" STUDY ON THE CORAL SPECIMENS IN THE DEPARTMENT MUSEUM"

SUBMITTED TO ST.TERESA'S COLLEGE, (AUTONOMOUS)
ERNAKULAM, AFFILIATED TO MAHATMA GANDHI UNIVERSITY,
KOTTAYAM IN
PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE OF BACHELOR OF SCIENCE
IN ZOOLOGY

Project Work By,
SHABNAM FARISHA
REG. NO: AB15ZOO026

DEPARTMENT OF ZOOLOGY
ST. TERESA'S COLLEGE (AUTONOMOUS)
ERNAKULAM

2017-2018

DECLARATION

I hereby declare that project work entitled "present study on the coral specimens of the museum of department of zoology, ST.TERESA'S COLLEGE, ERNAKULAM" submitted to St. Teresa's college(Autonomous), Ernakulam affiliated to Mahatma Gandhi University, Kottayam in the partial fulfillment of the requirements of Bachelor of Science degree in Zoology, is a record of original project done by me under the guidance and supervision of Dr. Soja Louis, Associate Professor of Department of Zoology ,St. Teresa's college(Autonomous), Ernakulam.

Name : Shabnam Farisha

Reg. No : AB15ZOO026 Signature

Acknowledgement

I, Shabnam Farisha,am very much indebted to Dr. Louis, my teacher guide for this work. I whole heartedly acknowledge, my teacher guide's keen interest, patience, guidance, unfailing encouragement & invaluable suggestions during the entire course of my work, which helped me accomplish this task.

I take this opportunity to express my heartfelt gratitude to Dr. K.Venkataraman, Former Director of "Zoological Society of India", also a Coral biologist, who identified the coral specimens in our museum.

Last, but not the least, I extend my gratitude to all the teaching & non teaching staff of the Department of Zoology for helping me in this project.

Above all, I thank Lord Almighty for his blessings & showing me the way throughout the journey. Also, my sincere appreciation to my parents for always standing by me.

Contents

Synopsis

The world of the Coral reefs is one of the most diverse ecosystems on our planet. Built over thousand years by tiny Calcium producing organisms, the reefs are a haven for countless thousands of life forms. It is a fairy tale world of bright colours & ever changing patterns. Only on the coral reef can one find living examples of merely every group of organisms representing a billion years of evolution. Some of the oldest reefs today began growing over 25 million years ago.

The coral reefs are the nursery for all life in the ocean, a remarkable ecosystem that sustains us. Yet with carbon emissions warming the seas, a phenomenon called “coral is bleaching” - a sign of mass coral death- has been accelerating around the world, & the public has no idea of the scale or implication of the catastrophe silently raging under water.

Major Reef formations in India are restricted to the Gulf of Mannar, Palk Bay, Gulf of Kutch, Lakshadweep islands, Andaman & Nicobar Islands. In India, coral reefs are being damaged & destroyed at an increasing rate.They face a number of worsening anthropogenic threats, including bleaching, destructive fishing practices, pollution & climate change. Various studies are being conducted to understand the importance of corals & to learn measures to preserve this valuable ecology. The reef condition is poor & declining in areas near shore water &areas with high population. Owing to this, the accessibility has been restricted to these areas. Hence, studies were conducted on the corals preserved in museums.Corals are the most primitive & successful cnidarians group, it helps us understand animal evolution .The corals were classified as per their taxonomy. The Corals present in the museum of Department of Zoology, St.Teresa’s College, collected from different reef ecosystems years ago, had 10 different Genus. 65% of the genus had common species, 17% were uncommon, 8% rare and 4% most abundant.

However, the human stresses have still continued with no signs of change.

Introduction

Coral Reefs are most diverse underwater ecosystem and home to many species of marineinvertebrate animals. Coral Reefs are marine structures created by calcifying coral animals and their algal symbionts. Coral reef ecosystem are generally high in biodiversity, mostly found in shallow tropical seas and are threatened by factors including ocean acidification, global warming and sea level rise . They act as barriers against natural calamities, protect the shoreline of islands. Coral reefs are the largest biogenic structures on earth. They reach sizes of greater than 1000 kms, from extreme " hotspots" of biodiversity & provide numerous ecosystems. As their name attests, the physical structure of most coral reefs is composed of hermatypic(reef building) stony corals . As a result of anthropogenic stress and global climatic change,hermatypic corals are increasingly facing challenges such as loss of zooxanthallae due to bleaching, increased microbial loads, competition with microalgae and loss of exoskeleton due to ocean acidification. Under each of these scenarios, these corals may need to rely even more on offesive or deffesive chemicals to survive in the changing world.

Stony corals belong to the phylum Cnidaria which also include sea anemones, jelly fish & hydrozoans. Sometimes mistaken for and referred to as plants/rocks, corals are actually made up marine in vertebrate animals called coral polyps and their exoskeleton structure that act as a 'home'. That is we see as the hard chalky structure that join together to form coral reefs. There are two main types of corals: Hard Coral and Soft Coral.

Hard Coral:

They are made up of rigid calcium carbonate (limestone) and appear very much like rocks. Each polyp secretes hard exoskeleton made up of calcium carbonate and a chalky internal skeleton that stays in place even after they die. As each generation of polyp dies, their exoskeleton remains. Hard corals grow at a very slow rate.Hard corals are scientifically known as scleraetinians.The exoskeleton of coral is called corallite and exoskeleton of colony is called corallum.

Soft Coral:

Also called Alcyonacea, are corals which do not produce calcium carbonate skeletons. Soft Coral contain minute, spiny skeletal elements called sclerites. Sclerites give these corals some degree of support & give their flesh a spiky, grainy texture that deters predators. Unlike stony corals, soft corals thrive in nutrient rich waters with less intense light. Almost all use symbiotic photosynthesizing zooxanthella as major energy source. They are integral members of reef ecosystem and provide habitat for fish, snail, algae and a diversity of other marine species.

Review of Literature

Assessment of coral cover and biodiversity following line intercept method, a total of 13 sps, belonging to 5 genera of sclerantinias is reported by Jasmine *et.al*, 2009. The most common genius of *Pocillopora* was represented by relative abundance value were delivered to each species and they were assigned the status of dominant, abundant, common and rare species. *Pocilloporaverucosa*and *Pocilloporameandrina*were assigned the status of dominant, abundant, common & rare species. *Pocilloporaverucosa*and *Pocilloporameandrina* were assigned the status as abundant in those areas. *Pocilloporadamicornis* belong to abundant category and all other species were either common or uncommon.

But, when the ocean absorbs more CO_2, as it is happening now, more bicarbonate ions are present than the carbonate ions making it harder for corals to accrete skeletons. The coral continue to invest an upward growth but "densification" or thickening suffers. As a result corals in lower pH waters build thinner skeletons that are susceptible to damage from pounding waives or attacks by eroding organisms.

Even though these ecosystems are facing major problems, there are methods to conserve them and was studied by Deepak,*et.al*,(2005), in Gulf of Kutch and to study the key conservation issues along the coastline of this fragile zone. They found that there is a direct correlation between industrialization, human disturbance & live cover.Reducing land based impact is an important strategy to protect coral reefs and communities that depend upon them. Appropriate land use practices are critical for management of watersheds to ensure that the transport of sediments, nutrients and other pollutants to corals is minimized. Engaging in watershed planning can be a crucially important responsibility to coral reef managers.

The major types of strategies that coral reef managers may get involved to reduce watershed impact on coral reef include –

Erosion/ sediment reduction:Coral reef managers can raise awareness about the implications to marine ecosystems of excess sediments entering water courses. A range of strategies are available to reduce erosions in both agricultural and urban settings including contour filling, terracing, rotational grazing or cropping, avoiding overstocking, road drainageand sediment traps.

- ✓ Sewage and storm water management :Point sources of pollution can be an obvious source of stress of marine ecosystem while sometimes expensive technical feasible measures for reducing impacts from sewage and storm water are readily available. Effective and well managed sewage treatment plant can neutralize or divert many harmful constituents to landfills, while settlement ponds and biological filters such as wetlands can greatly reduce the loads of harmful substances discharged with storm water.

- ✓ Reducing chemical inputs from agriculture :Excess fertilizers entering the water sources can have harmful impact on coastal water quality. Coral reef managers can help water shed managers work with landholders to understand the financial & economic implications of inefficient fertilizer and, provide guidance on optimal fertilizer type & application techniques.

- ✓ Community engagement :Local community & reef users are important beneficiaries of efforts to reduce stress on coral reefs & can be valuable partners in effort to influence water shed management divisions. Monitoring the programmed or participatory management activities that involves community members are great ways to engage stake holders & create a sense stewardship.

Methodology

The Coral skeletons in our museum were used for the present study. The identification& confirmation was done by an expert Dr. K. Venkatraman, who is a coral biologist.They were cleaned using fresh water &bleaching powder (Calcium hypochlorite).

Materials Used :

Buckets, gloves, brush, calcium hypochlorite, fresh waterPlaster of Paris, etc...

Method :

- The corals to be cleaned were kept in water for one week.
- Following day the corals were put in water mixed with calcium hypochlorite for one day with intermittent brushing every one hour
- Later they were dried under the sun
- All the branching corals were kept erect with the help of plaster of Paris.
- The identified corals were labeled with details of their kingdom, phylum, order, class, family, genus &species.

Observations & Result

Sl. No.	Genus		Species	Abundance
1	ACROPORA	1	CEREALIS	COMMON
		2	DIGITIFERA	UNCOMMON
		3	EFFLORESCENCE	RARE
		4	FLORIDA	COMMON
		5	FORSKALI	UNCOMMON
		6	HEMIPIRCHII	COMMON
		7	HYACINTHUS	MOST ABUNTANT
		8	MILLEPORA	COMMON
		9	MICROCLADOS	UNCOMMON
2	POCILLOPORA	1	DAMICORNIS	COMMON
		2	EYDOUXI	COMMON
3	STYLOPHORA	1	PISTILLATA	COMMON
4	SYMPHYLLIA	1	RADIANS	COMMON
		2	AGARICIA	COMMON
5	GONIASTREA	1	EDWARSI	COMMON
		2	RETIFORMIS	COMMON
6	MONTIPORA	1	DIGITATA	COMMON
		2	FLORIDA	COMMON
7	PLATYGYRA	1	PINI	UNCOMMON
8	ECHINIPORA	1	LAMELLOSA	COMMON
9	FAVIA	1	FAVUS	COMMON
		2	MAXIMA	RARE
10	FUNGIA	1	SCUTARIA	COMMON

I. Genus :*ACROPORA*

- *Acropora* is a genus small polyp of stony coral.
- Single axial polyp is found on the branch tip

- The genus has a wide range of morphologies of which most of them are having radial corallites

1-ACROPORA CEREALIS :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : CEREALIS

Measurements :
Branch tip : 10mm
Pore size : 2mm
Plate length: 20 mm

Description

- Their colonies are caespitose or corymbose , composed of branches which interlock in three dimensions
- Branches are thin with most of their width occupied by corallites .
- Axial corallites are tubular
- Radial corallites are tubular &appressed becoming narrow & conspicuous towards the tip of branches giving colonies a spiny appearance
- They are mostly brown, cream or white with purple, pink , blue or cream branch tips

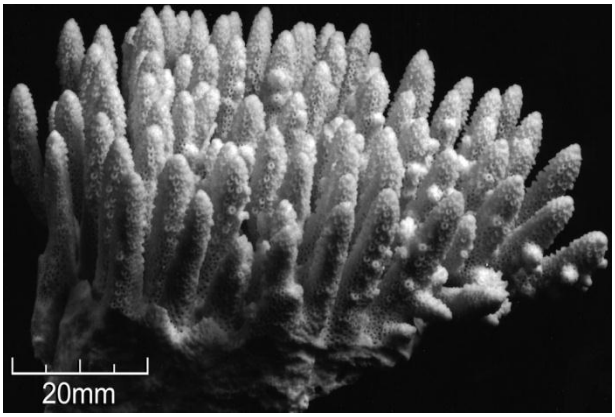
Habitat

- Upper reef slopes

Abundance

- Common

2-ACROPORA DIGITIFERA :



Measurements :
Branch tip : 10mm
Pore size : < 1 mm
Plate length : 20 mm

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : DIGITIFERA

Description

- Their colonies are upright or having tangles of branches upto 1 mtracross .
- Branches are thin and delicate.
- Axial corallites are long and tubular
- Radial corallites are mostly small and tubular or pocket shaped with sharp edges .
- Their colour is mainly reddish brown with blue or white axial corallites.

Habitat

- Shallow reef environments protected from strong wave action

Abundance

- Uncommon except on some sheltered reef slopes

3-ACROPORA EFFLORESCENCE :

kINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : EFFLORESCENCE

Measurements :
Corallites : < 5mm
Plate length : 20 mm

Description

- Their colonies are extensive , flat plate which is solid except towards the perimeter.
- They usually consist of highly fused irregular branches which may exceed two mtr across.
- Axial & radial corallites are not differentiated, all of them have sharp rims.
- The corallites at plate margins are horizontal
- They is little or no development of corallites on the undersurface of plates
- They are usually dark gray in colour.

Habitat

- Steep reef slopes

Abundance

- Rare

4-ACROPORAFLORIDA :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : FLORIDA

Measurements :
Corallites : < 5mm
Branch tip : < 5mm
Branches : <50mm

Description

- Coloniesin turbid water may attain great sizes.
- They are composed of thick upright or prostrate branches covered with short, stubby, sub branches.
- Main branches maybe highly fused, horizontal branches may have no branchlets on the undersurface.
- Axial corallites are small
- Radial corallites are either immersed or uniformly tubular over the whole colony
- Their colour is usually brown, occasionally bright green

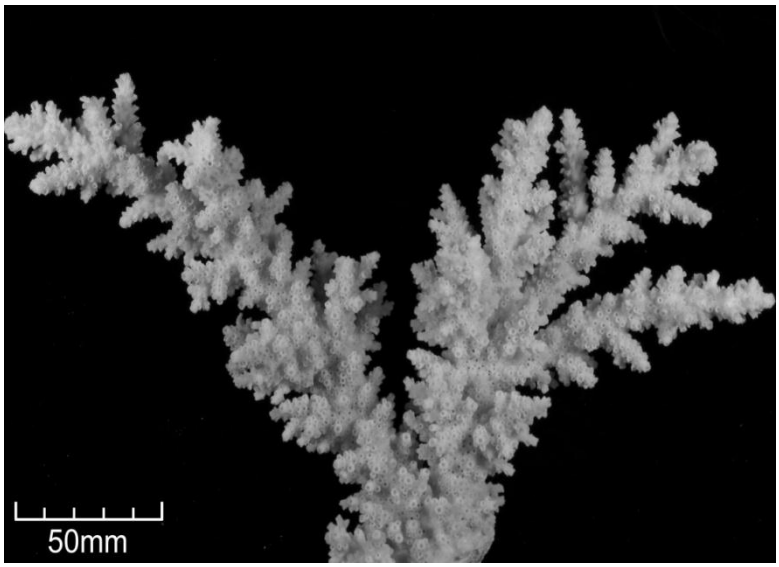
Habitat

- Shallow reef environment

Abundance

- Common

5-ACROPORA FORSKALI :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : FORSKALI

Measurements :
Branch tip : 5mm to 20mm
Pore size : <2mm
Branches : 20 to 50 mm

Description

- Colonies consist of open branches which are usually twisted into irregular shapes
- Axial corallites are tubular
- Radial corallites are irregular , immersed &tubular giving branch surface a rough appearance
- They are usually green in colour .

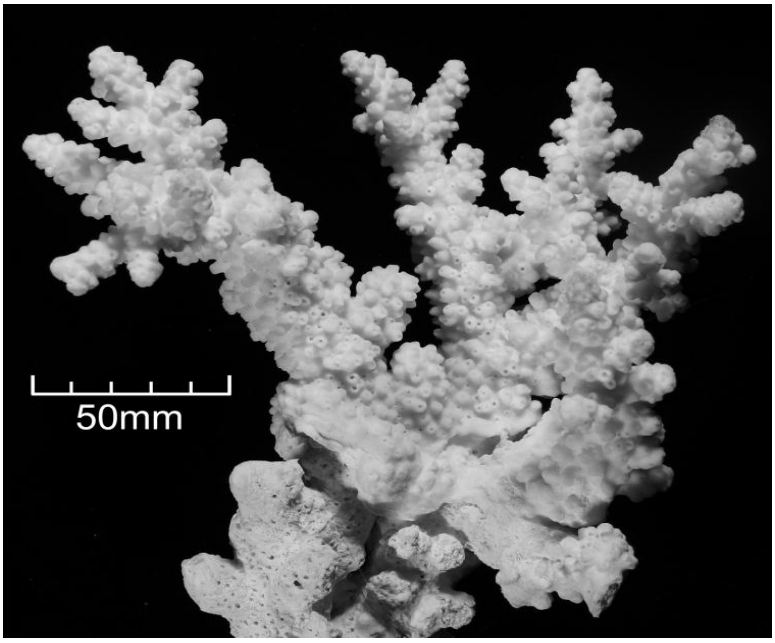
Habitat

- Shallow reef environment

Abundance

- Uncommon

6-ACROPORA HEMIPIRCHII :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : HEMIPIRCHII

Measurements :
Branch tip : <5mm
Pore size : 1mm
Branch : <50 mm

Description

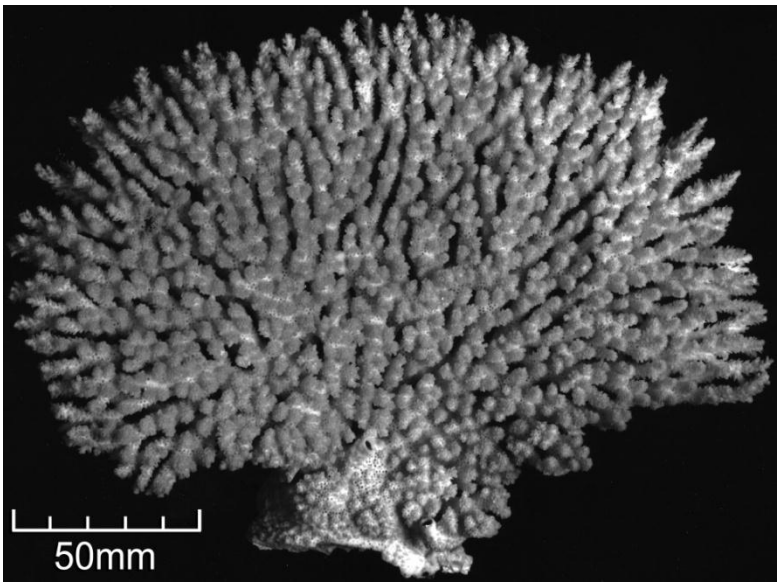
- Colonies consists of open thickets of sturdy,prostrate to upright.
- They are frequently over 2 m across & may form extensive single species stands .
- Axial corallites are dome shaped.
- Radial corallites are large & colonial.They are irregularly spaces & have thick smooth walls
- Coenosteum is smooth.
- They are commonly brown, or pinkish brown

Habitat

- Shallow reef environment

Abundance
Common

7-ACROPORA HYACINTHUS :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : HYACINTHUS

Measurements :
Branch tip : 10mm
Pore size : 1mm
Plate length : 50 mm
Radial corallites:10 mm

Description

- Their colonies are wide flat plates & stable or tired aggregation of small
- Their branches are thin & finely structured.
- Branchlets are fine & upward projecting .
- Axial corallites are distinct.
- Radial corallites are cup shaped& form rosettes.
- They have a uniform cream, brown, green or grey colour with or without blue growing margins

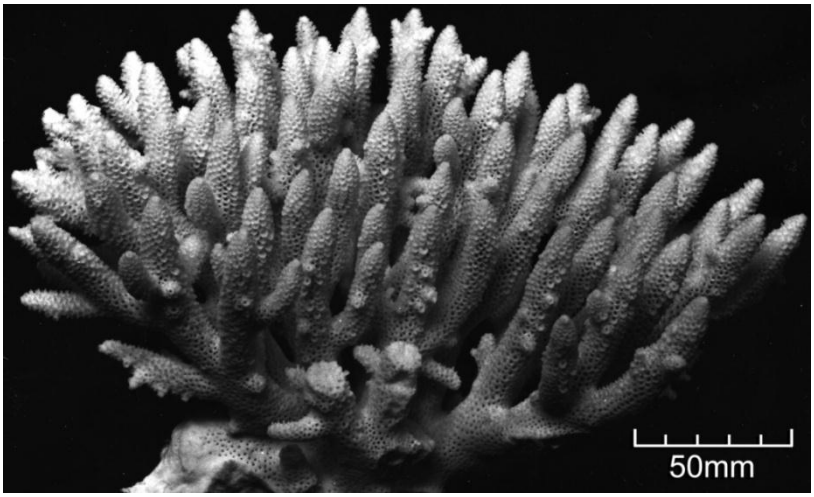
Habitat

- Upper reef slopes& outer reef flats

Abundance

- Most abundant corals of exposed outer reef slopes

8-ACROPORAMILLEPORA :



Measurements :	
Branch tip	: 10mm
Pore size	: 2mm
Branch length	: <2 mm

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : MILLEPORA

Description

- Colonies are corymbose cushions with short uniform branches
- Axial corallites are distinctive &tubular
- Radial corallites are closely compacted & all are of the same size
- They have a prominent lower tip giving a scale like appearance.
- Their colour varies from most common green with orange tips to a bright salmon pink, pale green or blue.

Habitat

- Shallow water, lagoons & upper reef slopes

Abundance

- Common

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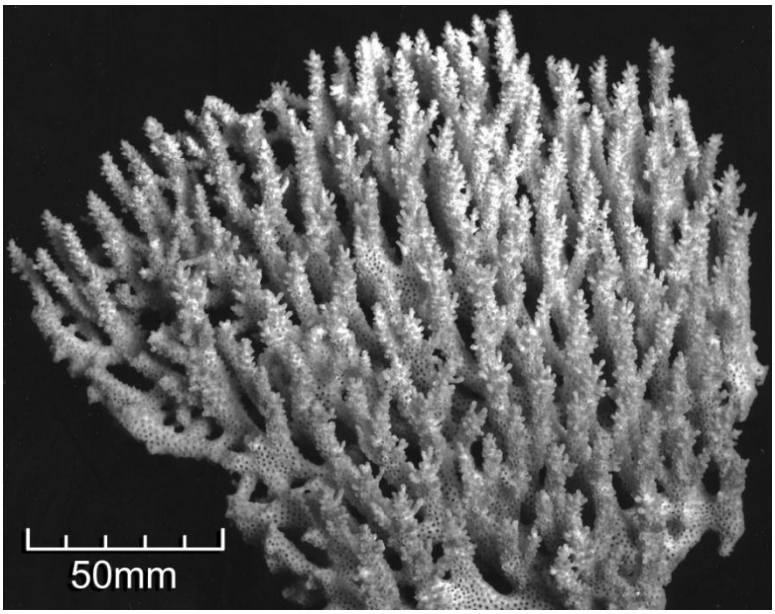
9-ACROPORA MICROCLADOS :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : ACROPORA
SPECIES : MICROCLADOS

Measurements :
Branch tip : 5mm
Branch length : 50 mm
Pore size : 2mm
Plate length : 50 mm

Description

- Colonies are corymbose plates usually one meter across with short , uniform, evenly spaced , taperingbranchlets 10mm thick at the base
- Axial corallites are tubular& conspicuous
- Radial corallites are irregular ,mostly tubular &appressedwith sharp edged nariform open
- They have distinctive pale pinkish brown colour

Habitat

- Upper reef slopes

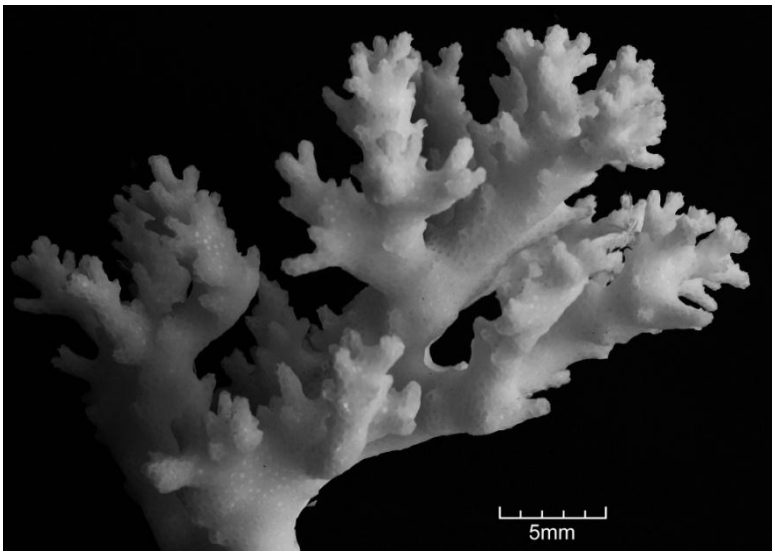
Abundance

- Usually uncommon

II. Genus : POCILLOPORA-

- Commonly called Cauliflower.
- They are stony corals which are wide spread & can be identified by the presence of wart like growth on their surface
- The colonies are dome shaped or branching and are variable in colour& shape depending on the species and environmental conditions .
- Species situated on shallow reefs pounded by the sea tend to be stunted , while those in deep calm water are often thin
- Each individual polyp has tentacles but they are extended normally at night .

1-POCILLOPORADAMICORNIS :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY :POCILLOPORIDAE
GENUS : POCILLOPORA
SPECIES : DAMICORNIS

Measurements :
Branches & Verrucae : 20 to 50 mm
Branch tip : 10 mm

Description

- Colonies are compact reaching several meters across
- There is no clear distinction verrucae and branches as these intergraded with each other
- Branches are highly compact & sturdy in habitat exposed to strong wave action and are thin & open in deep or protected habitats
- They are usually pale brown, greenish or pink in colour

Habitat

- Occur in all shallow water habitats from exposed reef fronts to mangrove swamps & wharf piles

Abundance

- Common

2- POCILLOPORAEYDOUXI :

Measurements :	
Branch	: 50mm
Verrucae	: 5mm

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : POCILLOPORIDAE
GENUS : POCILLOPORA
SPECIES : EYDOUXI

Description

- Colonies are composed of stout , upright , flattened branches.
- They are often one meter across & may form large single species.
- Branches maybe widely separated or maybe compact especially where the currents are strong
- Verrucae are uniform in shape.
- They are usually brown in colour

Habitat

- Most reef environments especially where currents are strong

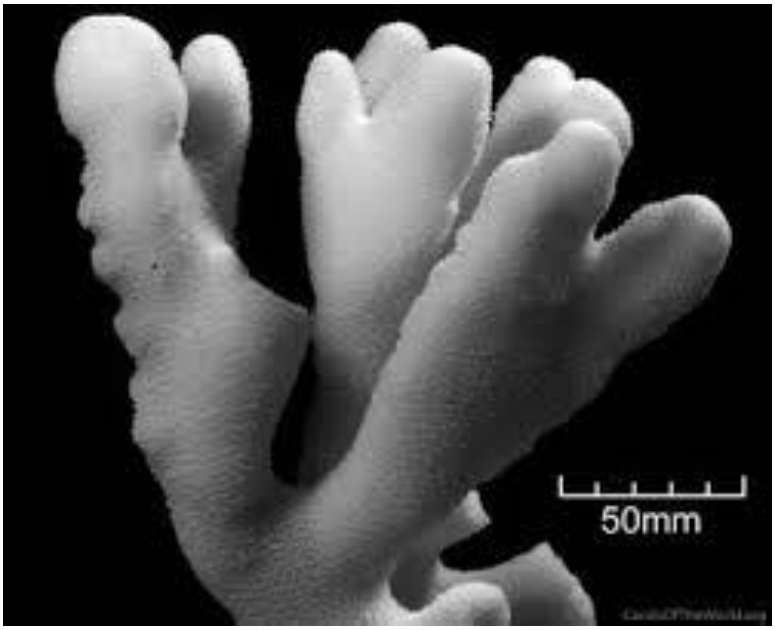
Abundance

- Common

III. Genus : STYLOPHORA–

- They are genus of colonial stony corals commonly known cat'spaw coral or bird's nest coral.
- Members of this genus are branching corals.
- The fingerlike branches vary in width & have blunt tips.
- The growth forms &colour vary according to level of light and the amount of water movement.
- The colour varies from orange, pink, magenta, purple, green to brown.

1-STYLOPHORAPISTILLATA :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : POCILLOPORIDAE
GENUS : STYLOPHORA
SPECIES : PISTILLATA

Measurements :
Corallites : 5 mm to 10mm
Branch tip : 10mm
Branch : 20 to 50 mm

Description

- Their colonies are branching with blunt ended branches becoming thick sub-massive
- Corallites are immersed conical or hooded
- They have a solid style like Columella, six primary septa which maybe short or fused with Columella and sometimes six short secondary septa
- Coenosteum is covered by fine spinules.
- They have a uniform cream, pink, blue or green colour .

Habitat

- Shallow water reef environment exposed to strong wave action.

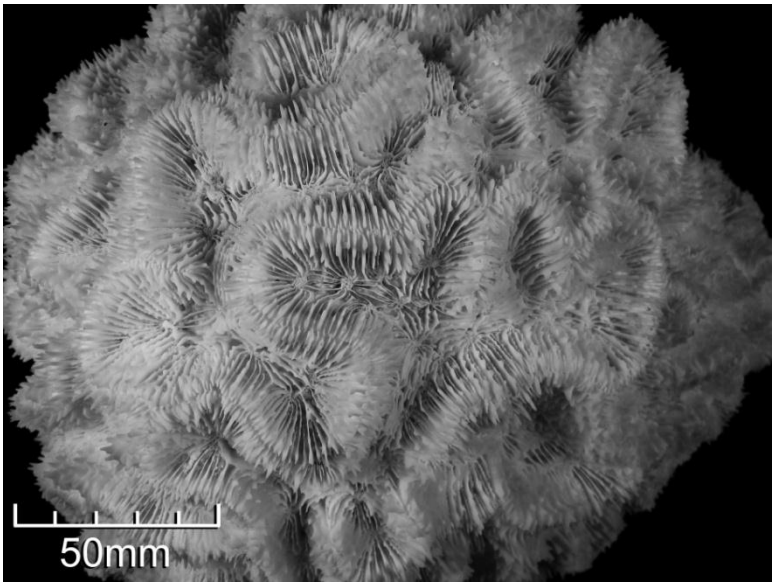
Abundance

- Common, maybe dominant species on exposed reef front

V .Genus : SYMPHYLLIA -

- The Symphyllia genus can grow in colonies that can be flat or dome shaped with white valleys that meander in curves & twists throughout the coral .
- All the corallites are fused together yet the divisions are clear due to a groove that runs along the top of the walls between each one .
- They are commonly called brain coral, closed brain coral or dented brain coral.
- Symphyllia will morph to extend their tentacles day or night when food is available.

1-SYMPHYLLIAAGARICIA :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MUSIIDAE
GENUS : SYMPHYLLIA
SPECIES : AGARICIA

Measurements :
Colony length(Corallites) : 50mm
Valley : 20 mm

Description

- Colonies are hemispherical .
- Valleys are straight or sinuous averaging 35mm wide & are usually separated by a narrow groove.
- Septa are thick & have large teeth.
- Columellaeare usually in two rows
- Their colour varies from brown to green or red, usually with contracting valleys & walls .

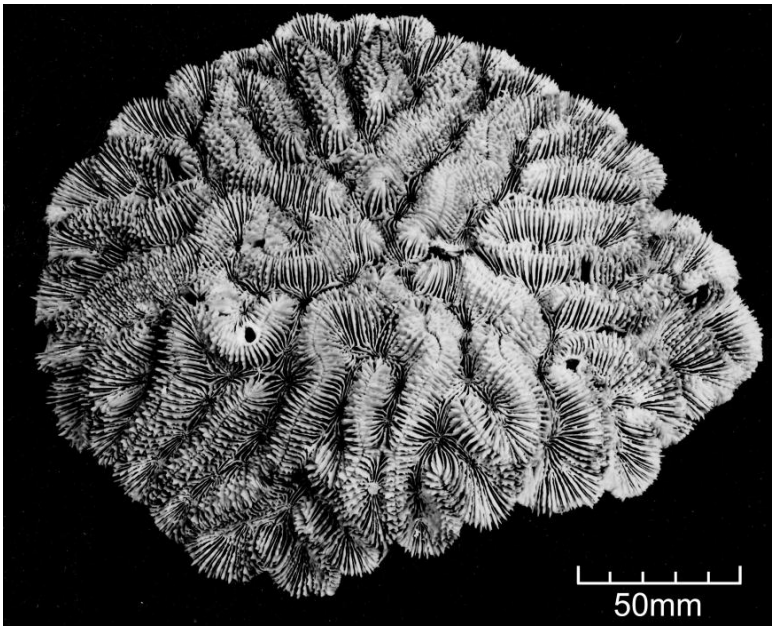
Habitat

- Exposed Upper reef slopes

Abundance

- Common

2- SYMPHYLLIARADIANS :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MUSIIDAE
GENUS : SYMPHYLLIA
SPECIES : RADIANS

Measurements :
Colony(Corallite) : 50mm
Valleys : 20 mm-50mm

Description

- Their colonies are hemispherical to flat.
- Valleys averages 20- 25mm wide & irregularly meandroid, becoming straight in flat colonies.
- Walls have moderately thick, fleshy appearance & usually have a groove along the top.
- A wide range of red , grey & green colour can be seen with valleys & walls usually of contrasting colours.

Habitat

- Upper reef slopes& fringing reefs

Abundance

- Common

V: Genus :GONIASTREA -

- Genus of stony coralsin the Faviidae family.
- Species belonging to this genus forms massive colonies usually spherical or elongate with well developedpaliform lobes.
- Polyps can be seen at night.

1-GONIASTREA EDWARSI :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : FAVIIDAE
GENUS : GONIASTREA
SPECIES : EDWARSI

Measurements :
Corallites : 10mm

Description

- Their colonies are massive, hemispherical or columnar, often 1 meter across.
- Corallites are slightly angular with thick angular walls .
- Septa are irregular in length & taper from the wall to the columellae which are small.
- Paliform lobes are thick
- They are usually cream or brownin colour with occasional orange center.

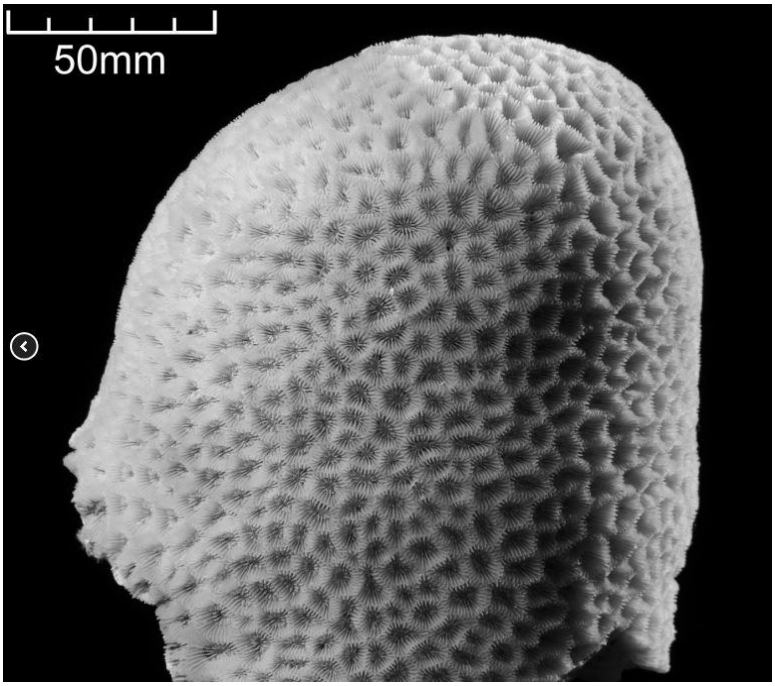
Habitat

- Most Shallow subtidal communities.

Abundance

- Common

2-GONIASTREARETIFORMIS :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : FAVIIDAE
GENUS : GONIASTREA
SPECIES : RETIFORMIS

Measurements :
Corallites : 10mm
Colony : 50mm

Description

- Their colonies are massive , hemispherical, flat or columnar and commonly one meter across.
- Corallites are four to six sided
- Long and short septa clearly alternate and are thin and straight with well developed thin paliform lobes
- They have uniform cream or pale brown colour

Habitat

- Dominant species of intertidal habitats

Abundance

- Common

VI: Genus :MONTIPORA -

- Growth morphology for the genus montipora include sub massive , laminar, foliacious, encrusting & branching
- Healthy montipora corals can be of various colours including orange, brown, pink ,green , blue, yellow , purple or grey.
- These corals have the smallest corallites of the coral family
- Columella not present
- Coenosteum and corallite wall are porous which can result in elaborate structures.
- Coenosteum of each Montipora species is different making it useful for identification.

1-MONTIPORA DIGITATA :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : MONTIPORA
SPECIES : DIGITATA

Measurements :
Branches : 10 to 50 mm
Colony : 50mm

Description

- Their colonies are digitate or arborescent with anatomizing upright branches.
- Corallites areimmersed and small, especially in colonies from shallow water.
- The coenosteum is smooth
- Their colour ranges from pale cream or brown to blue or pink

Habitat

- Shallow reef environments

Abundance

- Common

2-MONTIPORA FLORIDA :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : ACROPORIDAE
GENUS : MONTIPORA
SPECIES : FLORIDA

Measurements :
Corallites : 5mm
Colony surface: 5 -10mm

Description

- Their colonies are composed of unifaciallaminae, usually forming upright whirls
- These whirls maybe over 1 meter high & may cover a large area
- The Coenosteum is rough with small papillae
- Most corallites are embedded , others are tiny and often inclined irregularly on tuberculae
- They are usually pale brown or green in colour

Habitat

- Shallow turbid environment

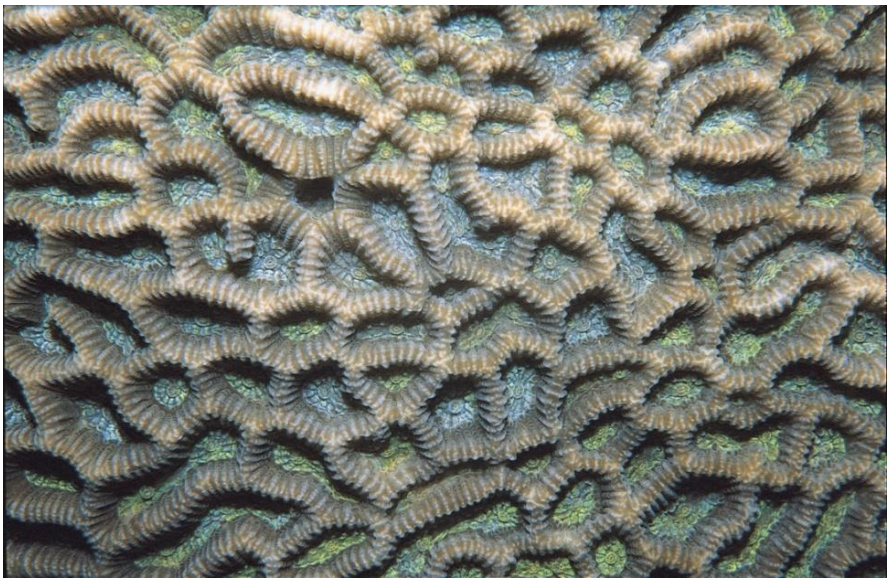
Abundance

- Common

VII-Genus :PLATYGYRA -

- Platygyra genus stony corals that form huge colonies that are either flat or dome shaped .
- The corallite walls twist & turn throughout the coral & share walls
- They do not have protruding rounded lobes
- They have rough septal teeth &corallite walls
- The corallite walls are heavier with valleys being less twisting & wider
- Typically the wall is brown or dark grey , with grey or green valleys , though there is a wide variation of colour.
- Colours include green, white, cream, pink , grey and brown & can have a bright or dull hues .

1-PLATYGYRA PINI :



Measurements :
Valley : 10mm

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MERULIDIINAE
GENUS : PLATYGYRA
SPECIES : PINI

Description

- Their colonies are massive to encrusting
- Corallites are monocentric or form short valleys
- Walls are thick with rounded edges
- There may be some development of columellacentres or paliform lobes
- They are usually grey or yellow brown with green or cream valley floors

Habitat

- Shallow reef environment

Abundance

- Usually uncommon

VIII- Genus: ECHINOPORA -

- Echinopora is genus of stony corals belonging to Merulidinae family
- They are commonly called hedgehog corals.

1-ECHINOPORA LEMELLOSA :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MERULIDIINAE
GENUS : ECHINOPORA
SPECIES : LAMELLOSA

Measurements :
Corallites : 10mm
Tube formation : 20mm
Plate formation : 50 mm

Description

- Their colonies are thin laminae , arranged in whirls or tires rarely forming tubes
- Corallites are relatively thin walled & small
- Columellae are small & compact , paliform lobes are well developed
- They are amber , pale to dark brown or greenish colouroften with darker brown or green Calices

Habitat

- Maybe a dominant species in shallow water habitat with flat substrates

Abundance

- Common

IX: Genus : FAVIA -

- Favia is genus of stony reef building stony corals in the Musiidae family
- Members of this genus are massive or thickly encrusting colonial corals, either dome shaped or flat & few are fallacious
- The corallites project slightly above the surface of the coral & each has its own wall
- The septa & costae linked to the corallites' wall are well developed and covered fine teeth
- The Polyp only extend & feed during night
- Each one has small numbers of tapering tentacles which often has dark coloured tip called stinger tentacles or sweeper tentacles.

1-FAVIA FAVUS :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MUSIIDAE
GENUS : FAVIA
SPECIES : FAVUS

Measurements :
Corallite : 10mm – 30mm
Pore size : 1mm

Description

- Their colonies are massive , rounded or flat
- Corallites are conical
- Septa are slightly irregular and widely spaced
- Paliform lobes are poorly developed
- They have a wide range of colours often with pale calices

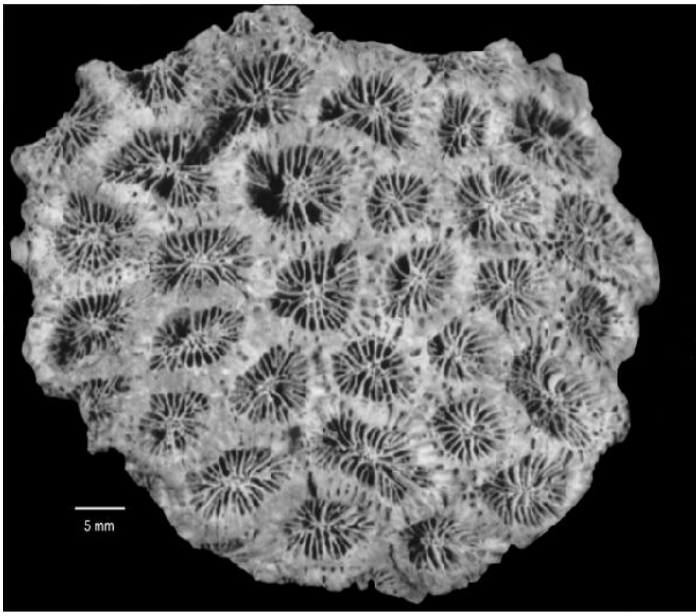
Habitat

- Dominant species on reef back margin

Abundance

- Common

2-FAVIAMAXIMA :



KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : MUSIIDAE
GENUS : FAVIA
SPECIES : MAXIMA

Measurements :
Massive Colony : 50mm
Pore size : <2mm

Description

- Their colonies are massive & usually small
- Corallites have well defined walls
- Septa are regular, thickened at the wall & thin conspicuous paliform lobes forming a crown around the columella
- Polyps maybe fleshy
- They are usually brown or yellow brown in colour with dull green or white oral disc

Habitat

- Upper reef slopes

Abundance

- Rare

X: Genus:FUNGIA -

- They are mushroom , disc or plate corals that are mostly solitary, some attaining 30 cm in diameter
- The juveniles attach themselves to rock but larger individuals detach themselves & become free living
- They are found in various colours including white, pink, purple, red, blue & yellow
- The discs are either round or oval and the central mouth which are surrounded by tentacles maybe slit
- The polyp sit in calcareous cup , the Corallite
- The septa & costae are robus and the spines and teeth found on them are characteristic of different species .

1-FUNGIA SCUTARIA :

KINGDOM : ANIMALIA
PHYLUM : CNIDARIA
CLASS : ANTHOZOA
ORDER : SCLERACTINIA
FAMILY : FUNGIDAE
GENUS : FUNGIA
SPECIES : SCUTARIA

Measurements :	
Septa	: 10mm
Lower surface	: 50mm
Upper surface	: 50 mm
Costae	: 10 mm

Description

- Polyps are oval , thick , heavy &upto 170 mm long
- Primary septa commence with a tall tentacular lobe and these are distributed at regular intervals from the mouth to the perimeter .
- They are usually brown , blue or yellow in colour , often with bright green blue or white tentacular lobes

Habitat

- Found with other Fungiaspecies& also Upper reef slopes exposed to strong wave action

Abundance

- Common and distinctive

Discussion

The corals identified include corals of various genus from *Acropora,Pocillopora,Stylophora,Symphyllia,Goniastrea,Montipora,* *,Platygyra,Echinopora,Favia* and *Fungia.Acropora* is a genus of stony and branching corals, *Montipora*genus include sub massive laminar,foliaceous, encrusting and branching corals. Both these genus belong to the family Acroporidae. *Pocillopora* includes stony coral species and are commonly called cauliflower corals due to its characteristic appearance. *Stylophora* is a colonial stony coral commonly called Cat's paw coral or birds nest coral. *Stylophora* and *Pocillopora* belong to the family Pocilloporidae. *Symphyllia* brain coral is also called closed brain coral or dented brain coral which can grow in colonies either flat or dome shaped belonging to Musiidae family. *Favia* genus is a stony coral belongs to the same family Musiidae has similarcharacteristic of that of genus *Symphyllia.Goniastrea* is a genus of stony coral in the Faviidae family. Genus *Platygyra* are also stony coral that form huge colonies either flat or dome shape and belongs to Merulidinae family. *Fungia* are mushroom,Disc or plate coral which are solitary, belonging to family Fungiidae.*Echinopora*, like *Platygyra*belongs to Merulidinaefamily is a genus of stony coral and are commonly called Hedgehog corals.

Coral Reefs are one of the most diverse and productive ecosystems of the world and are known as Rain Forest of the ocean. They act as natural barriers and protect the shore lines of Islands and landmasses against natural calamities. Nowadays, the reef ecosystems are facing major threats due to various anthropogenic activities which include destructive fishing improper gear operation, mining and pollution. Industrial development on coastal areas directly has an impact on coral reef ecosystem that causes bleaching, uprooting, continues disruption preventing the photosynthesis of associated algae etc. as their photosynthetic rate reduces supply of nutrients to the polyp also reduces which ultimately result in decrease in the coral growth, reproduction and distribution. Not only anthropogenic activities cause siltation and sedimentation but also many natural processes like monsoon winds cyclone, storm etc.

In striving to understand how ancient reefs might have functioned, the present is truly the key to past. Many of the critical management problems we are facing today, however require that we turn this equation around. By examining the character of past reefs & identifying the large scale temporal response of reefs to various natural stresses, we may be able to place the rapid changes we are now witnessing into the context of longer term change- the past may be the key to the present….and the future. The ever increasing world population and its dependence on natural resources are placing new stresses on reefs at an accelerating rate. While these systems are surprisingly resilient, increasing levels of human impact in the form of elevated nutrients and sedimentation are taking their toll. Recent episodes of coral bleaching have brought natural attention to the perils of tropical reef systems.

The outbreak of the Crown-of Thorns starfish on the Great Barrier Reef or the sudden die-off of the long spined sea urchin in the Caribbean have forced us to weigh the likelihood of these resulting from man – induced stresses versus natural ups and downs in the organisms that populate our seas. The possibility that the sea level may soon rise at a rate exceeding the ability of present day reefs to keep up is further case of great concern. The resulting impacts on coastal populations that depend on the reef for food and protection from oceanic waves could be devastating. Whether the goal is to be better understand the reefs and how they have evolved through time or protect these valuable ecosystems from increased degradation, placing the processes discussed into a realistic and temporal framework is of paramount importance.

Since the coral ecosystem is greatly affected their population my decrease in greater magnitude in the years to come. So it is of great importance to protect and preserve these ecosystems. Various strategies have been undertaken nowadays with the concern of conserving these ecosystems from further destruction. The major strategies include; remote sensing technique for monitoring sedimentation, erosion or sediment reduction, sewage and storm water management, reduction of chemical inputs from agriculture, community management & many more.

Conclusion

Coral Reefs have highly diverse features,the importance of which is related to both the need to manage our present day natural resources & the desire to understand the evolution of life in tropical seas. The present study on the coral specimens in our museum of Dept. of Zoology, St.Teresa's College, reveals that there are ten different genus starting from *Acropora, Pocillopora, Echinopora, Symphillia, Stylophora ,Goniastria, Montipora , Platygyra, Favia* to *Fungia*.

Genus *Acropora* has nine species out of which *Acroporacerealis*, *Acroporaflorida*, *Acroporahemipirchii*, and *Acroporamillepora* are common. *Acroporadigitifera* ,*Acroporaforskali*,&*Acroporamicroclados* are uncommon, while *Acropora efflorescence* &*Acroporahyacinthus*are very rare and the abundant respectively.

Genus *Pocillopora* has two species, *Pocilloporadamicornis&Pocilloporaeydouxi*which are common & found on most reef environments especially which are exposed to strong currents.

Genus *Echinopora* has only one species *Echinoporalamellosa* which is common & found in shallow water habitats with flat substrates .

Genus *Symphillia* has two species, *Symphilliaagaricia&Symphilliaradians*. The former is uncommon & the latter is common, both of which is found on upper reef slopes.

Genus *Stylophora* has only one species, *Stylophorapistillata*which is common, dominant species on exposed reef fronts.

Genus *Montipora* has two species, *Montiporadigitata&Montiporafloroida*, both of them are common. They are found on shallow reef environment.

Platygyra is another genus of stony coral containing only one species, *PlatygyrapiniEydouxi* which is usually uncommon & found on shallow reef environments.

Genus *Goniastria*has two species, *Goniastriaretiformis&Goniastriaedwardsi*, which are common & found on intertidal habitats and shallow subtidal communities respectively.

Genus *Favia* has two species, *Faviafavus*,a common & dominant species on reef back margins &*Favia maxima* which is rare and found on upper reef slopes.Genus *Fungia* has only one species,*Fungiascutaria*which is common & found with other *Fungia* species and also on upper reef slopes exposed to strong wave action.

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