Coral Reef Research Institute (NCRI) team of Zoological Survey of India brought out as many as 236 species of Scleractinian corals from these Islands. This includes 66 newly recorded corals also. A total of 6 genera recorded during the study were new to the Indian subcontinent such as *Anacropora*, *Agaricia*, *Cantharellus*, *Scolymia*, *Mycetophyllia* and *Diploria*.



MUSEUM ZOOLOGICAL



NATIONAL CORAL REEF RESEARCH INSTITUTE (NCRI)

NCRI was established on February 27, 2002 at Zoological Survey of India, Port Blair, Andaman and Nicobar Islands by the Ministry of Environment and Forests, Government of India with a mandate to monitor the health of coral reefs of Indian waters.

Objective

- ◆ Survey and Monitoring the Coral Reefs of India
- ◆ Investigate the diversity and distribution of corals. To study the coral associated floral and faunal communities
- ◆ To study the physico-chemical and productivities of the coral reef ecosystem
- ◆ Application of GIS and Remote sensing for coral reef monitoring
- ◆ Conservation and Management of coral reefs
- ◆ Documentation, videography, preparation of database, publication of compendium on corals of India.

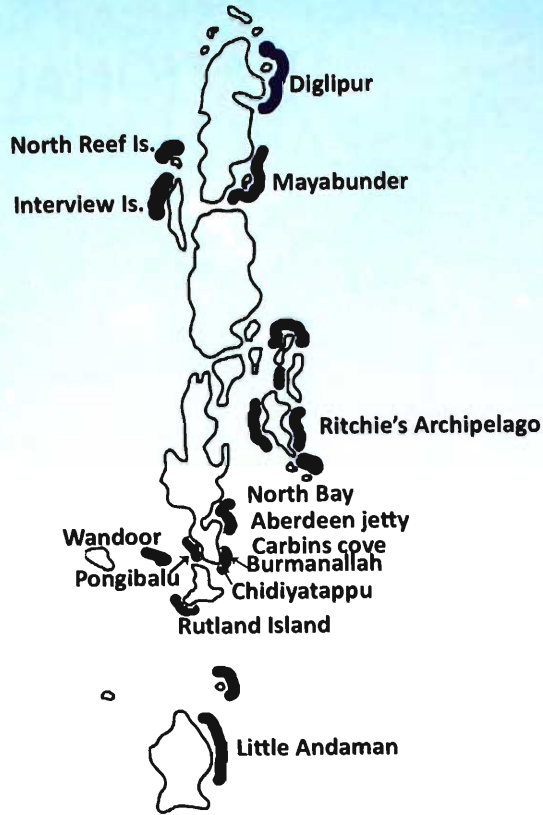
Areas surveyed by NCRI

Areas surveyed by Zoological Survey of India in Andaman and Nicobar Islands during 2009- 2010 to monitor the corals and coral associated fauna are given below.

Sl No.	Area surveyed	GPS Coordinates
SOUTH ANDAMAN		
1.	Off Burmanella	Lat 11° 33. 468'N Long 92° 43.873 'E
2.	Off Rangachang	Lat 11° 34. 350'N Long 92° 44.133 'E
3.	Chidyatapu	Lat 11° 29. 460'N Long 92° 42.530 'E
4.	Pongibalu	Lat 11° 31. 030'N Long 92° 39.159 'E
Rutland Island		
5.	Chain Nalah	Lat 12° 08. 522'N Long 93° 06.551 'E

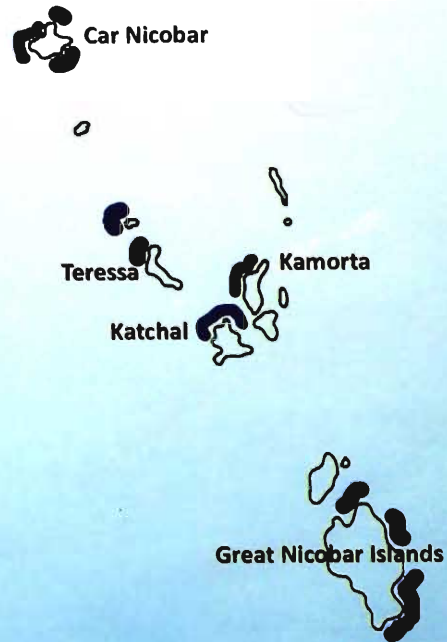
6.	<i>Padauk Dikri</i>	Lat 12° 29. 288'N Long 92° 40.141'E
7.	<i>Surumai Dikri</i>	Lat 11° 25. 504'N Long 92° 40.301 'E
8.	<i>Komeo</i>	Lat 11° 24. 314'N Long 92° 39.780 'E
9.	<i>Mitta Nalah</i>	Lat 11° 28. 541'N Long 92° 40.371 'E
10.	<i>Arom Point</i>	Lat 11° 30. 541'N Long 92° 38.769 'E
11.	<i>Aam Dera</i>	Lat 11° 24. 664'N Long 92° 37.456 'E
12.	North Wandoor	Lat 11° 37. 270'N Long 92° 37.035 'E

Bay of Bengal



Andaman Sea

Ten Degree Channel



*** Map not to Scale**

Map Showing the area surveyed

13.	Grub Island	Lat 11° 35.391'N Long 92° 35.637'E
14.	Jolly Buoy Island	Lat 11° 30.251'N Long 92° 32.591'E
15.	Tarmugli Island	Lat 11° 33.261'N Long 92° 36.809'E
16.	North Bay	Lat 11° 42.068'N Long 92° 45.116'E
17.	Off Collinpur	Lat 11° 41.598'N Long 92° 37.035'E
18.	Off Kurmadera	Lat 11° 39.933'N Long 92° 35.903'E
Ritchie's Archipelago		
19.	Havelock Island	Lat 12° 00.005'N Long 92° 56.808'E
20.	Inglis Island	Lat 12° 08.639'N Long 93° 06.786'E
21.	Henry Lawrence Island	Lat 12° 05.000'N Long 93° 06.312'E
22.	John Lawrence Island	Lat 12° 04.075'N Long 93° 00.398'E
23.	Outram Island	Lat 12° 00.574'N Long 92° 56.808'E
24.	Peel Island	Lat 12° 03.315'N Long 92° 59.929'E
25.	Wall & Nicolson Island	
26.	South Button Island	Lat 12° 13.467'N Long 92° 01.334'E
27.	North Button Island	Lat 12° 18.974'N Long 92° 03.826'E
28.	Middle Button Island	Lat 12° 16.473'N Long 93° 01.334'E
29.	Wilson Island	Lat 12° 13.061'N Long 93° 15.207'E
Neill Island		
30.	<i>Lakshmanpur</i>	Lat 11° 50.826'N Long 93° 00.554'E
31.	<i>Hawrah Bridge</i>	Lat 11° 49.727'N Long 93° 00.818'E
32.	<i>Middle Point</i>	Lat 11° 50.857'N Long 93° 00.554'E
33.	<i>Ramangar</i>	Lat 11° 48.400'N Long 93° 01.440'E
34.	<i>Sunset point</i>	Lat 11° 51.941'N Long 93° 00.667'E
35.	<i>Little Neil Island</i>	Lat 11° 47.063'N Long 93° 04.616'E
36.	<i>Pearl Park Beach</i>	Lat 11° 50.766'N Long 93° 00.795'E
Little Andaman Island		
37.	<i>Butler Bay</i>	Lat 10° 40.232'N Long 92° 56.808'E
38.	<i>Kala Pathar</i>	Lat 10° 39.558'N Long 92° 34.109'E
39.	<i>Haminder Bay</i>	Lat 10° 32.975'N Long 92° 32.651'E

40.	<i>Off Ramkrishnapur</i>	Lat 10° 42.630'N Long 92° 33.066'E
41.	<i>Sister Island</i>	Lat 10° 55.830'N Long 92° 07.023'E
42.	<i>Hut Bay</i>	Lat 10° 35.419'N Long 92° 33.066'E
43.	<i>Dugong Creek</i>	Lat 10° 48.385'N Long 92° 64.000'E
44.	<i>Off Light House</i>	Lat 10° 30.734'N Long 92° 30.264'E
MIDDLE ANDAMAN		
45.	North Reef Island	Lat 12° 56.084'N Long 92° 57.345'E
46.	Interview Island	Lat 12° 59.125'N Long 92° 42.981'E
47.	Mayabunder	
48.	Avis Island	Lat 12° 56.210'N Long 92° 33.066'E
49.	Sound Island	Lat 12° 56.084'N Long 92° 57.345'E
50.	Rail Island	Lat 12° 56.860'N Long 92° 54.620'E
51.	Karlo Island	Lat 12° 56.084'N Long 92° 53.378'E
52.	Karmatang	Lat 12° 51.322'N Long 92° 56.050'E
NORTH ANDAMAN		
53.	Ross Island	Lat 13° 18.167'N Long 93° 04.261'E
54.	Smith Island	Lat 13° 18.406'N Long 93° 04.207'E
55.	Ariel Bay	Lat 13° 16.093'N Long 93° 02.433'E
56.	Lamia Bay	Lat 02° 24.879'N Long 97° 05.516'E
NICOBAR ISLANDS		
Car Nicobar Island		
57.	<i>Malacca</i>	Lat 09° 10.490'N Long 92° 49.714'E
58.	<i>Kakaana</i>	Lat 09° 07.750'N Long 92° 48.678'E
59.	<i>Tamoloo</i>	Lat 09° 11.350'N Long 92° 49.498'E
60.	<i>Kimos</i>	Lat 09° 07.587'N Long 92° 46.316'E
61.	<i>Perka</i>	Lat 09° 11.203'N Long 92° 49.877'E
62.	<i>Lapati</i>	Lat 09° 13.978'N Long 92° 48.002'E
Nancowry Islands		
63.	<i>Kamorta Island - Bada Enaka</i>	Lat 12° 51.322'N Long 92° 56.050'E
64.	<i>Champin Island</i>	Lat 08° 01.670'N Long 93° 33.123'E
65.	<i>Trinket Island</i>	Lat 08° 02.806'N Long 93° 34.556'E

66.	Kamorta Island Kardip	–	Lat 08° 02.151'N Long 93° 33.182'E
67.	Kamorta Island Kakkana	–	Lat 08° 07.170'N Long 93° 31.606'E
68.	Munak Island		Lat 07° 59.813'N Long 93° 30.534'E
69.	Katchal Island		Lat 07° 58.952'N Long 93° 24.351'E
70.	Teressa Island		Lat 08° 13.686'N Long 93° 10.913'E
71.	Kundol Island		Lat 07° 10.023'N Long 93° 42.949'E
Great Nicobar Island			
72.	Campbell Bay		Lat 06° 59.749'N Long 93° 56.718'E

73.	Off Laxman Beach	Lat 07° 01.482'N Long 92° 37.456'E
74.	Off Gandhi Nagar	Lat 06° 50.496'N Long 93° 53.680'E
75.	Johinder Nagar	Lat 06° 57.226'N Long 93° 55.495'E
76.	Singam Basti	Lat 06° 58.307'N Long 93° 55.748'E
77.	Navy Dera	Lat 07° 07.571'N Long 93° 53.133'E
78.	Indira Point	Lat 06° 45.428'N Long 93° 49.541'E
79.	Kopen Heat	Lat 06° 50.923'N Long 93° 47.983'E

Coral Reefs of A&N Islands

Coral reefs of Andaman and Nicobar Islands can be classified into five major reefs such as North Andaman, Middle Andaman, South Andaman, Little Andaman and Nicobar Islands. The details of the reefs are described as follows

North Andaman

The northern most part of the Andaman Island comprise of pristine mangroves and serene beaches. Diglipur in North Andaman is endowed with dense mangroves and splendid shallow coral reefs. Though the reefs were not very dense, they are richly diversified. *Porites* dominates in few regions in an insignificant level. In the Islands of Ross and Smith, which are on the western side of Diglipur, the reefs are in thick patches, characterized by the Genus *Acropora* and *Porites* sp. in greater density. Exposure of vast reef area can be witnessed during low tides in both of the islands.



Middle Andaman

Middle Andaman in Andaman archipelago, having a total area of 1,536 km². The coral reefs are mainly concentrated around the smaller islands adjacent to Middle Andaman. The reefs along the eastern side of all the scattered islands



surrounding Middle Andaman are shallow due to the land uplift caused by destructive seismic waves. The reefs are mainly dominated by the genus *Acropora* followed by *Porites* in few islands. Reefs were destructed to extreme degrees in numerous islands due to the impact of tsunami. Vast regions of dead reefs, may exceed 300 meters are exposed during low tides depict the effect of tsunami over these islands. They are slowly replenishing by newly recruiting corals. The islands in the western side of Mayabunder are also represented by shallow reefs but have lesser reef flat than the islands in the eastern side.

South Andaman

The coral reefs in South Andaman differ in wide proportions from one another. South Andaman boasts two marine national parks, Mahatma Gandhi Marine National Park and Rani Jhansi Marine National Park. Both the parks cover



relatively a large area including several islands. These protected zones possess excellent species diversity and have good live coral cover, when compared to other areas in South Andaman. Some of the coral reef areas such as North Bay, where tourism has been promoted to extreme degrees have degraded over the years due to the constant battle with anthropogenic activity.

Little Andaman

Little Andaman is the southernmost island of the Andaman Archipelago. The island does not possess many shallow reefs like in the northern parts. The reefs are far away from shore and colonize in depths at an average about 15m.



Destructive Tsunami engulfed the reefs of little Andaman to a large extent and it can be witnessed along the eastern side. Recruited corals are more prevalent in shallower regions, revealing a good sign. Deep water corals are healthy and were affected to a lesser degree. Acroporids are dominant over here.

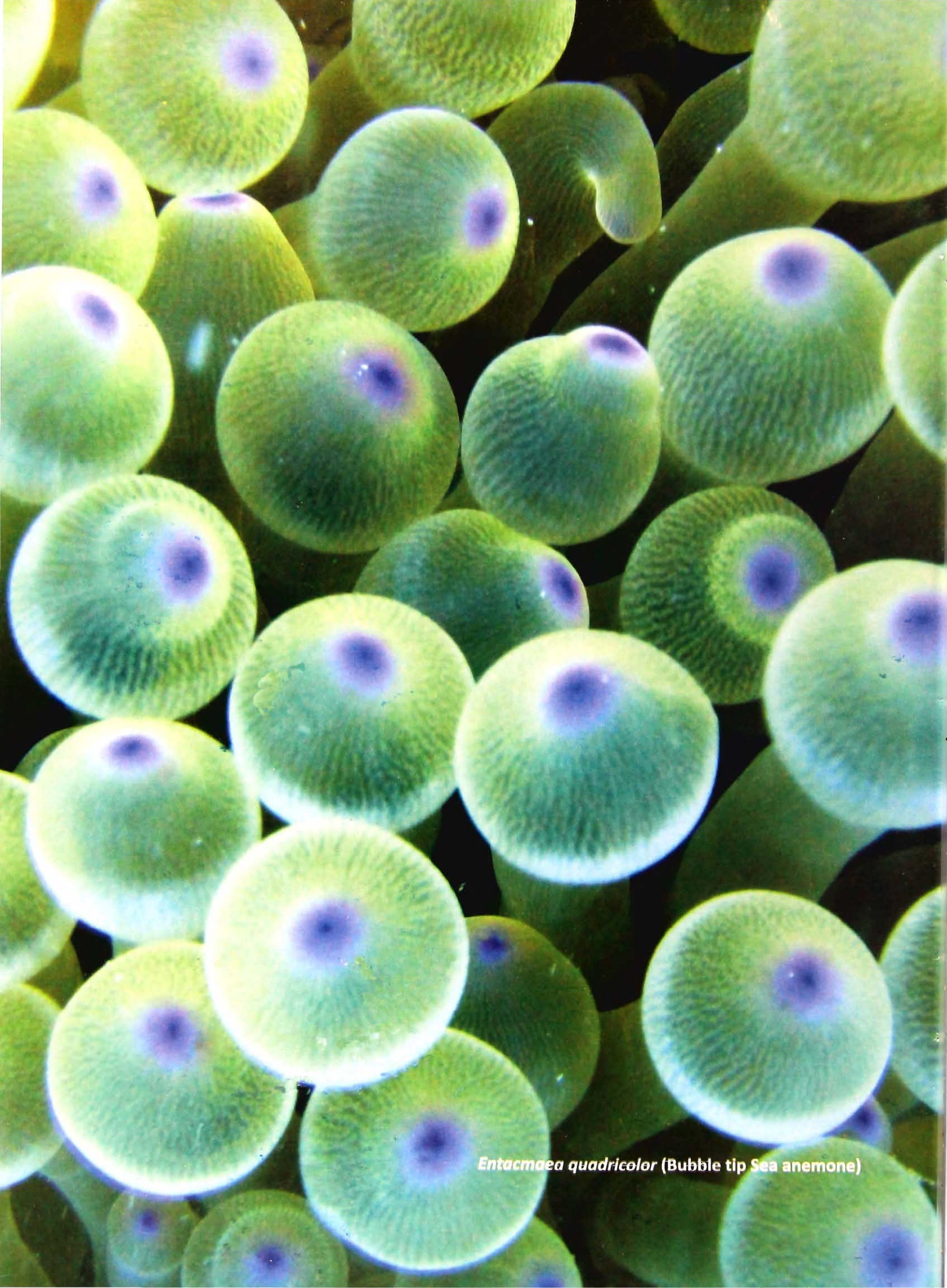
Nicobar Islands

Nicobar group of Islands are flat, fertile islands with unspoiled seas all around. Deep water corals dominate the reefs of Car Nicobar. Acropora is abundant here. Newly recruited Acroporids can be witnessed in these islands.





Acropora hyacinthus (Dana, 1846)



Entacmaea quadricolor (Bubble tip Sea anemone)

REEF ASSOCIATED FAUNA

The Andaman and Nicobar Islands supports one of the richest coral formations in the Indo-Pacific region, reputeing the Andaman Sea as a coral reef paradise. The Andaman Sea lies enclosed by Burma, Thailand and Malaysia on the east and the Andaman and Nicobar Islands on the west. The geographical position of A and N Islands makes it different from the coral reefs of Indian peninsula. Corals and their associated fauna of these Islands should be studied in comparison with the countries near by rather than the diversity of Indian peninsula. The mangrove strands near the shoreline is also plays a major role in the fauna associated with the coral reef. Larger quantities of the freshwater run off from adjacent land masses during the rainy season (lasts for 7-8 months) remarkably influence the salinity of the surface waters of the sea. Coral reefs occur profusely in the inshore waters along almost all the Islands from North Andaman to Great Nicobar. At many places rocky, sandy and muddy beaches occur between mangroves and coral reefs in the littoral region. The coral reefs of A & N Islands harbours 4540 species including mammals, reptiles, fishes, echinoderms, mollusca, crustaceans, polychaetes, sponges, sea anemones, tunicates, flat worms, hydroids, sea weeds, sea grasses etc. Some of the reef associated animals of these Islands are still remains unexplored.



Zanclus cornutus

Fishes

Fish constitutes one of the most important marine food resources of these Islands. Fishes serve as an indicator species for the health and phase shifting nature of the coral reef. The major indicator fishes are butterfly fishes and parrot fishes. Authentic information on the fish fauna of this region is essential for planning of proper fisheries



Pterois volitans

developmental programmes and sustainable utilization of suitable fish resources for economic growth. Talwar (1990) prepared a comprehensive list of fishes with 724 species known to inhabit the freshwater, mangroves and marine ecosystems of these Islands, followed by a supplementary list by Kamla Devi (1991) containing 71 species of fishes. Extensive taxonomic studies made in the recent years resulted in the additional record of more than 300 fish species. The checklist of fishes from these Islands by Rao (2009) cited 1371 species under 586 genera belonging to 175 families. The surveys conducted by ZSI during the year 2009 resulted with the addition of more than 70 species of reef fishes.

Molluscs

The phylum Mollusca is very large consisting of thousands of species commonly known as shells. The number of species of molluscs recorded from various parts of the world varies from 80,000 to 1, 50,000 (Venkataraman *et al.*, 2003). In India 5070 species of mollusca have been recorded from freshwater (183 species); land (1487 species) as

Class	Families	Genera	Species
Polyplocophora	4	7	12
Gastropoda	76	196	880
Cephalopoda	11	18	33
Bivalvia	53	150	350
Scaphopoda	1	1	7
Total	145	372	1282



Jorunna funebris

well as from marine habitats (3370 species). Andaman and Nicobar Islands have a rich molluscan diversity, which include more than 1000 species from the marine region. Gulf of Mannar and Lakshadweep have 428 and 424 species respectively. 3,370 species of marine molluscs have been reported from India that includes those occurring in coral reef ecosystem as well as other areas. The molluscan diversity studies of Andaman and Nicobar Islands were started in the late 19th century. The literature available shows that the earliest molluscan (Shells) study was on a collection of marine shells made by Smith in 1878. Subba Rao and Dey (2000) catalogued 1282 species of marine molluscs from these Islands. Molluscs occur in different habitats such as mangroves, coral reefs, rocky coasts, sandy beaches, sea grass beds and also at greater depths in the sea.

Echinoderms

Among the various animal groups, members of the phylum echinodermata are most conspicuous. They have two unique features which are not found in any other group of animals. The first one is the presence of water vascular system and other is presence of tentacle like structures called tube feet. The former helps in locomotion of the animal and the latter in food gathering. They have no heart, brain and eyes. Although they are the most highly evolved among the invertebrates, yet they show primitive characters like radial symmetry, regeneration and asexual reproduction. It is known that more than 6000 species of echinoderms are living in various area of the world. In



Thelenota ananas

Indian seas, 649 species are reported so far. Bell (1887) for the first time listed the echinoderms from the Andaman Islands. Earlier there were only stray reports of occurrence of individual species of these Islands. From this time onwards many workers reported echinoderms from these Islands and added several species to the echinoderm fauna. James (1983) while dealing with sea cucumber and sea urchin resources of the Andaman and Nicobar Islands gave a list of echinoderms known from these Islands. In addition, there have been several revisionary works effecting changes in the nomenclature and status of several taxa. Sastry (2005) attempted to compile all the available published literature on

Class	No. of Species Andaman	No. of species Nicobar	No. of species A & N Islands	Total
Crinoidea	35	7	8	50
Asteroidea	78	7	19	104
Ophiuroidea	70	9	24	103
Echinoidea	56	4	20	80
Holothuroidea	56	4	28	88
Total	295	31	99	425

echinoderms of Andaman and Nicobar Islands as well as the materials in the National Zoological Collection of Zoological Survey of India at Kolkata and Port Blair. It is resulted with a total of 425 species of echinoderms from these Islands.

Porifera

The sponges are found from shallow water to the depth of the ocean. Most sponges need a hard surface for attachment, but some can live on soft sediments. Few species are able to bore in rocks and shells. Sponges are common on rocky reefs, shipwrecks and coral reefs in a wide range of temperature and depths. They inhabit a wide variety of marine and freshwater systems and are found throughout tropical, temperate and polar region. Of the approximately 15,000 sponge species, most occur in marine environments, only about 1% of the species inhabits freshwater. The largest population occurs where there are strong tidal currents, which bring extra food. In Indian seas 451 species of sponges belonging to 3 classes, 17 orders, 65 families and 169 genera has been reported (Pattanayak and Manna, 2001). Tikader, *et.al.* (1986) given a comprehensive account of sea shore fauna of Andaman and Nicobar Islands. This list comprises of sponges belonging to 1 species of Calcarea, 16 species of Hexatinellidae and 63 species of Demospongiae. The recent work by Pattanayak (2006) describes 75 species, 48 genera, 35 families from the Andaman and Nicobar Islands. These include 4 new species records, 18 new locality records and 15 species endemic to the Andaman and Nicobar Islands. The work by Pattanayak this year reports 20 species of Hexatinellida and 122 species of Demospongiae from the National Zoological Collection India, in the Zoological Survey of India, Kolkata; which includes specimens from Andaman also.



Xestospongia testudinaria

Crustaceans

Crustacean diversity of Andaman and Nicobar Islands is well studied during 20th century by many researchers. Coral reefs inhabit several commonly important crustacean fauna. Heller (1865) revealed 14 species of hermit crabs from Nicobar Islands. Alcock (1905) further revealed 14 species and 5 new varieties/species of hermit crabs. Reddy and Ramakrishna (1972) found the occurrence of 20 species followed by Tikader *et.al.* (1986) reported 37 species lead to a total of 40 species of hermit crabs from Andaman and Nicobar Islands. Species composition of brachyuran crabs of Andaman and Nicobar Islands has been consolidated as 220 species through the reports of Sakai (1976), Kathirvel (1983), and Tikader *et.al.* (1986). A total of 162 species of prawn found in coral reef environment of these Islands are published by Silas *et.al.* (1983) and Tikader *et.al.* (1986). Apart from that 6 species of lobsters occurred in these Islands (Shanmugam and Kathirvel, 1983) Ajmal Khan (2002) compiled the list on crustacean fauna from these Islands and it depicts 837 species of crustaceans.



Ocypoda ceratophthalmus

Polychaetes

The polychaetes from Andaman available in the Indian Museum collections were described by Fauvel (1932) and subsequently incorporated in the Fauna of India Series by the same author in which he describes 90 species from these Islands. Subsequently many studies have been conducted in Andaman and Nicobar Islands for the exploration of this faunal group. Recently Rajasekaran and Fernando (2009) identified 30 more species under 23 genera and 8 families. All of them were new record to this archipelago and 15 species new to Indian waters. The work also includes an up to date list of polychaetes so far recorded from Andaman and Nicobar Islands (Families: 29; Number of genera: 107; Number of Species: 191).



Bispira brunnea

Tunicates

This group remains as one of the least studied coral reef fauna of India. Although tunicates are very commonly seen in the coral reef ecosystem, the taxonomical works on the group is rather nil in Andaman and Nicobar Islands. Pelagic tunicates from these Islands have been studied by Dhandapani (1996), however no literature for reef associated tunicates. As per our observations *Didemnum molle* and *Herdmania pallida* is very common in the reefs of Andaman and Nicobar Islands while *Clavinella moluccensis* is common in the reefs of South Andaman Island.



Didemnum molle

Flat worms

One of the diverse groups which has wide distribution in the coral reefs worldwide. The polyclad worms associated with the coral reefs are not yet explored from Andaman and Nicobar Islands. Preservation of organism is almost impossible for this group, and may be the reason for lack of studies by the earlier workers who were depending on the specimens most of the work. Digitalization makes a possible scope for the detailed study of this group from the coral reefs. Acanthozoon species was observed many a times from the reefs of South Andaman region. More or less 10 species were observed during the surveys of ZSI in the whole archipelago.



Pseudoceros laignensis

Reptiles

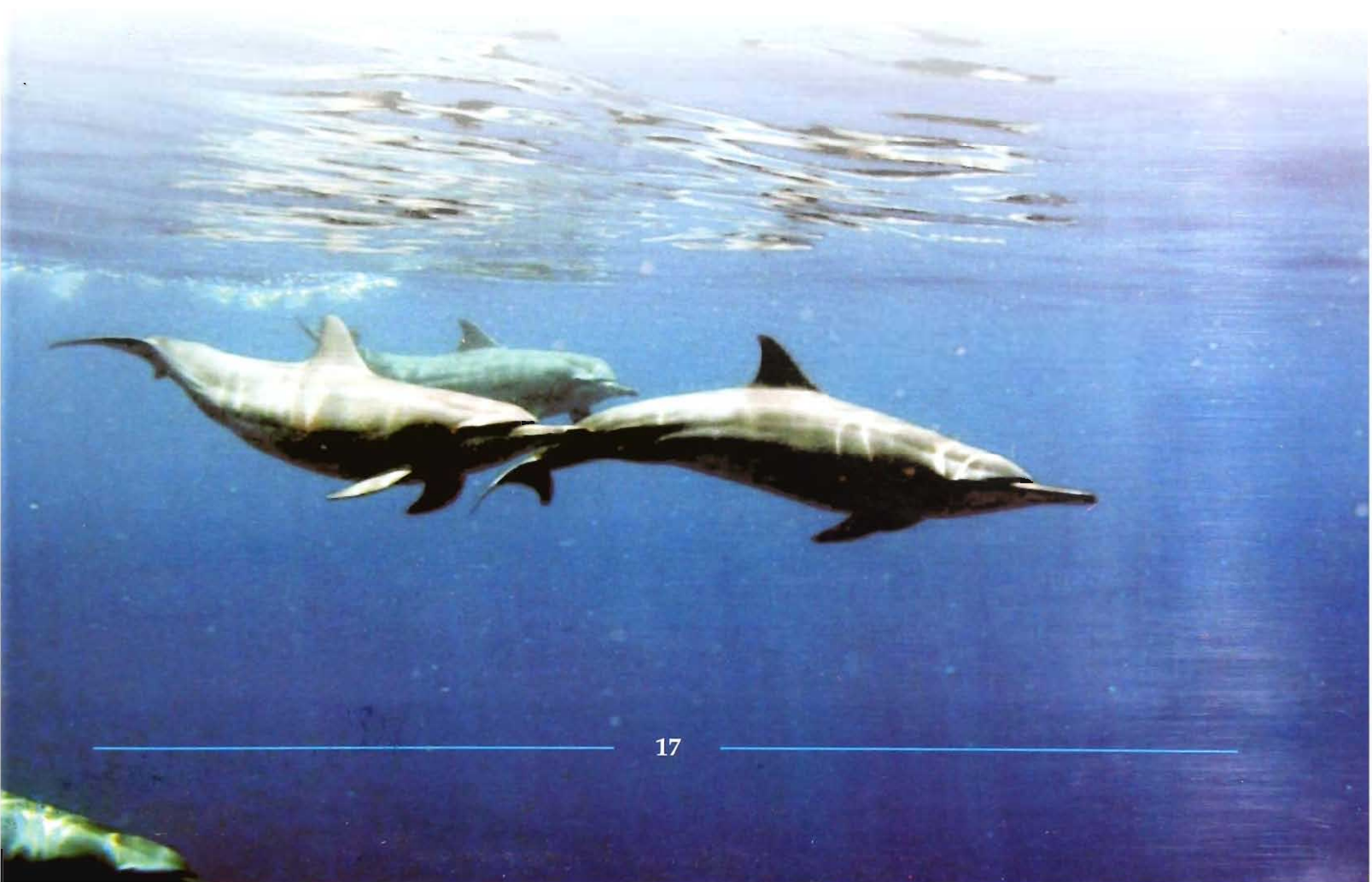
About 26 species of sea snakes belonging to the family Hydrophiidae and five species of sea turtles have been reported from seas around India. All the sea snakes and 4 species of turtles out of 5 species reported worldwide in the marine environment are known from islands of Andaman and Nicobar. Sea turtle nesting beaches at South Andaman, Little Andaman and the Nicobar Islands have almost vanished. These losses may reduce nesting by leatherback, green, hawksbill and olive ridley turtles.



Eretmochelys imbricata

Mammals

Marine mammals belong to three orders Cetacea, Carnivora and Sirenia. A little over 120 species are estimated to occur worldwide and of these 40 are reported from Indian Ocean and 25 species of marine mammals belonging to the order Cetacea and Sirenia are reported from Indian waters. However, a majority of these are oceanic forms and occasionally a few individuals may get stranded on the shore. Sea cow, *Dugong dugong* occurs in near shore waters of Gulf of Mannar, Gulf of Kachchh and Andaman and Nicobar Islands. Dolphins and some of the whales that live or breed in tropical waters, such as humpbacks, are occasionally seen near shore areas. The Government of India has so far listed three species of cetaceans (Irrawady dolphin, Ganges River dolphin and sperm whale) and the dugong in Schedule I of Wildlife Act 1972 (amended in 1991). Dolphins are very common in Andaman and Nicobar Islands. Off Port Blair they are seen in large groups. They are also seen very commonly in Ritchie's archipelago, Little Andaman, Car Nicobar etc. Dugongs are seen very often in Neil Island (Ritchie's Archipelago) and Teressa Islands of Nicobar.





Polyps of *Goniopora lobata*

04 Chapter

CORAL BIOLOGY

Coral colonies are composed of many small, cylindrical shaped animals called polyps. They are the basic unit of the corals.



Polyp Structure

Shape

The body of the polyp is a sac- like structure, and it is the basic units of a colony. Morphologically a single polyp is similar to a small Sea anemone. They do not have any internal skeleton but number of polyps sharing a common external skeleton.

Size

Sizes of polyps vary from one species to another, such as 1mm to several centimetres. So the average size of a polyp ranges from 1 mm to 25 cm. In short the colony size also varies from 5 cm to 4 m or above as in the case of large *Porites* colonies.

Colour

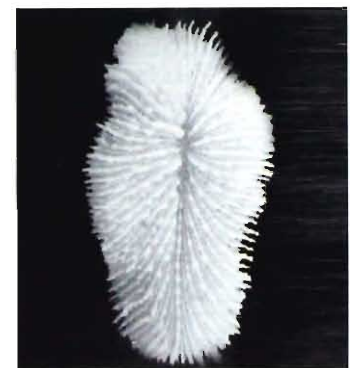
Scleractinian corals naturally have their own pigments on their tissue like white, red, orange, yellow, green, blue, and purple. Apart from that mostly they are obtain colours from Zooxanthellae (symbiotic algae, which is present on their tissue). So the colour which appeared outside is a combination of polyp and zooxanthellae colour.

But in non-scleractinian corals, getting colour from their internal skeleton called calcareous spicules.

Skeleton

As scleractinians do not have any internal skeleton, hence they are living in a common external skeleton which is made up of calcium carbonate (CaCO_3) secreted by the polyps.

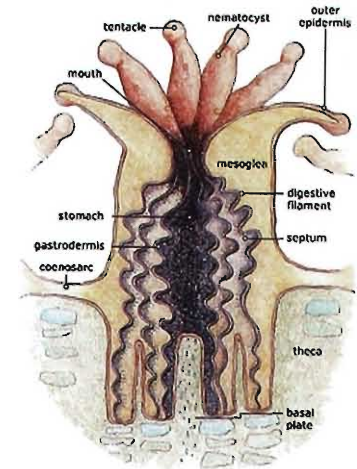
But non scleractinian corals like Soft coral and Gorgonians have internal skeletons called sclerites / spicules. Sclerites are made of calcium, and the structure of the sclerite is species specific, so playing a major role in identification of the same.



Anatomy

Digestive system

The oral disc or mouth is surrounded by six or multiples of six tentacles present, which help to catch prey and protection from predators, for which it has armoured with specialized cells called cnidoblasts (Stinging cells). The mouth leads into the stomach cavity. Stomach cavity is partitioned by longitudinal membranes called mesenteries, at the edge, it has a long thread like filaments; can protrude through mouth to capture food. And the mesenteries also have reproductive cells.



Nervous system

This small animal does not have any specialized nervous system like brain, instead of that they have a cluster of nerve forming a net like structure. This nerve net is help polyps to connect with adjacent polyps.

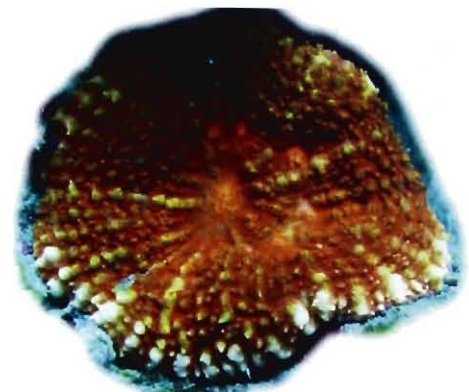
Tissue

Skin of the polyps is divided in to 3 such as Ectodermal layer (Outer); Mesogelea (Middle); Gastroderma layer (Inner).

Ectoderm: It is the outer cover of the corals, which has nematocyst to protect and hunting the prey (tentacles).

Mesogelea: It is connecting the Ectoderm and Endoderm and towards ectoderm filled with nerve cells.

Gastroderm: It is the shelter for symbiotic, single cell algae viz. Zooxanthellae, and glands and gonads are lined on this.



s o m e

Physiology

Food

Primarily obtain food (tiny zooplankton to small fishes) from surrounding by using tentacles, catch the prey and swallow them. But this is not enough to them, hence they also getting nutrients from Zooxanthellae, produced by photosynthesis. And wastes excrete through by mesenteric filaments.

Nutrient transfer

Food obtained by one polyp can be passed to other polyps in the colony, through inter connected tissues.

Sense

By using their nerve net, which is extends from the mouth to the tentacles, they will pass any signals or other information.

Chemoreception

Polyps can detect sugars and amino acids and other chemical signals. This sense, enables corals to detect prey, spawning response etc.

Reproduction

Corals can reproduce both sexually and asexually. An individual polyp may use both reproductive modes within its lifetime. In sexual reproduction, free swimming planula larvae is produced and settle on a suitable substratum in favourable environmental condition and grow in to a new colony by asexual reproduction called budding.

Sexual reproduction

Sexual reproduction will happen in three types such as Internal fertilization, External fertilization and Synchronous method.

In Internal fertilization, the reproductive cells are borne on mesenteries membrane, that line in the stomach cavity. And sperms will collect by tentacles from surrounding and fertilization will take place internally. These fertilized eggs are brooded by the polyp for days to weeks. Finally fully developed free-swimming larvae are released into the water and settle within hours.

In External fertilization, both sperm and eggs are released in to water, then fertilization will take place in the water column. After a few days develop into free-swimming larvae settle within hours to days.

Synchronous method: Two colonies are located in same environment, while reproducing by this method, if one colony produce male then the opposite colony will produce only female eggs, can happens vis-a-vis. Polyps release eggs and sperms into the water at the same time and zygote formation will take place in water column. Controlling factors play a major role in this reproduction viz. time, temperature, tidal and lunar cycles. Larvae usually settle in four to ten days. Literatures say that most larvae settle within 600 m of the parent reef.



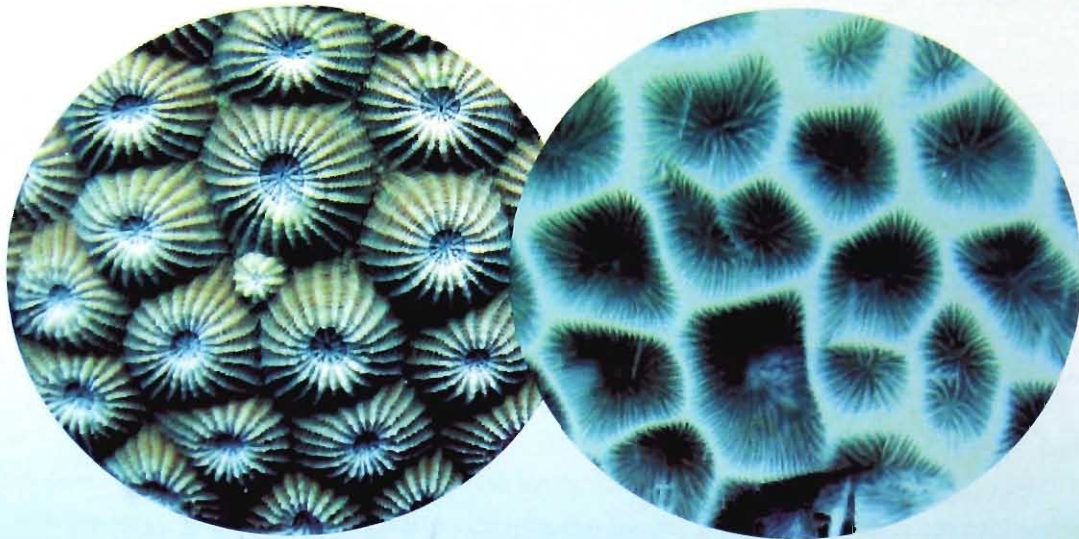
Asexual reproduction

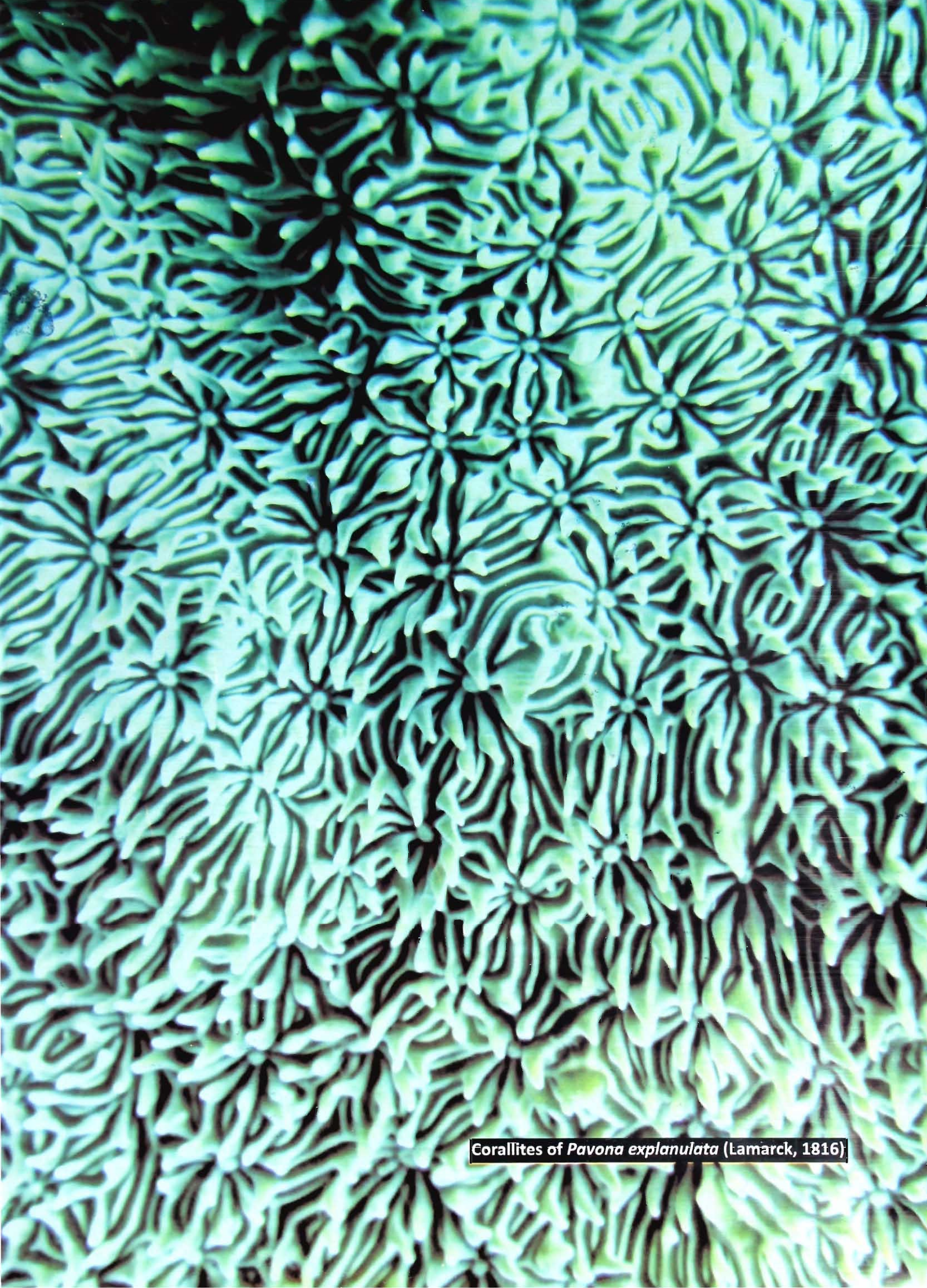
Environmental disturbances may dislodge some polyps or portions of colonies from the parent colony and place them on another part of the reef, those part or polyps will settle in a favourable place and grow. Often a polyp produced by sexual reproduction initiates growth of a colony asexually by budding. Later, the same polyp may reproduce sexually. In other hand coral reproduce through budding.

Budding expands the size of a coral colony. It occurs when a new corallite grows out from the adult polyp. As the new polyp grows it produces a coelenteron (stomach), tentacles and a mouth. The distance between the new and adult polyps grows, and with it the coenosarc (the common body of the colony; see coral anatomy). Budding can be classified in two types.

Intra-tentacular budding: It forms from the oral discs of a polyp, meaning that both polyps are the same size and are within the same ring of tentacles.

Extra-tentacular budding: It forms from the base of a polyp, and the new polyp is smaller





Corallites of *Pavona explanulata* (Lamarck, 1816)

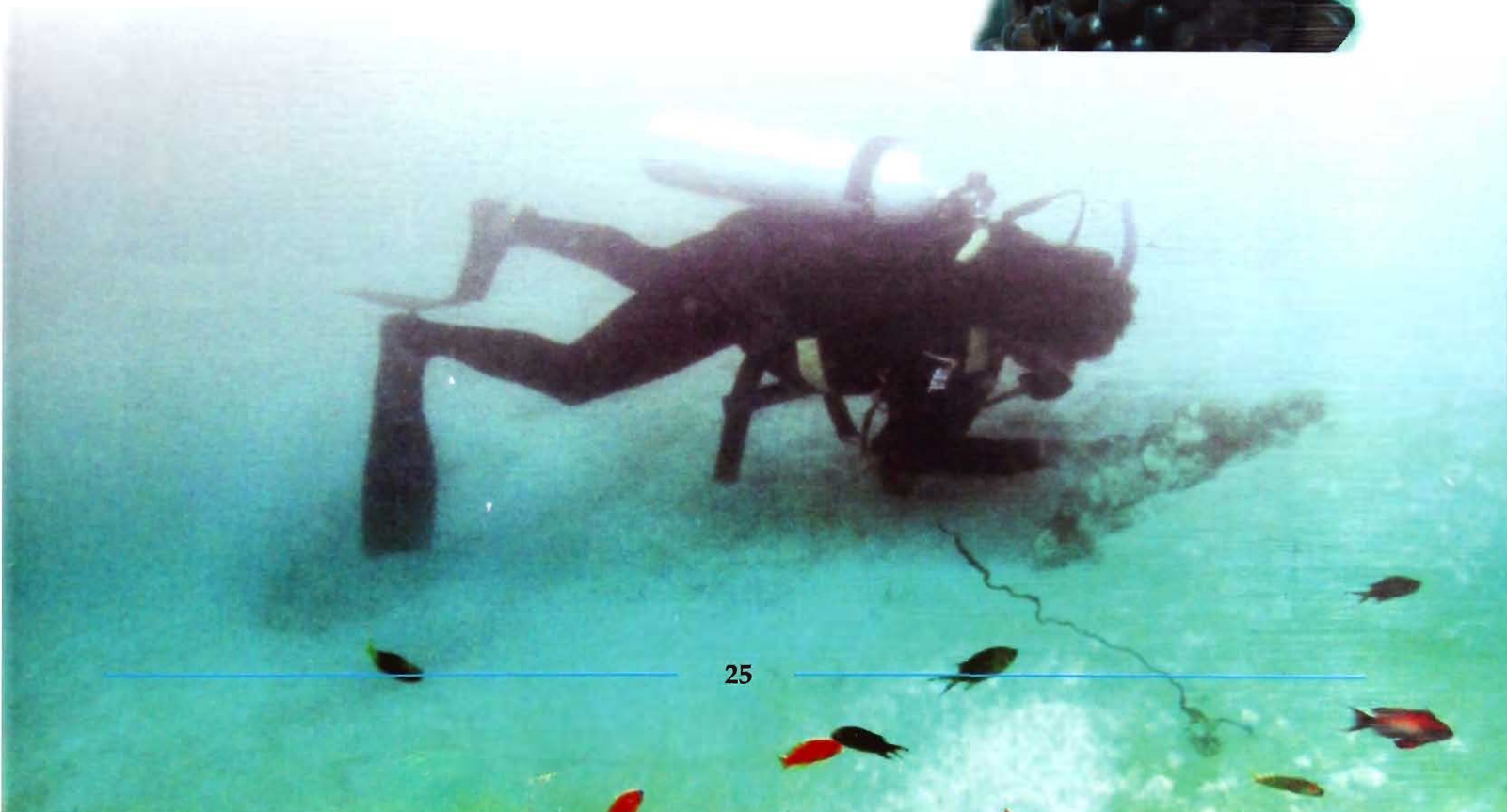


Herpolitha weberi Horst, 1921.

CORAL IDENTIFICATION

Identification of a coral underwater is done by visual observation and by feeling the skeletal characters by touch. The crystalline and hard skeleton underneath its body tissue helps in identifying it as hard coral and counting of the tentacles which are multiple of six helps in distinguishing it from its counterparts, horny and soft corals. A thorough knowledge about the coral characters is a must for in situ identification of species. Photographs depicting various morphological characters can be used for further confirmation of identification. This method can be adopted for protected areas like Marine National Parks where collection is banned.

A single photograph of the whole colony cannot serve the purpose of identification, as corals have very minute structures which are very important for their identification, viz septa, costae, columella, axial corallite, radial corallites etc. It is necessary to take at least two types of photographs, such as first one of the entire colony, it will show the growth form and colouration of the colony; Second picture should be a macro/micro photograph i.e. pictures taken as close to the coral as possible. This photo can be used for detailed identification of corallites, and their arrangement etc. Since the close up photograph reduces the colour loss this can tell us more about the colour also.



Growth Forms

The common skeleton of polyps have different forms, this is the first identification character of a coral. The following are the major growth forms of corals found in A and N Islands.



Massive: Colonies are solid, boulder or helmets shaped and are typically hermatypical, 60% of A&N Island's reefs covered by massive corals.
(Eg: *Porites lutea*)

Solitary: Corals composed of single individual and some coral can move little distance.
(Eg: *Ctenactis echinata*)



Sub massive: Colonies which form small columns, knobs, mounds or wedges.
(Eg. *Stylophora pistillata*)

Table: The colony will grow horizontal with fused and small upturned branches, forming porous or thick plates. Often they will not produce in down side.
(Eg: *Acropora hyacinthus*)



Branching: A descriptive term for a branch is, with compact radial sub-branches.
(Eg: *Acropora aspera*)

Digitate: Colony, which has short taper or dome shaped thick branches with uniform height. Usually the branches produced from a common thick basal plate.
(Eg: *Acropora monticulosa*)



Foliose: Coral colonies attached at one or more points, leaf-life or plate like in appearance.
(Eg: *Echinopora lamellosa*)

Corymbose: Colonies forms thin upright branches without basal plate.
(Eg: *Acropora nasuta*)



Encrusting: Coral colonies which are form a thin layer or crust over underlying substratum.
(Eg: *Montipora petelliformis*)

Bottle brush: The arborescent branches have numerous and uniformly elongate radial and axial corallites, hence colony looks like a bottle brush shape.
(Eg: *Acropora subglabra*)



Types of Corallites

The arrangement pattern of corallites in entire colony is another major identification character of a coral. The following are the major corallite arrangement patterns found in A and N Island's corals.



Ceroid

Adjacent corallites share the same wall.
(Eg: *Favites*)



Placoid

Each corallite has its own separate wall.
(Eg: *Favia*)



Phaceloid

Coral that have corallite of uniform height adjoined towards their base.
(Eg: *Dendrophyllia*)



Hydnochoroid

Septa fusing to form monticules or mould like structures called Hydnochores.
(Eg: *Hydnophora*)



Meandroid

Corallite mouths aligned in deep valleys, these valleys separated by reticulated walls.
(Eg: *Symphyllia*)

Structure of Corallite

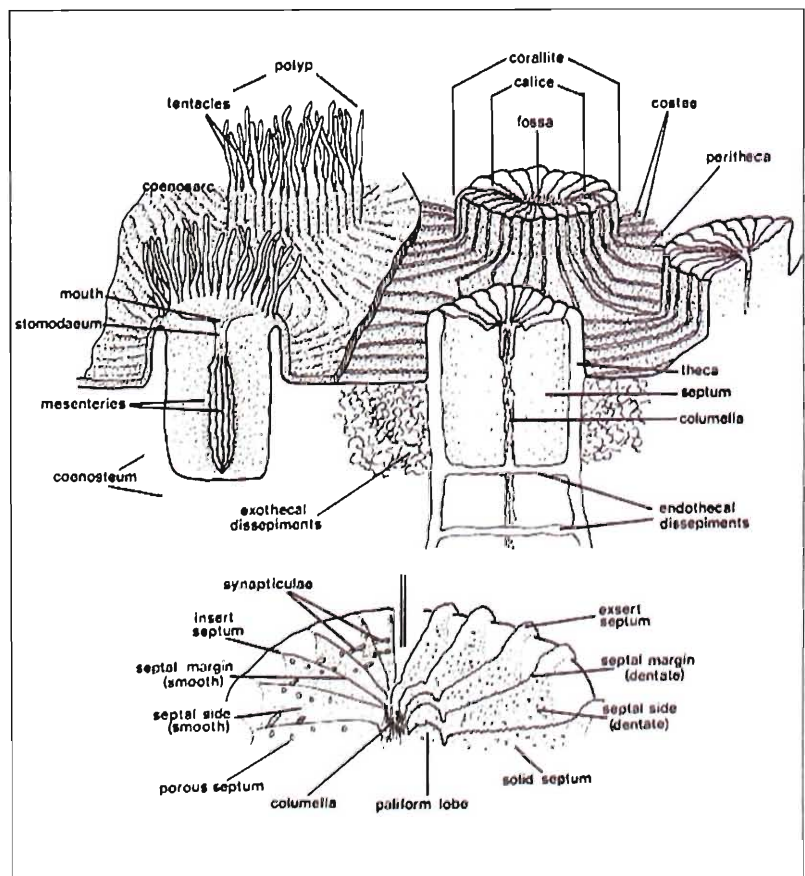
Skeleton of a corallite consist of two main parts called Septa and Columella. Septa are running radially from wall to centre of the corallites. Columellae are the centre part of the corallites where all septa meet.

Septal arrangement

Septa are usually in multiple of six. The first forming six septa are called primary septa, next to the primary septa, second cycle also consist of six septa will form between the last, but it is bit smaller than primary septa and it is called secondary septa, and tertiary septa which are further small in size, consist of 12 number place between 1st and 2nd cycles. The same pattern continues resulting in forth cycle of 24, fifth cycle of 48 and so on.

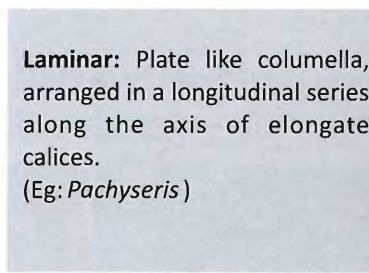
Columella categories

It has four major types called Spongy, Papillose, Solid and Laminar columella.

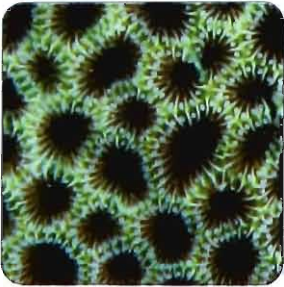




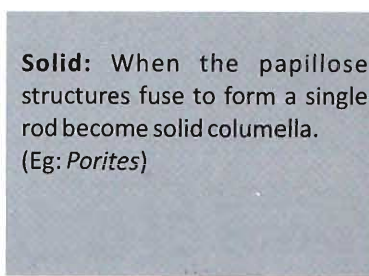
Spongy: It is formed by the intermingling irregularly twisted expansion from the inner septal margins and basal plate
(Eg: *Lobophyllia*)



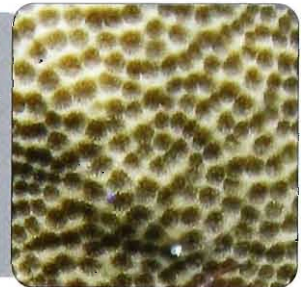
Laminar: Plate like columella, arranged in a longitudinal series along the axis of elongate calices.
(Eg: *Pachyseris*)



Papillose: If the expansions from the septa are vertical rods or ribbons.
(Eg: *Leptastrea*)



Solid: When the papillose structures fuse to form a single rod become solid columella.
(Eg: *Porites*)



Without Columella: In some species columellae is absent forming a deep pore.
(Eg: *Acroporidae*)

Underwater Photography

The recording of coral species became easy and more reliable using underwater photography. Sony Video recorder (Sony DCR-TRV340 E) with Ikelite housing for video transect; Sony Cyber shot DSC T900 with marine pack and Canon Power shot A 580 with Ikelite housing were used for photography in the present study. The photographs were taken using SCUBA equipments which enable the photography and species targeted collection of corals up to 25 meters of depth.

The primary obstacle faced by underwater photographers is the extreme loss of color and contrast when submerged to any significant depth. The longer wavelengths of sunlight (such as red or orange) are absorbed quickly by the surrounding water, so even to the naked eye everything appears blue-green in colour. The loss of colour not only increases vertically through the water column, but also horizontally, so subjects further away from the camera will also appear colorless and indistinct. So the original colour of the coral colony is lost during photograph. Underwater photographers solve this problem by combining two techniques. The first is to get the camera as close to the photographic subject as possible, minimizing the horizontal loss of color. For the camera which we used for the study; macro photographs can be taken at closer distance even less than 5 centimeters which curtail the colour loss.





Coral Sampling and Preservation

The common species of corals were identified in-situ and photographed using underwater camera. Both colony photograph and macro photograph were taken for further confirmation of the species. For the species, which is already recorded in India and for which are common in these area; under water macro photographs were quite enough for identification even the corallite structure were clear in the macro photographs. For the coral species which we were not able to identify under water were sampled for taxonomical studies.

The sampled specimens were brought to lab and kept in fresh water for two days. The dead tissues of the coral were washed thoroughly and air dried. The dried specimens were tagged and microscope photographs were taken for further identification of the species. The identified specimens were registered and deposited in the National Zoological Collection of Zoological Survey of India, Port Blair.

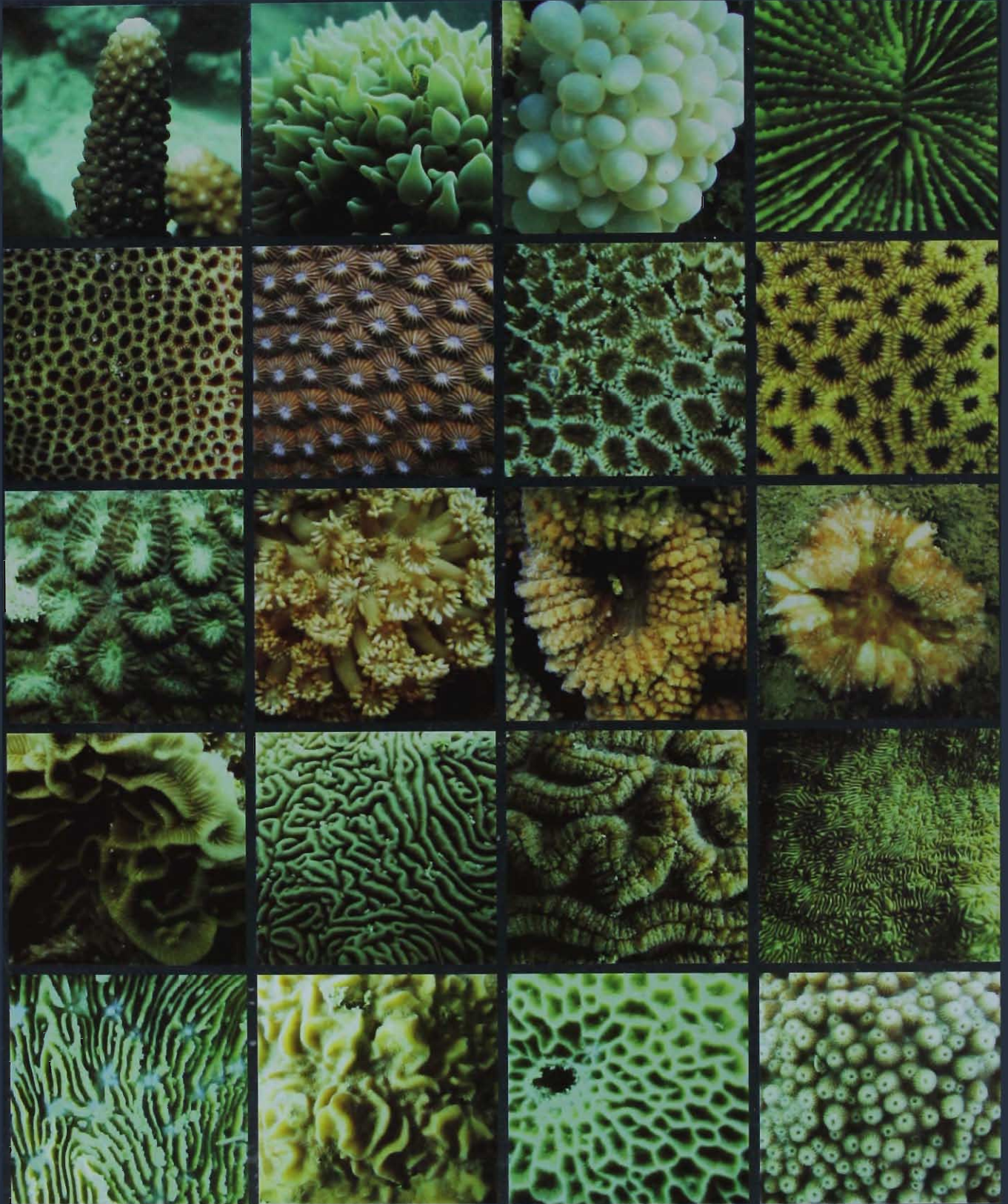


Specimen Labeling

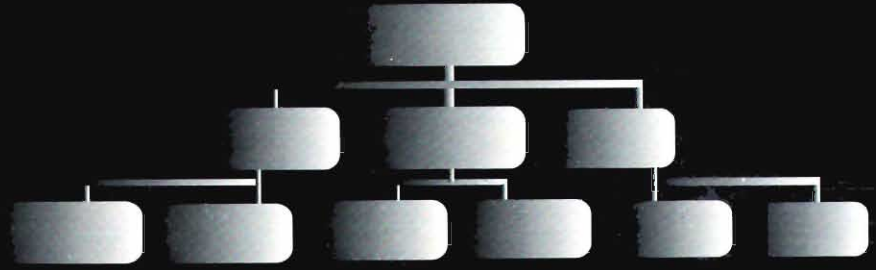
ZOOLOGICAL SURVEY OF INDIA Port Blair-744 102, A&N Islands

Scientific name	: <i>Echinopora lamellosa</i> (Esper, 1795)
Family	: Faviidae Gregory, 1900
Date of collection	: 05 July 2009
Place of collection	: Elephant Beach, Havelock Is.
Coordinates	: Lat 12° 03' .128" N, Long 93° 00' .236"
Depth	: 8 m
Collected by	: Sreeraj, C. R.
Identified by	: Raghuraman, R.
Reg. No	: ZSI/ANRC 4383

The cleaned and dried specimens were properly labeled for future reference. The label depicts the full details of that particular species such as the locality (name of the reef, name of the island or coast, name of the district, station number (if any), GPS location and depth of the reef and collection) date of collection, name of the collector etc. These information on the label may be made with printed/ photocopied on an overhead projection sheet (transparent plastic sheet with nylon twain) and information may be written using a water proof markers or glass marker pens.



corallites of Scleractinia



Systematics Scleractinia *of*

Scientific Classification

Kingdom: ANIMALIA Linnaeus, 1758

Phylum: CNIDARIA Hatschek, 1888

Class: ANTHOZOA Ehrenberg, 1831

Order: SCLERACTINIA Bourne, 1900



Acropora samoensis (Brook, 1891)

Family ACROPORIDAE Verrill, 1920

The species in this family are colonial, hermatypic, and one of the major reef forming families in Andaman and Nicobar Islands. Colonies have wide varieties of growth forms such as foliose, digitate, branching, encrusting, table etc., Columellae are poorly developed or absent.

Genera *Montipora*, *Acropora*, *Anacropora* and *Astreopora*



Similar families POCILLOPORIDAE and ASTROCOENIIDAE

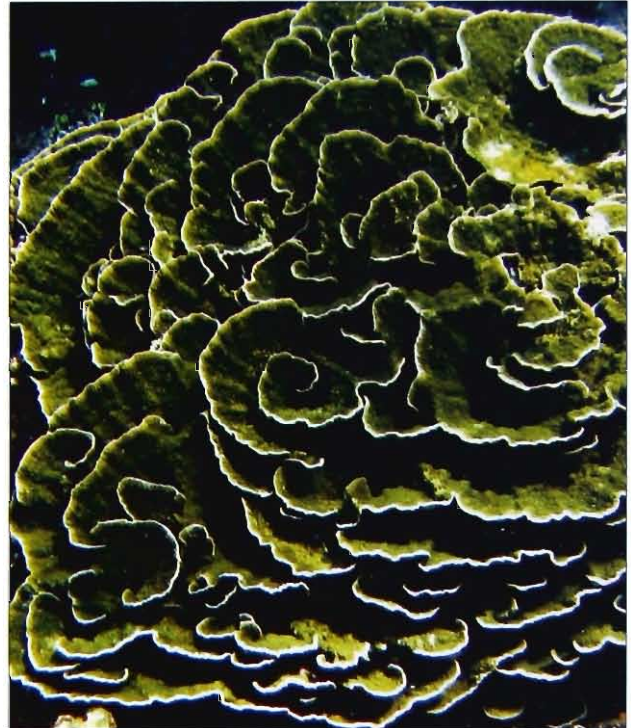


Genus *MONTIPORA* de Blainville, 1830

Characters: *Montipora* is the second largest genus of Family Acroporidae, and total of 72 species are recorded in the world. In India 28 species have been recorded of which 27 from east coast (Gulf of Mannar and Palk Bay and A & N Islands) and 13 are from west coast (Gulf of Kachchh and Lakshadweep) of India.

In this genus colonies are mostly foliose, laminar and encrusting, some colonies form sub-massive and branching. Corallites are very small, mostly immersed between the coenosteum columella are absent.

Similar genus: *Porites*.



1. *Montipora aquituberculata* Bernard, 1897

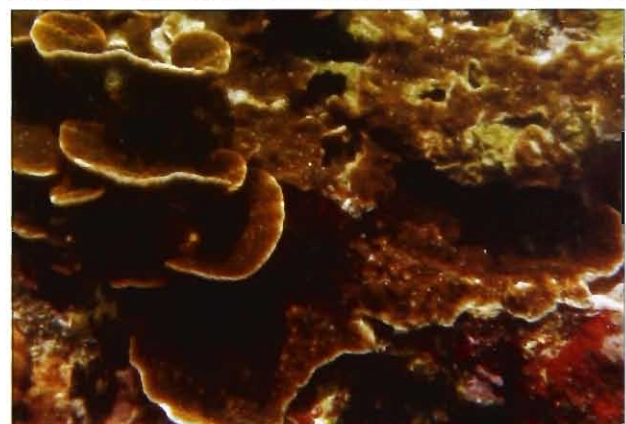
Description: Colonies are composed of thin laminae arranged overlapping whorls. Corallites are immersed and are surrounded by thecal papillae and form ridges. Reticulum papillae are thick and highly fused.

Colour: Living colonies are usually uniform brown, cream of purple, sometimes with pale margin in colour.

Similar Species: *M. florida*.

Distribution: Throughout Indo-Pacific; Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Usually found in protected lagoons. Mostly mixed with *Echinopora* colonies.



2. *Montipora angulata* (Lamarck, 1816)

Description: Colonies are encrusting and irregularly contorted branches. Corallites are immersed and evenly distributed. The reticulum is smooth.

Colour: Colonies are pale brown.

Similar Species: None.

Distribution: Throughout Indo-Pacific and Andaman & Nicobar Islands.

Remarks: Mostly found in fringing reef flats.

3. *Montipora caliculata* (Dana, 1846)

Description: Colonies are encrusting to massive. Corallites are a mixture of immersed exerted and corallites. Individual corallites typically have all or part of their wall missing so that adjacent corallites form short valleys. Parts of walls that remain may be tuberculae-like.

Colour: Colonies brown or blue.

Similar Species: *M. venosa*.

Distribution: Throughout the Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Often occur in shallow reef regions (<7 m depth).



4. *Montipora capitata* Dana, 1846

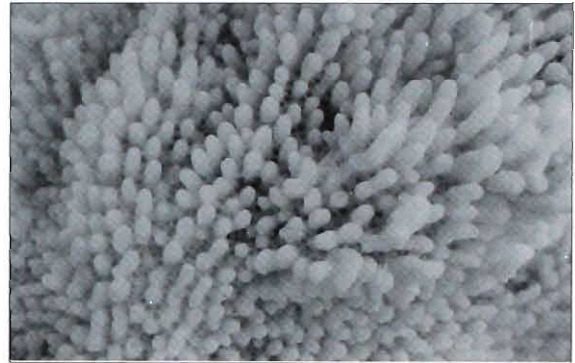
Description: Colonies are encrusting to arborescent. Verrucae are irregularly spaced and are usually fused towards branch tips or pale margins. Corallites are small and immersed between the verrucae. Coenosteum is rough.

Colour: Pale brown with white verrucae.

Similar Species: *M. verrucosa*.

Distribution: Indo-Pacific, most common in Hawaii and Andaman and Nicobar Islands.

Remarks: Usually found in shallow and sandy bottom areas.



5. *Montipora cebuensis* Nemenzo, 1976

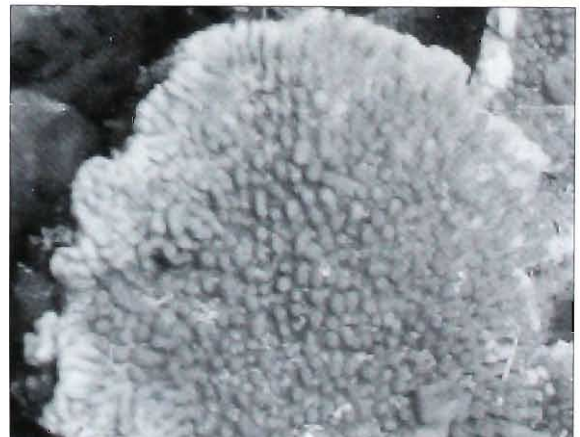
Description: Colonies are contorted dissected laminae. Coenosteum ridges are prominent. They are irregular on larger fronds, but are usually perpendicular to the margins of small fronds. Corallites occur irregularly, between the ridges.

Colour: Colonies are brown, sometimes with pale blue margins.

Similar Species: *M. delicatula*.

Distribution: Tropical Indo-Pacific, Japan, Hawaii and Andaman and Nicobar Islands.

Remarks: Shallow reef environments, especially lagoons.



6. *Montipora digitata* (Dana, 1846)

Description: Colonies are digitate or arborescent with anastomosing upright branches. Corallites are immersed and small, especially in colonies from shallow water. The coenosteum is smooth. Corallite walls are prominent, appears like a groove around corallite.

Colour: Colonies are pale cream or brown, sometimes pink or blue.

Similar Species: *M. samarensis*.

Distribution: Throughout tropical Indo-Pacific, Lakshadweep, Gulf of Mannar and Andaman and Nicobar Islands.

Remarks: Often confusing with *Porites cylindrica* and common in shallow reefs.



7. *Montipora flabellata* Studer, 1901

Description: Colonies are encrusting, with irregular lobes or columns. Corallites are small. Papillae cover the colony surface and are sometimes fused and form ridges. Septa are poorly developed.

Colour: Colonies are usually brown or blue and pale margin on the perimeter.

Similar Species: *M. lobulata*.

Distribution: Hawaii and Andaman and Nicobar Islands.

Remarks: Shallow reef environments and usually occupy the reef flats.



8. *Montipora florida* Nemenzo, 1967

Description: Colonies are composed of thin, unifacial laminae and forming upright whorls. These whorls may be over one metre high and may cover a large area. The coenosteum is rough with small coenosteum papillae. Most of the corallites are immersed; others are small and immersed on tuberculae.

Colour: Colonies are pale brown or greenish.

Similar Species: *M. friabilis*, *M. foliosa*, *M. capricornis* and *M. delicatula*.

Distribution: Tropical Indo-Pacific regions (Indonesia, Philippines and Samoa) and Andaman and Nicobar Islands.

Remarks: Found in shallow turbid environment.



9. *Montipora foliosa* (Pallas, 1766)

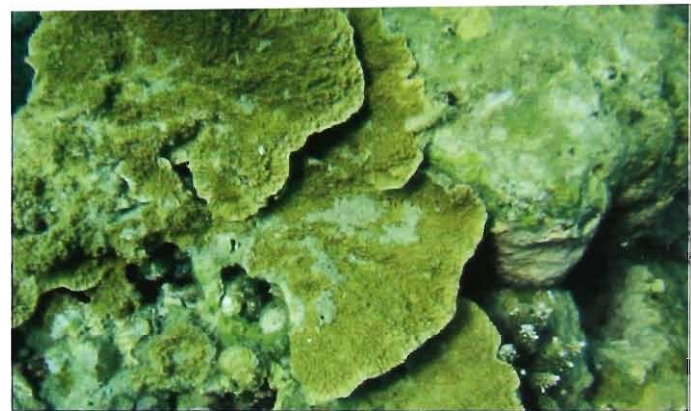
Description: Colonies are encrusting base with irregular laminar margins forming tiers of whorls. The continuous papillae forming ridges and they are perpendicular perimeter. Corallites are small and immersed between the ridges.

Colour: Colour usually cream brown.

Similar Species: *M. aequituberculata*.

Distribution: Indo-Pacific (East Africa to Coral Sea), Gulf of Kachchh, Lakshadweep, Gulf of Mannar and Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly in reef flat area.



10. *Montipora foveolata* (Dana, 1846)

Description: Colonies are massive may form irregular columns or mounds. Corallites are foveolate and immersed in the coenosteum. Coenosteum is fine in which Coenosteum, corallite papillae and tuberculae are absent.

Colour: Pale brown or cream.

Similar Species: *M. venosa*.

Distribution: Throughout Tropical, Sub-Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly occur in turbid reef flats.

11. *Montipora hemispherica* (Veron, 2000)

Description: Colonies are usually encrusting to hemispherical. Flattened, contorted branches usually occur near the centre of laminae and cover the surface of large colonies. Corallites are small and immersed in the coenosteum ridges. Papillae, tuberculae and laminae combined forms short ridges.

Colour: Grey and pale brown.

Similar Species: *M. setosa*.

Distribution: Red Sea and Andaman and Nicobar Islands.

Remarks: Shallow reef environments.



12. *Montipora hispida* (Dana, 1846)

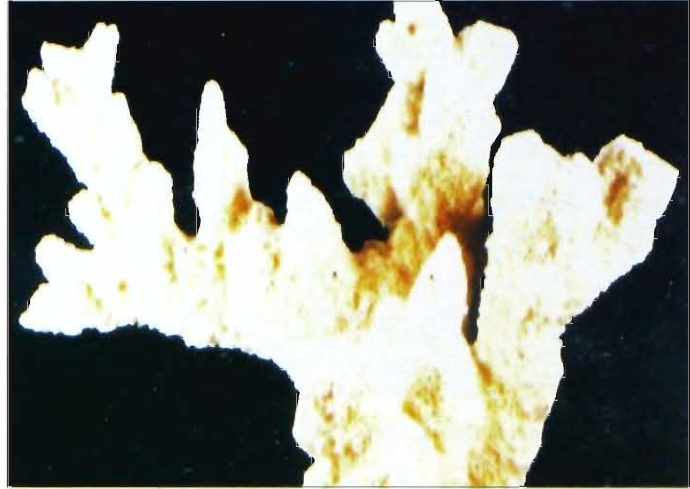
Description: Colonies are encrusting to sub-massive and may form short columns or tapered branches. Corallites are two types, immersed and exert, tuberculae forming ridges on the upright branches. Reticulum coarse with shorter papillae.

Colour: Colonies are dull brown.

Similar Species: *M. cactus*.

Distribution: Tropical Pacific (East to Hawaii) and Indian Ocean (West to Sri Lanka), Gulf of Kachchh, Lakshadweep, Gulf of Mannar and Palk Bay and Andaman and Nicobar Islands.

Remarks: Often confuse with *Anacropora* species.



Source: Venkataraman et al., 2003

13. *Montipora informis* Bernard, 1897

Description: Colonies are encrusting to massive. Corallites are small, immersed and evenly distributed. The coenosteum papillae covered the reticulum evenly.

Colour: Pale brown and white. Papillae may have white or Purple tips.

Similar Species: *M. efflorescens*.

Distribution: Indo-Pacific, Madagascar, New Caledonia, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found upper reef slope regions.



Source: Venkataraman et al., 2003

14. *Montipora meandrina* (Ehrenberg, 1834)

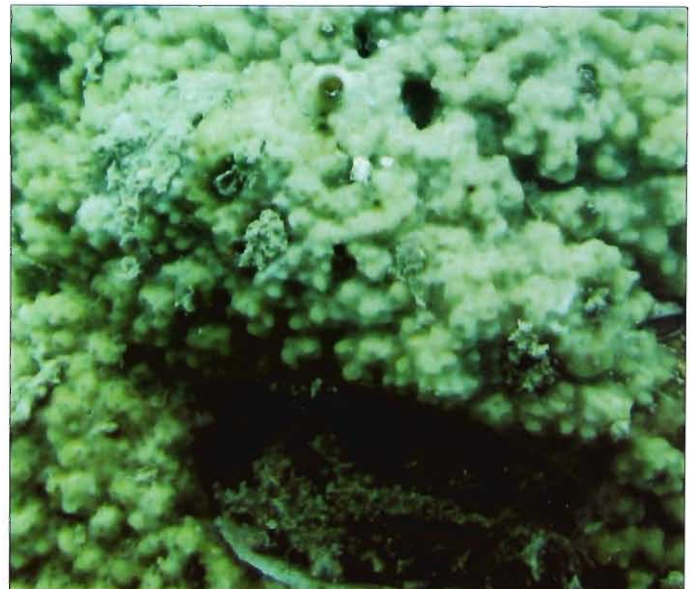
Description: Colonies are small, usually encrusting to sub-massive. The surface is covered with contorted irregular, large verrucae. These verrucae are not fused into any pattern. Corallites are small and inclined on the verrucae.

Colour: Colonies are pale brown or pink. Polyps are the same colour as the verrucae or are brightly coloured.

Similar Species: *M. danae*.

Distribution: Red Sea, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found on the crevices opening.



15. *Montipora peltiformis* Bernard, 1897

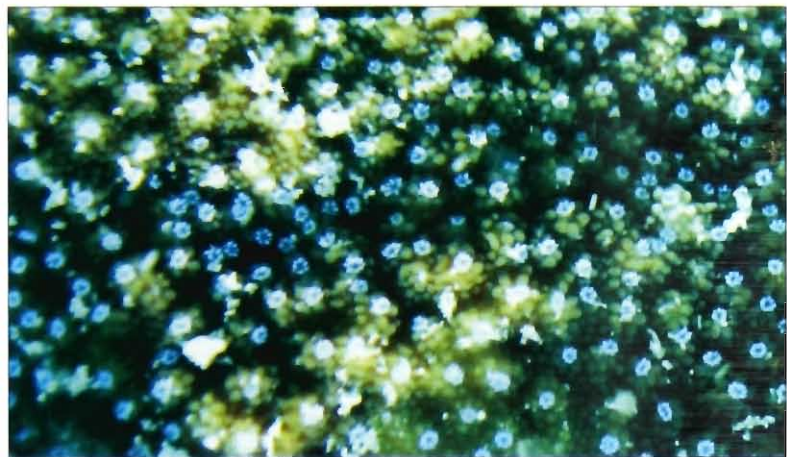
Description: Colonies are encrusting to sub-massive, and forming small mounds or columns. Coenosteum is highly rough by exerted papillae and small corallites are immersed between the papillae. Polyps are extending even during day time.

Colour: Colonies are brown with purple polyps.

Similar Species: *M. turtlensis*.

Distribution: Distributed worldwide except Caribbean and west to Africa; but in India found only in Andaman and Nicobar Islands.

Remarks: Mostly found in shallow reef regions.



16. *Montipora tuberculosa* Lamarck, 1816

Description: Colonies are encrusting or plate like to submassive. Corallites are small, some exert and some immersed. One or two directives, branches than the rest of the primaries. Corallites are separated by papillae/tuberculae of about one corallite in diameter. On the crest, papillae are absent.

Colour: Colonies are pale brown.

Similar Species: *M. monsdteriata*.

Distribution: Red Sea, Maldives, China Sea, Marshall Islands, Samoa, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in confined or crevices like areas.



Source: Venkataraman et al., 2003

17. *Montipora turgescens* Bernard, 1897

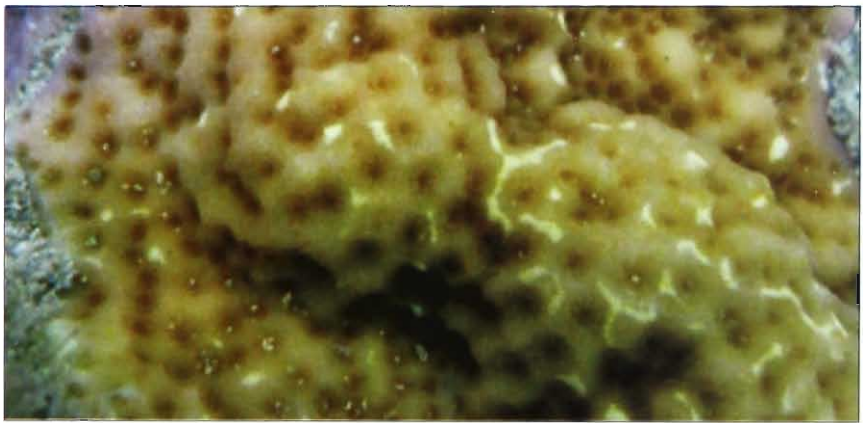
Description: Colonies are encrusting with small mounds. Coenosteum are smooth and covered with contorted irregular, large verrucae forming ridges. Corallites are large and immersed between the ridges.

Colour: Colonies are cream in colour with pinkish periphery.

Similar Species: *M. mollis*.

Distribution: World: India Ocean, Ellice Islands and Samoa; India: Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Often seen in wave exposed area.



18. *Montipora venosa* (Ehrenberg, 1834)

Description: Colonies are massive and submassive. Corallites are two type, some of them are slightly exert and others funnel shaped. Tuberculae and papillae are absent.

Colour: Colonies are pale brown.

Similar Species: *M. foveolata* and *M. caliculata*.

Distribution: Tropical Indo-Pacific (Red Sea to Marshall Islands), Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in outer reef areas. Sometimes confusing with *Pavona venosa*.



19. *Montipora verrilli* Vaughan, 1907

Description: Colonies are thin and encrusting. Corallites are approximately one millimetre diameter and are mostly submerged in the coenosteum. Corallite papillae are evenly spaced. Coenosteum papillae are shorter than corallite papillae, distributed irregularly making coenosteum rough.

Colour: Colonies are brown with blue centres

Similar Species: *M. patula*.

Distribution: Hawaii and Andaman and Nicobar Islands.

Remarks: Upper reef flat areas.



20. *Montipora verrucosa* (Lamarck, 1816)

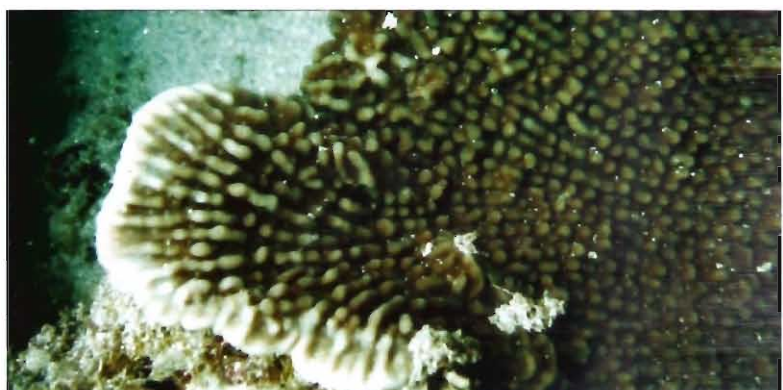
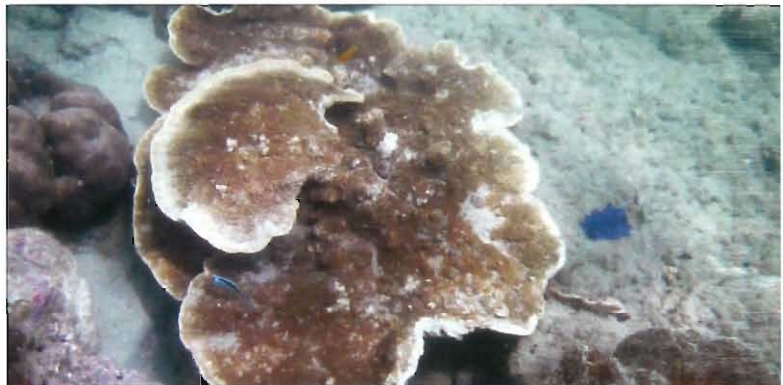
Description: Colonies are encrusting plates form tiers and whorls. Coenosteum is smooth, the coenosteum papillae are exert and round. At the edge of the colony, papillae are fused and forming straight ridges, which are perpendicular to edge.

Colour: Colour of the colony is pale brown.

Similar Species: *M. danae*.

Distribution: Throughout the world in India Lakshadweep, Gulf of Mannar, Palk bay and Andaman and Nicobar Islands.

Remarks: Upper reef slope and lagoons and mostly on soft bottoms.



21. *Montipora verruculosus* Veron, 2002

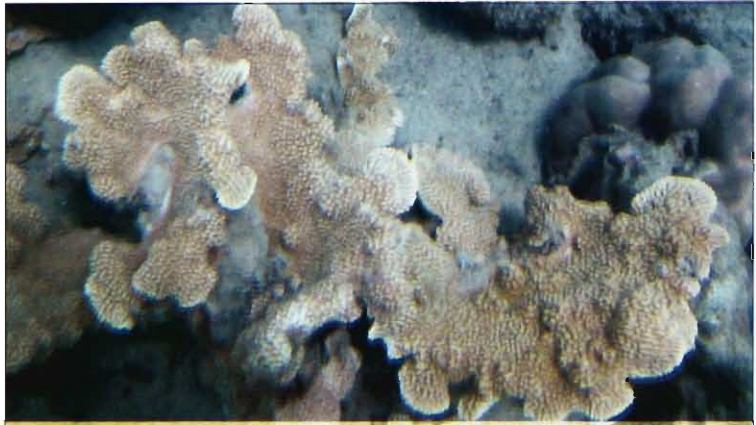
Description: Colonies are thick, flat, usually horizontal plates up to 2 metres across. Plates are covered with dome-shaped verrucae which are of very uniform size and are uniformly spaced. Verrucae are not aligned as radiating ridges except within 50 mm of plate margins. Corallites are small, immersed and crowded between the verrucae.

Colour: Colonies are grey in colour.

Similar Species: *M. danae* and *M. verrucosa*.

Distribution: Indo-Pacific (South East Asia) and Andaman and Nicobar Islands.

Remarks: Commonly seen in shallow reef flats.



22. *Montipora vietnamensis* Veron, 2000

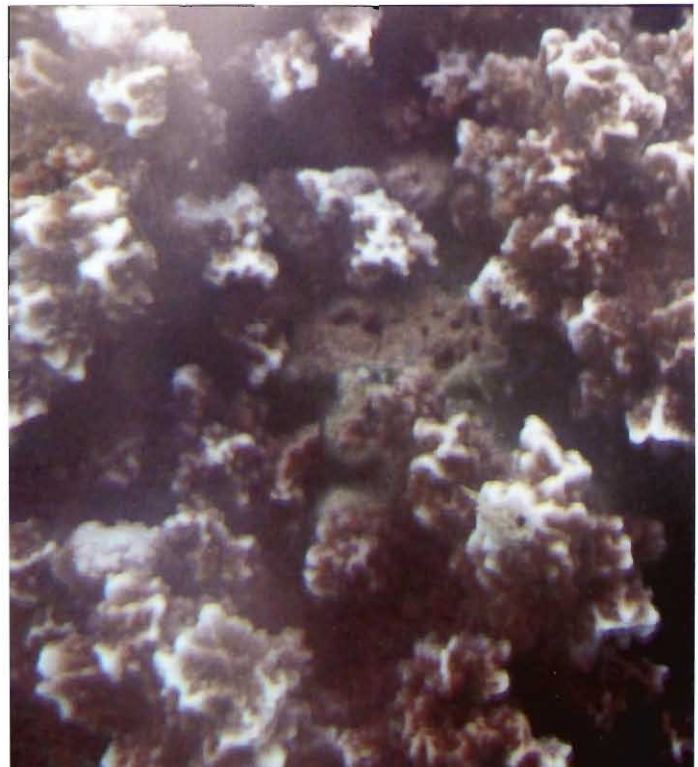
Description: Colonies are encrusting and may have laminar base, with compacted short upright branches. Coenosteum ridges are mostly vertical but may also be irregular. Corallites are large and prominent, aligned between the ridges. There are no corallites on the branch tip.

Colour: Colonies are dark brown, usually with white coenosteum ridges and branch tips.

Similar Species: *M. confusa*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Shallow reef slopes and rocky foreshore regions.



Genus *ANACROPORA* Ridley, 1884

Characters: Colonies are arborescent with thin tapered branches, without axial corallites. All corallites are radial and are small and immersed. Septa are in two cycles with inward projecting teeth. Columellae are absent. Corallite walls and the coenosteum are porous, without elaborations. Corallites often have projecting lower lips, which may develop into prominent spines. Polyps are widely spaced and small, with fine tentacles commonly extended during the day.

Similar Genus: *Montipora* and *Acropora*.



23. *Anacropora reticulata* Veron and Wallace, 1984

Characters: Branches are widely spaced, less than 10 mm thick and tapered, with blunt tips. The coenosteum is composed of fine rows of fused spinules forming a reticulate pattern. Corallites have prominent lower lips aligned in rows towards base.

Colour: Pale brown with white branch tips

Similar Species: *A. forbesi*.

Distribution: Throughout Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in soft bottom, protected lagoon or occur between the boulder corals. It is a new record to Indian waters.



Genus *ACROPORA* Oken, 1815

Acropora is the largest reef building corals and recorded around 170 species worldwide. 70 species are so far recorded from Indian waters of which two species from Gulf of Kachchh, 15 from Lakshadweep, 13 species from Gulf of Mannar and Palk Bay and all 70 species have been recorded from Andaman & Nicobar Islands.

Characters: *Acropora* is one the confusing genus for taxonomist, as it has much type of growth forms viz. Digitate, Arborescent, Corymbose, Sub massive and Table. Colonies have two types of corallites such as Axial and Radial corallites. The Radial corallites have shapes and arranging patterns, which are of taxonomical importance. Corallites are usually small with dimidiate openings. Columellae are absent. Corallite walls and the coenosteum are porous. Mostly polyps extend during night. *Acropora* corals are usually seen in shallow reef and high wave reef flat areas with bright light environment. The Genus *Acropora* is poorly reviewed in Gulf of Kachchh, but in other three reef regions especially in Andaman it has been well represented.



Similar Genus: *Anacropora* but *Anacropora* does not have axial corallites.



24. *Acropora abrotanoides* (Lamarck, 1816)

Description: Colonies are arborescent table consist of highly prostrate branches with upwardly projecting pointed ends. Radial corallites are two types arranged uniformly, the long tubular corallites

Colour: Dark greenish grey with pale axial corallite.

Similar Species: *A. robusta*.

Distribution: Tropical Indo-Pacific (Chagos, Tahiti and Australia), Lakshadweep and Andaman and Nicobar Islands.

Remarks: Found in highly wave exposed areas.



25. *Acropora anthocersis* (Brook, 1893)

Description: Colonies are thick corymbose to encrusting plates. Branchlets are short and thick and may be almost encrusting in strong wave action areas. Axial or incipient axial corallites are numerous in per branchlet. Radial corallites are strongly appressed, with thick walls and are arranged in a rosette.

Colour: Colonies are a mixture of colours, blue, purple and grey being the most common.

Similar Species: *A. hyacinthus*.

Distribution: Throughout the Indo-Pacific (West of Madagascar to Coral Sea) and Andaman and Nicobar Islands.

Remarks: Mostly found in upper reef slope, where exposed to high wave action.



26. *Acropora aspera* (Dana, 1846)

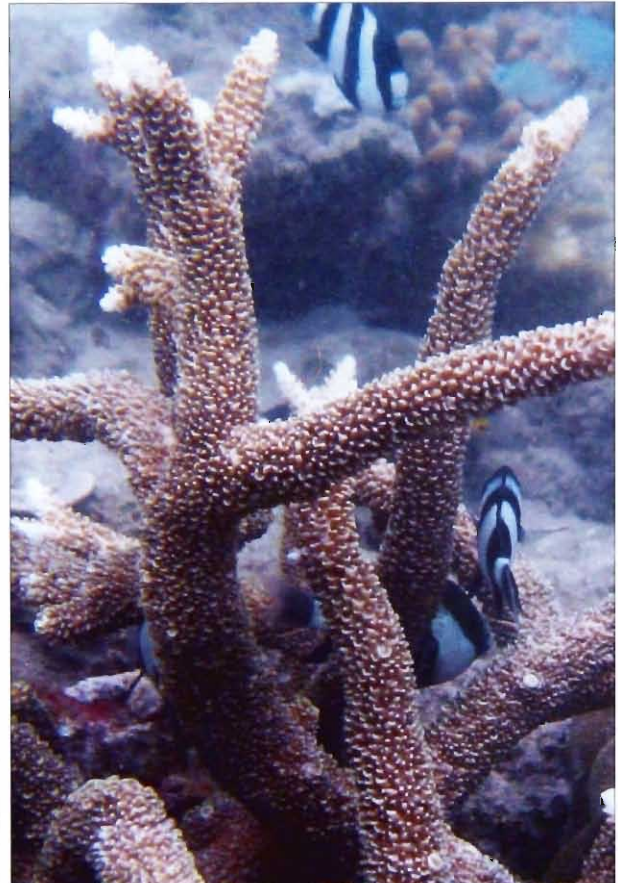
Description: Colonies are upright branches with thick encrusting bases. Axial corallites slightly exerted. Crowded radial corallites in two sizes. Radial corallites have prominent lower lips giving a scale like appearance.

Colour: Colonies are bright blue and cream in colour.

Similar Species: *A. millepora* and *A. pulchra*.

Distribution: Worldwide (Cocos-Keeling Islands, Western Australia) and Central Indo-Pacific Islands; India: Lakshadweep and Andaman and Nicobar Islands.

Remarks: Short or young colonies, confuse with *A. millepora*. Mostly found on sandy bottom.



27. *Acropora austera* (Dana, 1846)

Description: Colonies are open, arborescent to caespitose. Axial corallites are big, dome shaped and thick walled. Radial corallites are rounded. End of the secondary branches having numerous young branchlets.

Colour: Colour of the colony is cream and green.

Similar Species: *A. florida*.

Distribution: Tropical Indo-pacific (Madagascar, Marshall Islands and Great Barrier reef) and Andaman and Nicobar Islands.

Remarks: Occur on upper reef slope (5< m depth).



28. *Acropora brueggemanni* (Brook, 1893)

Description: Colonies are arborescent with cylindrical-shaped and tapering branches of varying length one or more immersed axial corallites. Radial corallites are evenly sized, mostly not touching, short conical or tubular appressed with round openings.

Colour: Greenish brown with pale tips.

Similar Species: *A. tofianensis*

Distribution: Central Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Colonies can occur as isolated clumps or extensive thickets that sometimes dominate in reef edges.



29. *Acropora carduus* (Dana, 1846)

Description: Colonies are hispidose, forming thickets with contorted upright or prostrate main branches. Radial corallites are long and uniform, scattered on branches, not touching, appressed tubular with round, oval or nariform openings. Branches are evenly spaced axial corallites are small and exert.

Colour: Pale brown or pale blue.

Similar Species: *A. subglabra* and *A. longicyathus*.

Distribution: Western Pacific, Mauritius, Japan, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found in protected sandy bottom is the characteristics feature of this species.



30. *Acropora caroloniana* Nemenzo, 1976

Description: Colonies are corymbose to caespito-corymbose, thick horizontal paltes composed of prostrate and short branchlets. Branchlets have large, usually tapering, axial and incipient axial corallites curving upwards. Radial corallites are mostly scattered, not touching appressed tubular with round to nariform openings.

Colour: Whitish brown or pale blue

Similar Species: *A. granulosa*.

Distribution: World: Indonesia, Philippines, Papua New Guinea and Great Barrier Reef; Inida: Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



31. *Acropora cerealis* (Dana, 1846)

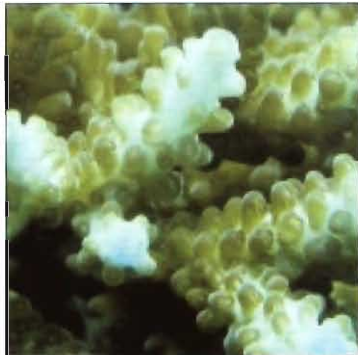
Description: Colonies are corymbose with interlocking branches. Branches are thin and widely spaced with most of their width occupied by corallites. Axial corallites are tubular prominent but not exert. Radial corallites are tubular and slightly appressed, become nariform in near branch tips.

Colour: Colonies are pale brown colour.

Similar Species: *A. nasuta* and *A. secale*.

Distribution: Throughout the Indo-Pacific and Andaman and Nicobar Islands Islands.

Remarks: In a same colony may have different types of radial corallite arrangements in different branches viz. arrange in row or irregularly



32. *Acropora chesterfieldensis* Veron and Wallace, 1984

Description: Colonies are digitate clumps, forming large stands. Branches divide irregularly. All corallites are rounded, with thick walls arranged irregularly. Axial and incipient axial corallites are large and dome-shaped with dimidiate openings. Radial corallites are short and suppressed.

Colour: Dark brown in deep water and Pale brown in shallow depth.

Similar Species: *A. ocellata*.

Distribution: Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Common in the Chesterfield reefs and Norfolk Islands.



33. *Acropora clathrata* (Brook, 1891)

Description: Colonies are table or plate like with horizontally radiating branches. Radial corallites evenly sized, branches are arranged closely. Axial corallites are prominent but not exert. There is usually no development of vertical branches.

Colour: Colonies are greenish brown, often with pale margins in colour.

Similar Species: *A. glauca*.

Distribution: Tropical Indo-Pacific, La Raunion, Taumotu Archipelago and Andaman and Nicobar Islands.

Remarks: Found in upper reef slopes.



34. *Acropora cophodactyla* (Brook, 1892)

Description: Colonies are digitate bushes with an encrusting base. Branches are thick, tapering to a conspicuous and tubular axial corallite. Radial and incipient axial corallites are of mixed sizes and are irregularly distributed.

Colour: Colonies are pale brown colour.

Similar species: *A. appressa*.

Distribution: Indo-Pacific to Japan and Andaman and Nicobar Islands.

Remarks: Exposed to upper reef slopes and flats.



35. *Acropora copiosa* Nemenzo, 1967

Description: Colonies are clumps of prostrate or upright branches. They have irregular branching patterns with frequent sub-branches. Axial corallites are small. Radial corallites are crowded, tubular, appressed, and are irregular in size and shape.

Colour: Brown and pinkish brown

Similar Species: *A. formosa* and *A. microphthalma*.

Distribution: Indo-Pacific, Madagascar, Japan and Andaman and Nicobar Islands.

Remarks: Shallow and protected environments.



36. *Acropora cytherea* (Dana, 1846)

Description: Colonies are wide and thin flat table. Branches are curved upward with projecting branchlets have exert axial corallites. Radial corallites evenly sized, with elongate upwardly pointing lips with nariform openings. Polyps are frequently extended during the day.

Colour: Colonies are uniform pale cream, brown or blue in colour.

Similar Species: *A. hyacinthus*.

Distribution: Tropical Indo Pacific (Mascarene Archipelago, Tahiti, Hawaii and Great Barrier Reef, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands)

Remarks: Mostly found in Sub-tidal reef slope and forming colonies up to 5 m diameter.



37. *Acropora digitifera* (Dana, 1846)

Description: Colonies are digitate and corymbose. Axial corallites are dome shaped with dimidiate openings. Radial corallites are tubular, slightly upraised with small openings. Branches are short and arranged very closely making colony tight.

Colour: Dull brown and cream branch lips.

Similar Species: *A. monticulosa* and *A. humilis*.

Distribution: Throughout indo-Pacific (Madagascar, Samoa and Great Barrier Reef, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands)

Remarks: Mostly seen in reef flat areas.



38. *Acropora divaricata* (Dana, 1846)

Description: Colonies have wide range of growth forms like divergent branching pattern within a bracket or solid plates to cushions. Flat branches end with curved tapered edge. Axial corallites are dome shaped, prominent with thick walled. Radial corallites are all similar and are usually aligned along branches.



Colour: Colonies are usually greenish or purple in colour.

Similar Species: *A. solitaryensis*.

Distribution: Throughout the Indo-Pacific, Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Seen in the upper reef slope, lagoons and fringing reef.



39. *Acropora echinata* (Dana, 1846)

Description: Colonies are hispidose, forming thickets. All corallites are elongate and tubular. Axial corallites are prominent, which are radiating perpendicularly from main branches. Radial corallites are evenly sized, appressed tubular with broad round and nariform openings.

Colour: Colonies are dark brown with purple or yellow lips.

Similar Species: *A. subglabra*.

Distribution: Indo-Pacific (Maldives Islands, Marshall Islands and Samoa, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Branches are very delicate, so mostly found in deep where no much water movements.

40. *Acropora efflorescens* (Dana, 1846)

Description: Colonies are solid plates by highly fused irregular branches. Axial and radial corallites are same, and all are have sharp rims. Plates are mostly horizontal. Corallites are crowded on the periphery than centre of the colony.

Colour: Dark grey.

Similar Species: *A. clathrata*.

Distribution: Maldives to Samoa and Andaman & Nicobar Islands.

Remarks: Found in Steep reef slope.

41. *Acropora florida* (Dana, 1846)

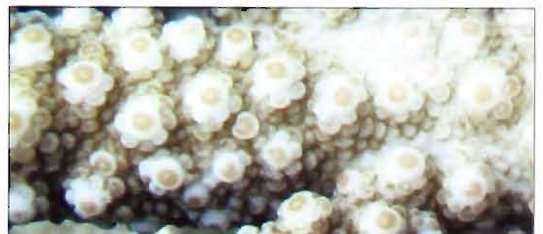
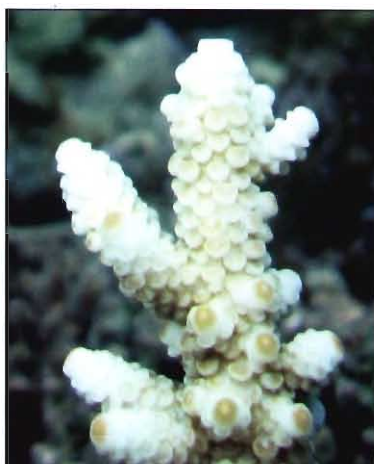
Description: Colonies are sub-arborescent consist of thick upright branches covered with short branchlets. Corallites are even in size and distribution, lamellate with thickened rounded lower lips. Axial corallites are dome shaped, thick walled with dimidiate openings.

Colour: Colonies are bright green and cream in colour.

Similar species: *A. austera*.

Distribution: Tropical Indo-Pacific (Maldives Islands, Marshall Islands, Great Barrier Reef and Andaman and Nicobar Islands).

Remarks: Found on upper reef slope.



42. *Acropora formosa* (Linnaeus, 1758)

Description: Colonies are arborescent, highly branched and forming thickets. Radial corallites are of mixed size and distributed irregularly. Axial corallites are slightly exerted. Branches are thin and tapered.

Colour: Colonies are cream and brown with pale branch ends.

Similar Species: *A. nobilis* and *A. grandis*.

Distribution: Throughout tropical Indo-Pacific (Madagascar, Marshall Islands, Phoenix Islands and Andaman and Nicobar Islands).

Remarks: Found as huge colony in outer reef slope areas.



43. *Acropora forskali* (Ehrenberg, 1834)

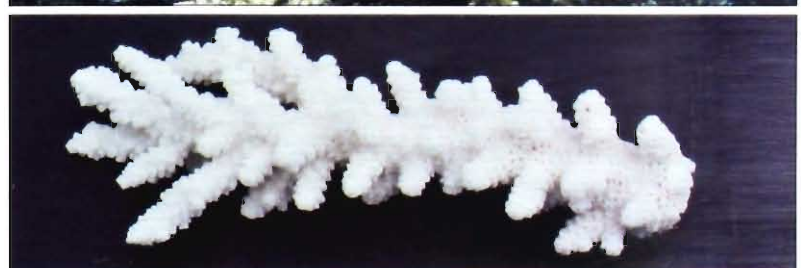
Description: Colonies consist of open branches and twisted into irregular shapes. Axial corallites occur on branch sides, exert, thick walled. Radial corallites are arranged in rows and are immersed to tubular; giving branch surfaces a rough appearance.

Colour: Colour of the colony is pale cream, pale green.

Similar Species: *A. florida* and *A. austera*.

Distribution: Madagascar, Red Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow reefs



44. *Acropora gemmifera* (Brook, 1892)

Description: Colonies are digitate to corymbose; branches are thick with tapering end. Axial corallites are small, radial corallites are arranged in rows; large corallites in base of the branch will become small and round near axial.

Colour: Colonies are pinkish in colour.

Similar Species: *A. humilis* and *A. monticulosa*.

Distribution: Red sea, New Caledonia Fiji, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Often found on reef flat area.



45. *Acropora glauca* (Brook, 1893)

Description: Colonies semi circle highly fused flat tables with irregular upright branches. Axial corallites and radial corallites have similar shape and size. Axial corallites are elongate and tubular. Radial corallites are evenly distributed, equal shapes and size, appressed rounded tubular with large round openings.

Colour: Colonies are pale pink with white corallite end.

Similar Species: *A. solitaryensis*.

Distribution: South East Asia, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Occur in rocky foreshore areas.



Source: Venkataraman et al., 2003

46. *Acropora globiceps* (Dana, 1846)

Description: Colonies are digitate and usually small. The size and shape of branches depends on wave action, but are always short and compacted. Corallites are irregular in size, those colonies on reef slopes are tubular, and those on reef flat colonies are more immersed. Axial corallites are small and sometimes indistinguishable, radial corallites are irregular in size and distribution.

Colour: Blue

Similar Species: *A. gemmifera* and *A. humilis*.

Distribution: Sub tropical Indo-pacific regions and Andaman and Nicobar Islands.

Remarks: Colonies exposed to strong wave action have pyramid shaped branchlets.



47. *Acropora grandis* (Brook, 1892)

Description: Colonies are highly arborescent, stag horn like. Axial corallites are slightly exserted and tubular. Radial corallites are two types those are near to branch tips, long and tubular and appressed towards base of the branch.

Colour: Pale blue or pale brown.

Similar Species: *A. nobilis*.

Distribution: Throughout Indo-Pacific (Philippines, Samoa, Great Barrier Reef and Andaman and Nicobar Islands).

Remarks: Found on sandy bottom.



Source: Venkataraman et al., 2003

48. *Acropora granulosa* (Milne Edwards and Haime, 1860)

Description: Colonies are semicircular plates, composed of regularly spaced horizontal branches with short upright branchlets. Radial corallites are of two sizes. Axial corallites are tubular and rounded with many incipient axial corallites. Corallites of the main branches are mostly sub-immersed.

Colour: Pale pink and cream with pale blue axial corallites.

Similar Species: *A. loripes* and *A. caroliniana*.

Distribution: Tropical Indo-Pacific (Reunion, Tahiti, Lakshadweep and Andaman and Nicobar Islands).

Remarks: Found in vertically descending reef slopes.



49. *Acropora hemprichii* (Ehrenberg, 1834)

Description: Colonies are irregular arborescent. Axial corallites are conical with dimidiate openings. Radial corallites are round, tick walled and not uniform. Incipient axial corallites are numerous, secondary branches are slightly curved towards axial.

Colour: Colonies are cream with yellowish axial corallites.

Similar Species: *A. parahemprichii*.

Distribution: Red Sea, East coast of Africa, Maldives, Sri Lanka, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Mostly found in submerged patchy reefs.



50. *Acropora horrida* (Dana, 1846)

Description: Colonies are arborescent with open branches. Axial corallites are prominent, but not exert, incipient axial corallites are many around the axial corallite. Radial corallites are irregular and mixture of size. Branches are thin and usually slightly curved. Tentacles are usually extended during the day.

Colour: Colour usually pale pink, polyps are pale blue or white.

Similar Species: *A. tortuosa* and *A. vaughani*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Main branches of colonies in turbid water have irregular branchlets; those in shallow clear water have compact branchlets, giving colonies a bushy appearance.



51. *Acropora humilis* (Dana, 1846)

Description: Colonies are corymbose. Axial corallites are dome shaped with tick wall, radial corallites are in two size, the small corallites are situated towards axial corallites and arranged in rows, the big corallites are arranged irregularly at the bottom. The new branches are often coming from middle of the branch. Branches are not compact.

Colour: Cream and brown with pinkish tips.

Similar Species: *A. gemmifera*.

Distribution: Throughout the Tropical Indo-Pacific, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Sturdy, digitate colonies with large axial corallites and uniform radial corallites are distinguishable feature to identify this species in underwater.



52. *Acropora hyacinthus* (Dana, 1846)

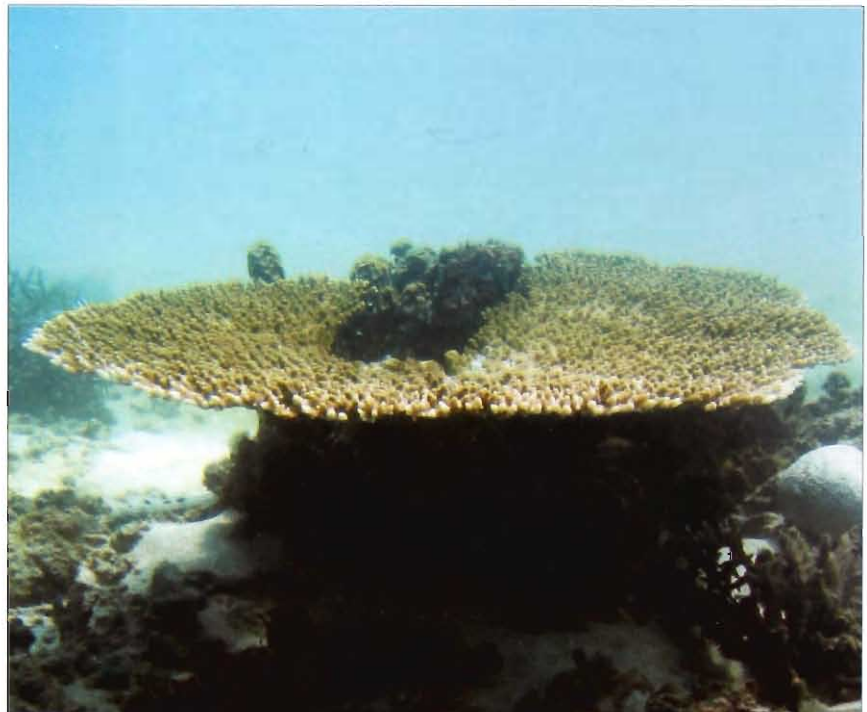
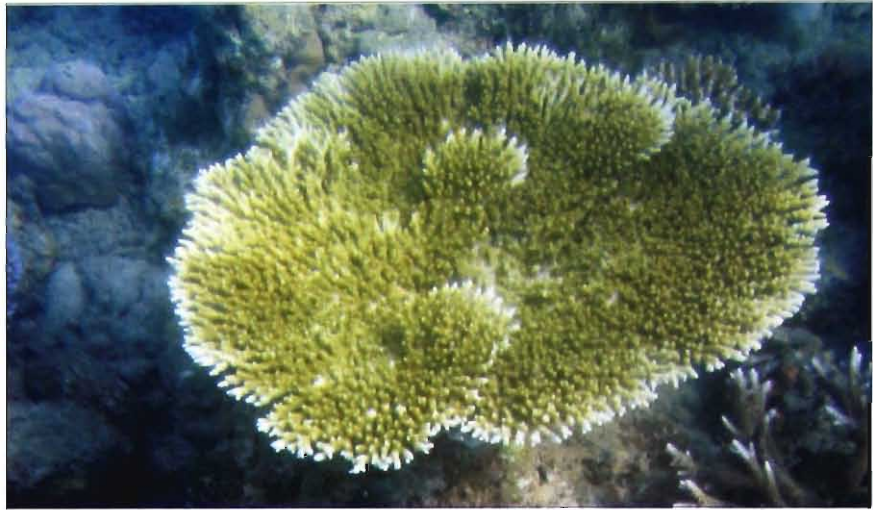
Description: Colonies are wide and flat, which are thin and finely structured. Periphery of the colony lined by pale colour as growing young corallites on the edge. Axial corallites are small and not exerted. Radial corallites are nariform shape but very small. The branches are small and attached by a sub-basal plate.

Colour: Colonies are green or cream with pinkish line on the border.

Similar Species: *A. cytherea*.

Distribution: Throughout the Indo-Pacific, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Occur in gradual reef slopes.



53. *Acropora kosurini* Wallace, 1994

Description: Colonies are corymbose clumps with long tapering branches. Axial corallites are dome shaped with thick walls. Radial corallites are strongly appressed and have nariform openings. Two types of radial corallites, large and small and uniformly spaced.

Colour: Colonies are brown.

Similar Species: *A. variabilis*.

Distribution: Philippines, western side of the Australia and Andaman and Nicobar Islands.

Remarks: Occur in Shallow reef environment.

54. *Acropora latistella* (Brook, 1892)

Description: Colonies are corymbose plates with side attachment. Branchlets are thin and delicate, straight or uniformly curved. Axial corallites are usually distinctive. Radial corallites are tubular turned outward, slightly appressed and have rosette arrangement, are usually in rows.

Colour: Colonies are pale brown.

Similar Species: *A. subulata*.

Distribution: Indo-Pacific (South East Asia, Great Barrier Reef and Andaman and Nicobar Islands).

Remarks: Mostly occur in all reef environments.

55. *Acropora loisettae* Wallace, 1994

Description: Colonies are arborescent with thin straight cylindrical branches. Axial corallites are highly exsert and tubular. Radial corallites are rasp-like.

Colour: Greenish blue.

Similar Species: *A. pulchara*.

Distribution: South East Asia including Andaman and Nicobar Islands.

Remarks: Found in protected lagoons.

56. *Acropora longicyathus* (Milne Edwards and Haime, 1860)

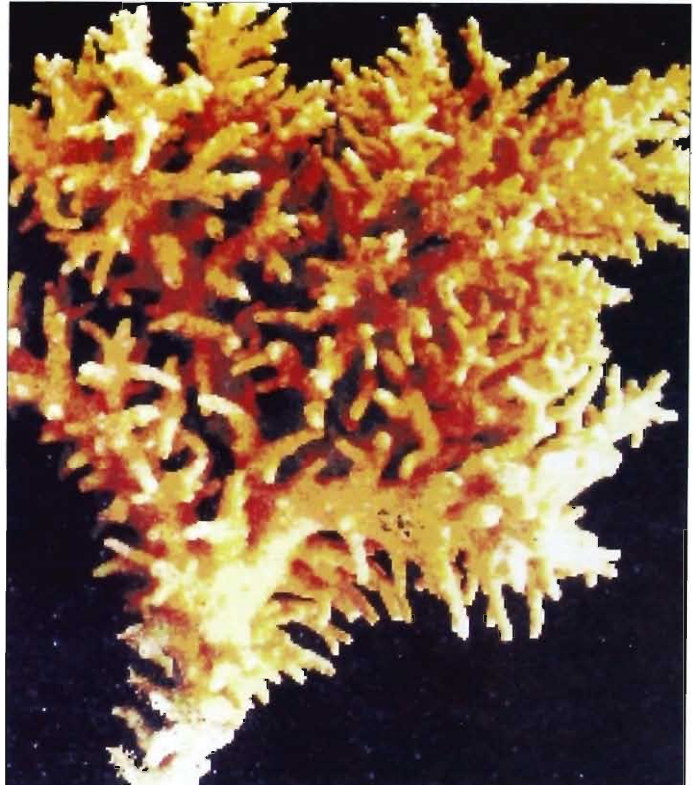
Description: Colonies are sub-arborescent, hispidose, with upright main branches. Corallites are tubular with round calices. Axial corallites are undistinguishable with radial corallites. Radial corallites are evenly sized, scattered on branches, appressed or partially appressed tubular with round openings.

Colour: Colonies are usually uniform pale to dark brown.

Similar Species: *A. subglabra*.

Distribution: Throughout Indo-pacific to Coral Sea including Andaman and Nicobar Islands.

Remarks: Occasionally seen in blue colour also.



Source: Venkataraman et al., 2003

57. *Acropora loripes* (Brook, 1892)

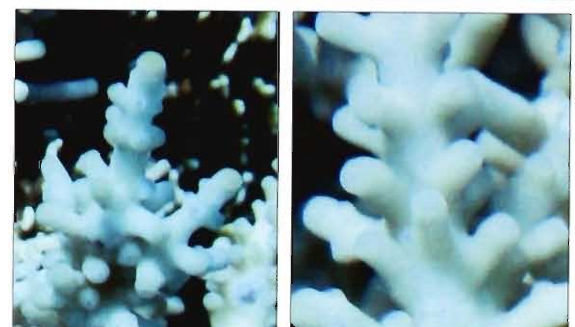
Description: Colonies have many growth forms, usually bottlebrush or plate like. Corallites are tubular, may have thickened walls becoming tubular. Axial corallites are tubular and thick walled. Radial corallites are tubular and pocket like, and present only on upper side or only one side of the branch.

Colour: Colonies are pinkish brown and corallites are dark brown colour.

Similar Species: *A. longicyathus* and *A. granulosa*.

Distribution: Throughout Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Mostly found on the upper reef slope.



58. *Acropora lutkeni* Crossland, 1952

Description: Colonies are corymbose plates with thick tapering branches. Axial corallites are rounded thick walled and not much larger than radial corallites but prominent. Radial corallites are irregular and mixture of size but are characteristically thick walled with rounded margins.

Colour: Colonies are pale brown.

Similar Species: *A. polystoma*

Distribution: Throughout the Indo-Pacific up to Coral Sea and Andaman and Nicobar Islands.

Remarks: Branches have incipient axial corallites and branchlets developing towards their base.



Source: Venkataraman et al., 2003

59. *Acropora microclados* (Ehrenberg, 1834)

Description: Colonies are corymbose plates with thick tapering branches and curved upward to a uniform height. Axial corallites are big, tubular and exerted. Radial corallites are uniform in size. Incipient axial corallites are common. Radial corallites are strongly appressed and arranged in roseate.

Colour: Colonies are pale brown and cream colour.

Similar Species: *A. cytherea*.

Distribution: Indonesia to Coral Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in upper reef slope areas.



60. *Acropora microphthalmalma* (Verrill, 1859)

Description: Colonies are arborescent, tapering and open branches and forming thickets. Sub-branches occur at irregular intervals. Corallites are numerous and small. Axial corallites are exert, radial corallites are small, tubular suppressed and of similar size.

Colour: Colonies are cream in colour.

Similar Species: *A. formosa*.

Distribution: Throughout Indo-Pacific (From west Madagascar, east to Marshall Islands and north to Ryukyu Islands), Lakshadweep, Gulf of Kachchh and Andaman and Nicobar Islands.

Remarks: Found in protected lagoons.



61. *Acropora millepora* (Ehrenberg, 1834)

Description: Colonies are corymbose to tabular. Axial corallites are prominent but not exert, wall are thick with bright colour. Radial corallites are uniform in size and have prominent lower lips giving scale like appearance to colony.

Colour: Colonies are bright green with bright yellow or pink lining on the corallite tips.

Similar Species: *A. aspera* and *A. pulchra*.

Distribution: Widely distributed in Tropical Indo-Pacific (Marshall Islands, Tonge, west Australian coast, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Found on shallow and sandy bottom.



62. *Acropora mirabilis* (Quelch, 1886)

Description: Colonies are corymbose plates. Branchlets are tall, straight and tapered. Axial corallites are prominent with thick wall but not exert. Radial corallites are short and uniform in size arranged in rows.

Colour: Colonies are cream colour.

Similar Species: *A. lotistella* and *A. dendrum*.

Distribution: Red Sea, East Madagascar, Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found on wave exposed reef flats.



63. *Acropora monticulosa* (Bruggemann, 1879)

Description: Colonies are digitate with thick conical branches. Base of the branches are broad square or rectangle. Axial corallites are similar to radial corallites, immersed. Radial corallites are uniform and arranged in rows with rounded diminutive openings, corallites are tubular slightly appressed towards base of the branch.

Colour: Colour of the colonies is green and creamy.

Similar Species: *A. gemmifera*.

Distribution: Throughout the Indo-pacific including Andaman and Nicobar Islands.

Remarks: *A. monticulosa* is most common in habitats where exposed to high water movement and strong wave action reefs.



64. *Acropora multiacuta* Nemenzo, 1967

Description: Colonies are corymbose or caespitico-corymbose. Branches are extremely elongated and tapered. Axial corallites are tubular and prominent. Radial corallites are very few numbers, nariform openings and appressed.

Colour: Cream and pale pink.

Similar Species: *A. suharsonoi*.

Distribution: Reported worldwide (Indonesia, Philippines, Papua New Guinea, Solomon Islands, Great Barrier Reef and Andaman and Nicobar Islands).

Remarks: This species is seen very rarely. Colonies are always grouping together. Mostly located in reef fronts.



Source: Venkataraman et al., 2003

65. *Acropora nana* (Studer, 1878)

Description: Colonies are compact clumps of long, tapering, straight, branchlets radiating from a solid base. Axial corallites are tubular with rounded margins and prominent. Radial corallites are long, tubular and strongly appressed. The whole colony is delicate and branchlets readily break apart.

Colour: Cream, blue or purple, usually with purple branch tips.

Similar Species: *A. valida* and *A. azurea*.

Distribution: Tropical Indo-Pacific, Eastern Madagascar and Andaman and Nicobar Islands.

Remarks: Outer reef areas where the strong current and wave action.



66. *Acropora nasuta* (Dana, 1846)

Description: Colonies are corymbose sometime forming small tables with tapering branches. Axial corallites are small and prominent. Radial corallites are uniform size and arranged in neat rows with flaring lips.

Colour: Colonies usually cream with bright pink or purple corallite ends

Similar Species: *A. valida* and *A. cerealis*.

Distribution: Widely distributed in Indo-Pacific (From Red Sea to East Tahiti, Lakshadweep and Andaman and Nicobar Islands).

Remarks: Colonies have many colour variations like cream or pale brown with blue or greenish-brown with purple or blue corallites in colour according to depth gradient.



67. *Acropora nobilis* (Dana, 1846)

Description: Colonies are arborescent branches, stag horn like. Axial corallites are large and exerted. Radial corallites are arranged irregularly and are in two size; tubular appressed, and small nariform. Branches are thin and elongate, new branches are numerous at the axial.

Colour: Creamy white branches with pale blue axial corallites.

Similar Species: *A. muricata* and *A. grandis*.

Distribution: Throughout Indo-Pacific to Coral Sea including Andaman and Nicobar Islands.

Remarks: Commonly seen in deep sandy lagoon and on upper reef slope.



68. *Acropora palifera* (Lamarck, 1816)

Description: Colonies are sturdy digitate branches with encrusting base. No exact axial corallite, radial corallites are large, dimidiate openings and thick walled. The coenosteum is composed of fine spinules with elaborated tips.

Colour: Pale cream, brown in colour.

Similar Species: *A. palmerae*.

Distribution: Throughout the tropical and subtropical Indo-Pacific, (From Madagascar and Diego Garcia in the west to Marshall Islands, Samoa in the east, Lakshadweep and Andaman and Nicobar Islands).

Remarks: In highly wave exposed and current area, colony will be short and highly curved. In confined areas colonies are straight with thick upright branches.



69. *Acropora palmerae* Wells, 1954

Description: Colonies are encrusting to form short and irregular columns. There is no particular axial corallite. Radial corallites are rasp-like sometimes round and thick walled with dimidiate openings.

Colour: Colonies are greenish brown, upright columns are pale in colour.

Similar Species: *A. palifera*, *A. robusta* and *A. danai*.

Distribution: Marshall Islands, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in shallow reef regions and reef fronts.



70. *Acropora paniculata* Verrill, 1902

Description: Colonies are large plates with inter locking branches. Branchlets are short and compact. Axial and incipient axial corallites are crowded in upper surface; axial corallites are long and thin. Radial corallites are immersed in lower branchlets.

Colour: Cream grey or blue.

Similar Species: *A. jacuquelineae*.

Distribution: Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in upper reef slopes

71. *Acropora papillare* Latypov, 1992

Description: Colonies are clumps of irregular branches on thick encrusting bases. Axial corallites are small, thick walled and prominent. Radial corallites are uniform size and have prominent lower lips giving a scale like appearance.

Colour: Colonies are brown or blue with yellow or pink flaring lips.

Similar Species: *A. aspera* and *A. abrotanoides*.

Distribution: West and Eastern Australia and Andaman and Nicobar Islands.

Remarks: Mostly found in inter-tidal reef flats.



72. *Acropora pharaonis* (Milne Edwards and Haime, 1860)

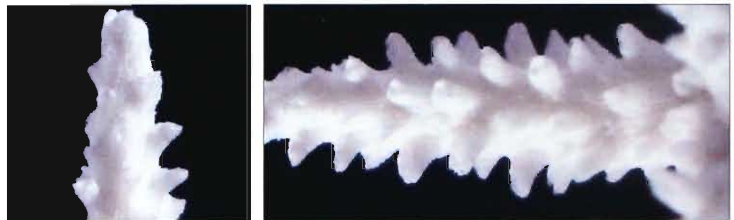
Description: Colonies are large horizontal tables with upright interlinked contorted branches. Branches are pointed and have short branchlets from main branches. Axial corallites are small and incipient axial corallites are abundant giving branches a spiny appearance. Radial corallites are appressed, with nariform openings.

Colour: Grey, brown and usually with pale branch tips.

Similar Species: *A. clathrata*, *A. plumose* and *A. parapharaonis*.

Distribution: Red Sea, Madagascar, Maldives, Sri Lanka and Andaman and Nicobar Islands.

Remarks: Sheltered reef slopes.



73. *Acropora plantaginea* (Lamarck, 1816)

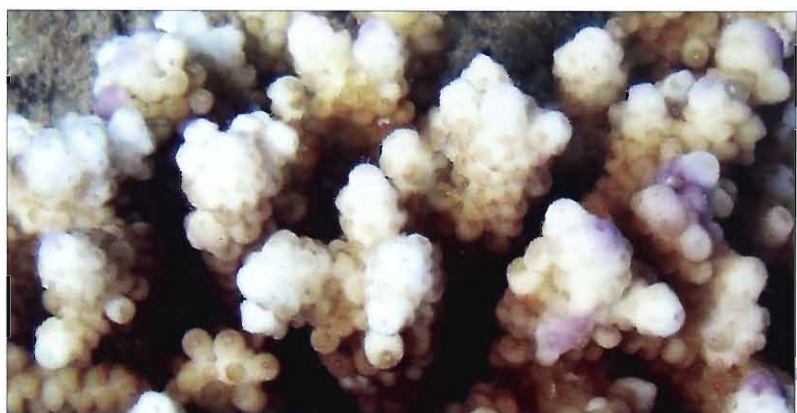
Description: Colonies are small and corymbose, forming compact bushes. Axial corallites are dome-shaped and short with bright colour. Radial corallites are thick walled, short, smooth surface and are arranged irregularly. New branches arise just below the axial corallite.

Colour: Colour, brownish-yellow branches end with pink axial polyp.

Similar Species: *A. squarrosa*.

Distribution: Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Mostly found in reef flat areas and confined reef slopes.



74. *Acropora polystoma* (Brook, 1891)

Description: Colonies are irregular corymbose plates with tapered branches of similar length and shape. Axial corallites are small, tubular and exert. Radial corallites are tubular, elongate and arranged in rows down branchlet sides and giving colonies a spiny appearance.

Colour: Cream, blue or yellow.

Similar Species: *A. massawensis*.

Distribution: Throughout Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Locate only in confined reef areas.



75. *Acropora proximalis* Veron, 2002

Description: Colonies are arborescent, irregularly branched. Branches are fine and mostly straight. Sometime they do not have corallites in under surface. Axial corallites are small. Radial corallites are elongate and strongly appressed.

Colour: Greyish brown.

Similar Species: *A. inermis*.

Distribution: Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow reef environments.

76. *Acropora pulchra* (Brook, 1891)

Description: Colonies are arborescent with short upturned branches sometimes forms irregular clumps. They may form stands more than 5 meters across. Branches are short, thin and cylindrical. Axial corallites are exert and thick walled. Radial corallites prominent lower lips give scale like appearance.

Colour: Greenish brown or green with pink corallites tip.

Similar Species: *A. aspera* and *A. millepora*.

Distribution: Indo-Pacific (South East Asia, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands).

Remarks: Mostly found on reef flat and shallow habitats or inter reef flats.

77. *Acropora robusta* (Dana, 1846)

Description: Colonies are sub arborescent forming thickets and contorted branches with upturned ends at the periphery. Axial corallites are exert. Radial corallites are of mixed sizes and shapes but are generally rasp like (nariform openings). Branches from the central and peripheral part of the same colony have completely dissimilar shapes.

Colour: Colonies are bright green with deep-pink branch tips or dark brown.

Similar Species: *A. abrotanoides*.

Distribution: Red Sea to tropical Indo-Pacific; Chagos, Tahiti and Great Barrier Reef, Lakshadweep and Andaman and Nicobar Islands.

Remarks: There is much variation in growth forms depending on wave and current action.



78. *Acropora roseni* Wallace, 1999

Description: Colonies are prostrate; branches are mostly contorted turned upward. Branches from the central and peripheral parts of the same colony have dissimilar shapes. Axial corallites are only distinguishable on well defined peripheral branches. Incipient and radial corallites are undistinguishable, both are in different shapes and size turned different sides.

Colour: Pale greenish brown.

Similar Species: *A. irregularis* and *A. meridiana*.

Distribution: Western Madagascar and Andaman and Nicobar Islands.

Remarks: Upper reef slope exposed to high wave action.



79. *Acropora rudis* (Rehberg, 1892)

Description: Colonies are composed of large, prostrate branches. Axial corallites are dome shaped, thick walled with dimidiate openings. Radial corallites are seen in upper surface of the branches, hence lower surface is smooth. Radial corallites are of mixed size, all are round and thick walled, the small corallites are immersed between the large beads like corallites. Usually corallites are highly crowded, coenosteum is smooth.

Colour: Colonies are pale and brown cream colour.

Similar Species: *A. hemprichii*.

Distribution: Western side of Sri Lanka, Bangladesh, Western Thailand, Seychelles, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Large corallites and sturdy branches are characteristic feature identification of this species in-situ.



80. *Acropora samoensis* (Brook, 1891)

Description: Colonies are digitate and corymbose. Branches are thick and curved, slightly tapered end. Axial corallites are dome shaped, thick walls and bigger than radial corallites. Radial corallites are of two sizes, thick walled corallites crowded around axial corallites, and tubular towards base of the branch, arranged irregularly. Incipient axial corallites and branchlets develop towards the base of branches.

Colour: Purple and pale pink.

Similar Species: *A. humilis*.

Distribution: Throughout Indo-Pacific regions and Andaman and Nicobar Islands.

Remarks: This species is mainly seen in slope and crevices like areas, with side attachment.



81. *Acropora secale* (Studer, 1878)

Description: Colonies are corymbose with tapering branches. Axial corallites are small and tubular and prominent. Radial corallites are of mixed sizes, such as long tubular with round to nariform and shorter nariform and increasing length towards side of the branches.

Colour: Colonies are dark brown and cream in colour with pinkish radial corallites (not common).

Similar Species: *A. cerealis* and *A. nasuta*.

Distribution: Tropical Indo-Pacific (west to the Mauritius, east of Marshall Islands, Taumotu, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Mostly found in outer reef flat areas.



82. *Acropora selago* (Studer, 1878)

Description: Colonies are corymbose clumps. Branchlets are thin and delicate. Axial corallites are long and tubular. Radial corallites are a mixture of long tubular with round to nariform openings and shorter nariform, the two types often arranged in separate rows along the branches but do not form a rosette arrangement. Tentacles are frequently extended during the day.

Colour: Pale cream, brown, blue or pink.

Similar Species: *A. tenuis* and *A. insingnis*.

Distribution: Widely distributed in tropical Indo-Pacific (west to Mauritius and east to the Marshall Islands, Taumotu Archipelago, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Mostly found on the outer reef flat, reef front and reef flat areas.



83. *Acropora solitaryensis* Veron and Wallace, 1984

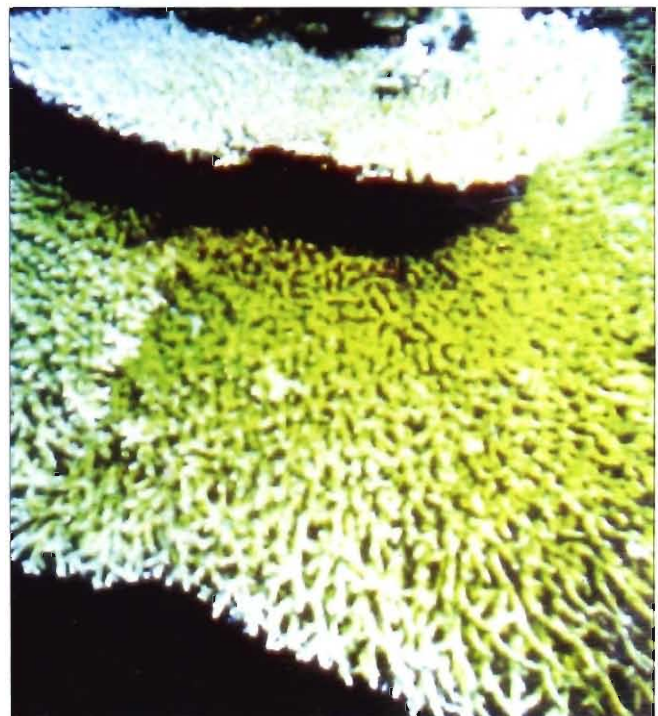
Description: Colonies are fused prostrate tables, with contorted upright branchlets may form solid plates in protected reefs. Axial corallites are tubular and prominent. Radial corallites are immersed on older parts of colonies, becoming tubular with nariform openings on growing parts.

Colour: Green and pale in shallow water.

Similar Species: *A. divaricata*.

Distribution: Throughout Indo-Pacific to Coral Sea including Andaman and Nicobar Islands.

Remarks: It is one of the well studied species in Indian Ocean.



Source: Venkataraman et al., 2003

84. *Acropora spicifera* (Dana, 1846)

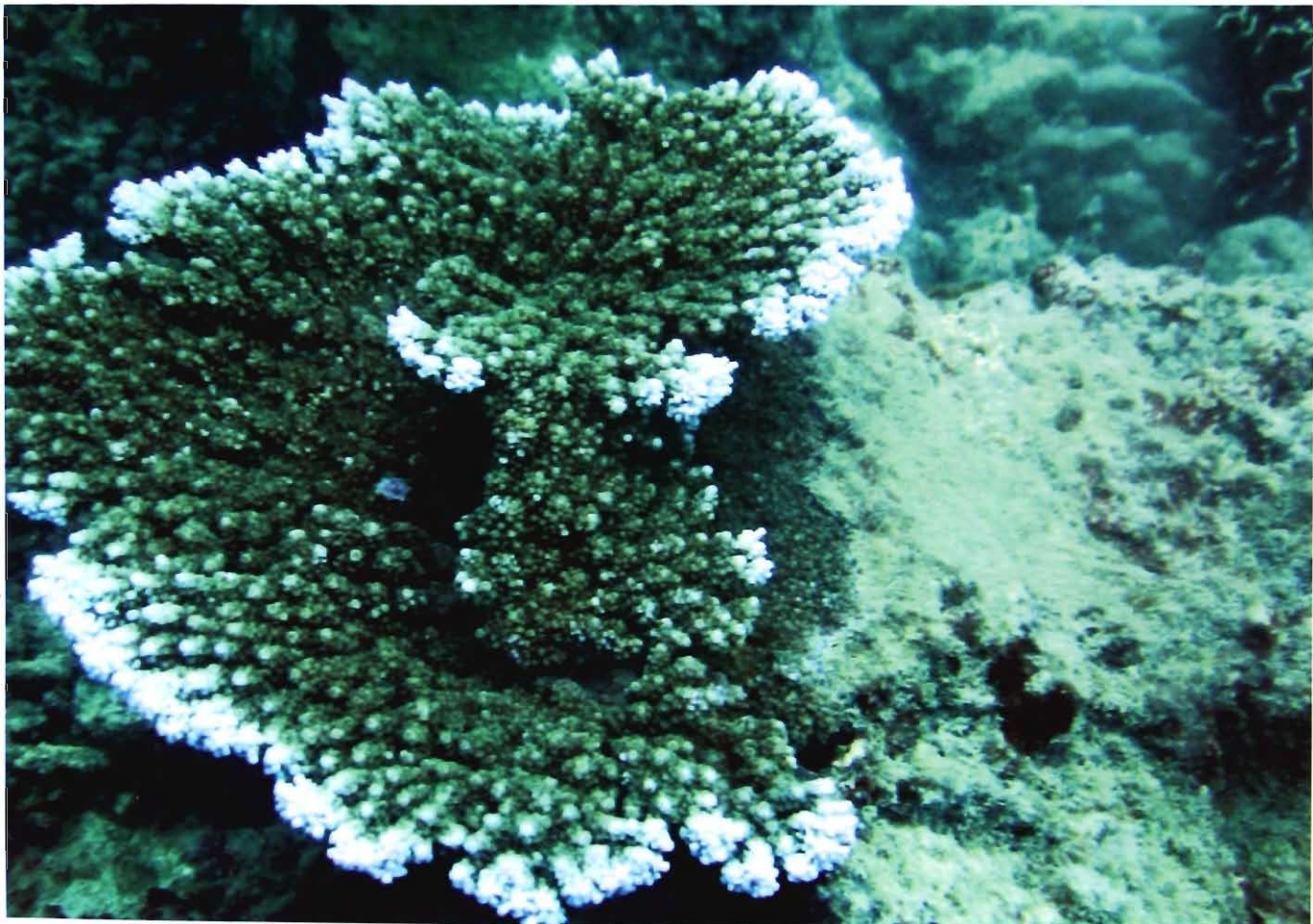
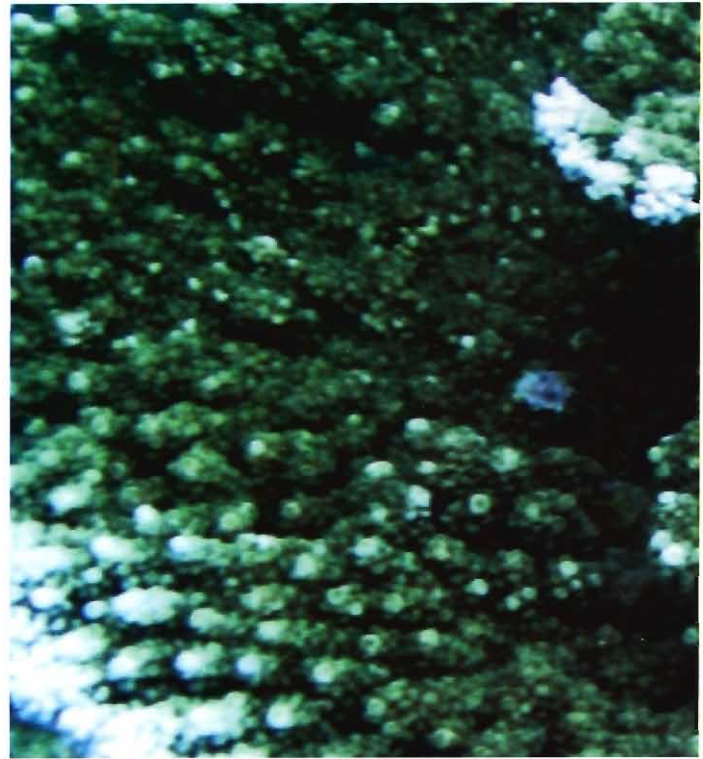
Description: Colonies are wide, flat, plates with lobed margins. Branches are outward projecting at the colony margins, but curved and tapered in other areas. Axial corallites are prominent, slightly exert. Radial corallites are immersed, nariform opening and have a rosette arrangement.

Colour: Grey or green, with pale margin on the periphery.

Similar Species: *A. hyacinthus* and *A. stoddarti*.

Distribution: Singapore, Indonesia, Japan, Western Australia and Andaman and Nicobar Islands.

Remarks: Found in gentle reef slope.



85. *Acropora squarrosa* (Ehernberg, 1834)

Description: Colonies are corymbose, branches are thin and finely structured and they become closely fused. Axial corallites are two times bigger than radial corallites, dome shaped, thick walled with dimidiate openings. Radial corallites are round towards branch end, which are present near axial corallite, small and immersed. Coenosteum is smooth.

Colour: Colonies are pale cream with bright purple spots on the tip.

Similar Species: *A. plantaginea*.

Distribution: Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Mostly seen in reef flat areas. Underwater it looks very brighter than any other corals as it has bright pale colour.



86. *Acropora subglabra* (Brook, 1891)

Description: Colonies are hispidose, forming thickets of intertwining branches. Branches are arranged irregularly, tapered with tubular exserted axial corallites and slightly upturned. Radial corallites are tubular and slightly appressed with nariform openings.

Colour: Colonies are pale brown with flaring tips.

Similar Species: *A. echinata* and *A. carduus*.

Distribution: Western Pacific, Ryukyu Islands, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: This species mostly found below 7 meter depth, where there is no much water movement.



87. *Acropora tenuis* (Dana, 1846)

Description: Colonies are corymbose clumps with neat evenly spaced branchlets. Axial corallites are tubular and distinctive. Radial corallites are uniform and have wide lower lips giving them a neat rosette with flaring lips.

Colour: Colonies are blue in colour with pinkish radial corallite lips.

Similar Species: *A. nasuta*.

Distribution: Indo-Pacific (Mauritius, Marshall Islands, Great Barrier Reef and Andaman and Nicobar Islands).

Remarks: It has much similarity with *A. nasuta*. But *A. nasuta* has slightly thick branchlets and radial corallites are arranged in neat rows do not form rosette.



88. *Acropora torresiana* Veron, 2002

Description: Colonies are digitate. Branches are uniform and straight or slightly curved. Sub branches are only formed near the base of main branches. Axial corallites are well dome shaped but, prominent. Radial corallites are short and tubular, of uniform size and are nearly arranged in rows down the sides of branches.

Colour: Pale brown with white corallite openings

Similar Species: *A. humilis*.

Distribution: Eastern Australia and Andaman and Nicobar Islands.

Remarks: Exposed upper reef slope and turbid areas.



89. *Acropora valenciennesi* (Milne Edwards and Haime, 1860)

Description: Colonies are open arborescent corymbose tables composed of horizontal widely spaced branches and upturned branch ends. Axial corallites are slightly exert. Radial corallites are uniform size and distributed evenly, towards branch base tubular with oval to nariform or dimidiate openings.

Colour: Mixture of brown, blue and green with pale branch ends in colour.

Similar Species: *A. hoeksemai*.

Distribution: Sri Lanka, Philippines, Great Barrier Reef, Gulf of Mannar and Andaman and Nicobar Islands.

Remarks: Mostly found on the reef slope areas and submerged reefs.



90. *Acropora valida* (Dana, 1846)

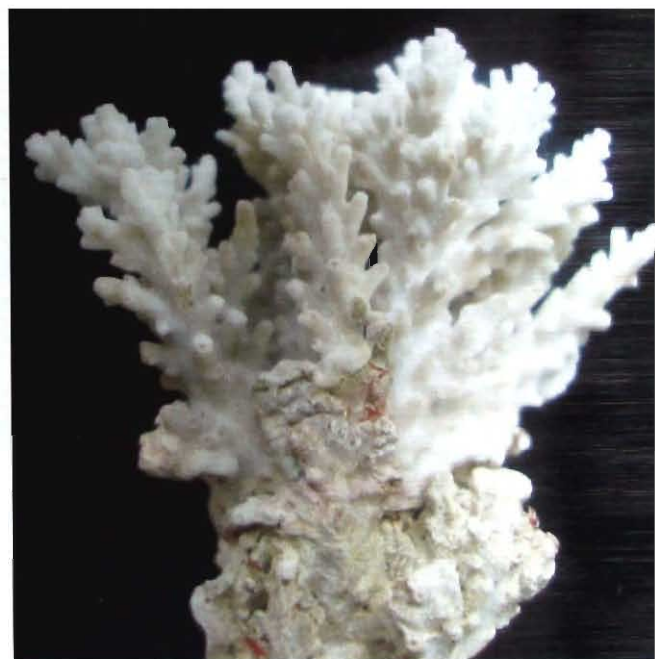
Description: Colonies have variable growth form encrusting to short tables, depending on water movements, mostly corymbose. Axial corallites are highly exert and crowded with incipient axial corallites. Radial corallites are mixture of sizes, often strongly appressed tubular, widely spaced. Branches are thin and arranged closely forming small shrubs like colony.

Colour: Cream brown or yellow sometimes brown with purple branch tips and cream corallites.

Similar Species: *A. nana* and *A. secale*.

Distribution: Tropical and sub-tropical Indo-Pacific, west to Red Sea, Eastern Hawaii, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in the outer reef and reef crest areas.



91. *Acropora variolosa* (Klunzinger, 1879)

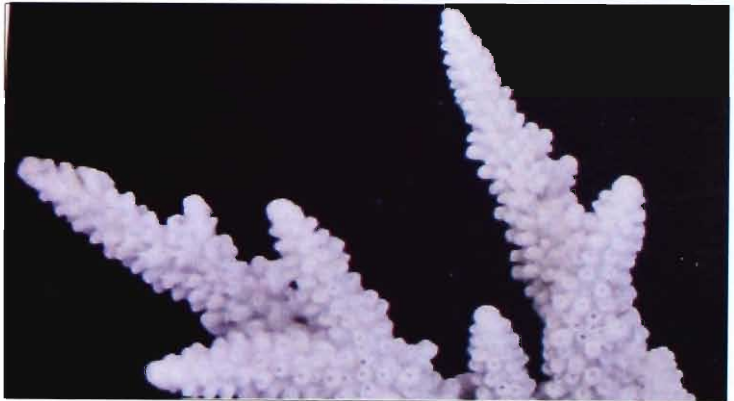
Description: Colonies are of open thickets of sturdy tapered upright branches. Axial corallites are large slightly exert and dome shaped. Radial corallites are of mixed sizes, the largest being tubular and exert, with thick walls and small openings, small corallites are immersed between the large corallites. The coenosteum is fine.

Colour: Colonies are brown purple with pale tips.

Similar Species: *A. rudis* and *A. hemprichii*.

Distribution: Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Mostly occurred in highly wave exposed areas.



92. *Acropora vaughani* Wells, 1954

Description: Colonies are open branching to bushy. Main branches have many compact branchlets giving colonies a bushy appearance. Axial corallites are big and exert, incipient axial corallites are abundant. Radial corallites are uniform and widely spaced. The coenosteum is fine, giving branches a smooth appearance.

Colour: Colonies are pale cream with purple spots in radial corallites.

Similar Species: *A. horrida*.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in the outer reef and reef crest areas.



93. *Acropora verweyi* Veron and Wallace, 1984

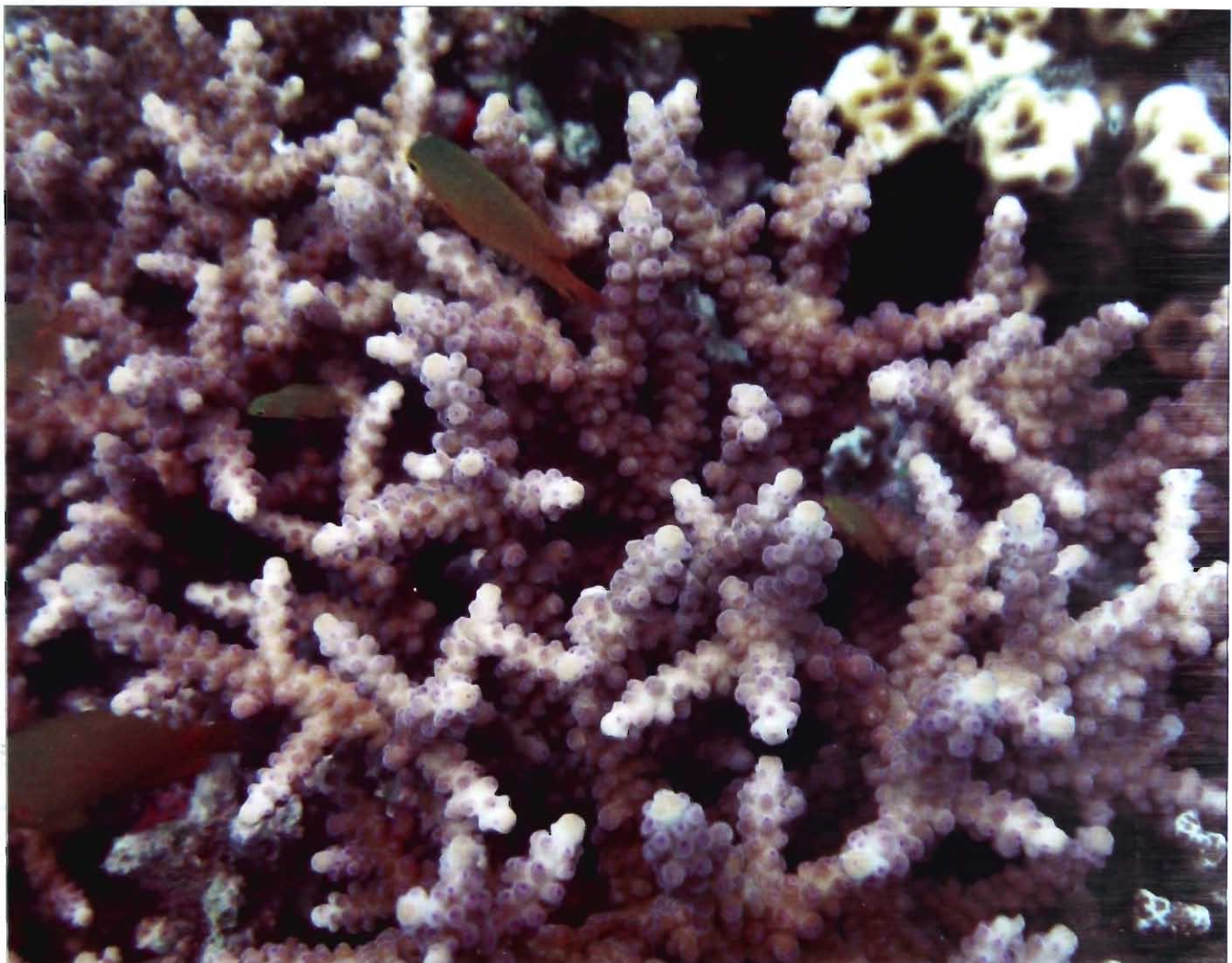
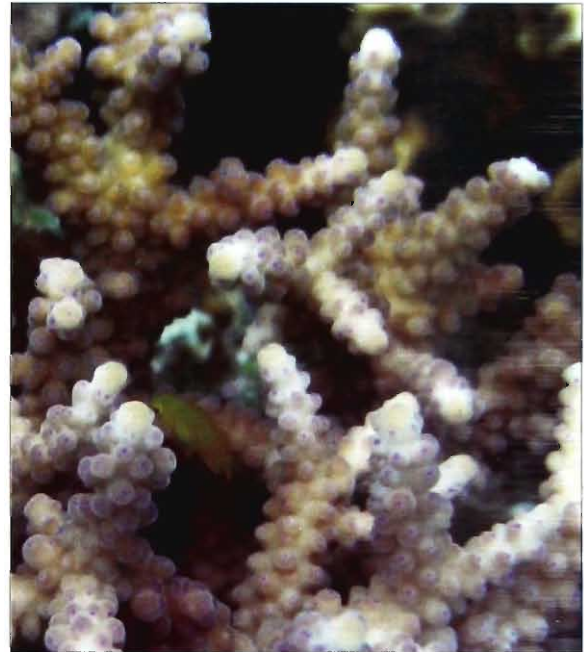
Description: Colonies form encrusting plates with short branches sometimes forms extensive corymbose bushes. Branches are 7-9 mm thick, do not taper and have short branchlets towards their bases. Axial corallites are tubular with thick walled and prominent. Radial corallites are rounded, tubular and appressed, and arranged in rows.

Colour: Uniform creamy white with yellow axial corallites.

Similar Species: *A. bushyensis*.

Distribution: Indo-Pacific, Madagascar, Japan and Andaman and Nicobar Islands.

Remarks: Shallow reef areas.

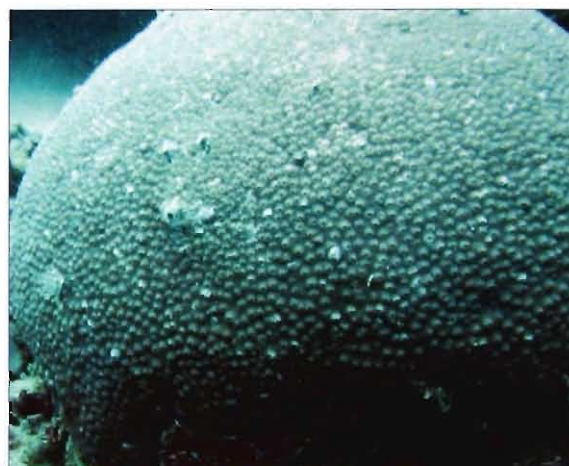


Genus *ASTREOPORA* de Blainville, 1830

Worldwide, there are 12 species of *Astreopora* of which eight species are recorded from India.

Characters: *Astreopora* is a well defined genus. Colonies are massive, laminar, encrusting or foliaceous. Corallites are immersed or conical with short, numerous, neatly spaced short septa. Columellae are deeply set and compact. Corallite walls are slightly porous and the coenosteum and walls have few elaborations. Polyps are extended at night only.

Similar Genera: *Turbinaria*.



94. *Astreopora cucullata* Lamberts, 1980

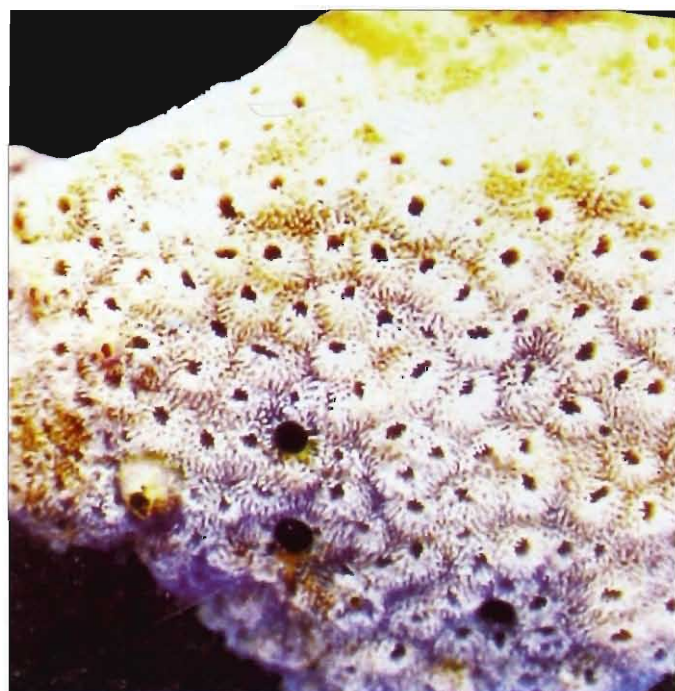
Description: Colonies are sub-massive to encrusting plates, with a well-developed epitheca and sometimes with short rootlets. Corallites vary in size and shape from being immersed on concave surfaces to exert on convex ones. The coenosteum is rough with large, usually flattened spinules, which have highly elaborated tips.

Colour: Colonies are cream.

Similar Species: *A. scabra*.

Distribution: From Southeast Asia to Coral Sea including Andaman and Nicobar Islands.

Remarks: Mostly found in shallow reefs.



Source: Venkataraman et al., 2003

95. *Astreopora gracilis* Bernard, 1896

Description: Colonies are hemispherical. Corallites are immersed to conical or tubular, usually face different directions and are of mixed sizes giving a chaotic appearance sometimes corallites are exert. The coenosteum is covered by papillae that are inclined on the surface, giving colonies coarse.

Colour: Pale cream.

Similar Species: *A. myriophthalma*.

Distribution: Red Sea, Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in shallow turbid water.

96. *Astreopora incrustans* Bernard, 1896

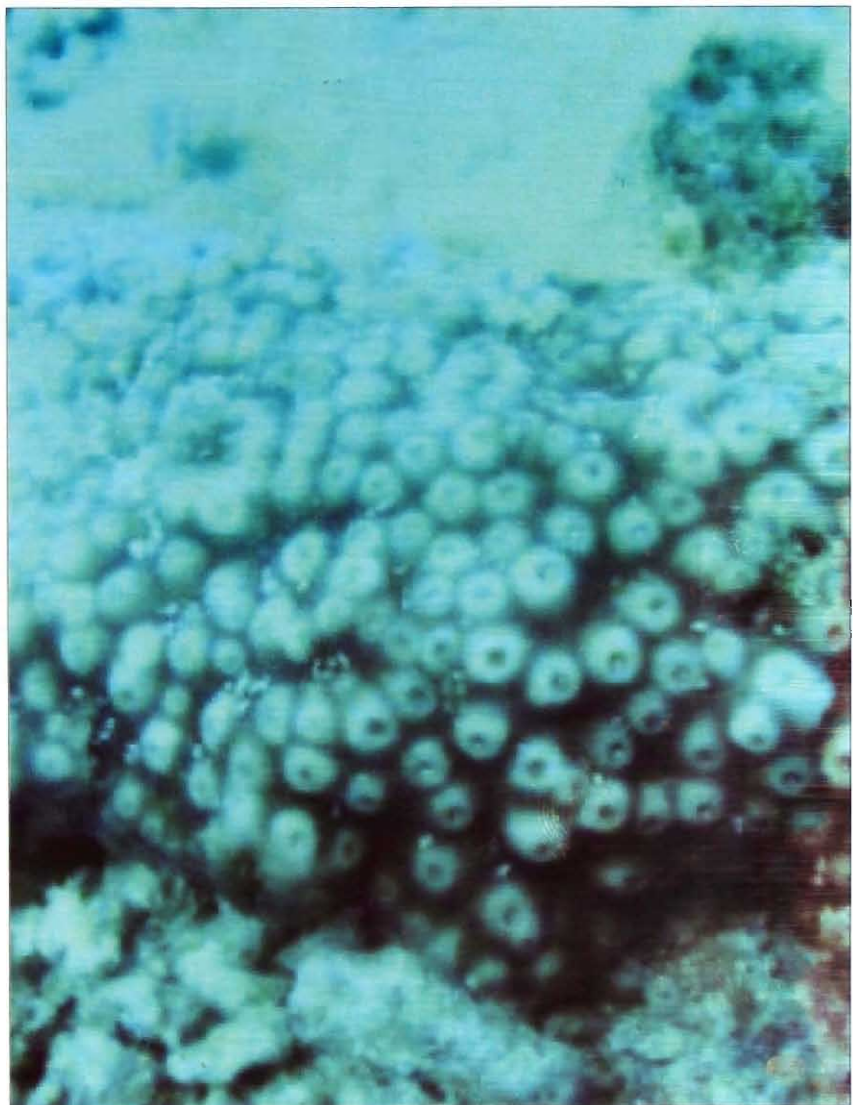
Description: Colonies are usually flat, encrusting. Corallites are large and are irregular in shapes, some corallites are tubular. Corallites have large openings, with rough coenosteum.

Colour: Colonies are dark brown and grey, with bright corallites surface.

Similar Species: *A. moretonensis*.

Distribution: Great Barrier Reef to Japan and Andaman and Nicobar Islands.

Remarks: In shallow reef areas.



97. *Astreopora listeri* Bernard, 1896

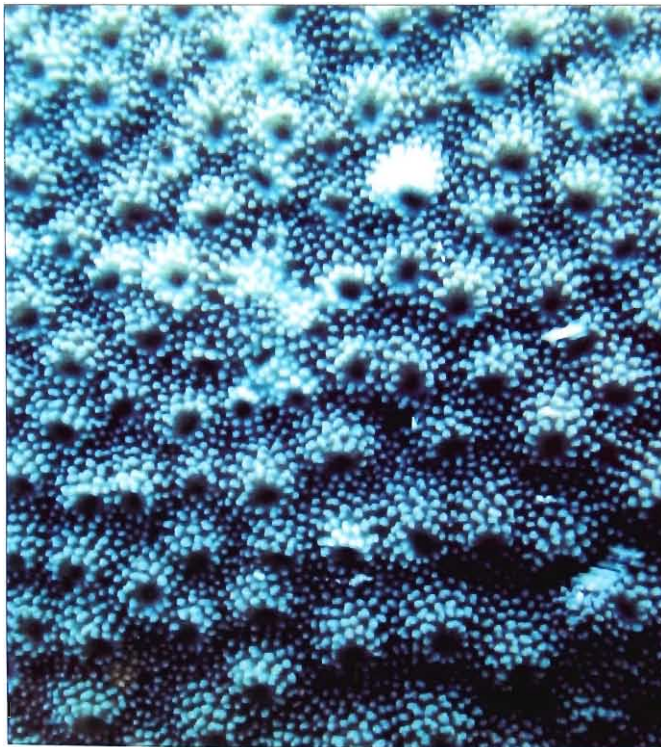
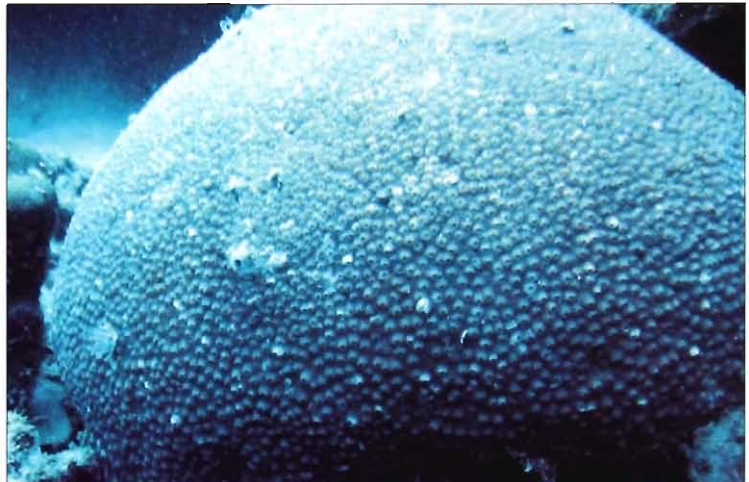
Description: Colonies are massive, hemispherical or flattened. Corallites are often immersed, evenly spaced and sometimes crowded, with small openings lined by feathery spinules giving the colony a spiny appearance. Coenosteum papillae are fine making colony rough.

Colour: Colonies are cream, brown and sometimes openings of the corallites are pinkish in colour.

Similar Species: *A. myriophthalma*.

Distribution: Tropical Indo-Pacific; Lakshadweep and Andaman and Nicobar Islands.

Remarks: Found mostly in reef flat areas, often confused with *Turbinaria* species.



98. *Astreopora myriophthalma* (Lamarck, 1816)

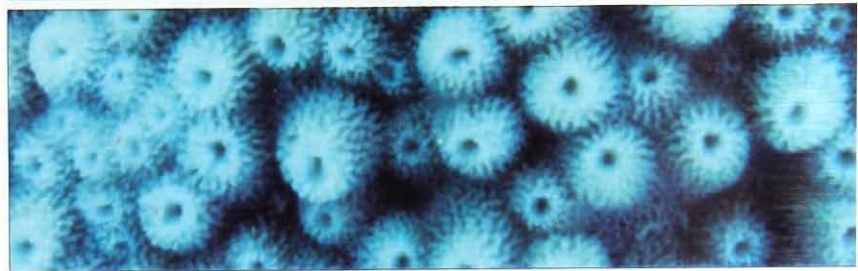
Description: Colonies are massive, hemispherical. Corallites are evenly spaced slightly conical in shape and exert, turned away from one another. The short papillae covered coastae and coenosteum with elaborated tips making coarse.

Colour: Colonies are cream, brown.

Similar Species: *A. listeri*.

Distribution: Indo-Pacific, Red Sea, South Pacific Islands, Lakshadweep, Gulf of Mannar and Andaman and Nicobar Islands.

Remarks: Often found in turbid waters.



99. *Astreopora ocellata* (Bernard, 1896)

Description: Colonies are dome shaped, may be flat. Corallites are of two size larger corallites are compact and large with wide opening, small corallites usually occur between the large corallites. The coenosteum is coarse.

Colour: Colonies are cream.

Similar Species: *A. macrostoma*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Shallow reef environments.



100. *Astreopora randalli* Lamberts, 1980

Description: Colonies are flat and encrusting, sometimes may form thick plates. Corallites are small immersed and widely spaced. Coenosteum papillae are fine and may form rows down the sides of corallites.

Colour: Cream and grey

Similar Species: *A. listeri*.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow protected reef environments.

101. *Astreopora suggesta* Wells, 1954

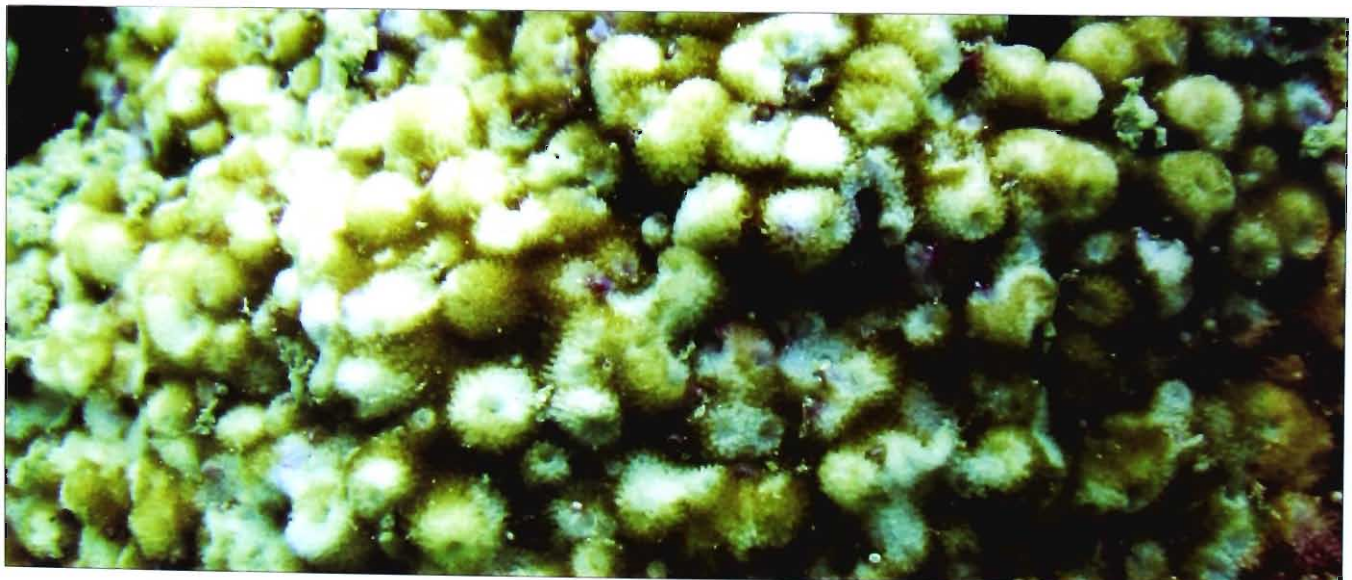
Description: Colonies are hemispherical with small, widely spaced corallites forming mounds or lobes in different shapes. Calices average 1 mm diameter. Septa are in two irregular cycles. Coenosteum papillae are short and blunt.

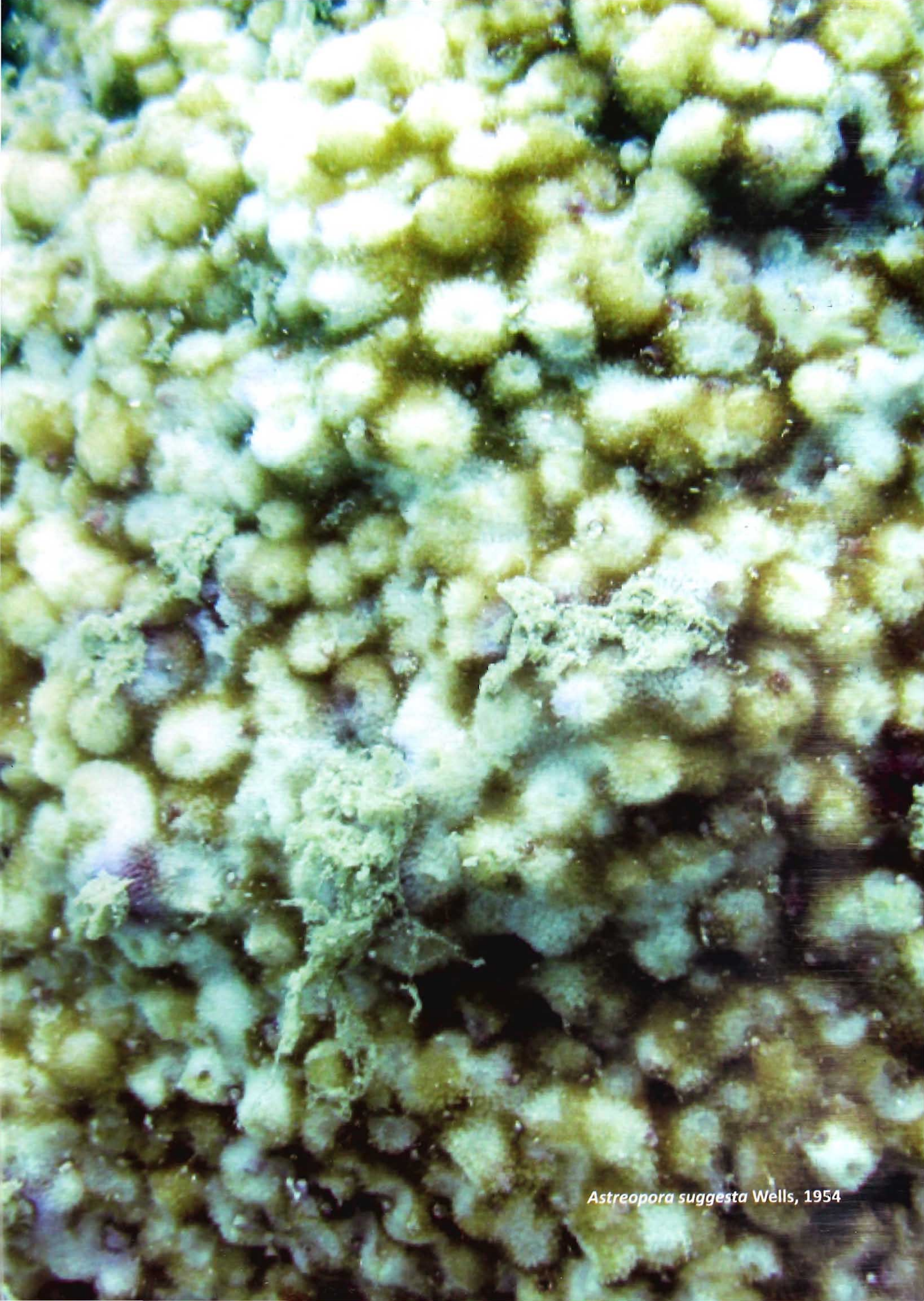
Colour: Brown with pale corallites.

Similar Species: *A. gracilis*.

Distribution: Madagascar, Red Sea, Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow reef environments.





Astreopora suggesta Wells, 1954

Family ASTROCOENIIDAE Koby, 1890

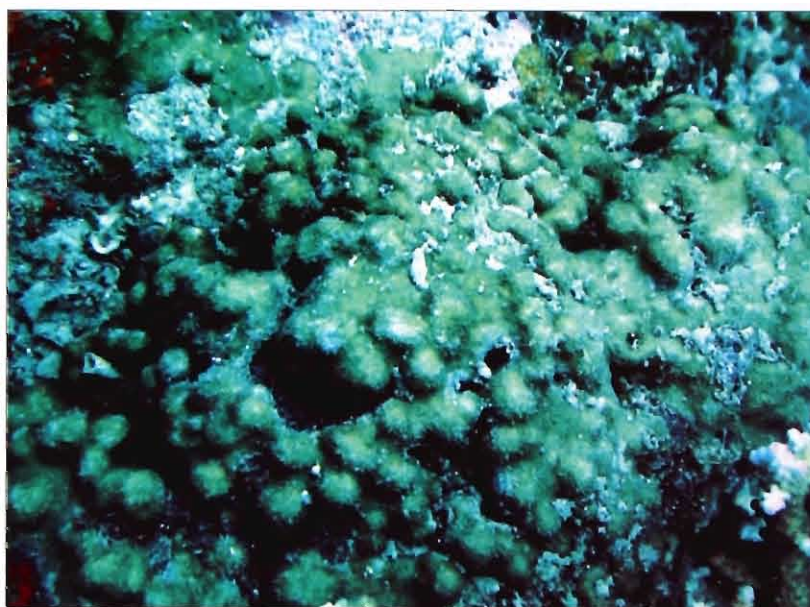
Four genera, *Stylocoeniella*, *Stephanocoenia*, *Palauastrea* and *Madrasis* are included in the family of which only two genera are reported from India. All the genera have close affinities with Pocilloporidae. Style like columellae and neatly arranged solid septa are important characters to this family. *Palauastrea* and *Madrasis*, previously placed in family Pocilloporidae, have been moved to the Astrocoeniidae (Veron, 2000). Three species under 2 genera under this family are recorded from Andaman & Nicobar Islands

Similar family: Pocilloporidae

Genus *STYLOCOENIELLA* Yabe and Sugiyama, 1935

Three species are reported worldwide, of which two are reported from these Islands.

Characters: Colonies are massive, columnar or encrusting. Corallites are immersed, circular with two unequal cycles of septa and style-like columellae. The coenosteum is covered with fine spinules and also by larger pointed styles, which are almost as numerous as the corallites. Polyps have not been observed extended during hours of day light.



102. *Styloceniella armata* (Ehrenberg, 1834)

Description: Colonies are encrusting. Corallites are widely spaced and form excavation in the coenosteum. Septa are in two equal or sub equal cycles. Each corallites has a prominent coenosteum style.

Colour: Bright red and brownish green.

Similar species: *S. guentheri*.

Distribution: Throughout Indo-Pacific region including Andaman and Nicobar Islands.

Remarks: Commonly seen in shallow reef environments.



103. *Stylocoeniella guentheri* (Bassett & Smith, 1890)

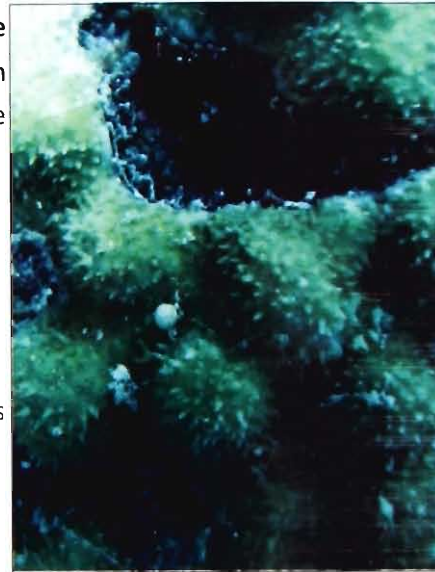
Description: Colonies are encrusting and forming columnar. Calices are small and widely spaced. Septa are in two unequal cycles and may join between adjacent corallites. Corallites widely spaced. Coenosteum styles are small but distinctive.

Colour: Dark greenish or mottled dark green.

Similar species: *S. armata*.

Distribution: Throughout Indo-Pacific, from Andaman and Nicobar Islands to Coral Sea.

Remarks: Mostly found in reef slope.



Genus *MADRACIS* Milne Edwards and Haime, 1849

Madracis is primarily an azooxanthellate genus. Larger angular corallites and lack of coenosteum styles characterize this genus, however, it has an encrusting and cryptic nature hence can easily be confused with *Stylocoeniella*. There are eight species reported worldwide, of which one is reported from Andaman and Nicobar Islands.

Characters: Colonies are massive, encrusting or columnar. Corallites are large, angular and there are no coenosteum styles. Corallites are closely packed and touching. Characters of the colonies are variable, but the structure of the corallites, and in particular the non-hexameral disposition of the septa, remain conspicuous and typical of the genus.

104. *Madracis kirbyi* Veron & Pichon, 1976

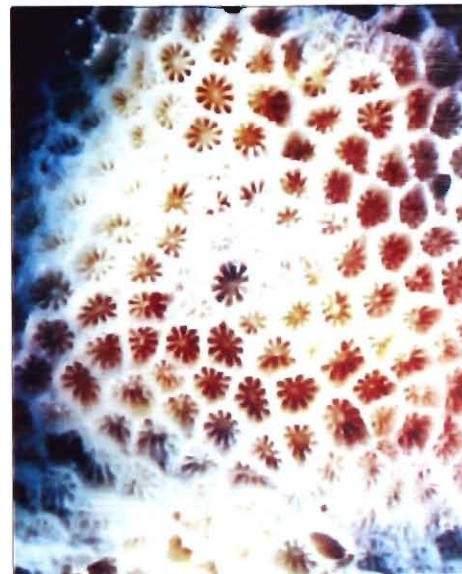
Description: Colonies are laminar, encrusting, nodular or columnar, columns being club shaped. Corallites are sub-ceroid, closely compacted and angular in outline with solid conical columellae. Usually ten septa are present and these are fused with the columella. The coenosteum is covered by fine spinules. Tentacles are usually extended only at night.

Colour: The oral disc is green or white, the coenosteum mottled brown or reddish-brown.

Similar species: *M. decatis*.

Distribution: Indo-Pacific (Madagascar, Maldives, Sri Lanka and Andaman and Nicobar Islands) and Red Sea.

Remarks: Mostly found in turbid waters.



Source: Venkataraman et al., 2003



Seriatopora hystrix Dana, 1846

Family POCILLOPORIDAE Gray, 1842

All species of this family are hermatypic and colonial. Three genera under this family such as *Pocillopora*, *Seriatopora* and *Stylopora*, which have very similar biological characters. All these three genus are recorded in Indian waters. There are thirty species reported from the world, of which 13 are recorded from India.

Characters: Colonies are sub-massive, short branched and arborescent. Branches are often flattened or fine and irregular. Colonies are covered in verrucae (large mounds). Corallites are small and mostly immersed. Septa and columella are usually poorly developed except *Pocillopora*. Skeletal characters vary greatly according to the position of corallites on branches. The coenosteum is covered with spinules.

Genera *Pocillopora*, *Seriatopora* and *Stylopora*



Similar families ASTROCOENIIDAE and ACROPORIDAE

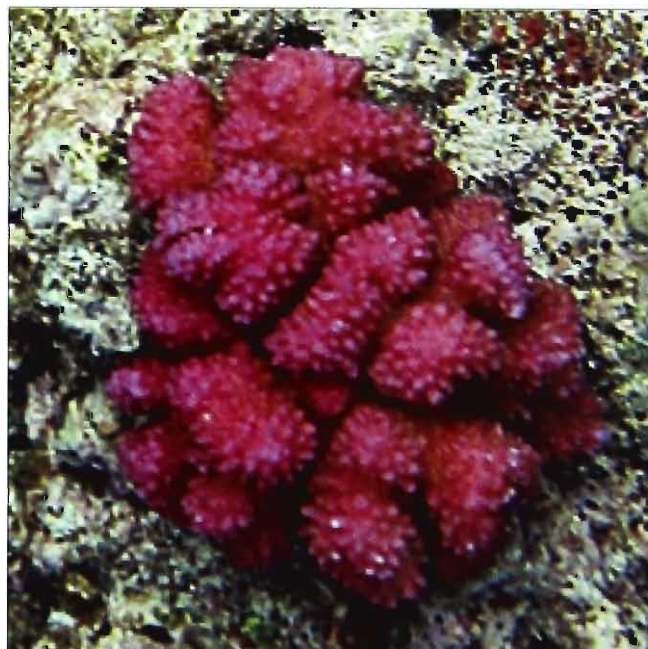


Genus *POCILLOPORA* Lamarck, 1816

Pocillopora is a well developed genus readily distinguishable from other genus by the presence of verrucae. There are 17 species reported worldwide, of which eight are recorded in India. It is represented in all major coral reef areas of India with an exception of Gulf of Kachchh.

Characters: Colonies are sub massive, ramose sometimes with prostrate branches. Colonies are covered with verrucae. Corallites are immersed between the verrucae. Corallites have solid columella and two unequal cycles of septa. The coenosteum is usually covered by granules. Polyps are usually extended only at night.

Similar Genera: None.



105. *Pocillopora ankeli* Scheer & Pillai, 1974

Description: Colonies are small and compact with short twisted branches. Main branches with rounded base and compressed distal part. Repeatedly dividing branches. Branches are 6-7 cm long; branchlets with obtuse rounded or flattened apices and are almost 3 cm in length. Verrucae present. Calices are about half a centimetre in diameter. At the junction of the septa and wall 12 spines are present. Well developed septa and columella are present.

Colour: Dark Brown

Similar species: *P. kelleheri*.

Distribution: Indonesia, Philippines, Malaysia and Andaman and Nicobar Islands.

Remarks: Found in shallow reef.

106. *Pocillopora damicornis* (Linnaeus, 1758)

Description: Colonies are compact slumps with irregular branches and lacks true verrucae. Branches are fine and widely separated. Corallites are highly compact and sturdy in habitats exposed to strong wave action and are thin and open in deep or protected habitats.

Colour: Colonies are pink or pale brown in colour.

Similar Species: *P. danae*.

Distribution: Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in reef flat areas and sometimes mixed with *P. verrucosa* colonies.



107. *Pocillopora danae* Verrill, 1864

Description: Colonies may be one meter across and are composed of irregular, mostly prostrate branches that tend to form a three dimensional tangle. Verrucae are widely spaced and irregular in size, although they remain distinct from branches.

Colour: Cream and reddish brown.

Similar Species: *P. verrucosa*.

Distribution: Indo-Pacific, Sri Lanka and Andaman and Nicobar Islands.

Remarks: Commonly observed in partly protected reef slope.



108. *Pocillopora eydouxi* (Milne-Edwards and Haime, 1860)

Description: Colonies are composed of stout, upright, flattened branches. Branches may be widely separated or compact, especially where currents are strong. Colonies may be very large. Verrucae are uniform.

Colour: Pale brown.

Similar Species: *P. verrucosa*.

Distribution: Indo-Pacific, Coral Sea and Tropical East America, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found on the upper reef slope area; often occur with *Stylophora* colonies.



109. *Pocillopora kelleheri* Veron, 2002

Description: Colonies are wide plates with prostrate branches that are usually evenly spaced. Colonies are usually attached on one side and do not form clumps. Verrucae are uniform in size and are not crowded.

Colour: Light brown

Similar Species: *P. eydouxi*.

Distribution: Coral Sea, Samoa Islands, Japan and Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found on manmade structures and vertically descending reef slopes.



110. *Pocillopora ligulata* Dana, 1846

Description: Colonies are up to half a meter across, compact with irregular radiating branches which have flattened ends and truncated tips. Verrucae are widely spaced and irregular.

Colour: Yellowish brown

Similar Species: *P. capitata*.

Distribution: Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Often occur in shallow water area exposed to high wave action.

111. *Pocillopora meandrina* Dana, 1846

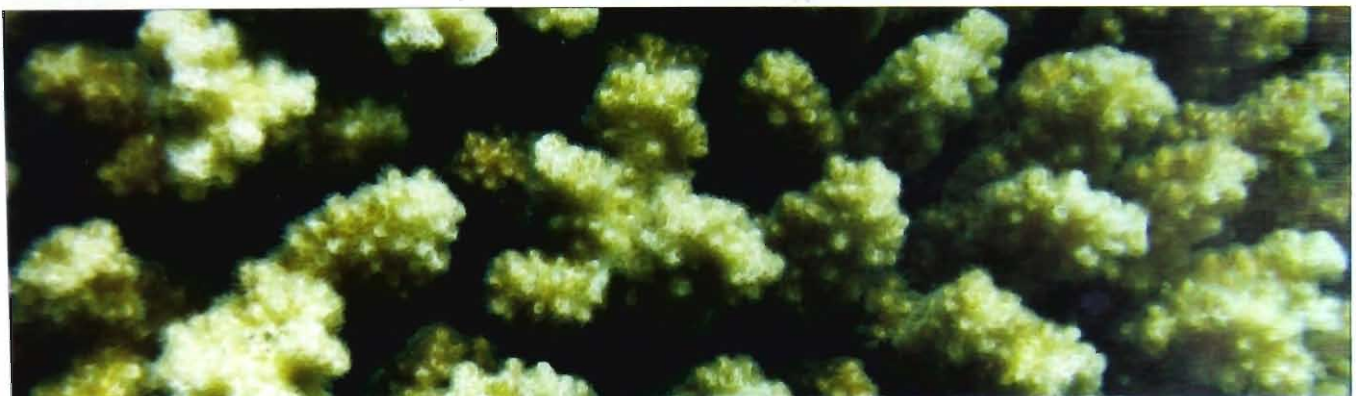
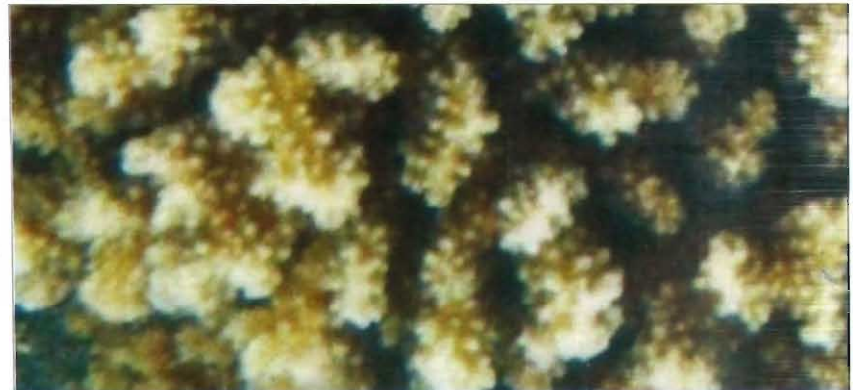
Description: Colonies are composed of uniform upright branches. Verrucae are prominent; large and irregular in size giving the colony a rough/ragged surface. Branches are thick and compact.

Colour: Pale yellow.

Similar Species: *P. kelleheri*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands and Western South America.

Remarks: Found in shallow reef environments.



112. *Pocillopora verrucosa* (Ellis and Solander, 1786)

Description: Colonies are compact and composed of uniform upright branches, clearly distinct from the verrucae, giving the colony a rough or ragged surface. Branches are thick and compact in habitats exposed to wave action, becoming open and thinner in protected habitats.

Colour: Colonies are reddish pink in colour.

Similar Species: *P. meandrina*, *P. danae*, *P. elegans* and *P. capitata*.

Distribution: Distributed throughout the World including Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Often mixed with *Stylophora* and *P. damicornis* colonies.



Genus *SERIATOPORA* Lamarck, 1816

Seriatopora is a well defined genus. There are five species recorded from the world of which three are recorded in Andaman and Nicobar Islands.

Characters: Colonies form compact bushes with thin anastomosing (fused) branches. Corallites are arranged in neat rows along the branches. They are mostly immersed and have poorly developed internal structures except for solid-like columella. Usually one, sometimes two cycles of septa are developed and are fused to the columella. The coenosteum is covered by fine spinules. Polyps are extended only at night.

Similar Genera: *Stylophora*.



113. *Seriatopora aculeata* (Quelch, 1886)

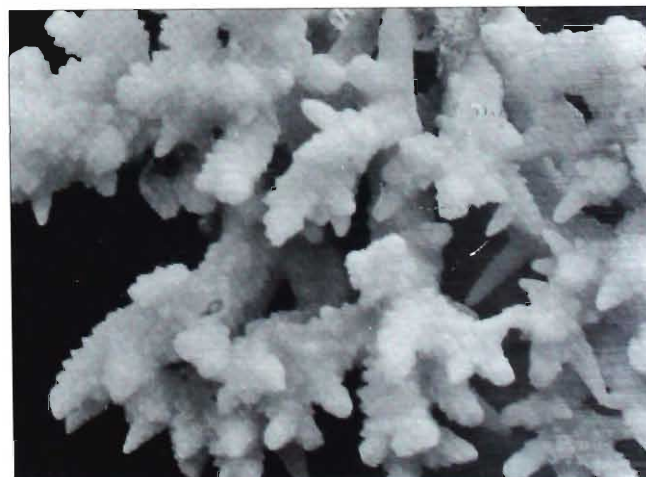
Description: Branches are thick (5-10 mm), short and strongly tapered. They are usually seen in fused clumps. Corallites are irregularly distributed on branches. Tentacles are commonly extended during daytime also.

Colour: Pink or cream

Similar Species: *S. stellata* and *S. hystrix*.

Distribution: Coral Sea, Northern Australia and Andaman and Nicobar Islands.

Remarks: Found in high water current environments.



114. *Seriatopora caliendrum* Ehrenberg, 1834

Description: A poorly defined species which shows a lot of geographic variation. Branches do not taper and they may be widely spaced or compact. Corallites are mostly arranged in rows along branches and tend to have Stylophora-like hoods. Tentacles are often extended during daytime also.

Colour: Cream or brown.

Similar Species: *S. hystrix* and *S. guttatus*.

Distribution: Red Sea to Coral Sea and Andaman and Nicobar Islands.

Remarks: Occurs in reef flat areas.

115. *Seriatopora crassa* Quelch, 1886

Description: Colonies are branching. Main branches are about 1 cm thick and branchlets either narrow or broad, when narrow 3 to 4 mm, broad ones 7 to 8 mm. Calices are sub-circular and about half centimetre in diameter. Upper wall raised up forming hoods. First cycle of septa is prominent, surface coenenchyme are echinulate.

Colour: Pale brown with white tips.

Similar Species: None.

Distribution: Philippines and Andaman and Nicobar Islands.

Remarks: It is rarely found in Indian waters. It was reported by Scheer and Pillai (1974) from Nicobar group of Islands.

116. *Seriatopora hystrix* Dana, 1846

Description: Colonies may form extensive stands. Thin tapering branches less than five centimetres, 1 cm below tip and 2-8 mm near colony base. Branches may be widely spaced or compact in more exposed habitats.

Colour: Cream and pale brown.

Similar species: *S. caliendrum* and *S. guttatus*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands and Coral Sea.

Remarks: Mostly found in soft muddy bottom.



117. *Seriatopora stellata* Quelch, 1886

Description: Colonies are thick and short with strongly tapered branches. Branches usually fused into clumps. Calices about half a centimetre in diameter and irregularly distributed. Corallites are aligned in rows which are raised into ridges down the sides of branches, the primary cycle of septa is well developed.

Colour: Pale brown with dark tips.

Similar Species: *S. hystrix*.

Distribution: Maldives to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow reefs.

Genus *STYLOPHORA* Schweigger, 1819

Seven species under the genus *Stylophora* are reported worldwide, of which only one species is recorded from India.

Characters: Colonies are ramose to sub-massive with short, seldom fusing branches, which are expanded at the tips. Colonies lack true verrucae. Upper wall of corallites is developed as a spiny hood. Six primary septa may be fused to a style-like columella. Corallites are in rows down branches. In India it is recorded from Lakshadweep and Andaman and Nicobar Islands.

Similar Genera: *Seriatopora*.



118. *Stylophora pistillata* (Esper, 1797)

Description: Colonies are sub-massive with blunt ended branches. Corallites are immersed and hooded. Columellae are distinctive. Six primary septa, which may be fused with the columella. The coenosteum is covered with fine spinules.

Colour: Pink, sometime brownish pink.

Similar Species: *Stylophora danae*.

Distribution: Throughout the Indo-Pacific including Lakshadweep and Andaman and Nicobar Islands in India and Coral Sea.

Remarks: Commonly seen in shallow reef slope areas.





Stylophora pistillata (Esper, 1797)



Physogyra lichtensteini Milne Edwards and Haime, 1851

Family EUPHYLLIDAE Veron, 2000

Species of this family are commonly called as bubble corals. The shape of the extended tentacles in underwater is used to identify the species. The museum specimens are difficult to identify. There are five reported genera from the world, of which three are recorded in India.

Characters: Colonies are phacelioid, meandroid or fabello-meandroid, with large, solid and widely space septo-costae, which have little or no ornamentation. Corallite walls have a similar structure. All species are zoozanthellate.

Genera *Euphyllia*, *Cataphyllia*, *Nemansophyllia*, *Pleurogyra* and *Physogyra*



Similar families MEANDRINIDAE, FLABELLIDAE and OCULINIDAE

Genus EUPHYLLIA Dana, 1846

In general, corals have been identified entirely by their skeletons, but only in *Euphyllia* the appearance of living polyp is being used to identify different species. Eight species are reported from the world of which four species are recorded in India.

Characters: Colonies are flabelloid, phacelioid or meandrophacelioid, the latter usually dome shaped. Walls are thin and imperforated. Columellae are mostly absent. Septa are prominent, smooth edged and imperforate. Polyps are extended day and night; are large, fleshy and have tentacles, which vary in shape of each species. In *Euphyllia* and *Pleurogyra* corolla may be similar, but living polyps are completely different. This genus is recorded from Lakshadweep and Andaman & Nicobar Islands.

Similar Genera: *Cataphyllia*.



119. *Euphyllia ancora* Veron and Pichon, 1979

Description: Colonies are phaceloid. Corallite walls are thin, with sharp edges, columellae are small. Septa not exerted, Polyps have large tubular and kidney shaped tentacles (Hammer or 'T' shaped).

Colour: Colonies are grey with pale cream outer borders.

Similar Species: *E. divisa* and *E. paraancora*.

Distribution: Tropical Indo-Pacific to Japan including Andaman and Nicobar Islands.

Remarks: Found in calm and shallow water.



120. *Euphyllia divisa* Veron and Pichon, 1979

Description: Colonies may be over one meter across. They may be flabello-meandroid with exert septa which plunge near the valley centre. Valley walls form sharp edges. There are no columellae. Polyps have large tubular tentacles with smaller tubular branches. All branches have knob-like tips.

Colour: Translucent cream or green tentacles with pale tips.

Similar Species: *E. ancora* and *E. paradivisa*.

Distribution: Tropical Indo-Pacific to Japan including Andaman and Nicobar Islands.

Remarks: Large colonies are usually found in shallow, turbid environments and are commonly attached to vertical surface.



121. *Euphyllia glabrescens* (Chamisso and Eysenhardt, 1821)

Description: Colonies are phaceloid and corallites are usually separated by 0.5-1 corallite diameters. Corallite walls are thin, with sharp edges. Septa are not strongly exerted. Polyps have tubular tentacles.

Colour: Grey bulb with green or pink tips.

Similar Species: *E. cristata*.

Distribution: Indo-Pacific including Lakshadweep and Andaman and Nicobar Islands from India, Red Sea, Marshall Islands and Samoa Islands.

Remarks: Sometimes it may found with single polyp also.



122. *Euphyllia yaeyamaensis* (Sirai, 1980)

Description: Colonies are phaceloid with corallites circular or flabello-meandroid with short valleys. Valleys are up to 40 millimetres wide. Corallite walls are sharp edged. Septa are closely compacted. There are no columellae. Tentacles are short and fleshy and covered with short uniform branchlets, each with a terminal knob. They are aligned radially to polyp centres and can retract, but slowly.

Colour: Usually a distinctive purple-grey, sometimes greenish grey, occasionally translucent. Branchlets sometimes have pale tips.

Similar Species: *E. divisa*.

Distribution: Indo-Pacific to Coral Sea including Andaman and Nicobar Islands.

Remarks: Found in shallow and confined reef areas.

Genus *PLEUROGYRA* Milne Edwards and Haime, 1848

Pleurogyra is one of the few corals sufficiently well armed to be able to sting a human. out of three species recorded in the world, only one species is reported from India.

Characters: Colonies are phaceloid to flabello-meandroid with valleys more or less connected by imperforate, smooth-edged, very exert and widely spaced. Columellae are absent. Polyps are extended only at night. During day, polyps extend with cluster of grey vesicles, the size and shape of large grapes. This genus is recorded only from Andaman & Nicobar Islands in India.

Similar genera: *Euphyllia*.



123. *Pleurogyra sinulosa* (Dana, 1846)

Description: Colonies are phaceloid to flabello-meandroid with valleys more or less connected by a light blistery coenosteum. Septa are large, imperforate, and smooth-edged, very exert and widely spaced. Columellae are absent. Polyps are extended only at night. During the day, polyps extend cluster of grey vesicles, the size and shape or large grapes. These retract slowly, if at all, when disturbed.

Colour: Colonies are usually bluish-grey.

Similar Species: *P. discus*.

Distribution: Tropical Indo-Pacific including Andaman and Nicobar Islands, Red Sea and Marshall Islands.

Remarks: Mostly found on mouth of crevices.



Genus *PHYSOGYRA* Quelch, 1884

Like *Pleurogyra*, it is capable of stinging humans. And it is commonly called jasmine corals. It is a monospecific genus.

Characters: Colonies are meandroid with short, widely separated valleys interconnected with a light blistery coenosteum. Septa are large, imperforate smooth-edged, exsert and widely spaced. Columellae are absent. Polyps are small with hard tips, extended during day. During the day the whole colony surface is covered with a mass of vesicles, which appears the size, and shape of small grapes. These vesicles retract when disturbed.

Similar genera: *Plerogyra*.



124. *Physogyra lichtensteini* Milne Edwards and Haime, 1851

Description: Colonies are meandroid with short and widely separated valleys interconnected with a light blistery coenosteum. Septa are large, imperforate, smooth – edged, exert and widely spaced. Walls are imperforate. Columellae are absent. Polyps are extended during day time also.

Colour: Bright cream colour.

Similar Species: *Plerogyra sinulosa*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands, Madagascar and Marshall Islands.

Remarks: Mostly found in protected and turbid habitats.



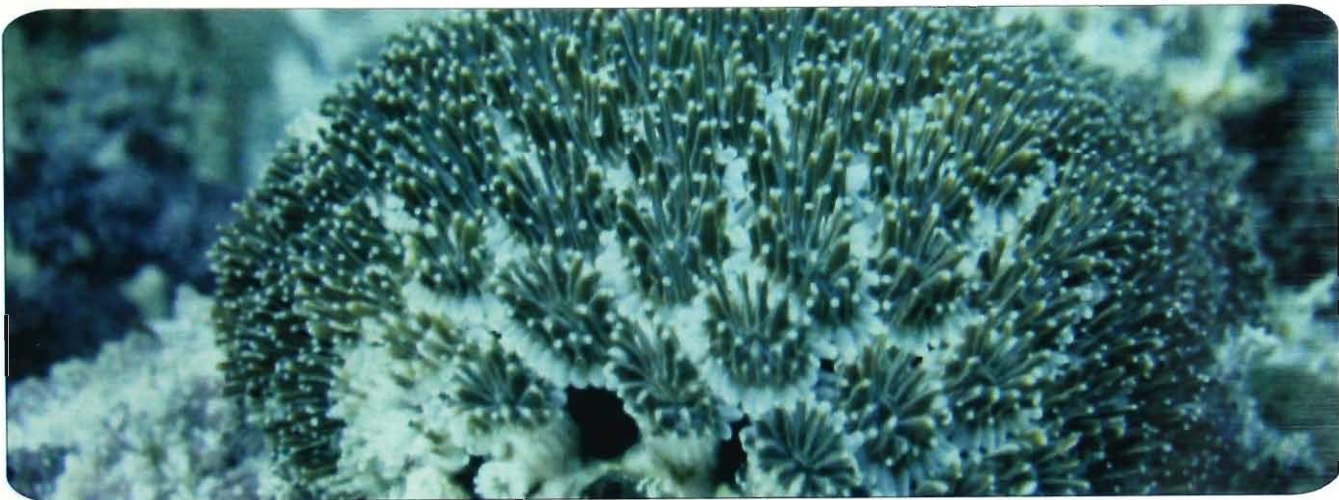


Galaxea fascicularis (Linnaeus, 1767)

Family OCULINIDAE Gray, 1847

Characters: Colonial, hermatypic and ahermatypic, extant and fossile. Corallites are thickened and linked by a smooth coenosteum. Septae are linked by a smooth coenosteum. Septa are very exsert. Related to the family Rhizangiidae. The species of Oculinidae are generally ahermatypic except two genera viz. *Galaxea* and *Archelia*. *Galaxea* is the only genus recorded in India.

Genera *Oculina*, *Slimplastrea*, *Schizoculina* and *Galaxea*



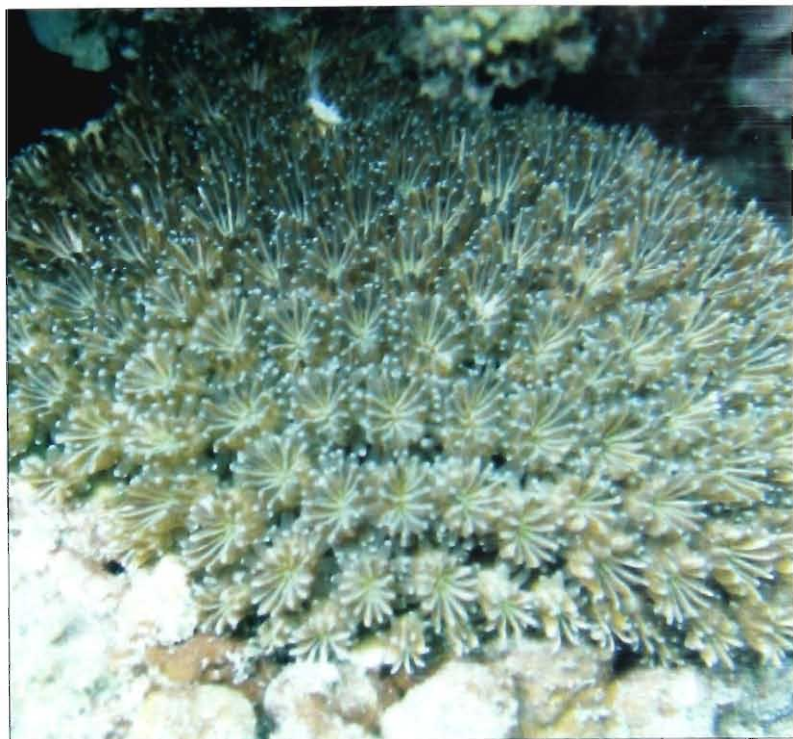
Similar family EUPHYLLIDAE

Genus GALAXEA Oken, 1815

Of the seven species recorded in the worldwide, only two are recorded from India.

Characters: Colonies are massive, columnar, encrusting or irregular. Corallites are cylindrical, thin walled and separated by a blisterly coenosteum. Columellae are weak or absent. Septa are very exsert. Polyps are sometimes extended during the daytime also. *Galaxea* is close to *Archelia*, which differs in being arborescent or bushy. Except Gulf of Kachchh it represents from all the other three major coral reef areas of India.

Similar Genera: None.



125. *Galaxea acrhelia* Veron, 2002

Description: Colonies are composed of short irregular lobe like or truncated branches. They may be several meters across, but are usually less than half a meter. Corallites are tubular, thin walled with flaring rims. Small corallites branch off larger corallites. Columellae are absent. Septa are very exsert and are commonly irregular in length. The coenosteum is soft and blistery. The whole skeleton is very fragile. Tentacles are usually extended only during night.

Colour: Pale brown or grey with white branch ends.

Similar Species: *G. fascicularis* and *G. horrescens*.

Distribution: Great Barrier Reef and Andaman and Nicobar Island.

Remarks: Found in high wave and current action areas.

126. *Galaxea astreata* (Lamarck, 1816)

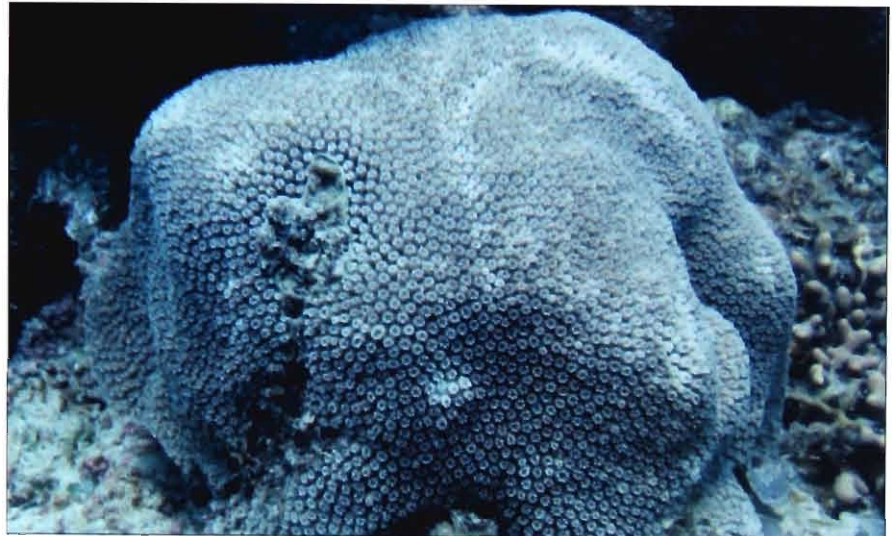
Description: Colonies are sub-massive, columnar or encrusting and commonly exceed 2 metres across in turbid water. Corallites sometimes vary greatly in size depending on where they occur on the colony: they are usually 3-4.5 mm diameter. Usually eight to twelve septa reach the corallite centre. Tentacles are seldom fully extended during the day.

Colour: Colonies are usually grey, also pink, green or brown.

Similar Species: *G. fascicularis*.

Distribution: Distributed worldwide from Red Sea to Coral Sea, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Island.

Remarks: Mostly occur in high wave reef flat and reef slope areas.



127. *Galaxea fascicularis* (Linnaeus, 1767)

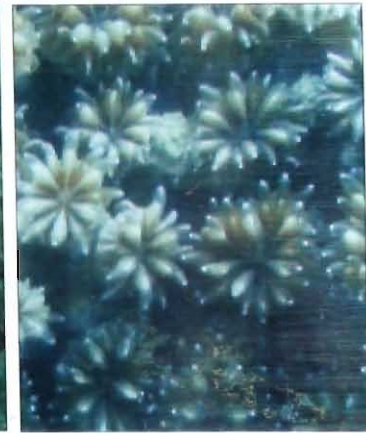
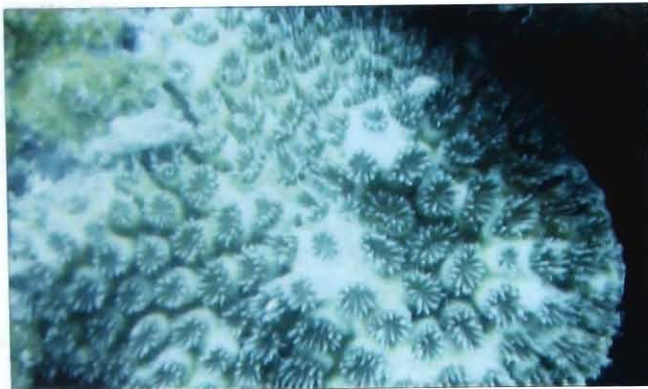
Description: Small colonies are cushion-shaped or low domes or are irregular. Large colonies, which frequently exceed 5 metres across, are columnar or massive. Corallites are of mixed sizes, usually less than 10 mm diameter with numerous septa reaching the corallite centre. Tentacles are usually extended during the day.

Colour: Polyps are usually green, grey, red or brown, commonly with tentacles and septa of contrasting colours. Tentacles often have conspicuous white tips.

Similar Species: *G. astreata*.

Distribution: Distributed from Red Sea to Western Pacific Fiji, Samoa, Abrolhos Islands, Great Barrier Reef and India-Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Island.

Remarks: Common in reef flats, crevices and muddy bottom habitats.





Psammocora digitata Milne Edwards & Haime, 1851

FAMILY SIDERASTREIDAE Vaughan and Wells, 1943

Siderastreidae is a family with mostly extant colonial and hermatypic corals.

Characters: Colonies are massive and columnar. Corallites are immersed with poorly defined walls formed by thickening of the septo-costae. Septa are usually fused along their inner margins to form fan-like groups; they have granulated upper margins and are closely compacted and evenly spaced.

Genera *Siderastrea*, *Pseudosiderastrea*, *Psammacora* and *Coscinarea*



Similar family AGARICIIDAE

Genus *PSEUDOSIDERASTREA* Yabe and Sugiyama, 1935

It is monospecific and closely resembles *Coscinarea* and superficially resembles *Coeloseris* and *Lepastrea*. In India, it is reported in all reef areas except Lakshadweep Islands.

Characters: Colonies are encrusting to massive or dome shaped. Corallites are cerioid, polygonal, half centimetre in diameter. Septa are evenly spaced and fuse with each other in fan like groups. Septa have fine, saw like teeth. Columellae consist of one to four pinnules.

Similar Genera: *Siderastrea*.



128. *Pseudosiderastrea tayami* Yabe and Sugiyama, 1935

Description: Colonies are encrusting to forming small mounts. Septa has lined with fine tooth. Columellae are distinctive with one to four small pinnules. Septa are evenly spaced and inner margins of septa fused. Septa are arranged uniformly.

Colour: Colonies are pale grey with distinctive white corallite walls.

Similar Species: *Siderastrea savignyana*.

Distribution: Distributed from Madagascar to Coral Sea including India; Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in very shallow water and partially water exposed area.



Genus *PSAMMACORA* Dana, 1846

This genus was previously included under the family Thamnasteriidae and now it is believed to have closer affinities with *Siderasteridae*, especially *Coscinaraea*. There are 12 species recorded in the world, of which four species recorded in India.

Characters: Colonies are massive, columnar, laminar, foliaceous or encrusting. Corallites are very small and shallow, sometimes forming shallow valleys. Walls are distinct. A small number of primary septo-costae are imbedded in secondary septo-costae, forming distinctive species-specific patterns. Septo-costae have finely granulated margins. Columellae consist of groups of pinnules. Polyps are usually extended only at night.

Similar Genera: *Coscinaraea*.



129. *Psammocora contigua* (Esper, 1797)

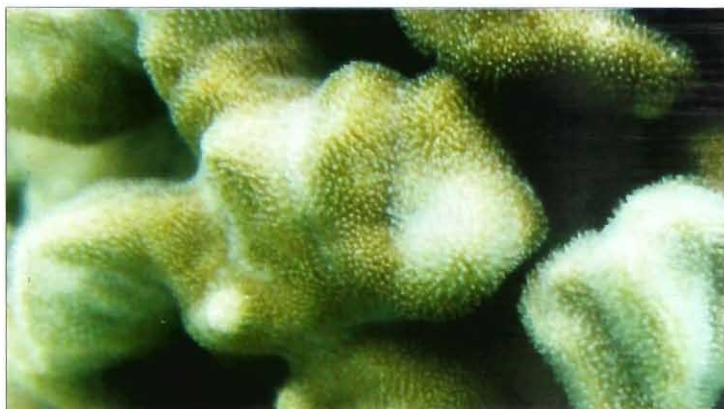
Description: Colonies are mixtures of flattened branches, short columns and irregularly fused. Coenosteum is very smooth, near the branch tips slightly forming small grooves. Corallites are small and arranged neatly. Coenosteum is porous.



Colour: Greyish brown with pale margin on branch ends.

Similar Species: *P. digitata*.

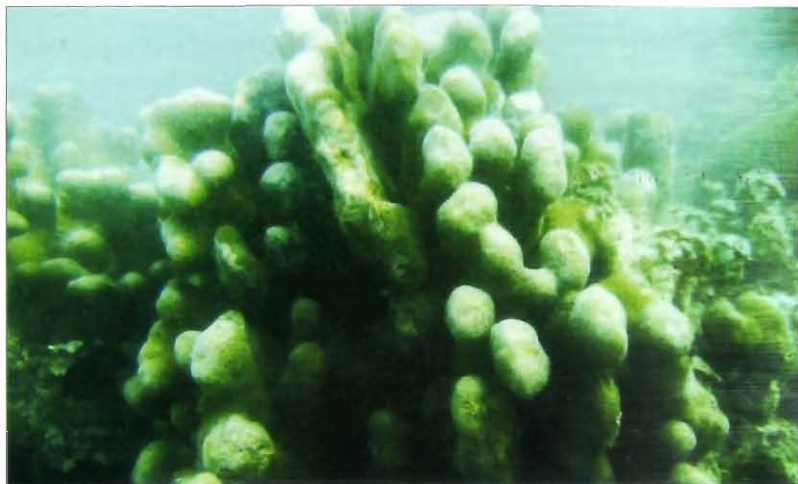
Distribution: Distributed in Indo-Pacific (from Eastern Africa to Red Sea to Samoa including India; Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).



Remarks: Sometimes it may confuse with *Pavona danai*.

130. *Psammocora digitata* Milne Edwards and Haime, 1851

Description: Colonies are encrusting to form short upturned sturdy columns. Corallites are small and immersed forming short valley, which is consist of three to four corallites, this arrangement making colony rough. The columellae consist of few granulated tuberculae.



Colour: Brownish grey.

Similar Species: *P. contigua*.

Distribution: Tropical Indo-Pacific including India; Gulf of Kachchh, Lakshadweep and Andaman and Nicobar Islands.



Remarks: Mostly found in outer reef slope area.

131. *Psammocora explanulata* van der Horst, 1922

Description: Colonies are thin plates or encrusting with a flat surface. Corallites are large for *Psammocora*, regularly distributed and have distinctive exert primary septo-costae which may be petaloid or meandering.

Colour: Pale or dark brown or green, frequently mottled.

Similar Species: *Coscinaraea wellesi*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands and Madagascar to Red Sea.

Remarks: Mostly found in confined reefs.

**132. *Psammocora haimeana* Milne Edwards and Haime, 1851**

Description: Colonies are sub-massive. Corallites are situated at the bottom of depressions or in short non-meandering valleys. Walls have acute tops. Primary septo-costae are petaloid but not exert.

Colour: Uniform grey, brown or sometimes bright colours.

Similar Species: *P. profundacella*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands and Madagascar to Red Sea.

Remarks: Shallow reef environments.

133. *Psammocora profundacella* Gardiner, 1898

Description: Colonies are sub-massive, sometimes may form thin plate. Corallites are arranged along valley floors. Primary septo-costae are not petaloid or only slightly so. Septa are not exsert. Walls between corallites are rounded and may form a central ridge.

Colour: Grey and brown

Similar Species: *P. haimeana*.

Distribution: From South Africa, Western Indian Ocean and East to the Line Islands; Lakshadweep and Andaman and Nicobar Islands.

Remarks: Mostly found in shallow waters.



134. *Psammocora superficialis* Gardiner, 1898

Description: Colonies are encrusting of form thick plates with low irregular ridges. Corallites are small, shallow, and irregularly distributed. Primary Septo-costae have a petaloid shape.

Colour: Uniform pale dark grey sometimes brightly coloured.

Similar species: *P. niestrazi*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands, Red Sea, Pacific and Western side of America.

Remarks: Mostly found in all reef environments.

Genus *COSCINARAEA* Milne Edwards and Haime, 1848

Eight species recorded worldwide, of which only two are found in India especially from Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman & Nicobar Islands. It closely resembles *Pseudosideratrea* and is often confused with *Psammacora*.

Characters: Colonies are massive, columnar, encrusting or laminar. Corallites are large and in short valleys or irregularly scattered and shallow. Corallite walls developed. Columellae consist of group of pinnules. Septo-costae are fused in distinctive patterns and have finely serrated to heavily granulated margins. Compound tuberculae and true synapticulothecal wall distinguish *Coscinaraea* from *Psammacora*. Polyps are usually extended at night and sometimes during the day.

Similar Genera: *Psammacora*.

135. *Coscinaraea columna* (Dana, 1846)

Description: Colonies are encrusting or massive, sometimes hillocky. Columellae are compacted pinnules; set well below the septo-costae are not heavily granulated.

Colour: Greenish yellow and grey

Similar Species: *C. exesa*.

Distribution: Throughout the Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Shallow reef environments.

136. *Coscinaraea crassa* (Veron and Pichon, 1980)

Description: Colonies are larger plates with larger compact corallites. Long and short septo-costae arranged slightly alternate. Columellae are single fused septal margins deep within the corallite.

Colour: Pale brown.

Similar Species: *Podabacia crustacea*.

Distribution: South east Asia including Andaman and Nicobar Islands and Madagascar, Coral Sea and Japan.

Remarks: Mostly found in shallow reef environments.



Psammocora digitata Milne Edwards & Haime, 1851



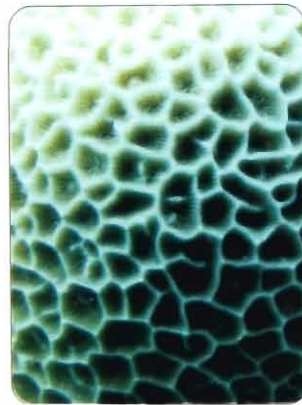
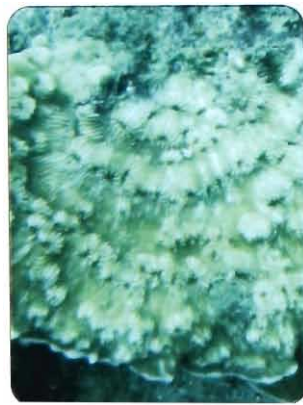
Pachyseris gemmae Nemenzo, 1955

FAMILY AGARICIIDAE Gray, 1847

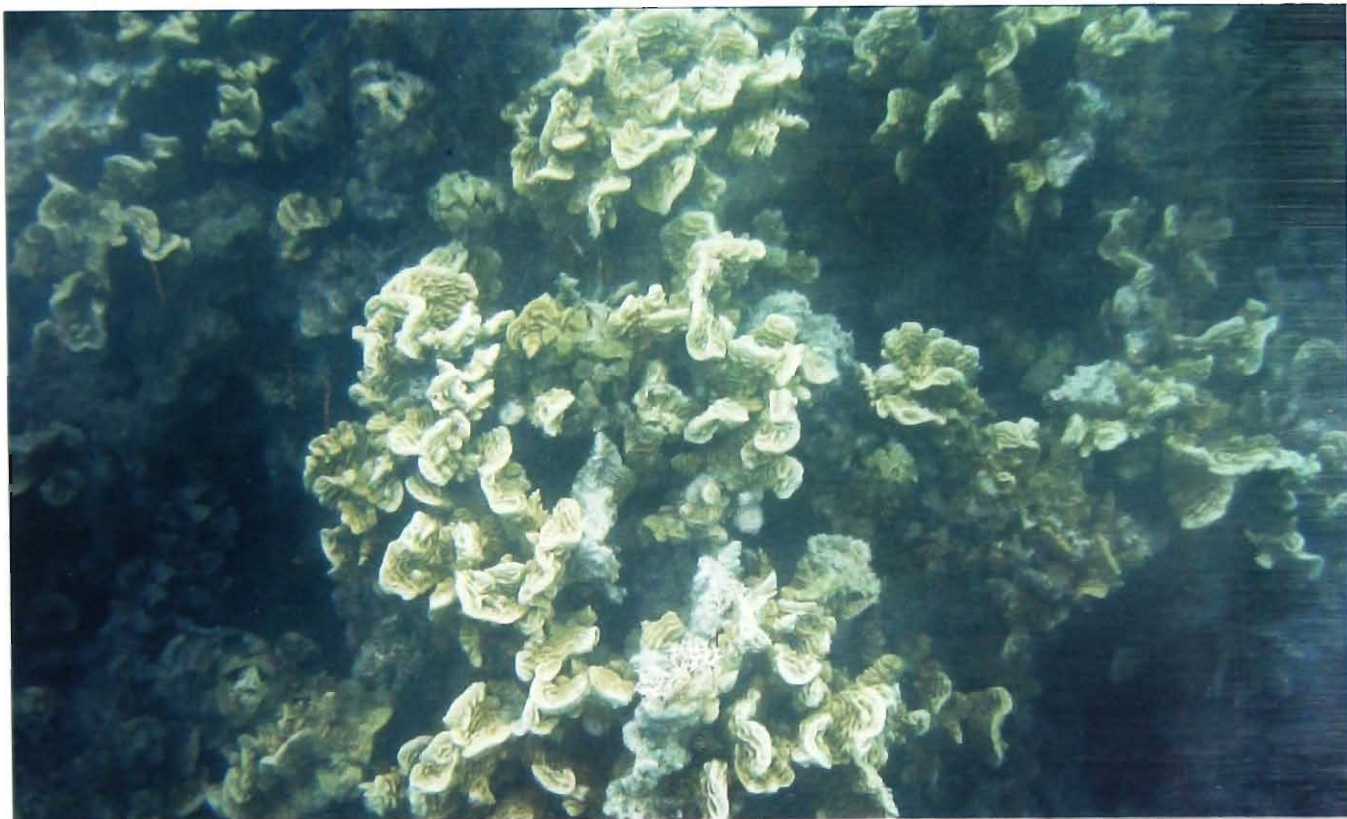
The family includes six extend hematyopic genera, of which except *Agaricia* all other five genera are reported from India.

Characters: Mostly colonial, hermatypic corals. Colonies are massive, laminar or foliaceous. Corallites are immersed with poorly defined walls formed by thickening of the septo-costae. Septa seldom fuse and are continuous between adjacent corallite centres. They have smooth or finely serrated margins and are closely packed.

Genera *Pavona*, *Leptoseris*, *Gardineroseris*, *Coeloseris*, *Pachyseris* and *Agaricia*



Similar family SIDERASTREIDAE



Genus *Agaricia* Lamarck, 1801

Characters: Colonies are composed of plates which are flat, horizontal or upright. The latter are usually contorted and fused. Corallites are aligned in rows which are separated by mostly parallel ridges (colonies) roughly parallel to plate margins. Septo-costae alternate. They are perpendicular to plate ridges or converge on corallite centres, which have weakly developed columellae.

Similar Genera: *Pachyseris* and *Pavona*.



137. *Agaricia fragilis* Dana, 1846

Description: Colonies form flat unifacial explanate plates with long corallites, roughly concentric valleys. Valleys are closely spaced corallites are small, close together and face upwards. Columellae are weakly developed.

Colour: Greyish brown

Similar species: *A. undata*.

Distribution: Caribbean Sea, Tethys and Andaman and Nicobar Islands.

Remarks: Found in shallow confined crevices.

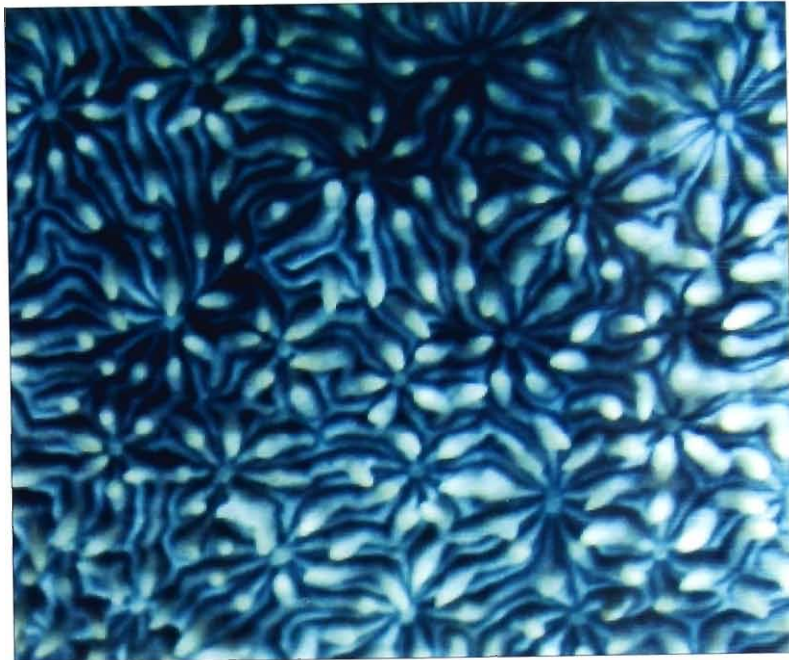


Genus *Pavona* Lamarck, 1801

There are 14 species reported in the genus *Pavona*, of which nine are recorded in India from all major reef areas except of Gulf of Kachchh.

Characters: Colonies are massive, laminar or foliaceous, the latter usually being bifacial. Corallites have poorly defined walls. They have small shallow depressions, usually with a central columella, sometimes separated by ridges. Corallites are interconnected by exert septo-costae. Most species of *Pavona* extend their polyps only at night except *P. explanulata*.

Similar genera: *Leptoseris*.



138. *Pavona bipartite* Nemenzo, 1980

Description: Colonies are sub-massive or encrusting and may be over one meter across. Corallites are uniformly distributed but colonies are characteristically uneven in height and may form slightly raised ridges several centimetres long. Septo-costae are in row slightly alternating orders.

Colour: Uniform pale to dark brown.

Similar species: *P. duerdeni*.

Distribution: Widely distributed in Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Commonly seen in shallow reef environments.



139. *Pavona cactus* (Forskål, 1775)

Description: Colonies are composed of thin, contorted, bifacial upright fronds, thickened branching bases. Corallites are fine, shallow and aligned in irregular rows parallel to frond margins.

Colour: Bright golden colour

Similar Species: *P. frontifera*.

Distribution: Throughout the tropical and sub-tropical Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Mostly found in lagoons and soft bottom area.



140. *Pavona clavus* (Dana, 1846)

Description: Colonies are columnar, club shaped and laminar and form colonies several metres across or extensive single species stands. Columns divide but do not fuse. Corallites have thick walls and are well defined. Septo-costae are of two very distinct orders. Columellae are short.

Colour: Dull brown and pale grey.

Similar Species: *P. duerdeni*.

Distribution: Throughout Indo-Pacific including India (Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Mostly found in waves and current exposed area.



141. *Pavona decussata* (Dana, 1846)

Description: Colonies are thick interconnecting bifacial upright plates, with or without lobed horizontal margins and upright plates. Corallites are irregular, deep seated, and are sometimes aligned parallel to margins.

Colour: Dark brown.

Similar Species: *P. danae* and *P. frontifera*.

Distribution: Tropical Indo-pacific including India (Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands).

Remarks: Mostly occur in soft bottom reefs.



142. *Pavona duerdeni* Vaughan, 1907

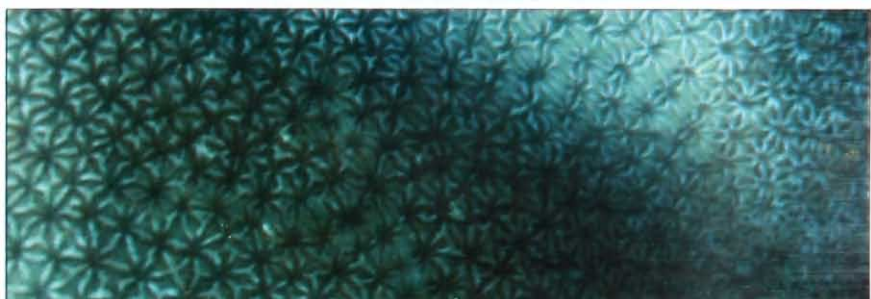
Description: Massive colonies sometimes divided into irregular ridges. Skeleton is very dense. Corallites are small, immersed and arranged neatly. Septo-costae are exserted and strongly alternated, gives the colony a smooth appearance.

Colony: Pale brown with thick septo-costae.

Similar Species: *P. minuta*.

Distribution: From Madagascar to South America and Andaman and Nicobar Islands.

Remarks: Mostly found in horizontal shallow substrates.



143. *Pavona explanulata* (Lamarck, 1816)

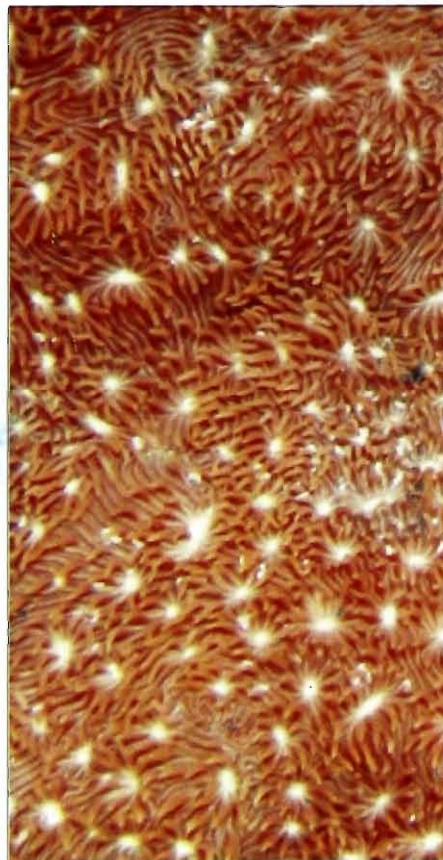
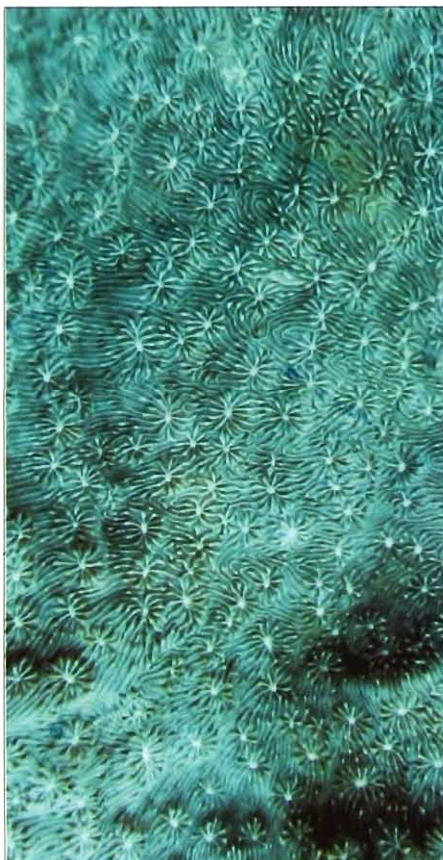
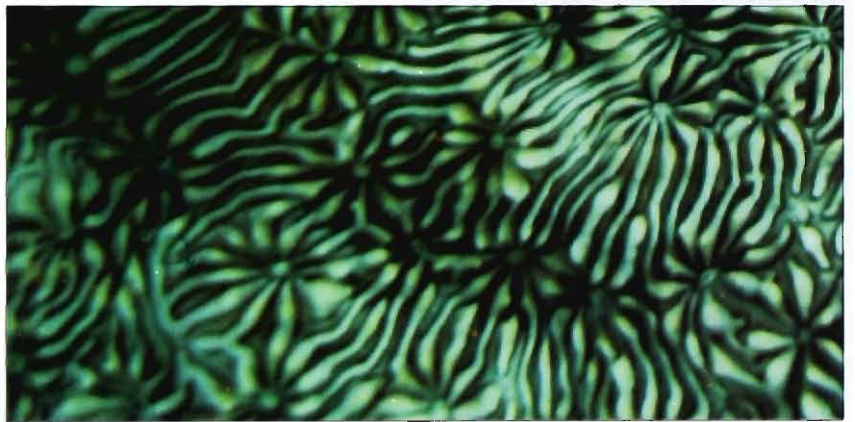
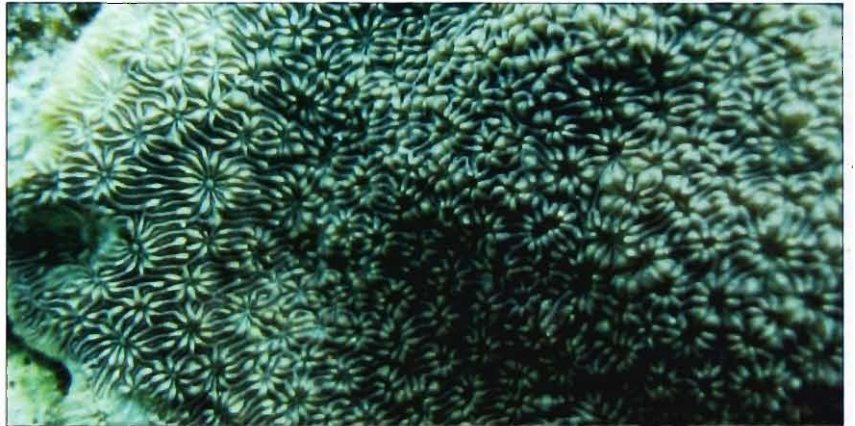
Description: Colonies are encrusting but are sometimes submassive. Corallites are usually widely spaced and circular, with pillar like columellae and smooth alternating septo-costae. They may occur in concentric rows.

Colour: It has wide variety of colours such as dark green, brown or mottled brown.

Similar Species: *P. gigantea*.

Distribution: Madagascar, Cocos-Keeling Islands and Andaman and Nicobar Islands in the Indian Ocean and Great Barrier Reef.

Remarks: Often found inside the crevices and below the rocks.



144. *Pavona gigantea* Verrill, 1896

Description: Colonies are massive. Corallites have thick walls and are well defined. Septocostae are in two distinct orders. Columellae are well developed. Tentacles are extended during the day giving colonies a furry appearance.

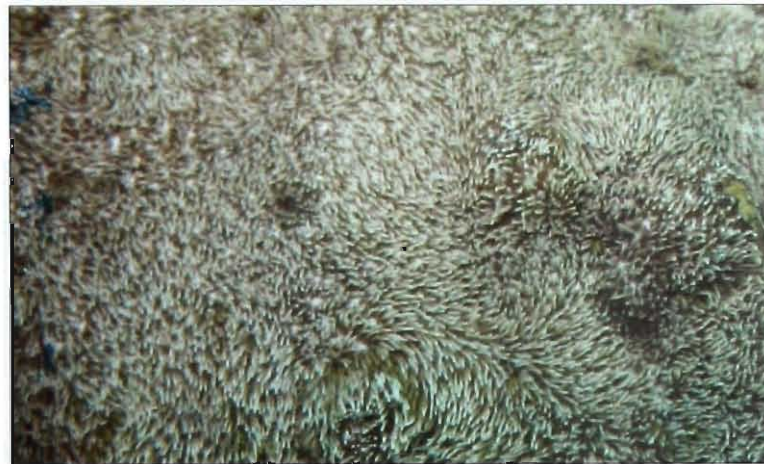
Colour: Greenish grey.

Similar Species:

P. explanulata.

Distribution: West to South America and Andaman and Nicobar Islands.

Remarks: Mostly found in confined lagoons.



145. *Pavona maldivensis* (Gardiner, 1905)

Description: Colonies are laminar, encrusting sometimes forming short contorted branches. Corallites are circular, placoid, usually of irregular sizes with distinct thecae. Those near plate margins may be aligned in parallel rows.

Colour: Pale or dark greyish brown.

Similar species: None.

Distribution: Tropical Pacific, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Mostly found in strong wave action areas.



Source: Venkataraman et al., 2003

146. *Pavona minuta* Wells, 1954

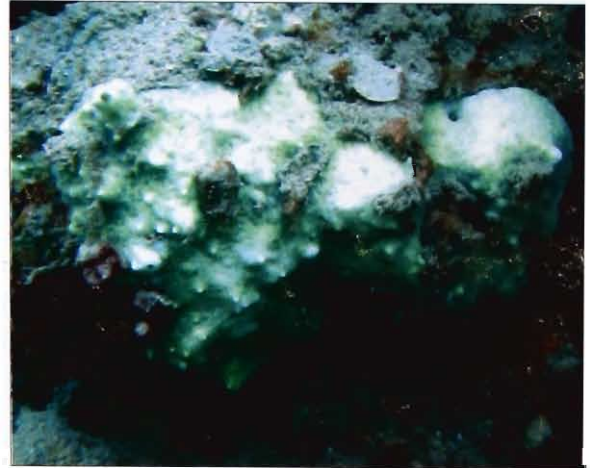
Description: Colonies are encrusting to sub-massive with thin margins. Corallites are small and widely spaced, hence colonies are smooth. Corallites walls are thick.

Colour: Colonies are dark green and brown.

Similar Species: *P. clavus*.

Distribution: East Indian Ocean, Sri Lanka, South East Asia, Great Barrier Reef, Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in shallow reef areas.



147. *Pavona varians* Verrill, 1846

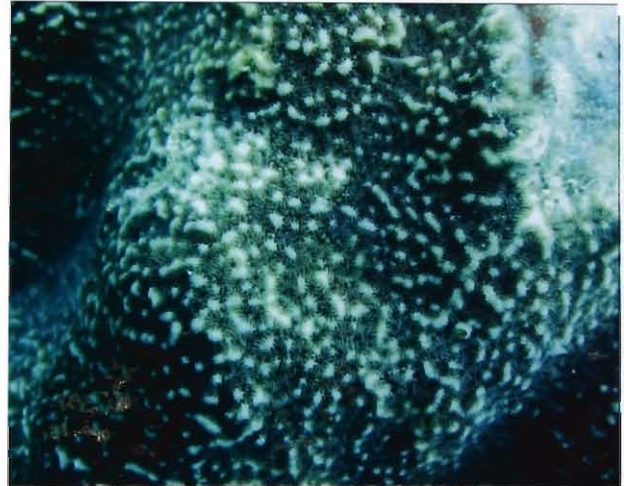
Description: Colonies are sub-massive, laminar or encrusting or various combinations of these. Corallites are in short irregular valleys, or are in aligned between ridges perpendicular to margins, or are irregularly distributed on flat surfaces. Septo-costae are in alternating orders.

Colour: Yellowish green, in deep waters dark brown with glittering ridges.

Similar Species: *P. venosa*.

Distribution: Tropical Pacific, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Colony colour often merged with background (rock/dead coral).



148. *Pavona venosa* (Ehrenberg, 1834)

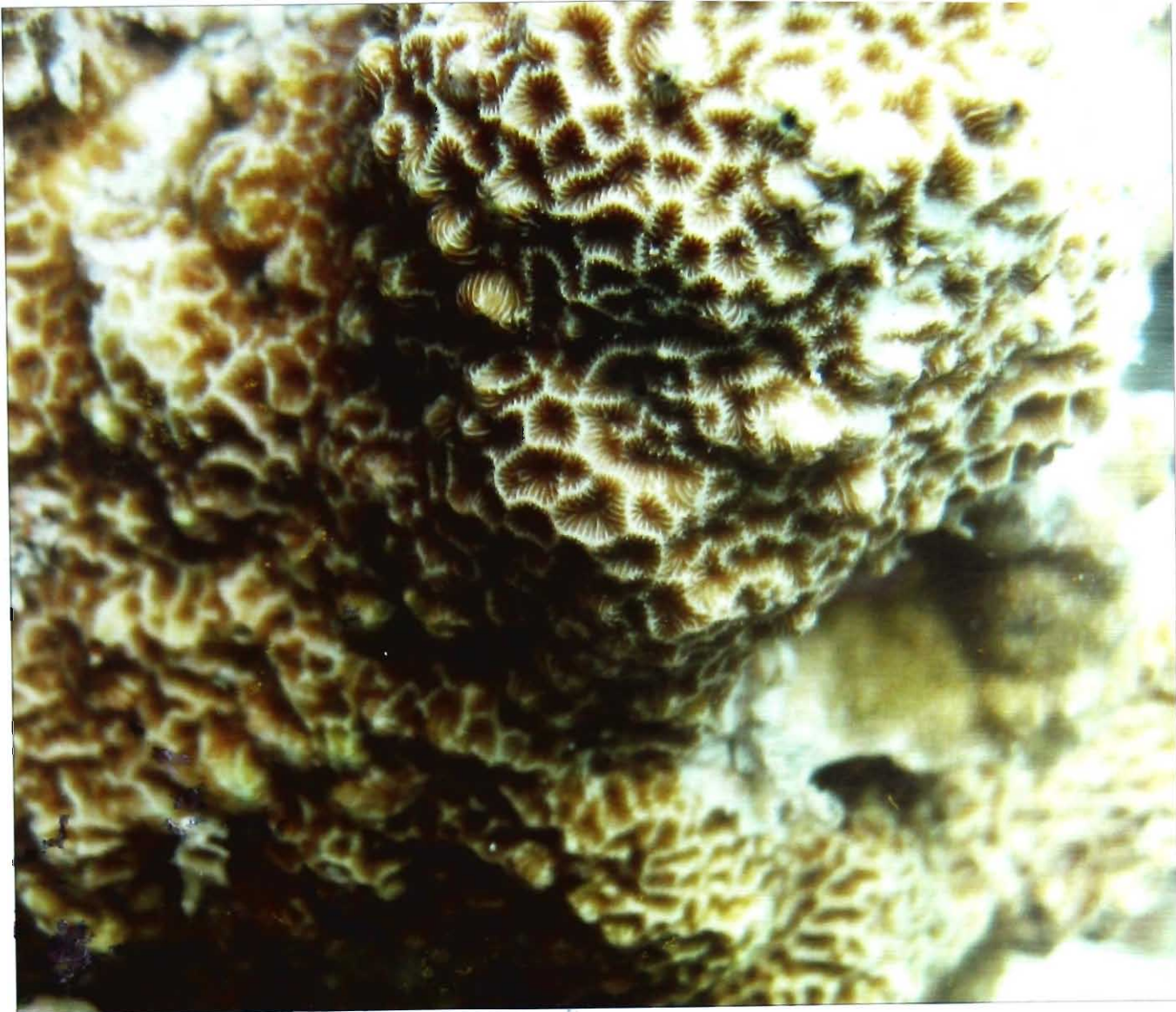
Description: Colonies are massive, may form columns. Corallites are sub-ceroid. Septo-costae are in three orders, uniform and widely spaced. Columellae are poorly developed and may absent.

Colour: Yellowish brown.

Similar species: *P. varians*.

Distribution: Red Sea, Celebs, Indonesia, Marshall Islands, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope areas.



Genus *LEPTOSERIS* Milne Edwards and Haime, 1849

There are 15 species of *Leptoseris*, of which two are recorded from the Andaman and Nicobar Islands.

Characters: Colonies are foliaceous and have a delicate leafy appearance. On occasions, colonies may be laminar or encrusting. They frequently have a distinct central corallite. Corallites have poorly defined walls. There are small shallow depressions with a central columella, usually separated by ridges and interconnected by fine septo-costae. Eventhough they are widespread, most species are considerable geographic as well as environmental variations.

Similar Genera: *Pavona*.



149. *Leptoseris cuclata* (Ellis and Solander, 1786)

Description:

Colonies are flat plates which may be encrusting or tiered. Corallites are closely compacted, large, outwardly inclined, with a tendency to form concentric rows. Septo-costae strongly alternate.

Colour: Brown.

Similar Species:

L. nycetoseroides.

Distribution:

Caribbean Sea and Andaman and Nicobar Islands.

Remarks: Often seen in outer reef slope areas.



150. *Leptoseris explanata* (Yabe and Sugiyama, 1941)

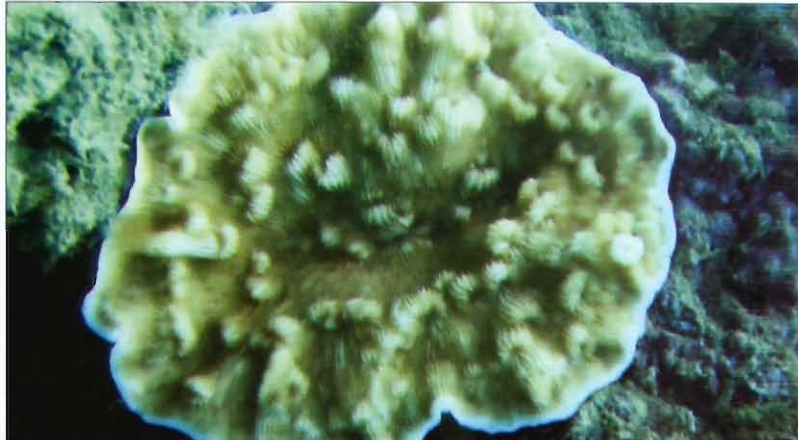
Description: Colonies are composed of unifacial laminae which may be horizontal with entire or lobed margins, or contorted and partly upright. Corallites are widely spaced and outwardly inclined. Long and short septo-costae alternate strongly and form fine but conspicuous radiating striations.

Colour: Pale brown.

Similar Species: *L. gardineri* and *L. scabra*.

Distribution: Distributed worldwide from Madagascar to Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Usually found on vertical or overhung faces, especially of lower reef slopes



151. *Leptoseris hawaiiensis* (Vaughan, 1907)

Description: Colonies are encrusting laminae attached in centre of the colony. Corallites are small, deep and rounded, irregularly distributed and form small mounds around the corallites. Septo-costae are even, giving the coenosteum a smooth appearance.

Colour: Greenish brown and Pale brown.

Similar Species: *L. scabra*.

Distribution: Mascarene Archipelago in the west, Indonesia, Palau, the Marshall Islands, Hawaii and Andaman and Nicobar Islands.

Remarks: Mostly found inside the crevices or below the rocks.



152. *Leptoseris incrustans* (Quelch, 1886)

Description: Colonies are primarily encrusting but may develop broad explanate laminae. These laminae often have radiating ridges. Corallites are small, closely compacted and superficial. The coenosteum commonly has monticules. Septo-costae are thin and equal, giving colony a smooth surface.

Colour: Pale brown but columellae usually thick brown or green

Similar Species: *L. hawaiiensis*.

Distribution: Marshall Islands, Madagascar, Hawaii and Andaman and Nicobar Islands.

Remarks: Found in confined areas.



153. *Leptoseris mycetoseroides* Wells, 1954

Description: Colonies are encrusting or laminar plates which frequently exceed one metre across. Plates have small irregular folds on the surface. Corallites are crowded between the folds except towards the periphery where they are aligned in rows parallel to the margins. They are outwardly inclined. Septo-costae are fine and even.

Colour: Mottled brown and green

Similar Species: *L. foliosa*.

Distribution: Marshall Islands, Madagascar and Andaman and Nicobar Islands.

Remarks: Found in reef slope protected from wave action.



154. *Leptoseris papyracea* (Dana, 1846)

Description:

Colonies are delicate, unifacial, contorted and with irregularly divided fronds, each frond with a few corallites.

Colour: Colonies are dull brown on upper surface and lower side white.

Similar Species:

L. gardineri.

Distribution:

Madagascar, Amrinat Islands, Hawaii, Eastern Pacific and Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found in protected habitat.



Source: Venkataraman et al., 2003

155. *Leptoseris scabra* Vaughan, 1907

Description: Colonies are composed of encrusting; unifacial laminae which may become highly contorted forming hollow columns or tubes. A central corallites may be distinguishable. Corallites becomes more widely spaced towards the colony perimeter. They are irregular and usually outwardly inclined. Long and short septo-costae strongly alternate and are interlinked in complex patterns.

Colour: Pale brown with white margins.

Similar Species: *L. hawaiiensis*.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Usually found on vertical rocks.

156. *Leptoseris solida* (Quelch, 1886)

Description: Colonies are encrusting and do not have a conspicuous central corallite. The surface may be folded and sometimes forms tubes. Corallites are inclined towards the colony margins and are distributed irregularly. Corallites have small openings. Septo-costae are granulated and alternate. Those of adjacent corallites commonly occur between corallites.

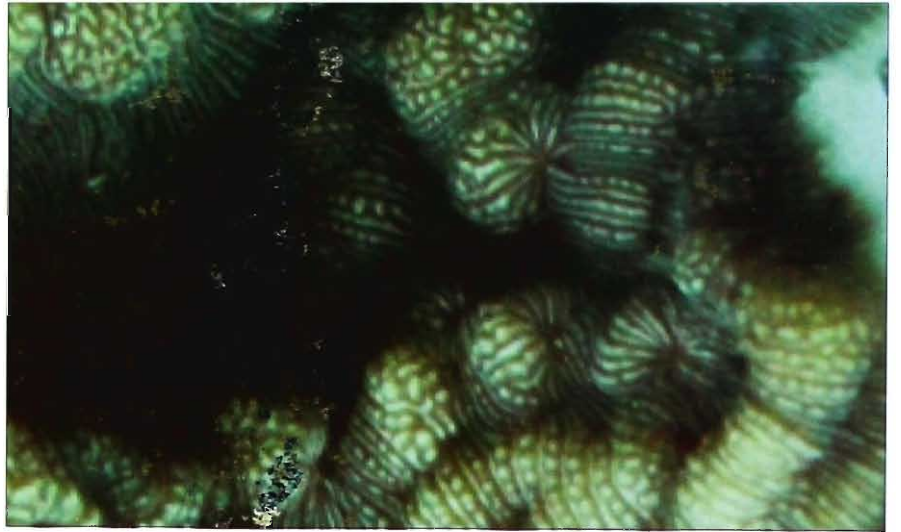


Colour: Brown with white margins.

Similar Species: *L. scabra*.

Distribution: Distributed in Indo-Pacific, Madagascar, Red Sea, Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Mostly found in reef slope.



157. *Leptoseris yabei* (Pillai & Scheer, 1976)

Description: Colonies are laminar, in whorls or tiers or vase-shaped. They are commonly over one meter across. Corallites are enclosed in rectangular pockets formed between radiating ridges and low walls which are parallel to frond margins. Septo-costae are moderately exsert and alternate.

Colour: Pale brown

Similar Species: *L. mycetoseroides*.

Distribution: Indo-Pacific, Red Sea, Maldives, Japan and Andaman and Nicobar Islands.

Remarks: Usually found on reef flats.

Genus *COELOSERIS* Vaughan, 1918

This is a monospecific and well defined genus.

Characters: Colonies are massive either rounded or hillocky. Corolla are cerioid with colonies formed by monostomodaei budding. Columellae are absent and the axial space is open. It has *Pavona*-like, neatly arranged septo-costae, which join at top of the walls. Polyps are extended only at night.

Similar Genera: *Pavona* and *Leptastrea*.



158. *Coeloseris mayeri* Vaughan, 1918

Description:

Colonies are massive either rounded or hillocky. Corallites are cerioid, large arrange tightly. Columellae are absent. Septo costae slightly exert.

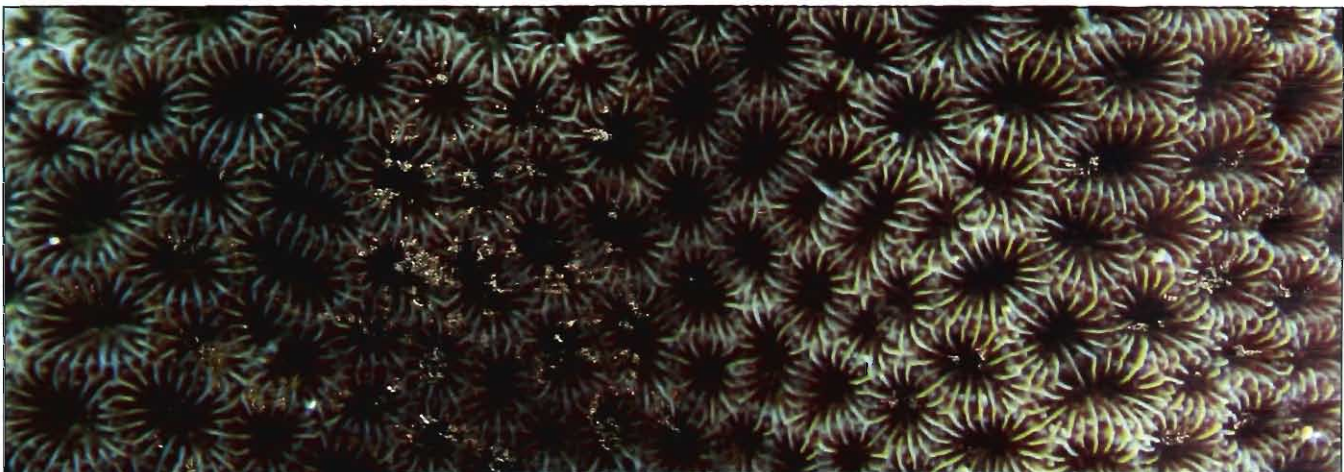
Colour: Yellowish green and pale brown.

Similar Species: *Pavona* sp. and *Leptoseria* sp.

Distribution:

Great Barrier Reef, Elizabeth and Middleton Reef, Rowley Shoals, Scoot Reef and Andaman and Nicobar Islands.

Remarks: Found in Reef flat areas. Often confusing with *Favia lacuna*.



Genus *GARDINEROSERIS* Scheer and Pillai, 1974

This is a monospecific genus. In India it is reported from Lakshadweep and Andaman & Nicobar Islands.

Characters: Colonies are massive to encrusting, sometimes with laminar margins. Corallites have poorly defined walls but are separated by acute ridges so that each corallite is at the bottom of a neat excavation. Columellae are present and septo-costae are fine and even. Polyps are extended only at night.

Similar Genera: *Pavona*.



159. *Gardineroseris planulata* (Dana, 1846)

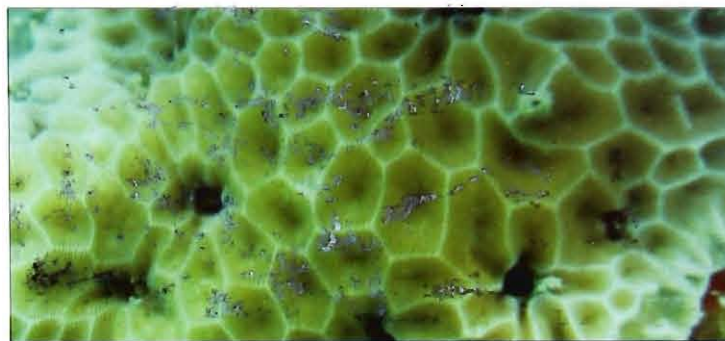
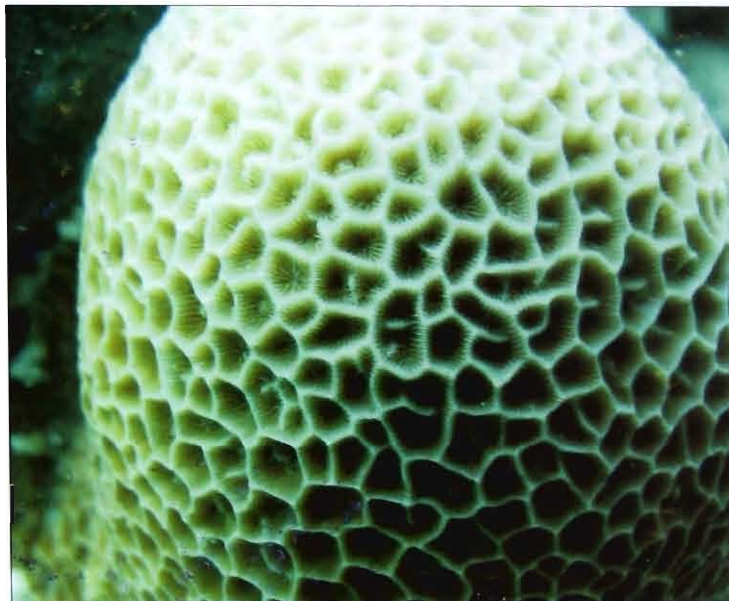
Description: Colonies are massive to encrusting, sometimes with laminar margins. Corallites have poorly defined walls but are separated by acute ridges so that each corallite or group of corallites is at the bottom of a neatly rounded excavation. Columellae are present and septo-costae are fine and even. Tentacles are rarely extended and only at night.

Colour: Colonies are pale or dark brown, sometimes yellow or green.

Similar Species: *Pavona varians*.

Distribution: Tropical Indo-Pacific, Red Sea, Marshall Islands, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Often seen in calm waters.



Genus *PACHYSERIES* Milne Edwards and Haime, 1849

Pachyseries is a well defined genus. There are five species of *Pachyseries* reported from the world of which three are recorded from India.

Characters: Colonies are laminar (upright fronds) and unifacial, to branching and bifacial. Branches are usually highly contorted. The surface is a series of concentric rings parallel with the margins. Corallite centres are not discernible. Valleys are concentric and parallel to the corallum edge. Columellae are wall-like with lobed upper margins or absent. Septo-costae are fine, even and tightly compacted. Extended polyps have never been observed.

Similar Genera: *Agaricia*.



160. *Pachyseris foliosa* Veron, 1990

Characters: Colonies consist of whorls of delicate, unifacial, undivided or bifurcating fronds. Valleys are shallow and parallel to frond margins. There is almost no development of columellae.

Colour: Pale brown.

Similar species: *P. involuta* and *P. speciosa*.

Distribution:

Philippines, Indonesia, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found in protected reef slopes.



161. *Pachyseris gemmae* Nemenzo, 1955

Description: Colonies are horizontal irregular folded frons. Valley is parallel to frond margins except towards the base of fronds where they become irregular. Corallites are wavy. Columellae are wall-like and clearly fused with septo-costae.

Colour: Creamy, valley lined with brown.

Similar Species: *P. speciosa*.

Distribution: Distributed in Great Barrier Reef, Philippines, Indonesia and Andaman & Nicobar Islands.

Remarks: Soft bottom reef slope areas.



162. *Pachyseris rugosa* (Lamarck, 1801)

Description: Colonies consist of upright irregular, usually contorted, anastomosing bifacial plates. Columellae are wall-like lobes.

Colour: Colonies are deep bluish-grey and brown.

Similar Species: *P. gemmae*.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in wave exposed areas.



163. *Pachyseris speciosa* (Dana, 1846)

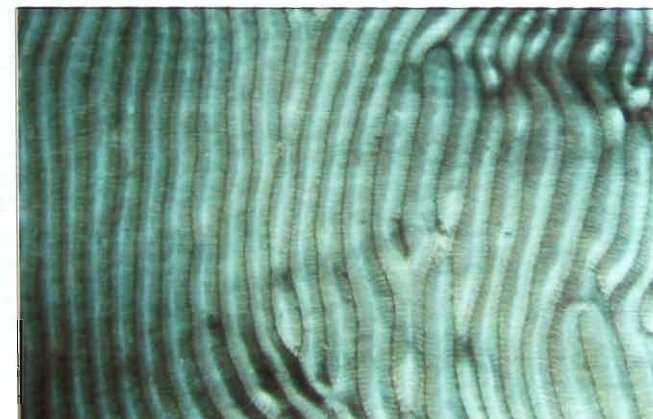
Description: Colonies are unifacial laminae, horizontal. Valleys are parallel to frond margins. Corallites are small. Columellae are absent.

Colour: Pale brown

Similar Species: *P. gemmae*.

Distribution: Tropical Indo-Pacific, Red Sea to Marshall Islands, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in lower reef slope.





A group of Fungids

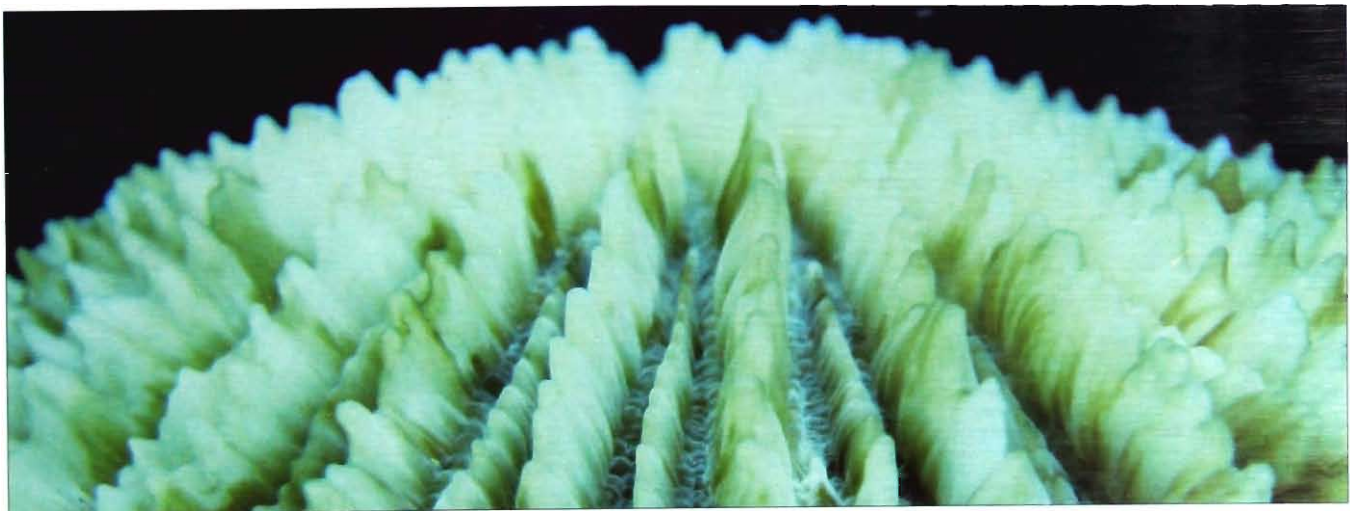
FAMILY FUNGIIDAE Dana, 1846

Characters: Solitary or colonial, free living or attached, mostly hermatypic and extant. Colonial genera are derived from solitary genera and each has septo-costal structures corresponding to those of a solitary genus. These septo-costae radiate from the mouth on the upper surface as septa and from the centre of the under surface as costae.

Genera *Cycloseris*, *Diaseries*, *Fungia*, *Ctenactis*, *Herpolitha*, *Polyphyllia*, *Halomitra*, *Sandalolitha*, *Lithophyllon*, *Podabacia* and *Zoophilus*. Except *Zoophilus*, all the other ten genera are reported in India.



Similar families None.

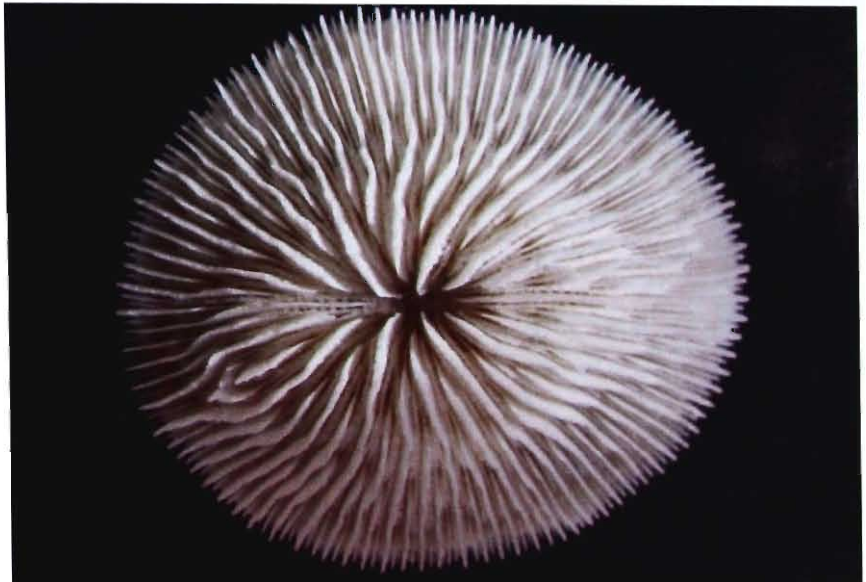


Genus *CYCLOSERIS* Milne Edwards and Haime, 1849

Eleven species are reported worldwide, of which six species are reported in India.

Characters: Solitary, free living, flat or dome shaped or slightly oval in outline, with a central mouth. Septa have fine teeth; costae are fine, without under surface pits. Polyps are usually extended only at night. Fine tentacles cover the upper surface of the disc.

Similar genera: *Fungia* and *Diaseris*.



164. *Cycloseris costulata* (Ortmann, 1889)

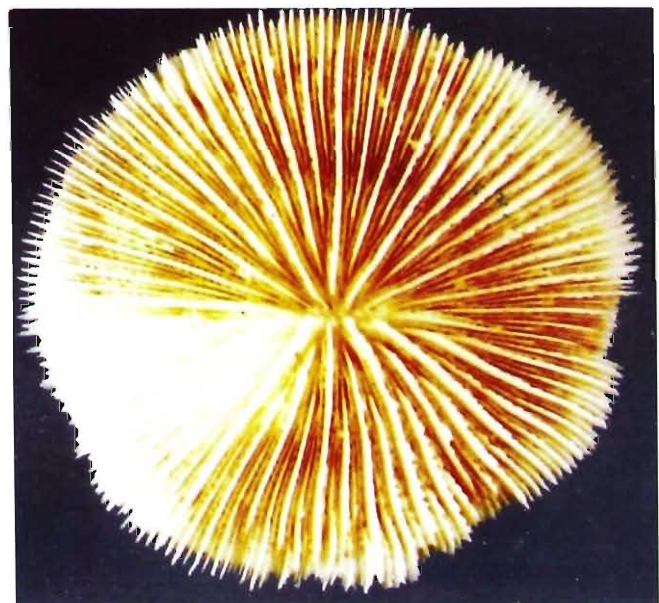
Description: Corals are circular, helmet shaped, up to 76 mm in diameter with a concave under surface. Primary septa are thick and exert around the mouth.

Colour: Pale cream or brown

Similar Species: *C. cyclolites*.

Distribution: Maldives, Sri Lanka, Andaman and Nicobar Islands, Great Barrier Reef, Bismarck Archipelago and Palau.

Remarks: Occur in soft inter-reef and in reef substrates.



Source: Venkataraman et al., 2003

165. *Cycloseris cyclolites* (Lamarck, 1801)

Description: Polyps are circular domes up to 40 mm in diameter with a concave undersurface. Septa are straight and symmetrical. Primary septa are thick and exert around the mouth.

Colour: Polyps are pale cream or greenish.

Similar Species:

C. costulata.

Distribution: Red Sea, Sri Lanka, Philippines, Great Barrier Reef, New Britain, Japan, Palau and Andaman and Nicobar Islands

Remarks: Mostly found in soft muddy bottom.



166. *Cycloseris hexagonalis* Milne Edwards and Haime, 1848

Description: Polyps are flat, slightly central dome around the mouth. Septa are fine and uniform running from mouth to perimeter. Small corals have an angular outline that becomes irregular when fully grown. Colony can attain 90 mm in diameter. Tentacular lobes are absent. Costae are fine and only developed towards the polyp perimeter.

Colour: Brown and Green

Similar Species: *C. sinensis*.

Distribution: Sri Lanka to Coral Sea including Andaman and Nicobar Islands.

Remarks: Found in soft bottom reefs.

167. *Cycloseris patelliformis* (Boschma, 1923)

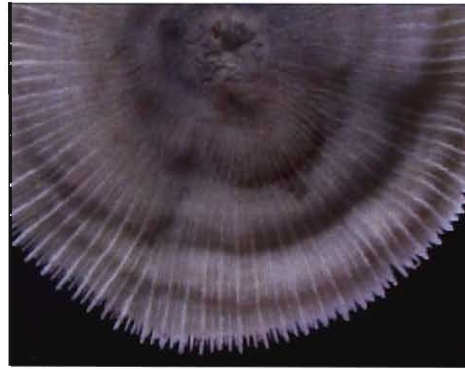
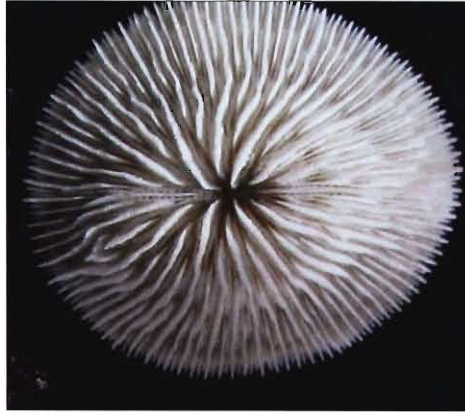
Description: It is circular, or very lightly elongate, up to 7 cm maximum diameter. The undersurface is flat or slightly concave. The upper surface is flat, except around the axial fossa, where septa of the lower orders are strongly arched. It usually has very thin perimeters.

Colour: Cream

Similar species:
C. vaughani.

Distribution: Indonesia, Philippines, Great Barrier Reef, Samoa and Andaman and Nicobar Islands.

Remarks: Found only on soft, sandy to muddy substrates. Usually occur in the soft bottom.



168. *Cycloseris sinensis* Milne Edwards and Haime, 1849

Description: Polyps are flat, circular or irregular in outline. There is little or no central dome. The central fossa is deep. Septa are thick, tightly packed and even, giving the oral disc a smooth appearance. Long and short septa which are clearly alternate.

Colour: Pale brown.

Similar species: *C. hexagonalis* and *Diaseries distorta*.

Distribution: Maldives, South Africa, Indonesia, Philippines, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands.

Remarks: Occur in soft inter-reef substrates.

169. *Cycloseris somervillei* (Gardiner, 1909)

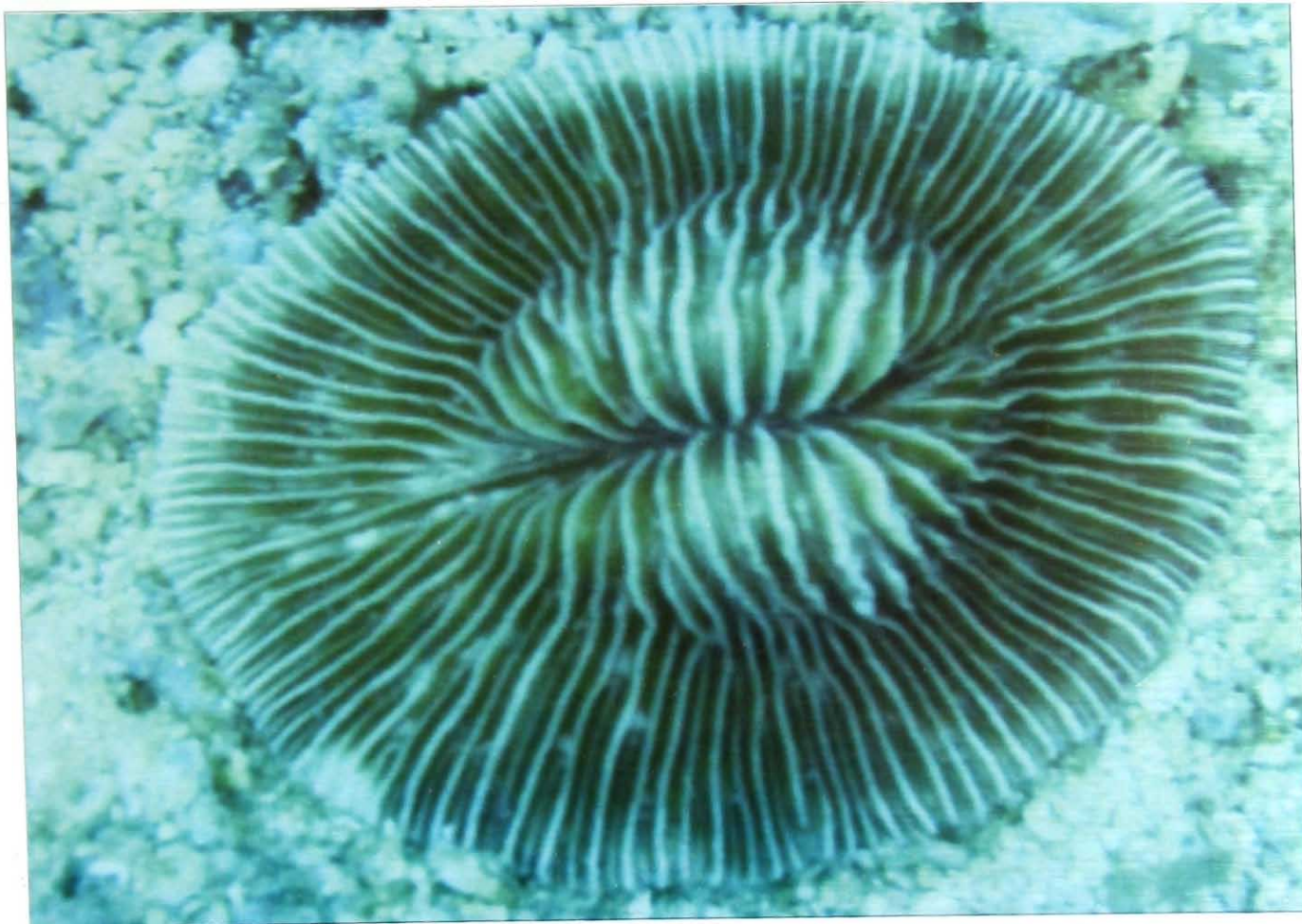
Description: Polyps are oval in shape. Septa are numerous and thin, except toward the centre, where those of the lower order increase in thickness. Septal margins bear small, regular, triangular dentations, which correspond to vertical rows of small granules on the septal sides. The columella is well developed and delicately spongiöse. Costae are thin, slightly wavy towards the centre of the corallum.

Colour: Pale brown

Similar Species: *Fungia horrida*.

Distribution: Seychelles, Amirante, Sulu Island, Great Barrier Reef, Fiji, Andaman and Nicobar Islands and Lakshadweep.

Remarks: Found on the soft inter-reef substrates and lower reef slopes protected from wave action.



Genus *DIASERIS* Milne Edwards and Haime, 1849

Out of two species reported from the world, only one is recorded in India.

Characters: Corals are flat, solitary, free living polyps, which are composed of several fan shaped segments with a mouth situated at the point of divergence of the segments. Septa are thick with blunt teeth resembling rows of granules. Corals are commonly inflated with water. The increased surface area may help to prevent burial in soft substrates and may also facilitate movements across the substrate.

Similar Genera: *Cycloseris*.

170. *Diaseris distorta* (Michelin, 1843)

Description:

Polyps consist of fan-shaped segments up to 40 mm wide. Thick beaded septa are of unequal in height. Polyps are commonly inflated by water to several times the volumes of the skeleton.

Colour: Cream

Similar Species: *D. fragilis*

Distribution:

From Madagascar to Hawaii Islands, Andaman and Nicobar Islands.

Remarks: Occur in soft substrates, especially where exposed to currents. Sometimes found in sea grass beds.



Genus *CANTHARELLUS* Hoeksema and Best, 1984

Worldwide two species recorded of which only one species reported from Andaman & Nicobar Islands.

Characters: Polyps have one, or sometimes several centres. They are permanently attached to the substrate. Speta and costae have simple ornamentations, usually only fine granules.

Similar genera: *Cycloseris* and *Diaseris*.



171. *Cantharellus noumeae* Hoeksema and Best, 1984

Description: Polyps are small, cup-shaped when fully developed, and have wavy margins. The species may be solitary or colonial, the latter consisting of a few contorted corallites. Primary septa are thin and usually smooth edged.

Colour: Brown.

Similar Species: *Cycloseris duederleini*.

Distribution: Red Sea, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in shallow and clear water.



Genus *FUNGIA* Lamarck, 1801

Eighteen species recorded worldwide, of which seventeen are reported from India.

Characters: Corals are solitary, free living (except for juveniles), flat or dome shaped, circular or elongate in outline, with a central mouth. Septa have large or small, rounded or pointed teeth; costae consist mostly of rows of spines. The disc has often pits between the costae on the lower surface. Polyps are usually extended only at night and have short widely spaced tentacles.

Similar Genera: *Cycloseris*.



172. *Fungia concinna* Verrill, 1864

Description: Polyps are circular, up to 160 mm diameter and generally flat. Septa are densely packed. Septal teeth and costal spines are small, giving septa a smooth appearance. Tentacular lobes are not formed or are minute. The undersurface is usually without pits.

Colour: Polyps are usually brown, sometimes with a contrasting perimeter.

Similar Species: *F. repanda*, *F. spinifer* and *F. scabra*.

Distribution: Coral Sea to Madagascar and Andaman and Nicobar Islands.

Remarks: Usually found in reef flat.



173. *Fungia corona* Doderlein, 1901

Description: Polyps have an irregular outline, flat to strongly convex, thin and light. Septa are of markedly different sizes and have large pointed teeth. Tentacular lobes are weakly developed. Costae are widely spaced, the larger having simple spines.

Colour: Pale brown.

Similar Species: *F. danai*.

Distribution: Red sea, Madagascar, Sri Lanka, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Often occur in soft bottom reef slope.



174. *Fungia danai* Milne Edwards and Haime, 1851

Description: Polyps are circular, up to 300 mm diameter and not heavily calcified, with a strong central arch. Septa are straight and have very large teeth and a prominent tentacular lobe. Costae are compact, with large branching spines of different orders. The undersurface has pits between the costae but few deep perforations.

Colour: Polyps are usually brown sometimes mottled, with pale septal margins and tentacular lobes.

Similar Species: *F. horrida*.

Distribution: Tropical Indo-Pacific to Madagascar and Andaman and Nicobar Islands.

Remarks: Reef flat and reef slope.



175. *Fungia fralinae* Nemenzo, 1955

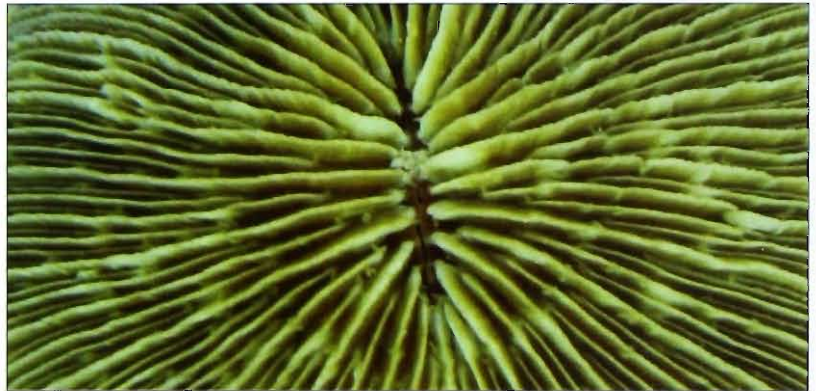
Description: Polyps are circular. Septa are in two distinct orders, those of the first order being very exert, straight and thin. All septa have fine teeth. Tentacles, which are sometimes bifurcated, are commonly extended during the day.

Colour: Polyps are usually olive-green with tiny but conspicuous violet tentacle tips.

Similar Species: None.

Distribution: Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in reef slope and protected lagoons.

176. *Fungia fungites* (Linnaeus, 1758)

Description: Polyps are approximately circular and up to 280 mm diameter. Septal teeth are triangular, pointed and usually have well defined central ribs. Tentacular lobes may be present. Costal spines are tall, smooth and conical.

Colour: Polyps are brown, sometimes mottled, often with pale tentacular lobes.

Similar Species: *F. repanda*.

Distribution: Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in reef slope and lagoons.



177. *Fungia granolusa* (Klunzinger, 1879)

Description: Polyps are circular, up to 135 mm diameter and flat or with a central arch. Septa are thick and wavy, with finely granulated margins. Tentacular lobes are wide, causing the wavy shape of the septa. Costae are fine. The undersurface has pits between the costae.

Colour: Brown

Similar Species: *F. scabra*.

Distribution: Red sea, Madagascar, Maldives, Sri Lanka and Andaman and Nicobar Islands.

Remarks: Found in reef slope and lagoons.

178. *Fungia horrida* Dana, 1846

Description: Polyps are circular, up to 200 mm diameter and thick, with a strong central arch. Septa are straight, with very large irregular teeth. Tentacular lobes are weakly developed. Costae are unequal, with very long spines. There are no pits between the costae.

Colour: Polyps are usually brown, commonly with radiating stripes or mottled.

Similar Species: *F. danai*.

Distribution: Red Sea, Madagascar, Philippines, Australia, Fiji and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



179. *Fungia klunzingeri* Doderlein, 1901

Description: Polyps are circular, up to 200 mm diameter and flat or with a central dome. Septa are of markedly different sizes and have large triangular to columnar teeth with a central rib and which form regular pattern. Tentacular lobes are usually not developed. Costae are widely spaced, the larger having simple spines. The undersurface has pits between the costae.

Colour: Polyps are brown, sometimes with radiating stripes, with white tentacular lobes.

Similar Species: *F. horrida*.

Distribution: Red Sea, Madagascar, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Occur in reef slope and lagoons.

180. *Fungia moluccensis* (Horst, 1919)

Description: Polyps are usually attached to, or encrust, the substrate. They may be shaped like *Fungia paumotensis* but are commonly contorted. They usually have a strong central arch. In specimens which are not contorted, primary septa extend from the mouth to the perimeter. Secondary mouths are sometimes formed. Costae are irregular. An attachment scar is usually prominent.

Colour: Brown, cream or mottled.

Similar Species: *F. paumotensis*.

Distribution: Red Sea, Maldives, Hawaii Islands and Tropical Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Found in reef slope and turbid water.



181. *Fungia paumotensis* Stutchbury, 1833

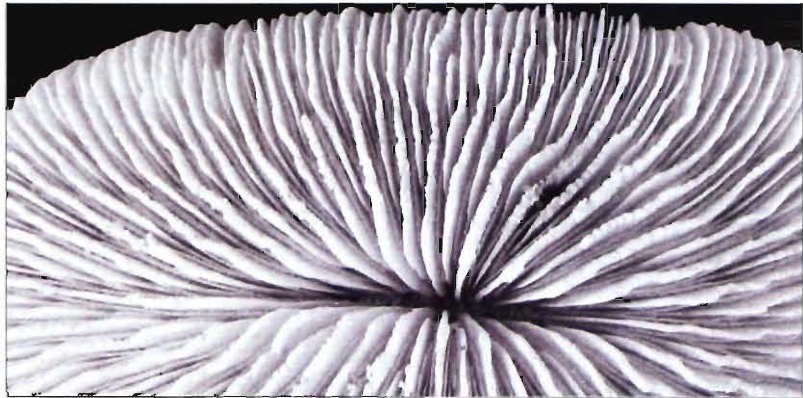
Description: Polyps are elongate up to 250 mm long with almost parallel sides. They are thick and heavy and usually have a strong central arch. Most primary septa extend from the mouth to the perimeter. Costae are fine straight. There are no attachment scars except on immature specimens.

Colour: Polyps are usually brown.

Similar Species: *F. moluccensis*.

Distribution: Red Sea, Madagascar, Maldives, Philippines, Australia, Coral Sea, Japan and Andaman and Nicobar Islands.

Remarks: Reef slope and lagoons.



182. *Fungia repanda* Dana, 1846

Description: Corals are circular, up to 30 cm in diameter, thick, flat or strongly arched. Septal teeth are fine but clearly visible, coral spines are granular. The under surface has pits between the costae.

Colour: Brown.

Similar Species: *F. fungites*.

Distribution: Indo-Pacific, Red Sea, Australia, Coral Sea and Andaman and Nicobar Islands.

Remarks: Commonly occur in reef slopes and lagoons.



183. *Fungia scabra* (Doderlein, 1901)

Description: Polyps are usually circular, flat or arched. Septa are thin with fine conical or granular teeth. Small tentacular lobes may be present. Costae are fine. There are no pits between the costae. Septa may form irregular patterns in turbid environments.

Colour: Polyps are usually brown.

Similar Species: *F. concinna*.

Distribution: Madagascar, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Found in reef flat.



184. *Fungia scruposa* (Klunzinger, 1879)

Description: Polyps are circular or oval, up to 240 mm diameter, not strongly arched, thick and heavy. Septa are densely packed and often wavy. Tentacular lobes may be present. Costae are very unequal, with simple spines. The undersurface has extensive perforations between costae.

Colour: Polyps usually brown or blue or pink.

Similar Species: *F. corona*.

Distribution: Red Sea, Madagascar, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Occur in Reef slope.



185. *Fungia scutaria* Lamarck, 1801

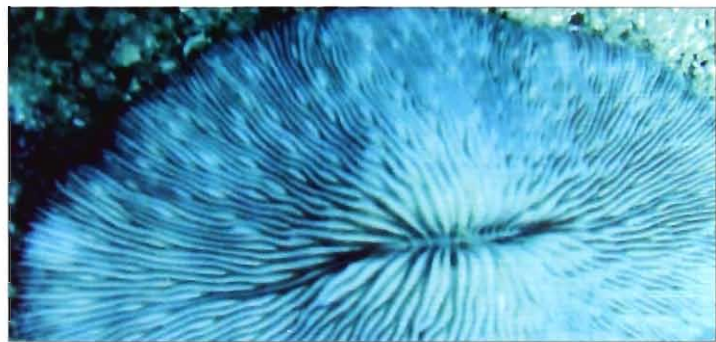
Description: Polyps are oval, thick, heavy and up to 170 mm long. Primary septa commence with a tall tentacular lobe and these are distributed at regular intervals from the mouth to the perimeter.

Colour: Polyps are usually brown, blue or yellow, often with bright green, blue or white tentacular lobes.

Similar Species: *F. seychellensis*.

Distribution: Red Sea to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



186. *Fungia spinifer* (Claereboudt and Hoeksema, 1987)

Description: Polyps are circular, up to 125 mms diameter, with a distinct central arch. Septa are densely packed and straight and have fine teeth and granulated sides.

Colour: Brown to greyish-violet.

Similar Species: *F. scabra*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Outer reef slope.



187. *Fungia seychellensis* Hoeksema, 1993

Description: Polyps are circular to elongate and up to 150 mm long. Mouths may occur outside the axial furrow. Septa are fine, densely packed and usually sinuous. Tentacular lobes are inconspicuous or absent.

Colour: Polyps are pale brown in colour.

Similar Species: *F. scutaria*.

Distribution: Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Rare and found in shallow reef flats.



188. *Fungia taiwanensis* Hoeksema and Dai, 1991

Description: Polyps are elongate and up to 280 mm long with irregular sides. They are thick and heavy and usually have a strong central arch; most primary septa extend from the mouth to the perimeter. There are many secondary mouths.

Colour: Polyps are brown, with white tentacles.

Similar Species: *F. moluccensis*.

Distribution: Japan and Andaman and Nicobar Islands.

Remarks: Commonly seen in reef flat.

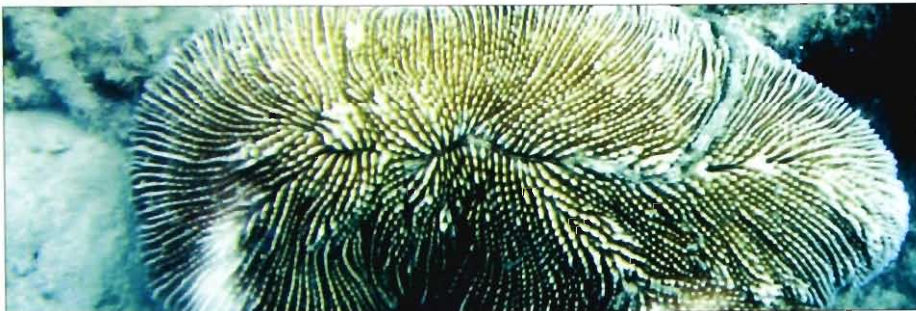


Genus *CTENACTIS* Verril, 1864

Three species are recorded worldwide and all are reported from India.

Characters: Polyps are elongated with a prominent central furrow, which may have one to several mouths. Adults are free living and either mono or poly stomatous. Septa are neatly spaced and have large triangular evenly spaced teeth. Septal dentations are coarse and either angular or rounded lobate. The costal spines are relatively large and echinose.

Similar Genera: *Fungia* and *Herpolitha*.



189. *Ctenactis albitentaculata* Hoeksema, 1989

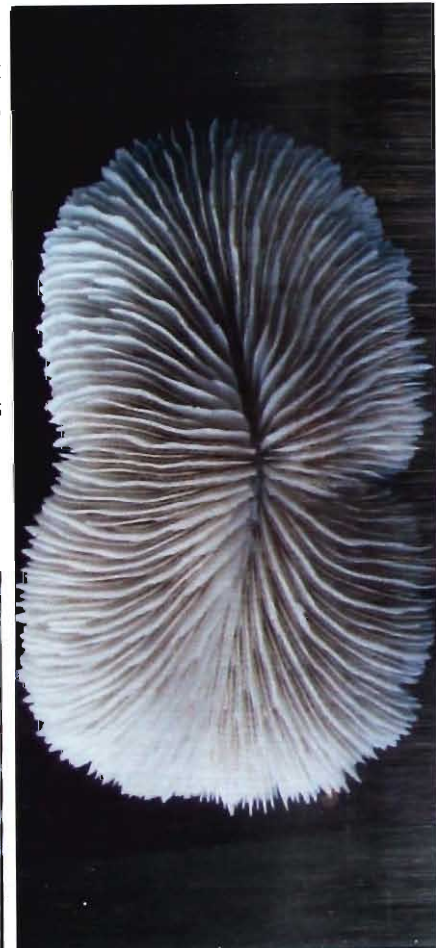
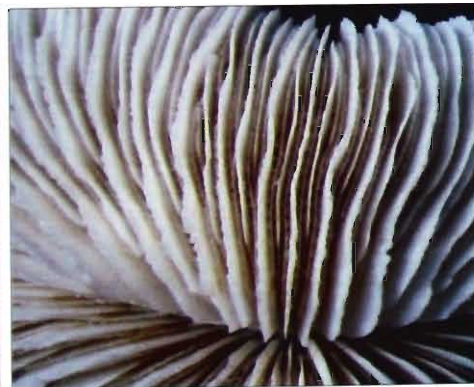
Description: Polyps are elongate with an axial furrow extending most of the polyp length. Several mouths are arranged along the axial furrow but do not occur outside the furrow. Septal teeth are long and tapered. Tentacles are usually partly extended during the day.

Colour: Pale brown.

Similar species: *C. echinata*.

Distribution: Indo-Pacific including Japan, Andaman and Nicobar Islands and Hawaii Islands.

Remarks: Commonly seen in shallow reef flats.



190. *Ctenactis crassa* (Dana, 1846)

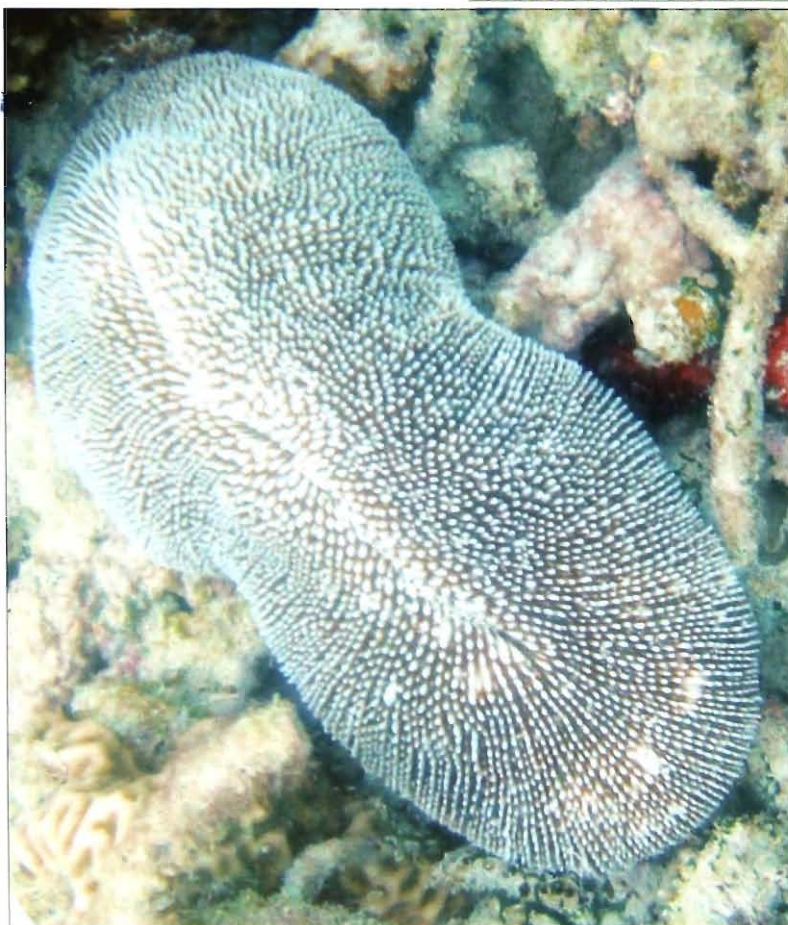
Description: Polyps are elongate, free-living. Axial furrow extending almost to the polyp ends, edges are slightly pointed. Several mouths are arranged only along the axial furrow; do not form outside the furrow. Septa are densely packed. Septal teeth are fine and arranged neatly.

Colour: Polyps are brownish orange.

Similar Species: *C. echinata*.

Distribution: Maldives, Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow reef flats.



191. *Ctenactis echinata* (Pallas, 1766)

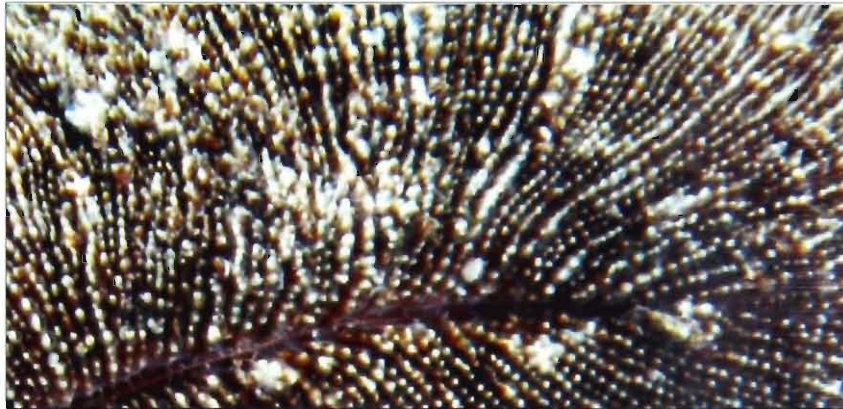
Description: The corollas are thick and vary from flat to highly arch. Polyps are elongate. Septal teeth and costal spines are well developed. The septa are densely packed and either straight or slightly bending. The septa are of low orders, thin and usually perforated. The corallum wall is perforated and covered by granulations. Only a single mouth is present. Adults are sessile.

Colour: Pale brown.

Similar Species: *C. crassa*.

Distribution: Red Sea, Indo-Pacific, Japan and Andaman and Nicobar Islands.

Remarks: Reef slope and protected lagoons.



Genus *HERPOLITHA* Eschscholtz, 1825

Two species are reported from the world and both recorded from India.

Characters: Adults are free living, elongate with an axial furrow that may extend to the corallum ends. Several centres, corresponding with mouths are arranged along the furrow and secondary centres are distributed over the rest of the upper surface. The corallum wall is perforated and not covered by granulations. The septal and costal ornamentations are fine. The granulations on the septal sides are arranged in rows perpendicular to the septal margins. Septa are similar in structure to those of *Fungia* (*Pleuractis*). Polyps are extended only at night. Tentacles are short and widely spaced like *Fungia*. Secondary centres have single tentacles. *Herpolitha* has similar shape to *Fungia* (*Ctenactis*). It has also similarities with *Polyphyllia* although the latter has very distinct septa and more numerous centres. In India it is reported from the reefs of Andaman & Nicobar Islands.

Similar Genera: *Fungia*, *Ctenactis* and *Polyphyllia*.



192. *Herpolitha limax* (Houttuyn, 1772)

Description: Colonies are usually elongate and generally have rounded ends. Mouths occur within the axial furrow which runs most of the length of the colony. Secondary mouths outside the furrow are numerous. Few if any primary septo-costae extend from the axial furrow to the perimeter. Some colonies develop forked axial furrows and become Y, T or X shaped.

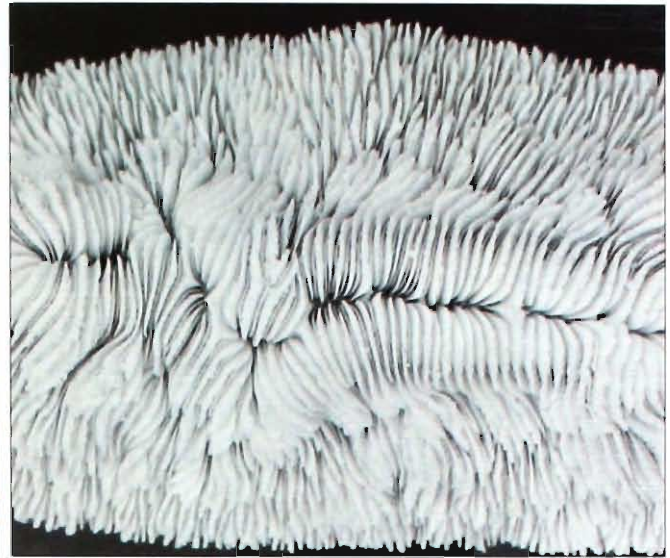
Colour: Tentacles are extended only at night. Polyps are pale or dark brown or greenish-brown.

Similar Species: *H. weberi*.

Distribution: Indo-Pacific, Red Sea, Mozambique to Japan, Australia and Andaman and Nicobar Islands.

Remarks: Usually occur with *Fungia* in reef flats.





193. *Herpolitha weberi* (Van Der Horst, 1921)

Description: Colonies are flat, narrow and elongate, usually with pointed ends. Mouths occur only within the axial furrow, which runs to the tips of the colony. Usually all septo-costae extend from the axial furrow to the perimeter. Tentacles may extend day and night.

Colour: Polyps are pale brown or mottled.

Similar Species: *H. limax*.

Distribution: Red Sea, Maldives, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Shallow reefs.



Genus *POLYPHYLLIA* Quoy and Gaimard, 1883

Two species are recorded worldwide, of which one is reported from India.

Characters: Coralla are polystomatuous, concavo-convex, mostly elliptical or elongate in outline. Secondary centres are numerous and equal to nearly equal in size to those of the axial furrow, which may become obscure. Septal and costal characters are those of *Fungia paumotensis* and *Herpolitha*. Corallum wall is perforated. The septal dentations are fine; they are covered by irregular rows of granulations perpendicular to the septal margins.

Similar Genera: *Herpolitha* and *Podabacia*.



194. *Polyphyllia talpina* (Lamarck, 1801)

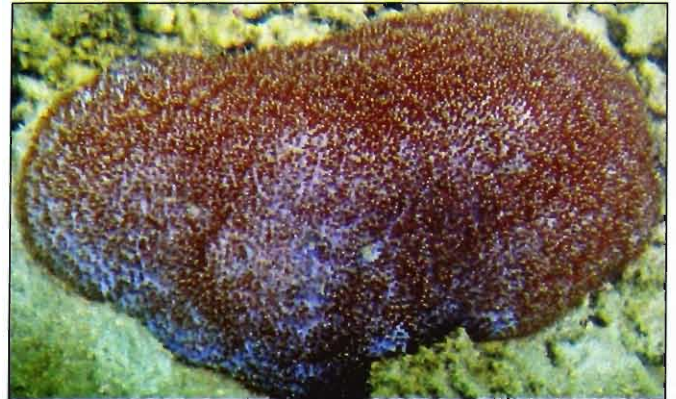
Description: Adults are free-living, elongated with an axial furrow that may become indistinct. Centres are evenly distributed over the upper surface. The interstomatous septa are short because of the high density of the stomata. The septa are densely packed, straight and have unequal thickness and height. The septa of lower orders are thick and solid; those of higher orders are thin and usually perforated. Tentacular lobes are absent. The septal sides are thinly and irregularly covered by granulations. Polyps are usually extended during the day. Tentacles are long and numerous.

Colour: Grey, greenish or cream in colour with white tentacle tips

Similar Species: *P. novaehiberniae*.

Distribution: Madagascar, Mauritius, Maldives, Indonesia, Philippines, Palau, Great Barrier Reef, Fiji, Tonga, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



Genus *SANDALOLITHA* Quelch, 1884

Three species are recorded worldwide, of which two are recorded from Andaman and Nicobar Islands.

Characters: Adult animals are free living. Colonies are with heavy construction and without an axial furrow. Corallites are exsert, outward facing and numerous. The polyps become polystomatuous by circumstomadeal budding. The corallum wall is perforate. The septal and costal ornamentations are coarse. The granulations on the septal sides are irregularly dispersed. Polyps are extended only at night. *Halomitra*, which is of lighter construction with corallites further apart.

Similar Genera: *Halomitra*.

195. *Sandalolitha dentata* Quelch, 1884

Description: Colonies are flat and irregular in shape, with corallites mostly in the central area. An axial furrow can be seen in small specimens. Septa vary greatly in height.

Colour: Brown.

Similar Species: *S. robusta*.

Distribution: Maldives, Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Found in deep waters.

196. *Sandalolitha robusta* (Quelch, 1886)

Description: Colonies are large free-living, circular to oval without axial furrow. Corallites are compact. Septa vary little in height. Tentacles are extended only at night.

Colour: Pale brown.

Similar Species: *S. robusta*.

Distribution: Maldives, Indonesia, Philippines, Great Barrier Reef, Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Found in deep and soft bottom reef slope.



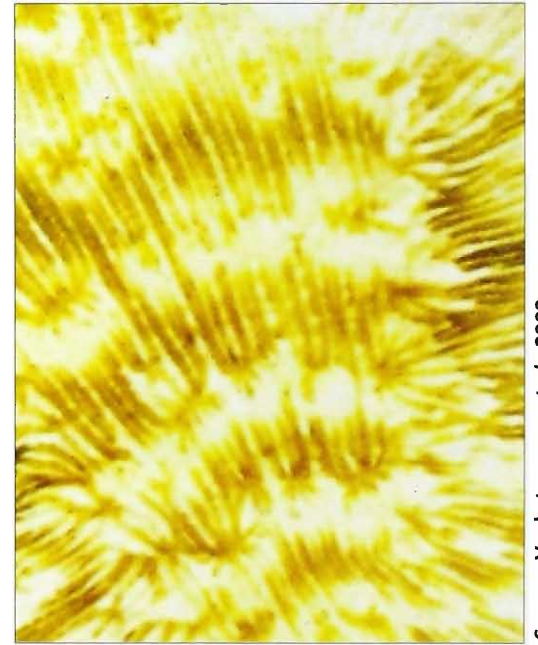
Source: Venkataraman et al., 2003

Genus *HALOMITRA* Dana, 1846

Three species are reported worldwide, of which one species is recorded from India.

Characters: Adults are free living. Colonies are thin walled and delicate, with outward facing corallites. Corolla is polycentric, free, sub-circular, gently convex or strongly arched, without, an axial furrow. The corallum wall perforated and its lower surface is granulated. The septal and costal ornamentations are coarse. The granulations on the septal sides are either arranged in rows or in ridges perpendicular to the septal margin. Colony formation is by circum-oral, polycyclic, polystomodeal budding. Septo-costal characters are those of *Fungia fungites*. Polyps are extended only at night. Tentacles are small and widely spaced.

Similar Genera: *Sandalolitha* and *Podabacia*.



Source: Venkataraman et al., 2003

197. *Halomitra pileus* (Linnaeus, 1758)

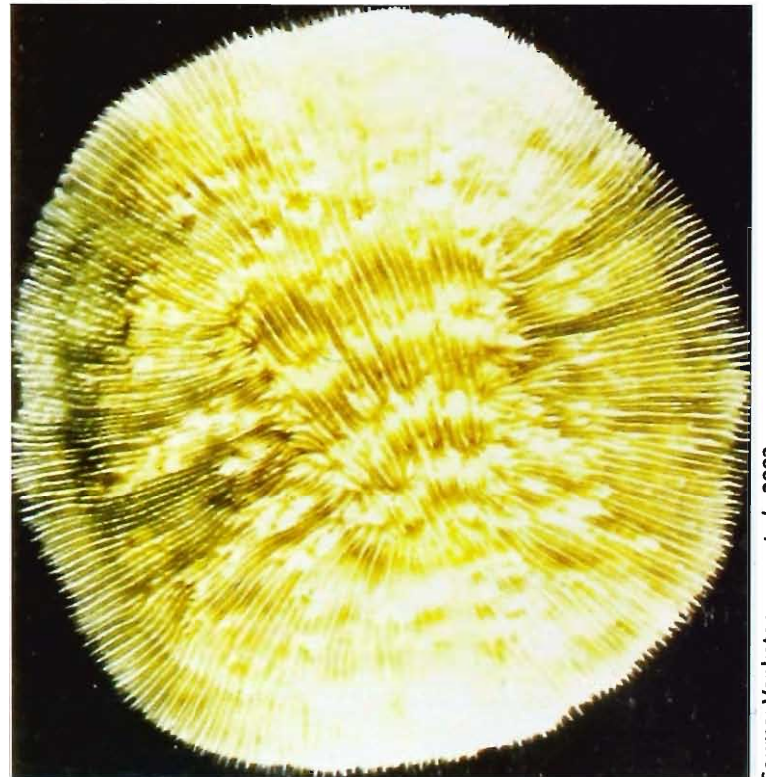
Description: Colonies are large, free living, dome shaped. They have no axial furrow. Corallites are widely spaced and increase in size as the colony grows. In small colonies, septo-costae radiate in a far from the initial point for growth or are perpendicular to the colony margin, in which case they form distinct lines of demarcation. Septa have teeth similar to those of *F. fungites*.

Colour: Pale brown.

Similar Species: *H. clavator*.

Distribution: Madagascar, Chagos, Maldives, Indonesia, Philippines, Australia, Fiji, Samoa and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



Source: Venkataraman et al., 2003

Genus *LITHOPHYLLON* Rehberg, 1892

Three species are reported from the world, of which two species recorded from India.

Characters: The animals remain in anthocaulus stage (they do not become detached). The polyps are polystomatous by circumstomadeal budding. The corallum wall is solid and does not form fragmentation clefts. The septal dentations are ravel shaped. The costae are simply granular, cylindrical-conical and granulated or arborescent. Coralla are polycentric, explanate, foliaceous, unifacial and remain attached to the substratum in the adult stage. Colony formation is by marginal budding. Septo-costae structures are those of *Cycloseris*. Polyps are usually extended only at night. *Lithophyllon* is most similar to *Podabacia*.

Similar genus: *Podabacia*.



198. *Lithophyllon lobata* (Horst, 1921)

Description: Colonies are encrusting, has one large distinct central corallite formed and this is distinctive. Peripheral corallites are usually much smaller. Sometimes there is a small cluster of central corallites. Septo-costae radiate from the central corallite, are thin, wavy and exsert and may have tentacular lobes.

Colour: Brown.

Similar Species: *L. undulatum*.

Distribution: Indo-pacific; Japan and Andaman and Nicobar Islands.

Remarks: Found in reef flat areas.



199. *Lithophyllon undulatum* Rehberg, 1892

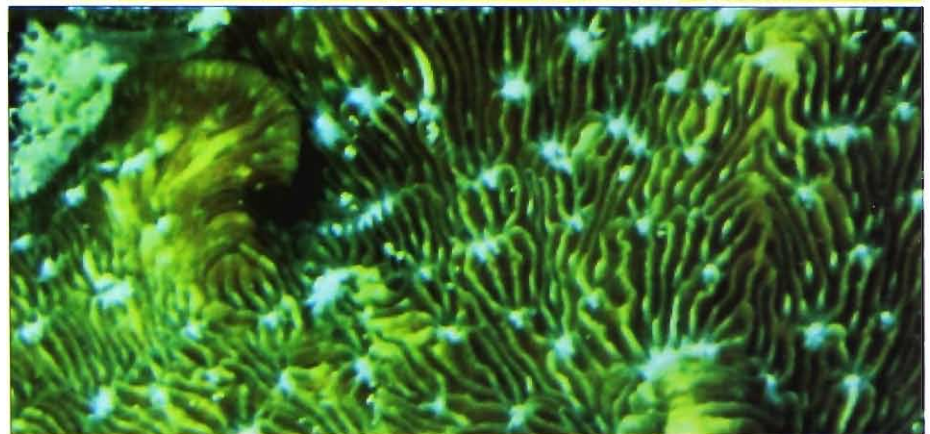
Description: Colonies are encrusting and form flat laminae with lobed margins. There is usually no central corallite. Septocostae are thin and exsert.

Colour: Dark brown with blue corallites.

Similar Species: *Lithophyllon lobatá*.

Distribution: Indo-pacific, Japan and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



Genus *PODABACIA* Milne Edwards and Haime, 1849

Four species are recorded worldwide of which two are recorded from India.

Characters: The animals are free living. The corals are either cup shaped or foliaceous. Coralla are polycentric, explanate or foliaceous, remaining attached to the substratum in the adult stage. Corallites are well defined, usually inclined towards the plate margins. Septo-costae structures are those of *Fungia* and *Sandalolitha*. The corallum wall is perforated and covered by granulations. The septal dentations are fine and lobate with granulations irregularly distributed over their sides. The coastal spines are small and slightly echinose. Polyps may be extended day or night.

Similar Genera: *Lithophyllon*.



200. *Podabacia crustacea* (Pallas, 1766)

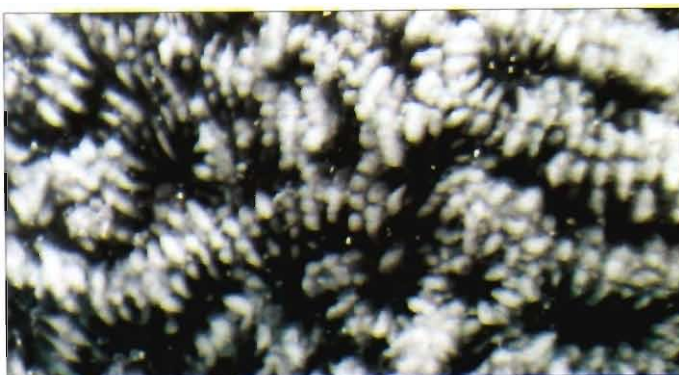
Description: Colonies are attached, encrusting or laminar, unifacial and may form tiers. A central corallite is sometimes distinguishable; peripheral corallites are exsert and inclined towards the plate margins.

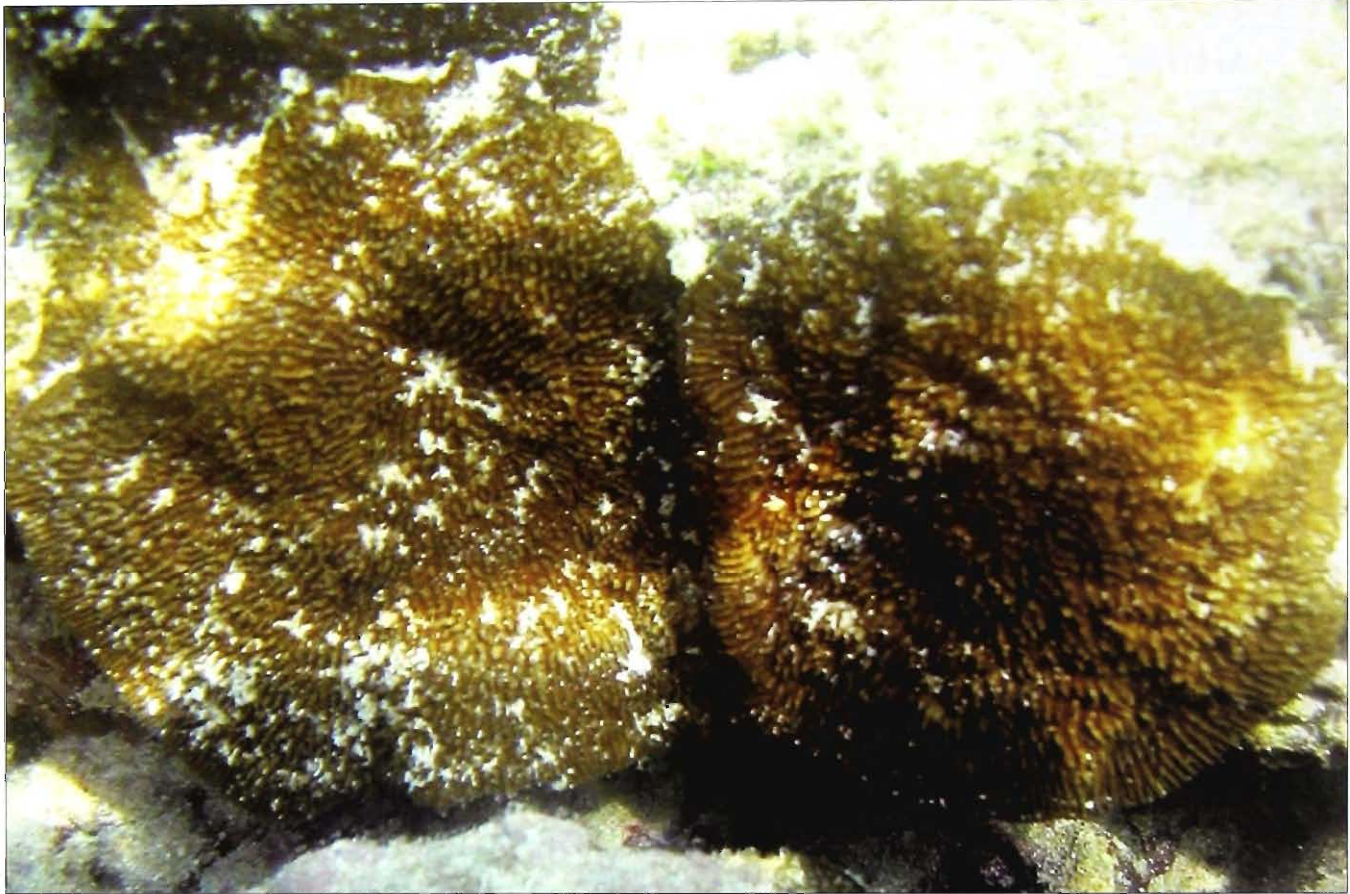
Colour: Tan or dark brown. Septo costae are cream, often with pale margins.

Similar Species: *Sandalolitha robusta*.

Distribution: Indo-Pacific to Red Sea and Andaman and Nicobar Islands.

Remarks: Attached on vertical rocks.





201. *Podabacia lanakensis* Veron, 2000

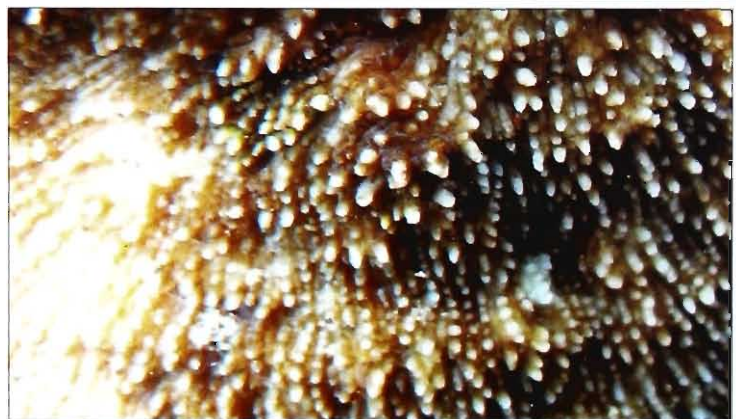
Description: Colonies are loosely attached or free-living, encrusting or laminar, and unifacial, with irregularly lobed margins and an irregularly contorted surface. There is no central corallite. Peripheral corallites are inclined towards the plate margins. Septo costae are similar to those of *Halomitra*.

Colour: Grey-brown with white margins.

Similar Species: *Lithophyllon*, *Podabacia*, *Halomitra* and *P. motuporensis*.

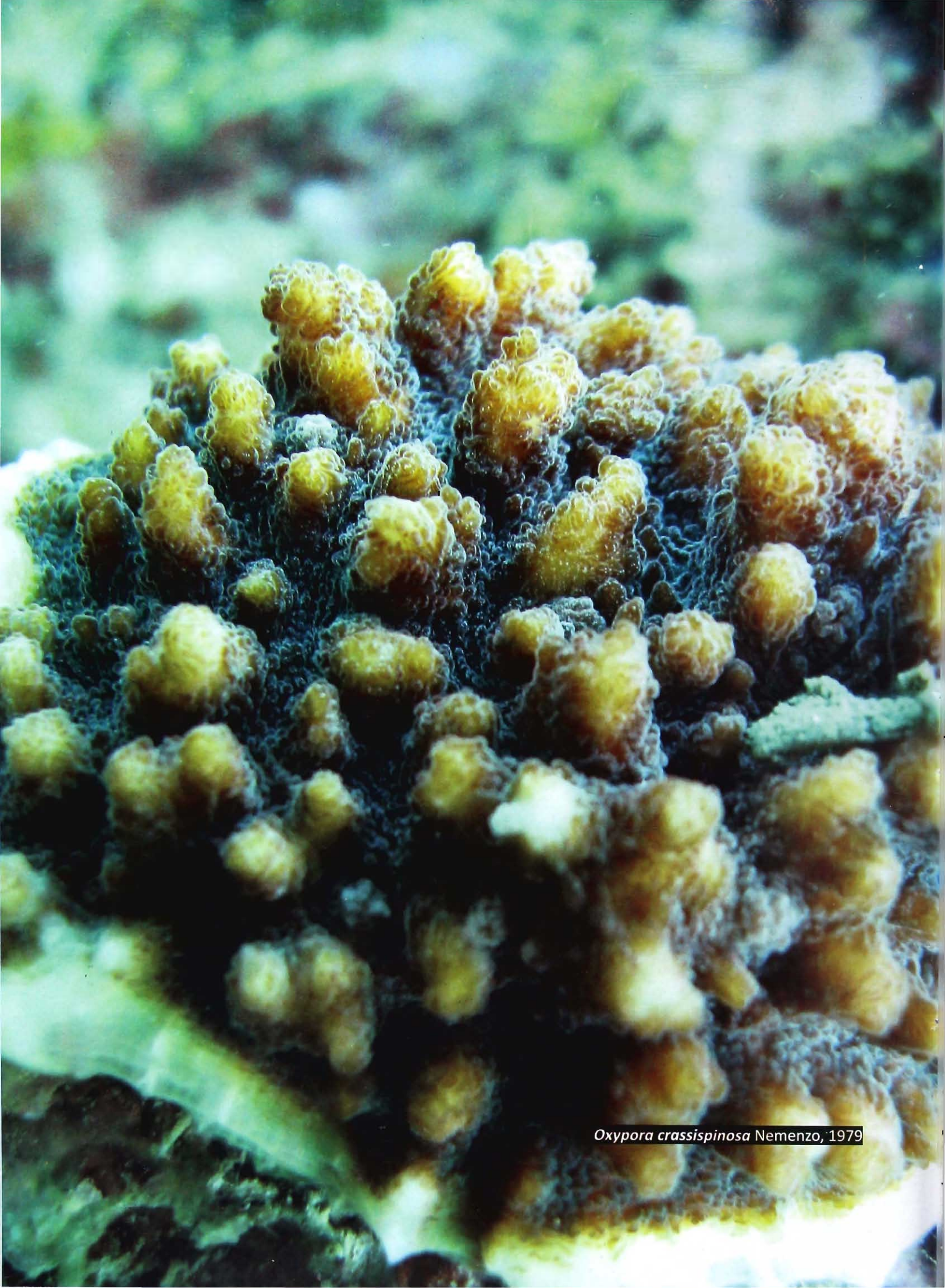
Distribution: Sri Lanka and Andaman and Nicobar Islands.

Remarks: Soft bottom reefs.





Fungids

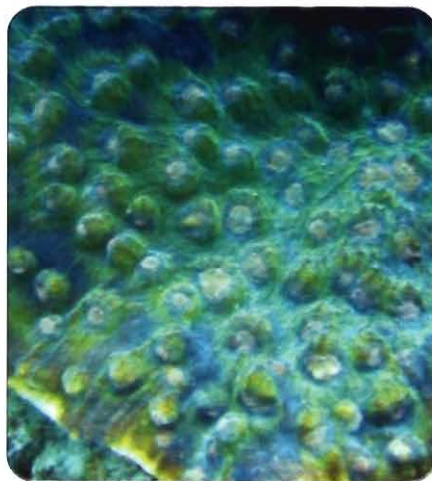


Oxypora crassispinosa Nemenzo, 1979

FAMILY PECTINIIDAE Vaughan and Wells, 1943

Characters: Colonial, hermatypic basically laminar and composed of thin plates. Corallite walls are absent or modified as non-porous costae coenosteum of the laminae.

Genus *Echinophyllia*, *Echinomorpha*, *Oxypora*, *Mycedium* and *Pectinia*



Similar family MUSSIDAE



Genus *ECHINOPHYLLIA* Klunzinger, 1879

Eight species are recorded in the world of which three species are reported from India and all recorded from Andaman and Nicobar Islands.

Characters: Colonies are encrusting or laminar. Calices are round or oval immersed to tubular and not strongly inclined on the colony surface. Septa are usually numerous. Columellae are usually well developed. The coenosteum is pitted at the commencement of new septo-costae. Tentacles are extended only at night.

Similar Genera: *Oxypora* and *Mycedium*.

202. *Echinophyllia aspera* (Ellis and Solander, 1786)

Description: Colonies are encrusting laminae. Central parts may be hillocky and sub massive, peripheral parts may be contorted or form whorls and tiers. Corallites have toothed rather than beaded costae. There are no paliform lobes.

Colour: Brown, green and red.

Similar Species: *Oxypora lacera* and *Echinopora patula*.

Distribution: From Indo-Pacific including Andaman and Nicobar Islands to Coral Sea.

Remarks: Mostly found in outer reef slope.

203. *Echinophyllia echinata* (Saville-Kent, 1871)

Description: Colonies are thin flat to vase shaped laminae with a conspicuous central corallite in smaller colonies and widely spaced radial corallites. Costae are exsert, unequal and smooth or toothed.

Colour: Mottled brown, green and red.

Similar Species: *Oxypora crassispinosa*.

Distribution: Tropical and sub-tropical Indo-Pacific to Madagascar and Andaman and Nicobar Islands.

Remarks: Occur in soft bottom reef slope and crevices.

204. *Echinophyllia echinoporoides* Veron and Pichon, 1979

Description: Colonies are encrusting laminae, sometimes with nodules at the colony centre. Corallites are comparatively small, mostly immersed and are slightly inclined towards the colony margins.

Colour: Usually a uniform cream to dark brownish-green, but commonly brick red in Japan.

Similar Species: *Echinopora lamellosa*.

Distribution: Indo-Pacific including Andaman and Nicobar Islands and Japan to Coral Sea.

Remarks: Mostly found in turbid waters.

Genus *OXYPORA* Saville-Kent, 1871

Five species are recorded worldwide of which two species are reported in India and both recorded from Andaman & Nicobar Islands also.

Characters: Colonies are foliaceous, usually with very thin laminae. Calices are round or oval in shape, irregular, shallow not strongly inclined on the corallum surface. Septa are few, columellae are poorly developed. The coenosteum is pitted at the insertion of new septo-costae. Polyps are extended only at night.

Similar Genera: *Echinophyllia*, *Echinopora* and *Mycedium*.



205. *Oxypora crassispinosa* Nemenzo, 1979

Description: Colonies are thin explanate laminae that may be flat and horizontal or upright and highly convoluted. Plates have ragged margins. Corallites are small with a few costae. One or two costae per corallite are very exert, with irregular large teeth.

Colour: Dark green or brown with white margins.

Similar Species: *Mycedium mancaoi*, *Echinophyllia echinata* and *Oxypora glabra*.

Distribution: Red Sea, Philippines, Indonesia, Andaman and Nicobar Islands, Great Barrier Reef and Coral Sea.

Remarks: Mostly found in protected reef environments.



206. *Oxypora lacera* (Verrill, 1864)

Description: Colonies are thin, encrusting or laminar plates. They may become greatly thickened in turbulent environments. Corallites may be fine and delicate on thin laminae to grossly thicken on sub-massive parts of the same colony. Costae are always toothed.

Colour: Pale brown or greenish.

Similar species: *O. glabra* and *O. convoluta*.

Distribution: From Indo-Pacific to Coral Sea including Andaman and Nicobar Islands.

Remarks: Found mostly on the shallow protected reef slopes.

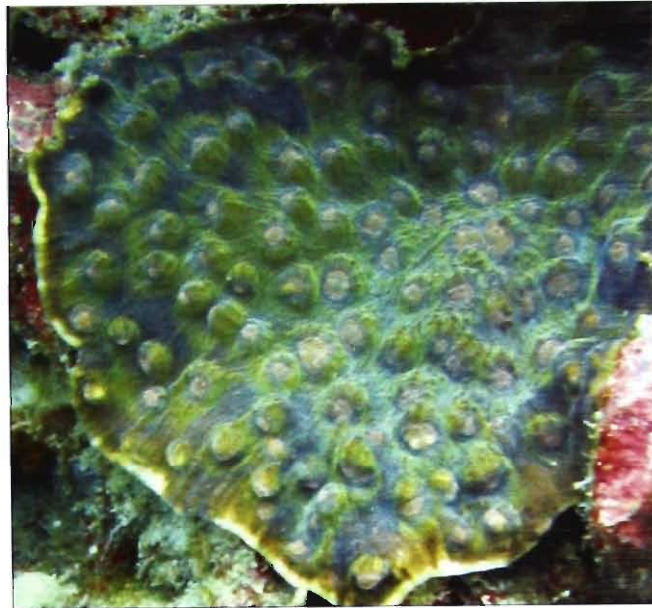


Genus *MYCEDIUM* Oken, 1815

Five species are recorded worldwide of which two species is reported in India especially in Andaman & Nicobar Islands.

Characters: Colonies are laminar or foliaceous. Corallites are nose shaped, facing outward towards the corallum perimeter. Septa and columellae are well developed and costae form outwardly walls. The coenosteum is never pitted at the insertion of new septo-costae. Polyps are extended only at night. Except from Lakshadweep Islands it is reported in all the other three major coral reef areas in India.

Similar Genera: *Echinophyllia*.



207. *Mycedium elephantotus* (Pallas, 1766)

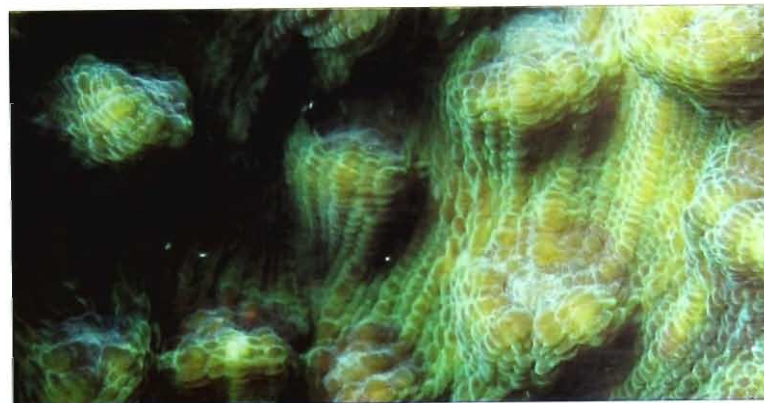
Description: Colonies are laminar or encrusting. Corallites are nose shaped, facing outwards towards the corallum perimeter. Septa and columellae are well developed and costae form outwardly radiating ribs on the corallum surface, which may become highly elaborated on corallite walls. The coenosteum is never pitted at the insertion of new septo-costae. Polyps are extended only at night.

Colour: Brown, grey, green or pink.

Similar Species: *M. robokaki*.

Distribution: Indo-Pacific, Red Sea, Tahiti, Great Barrier Reef, Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in most reef environments protected from strong wave action.





208. *Mycedium robokaki*, Moll and Borel-Best, 1984

Description: Colonies are composed of small, thin, unifacial laminae, usually with non-wavy margins. Corallites are small, strongly inclined on the laminae and are sometimes arranged concentrically. Septo-costae are compact and have ornamented spines.

Colour: Tan or pinkish, with pale margins to laminae.

Similar Species: *M. steeni*.

Distribution: Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in calm waters and crevices mouths.



Genus *PECTINIA* Oken, 1815

Nine species are recorded worldwide of which four species are reported from India.

Characters: Colonies are laminar to sub-arborescent, covered with high, thin, acute irregular walls arranged as wide valleys. Valleys may be as short as they are wide and the walls may form tall spires, becoming sub-arborescent. Corallite centres occur in any position. Septo-costae are well developed and may form the start of walls or spires. Polyps are extended only at night. *Pectinia* resembles only *Physophyllia*, which is not found in India. This genus is recorded only from the reefs of Andaman & Nicobar Islands.

Similar Genera: *Oulophyllia*.



209. *Pectinia alcornis* (Saville-Kent, 1871)

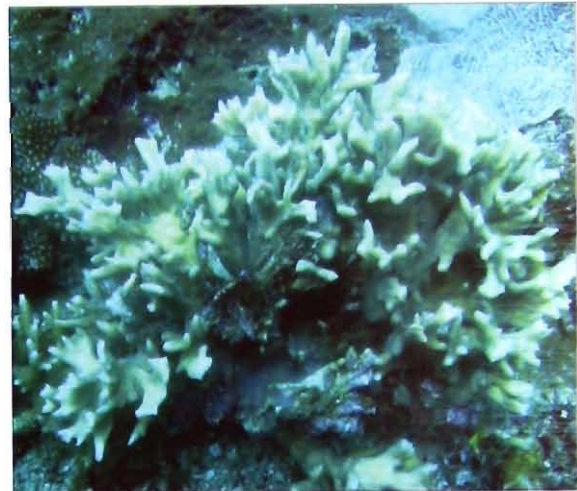
Description: Colonies are irregular clusters of fluted flat laminae with exert costae forming upwardly projecting spires and short walls. Upward projecting spires may be tall, becoming the dominant part of the colony. Columellae are well developed. Costae are characteristically toothed.

Colour: Mixtures of green, yellow and brown with central part of colonies usually darker than peripheral parts.

Similar Species: *P. paeonia*.

Distribution: Maldives, Tropical Indo-Pacific, Great Barrier Reef, Coral Sea, Japan and Andaman and Nicobar Islands.

Remarks: Mostly soft bottom and turbid waters.



210. *Pectinia lactuca* Pallas, 1766

Description: Colonies are sub-massive or form thick plates and frequently exceed one metre across. They have elongate valleys and walls of relatively uniform height. Most valleys can be traced from the colony centre to the margins.

Colour: Uniform grey, brown or green.

Similar Species: *P. maxima* and *P. ayleni*.

Distribution: Indo-Pacific to Coral Sea and Andaman & Nicobar Islands.

Remarks: Found in outer reef slopes.

211. *Pectinia paeonia* (Dana, 1846)

Description: Colonies never have extended valleys. Instead they form irregular clusters of fluted thin lamellae with exert costae forming upwardly projecting spines and short walls. Columellae are weakly developed. Septa are smooth or have small teeth.

Colour: Mottled brown and grey.

Similar species: *P. alcicornis*.

Distribution: From Maldives to Coral Sea including Andaman and Nicobar Islands.

Remarks: Found mostly in turbid water habitats, especially on fringing reefs and in crevices on the reef slopes.



212. *Pectinia teres* Nemenzo, 1981

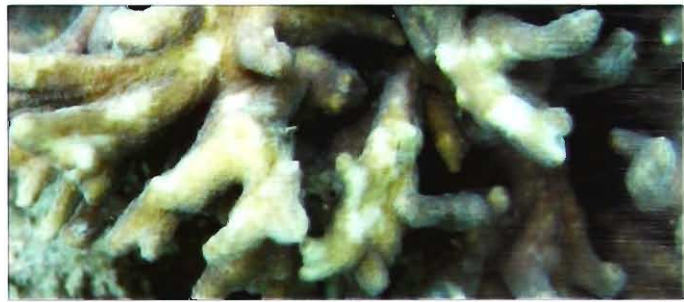
Description: Colonies have little formation of laminae, but form clumps of pointed branch-like spires, each composed of exsert costae. Well developed colonies are clumps of spires. Corallites are conspicuous.

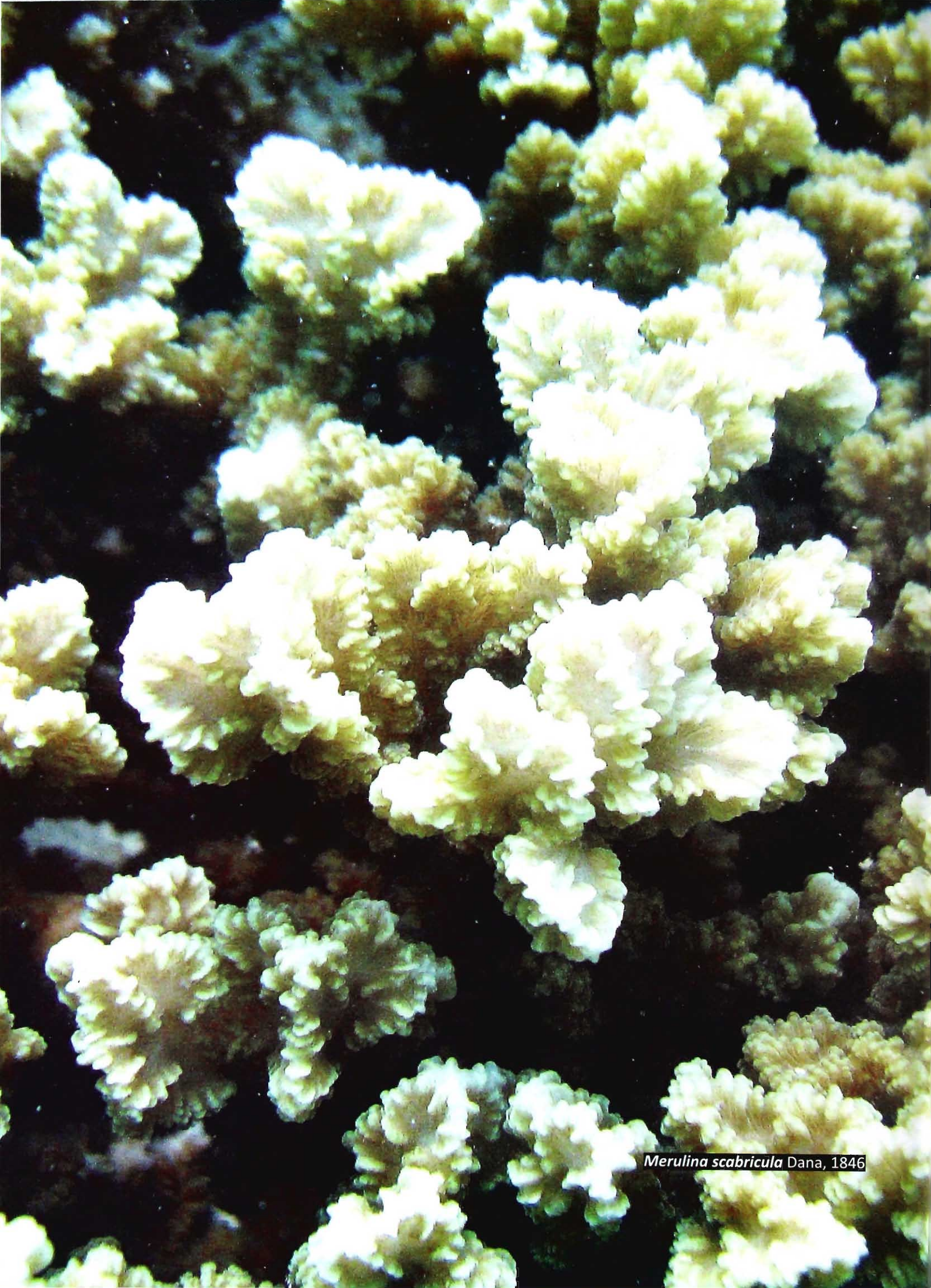
Colour: Yellow-brown or grey.

Similar Species: *P. elongata* and *P. alcicornis*.

Distribution: Indonesia, Philippines, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Occur in protected reef slopes.





Merulina scabricula Dana, 1846

FAMILY MERULINIDAE Verrill, 1866

Characters: All genera are extant, hermatypic and colonial. Skeletal structures are faviid like but are highly fused, without paliform lobes. Valleys are superficial or may become obscured because of fanwise spreading or contortions.

Genus Hydnohora, Merulina, Paraclavarina, Scapophyllia and Boninastrea.



Similar families FAVIIDAE and TRACHYPHYLLIDAE



Genus *HYDNOPHORA* Fischer de Waldheim, 1807

This genus has traditionally been included in the family Faviidae. However, the structural similarities between the branch tips of *Hydnophora* and *Merulina* and the similarities between the extended polyps of *H. pilosa* and *Scapophyllia cylindrica* leave very little doubt as to the former's real affinities. Six species are reported worldwide of which five species are recorded from India.

Characters: Colonies are massive, encrusting or arborescent. The genus is characterized by the presence of hydnohores formed where sections of common wall between corallites intersect and develop into conical mounds. Hydnohores cover the colony surface and make this genus immediately recognizable. Polyps are usually extended only at night (except *H. exesa* and *H. pilosa*). Short tentacles surround the base of each hydnohore, one tentacle between each pair of septa. In India it is recorded from all the major coral reef areas.

Similar Genera: *Merulina*.



213. *Hydnophora exesa* (Pallas, 1766)

Description: Colonies are sub-massive, encrusting, laminar or sub-arborescent. Much of this variation may occur in the same colony but some colonies are composed only of plates. Hydnohores are 5-8mm diameter. Tentacles are often extended day and night: they are long and shaggy and of uniform length.

Colour: Colonies are cream or dull green.

Similar Species: *H. microconos*, *H. bonsai* and *H. pilosa*.

Distribution: Indo-Pacific, Red Sea, Ellier Islands, Australia, Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in wave exposed reef flat.



214. *Hydnophora grandis* Gardiner, 1904

Description: Colonies are composed of irregular branches, mostly circular in section, with little tendency to form an encrusting base. Branches are 10-15 mm thick. There is little fusion of monticules.

Colour: Colonies are cream, yellowish or green.

Similar Species: *H. rigida*.

Distribution: Maldives, Philippines, Indonesia, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in shallow protected reefs.



215. *Hydnophora microconos* (Lamarck, 1816)

Description: Colonies are massive, with a convex surface. Valleys are comparatively narrow and regularly conical and elongated. The first order septa are horizontal at the top of the monticules. The septal dentations are obsolete except on the lower part of the septa close to the columella, where a few fine dentations covered with scattered, small granules. The columellae are of a lamellar type, generally continuous, encircling the monticules.

Colour: Colonies are dull creamy coloured.

Similar Species: *H. exesa*.

Distribution: Indian Ocean, Red Sea, Australia, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Occur in all reef areas.



216. *Hydnophora pilosa* (Veron, 1985)

Description: Small colonies have encrusting, laminar or sub-massive bases with short columns or branches. Large colonies are hemispherical, consisting of compact fused branches. Branches are sometimes flattened towards their tips. Monticules are low and rounded. Tentacles are extended day and night; they are long and shaggy and of uniform length.

Colour: Polyps are dark brown, tentacles have white tips.

Similar Species: *H. exesa*.

Distribution: Philippines, Indonesia, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Often seen in rubble and deep waters.



217. *Hydnophora rigida* (Dana, 1846)

Description: Colonies are arborescent, without encrusting bases. Septa radiating around the monticules, columellar centres, well defined. Septal dentations are absolute of minute, septal side are spinose.

Colour: Creamy.

Similar Species: *H. grandis*.

Distribution: Red Sea to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in calm upper reef slope and shallow reef flats.



Genus *MERULINA* Ehrenberg, 1834

Three species are recorded worldwide of which two species reported in India.

Characters: Colonies are laminar and foliaceous or sub arborescent with different growth forms characteristically occurring in one colony. Valleys are short, straight and spread fanwise, then divide. They radiate from the colony centre on flat surfaces but are highly contorted on branches. Flat surfaces often have concentric growth lines. Polyps are usually extended only at night. Only one species is recorded from the Lakshadweep and A and N Islands.

Similar Genera: *Hydnophora* and *Scapophyllia*.



218. *Merulina ampliata* (Ellis and Solander, 1786)

Description: Colonies are laminar, with these different growth forms characteristically occurring together in large colonies. However, colonies may be composed only of plates or, in shallow water, primarily of branches. Valleys are short, straight and spread in a fan before dividing. They radiate from the colony centre on flat surfaces often have concentric growth lines. Tentacles are usually extended only at night.



Colour: Variety of pale colours, usually blue, or pink or pale brown.

Similar Species: *M. scabricula*.

Distribution: Tropical Indo-Pacific to Madagascar and Andaman and Nicobar Islands.

Remarks: Occur inside the crevices and vertical hanging rocks.



219. *Merulina scabricula* Dana, 1846

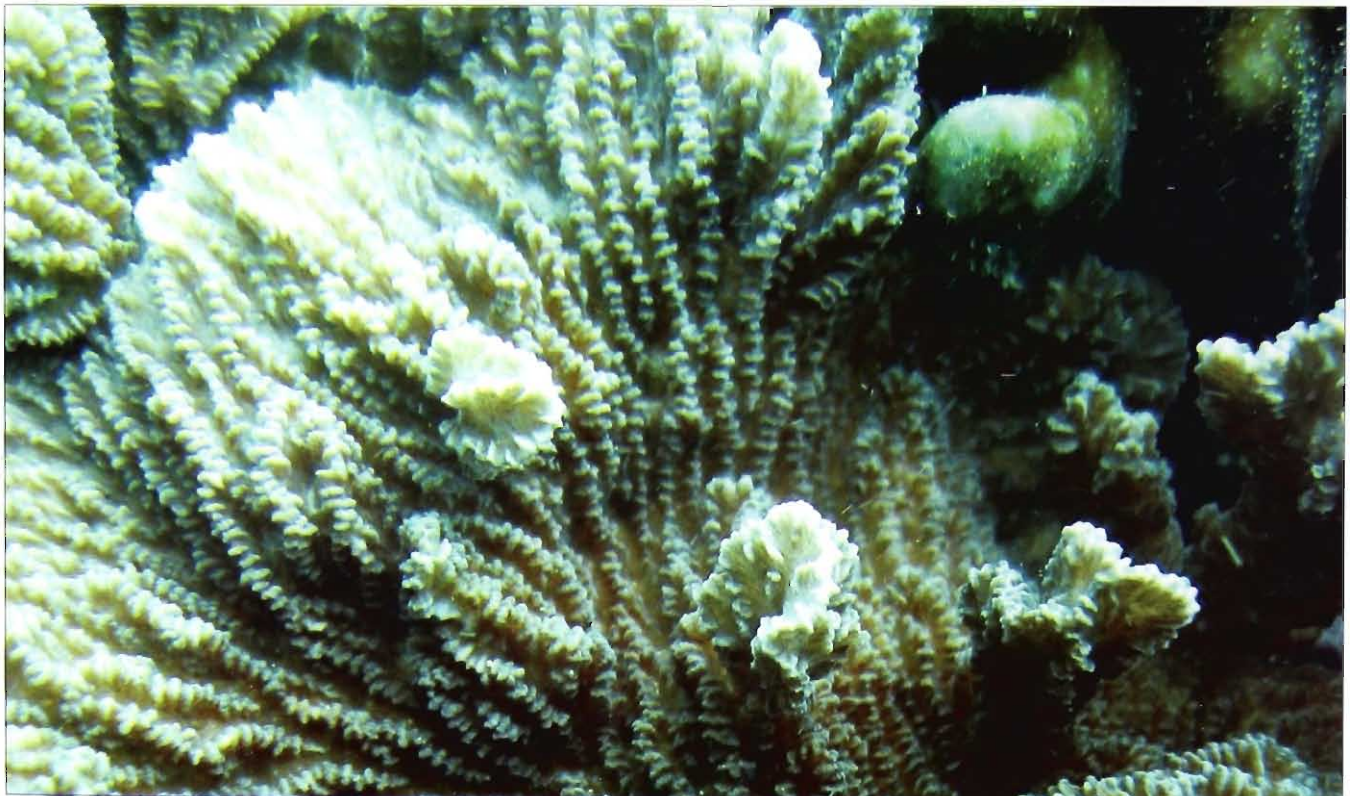
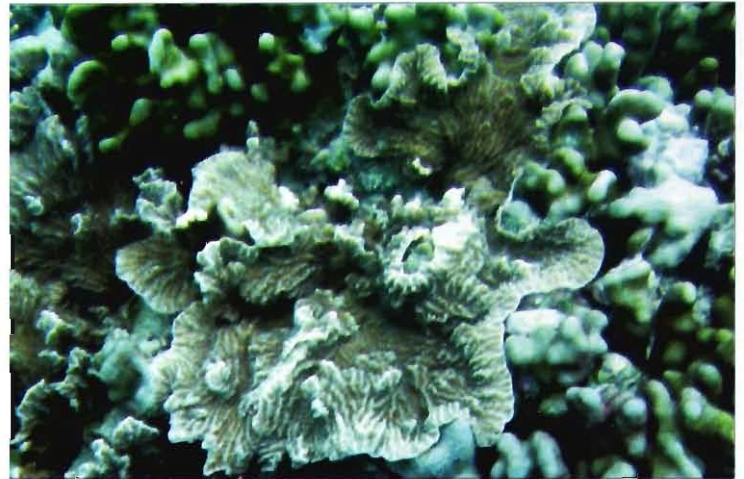
Description: Colonies are laminar or sub-arborescent, with these different growth forms characteristically occurring together in large colonies. Valleys are short, straight, and spread in a fan before dividing. They radiate from the colony centre on flat surfaces, but are highly contorted on branches. Flat surfaces often have concentric growth lines. Tentacles are extended only at night. Well developed colonies always have some branch development.

Colour: Blue or pale brown with blue margins. Tentacles are extended only at night.

Similar Species: *M. ampliata*.

Distribution: Red Sea, Maldives, Philippines, Marshall Islands, Samoa, Japan and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



Genus *SCAPOPHYLLIA* Milne Edwards and Haime, 1848

It is a monospecific genus and in India it is recorded only from Andaman & Nicobar Islands.

Characters: Colonies are composed of blunt ended columns, which may divide and with thick laminar bases. Valleys are meandroid and sinuous. Septa are thick in the valleys and fuse irregularly with each other and with a few thick septal teeth that comprise each columella. Polyps are usually extended only at night and have long tapering tentacles of uniform length.

Similar Genera: *Merulina*.

220. *Scapophyllia cylindrica* (Milne Edwards and Haime, 1848)

Characters: Colonies are composed of blunt ended columns, which may divide and with thick laminar bases. Valleys are meandroid and sinuous. Septa are thick in the valleys and fuse irregularly with each other and with the few thick septal teeth that comprise each columella. Polyps are extended only at night and have long tapering tentacles of uniform length.



Colour: Cream or yellow brown.

Similar Species: *Merulina*.

Distribution: Tropical Indo-Pacific, Malaysia, Sumatra, Marshall Islands, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Usually found in turbid waters around fringing reefs and in lagoons.





Tubastrea coccinia Lesson, 1829

FAMILY DENDROPHYLLIDAE Gray, 1847

Solitary or colonial, mostly ahermatypic. Corallite walls are porous, usually composed of coenosteum. Septa are fused in a distinctive pattern (Pourtales Plan = inner margins of higher order septa curve to adjacent septa and fuse), at least in immature corallites. Not related to any other family. This family contains only three hermatypic genera, *Turbinaria*, *Duncanopsammia* and *Heteropsammia*. Superficially they are completely different.

Genus: *Turbinaria*, *Duncanopsammia* and *Heteropsammia* are hermatypic. *Balanophyllia*, *Endopsammia*, *Tubastrea*, *Dendrophyllia*, *Enallopsammia* are the ahermatypic.

Similar families: None.

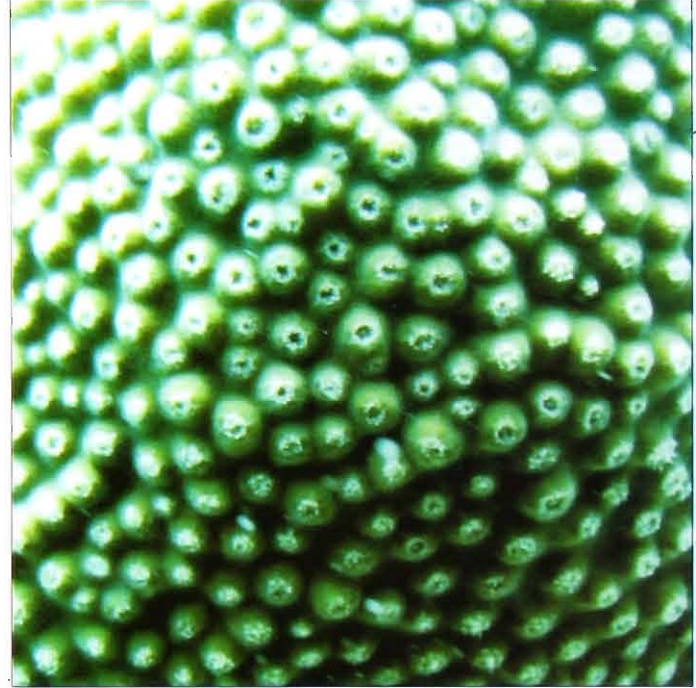


Genus *TURBINARIA* Oken, 1815

Turbinaria is particularly successful in higher latitudes, where they can compete with kelps for space and light. Of the seven species reported worldwide of which four are recorded from India.

Characters: Colonies are massive, columnar, laminar or foliaceous with laminae frequently contorted. Corallites are round, immersed to tubular and have porous walls with the same structure as the surrounding coenosteum. Septa are short and neat, columellae are broad and compact. Polyps, except for those of *T. peltata*, are usually extended only at night. This genus is represented from all the four major coral reef area in India.

Similar Genera: *Astreopora*.



221. *Turbinaria mesenterina* (Lamarck, 1816)

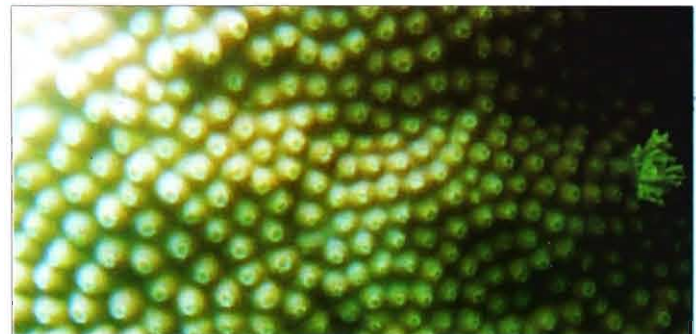
Description: Colonies are composed of unifacial laminae, which are highly contorted. Fronds more vertical than horizontal, amount of folding vary greatly and can form dense mass of folds and tubes, less convoluted (corallites more tubular than conical) in deeper water or less light. Corallites are crowded, slightly exsert, tubular or conical, usually protuberant and strongly inclined i.e. vertical, older corallites deeply embedded to smooth.

Colour: Greenish grey.

Similar Species: *T. reniformis*.

Distribution: Tropical Indo-Pacific, Red Sea, East African Coast, Marshall Islands, Fiji, Great Barrier Reef, Gulf of Kachchh, Gulf of Mannar, Lakshadweep, Palk Bay and Andaman and Nicobar Islands.

Remarks: Dominant in shallow turbid environments.



222. *Turbinaria peltata* (Esper, 1794)

Description: Colonies are with or without stalks, encrusting or tabular, thickened, uniaxial or ridges with budding margins bifacial fronds or cylindrical columns. Corallites crowded or widely spaced, flush or protrude. Colony margins mostly composed of closely packed outward projecting corallites, with subsequent growth of corallites become less inclined toward margins and more upward projecting and increasingly immersed and decrease in corallite density towards centre.

Colour: Grey and brown.

Similar Species: *T. patula*.

Distribution: East Africa, Japan, Marshall Islands, Fiji, the Great Barrier Reef, Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Usually occurs in shallow rocky fore-shores with turbid waters. Also occurs on shallow reef slopes.



223. *Turbinaria reniformis* Bernard, 1896

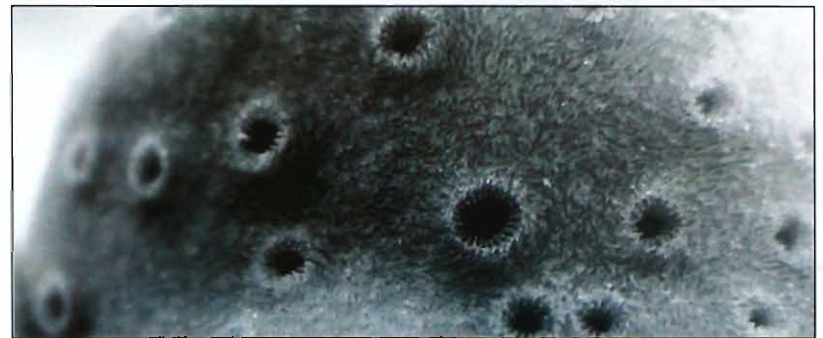
Description: Growth forms are not usually as convoluted, unifacial laminae with plates horizontal at bottom becoming inclined and folded at top. Corallites are variable, widely spaced, thick walled, and crowded to almost touching, most conical, thick walls and small calices. Colonies sometimes form tiers, which are mostly horizontal.

Colour: Yellowish green with distinctly coloured margin.

Similar Species: *T. mesenterina*.

Distribution: Tonga and the Cook Islands, Marshall Islands, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Sometimes form large stands on fringing reefs, where the water is turbid.



224. *Turbinaria stellulata* (Lamarck, 1816)

Description: Colonies are primarily encrusting. Corallites are thick walled, conical and average 2.5 mm diameter.

Colour: Greenish brown.

Similar Species: *T. radicalis* and *T. irregularis*

Distribution: Red Sea, Maldives, Indonesia, Coral Sea, Samoa, Japan and Andaman and Nicobar Islands.

Remarks: Mostly found in upper reef slope.

Genus *DENDROPHYLLIA* Gray 1847

In this genus all are azooxanthellate corals. In India, only one species is recorded from Andaman and Nicobar Islands.

Characters: Colonies are mostly small, colonial, and arborescent. Corallites are arranged in irregular direction. Corallites are placoid and cylindrical. Septa arranged in 5 distinct layers. Columellae are well developed spongy.

Similar Genera: *Tubastrea*.



225. *Dendrophyllia robusta* (Bourne, 1905)

Description: Colonies are small, arborescent, consisting of gently bent, long axial corallite and sparsely branching lateral corallites, these latter being elongate-conical and also gently bent in irregular directions. Septa thin, hexamerally arranged in 5 cycles. Columella is discrete, spongy mass.

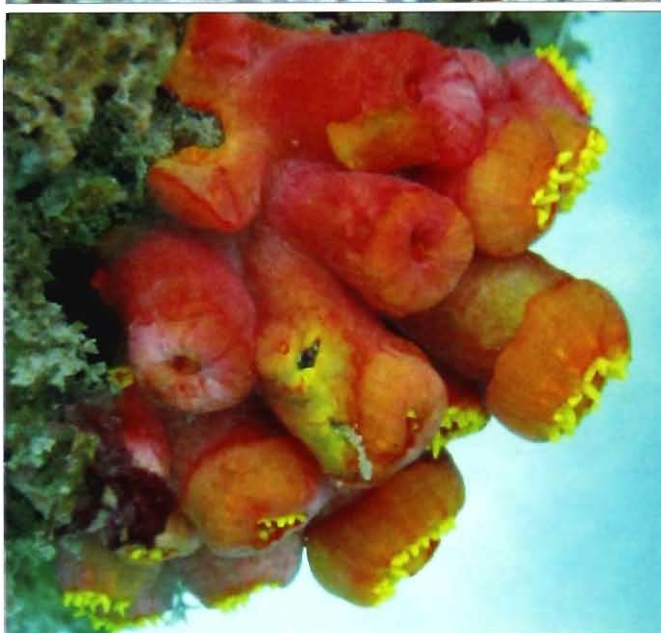
Colour: Reddish orange and blackish green.

Similar Species: *Tubastrea*.

Distribution: Andaman and Nicobar Islands to Coral Sea and Japan.

Remarks: Mostly found in vertical manmade structure and vertically hanging rocks.





226. *Dendrophyllia miniscula* (Bourne, 1905)

Description: Colonies are small with irregularly arranged branches. The corallites are 2 to 4 mm long and they do not increase from the base to the calicular margin. The diameters of the calicle varied from 2.5 to 3.5 mm. The costae which are fairly prominent are visible all over the stem and are covered with irregularly scattered granulations. Intercostal furrows rather narrow with small perforations.

Similar Species: None.

Distribution: East Indies, Ceylon, Maldives and Andaman and Nicobar Islands.

Remarks: This species was recorded during an examination of the coral collections of the Zoological Survey of India in 1967 by D. Sudarsan and S.K Mukhopadhyay.

Genus *TUBASTREA* Lesson 1829

All species are azooxanthellate. In India three species reported so far.

Characters: Colonies are small, arborescent. Corallites are placoid, cylindrical and highly exerted from the base. Septa are in 4 cycles arranged in hexamerally. Costae and coenosteum is covered with thin ridges and porous furrows. Costae granulated.

Similar genera: *Dendrophyllia*.



227. *Tubastrea coccinia* Lesson, 1829

Description: Colonies are colonial, flat to hemispherical, consisting of cylindrical, corallites with placoid budded from broad coenosteum. Calices circular to slightly elliptical, coenosteum covered with irregularly curled, thin ridges separated by wide, highly porous furrows. Columella is variable in size.

Colour: Reddish orange.

Similar Species: *T. diaphana*.

Distribution: Distributed throughout the Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in vertical man made structure and vertically hanging rocks.



228. *Tubastrea diaphana* Dana, 1846

Description: Colonies are colonial; corallites are phaceloid, consisting of bushy cluster of cylindrical corallites budded from narrow common coenosteum or lower part of other corallites. Costae as low ridges covered with minute granules and separated by porous inter-costal furrows. Septa hexamerally arranged in 4 cycles; Columella usually as small, elongate, fascicular mass.

Colour: Black-green.

Similar Species: *T. coccinia*.

Distribution: Distributed throughout the Indo-Pacific and Andaman & Nicobar Islands.

Remarks: Mostly found in vertical man made structure and vertically hanging rocks.



229. *Tubastrea micranthus* Ehrenberg, 1834

Description: Colonies are colonial, large, arborescent, attached by massive base. A colony consisting of few stems of long, tapered axial corallites and sparse lateral branches. Costae as low ridges covered with granules and separated by not very porous inter-costal furrows. Septa hexamerally arranged in 4 cycles.

Colour: Blackish green.

Similar Species: *T. diaphana*.

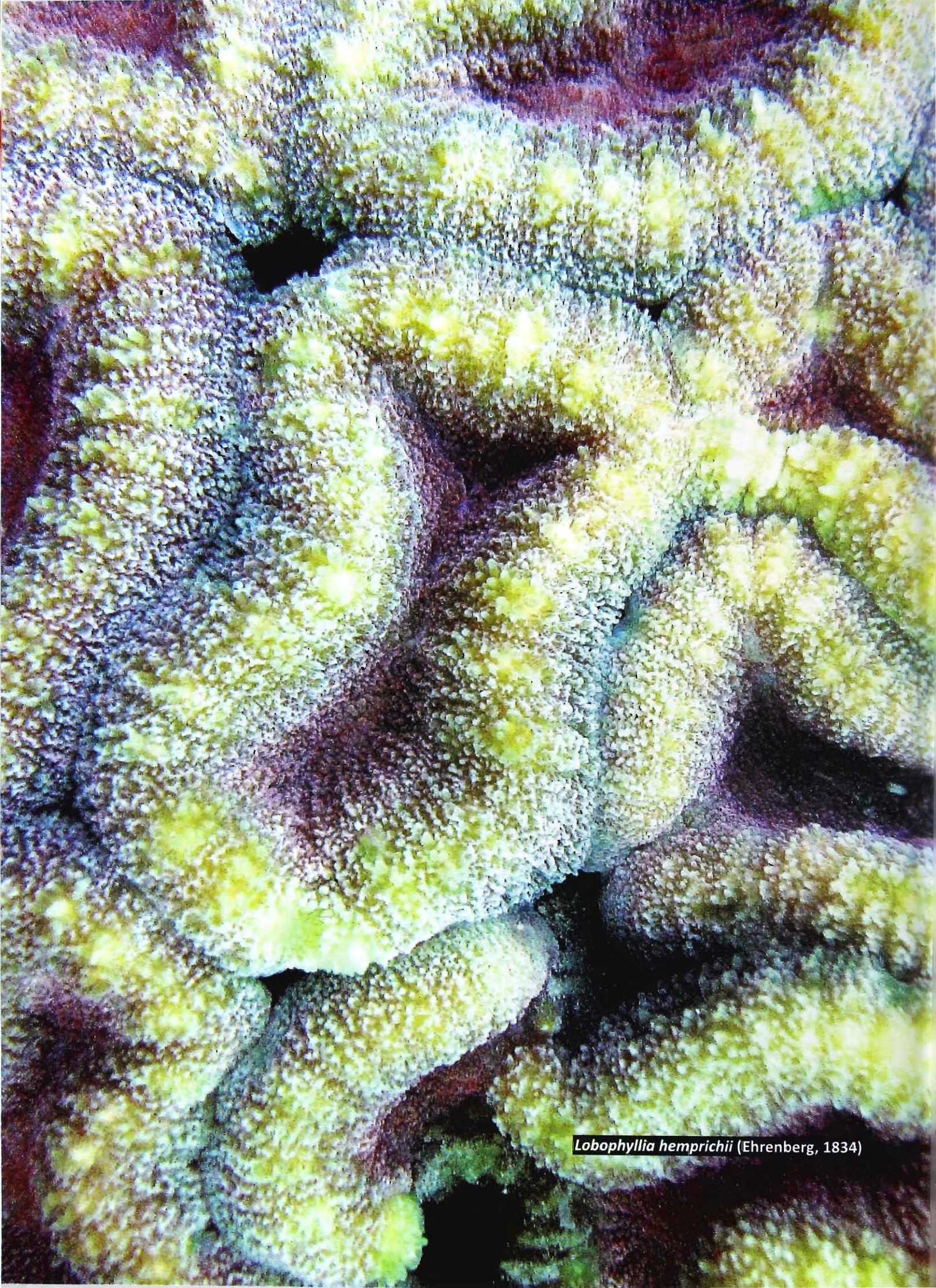
Distribution: Distributed throughout the Indo-Pacific and Andaman & Nicobar Islands

Remarks: Found in vertical man made structure and Soft bottom reefs.





Tubastrea micranthus Ehrenberg, 1834



Lobophyllia hemprichii (Ehrenberg, 1834)

FAMILY MUSSIDAE Ortmann, 1890

Characters: All species are zooxanthellate, solitary or colonial, extant or fossil. Skeletal structures are solid. Corallites and valleys are large. Septa have large teeth or lobes. Columellae and walls are thick and well developed.

Genus *Blastromussa*, *Cynarina*, *Scolymia*, *Australomussa*, *Acanthastrea*, *Lobophyllia*, *Symphyllia*, *Mussa*, *Isophyllia*, *Isophyllastrea*, *Mycetophyllia* and *Mussimillia*.



Similar family PECTINIDAE.



Genus *ACANTHASTREA* Milne Edwards and Haime, 1848

12 species are reported from the world, of which four species are recorded from India.

Characters: Colonies are massive, usually flat. Corallites are cerioid or sub-placoid, monocentric, either circular or angular in shape. Septo-costae are thick near the corallite wall, becoming thin near the columella and have tall mussid teeth. Polyps are thick walled and are extended only at night. This genus recorded from Gulf of Kachchh, Lakshadweep and Andaman and Nicobar Islands.

Similar Genera: *Lobophyllia*, *Mussimilla*, *Micromussa*, *Favia* and *Favites*.



230. *Acanthastrea echinata* Milne Edwards and Haime, 1848

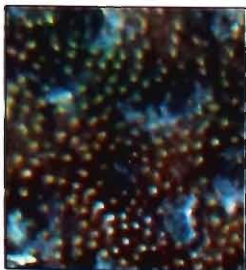
Description: Colonies are massive, hemispherical. Corallites are mostly cerioid. Septa are echinulate dentations and granulated on sides.

Colour: Colonies are green and brown colour.

Similar Species: *A. subechinata*.

Distribution: Tropical, sub-tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in reef edges.



231. *Acanthastrea hemprichii* (Ehrenberg, 1834)

Description: Colonies are encrusting to massive. Corallites are cerioid. Septa have exsert teeth. Colonies have fleshy tissue over the skeleton, but this is not thick enough to mask underlying skeletal structures.

Colour: Mottled browns and greens.

Similar Species: *A. echinata* and *A. bowerbanki*.

Distribution: Red Sea, Madagascar, Philippines, Indonesia, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in turbid waters.

232. *Acanthastrea hillae* Wells 1955

Description: Colonies are cerioid and usually small but sometimes over 1.5m across. Corallites have irregular shapes and sometimes form short valleys with several centres. Colonies have moderately fleshy tissue over the skeleton.

Colour: Greyish brown.

Similar Species: *A. ishigakiensis* and *A. maxima*.

Distribution: Indonesia to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flat.



233. *Acanthastrea ishigakiensis* Veron, 1990

Description: Colonies are massive, usually hemispherical. Corallites are cerioid and becoming placoid on the colony sides. Septa are mostly uniform with large teeth. Colonies have thick fleshy tissue over the skeleton.

Colour: Bluish grey.

Similar Species: *A. hillae* and *Symphyllia erythrae*.

Distribution: Tropical, sub-tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in outer reef slopes.

Genus *LOBOPHYLLIA* de Blainville, 1830

Nine species are reported in the world, of which four are recorded in India.

Characters: Colonies are phaceloid to flabello-meandroid either flat topped or dome shaped. Corallites and /or valleys are large. Septa are large with very long teeth. Columellae centres are broad and compact. Polyps are extended only at night. Tentacles usually have white tips. *Symphyllia* has coarse skeletal structures comparable to *Lobophyllia*. In India this genus is reported from Lakshadweep and Andaman and Nicobar Islands.

Similar Genera: *Symphyllia*.



234. *Lobophyllia corymbosa* (Forskål, 1775)

Description: Colonies are hemispherical and phaceloid with one to three centres per branch. Calices are deep, with well defined walls. Septa are thick near the walls and thin within the calices. Septal teeth are tall and blunt, decreasing in size towards the columella.

Colour: Greenish brown.

Similar Species: *L. dentatus*.

Distribution: Indo-Paciific, Red Sea, Samoa, Great Barrier Reef, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Mostly found in soft bottom outer reef slope.



235. *Lobophyllia hemprichii* (Ehrenberg, 1834)

Description: Colonies are flat to massive and phaceloid to flabello-meandroid. Septa taper from the wall the columella with all and sharp teeth.

Colour: Greenish brown.

Similar Species: *L. dentatus* and *L. robusta*.

Distribution: Red Sea, Tahiti, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



236. *Lobophyllia robusta* Yabe, Sugiyama and Eguchi, 1936

Description: Colonies are usually consist of a few corallites but may become large and hemispherical. Corallites are large, phaceloid and mostly monocentric. Septa have sharp exsert teeth. Polyps are thick and fleshy, with a rough surface.

Colour: Bluish grey

Similar Species: *L. hemprichii* and *L. flabelliformis*.

Distribution: Madagascar, Andaman and Nicobar Islands to Great Barrier Reef and Japan.

Remarks: Found in upper reef slope.





Symphyllia radians Milne Edwards and Haime, 1849

Genus *SYMPHYLLIA* Milne Edwards and Haime, 1848

Seven species are reported in the world, of which four are recorded from India.

Characters: Colonies are meandroid, either flat topped or dome shaped. Valleys are wide. A groove usually runs along the top of the walls. Septa are large with long teeth. Columellae centres are broad and compact. Polyps are extended only at night. It is represented from all the four major reef regions of India.

Similar Genera: *Lobophyllia*.



237. *Symphyllia agaricia* (Milne Edwards and Haime, 1849)

Description: Colonies are hemispherical to flat. Valleys are sinuous or straight- 35 mm wide and usually separated by a narrow groove. Septa are thick with large teeth.

Colour: Brown and red.

Similar Species: *S. radians*.

Distribution: Throughout the Indo-Pacific, up to Coral Sea and Andaman and Nicobar Islands.

Remarks: Mostly found on exposed upper reef slopes.



238. *Symphyllia radians* Milne Edwards and Haime, 1849

Description: Colonies are massive to flat. Valleys are fairly straight, especially if colonies have flat surfaces, otherwise irregularly sinuous. Valleys are in a radiating pattern. Septal dentations are intermediate between *S. recta* and *S. agaricia*. Valleys average 20-25 mm wide.

Colour: It has wide range of colour range such as brown, red, green and grey with contrasting wall margins.

Similar Species: *S. recta* and *S. agaricia*.

Distribution: Maldives to Great Barrier Reef including India; Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Occur in upper reef slope.



239. *Symphyllia recta* (Dana, 1846)

Description: Colonies are massive to flat. Valleys are highly sinuous and narrow up to 15 mm wide. Walls have a groove along the top. Septal dentations are fine.

Colour: Brown and grey.

Similar species: *S. radians*.

Distribution: Maldives, Marshall Islands, Samoa, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found on upper reef slopes and fringing reefs.



240. *Symphyllia valenciennesii* Milne Edwards and Haime, 1849

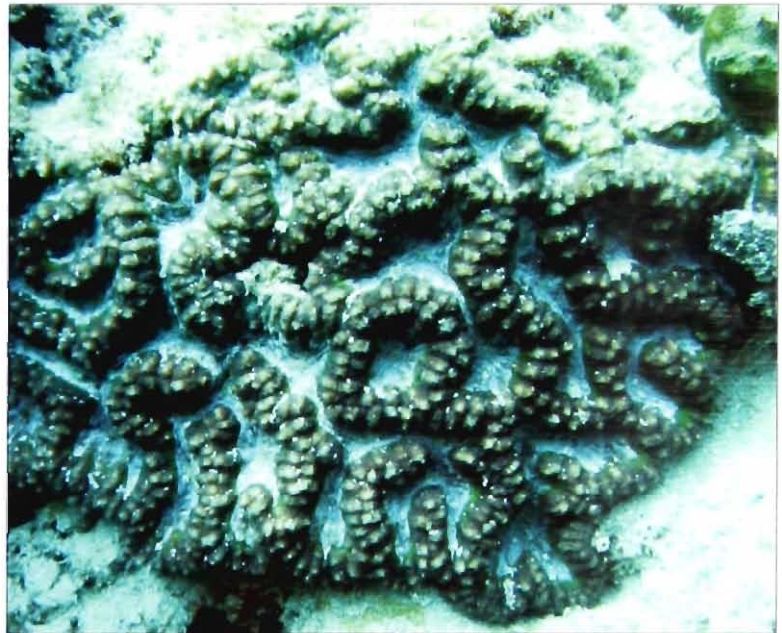
Description: Colonies are usually fat. Valleys radiated from a flat central area and have steep sides and flat floors. Walls have a moderately fleshy appearance and usually have a groove along the top. Septa are thick, with large teeth. Polyps may be fleshy.

Colour: Greyish brown.

Similar Species: *S. agaricia*.

Distribution: Western Australia to Eastern Madagascar and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.

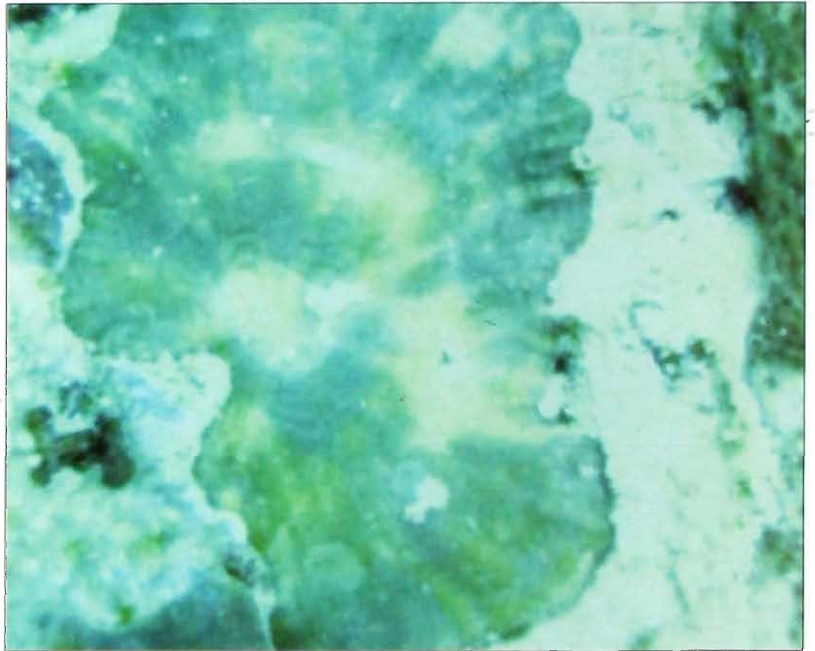


Genus *SCOLYMIA* Haime, 1852

Over all 3 species have been recorded worldwide, of which only one is reported from India.

Characters: Corals are usually monocentric, rarely polycentric. Secondary centres may occur inside or outside the original calices and calices may divide. Walls are indistinct beneath the septo-costae. Septa slope evenly, with little fusion. Primary septae large, regular having blunt teeth. Columellae are broad and compact. Tentacles are extended only at night.

Similar Genera: *Australomussa*.



241. *Scolymia vitiensis* Bruggemann, 1877

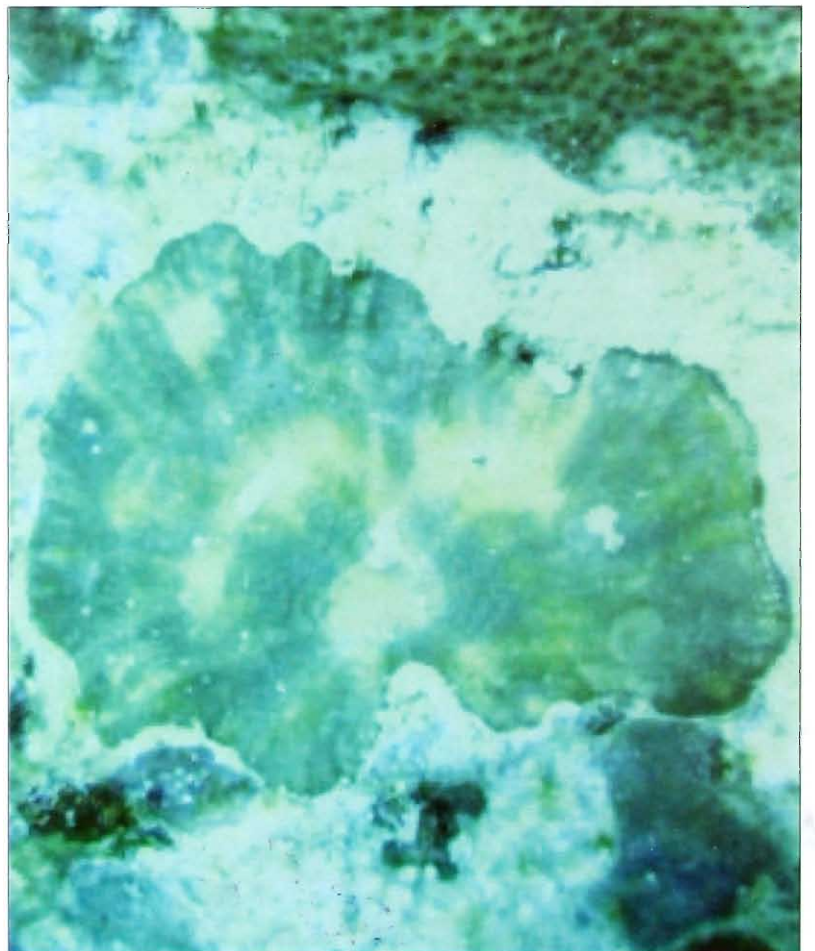
Description: Colonies are large and colonial. Septa slope up from the columellae to an indistinct wall then costae slope down to the periphery. This gives the fleshy mantle of the polyps a distinctive concentric texture. Secondary centres occur near the colony centres and also around the periphery. Septo-costae are sturdy, with large blunt teeth.

Colour: Dark green and reddish orange.

Similar species: *S. australis*.

Distribution: Madagascar, Maldives, Philippines, Marshal Islands, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in deep waters.



Genus *MYCETOPHYLLIA* Milne Edwards and Haime, 1848

Characters: Colonies are flat plates with radiating valleys. Septo-costae are exsert, columellae are poorly developed. Tentacles are usually small or apparently absent except at the margins of colonies.

Similar Genera: *Symphyllia*.



242. *Mycetophyllia danaana* Milne Edwards and Haime, 1849

Description: Colonies are solid rounded plates. Long sinuous valleys are radiate from the original point of growth and are sometimes deep. Short valleys wall sometimes form *Hydnophora* like monticules. Septo-costae are thinner than intervening spaces. Columellae are rudimentary or absent. There is one row of mouths in the valleys.

Colour: Green valley with pink walls.

Similar species: *M. lamarckiana*.

Distribution: Caribbean Sea and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



Genus *AUSTRALOMUSSA* Veron, 1985

It is a monospecific genus.

Characters: Colonies are flat plates. Corallites are sub-ceroid and form short valleys. Tissue over the septa and costae are sturdy, with large blunt teeth. In India it is only reported from Andaman & Nicobar Islands.

Similar Genera: *Scolymia*.



243. *Australomussa rowleyensis* Veron, 1985

Description: Colonies are flattened and helmet shaped. Corallites are sub-ceroid and have short valleys. Tissues over the septa are usually distinct in colour and texture from tissue over the costae. Septa and costae are sturdy, with large blunt teeth.

Colour: Bluish grey.

Similar species: *Scolymia vitiensis*.

Distribution: Distributed from Andaman and Nicobar Islands to Great Barrier Reef.

Remarks: Found in lower reef slope.



Genus *CYNARINA* Bruggemann, 1877

One of the most delicately beautiful corals. Despite their delicate appearance *Cynarina*, alone among the mussids, are tolerant of a wide range of environmental conditions and make good aquarium specimens.

Characters: It is a monospecific genus. Corals are monocentric (oval or circular or cylindrical) with a base firmly attached or with a pointed base and free living. Primary septa are thick and have very large teeth. Paliform lobes are usually well developed. Columellae are broad and compact. Polyps are extended only at night and are transparent so that the toothed primary septa are seen clearly. It is reported in India from Andaman & Nicobar Islands.

Similar genera: *Indophyllia*.

244. *Cynarina lacrymalis* (Milne Edwards and Haime, 1848)

Description: Colonies are monocentric, oval or circular with a base for attachment. It may have a pointed base when free-living. Primary septa are thick with large, rounded lobed teeth. Paliform lobes are usually developed. Columellae are broad and compact.

Colour: Mixture of green and brown.

Similar species: *Indophyllia mascassrensis*.

Distribution: Throughout Indo-Pacific including Andaman and Nicobar Islands up to Coral Sea.

Remarks: Mostly occur in protected reef environments and deep sandy substrates.



Favia pallida (Dana, 1846)

FAMILY FAVIIDAE Gregory, 1900

Faviidae is one of the most important families of Scleractinia corals. It is a largest family in terms of number of genera.

Characters: All extant species are hermatypic and colonial. Septa, paliform lobes, columellae and wall structures, when present, all appear to be structurally similar. Septal structures are simple; Columellae are simple tangle of elongate septal and cross-linkages. The majority of Faviid genera are easily recognised because they are composed of a small number of species all of which have a number of distinctive characters in common.

Genus *Diploria*, *Calpophyllia*, *Manicina*, *Solenastrea*, *Cladocora*, *Astreomilia*, *Erythrastrea*, *Caulastrea*, *Favia*, *Barabattoia*, *Favites*, *Goniastrea*, *Playgyra*, *Australogyra*, *Leptoria*, *Oulophyllia*, *Oulastrea*, *Montastrea*, *Plesiastrea*, *Diplostrea*, *Leptastrea*, *Cyphastrea*, *Echniopora* and *Moseleya*.



Similar families ASTROCOENIIDAE and ACROPORIDAE

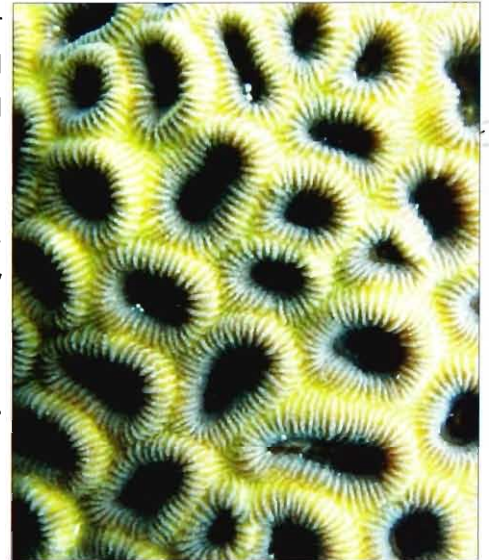


Genus *FAVIA* Oken, 1815

The species of *Favia* are the most common coral found in shallow water communities that are not dominated by *Acropora*. 22 species are reported in the world, of which 12 are reported from India as well as Andaman and Nicobar Islands also.

Characters: Colonies are usually massive, either flat or dome shaped. Corallites are monocentric and placoid, each corallites projects slightly above the colony surface and have their own wall. Intratentacular division forms daughter corallites. Polyps are extended only at night and have a simple circle of tapering tentacles, often with a pigmented tip. It has reported from all four major reef regions of India.

Similar Genera: *Favites*.



245. *Favia albidus* Veron 2000

Description: Colonies are massive and small. Corallites are large and crowded. Columellae are small, well developed paliform lobes are forming crown around the columellae. Corallite walls are thick and exserted.

Colour: Colonies are usually pale brown with thick brown margin along the walls.

Similar Species: *Favia matthaii*.

Distribution: Red Sea and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



246. *Favia fava* (Forskal, 1775)

Description: Colonies are massive rounded or flat. Corallites are conical. Septa are slightly irregular and widely spaced. Paliform lobes are poorly developed.

Colour: Colonies are very variedly coloured often mottled, with pale calices.

Similar Species: *F. speciosa*.

Distribution: Red Sea, Japan, Marshall Islands, Samoa, Great Barrier Reef, Coral Sea, Gulf of Kachchh and Andaman and Nicobar Islands.

Remarks: Occur in soft bottom reefs.



247. *Favia lacuna* Veron, Turak and DeVantier, 2002

Description: Colonies are submassive to massive, usually more than one metre across. Corallites are subplacoid, circular to irregular in shape, and crowded. The inner walls of corallites plunge vertically. Septa are thin, uniformly spaced and subequal, most reaching the columella deep within the calice. Costae of adjacent corallites do not meet, leaving a narrow ambulacral groove. There are no paliform lobes. Columellae are small and compact.

Colour: Colonies are tan with white centres.

Similar Species: *Oulophyllia*.

Distribution: Red Sea and Andaman and Nicobar Islands.

Remarks: Upper reef slope.



248. *Favia lizardensis* Veron and Pichon, 1977

Description: Colonies are massive and are commonly over one meter across. Corallites are circular, and regularly spaced. Corallite walls are thick but have fine rims. Septa are uniformly thin and widely spaced, without paliform lobes. Costae are well developed.

Colour: Pinkish brown with cream or greenish oral discs.

Similar Species: *F. rosaria*.

Distribution: Madagascar, Indo-Pacific, Japan and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope areas.



249. *Favia matthaii* Vaughan, 1918

Description: Colonies are massive and usually small. Corallites are crowded and circular. Septa are thickened, exsert or ragged, with large teeth near the wall. They have well developed paliform lobes forming a crown around the columella.

Colour: Colonies are usually brown or grey or mottled, with walls and calices of contrasting colours.

Similar Species: *F. albidus* and *F. pallida*.

Distribution: Indo-Pacific to Coral Sea and Andaman and Nicobar Islands.

Remarks: Common in upper reef slope area.



250. *Favia maxima* Veron, Pichon and Wijsman-Best, 1977

Description: Colonies are massive and usually small. Corallites have well defined walls. Septa are regular, thickened at the wall and with conspicuous paliform lobes forming a crown around the columella.

Colour: Polyps may be fleshy. Colonies are brown or yellow-brown with dull green or white oral discs.

Similar Species: *F. maritima*.

Distribution: Red Sea, Maldives, Indonesia, Philippines, Great Barrier Reef, Japan and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



251. *Favia pallida* (Dana, 1846)

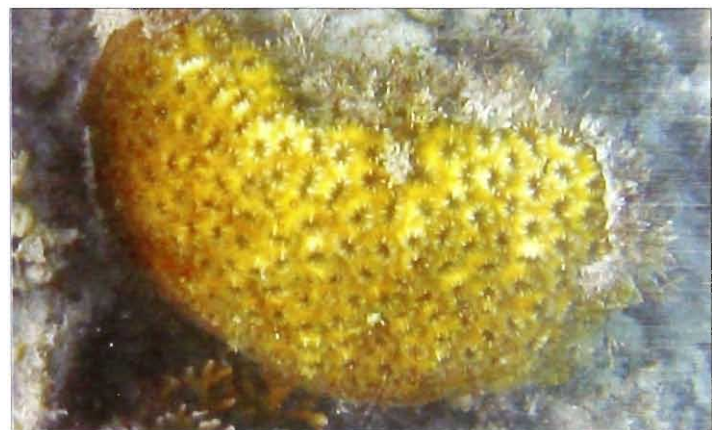
Description: Colonies are massive. Corallites are circular, closely compacted in shallow water, more widely spaced in deeper water. Septa are widely spaced and characteristically irregular. Paliform are usually poorly developed.

Colour: Colonies are pale yellow, cream or green, with dark brown or green oral discs.

Similar Species: *F. speciosa*.

Distribution: Tropical Indo-Pacific, Red Sea, Samoa, Great Barrier Reef, Gulf of Kachchh, Lakshadweep, Palk Bay and Andaman and Nicobar Islands.

Remarks: Reef flat and protected reef self areas.



252. *Favia rotumana* (Gardiner, 1899)

Description: Colonies are usually flat and subplacoid. Corallites are large in size (more than 12 mm in diameter). Corallites are crowded, irregular in shape and may have up to three centres. Septa are exsert, thin and very irregular; they plunge steeply inside the wall. Paliform lobes are poorly developed or absent.

Colour: Living colonies usually display different coloured corallite walls and oral discs.

Similar Species: *F. mathaii* and *Platygyra pini*.

Distribution: Throughout Indo-Pacific, up to Coral Sea and Andaman and Nicobar Islands.

Remarks: Usually found in upper reef slopes.

253. *Favia rotundata* Veron and Pichon, 1977

Description: Colonies are dome-shaped. Corallites are thick walled and circular, tending to be cerioid. Polyps are fleshy and circular in outline.

Colour: Pale grey and yellowish brown.

Similar Species: *F. maxima*.

Distribution: Red Sea, Maldives, Indonesia, Philippines, Great Barrier Reef, Japan and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope areas.

254. *Favia speciosa* Dana, 1846

Description: Colonies are massive. Corallites are circular and closely compacted in shallow water, more widely spaced in deeper water. Septa are fine, numerous and regular. Paliform lobes are usually poorly developed.

Colour: Colonies are pale grey, green or brown, usually with calices of contrasting colours.

Similar Species: *F. pallida*.

Distribution: Red Sea, East Africa, Great Barrier Reef, Coral Sea, Gulf of Kachchh, Mandabam, Lakshadweep Islands, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in shallow reef regions.



255. *Favia stelligera* (Dana, 1846)

Description: Colonies are spherical, columnar, hillocky or flat and may be several metres across. Corallites are evenly distributed and conical, with thick walls and small openings. Costae are equal and well developed. Those of adjacent corallites do not join. A crown of paliform lobes is usually clearly visible.

Colour: Colonies are uniform brown or green.

Similar Species: *Montastrea salebrosa*.

Distribution: Red Sea to Indo Pacific and Andaman and Nicobar Islands.

Remarks: Wave exposed reefs.



256. *Favia truncatus* Veron, 2000

Description: Colonies are massive, flat and sometimes hemispherical. Corallites are typically inclined on the colony surface, facing downwards on hemispherical surfaces. Corallite walls have sharp rims except for colonies from very shallow water. The lower part of the wall of inclined corallites is commonly immersed, giving the upper part a hooded appearance. Septa are widely spaced and irregular in size. Paliform crowns are well developed.

Colour: Colonies are uniform yellowish-green or brown.

Similar Species: *F. speciosa* and *F. pallida*

Distribution: Madagascar, Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in shallow waters.



Genus *FAVITES* Link, 1807

Fourteen species are reported from the world, of which ten are recorded from India.

Characters: Colonies are usually massive, either flat or dome-shaped. Corallites are monocentric and cerioid, occasionally subplacoid. Corallites are usually reported with 6-14 mm in size. Adjacent corallites mostly share common walls. Paliform lobes are often poorly developed. Polyps are extended only at night and have a single circle of tapering tentacles like *Favia*. This genus is recorded from all the major coral reef areas of India.

Similar Genera: *Favia* and *Goniastrea*.



257. *Favites abdita* (Ellis and Solander, 1786)

Description: Colonies are massive, either rounded or hillocky and sometimes over one metre across. Corallites are rounded, with thick walls. Septa are straight, with exsert teeth.

Colour: Colonies are dark in turbid environments, otherwise pale brown with brown or green oral discs.

Similar Species: *F. halicora* and *F. flexuosa*.

Distribution: Indo-Pacific, Red Sea, Samoa, Great Barrier Reef, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly common in all reef regions.



258. *Favites acuticollis* (Ortmann, 1889)

Description: Colonies are submassive to encrusting. Corallites are deep with very thin angular walls giving colonies a honey comb appearance. Corallites are usually less than 7 mm diameter. Septa are few and widely spaced, paliform lobes are absent.

Colour: Dark colours, often with white upper margins to walls.

Similar Species: *F. pentagona*, *F. spinosa* and *Goniatrea columella*.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow reefs.



259. *Favites chinensis* (Verrill, 1866)

Description: Colonies are massive and rounded. Corallites are shallow, angular to subplacoid, with thin walls. Septa are straight and even. Those of adjacent corallites are aligned across the wall. There are no paliform lobes.

Colour: Colonies are usually yellow or green-brown.

Similar Species: *F. complanata*.

Distribution: Red Sea, Madagascar, Indo-Pacific to Japan and Andaman and Nicobar Islands.

Remarks: Found in protected reef lagoons.



260. *Favites complanata* (Ehrenberg, 1834)

Description: Colonies are massive with slightly angular corallites. Corallites have thick, rounded walls. Paliform lobes are weakly developed. Columellae are large. Septal spines may be prominent. Costae commonly form three pointed star where three corallites adjoin.

Colour: Colonies are usually brown, sometimes with green or grey oral discs.

Similar Species: *F. abdita*.

Distribution: Indo-Pacific, Red Sea, Great Barrier Reef, Lakshadweep, Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Outer reef slope areas.



261. *Favites flexuosa* (Dana, 1846)

Description: Colonies are hemispherical or flat. Corallites are angular and deep. Septa are prominent, with large conspicuous teeth. Paliform lobes are weakly developed.

Colour: A wide range, usually with contrasting walls and oral discs.

Similar species: *F. paraflexuosa*, *F. vasta*, *F. abdita* and *Acanthastrea echinata*.

Distribution: Indo-Pacific, Red Sea, Fiji, Great Barrier Reef, Coral Sea and Andaman and Nicobar Islands.

Remarks: Upper reef regions.



262. *Favites halicora* (Ehrenberg, 1834)

Description: Colonies are massive, either rounded or hillocky. Corallites have very thick walls and tend to become subplacoid. Paliform lobes may be developed.

Colour: Colonies are usually uniform yellowish- or greenish- brown.

Similar Species: *F. abdita*.

Distribution: Indo-Pacific, Red Sea, Samoa and Andaman and Nicobar Islands.

Remarks: Shallow reef regions.



263. *Favites micropentagona* Veron, 2002

Description:

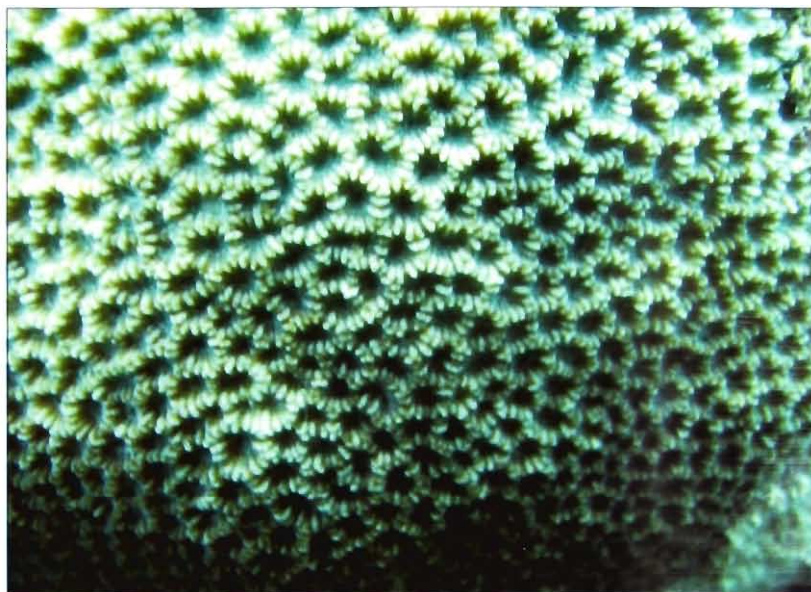
Colonies are encrusting to submassive. Corallites are pentagonal in shape and 3-4 mm diameter. Septa are in two alternating cycles, with irregular teeth. The paliform crown is clearly developed.

Colour: Colonies are pale brown, sometimes with dark oral discs.

Similar Species: *F. pentagona*.

Distribution: Indonesia, Philippines, Coral Sea and Andaman and Nicobar Islands.

Remarks: Upper reef slope.



264. *Favites pentagona* (Esper, 1794)

Description: Colonies are submassive to encrusting, sometimes forming irregular columns. They commonly exceed one metre across. Corallites are thin walled and angular. Septa are few in number. Paliform lobes are well developed, commonly forming conspicuous crown.

Colour: Often brightly coloured, brown or red, commonly with green oral discs.

Similar species: *F. bestae* and *F. micropentagona*.

Distribution: Indo-Pacific upto Coral Sea, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Shallow reef regions.



265. *Favites spinosa* (Klunzinger, 1879)

Description: Colonies are small, massive and rounded. Corallites are deeply excavated, with angular walls. Septa are straight, widely spaced and are usually in two alternating orders. Paliform lobes are weakly developed. Septa have very prominent teeth, which have ragged margins. Columellae are small and compact.

Colour: Corallite walls are off-white, centres are dark.

Similar Species: *F. acuticollis*.

Distribution: Red Sea, Madagascar, Sri Lanka and Andaman and Nicobar Islands.

Remarks: Reef flat areas.



266. *Favites vasta* (Klunzinger, 1879)

Description: Colonies are massive and are commonly over one metre across. Corallites are deep and angular and have very thick walls. Septa are equal, uniform, not exsert and finely toothed. Paliform lobes are usually present.

Colour: Corallite walls are always uniform amber with cream or white oral discs.

Similar Species: *F. flexuosa*.

Distribution: Red Sea, Madagascar, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Outer reef slope.



Genus *GONIASTREA* Milne Edwards and Haime, 1848

Thirteen species under this genus are reported from the world, of which seven species are recorded in India.

Characters: Colonies are massive, usually spherical or elongate. Corallites are monocentric and cerioid to polycentric and meandroid. Paliform lobes are well developed. Meandroid colonies have well defined columella centres. Polyps are extended only at night. It is represented in all major reefs of India.

Similar Genera: *Favites*, *Leptoria* and *Platygyra*.



267. *Goniastrea aspera* Verrill, 1905

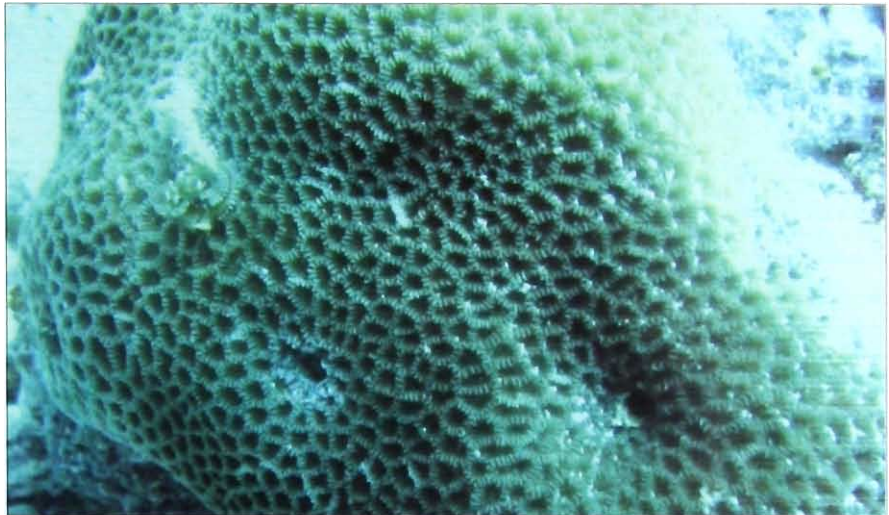
Description: Colonies are massive to encrusting. Corallites are angular in shape and have walls. Long and short septa generally alternate. Paliform lobes are well developed in colonies from exposed habitats.

Colour: Colonies are usually pale brown. Corallite centres are often cream.

Similar Species: *G. edwardsi*, *Favites pentagona* and *F. halicora*.

Distribution: Indo-Pacific to Red Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in shallow reef flat and in turbid water.



268. *Goniastrea australensis* (Milne Edwards and Haime, 1857)

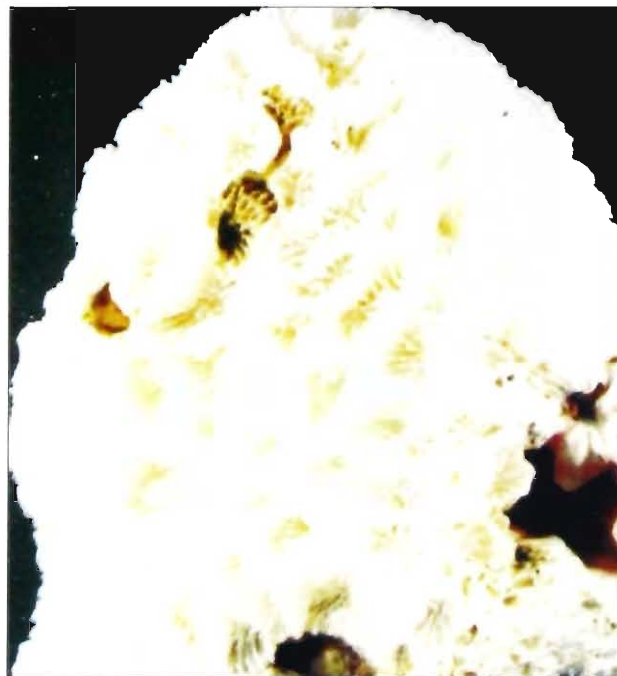
Description: Colonies are submassive or encrusting, and meandroid, with sinuous valleys. Columella centres and paliform lobes are well developed.

Colour: Very variable but usually a uniform dull green or brown or with walls and valley floors of contrasting dull or bright colours.

Similar Species: *Platygyra lamellina* and *Oulophyllia crispa*.

Distribution: Indo-Pacific, Philippines, Samoa, Coral Sea, Marshall Islands and Andaman and Nicobar Islands.

Remarks: Mostly found on shallow vertically hanging rocks.



Source: Venkataraman et al., 2003

269. *Goniastrea edwardsi* Chevalier, 1971

Description: Colonies are massive, hemispherical or columnar and often over one metre across. Corallites are only slightly angular, with thick rounded walls. Septa are irregular in length and taper from wall to the columellae, which are small. Paliform lobes are thick.

Colour: Colonies are uniform cream or brown, occasionally with orange centres.

Similar Species: *G. aspera* and *G. retiformis*.

Distribution: Indo-Pacific upto Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flats.



270. *Goniastrea minuta* Veron, 2002

Description: Colonies are usually encrusting, becoming submassive. Corallites are angular, with uniform appearance. Walls are usually thin. Long and short septa strongly alternate. Paliform lobes are well developed, forming a neat crown.

Colour: Colonies are uniform pale brown or greenish-brown. Wall tops are pale.

Similar Species: *G. retiformis*.

Distribution: Madagascar, Indonesia, Philippines, Great Barrier Reef, and Andaman and Nicobar Islands.

Remarks: Protected outer reef slope.



271. *Goniastrea pectinata* (Ehrenberg, 1834)

Description: Colonies are submassive or encrusting. Corallites are cerioid to submeandroid. The latter usually have less than four centres. Walls are thick, paliform lobes are well developed.

Colour: Usually pale brown or pink but may be dark brown in deep or turbid water.

Similar species: *G. edwardsi* and *G. australensis*.

Distribution: Indo-Pacific, Red Sea, Samoa, Coral Sea, Lakshadweep, Palk Bay, Gulf of Kachchh and Andaman and Nicobar Islands.

Remarks: Shallow reefs, attached on the crevices mouth.



272. *Goniastrea peresi* (Faure and Pichon, 1978)

Description: Colonies are encrusting and helmet-shaped, with neatly scalloped lower margins. Corallites are characteristically aligned in short shallow radiating valleys at the colony margin. Septa are strongly beaded. A small neat paliform crown is usually present. Budding is both intra- and extratentacular.

Colour: Colonies are pink in valleys.

Similar Species: *G. aspera*, *G. palauensis* and *Favites abdita*.

Distribution: Red sea, Madagascar, Maldives and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flat.



273. *Goniastrea retiformis* (Lamrck, 1816)

Description: Colonies are massive, hemispherical, flat or columnar, and commonly over one metre across. Corallites are four to six sided. Long and short septa clearly alternate and are thin and straight with well developed thin paliform lobes

Colour: Uniform cream or pale brown, occasionally brown, pink or green.

Similar species: *G. edwardsi* and *G. minuta*.

Distribution: Indo-Pacific, Red Sea, Samoa, Coral Sea, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in turbid shallow reef flats.



Genus *PLATYGYRA* Ehrenberg, 1834

Ten species are reported from the world, of which six are recorded from India.

Characters: Colonies are massive, either flat or dome shaped. Corallites are rarely cerioid, commonly meandroid. Paliform lobes are not developed; columellae seldom from centers and are continuous tangle of species. Polyps are extended only at night. It is recorded in all major reefs regions of India.

Similar Genera: *Goniastrea* and *Leptoria*.



274. *Platygyra acuta* Veron, 2000

Description: Colonies are massive and meandroid, with wall forming an acute. Septa are uniformly exsert and have ragged margins. Columellae are well developed but do not form centres.

Colour: Greyish brown.

Similar Species: *P. daedalea* and *P. sinensis*.

Distribution: Red sea, Madagascar, Indonesia, Philippines, Marshall Islands and Andaman and Nicobar Islands.

Remarks: Found in upper reef slope.



275. *Platygyra daedalea* (Ellis and Solander, 1786)

Description: Colonies are massive and meandroid, with thick walls. Speta are exsert and have a characteristically ragged appearance. Collumellae are weakly developed and centres are indistinct.

Colour: Colonies are grey.

Similar Species: *P. lamellina*.

Distribution: Indo-Pacific, Marshall Islands, Coral Sea, Lakshadweep, Gulf of Kachchh, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Wave exposed reef edges.



276. *Platygyra lamellina* (Ehrenberg, 1834)

Description: Colonies are massive and meandroid with thick walls. Septa are exserted with margins. Collumellae are well developed but not form centres.

Colour: Greyish brown.

Similar Species: *P. daedalea*, *P. crosslandi* and *Goniastrea australensis*.

Distribution: Indo-Pacific, Red Sea, Polynesia, Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in outer reef slope.



277. *Platygyra pini* Chevalier, 1975

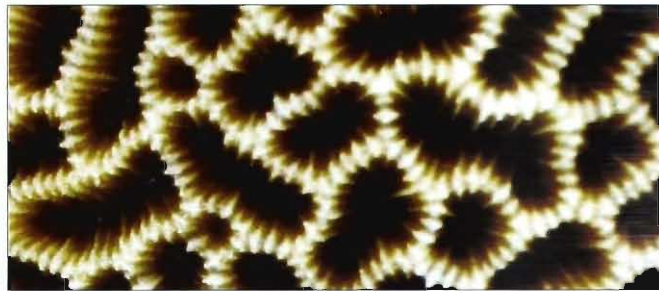
Description: Colonies are massive, with thick walls. Corallites are monocentric. Septa are thin and widely spaced. Columella are poorly developed.

Colour: Pale colour.

Similar Species: *P. ryukyuensis* and *P. crosslandi*.

Distribution: Madagascar, Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Occur in shallow reef flats.



278. *Platygyra sinensis* (Milne Edwards and Haime, 1849)

Description: Colonies are massive, with thin walls. Septa are thin, slightly exsert and they do not form paliform lobes. Columellae are weakly developed and there are no columella centres.

Colour: Colonies are brown.

Similar Species: *P. ryukyuensis* and *Goniastrea favulus*.

Distribution: Indo-Paific, Red Sea, Samoa, Coral Sea, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in back reef margin.



279. *Platygyra verweyi* Wijsman-Best, 1976

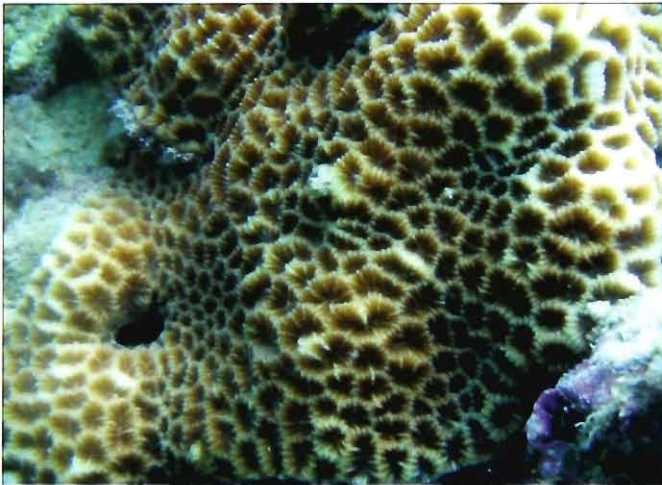
Description: Colonies are massive and cerioid to submeandroid with thin, acute walls. Septa are thin and uniformly spaced. Columellae are weakly developed or absent.

Colour: Uniform or mottled grey or brown, usually with contrasting walls and valley floors.

Similar Species: *P. sinensis*, *P. pini* and *P. carnosus*.

Distribution: Indonesia, Philippines, Japan, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in reef flats and upper reef slope.



Genus *OULOPHYLLIA* Milne Edwards and Haime, 1848

Three species are reported from the world, and all the three species are recorded in India also.

Characters: Colonies are massive, monocentric to meandroid, composed of large values with widely spaced, ragged septa and acute thin walls. Paliform lobes are usually present. Polyps are extended only at night. Only one species is recoded from A & N Islands.

Similar Genera: *Platygyra*.



280. *Oulophyllia bennettiae* (Veron and Pichon, 1977)

Description: Colonies are massive with large angular corallites, which may have up to three columellae. Septa are widely spaced, with large rounded teeth and some development of paliform lobes. Septa of adjacent corallites are aligned.

Colour: Distinctive greenish-grey with green oral discs.

Similar species: *G. palauensis* and *Favites flexuosa*.

Distribution: Distributed from Andaman and Nicobar Islands to Coral Sea.

Remarks: Found in upper reef slopes.



281. *Oulophyllia crispera* (Lamarck, 1816)

Description: Colonies are usually massive. Valleys are broad and V – Shaped. Septa are thin and slope to the columella, which form well-defined centres.

Colour: Brown walls with pink in colour

Similar Species: *O. levis*.

Distribution: Red Sea, East Africa, Madagascar, Chagos, Maldives, Philippines, Japan and Andaman and Nicobar Islands.

Remarks: Found in shallow lagoons.



282. *Oulophyllia levis* (Nememzo, 1959)

Description: Colonies are thick plates or are hemispherical. Valleys are usually perpendicular to the margin of plates, and are sinuous towards colony centres. They are short, broad (up to 20 mm), V-shaped and have sharp upper margins. Columellae are weakly developed.

Colour: Greenish brown.

Similar Species: *O. crispera*.

Distribution: Japan, Indonesia, Philippines, Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in reef slopes.



Genus *LEPTORIA* Milne Edwards and Haime, 1848

Two species of *Leptoria* are reported from the world, and both are recorded in India.

Characters: Colonies are massive with an even surface and dense skeleton. Corallite valleys are highly meandroid and uniform. Septa are uniformly spaced and equally sized. Columellae are wall like with a lobed upper margin and do not form centres. Paliform lobes are absent. Polyps are extended only at night. It is recorded all major reefs of India except Gulf of Kachchh.

Similar Genera: *Platygyra* and *Goniastrea*.



283. *Leptoria irregularis* Veron, 1990

Description: Colonies are laminar. Septa are irregular with strong teeth. Valleys are perpendicular to colony margins.

Colour: Colonies are brownish yellow with creamy line on the margins.

Similar Species: *Leptoria phrygia* and *Scapophyllia cylindrica*.

Distribution: Red Sea, Indonesia, Philippines, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Occur in upper reef slope.



284. *Leptoria phrygia* (Ellis and Solander, 1786)

Description: Colonies are massive with an even surface and dense skeleton. Corallite valleys are highly meandroid and uniform. Septa are uniformly spaced and are of equal size. Columellae are wall like with a lobed upper margin and do not form centres. Paliform lobes are absent.

Colour: Pale brown.

Similar Species: *L. irregularis*.

Distribution: Indo-Pacific, Red Sea, Fiji Islands, Japan, Australia, Coral Sea, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flats and turbid waters.



Genus *DIPLORIA* Milne Edwards and Haime, 1848

Three species are found world wide of which only one species is present in India.

Characters: Colonies are massive and meandroid. Columellae are interlinked. Paliform lobes are weakly developed or absent. Tentacles are extended only at night.

Similar Genera: *Platygyra*.



285. *Diploria srigosa* (Dana, 1848)

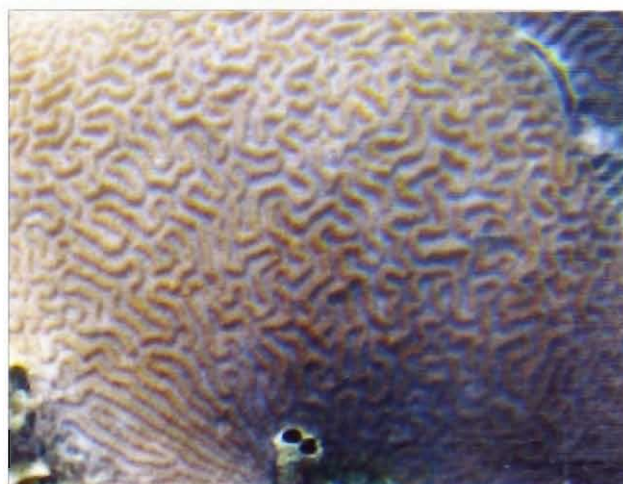
Description: Colonies are massive or encrusting. The surface is even, with sinuous valleys 6-9 mm wide. Interlinked columellae are well developed. Ambulacral grooves are fine.

Colour: Greenish grey.

Similar Species: *D. clivosa*.

Distribution: Caribbean Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow reef slopes and lagoons.



Genus *MONTASTREA* de Blainville, 1830

Ten species are reported from the world, of which four species are recorded from India.

Characters: Colonies are massive, either flat or dome shaped. Corallites are monocentric and placoid. Daughter corallites are predominantly formed by extra tentacular budding, which is, budding from the wall of parent corallites. Some intra tentacular budding may also occur. This genus can be separated readily from the other massive faviid genera with extra tentacular budding (*Plesiastrea*, *Diplostrea*, *Leptastrea* and *Cyphastrea*) because each of these has well defined characters. *Montastrea* is recorded all major reefs in India.

Similar Genera: *Cyphastrea*.



286. *Montastrea annuligera* (Milne Edwards and Haime, 1849)

Description: Colonies are irregular or encrusting. Corallites are circular. Septa taper from the wall to the columella and are in three cycles; those of the primary cycle are usually exert, widely spaced, and have well developed paliform lobes. Most colonies have atleast some development of 'groove and tubercle' structures.

Colour: Mottled or uniform green and brown, with darker calices.

Similar species: *Montastrea multipunctata*, *M. curta* and *M. valenciennesi*.

Distribution: Red Sea, Western Pacific, Philippines, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Mostly found in upper reef slopes.

287. *Montastrea colemani* (Veron, 2000)

Description: Colonies are sub-massive to encrusting, with compact rounded corallites 5-8 mm in diameter. 'Groove and tubercle' formations are well developed. Two cycles of septa clearly alternate; both are thickened over walls and are uniformly toothed. Paliform crowns are well developed.

Colour: Uniform brown or brown with green centres.

Similar Species: *M. valenciennesi*.

Distribution: Red Sea, Madagascar, Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Shallow reef flats and in turbid waters.



288. *Montastrea curta* (Dana, 1846)

Description: Colonies are spherical, columnar. Corallites are circular and widely spaced. Long and short septa alternates. Small paliform lobes are usually developed.

Colour: Cream or orange and usually dark in deep waters.

Similar Species: None.

Distribution: Indo-Pacific to Red Sea and Andaman and Nicobar Islands.

Remarks: Outer reef flat areas and deep waters.

289. *Montastrea valenciennesi* (Milne Edwards and Haime, 1848)

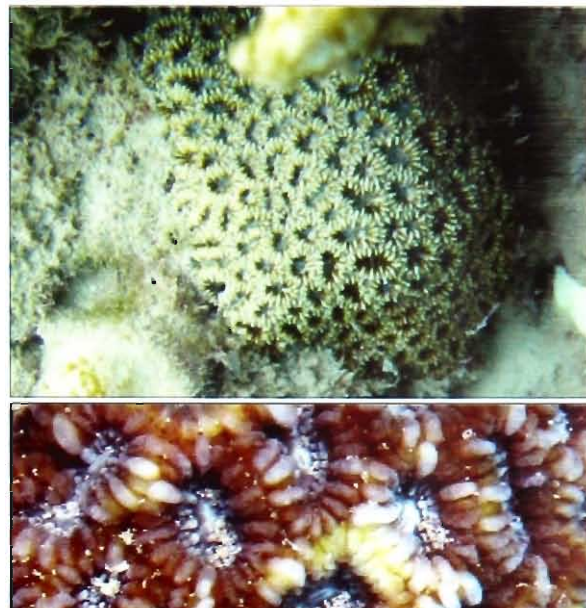
Description: Colonies are encrusting, with angular corallites. Groove and tubercle' formations are well developed. Long and short septa strongly alternate, are thickened over walls and are uniformly toothed.

Colour: Greenish brown.

Similar Species: *M. colemani* and *M. magnistellata*

Distribution: Madagascar, Marshall Islands, Great Barrier Reef, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Upper reef slope.



Genus *PLESIATREA* Milne Edwards and Haime, 1848

Worldwide two species are recoded so far, of which one species reported in India

Characters: Colonies are massive, rounded or flattened. Corallites are small, rounded, placoid and are formed by extratentacular budding.

Similar Genera: None.



290. *Plesiatria versipora* (Lamarck, 1816)

Description: Colonies are flat and are frequently lobed, usually smaller in the tropics. Paliform lobes form a neat circle around small columellae. Tentacles are sometimes extended during the day; they are short and are of two alternating sizes.

Colour: Greyish green.

Similar Species: *P. devantieri*.

Distribution: St. Vincent's Gulf of Australia, Lakshadweep, Gulf of Kachchh and Andaman and Nicobar Islands.

Remarks: Found in calm, shallow reef flats.



Genus *OULASTREA* Milne Edwards and Haime, 1848

It is a mono specific genus, which has only one species.

Characters: Colonies are encrusting and grow up to only few centimetres in diameter. Corallites are like a small *Montastrea*. The skeleton remains black with septa when dries. In India it is recorded only from Andaman and Nicobar Islands.

Similar Genera: *Diploastrea*.

291. *Oulastrea crispata* (Lamarck, 1816)

Description: Colonies are small encrusting. Corallites are like a small *Montastrea*, are of uniform size and are closely compacted. Long and short septa alternate. Paliform lobes are well developed. Tentacles are sometimes extended during the day.

Colour: Coenosteum is dark brown and septa are white.

Similar Species: None.

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Mostly found in turbid waters.

Genus *DIPLOASTREA* Matthai, 1914

Diploastrea is a mono-specific genus, which has only one species world wide.

Characters: Colonies are dome shaped with a very even surface and may be up to 2 m high and 7 m in diameter. The skeleton is very dense. Corallites are placoid. Columellae are large. Septa are equal and are thick at the wall and thin where they join the Columellae. In India it is recorded from Lakshadweep and Andaman and Nicobar Islands.

Similar Genera: None.



292. *Diploastrea heliopora* (Lamarck, 1816)

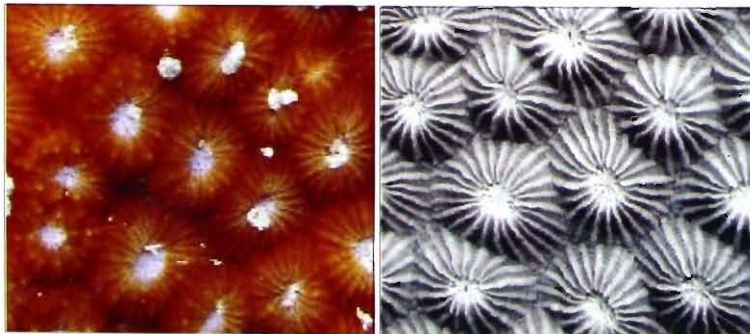
Description: Colonies are massive evenly surfaced. Corallites are very dense and uniformly distributed, and it appears like Honey comb. Corallites form low cones with small openings and very thick walls. Columellae are large. Septa are uniform and are thick at the wall and thin where joining the columellae.

Colour: Colonies are usually uniform cream or grey, sometimes greenish.

Similar Species: None.

Distribution: Indo-Pacific to Madagascar and Andaman and Nicobar Islands.

Remarks: Found in all reef areas.

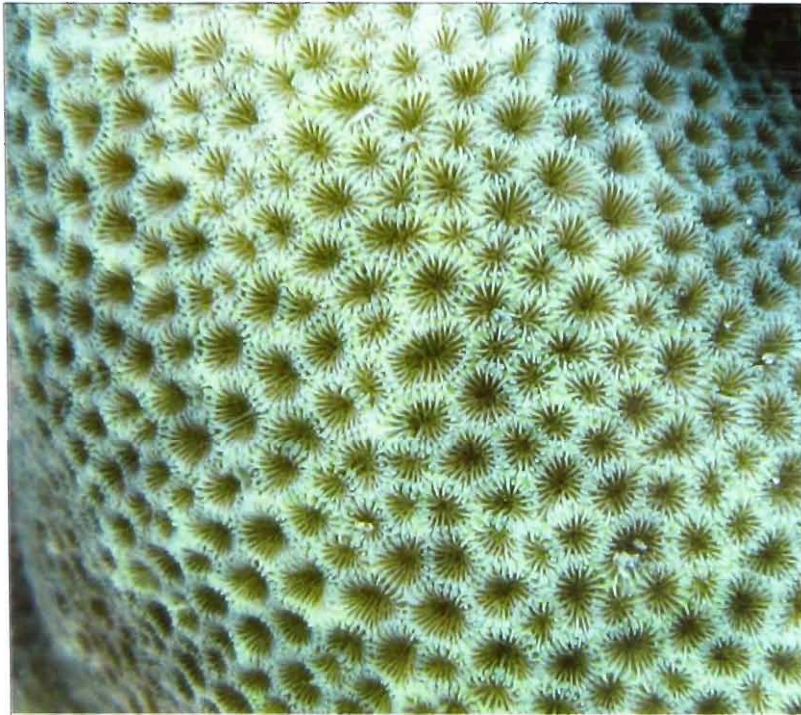


Genus *LEPTASTREA* Milne Edwards and Haime, 1848

Seven species are reported from the world, of which three are recorded from India.

Characters: Colonies are massive, usually flat or dome shaped. Corallites are subserioid to placoid. Costae are poorly developed or absent. Columellae consist of vertical pinnules. Septa have inward projecting teeth. Polyps are extended only at night. It is represented from all the major coral reef areas in India.

Similar Genera: *Cyphastrea*.



293. *Leptastrea bottae* Milne Edwards and Haime, 1849

Description: Colonies are massive to encrusting. Corallites are cylindrical separated only by a fine groove. Septa are in three cycles, the longest being distinctive and exert. Groove and tubercle formations are sometimes well developed.

Colour: White or cream with darker calices.

Similar Species: *L. inaequalis* and *L. transversa*.

Distribution: Red Sea, Madagascar, Maldives, Japan, Indonesia, Philippines, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flats.

294. *Leptastrea purpurea* (Dana, 1846)

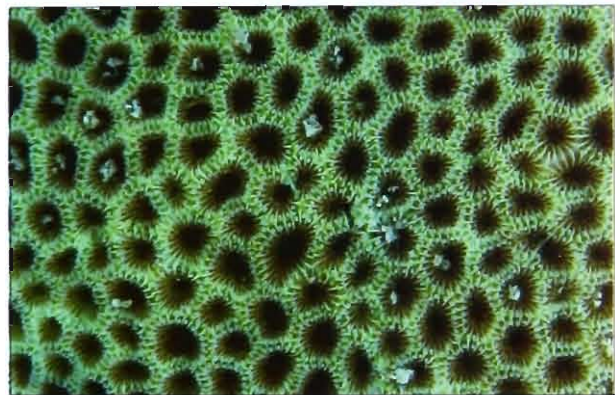
Description: Colonies are flat with angular, ceroid corallites which vary in size within the same colony. Colonies on feet flats may have several corallites in shallow valleys. Septa are tight compact, approximately similar in size, and have margins that slope uniformly towards the corallite centre. Columellae are small and compact.

Colour: Pale yellow and greenish.

Similar Species: *L. transversa*.

Distribution: Indo-Pacific, Red Sea, Hawaii, Australia, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in wide range of reef environments.



295. *Leptastrea transversa* Klunzinger, 1879

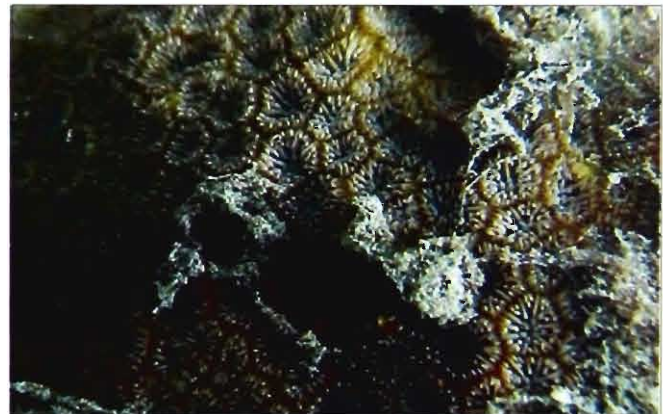
Description: Colonies are flat with angular, cerioid corallites. Septa are not tightly compact and plunge steeply near the columella. Columellae consist of a few pinnules aligned in a row and often fused.

Colour: Colonies are greenish yellow.

Similar Species: *L. purpurea*.

Distribution: Indo-Pacific, Red Sea, Australia, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in wide range of reef environments.

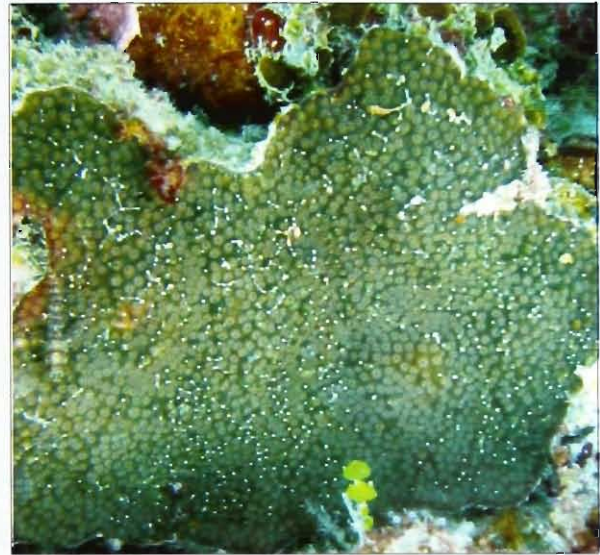


Genus *CYPHASTREA* Milne Edwards and Haime, 1848

Eight species are reported from the world, of which four species are recorded from India

Characters: Colonies are massive to columnar with a smooth or hillocky as in the case of *C. serailia* and massive or encrusting as in the case of *C. microphthalma*. Corallites are placoid, with calices less than 3 mm in diameter. Costae are generally restricted to the corallite wall; the coenosteum is granulated. Polyps are extended only at night. In India this genus is reported from all the major reef areas.

Similar Genera: *Echinopora*, *Montastrea* and *Plesiastrea*.



296. *Cyphastrea japonica* Yana and Sugiyama, 1932

Description: Colonies are encrusting, with an irregular surface. Corallites are small and arranged tightly. Septa are in two unequal orders of 12 each arranged alternatively, the first being exert and irregularly toothed. Coenosteum spinules are prominent. Groove and tubercle formations are often present.

Colour: Colonies are thick green and yellowish green, sometimes pink in colour.

Similar Species: *C. chalcidicum* and *C. ocellina*.

Distribution: Indonesia, Philippines, Japan and Andaman and Nicobar Islands.

Remarks: Found in shallow exposed reef environments.



297. *Cyphastera ocellina* (Dana, 1864)

Description: Colonies are massive or encrusting, with an undulating surface and tightly compacted. Septa are in two unequal orders of 12 each and sometimes have a third order. Paliform lobes are absent. The coenosteum is covered with short spinules.

Colour: Colonies are pale greenish-yellow or dark green.

Similar Species: *C. japonica*.

Distribution: Indonesia, Philippines, Japan and Andaman and Nicobar Islands.

Remarks: Occur in upper reef slopes.



298. *Cyphastera serailia* (Forskål, 1775)

Description: Colonies are massive to columnar with a smooth or hilly surface. Corallites are rounded and equal in size. Costae do not alternate strongly. There are 12 primary septa.

Colour: Usually uniform or mottled grey, brown or cream.

Similar Species: *C. chalcidicum* and *C. microphthalma*.

Distribution: Indo-Pacific, Red Sea, Marshall Islands, Philippines, Australia, Lakshadweep, Gulf of Mannar, Plak Bay and Andaman and Nicobar Islands.

Remarks: Found in all reef environments.

299. *Cyphastrea microphthalma* (Lamarck, 1816)

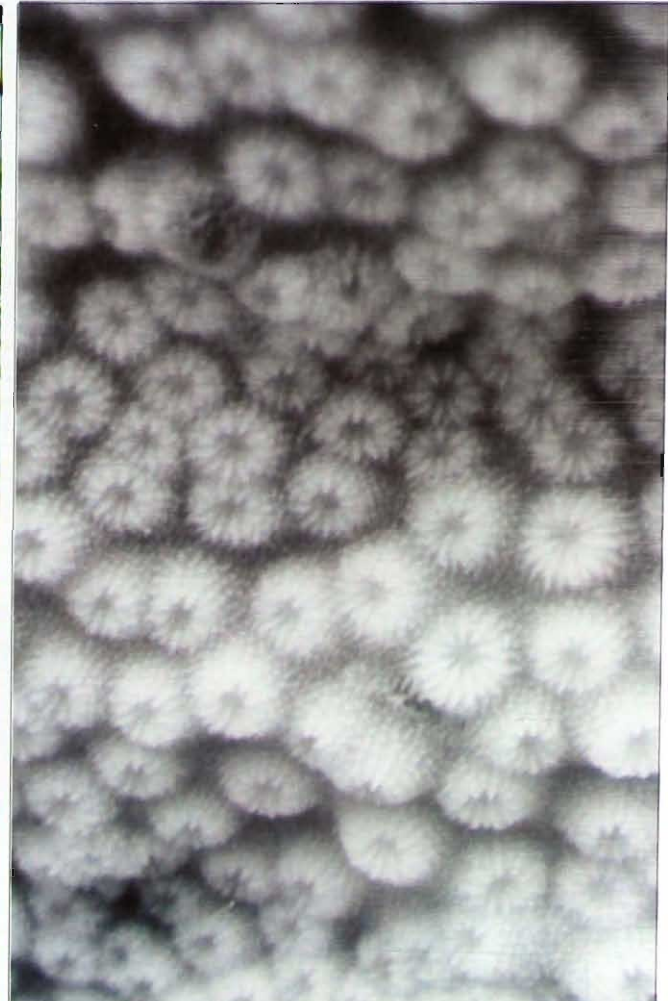
Description: Colonies are massive, becoming thin encrusting plates where light levels are low. They commonly grow as mobile balls (coralliths). Corallites are tall and conical; compact in colonies exposed to strong light, widely spaced in encrusting colonies. They usually have 10 primary septa although this varies among corallites.

Colour: Brown, cream or green, sometimes other colours. Septa are commonly white.

Similar Species: None.

Distribution: Indo-Pacific, Samoa, Australia, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flats.

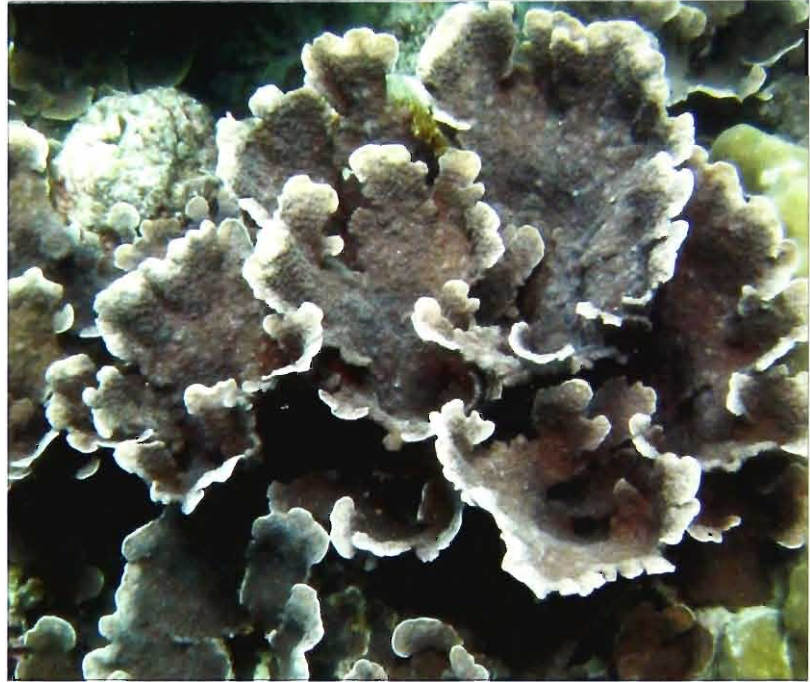


Genus *ECHINOPORA* Lamarck, 1816

It has wide variety of growth forms as *Merulina*. 5 species are reported from India.

Characters: Colonies are branching, foliose, encrusting, massive or mixture of these forms. Corallites are placoid with calices up to 5 mm in diameter. Septa are exert and irregular. Columellae are usually prominent. Costae are usually restricted to the corallite wall. The coenosteum is granulated. Polyps extended only at night. In India it is recorded in all major reef areas.

Similar Genera: *Cyphastrea*.



300. *Echinopora fruticulosa* Klunzinger, 1879

Description: Colonies are irregular clumps of interlocking branches. Branches are formed of single tubular corallites (or axial corallites) with lateral buds. Corallites are large. Costal spines are widely spaced and not exert.

Colour: Colonies are pinkish brown and with pale corallite ends.

Similar Species: *E. ashmorensis*, *E. pacificus* and *E. gemmacea*.

Distribution: Red Sea, Madagascar and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flat and upper reef slopes.



301. *Echinopora gemmacea* (Lamarck, 1816)

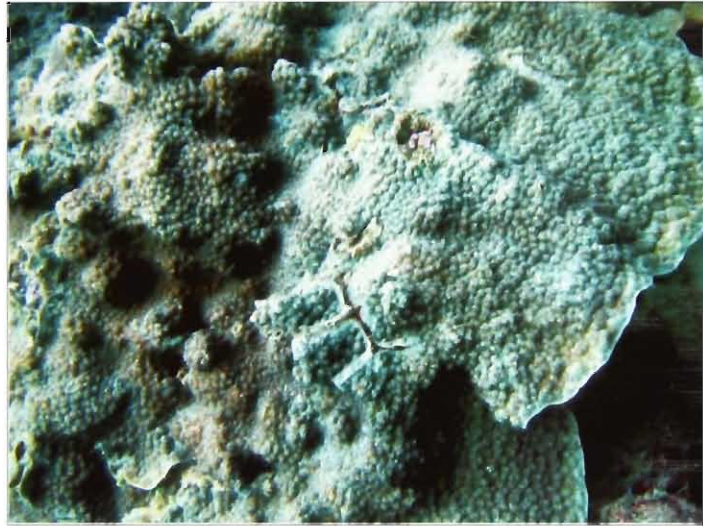
Description: Colonies are thin laminar plates with short branches. Corallites are large, walls and coenosteum covered with short spinules. Columella are large, paliform lobes are not well developed.

Colour: Colonies usually grey, sometimes pale cream to dark brown or green.

Similar species: *E. horrida* and *E. hirsutissima*.

Distribution: Indo-Pacific to Red Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in shallow protected reef environments.



302. *Echinopora hirsutissima* Milne Edwards and Haime, 1849

Description: Colonies are encrusting to sub-massive. Corallites are irregular with prominent skeletal structures. Costae are strongly beaded. The coenosteum is densely covered with thick, finely elaborate spinules.

Colour: Mustard, green, brown.

Similar species: *E. irregularis*, *E. horrida* and *E. gemmacea*.

Distribution: Red Sea, Madagascar, Maldives, Philippines, Great Barrier Reef, Coral Sea, Samoa, Marshall Islands, Japan, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Shallow reef environments.

303. *Echinopora horrida* Dana, 1846

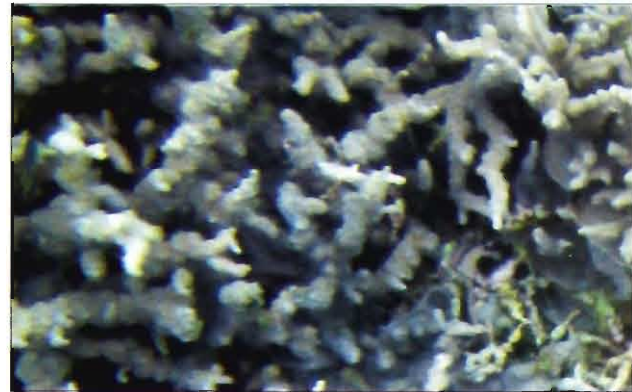
Description: Colonies are composed of contorted branches, sometimes with flat laminar bares. Corallites are thick walled and have six thick primary septa. The coenosteum is covered with tall spinules.

Colour: Colonies are dark brown, cream or green.

Similar species: *E. gemmacea* and *E. mammiformis*

Distribution: Tropical Indo-Pacific and Andaman and Nicobar Islands.

Remarks: Found in upper reef slopes.



304. *Echinopora lamellosa* (Esper, 1795)

Description: Colonies are thin laminae forming whorls and tubes. Corallites are relatively thin walled and small. Collumella are small and compact, and paliform lobes are well developed.

Colour: Colonies are greyish green, some time pinkish line seen along the periphery of the laminae.

Similar species: *E. ashmorensis*, *E. pacificus* and *E. gemmacea*.

Distribution: Coral Sea to Red Sea and Andaman and Nicobar Islands.

Remarks: Dominant in shallow reef flats.





Echinopora lamellosa (Esper, 1795)



Trachyphyllia geoffroyi (Audouin, 1826)

Source: Venkataraman et al., 2003

FAMILY TRACHYPHYLLIIDAE Verrill, 1901

Solitary to colonial and zooxanthellate. The family is separated from Faviidae by growth form, the presence of large paliform lobes and fine teeth on the septa. This family has only one genus *Trachyphyllia*.

Genus *TRACHYPHYLLIA* Milne Edwards and Haime, 1848

It is a monospecific genus. Colonies are usually free living, colonial and flabello-meandroid, resulting from intramural budding. Corallite wall appears to be primarily parathecal and primarily septo-thecal. The columella is trabecular centres are linked.

Similar genera: None.

305. *Trachyphyllia geoffroyi* (Audouin, 1826)

Description: Colonies are flabello-meandroid and free living. They are usually hourglass shaped. Valleys have large regular septa and paliform lobes and a large columella of tangled spines. Polyps are fleshy. When tentacles are retracted during the day a large mantle extends well beyond the perimeter of the skeleton. This retracts if distributed. At night tentacles in several rows are extended from the expanded oral disc inside the mantle.

Colour: Yellow, brown and green.

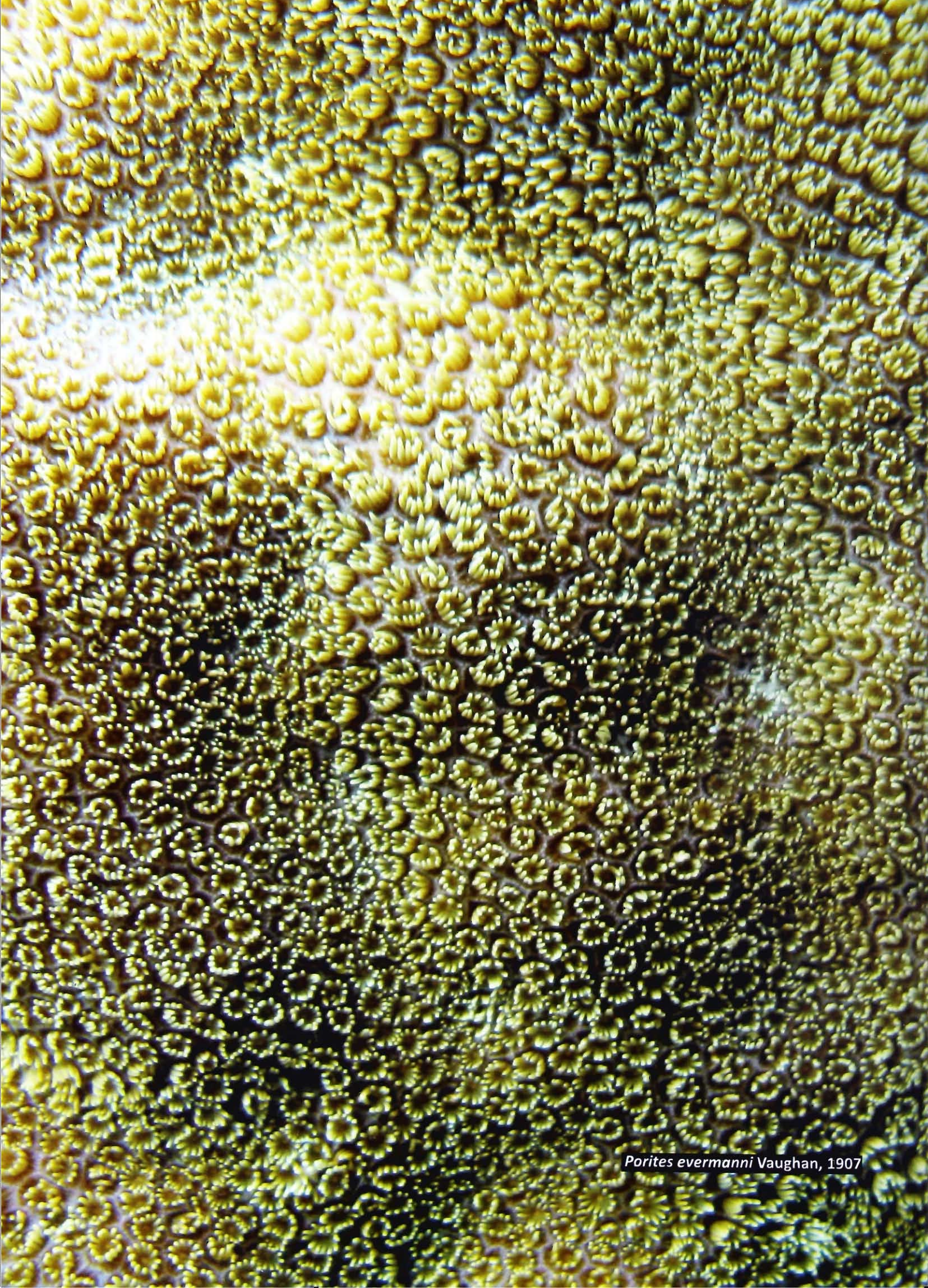
Similar Species: *Symphyllia*.

Distribution: Red Sea, Philippines, Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found in soft bottom reef with other free living corals such as *Fungia*, *Diaseris* etc.



Source: Venkataraman et al., 2003



Porites evermanni Vaughan, 1907

FAMILY PORITIDAE Gray, 1842

This is one of the main reef builder corals in India. One of the largest families in terms of number of genera. The genus *Porites* is the major reef builder in Andaman group of Islands.

Characters: Poritidae is a heterogenous assemblage of distantly related genera. It is colonial hermatypic and mostly extant. Colonies are usually massive, laminar or ramose. Corallites have a wide size range but are usually compact with little or no coenosteum. Walls and septa are porous.

Genus *Porites*, *Stylarae*, *Poritipora*, *Goniopora* and *Alveopora*.

Similar families None.

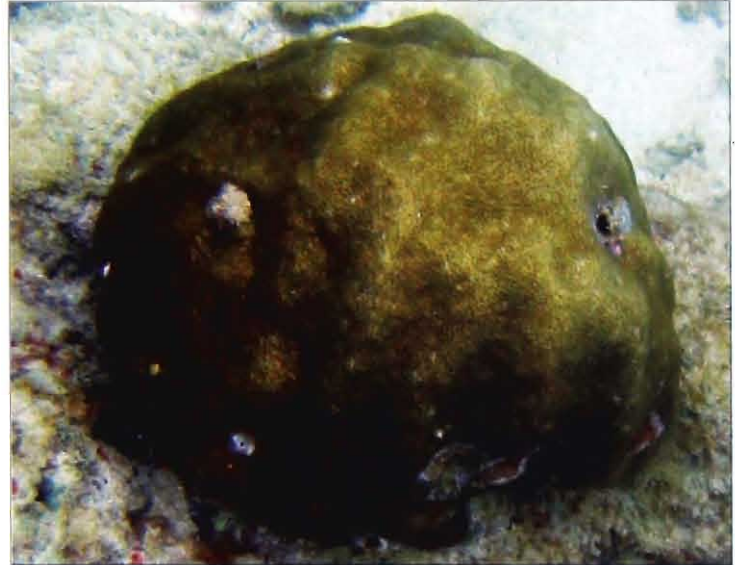


Genus *PORITES* Link, 1807

52 species are reported from the world, of which 18 are recorded in India.

Characters: Colonies are flat (foliaceous or encrusting), massive or branching. Massive colonies are spherical or hemispherical when small and helmet or dome shaped; when large are commonly over 5 m in diameter. Corallites are small, immersed, with calices less than 2 mm in diameter and filled with septa. Polyps usually extend only at night.

Similar Genera: *Montipora*.



306. *Porites annae* Crossland, 1952

Description: Colonies have nodular anastomosing branches with encrusting laminar bases. Branches are irregular and usually joined with adjoining branches forming a vertical laminar structure. Corallites are large and surface is smooth.

Colour: Greyish brown.

Similar Species: *P. cocosensis*.

Distribution: Distributed from Andaman and Nicobar Islands to Coral Sea.

Remarks: Forming massive colonies in shallow calm reef flats.



307. *Porites arnaudi* Reyes-Bonilla and Carricart-Ganivet, 2000

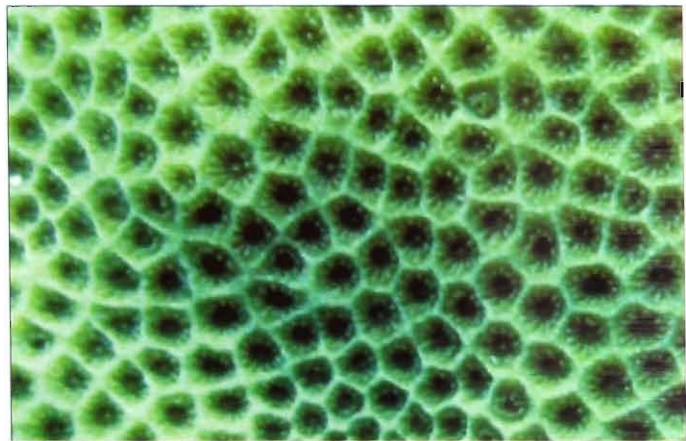
Description: Colonies are flat plates which may be arranged as tiers or whorls. Surface is smooth and corallites are compact and deeply excavated making colony pitted appearance.

Colour: Pale brown or greenish-grey, usually with pale margins to plates.

Similar Species: *P. lobata*.

Distribution: Coral Sea, Western Caribbean and Andaman and Nicobar Islands.

Remarks: Mostly found in outer reef slopes and attached from vertically hanging rocks.



308. *Porites compressa* Dana, 1846

Description: Colonies may form large patches of reefs. Branches are cylindrical and commonly fuse. Growth-forms and corallite characters are extremely variable so much so that single reef patches are composites of distinct races.

Colour: Mostly dull greys and browns.

Similar Species: *P. cylindrica* and *P. harrisoni*.

Distribution: Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Found in shallow protected lagoons.

309. *Porites cylindrica* Dana, 1846

Description: Colonies are branching, with an encrusting base. Concave calices give the surface a pitted appearance. Polyps are frequently extended during the day.

Colour: Creamy.

Similar Species: *P. attenuate* and *P. compressa*.

Distribution: Red Sea, Maldives, Sri Lanka, Philippines, Samoa, Marshall Islands, Coral Sea, Great Barrier Reef, Japan and Andaman and Nicobar Islands.

Remarks: Mostly dominated in shallow reef flats.



310. *Porites eridani* Umbgrove, 1940

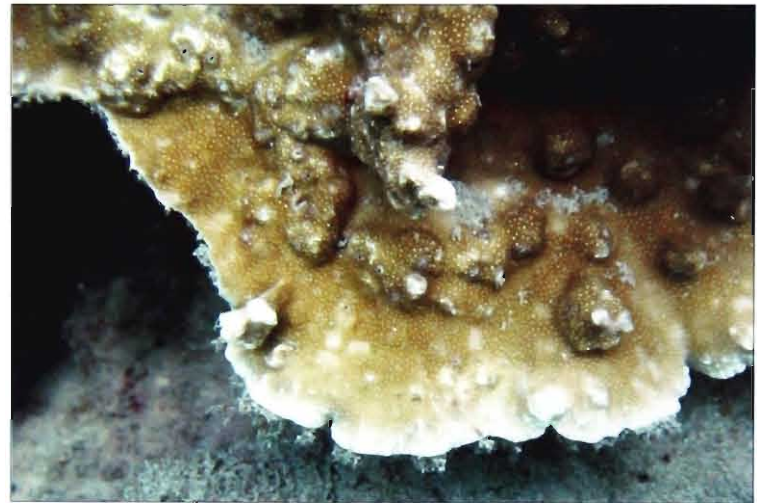
Description: Colonies are large basal laminae, often with contorted branches. Corallites are irregularly distributed on both laminae and branches.

Colour: Brown.

Similar Species: *P. flavus*, *P. sillimani* and *P. latistella*.

Distribution: Tropical Indo-Pacific including Andaman and Nicobar Islands.

Remarks: Found in steep reef slopes.



311. *Porites evermanni* Vaughan, 1907

Description: Colonies are massive with a tendency to form columns. Tentacles are usually extended during day.

Colour: Usually mustard, sometimes brown.

Similar Species: *P. australiensis* and *P. columnaris*.

Distribution: From Maldives to Great Barrier Reef including Andaman and Nicobar Islands.

Remarks: Found in shallow lagoons.



312. *Porites harrisoni* Veron, 2000

Description: Colonies are usually less than one metre across. They have a wide range of sub-massive, nodular, columnar and branching growth-forms on a broad encrusting base.

Colour: Dark brown.

Similar Species: *P. compressa*.

Distribution: Red Sea and Andaman and Nicobar Islands.

Remarks: Occur in outer reef slopes.



313. *Porites latistella* Quelch, 1886

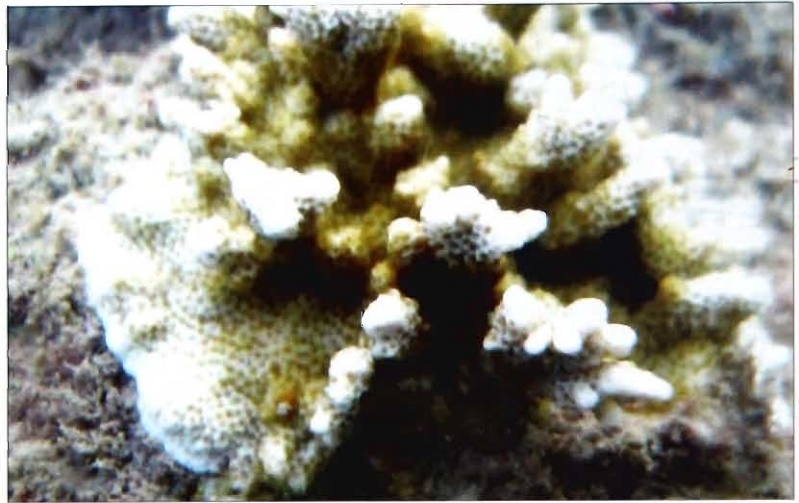
Description: Colonies are thin basal laminae and twisted flattened branches. Corallites are large and aligned in irregular rows along the branches. Concave calices give the pitted appearance to the colony and no corallites on the axial.

Colour: Pale brown.

Similar Species: *P. sillimaniana*.

Distribution: Madagascar, Indonesia to Coral Sea and Andaman and Nicobar Islands.

Remarks: Shallow protected reef slopes.



314. *Porites lichen* Dana, 1846

Description: Colonies are flat laminae or plates, or fused nodules and columns. Corallites are commonly aligned in irregular rows separated by slight ridges. Septal structures are variable and irregular.

Colour: Usually bright yellowish green, sometimes brown.

Similar species: *P. annae* and *P. heronensis*.

Distribution: Red Sea, Fiji, Samoa, Great Barrier Reef, Gulf of Kachchh, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in outer reef slopes.

315. *Porites lobata* Dana, 1846

Description: Colonies are massive, hemispherical and may several meter in height sometimes they may be form mini allots in high tidal amplitude areas. Surface is smooth and usually have tendency to form lobes or humps on their surface.



Colour: Colonies are pale brown.

Similar Species: *P. solida*.

Distribution: Tropical Indo-Pacific, Philippines, Maldives, Red Sea Lakshadweep and Andaman and Nicobar Islands.



Remarks: Dominant species in reef slopes.

316. *Porites lutea* Milne Edwards and Haime, 1860

Description: Colonies are hemispherical. The surface is smooth with small trenches. Septa do not reach the upper wall margin but slope gently towards the columellae. Colour of the colony is creamy yellow.



Colour: Cream and pale brown.

Similar Species: *P. australiensis* and *P. lobata*.

Distribution: Red Sea, Great Barrier Reef, Gulf of Kachchh, Lakshadweep, Kulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Mostly occurs with *P. lobata* and *P. solida* in outer reef slopes.



317. *Porites monticulosa* Dana, 1846

Description: Colonies are massive, columnar, laminar and branching. Corallites are separated into groups by ridges.

Colour: Bluish brown.

Similar Species: *P. rus*.

Distribution: Red Sea, Madagascar, Philippines, Great Barrier Reef, Hawaii Islands and Andaman and Nicobar Islands.

Remarks: Found in shallow reef environments.



318. *Porites murrayensis* Vaughan, 1918

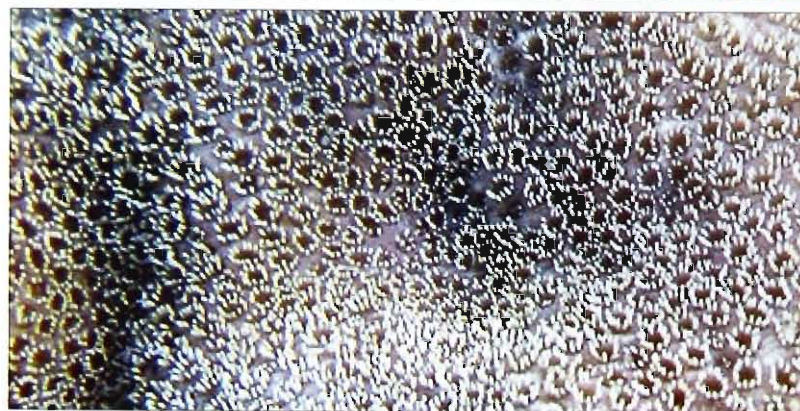
Description: Colonies are hemispherical. The colony surface is smooth and corallites are small and evenly spaced.

Colour: Cream and brown.

Similar Species: *P. lobata*.

Distribution: Maldives, Great Barrier Reef, Samoa, Marshall Islands, Philippines and Andaman and Nicobar Islands.

Remarks: Found in shallow reef environments.



319. *Porites myrmidoensis* Veron, 1985

Description: Colonies are massive and may be over 4 metres across. The surface is usually nodular. Corallites are in deeply excavated pits and are distinctive underwater.

Colour: Uniform or mottled green or brown.

Similar Species: *P. solida*.

Distribution: Great Barrier Reef and Andaman and Nicobar Islands.

Remarks: Mostly found in upper reef slope.



320. *Porites nigrescens* Dana, 1846

Description: Colonies are branching, sometimes with an encrusting base. Concave calices give the surface a pitted appearance. Tentacles are frequently extended during the day.

Colour: Brown or cream.

Similar Species: *P. cylindrica* and *P. negrosensis*.

Description: Tropical Indo-Pacific, South China, Madagascar, Fiji, Australia and Andaman and Nicobar Islands.

Remarks: Found in lower reef slopes.



321. *Porites rus* (Forskal, 1775)

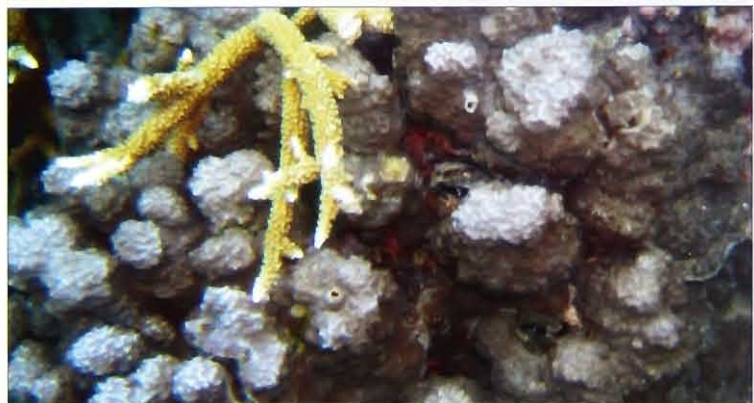
Description: Colonies are sub-massive, laminar or contorted anastomosing branches and columns, commonly over 5 metres across. Corallites are separated into groups by ridges which characteristically converge towards each other forming flame-shaped patterns.

Colour: Pale cream, yellow or dark bluish-brown, often with pale branch tips. Some times brightly coloured in shallow water.

Similar Species: *P. rus*, *P. monticulosa* and *Montipora*.

Distribution: Indo-Pacific, Red Sea, Hawaii, Lakshadweep and Andaman and Nicobar Islands.

Remarks: Found in shallow reef environments.



322. *Porites solidus* (Forskal, 1775)

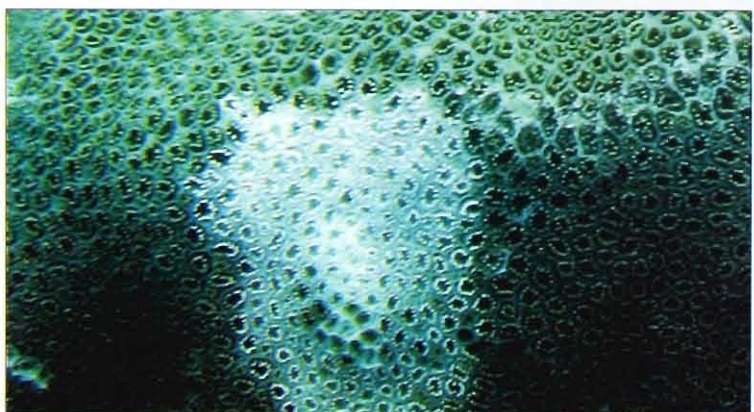
Description: Colonies are massive, usually hemispherical, and may be several metres across. The surface is smooth to undulating. Corallites are conspicuously large.

Colour: Brown or greenish yellow.

Similar Species: *P. lobata*.

Description: Indo-Pacific, Red Sea, Hawaii, Great Barrier Reef, Lakshadweep, Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands.

Remarks: Found in steep reef slopes.



323. *Porites vaughani* (Crossland, 1952)

Description: Colonies are encrusting, laminar or form columns. Corallites are widely spaced and separated by ridges. They are uniform in size within the same colony; those of colonies from exposed upper reef slopes are relatively small.

Colour: Usually pale cream, pink or brown but may be bright green or purple.

Similar Species: *P. annae* and *P. lichen*.

Distribution: Andaman and Nicobar Islands to Coral Sea.

Remarks: Found in shallow reef slopes.



Genus *GONIOPORA* de Blainville, 1830

Twenty four species are reported worldwide, of which nine species are recorded from India.

Characters: Colonies are usually columnar or massive but may be encrusting. Corallites are usually thick but porous walls and calices are filled with compact septa and columella. Polyps are long and fleshy, extended day and night. *Goniopora* are usually easier to identify in Underwater than they are from skeletons. They have 24 tentacles. It is reported from all the four major coral reef areas in India.

Similar Genera: *Alveopora*.



324. *Goniopora columna* Dana, 1846

Description: Colonies are short columns, oval in transverse section. Corallites near the tops of columns have fine irregular septa and diffuse columellae. Those on the sides of columns have broad compact columellae and short septa. Colonies have large polyps with large oral cones.

Colour: Brown, green or yellow, usually with white oral cones. Contracted polyps usually have distinctly different colours.

Similar Species: *G. stokesi* and *G. lobata*.

Distribution: Great Barrier Reef, Red Sea, Fiji Coral Sea and Andaman and Nicobar Islands.

Remarks: Mostly found in turbid waters.

325. *Goniopora lobata* Milne Edwards and Haime, 1860

Description: Colonies are hemispherical or, more usually, form short thick columns. Columellae and oral cones are small. Polyps are elongate when fully extended.

Colour: Colonies are usually brown, yellow or green, often with contrasting oral cones and tentacle tips.

Similar Species: *G. columna* and *G. stokesi*.

Distribution: From Red Sea to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow turbid waters.



326. *Goniopora minor* Crossland, 1952

Description: Colonies are hemispherical or encrusting. Calices are circular in outline, with thick walls. There are usually six thick calices which are in contact, forming a crown. All septal structures are heavily granulated.

Colour: Brown or green, usually with distinctively coloured oral discs and pale tips to the tentacles.

Similar Species: *G. tenuidens*.

Distribution: From Red Sea to Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in shallow, protected lagoons.

327. *Goniopora norfolkensis* Veron and Pichon, 1982

Description: Colonies are hemispherical to encrusting. Calices have small columellae and long, regular, steeply plunging septa. Paliform lobes are absent.

Colour: Colonies are usually greenish brown with distinctively coloured oral discs and pale tips to the tentacles.

Similar Species: *G. pendulus* and *G. tenuidens*.

Distribution: Great Barrier Reef, Indonesia, Thailand, Philippines and Andaman and Nicobar Islands.

Remarks: Usually seen in shallow reef flats.



328. *Goniopora pandoraenis* Veron and Pichon, 1982

Description: Colonies consist of small branching columns, usually oval in transverse section. Corallites have thick walls and septa. Six thick paliform lobes form a crown.

Colour: Colonies are dark grey-brown with white mouths and tentacle tips.

Similar Species: *G. eclipsensis*.

Distribution: Andaman and Nicobar Islands to Coral Sea.

Remarks: Found in shallow reef environments.



329. *Goniopora planulata* (Ehrenberg, 1834)

Description: Colonies are sub-massive with small compacted columns or mounds. Corallites have thin walls. Septa are thin and irregular and do not form deltas except in colonies in very shallow water. Paliform lobes form a diffuse crown. Polyps are short with tentacles of uniform length.

Colour: Dark greyish brown.

Similar species: *G. columna*.

Distribution: Red Sea, Madagascar, Indonesia, Philippines, Marshal Islands and Andaman and Nicobar Islands.

Remarks: Found in outer reef slopes.

330. *Goniopora stokesi* Milne Edwards and Haime, 1851

Description: Colonies are free-living or attached, hemispherical or rarely have short thick columns. Calices have high walls which have a ragged appearance. Columellae are broad and irregular. Small satellite colonies often occur embedded in the living tissue of parent colonies. Polyps are of mixed sizes, the larger being elongate.

Colour: Pale brown or green, usually with green tentacle tips.

Similar Species: *G. pendulus* and *G. lobata*.

Distribution: Madagascar, Red Sea, Philippines, Indonesia, Australia, Lakshadweep, Gulf of Mannar, Palk of Bay and Andaman and Nicobar Islands.

Remarks: Mostly found in soft bottom reef flats.



331. *Goniopora stutchburyi* Wells, 1955

Description: Colonies are sub-massive to encrusting. Calices are small and shallow, giving colonies a smooth surface. Polyps have short tapered tentacles which may not be extended during day.

Colour: Usually pale during day brown or cream, sometimes with pale blue mouths.

Similar Species: *Porites*.

Distribution: From Sri Lanka to Coral Sea including Andaman and Nicobar Islands.

Remarks: Found in shallow reef environments.

332. *Goniopora tenuidens* (Quelch, 1886)

Description: Colonies are massive, hemispherical or irregular. Corallites are rounded with thin walls and have six prominent paliform lobes. Polyps are closely compacted, uniform in length and have tentacles of uniform length.

Colour: Colonies are uniform blue or pink, green or brown sometimes with white tips to the tentacles.

Similar Species: *G. mino*, *G. pearsoni* and *G. norfolkensis*.

Distribution: Western Pacific, South China Sea, Philippines, Indonesia, Australia and Andaman and Nicobar Islands.

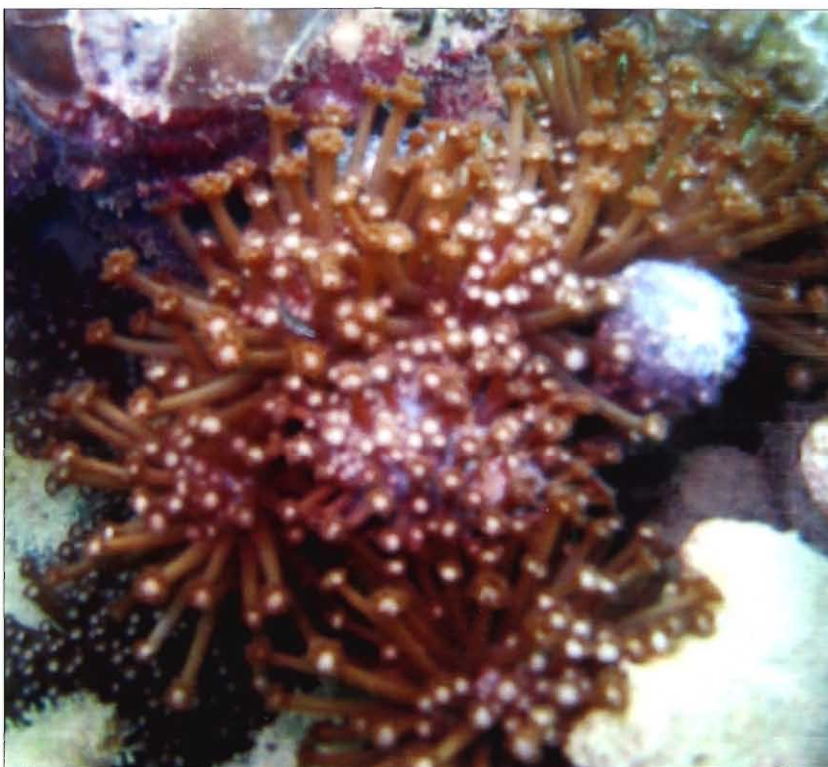
Remarks: Found in sub-tidal reefs and upper reef slopes.



Genus *ALVEOPORA* Blainville, 1830

Characters: Colonies are massive or branching, often with irregular shapes. The skeletal structure is light, consisting of interconnecting rods and spines. Corallites have lattice-like walls and septa that are mostly composed of fine spines which may connect in the centre to form a columella tangle. Polyps are large and fleshy and are normally extended day and night. They have 12 tentacles, often with swollen knob-like tips.

Similar Genera: *Goniopora*.



333. *Alveopora catalai* Wells, 1968

Description: Colonies are composed of gnarled that divide irregularly. Corallites are large, composed of an interlocking network of rods and spines. Polyps are large with knob-like tentacle tips.

Colour: Pale brown with white columella.

Similar Species: *A. gigas* and *A. allingi*.

Distribution: Maldives, Philippines, Indonesia, Australia, Coral Sea and Andaman and Nicobar Islands.

Remarks: Found in soft bottom and in turbid waters.



334. *Alveopora verrilliana* Dana, 1846

Description: Colonies are composed of short irregularly dividing knob-like branches. Corallites have short blunt septal spines and a palisade of vertical spines above the wall. Polyps are long when extended.

Colour: Thick green.

Similar species: *A. fenestrata*.

Distribution: Red Sea, Madagascar, Sri Lanka, Tropical Indo-Pacific, Japan and Andaman and Nicobar Islands.

Remarks: Found in shallow reef flats.





Porites lobata Dana, 1846



Heap of rubbles washed ashore along the beach of Kurmadera, South Andaman

THREATS TO CORAL REEFS OF ANDAMAN AND NICOBAR ISLANDS

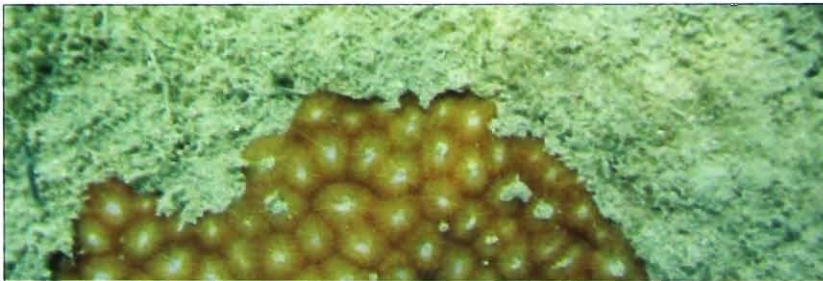
Menaces to the fragile marine biota radiate from several sources. Apart from natural stressors, humans, for their optimistic survival continue imposing adverse effects which cause irreparable damages. Anthropogenic activities have intimidated the sensitive ecological balance to extreme magnitudes. A rasping fact is that, humans without knowing the natural law of the sea by which it operates involved indirectly in many of the natural stresses too. These alarming issues urge us by ringing a clear message: "save our seas; heal the earth." Supplemented with finest photographs, threats of all sorts have been discussed in the following pages.



1. Natural Stress

Earthquake and Tsunami

After the earthquake (7.2 richter Scale) cum tsunami of December 2004, Andaman and Nicobar Islands faced enormous geological changes. The landmass of North Andaman became lifted up more than a meter and that of the subduction in South Andaman was up to 1.5 meters. The uplifted areas of North Andaman include some of the most diverse coral reefs. Earthquake caused irreparable damages to the coral reef ecosystem of these Islands. Almost 30% of reef flat areas of North Andaman are mostly exposed and died in due course of years (ZSI, 2009). Further, the earthquake caused cracks in the boulder corals and many massive corals were upturned.



Siltation and smothering

Being located in the tropical rain forest region of the world, Andaman & Nicobar Islands receives approximately 300 cm rainfall annually. Freshwater runoff stresses upon many fauna and flora in semi-enclosed bays and lagoons by lowering salinity and depositing large amounts of sediments and nutrients. Siltation and smothering of coral reefs is a major issue in Andaman and Nicobar Islands. Some of the reefs near Port Blair area itself are under threat due to siltation which causes mortality of corals. The coral reef of North Bay, Aberdeen Bay, Chidiyatappu etc. are examples.

Predation by fishes

The butterfly and parrot fishes are obligate coral predators. Their distribution and abundance on the coral reef may provide clues about conditions of the reef. In this sense they are considered as an indicator species. The argument is developed that counting a few species of conspicuous fishes is more efficient than trying to assess the distribution and abundance of the corals directly. The pollution of coral reefs may be due to chronic, sub-lethal levels, affecting the reef over long periods of time. The fish, being motile, may provide an early warning to deteriorating conditions by changes in their behavior, including eventual movement from the reef. Among many fishes which feed up on coral polyps. Chaetodontidae and Scaridae are the major representation.

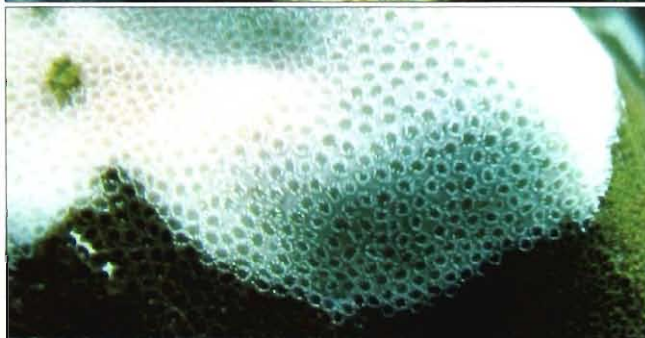


A total of 66 species of these two groups are found in coral reef area of Andaman & Nicobar Islands (ZSI, 2009). The feeding of fishes is a common incidence in the reef and is mostly recoverable. But in some instances the parrot fishes comes in large aggregations and that indicates the deterioration of the reef. This incidence is mostly seen in the Mahatma Gandhi Marine National Park, especially Boat and Tarmugli Islands.



Bleaching

Healthy tissue of most stony corals ranges from yellow to brownish in colour, a function of the photosynthetic pigments of their symbiotic zooxanthellae. When corals are inordinately stressed, they often expel their zooxanthellae, or the concentration of photosynthetic pigments declines. This response is known as 'bleaching'. Thus, the bleaching event can change the coral reef community, mostly affecting branching corals while the massive corals could survive. The period after the tsunami noticed another grave ecological threat to the reefs. Mass bleaching was observed during May 2005 due to the elevation of sea surface temperature. The first massive bleaching from Andaman Islands was reported in July 1998 due to El Niño which affected approximately 20% of corals. Recently in April 2010, mass bleaching was observed in the corals of Indian Islands, in which 70 to 80% of corals were bleached due to elevation of sea surface temperature upto 30-32°C



Coral diseases

Coral diseases and syndromes generally occur in response to biotic stresses such as bacteria, fungi and viruses, and/or abiotic stresses such as increased seawater temperatures, ultraviolet radiation, sedimentation and pollutants. One type of stress may exacerbate the other. The frequency of coral diseases appears to have increased significantly over the last 10 years, causing widespread mortality among reef-building corals. Many scientists believe the causative factors of these diseases are related to deteriorating water quality associated with anthropogenic pollutants and increased sea surface temperatures. This may, in turn, allow the proliferation and colonization of disease-causing microbes. However, exact causes for most coral diseases remain elusive. The onset of most diseases likely is a response to multiple factors.

In our recent surveys it was observed that occurrence of disease is very common in the reefs of Andaman and Nicobar Islands. One or more diseases were observed in all the reef areas surveyed. This has to be looked into seriously to address the problem.

Competition for space

Competition for space has gained the attention of a wide variety of investigators interested in making long-range predictions about community structure. In tropical coral reef communities, heavy emphasis has been placed on the transitive nature of competitive interactions between scleractinian corals and the contribution of such competitive hierarchies to the structure of these communities. It is becoming increasingly evident that non-scleractinian invertebrates such as encrusting sponges, zooanthids, ascidians, gorgonians and soft corals also compete aggressively for space in these open-reef habitats, and may often be the dominant space occupiers as in many reef areas of Andaman and Nicobar Islands.

The competition for space is of major concern in point of community structure and species richness. In our observations, it was clear that sponges, zooanthids and algae are the major factors determining the community structure of the reefs of these Islands.



Sponges as a competitor and destructor

Sponges are one of the major phyla found in the hard substrate marine benthos (Sarà and Vacelet 1973). One of their more interesting characteristics is that they are able to establish a great diversity of relationships (mutualism, commensalism and parasitism) with unicellular and multicellular organisms. Sponge-coral interactions are common in coral reefs where strong competition for space exists and where it is frequent that aggressive sponges overgrow the coral.

Encrusting sponges are very common in the reefs of these Islands. In many cases it was observed that these sponges are killing the live tissues of corals. The main species killing the corals are *Chondrilla nucula*, *Ectyoplasia ferox* and *Chalinula nematifera* affecting both branching and massive corals.



Crown-of-thorns starfish

Acanthaster planci is one of the most beautiful echinoderms seen in coral reef ecosystem. They have 16 to 18 arms and are covered all over with long and venomous spines. A big one can be half a meter in diameter. The spines are so sharp they slide through skin, and most gloves, without any real pressure. Crown -of- thorns starfish are found on coral reefs in the tropics ranging from the Red Sea, throughout the Indo-Pacific Ocean, Andaman & Nicobar Islands and all the way to the Pacific coast of Panama. They eat coral not the coral skeletons, just the delicate coral polyps. Since coral flesh is just a thin film on the outside of the coral skeleton, and since the polyps can withdraw down into protective little cups, coral is not very easy to make a meal out of.

These starfishes climb up on a coral and pulls its stomach out of its mouth with its tube feet. The starfish has thousands of these flexible tube feet, each ending with a little suction cup. The feet pass the stomach from one to the next until the big yellow stomach is spread out over the coral. Then the stomach slishes the live coral with



digestive juices. The cells of the stomach scoff up the bits of dissolving coral. When the starfish has cleaned the coral right back to the white calcium carbonate skeleton, it sucks in its stomach and walks off, using those tube feet. Normally, there are not many Crown-of-thorns on a coral reef. May be one every kilometer of reef or less. Many reefs don't seem to have any at all. But when temperature favour these sea stars, that is increase in temperature, could cause blooming of these creatives which may cause adverse effects on the reef community. The problem of *Acanthaster planci* in the Mahatma Gandhi Marine Natural Park was reported many years before itself. We have observed them feeding on corals from the reefs of North Bay, Chidiyatappu, Havelock, Car Nicobar, Great Nicobar and North Andaman.



2. Anthropogenic stress

Varied human activities which are, a cause for concern over and above the natural disturbances, include runoff and sedimentation from development activities, eutrophication from sewage and agriculture, physical impact of maritime activities, dredging, fishing practices, pollution from commercial sources and the synergistic impacts of anthropogenic disturbance. Pollution in the marine environment resulting in harm to marine life, danger to human health, hindrances to marine activities and a reduction in the quality and usefulness of seawater. The amount of sediments and chemicals the runoff water carries to the sea has profound effects on fertilization of eggs of marine species. Likewise, the quality of runoff water can affect the metamorphosis of the larvae of many species.

It takes a year for a centimeter of coral to grow - and will take dozens of years for coral stands which have been damaged by humans.



Eutrophication

The increasing urbanization in and around Port Blair area became a serious threat to the coral reefs nearby. Anthropogenic wastes make the coastal waters enriched with the nutrients and leads to many health problems. When the homeostasis of the reef area is lost, there is an overgrowth of algae. When too much algae grows on the reef, the coral cannot get enough oxygen and the reef is effectively smothered by Nitrogen and Carbon-di-oxide. Polychaete infestation in reef area also due to nutrient enrichment has already been reported.

Sewage discharge and runoff may also introduce pathogens into coral reef ecosystems. For example, *Aspergillus sydowii* has been associated with a disease in sea fans, and *Serratia marcescens*, has been linked to white pox, another coral disease.



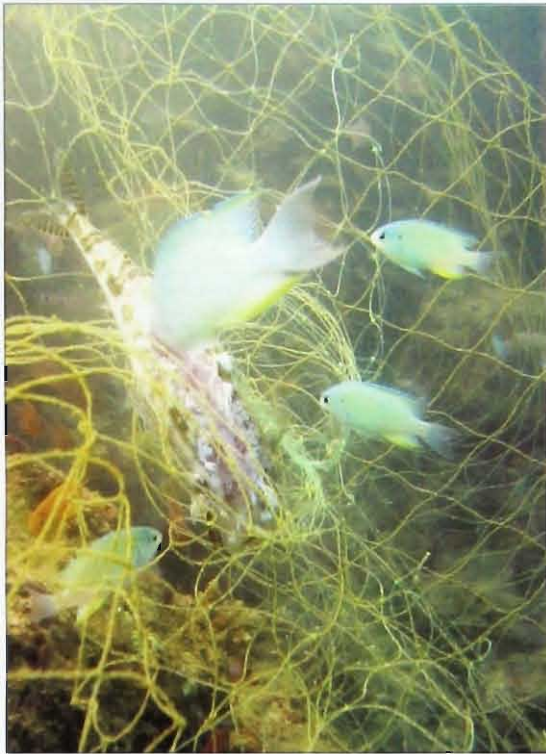
Siltation

Silt is definitely a detrimental factor affecting the growth and survival of the corals. Siltation occurs not only due to disturbance of the benthic substratum by anthropogenic activities such as the operation of fishing vessels but also due to natural causes such as monsoon winds. The increasing siltation due to development activities in the coastal areas also threatens the coral reef ecosystem. The effects were clearly visible from one the most visited reef- North Bay. The silt almost covers the corallite and blocking its respiratory activities. This smothering may lead to the death of the corals. Even many colonies were observed dead due to smothering.

Mangrove deforestation

Twenty percent of the world's mangrove forests have been lost since 1980, says the January 2008 report "Loss of mangroves alarming" from the Food and Agriculture Organization of the UN (FAO). Mangrove forests and coral reefs do not always occur near each other. However, these two ecosystems are neighbours often enough that important biological and physical interactions have been observed. Places as disparate as Indonesia, Australia, Andaman and Nicobar Islands and the Caribbean have mangrove coastlines not far from coral reefs. The roots of mangrove trees do an important job of keeping the coastline's soil intact and out of the ocean. Unfortunately, the loss of mangrove forests can lead to silt traveling out to sea. The eroding coastline is bad for land inhabitants, but it also leads to the siltation on coral reefs. This often means death for corals that are smothered by soil.





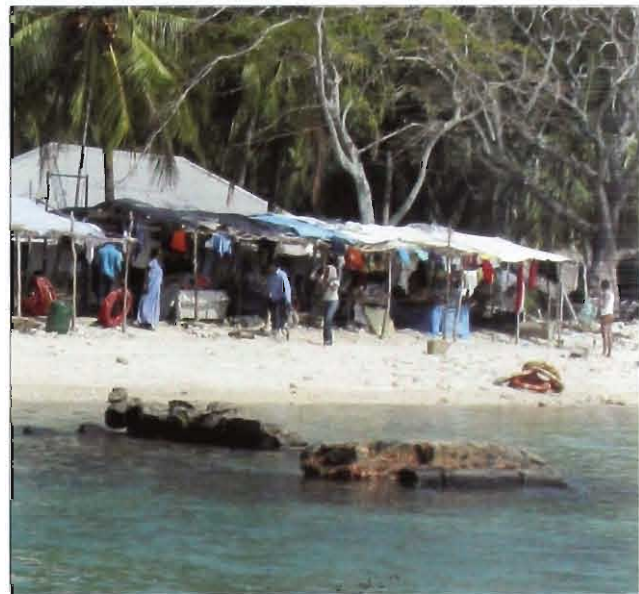
Debris

Since the society uses the sea as a common dumping yard, the ultimate effect is to the animals living in water. The plastic materials thrown by the local people and the tourists make the corals under threat. Plastic carry bags and other plastic sheets settle in the bottom which seldom degrades.

Plastic debris kills several reef species. Abandoned fishing nets and other gear—often called "ghost nets" because they still catch fish and other marine life despite being abandoned—can entangle and kill reef organisms and break or damage reefs. Even remote reef systems suffer the effects of marine debris. During many instances we have noticed branching corals died due to plastic smothering. The fishing nets are also of major share in the total plastics. The fishing nets primarily breaks off the branching corals, then gets entangled upon it. Observing fishes trapped in these nets are not so uncommon.

Destruction of corals by tourism activities

Tourism has caused severe damage to the reefs. Corals are often removed from their habitat. Also, in some coastal areas with rapidly growing populations and development, piers and docks have been built right on top of coral reefs. The marine based tourism activities recently gained much attention worldwide. The increased tourism activities in the reef areas are also puts the corals under threat. However, much of the destruction of coral reefs is caused by people who have never even seen a reef. Tourists break off the corals out of curiosity to know about it. Broken live corals in the North Bay beach is an example of destruction.



Diver's destruction

The recent developments in the tourism sector made these Islands as the SCUBA pioneers of our country. Most of the best diving sites of our country are in these Islands, and it gains more consideration day by day. In this context the destruction of the reefs by SCUBA divers should also be counted. These passionate divers can cause destruction as the vibrant color attracts the divers toward it. Careless divers often inadvertently destroy coral reefs by kicking them or dropping anchors from their boats directly onto the coral. At present there is not much impact of divers in these Islands.

CHECKLIST OF SCLERACTINIAN CORALS REPORTED DURING DIFFERENT PERIOD IN ANDAMAN & NICOBAR ISLANDS

No:	Species name	NCRI 2010	Venkatraman <i>et al.</i> , 2003	Turner <i>et al.</i> , 2001
Family: ACROPORIDAE Verrill, 1902				
Genus: <i>Montipora</i> de Blainville, 1830				
1	<i>Montipora aequituberculata</i> Barnard, 1897	+	+	+
2	<i>Montipora angulata</i> (Lamarck, 1816)		+	
3	<i>Montipora caliculata</i> (Dana, 1846)	+		+
4	<i>Montipora capitata</i> Dana, 1846	+		+
5	<i>Montipora cebuensis</i> (Nemanzo, 1976)	+		
6	<i>Montipora digitata</i> (Dana, 1846)	+	+	+
7	<i>Montipora flabellata</i> Studer, 1901	+		
8	<i>Montipora florida</i> Nemanzo, 1967	+		
9	<i>Montipora foliosa</i> (Pallas, 1766)	+		
10	<i>Montipora foveolata</i> (Dana, 1846)			+
11	<i>Montipora hemispherica</i> (Veron, 2000)	+		
12	<i>Montipora hispida</i> (Dana, 1846)		+	
13	<i>Montipora informis</i> Bernard, 1897		+	
14	<i>Montipora meandrina</i> (Ehrenberg, 1834)	+	+	+
15	<i>Montipora peltiformis</i> Benard, 1897	+	+	
16	<i>Montipora tuberculosa</i> Lamarck, 1816		+	+
17	<i>Montipora turgescens</i> Bernard, 1897	+	+	
18	<i>Montipora venosa</i> (Ehrenberg, 1834)		+	+
19	<i>Montipora verrilli</i> Vaughan, 1907	+		
20	<i>Montipora verrucosa</i> (Lamarck, 1816)	+	+	+
21	<i>Montipora verruculosus</i> Veron, 2000	+		
22	<i>Montipora vietnamensis</i> Veron, 2000	+		+
Genus: <i>Anacropora</i> Ridley, 1884				
23	<i>Anacropora reticulata</i> Veron and Wallace, 1984	+		
Genus: <i>Acropora</i> Oken, 1815				
24	<i>Acropora abrotanoides</i> (Lamarck, 1816)	+	+	
25	<i>Acropora anthocercis</i> (Brook, 1893)	+	+	
26	<i>Acropora aspera</i> (Dana, 1846)	+	+	
27	<i>Acropora austera</i> (Dana, 1846)	+	+	+
28	<i>Acropora brueggemanni</i> (Brook, 1893)	+	+	+
29	<i>Acropora carduus</i> (Dana, 1846)	+	+	+
30	<i>Acropora caroloniana</i> Nemanzo, 1976		+	
31	<i>Acropora cerealis</i> (Dana, 1846)	+		+
32	<i>Acropora chesterfieldensis</i> (Veron and Wallace, 1984)	+		+
33	<i>Acropora clathrata</i> (Brook, 1891)	+	+	+
34	<i>Acropora cophodactyla</i> (Brook, 1842)	+		+
35	<i>Acropora copiosa</i> Nemanzo, 1967	+		
36	<i>Acropora cytherea</i> (Dana, 1846)	+	+	+
37	<i>Acropora digitifera</i> (Dana, 1846)		+	+

38	<i>Acropora divaricata</i> (Dana, 1846)	+	+	+
39	<i>Acropora echinata</i> (Dana, 1846)		+	+
40	<i>Acropora efflorescens</i> (Dana, 1846)			+
41	<i>Acropora florida</i> (Dana, 1846)	+	+	+
42	<i>Acropora formosa</i> (Linnaeus, 1758)	+	+	+
43	<i>Acropora forskali</i> (Ehrenberg, 1834)	+		
44	<i>Acropora gemmifera</i> (Brook, 1892)	+	+	+
45	<i>Acropora glauca</i> (Brook, 1893)		+	
46	<i>Acropora globiceps</i> (Dana, 1846)	+		+
47	<i>Acropora grandis</i> (Brook, 1892)		+	+
48	<i>Acropora granulosa</i> (Milne Edwards and Haime, 1860)	+	+	+
49	<i>Acropora hemprichii</i> (Ehrenberg, 1834)	+	+	+
50	<i>Acropora horrida</i> (Dana, 1836)	+		
51	<i>Acropora humilis</i> (Dana, 1846)	+	+	+
52	<i>Acropora hyacinthus</i> (Dana, 1846)	+	+	+
53	<i>Acropora kosurini</i> Wallace, 1994			+
54	<i>Acropora latistella</i> (Brook, 1892)		+	
55	<i>Acropora loisettæ</i> Wallace, 1994			+
56	<i>Acropora longicyathus</i> (Milne Edwards and Haime, 1860)		+	+
57	<i>Acropora loripes</i> (Brook, 1892)		+	+
58	<i>Acropora lutkeni</i> Crossland, 1952		+	+
59	<i>Acropora microclados</i> (Ehrenberg, 1834)	+	+	
60	<i>Acropora microphthalma</i> (Verrill, 1859)	+	+	
61	<i>Acropora millepora</i> (Ehrenberg, 1834)		+	
62	<i>Acropora mirabilis</i> (Quelch, 1886)	+		
63	<i>Acropora monticulosa</i> (Bruggemann, 1879)	+	+	+
64	<i>Acropora multiacuta</i> Nemenzo, 1967		+	
65	<i>Acropora nana</i> (Studer, 1878)	+		
66	<i>Acropora nasuta</i> (Dana, 1846)	+	+	+
67	<i>Acropora nobilis</i> (Dana, 1846)	+	+	+
68	<i>Acropora palifera</i> (Lamarck, 1816)	+	+	+
69	<i>Acropora palmerae</i> Wells, 1954	+	+	+
70	<i>Acropora paniculata</i> Verrill, 1902			+
71	<i>Acropora papillare</i> Latypov, 1992	+	+	
72	<i>Acropora pharaonis</i> (Milne Edwards and Haime, 1860)	+		
73	<i>Acropora plantaginea</i> (Lamarck, 1816)	+		
74	<i>Acropora polystoma</i> (Brook, 1891)	+	+	
75	<i>Acropora proximalis</i> Veron, 2002			+
76	<i>Acropora pulchra</i> (Brook, 1891)		+	+
77	<i>Acropora robusta</i> (Dana, 1846)	+	+	+
78	<i>Acropora roseni</i> Wallace, 1999	+		
79	<i>Acropora rudis</i> (Rehberg, 1892)	+	+	+
80	<i>Acropora samoensis</i> (Brook, 1891)	+	+	+
81	<i>Acropora secale</i> (Studer, 1878)	+		+
82	<i>Acropora selago</i> (Studer, 1878)	+		+
83	<i>Acropora solitaryensis</i> Veron and Wallace, 1984		+	+

84	<i>Acropora spicifera</i> (Dana, 1846)	+	+	+
85	<i>Acropora squarrosa</i> (Ehrenberg, 1834)	+		
86	<i>Acropora subglabra</i> (Brook, 1891)	+	+	
87	<i>Acropora tenuis</i> (Dana, 1846)	+	+	+
88	<i>Acropora torresiana</i> Veron, 2002	+		
89	<i>Acropora valendennesi</i> (Milne Edwards & Haime, 1860)	+	+	+
90	<i>Acropora valida</i> (Dana, 1846)	+	+	
91	<i>Acropora variolosa</i> (Klunzinger, 1879)	+		
92	<i>Acropora vauhani</i> Wells, 1954	+		+
93	<i>Acropora verweyi</i> (Veron and Wallace, 1984)	+		

Genus: *Astreopora* de Blainville, 1830

94	<i>Astreopora cucullata</i> Lamberts, 1980		+	
95	<i>Astreopora gracilis</i> Bernard, 1896			+
96	<i>Astreopora incrustans</i> , Bernard, 1896	+		
97	<i>Astreopora listeri</i> Bernard, 1896	+	+	+
98	<i>Astreopora myriophthalma</i> (Lamarck, 1816)	+	+	+
99	<i>Astreopora ocellata</i> (Bernard, 1896)	+		
100	<i>Astreopora randalli</i> Lamberts, 1980			+
101	<i>Astreopora suggesta</i> Wells, 1954	+		+

Family: ASTROCOENIIDAE Koby, 1890

Genus: *Stylocoeniella* Yabe and Sugiyama, 1935

102	<i>Stylocoeniella armata</i> (Ehrenberg, 1834)			+
103	<i>Stylocoeniella guentheri</i> (Bassett & Smith, 1890)	+	+	+

Genus: *Madracis* Milne Edwards and Haime, 1849

104	<i>Madracis kirbyi</i> Veron & Pichon, 1976		+	
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Family: POCILLOPORIDAE Gray, 1842

Genus: *Pocillopora* Lamarck, 1816

105	<i>Podillopora ankell</i> Scheer & Pillai, 1974		+	
106	<i>Podillopora damicornis</i> Linnaeus, 1758	+	+	+
107	<i>Podillopora danae</i> Verrill, 1864	+		
108	<i>Podillopora eydouxi</i> (Milne Edwards & Haime, 1860)	+	+	+
109	<i>Podillopora kelleheri</i> Veron, 2002	+		
110	<i>Podillopora ligulata</i> Dana, 1846		+	
111	<i>Podillopora meandrina</i> Dana, 1846	+		+
112	<i>Podillopora verrucosa</i> (Ellis & Solander, 1786)	+	+	+

Genus: *Seriatopora* Lamarck, 1816

113	<i>Seriatopora aculeate</i> (Quelch, 1886)	+		
114	<i>Seriatopora callendrum</i> Ehrenberg, 1834			+
115	<i>Seriatopora crassa</i> Quelch, 1886		+	

116	<i>Seriatopora hystrix</i> Dana, 1846	+	+	+
117	<i>Seriatopora stellata</i> Quelch, 1886		+	
Genus: <i>Stylophora</i> Schweigger, 1819				
118	<i>Stylophora pistillata</i> (Esper, 1797)	+	+	+
Family: EUPHYLLIDAE Veron, 2000				
Genus: <i>Euphyllia</i> Dana, 1846				
119	<i>Euphyllia ancora</i> Veron & Pichon, 1979	+		+
120	<i>Euphyllia divisa</i> Veron & Pichon, 1979	+		+
121	<i>Euphyllia glabrescens</i> (Chamisso & Eysenhardt, 1821)	+	+	+
122	<i>Euphyllia yaeyamaensis</i> (Sirai, 1980)			+
Genus: <i>Plerogyra</i> Milne Edwards and Haime, 1848				
123	<i>Plerogyra sinuosa</i> (Dana, 1846)	+	+	+
Genus: <i>Physogyra</i> Quelch, 1884				
124	<i>Physogyra lichtensteini</i> (Milne Edwards and Haime, 1851)	+	+	+
Family: OCULINIDAE Grey, 1847				
Genus: <i>Galaxea</i> Oken, 1815				
125	<i>Galaxea archelia</i> Veron, 2002			+
126	<i>Galaxea astreata</i> (Lamarck, 1816)	+	+	+
127	<i>Galaxea fascicularis</i> (Linnaeus, 1767)	+	+	+
Family: SIDERASTREIDAE Vaughan and Wells, 1943				
Genus: <i>Pseudosiderastrea</i> Yabe and Sugiyama, 1935				
128	<i>Pseudosiderastrea tayami</i> Yabe and Sugiyama, 1935	+	+	
Genus: <i>Psammocora</i> Dana, 1846				
129	<i>Psammocora contigua</i> (Esper, 1797)	+	+	+
130	<i>Psammocora digitata</i> Milne Edwards and Haime, 1851	+	+	+
131	<i>Psammocora explanulata</i> van der Horst, 1922			+
132	<i>Psammocora haimeana</i> Milne Edwards and Haime, 1851		+	+
133	<i>Psammocora profundacella</i> Gardiner, 1898		+	+
134	<i>Psammocora superficialis</i> Gardiner, 1898			+
Genus: <i>Coscinaraea</i> Milne Edwards and Haime, 1848				
135	<i>Coscinaraea columna</i> (Dana, 1846)			+
136	<i>Coscinaraea crassa</i> Veron and Pichon, 1980			+

Family: AGARICIIDAE Grey, 1847			
Genus: <i>Agaricia</i> Lamarck, 1801			
137	<i>Agaricia fragilis</i> Dana, 1846	+	
Genus: <i>Pavona</i> Lamarck, 1801			
138	<i>Pavona bipartite</i> Nemenzo, 1980	+	+
139	<i>Pavona cactus</i> (Forsk., 1775)	+	+
140	<i>Pavona clavus</i> (Dana, 1846)	+	+
141	<i>Pavona decussata</i> (Dana, 1846)	+	+
142	<i>Pavona duerdeni</i> Vaughan, 1907	+	+
143	<i>Pavona explanulata</i> (Lamarck, 1816)	+	+
144	<i>Pavona gigantea</i> Verrill, 1896	+	
145	<i>Pavona maldivensis</i> (Gardiner, 1905)		+
146	<i>Pavona minuta</i> Wells, 1954		+
147	<i>Pavona varians</i> Verrill, 1846	+	+
148	<i>Pavona venosa</i> (Ehrenberg, 1834)	+	+
Genus: <i>Leptoseris</i> Milne Edwards and Haime, 1849			
149	<i>Leptoseris cucullata</i> (Ellis & Solander, 1786)	+	
150	<i>Leptoseris explanata</i> (Yabe & Sugiyama, 1941)	+	+
151	<i>Leptoseris hawaiiensis</i> (Vaughan, 1907)		+
152	<i>Leptoseris incrustans</i> (Quelch, 1886)	+	+
153	<i>Leptoseris mycetoseoides</i> Wells, 1954	+	+
154	<i>Leptoseris papyracea</i> (Dana, 1846)		+
155	<i>Leptoseris scabra</i> Vaughan, 1907		+
156	<i>Leptoseris solida</i> (Quelch, 1886)	+	
157	<i>Leptoseris yabei</i> (Pillai & Scheer, 1976)		+
Genus: <i>Coeloseris</i> Vaughan, 1918			
158	<i>Coeloseris mayeri</i> Vaughan, 1918		+
Genus: <i>Gardineroseris</i> Scheer and Pillai, 1974			
159	<i>Gardineroseris planulata</i> (Dana, 1846)	+	+
Genus: <i>Pachyseris</i> Milne Edwards and Haime, 1849			
160	<i>Pachyseris foliosa</i> Veron, 1990	+	
161	<i>Pachyseris gemmae</i> Nemenzo, 1955	+	+
162	<i>Pachyseris rugosa</i> (Lamarck, 1801)	+	+
163	<i>Pachyseris speciosa</i> (Dana, 1846)	+	+
Family: FUNGIIDAE Dana, 1846			
Genus: <i>Cycloseris</i> Milne Edwards and Haime, 1849			

164	<i>Cycloseris costulata</i> (Ortmann, 1889)			+
165	<i>Cycloseris cyclolites</i> (Lamarck, 1801)	+		+
166	<i>Cycloseris hexagonalis</i> Milne Edwards and Haime, 1848			+
167	<i>Cycloseris patelliformis</i> (Boschma, 1923)	+		+
168	<i>Cycloseris sinensis</i> Milne Edwards and Haime, 1849			+
169	<i>Cycloseris somervillei</i> (Gardiner, 1909)	+		+
Genus: <i>Diaseris</i> Milne Edwards and Haime, 1849				
170	<i>Diaseris distorta</i> (Michelin, 1843)			+
Genus: <i>Cantharellus</i> Höksema and Best, 1984				
171	<i>Cantharellus noumeae</i> Höksema and Best, 1984	+		
Genus: <i>Fungia</i> Lamarck, 1801				
172	<i>Fungia concinna</i> Verrill, 1864	+		+
173	<i>Fungia corona</i> Doderlein, 1901	+	+	
174	<i>Fungia danai</i> Milne Edwards and Haime, 1851	+	+	
175	<i>Fungia fralinae</i> Nemenzo, 1955	+		
176	<i>Fungia fungites</i> (Linnaeus, 1758)	+	+	+
177	<i>Fungia granulosa</i> (Klunzinger, 1879)	+		+
178	<i>Fungia horrida</i> Dana, 1846	+	+	+
179	<i>Fungia klunzingeri</i> Doderlein, 1901	+		+
180	<i>Fungia moluccensis</i> (Horst, 1919)			+
181	<i>Fungia paumotensis</i> Stutchbury, 1833	+	+	+
182	<i>Fungia repanda</i> Dana, 1846	+	+	+
183	<i>Fungia scabra</i> (Doderlein, 1901)	+		
184	<i>Fungia scruposa</i> (Klunzinger, 1879)	+		
185	<i>Fungia scutaria</i> Lamarck, 1801	+	+	+
186	<i>Fungia spinifer</i> (Claereboudt and Hoeksema, 1987)	+		
187	<i>Fungia sechellensis</i> Hoeksema, 1993	+		
188	<i>Fungia taiwanensis</i> Hoeksema and Dai, 1991	+		
Genus: <i>Ctenactis</i> Verrill, 1864				
189	<i>Ctenactis albitentaculata</i> Hoeksema, 1989	+		+
190	<i>Ctenactis crassa</i> (Dana, 1846)	+	+	+
191	<i>Ctenactis echinata</i> (Pallas, 1766)	+	+	+
Genus: <i>Herpolitha</i> Eschscholtz, 1825				
192	<i>Herpolitha limax</i> (Houttuyn, 1772)	+	+	+
193	<i>Herpolitha weberi</i> Horst, 1921	+		
Genus: <i>Polyphyllia</i> Quoy and Gaimard, 1833				
194	<i>Polyphyllia talpina</i> (Lamarck, 1801)		+	+

Genus: *Sandalolitha* Quelch, 1884

195	<i>Sandalolitha dentata</i> Quelch, 1884			+
196	<i>Sandalolitha robusta</i> (Quelch, 1886)		+	

Genus: *Halomitra* Dana, 1846

197	<i>Halomitra pileus</i> (Linnaeus, 1758)		+	
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Genus: *Lithophyllon* Rehberg, 1892

198	<i>Lithophyllon lobata</i> (Horst, 1921)	+		
199	<i>Lithophyllon undulatum</i> Rehberg, 1892	+	+	+

Genus: *Podabacia* Milne Edwards and Haime, 1849

200	<i>Podabacia crustacea</i> (Pallas, 1766)	+	+	
201	<i>Podabacia lanakensis</i> Veron, 2000	+		+

Family: PECTINIIDAE Vaughan and Wells, 1943

Genus: *Echinophyllia* Klunzinger, 1879

202	<i>Echinophyllia aspera</i> (Ellis & Solander, 1786)		+	+
203	<i>Echinophyllia echinata</i> (Saville-Kent, 1871)			+
204	<i>Echinophyllia echinoporoides</i> Veron & Pichon, 1979			+

Genus: *Oxypora* Saville-Kent, 1871

205	<i>Oxypora lacera</i> (Verrill, 1864)	+	+	
206	<i>Oxypora crassispinosa</i> Nemenzo, 1979	+		+

Genus: *Mycedium* Oken, 1815

207	<i>Mycedium elephantotus</i> (Pallas, 1766)	+	+	+
208	<i>Mycedium robokaki</i> , Moll and Borel-Best, 1984	+		

Genus: *Pectinia* Oken, 1815

209	<i>Pectinia akicornis</i> (Saville-Kent, 1871)	+		+
210	<i>Pectinia lactuca</i> Pallas, 1766	+	+	
211	<i>Pectinia paeonia</i> (Dana, 1846)	+	+	+
212	<i>Pectinia teres</i> Nemenzo, 1981	+		

Family: MERULINIDAE Verrill, 1866

Genus: *Hydnophora* Fischer de Waldheim, 1807

213	<i>Hydnophora exesa</i> (Pallas, 1766)	+	+	+
214	<i>Hydnophora grandis</i> Gardiner, 1904	+		+
215	<i>Hydnophora microconos</i> (Lamarck, 1816)	+	+	+
216	<i>Hydnophora pilosa</i> (Veron, 1985)	+		+
217	<i>Hydnophora rigida</i> (Dana, 1846)	+	+	+

Genus: *Merulina* Ehrenberg, 1834

218	<i>Merulina ampliata</i> (Ellis & Solander, 1786)	+	+	+
219	<i>Merulina scabricula</i> Dana, 1846	+		+

Genus: *Scapophyllia* Milne Edwards and Haime, 1848

220	<i>Scapophyllia cylindrica</i> (Milne Ewdwards and Haime, 1848)		+	+
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Family: DENDROPHYLLIDAE Grey, 1847

Genus: *Turbinaria* Oken, 1815

221	<i>Turbinaria mesenterina</i> (Lamarck, 1816)		+	+
222	<i>Turbinaria peltata</i> (Esper, 1794)	+	+	
223	<i>Turbinaria reniformis</i> Bernard, 1896		+	
224	<i>Turbinaria stellulata</i> (Lamarck, 1816)			+

Genus: *Dendrophyllia* Grey, 1847

225	<i>Dendrophyllia robusta</i> (Bourne,1905)	+		
226	<i>Dendrophyllia miniscula</i> (Bourne, 1905)*			

Genus: *Tubastraea*

227	<i>Tubastrea coccinia</i> Lesson, 1829	+		+
228	<i>Tubastrea diaphana</i> Dana, 1846	+		+
229	<i>Tubastrea micranthus</i> Ehrenberg, 1834	+		+

Family: MUSSIDAE Ortmann, 1890

Genus: *Acanthastrea* Milne Edwards and Haime, 1848

230	<i>Acanthastrea echinata</i> (Dana, 1846)	+	+	+
231	<i>Acanthastrea hemprichii</i> (Ehrenberg, 1834)			+
232	<i>Acanthastrea hillae</i> Wells 1955		+	
233	<i>Acanthastrea ishigakiensis</i> Veron, 1990			+

Genus: *Lobophyllia* de Blainville, 1830

234	<i>Lobophyllia corymbosa</i> (Forskal,1775)	+	+	
235	<i>Lobophyllia hemprichii</i> (Ehrenberg, 1834)	+	+	+
236	<i>Lobophyllia robusta</i> Yabe and Sugiyama,1936	+		

Genus: *Symphyllia* Milne Edwards and Haime, 1848

237	<i>Symphyllia agaricia</i> (Milne Edwards and Haime, 1849)		+	+
238	<i>Symphyllia radians</i> Milne Edwards and Haime,1849	+	+	
239	<i>Symphyllia recta</i> (Dana, 1846)	+	+	+
240	<i>Symphyllia valenciennesii</i> Milne Edwards & Haime, 1849	+		

Genus: <i>Scolymia</i> Haime, 1852			
241	<i>Scolymia vitiensis</i> , Bruggemann, 1877	+	
Genus: <i>Mycetophyllia</i> Milne Edwards and Haime, 1848			
242	<i>Mycetophyllia danaana</i> (Milne Edwards and Haime, 1849)	+	
Genus: <i>Australomussa</i> Veron, 1985			
243	<i>Australomussa rowleyensis</i> Veron, 1985		+
Genus: <i>Cynarina</i> Bruggemann, 1877			
244	<i>Cynarina lacrymalis</i> (Milne Edwards and Haime, 1848)	+	+
Family: FAVIIDAE Gregory, 1900			
Genus: <i>Favia</i> Oken, 1815			
245	<i>Favia albidus</i> Veron 2000	+	
246	<i>Favia fava</i> (Forskal, 1775)	+	+
247	<i>Favia lacuna</i> (Veron, Turak and DeVantier, 2002)	+	
248	<i>Favia lizardensis</i> (Veron & Pichon, 1977)	+	
249	<i>Favia matthaii</i> Vaughan, 1918	+	+
250	<i>Favia maxima</i> Veron, Pichon & Wijsman-Best, 1977	+	
251	<i>Favia pallida</i> (Dana, 1846)	+	+
252	<i>Favia rotumana</i> (Gardiner, 1899)		+
253	<i>Favia rotundata</i> Veron & Pichon, 1977		+
254	<i>Favia speciosa</i> Dana, 1846	+	+
255	<i>Favia stelligera</i> (Dana, 1846)	+	+
256	<i>Favia truncat</i> s Veron, 2000	+	+
Genus: <i>Favites</i> Link, 1807			
257	<i>Favites abdita</i> (Ellis & Solander, 1786)	+	+
258	<i>Favites acuticollis</i> (Ortmann, 1889)		+
259	<i>Favites chinensis</i> (Verrill, 1866)	+	
260	<i>Favites complanata</i> (Ehrenberg, 1834)	+	+
261	<i>Favites flexuosa</i> (Dana, 1846)		+
262	<i>Favites halicora</i> (Ehrenberg, 1834)	+	+
263	<i>Favites micropentagona</i> Veron, 2002	+	
264	<i>Favites pentagona</i> (Esper, 1794)		+
265	<i>Favites spinosa</i> (Klunzinger, 1879)	+	
266	<i>Favites vasta</i> (Klunzinger, 1879)	+	
Genus: <i>Goniastrea</i> Milne Edwards and Haime, 1848			
267	<i>Goniastrea aspera</i> Verrill, 1905	+	+

268	<i>Goniastrea australensis</i> (Milne Edwards and Haime, 1857)		+	
269	<i>Goniastrea edwardsi</i> Chevalier, 1971	+	+	+
270	<i>Goniastrea minuta</i> Veron, 2002	+		+
271	<i>Goniastrea pectinata</i> (Ehrenberg, 1834)	+	+	+
272	<i>Goniastrea persi</i> (Faure and Pichon, 1978)	+		
273	<i>Goniastrea retiformes</i> (Lamarck, 1816)		+	+
Genus: <i>Platygyra</i> Ehrenberg, 1834				
274	<i>Platygyra acuta</i> Veron, 2000	+		+
275	<i>Platygyra daedalea</i> (Ellis & Solander, 1786)	+	+	+
276	<i>Platygyra lamellina</i> (Ehrenberg, 1834)	+	+	+
277	<i>Platygyra pini</i> Chevalier, 1975	+	+	
278	<i>Platygyra sinensis</i> (Milne Edwards and Haime, 1849)	+	+	
279	<i>Platygyra verweyi</i> Wijsman-Best, 1976			+
Genus: <i>Oulophyllia</i> Milne Edwards and Haime, 1848				
280	<i>Oulophyllia bennettiae</i> (Veron and Pichon, 1099)	+		
281	<i>Oulophyllia crispa</i> (Lamarck, 1816)	+	+	
282	<i>Oulophyllia levis</i> (Nememnzo, 1959)	+		+
Genus: <i>Leptoria</i> Milne Edwards and Haime, 1848				
283	<i>Leptoria irregularis</i> Veron, 1990	+		
284	<i>Leptoria phrygia</i> (Ellis & Solander, 1786)	+	+	+
Genus: <i>Diploria</i> Milne Edwards and Haime, 1848				
285	<i>Diploria strigosa</i> (Dana, 1848)	+		
Genus: <i>Montastrea</i> de Blainville, 1830				
286	<i>Montastrea annuligera</i> (Milne Edwards and Haime, 1849)		+	
287	<i>Montastrea colemani</i> (Veron, 2000)			+
288	<i>Montastrea curta</i> (Dana, 1846)			+
289	<i>Montastrea valenciennesi</i> (Milne Edwards and Haime, 1848)	+	+	
Genus: <i>Plesiastrea</i> Milne Edwards and Haime, 1848				
290	<i>Plesiastrea versipora</i> (Lamarck, 1816)		+	+
Genus: <i>Oulastrea</i> Milne Edwards and Haime, 1848				
291	<i>Oulastrea crispata</i> (Lamarck, 1816)		+	+
Genus: <i>Diplostrea</i> Matthai, 1914				
292	<i>Diplostrea heliopora</i> (Lamarck, 1816)	+	+	+

Genus: *Leptastrea* Milne Edwards and Haime, 1848

293	<i>Leptastrea bottae</i> Milne Edwards and Haime, 1849		+	
294	<i>Leptastrea purpurea</i> (Dana, 1846)	+	+	+
295	<i>Leptastrea transversa</i> Klunzinger, 1879	+	+	+
Genus: <i>Cyphastrea</i> Milne Edwards and Haime, 1848				
296	<i>Cyphastrea japonica</i> Yana and Sugiyama, 1932	+		
297	<i>Cyphastrea serailia</i> (Forskal, 1775)	+	+	
298	<i>Cyphastrea ocellina</i> (Dana, 1864)	+		
299	<i>Cyphastrea microphthalma</i> (Lamarck, 1816)		+	
Genus: <i>Echinopora</i> Lamarck, 1816				
300	<i>Echinopora fruticulosa</i> (Ehrenberg, 1834)	+		
301	<i>Echinopora gemmacea</i> Lamarck, 1816	+	+	+
302	<i>Echinopora hirsutissima</i> Milne Edwards & Haime, 1849			+
303	<i>Echinopora horrida</i> Dana, 1846	+	+	
304	<i>Echinopora lamellosa</i> (Esper, 1795)	+	+	
Family: TRACHYPHYLLIDAE Milne Edwards and Haime, 1848				
Genus: <i>Trachyphyllia</i> Milne Edwards and Haime, 1848				
305	<i>Trachyphyllia geoffroyi</i> (Audouin, 1826)		+	
Family: PORITIDAE Grey, 1842				
Genus: <i>Porites</i> Link, 1807				
306	<i>Porites annae</i> Crossland, 1952	+		+
307	<i>Porites arnaudi</i> Reyes-Bonilla & Carricart-Ganivet, 2000	+		
308	<i>Porites compressa</i> Dana, 1846		+	
309	<i>Porites cylindrica</i> Dana, 1846	+		+
310	<i>Porites eridani</i> Umbgrove, 1940	+		
311	<i>Porites evermanni</i> Vaughan, 1907	+		+
312	<i>Porites harrisoni</i> Veron, 2000	+		
313	<i>Porites latistella</i> Quelch, 1886	+		
314	<i>Porites lichen</i> Dana, 1846		+	
315	<i>Porites lobata</i> Dana, 1846	+	+	
316	<i>Porites lutea</i> Milne Edwards and Haime, 1860	+	+	
317	<i>Porites monticulosa</i> Dana, 1846	+		+
318	<i>Porites murrayensis</i> Vaughan, 1918	+	+	
319	<i>Porites myrmidoensis</i> Veron, 1985	+		
320	<i>Porites nigrescens</i> Dana, 1846	+	+	
321	<i>Porites rus</i> (Forskal, 1775)	+	+	+
322	<i>Porites solida</i> (Forskal, 1775)	+	+	
323	<i>Porites vaughani</i> (Crossland, 1952)			+
Genus: <i>Goniopora</i> de Blainville, 1830				
324	<i>Goniopora columna</i> Dana, 1846		+	
325	<i>Goniopora lobata</i> Milne Edwards and Haime, 1860	+		
326	<i>Goniopora minor</i> Crossland, 1952		+	

327	<i>Gonopora norfolkensis</i> Veron and Pichon, 1982	+		
328	<i>Gonopora pandoraensis</i> Veron and Pichon, 1982	+		
329	<i>Gonopora planulata</i> (Ehrenberg, 1834)		+	
330	<i>Gonopora stokesi</i> Milne Edwards and Haime, 1851		+	
331	<i>Gonopora stutchburyi</i> Wells, 1955		+	
332	<i>Gonopora tenuidens</i> (Quelch, 1886)	+	+	
	Genus: <i>Alveopora</i> de Blainville, 1830			
333	<i>Alveopora catala</i> Wells, 1968	+		
334	<i>Alveopora verrilliana</i> Dana, 1846		+	
	Total	236	193	181

* Recorded by *Sudarshan* and *Mukhopadhyay* (1967)

GLOSSARY

Anastomose: Fusion by growth of branches etc.

Appressed: Corallite closely connected to the coenosteum

Arborescent: Colony composed of elongate, tree-like branches.

Axial corallite: Corallite at the tip of a branch, which runs through the branch axis, characteristic of *Acropora*.

Bifacial: Corallites occur on both sides of a plate or folia.

Bleaching: When corals are severely stressed they become white.

Branching colonies: Any growth form where branches are formed.

Budding: Coral polyp splits in two and produces two new "daughter" polyps

Caespitose: Growing as a clump or compact bush.

Calice: The inside area of the corallite, not including the walls.

Ceriod: Adjacent corallites share the same wall.

Coenosteum: The surface of the corallum in between the corallites.

Colony: Corals are made up of numerous individual coral polyps which are interconnected to form a colony.

Columella: Skeletal structure at the centre of the corallite composed of single or multiple elements.

Continuous septa: The septa in one corallite meet the septa in an adjacent corallite along the same axis.

Coralline algae: Algae that form solid calcium carbonate accretions.

Corallum (Plural- coralla): Coral skeleton.

Corallite: Individual cup in a skeleton, which holds a polyp.

Corymbose: forming a thick table-shaped colony supported by a central ridge or marginal stalk.

Costae: Thin skeletal ridges on the coenosteum, which are continuations of septa and septo-costae.

Cycles of septa/septo-costae: Where radial elements occur in a set sequence of size.

Dendroid: Branching like a tree.

Denticles: Small teeth.

Dichotomous: In two parts.

Digitate: A colony with short branches shaped like the upturned fingers of a hand.

Dimidiate: Shape of radial corallites that resembles a scoop.

Encrusting: Growth form of a coral in which the animal forms a thin layer or crust over rocks.

Endemic: A species restricted to a specific region.

Epitheca: The unattached area on the underside of a corallum, only found on corals that do not have living under surfaces.

Exotheca: Entire inner surface of a corallum, only found on corals that do not have living under surfaces.

Extinct: No longer living.

Explanate: Plate growth form.

Exsert: Protrude above the surface.

Extra tentacular budding: Method of polyp reproduction in which the new polyp originates outside the ring of tentacles.

Fenestrate: Having small openings.

Flabello-meandroid corals: Corals, which have valleys with walls that are separate from the walls of adjacent valleys.

Foveolate corallites: Corallites of some species of *Montipora*, which are situated at the base of funnel shaped depressions.

Free living coral: Corals that are not attached to the substrate.

Granulate: Covered with tiny protruding granules of skeleton, usually the ends of tuberculae.

Growth form: Overall shape of the entire coral skeleton.

Hermaphrodite: Possessing both male and female reproductive organs.

Hermatypic: Marine invertebrates that have photosynthetic plants living symbiotically within their tissue.

Holotype: The principal specimen on which a species name is based.

Hydnophores: Small mounds that cover the surface of *hydnothoria* and carry septa.

Intra tentacular budding: Method of polyp reproduction in which a new polyp originates inside the ring of tentacles of another polyp, which results in one polyp dividing into two or more polyps.

Labellate: Shaped like a lip.

Larva: Young stage which looks quite different to adult stage.

Lamellar: Flat, plate-like.

Margin: Edge.

Meandroid: Corallite arrangement in which corallites form a series to create valleys or meanders.

Monospecific: Describes a genus with one species only, or a coral community with one species only.

Monticules: Conical sections of common wall between corallites which have a secondary radial symmetry.

Mesoglea: An initially non-cellular layer between the ectodermis and gastrodermis.

Morphotype: A different form of a polymorphic species.

Nariform: Shape of a radial corallites that resemble an inverted nose.

Nematocysts: Microscopic stinging cells occurring individually in the ectodermis or grouped into wart like clumps on tentacles.

Nominal species: Species that exist in name only.

Oral disc: The soft tissue between the mouth and the surrounding tentacles.

Paliform lobe: Innermost dentation of septum (formed differently from palus) may form a crown.

Palus (plural- pali): Innermost dentation of septum (formed differently from paliform) may form a crown.

Papillae: Projection of coenosteum on the surface of many species of *Montipora* that are less than a corallite in width.

Perforate: Having many holes.

Peritheca: Area outside the corallite, also called coenosteum and exotheca.

Phaceloid corals: Corals that have corallites of uniform height adjoined towards their base.

Planktonic: Microscopic animals and plants, which live suspended in water.

Planula: The larval, swimming stage of corals.

Platform reefs: General term for reefs which are not clearly derived from sea level change or the proximity of land.

Polyp: Small, tube shaped animal with a ring of tentacles.

Pourtales plan: Distinctive arrangement of septa found in some corals.

Proximal: Towards the columella.

Radial corallites: Corallites on the sides of branches of *Acropora*.

Ramose: Colony composed of branches.

Reefs: Limestone platforms of shallow tropical seas built by corals, coralline algae and other photosynthetic organisms or symbionts.

Reef-Building corals: Zooxanthellate or hermatypic corals.

Reef-flat: The flat intertidal parts of reef that are exposed to wave action.

Reef-slope: The sloping parts of reefs below the reef flat.

Reticulate: Net-like pattern.

Scleractinia: Belonging to the order Scleractinia, commonly known as hard corals.

Septo-costae: Ridges on the outside of the corallite walls that are continuations of the septa; they are called costae after they reach the end of the wall and continue out onto the coenosteum.

Septum (plural-septa): The blade-shaped skeletal element that radiates from the corallite centre.

Solitary corals: Corals composed of single individuals with many mouths and colonies with individuals which have single mouth.

Spat: Pinhead sized single corallites that form immediately after metamorphosis of planula larvae.

Spawning: The release of gametes into the water column.

Spongy: Tightly reticulate.

Spinules: Small spines that occur between the corallites of a coral skeleton.

Staghorn corals: Common name for arborescent *Acropora*.

Striated: Ridged.

Stromatoporoids: Sponge like organisms that were major builders of Palaeozoic reefs.

Styliform: A single needle.

Symbiosis: The close association between two organisms where there is substantial mutual benefit.

Synapticulae: Skeletal rods that join adjacent septa; oriented parallel to the wall, and may form inner rings.

Synonymy: A list of names considered by a taxonomist to apply to a given taxon other than name by which the taxon should be known.

Systematics: Study of the genetic relationship between taxa.

Tabulate corals: A major group of non-scleractinian corals that become extinct at the close of the Palaeozoic era.

Taxon: A taxonomic unit.

Taxonomy: The process of recognising, describing and ordering species.

Tentacle: Projection around the mouth of a coral polyp.

Trebeculae: Radiating skeletal fibres that grow together to form septa and other skeletal elements; the endpoints are visible as granulations.

Tubular: Simplest type of corallite shape.

Unifacial: Describes plates, which have corallites on one side only.

Zooxanthellae: Photosynthetic algae that can occur symbiotically in animal tissue.

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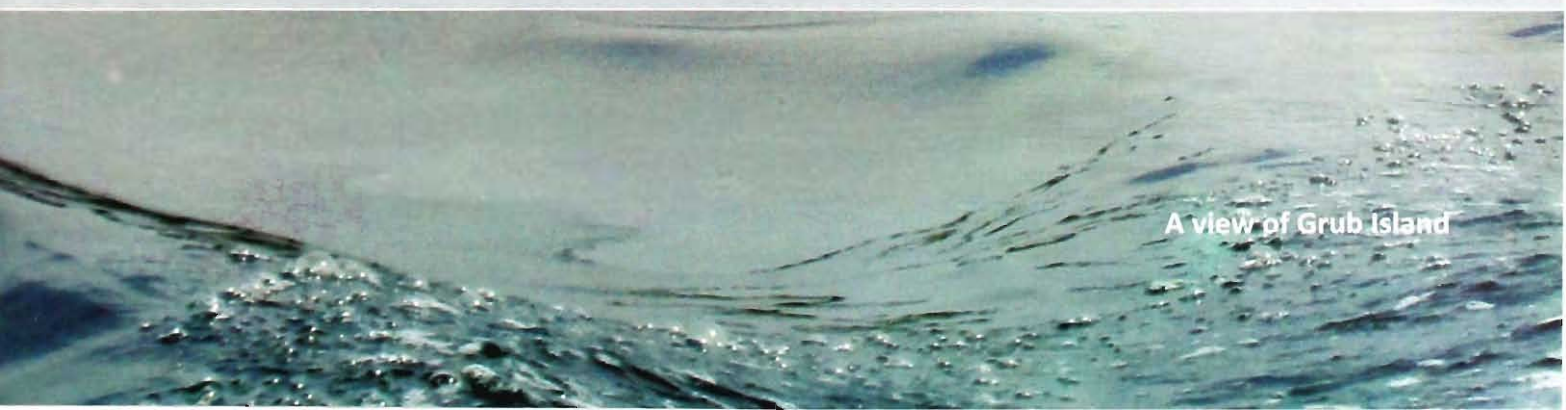
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Acknowledgments

The authors are grateful to the Ministry of Environment and Forests, Government of India for providing the necessary facilities and financial support through the project of National Coral Reef Research Institute for carrying out the work. The assistance provided by the scientific staff of ZSI and NCRI team, Port Blair is also gratefully acknowledged.



A view of Grub Island



