



## STUDIES ON NEW FINDINGS OF GORGONIIDAE FROM RITCHIE'S ARCHIPELAGO ANDAMAN AND NICOBAR ISLANDS

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### ABSTRACT

The aim of this study was to conduct a survey of gorgonians in Ritchie's Archipelago, South Andaman focusing on species diversity, richness, distribution and ecology. During the survey 13 species belonging to 12 genera were recorded from this region. All these species are new distributional records to this region, the genera *Melithaea*, *Mopsella*, *Menella*, *Rumphella* and *Dichotella* are new addition to Indian gorgonians. The maximum species diversity, richness and evenness of gorgonians found at Havelock Island, followed by John Lawrence Island and Henry Lawrence Island.

**KEY WORDS:** Gorgonians, New records, Ritchie's Archipelago, Andaman and Nicobar.

### INTRODUCTION

Gorgonians are common and conspicuous members of almost all coral reefs. They are popularly called seafans and are marine coelenterates. Their distribution and abundance are influenced by environmental factors such as light, temperature, water flow, current, and substrate (Russo 1985; Weinbauer and Velimirov 1995; Zeevi and Benayahu 1999). Azooxanthellate gorgonians usually occur in mid-depth reefs and deep windward fore-reef terrace areas with high currents and sedimentation (Goh and Chou 1995; Goh *et al.*, 1997; Sanchez *et al.*, 1998). Gorgonians also act as refuge habitats for many small invertebrates such as crabs, snails and brittle stars (Goh *et al.*, 1999; Buhl-Mortensen and Mortensen 2005; Gili *et al.*, 2006). Their shape and complexity have an influence on the diversity and abundance of associated animals (Buhl- Mortensen and Mortensen 2005). The Indo-Pacific region has a high diversity of gorgonian corals (Goh and Chou 1996; Fabricius and Alderslade 2001; Dautova, 2007). The distribution of octocorals including gorgonians was reported at Carrie Bow Cay, Belize (Howard *et al.*, 1983). In Southeast Asia, few studies exist on the diversity of gorgonians (Alderslade *et al.*, 1989; Goh and Chou 1996; Goh *et al.*, 1997; Ofwegen *et al.*, 2000; Ofwegen and Alderslade, 2007). There are scattered taxonomic descriptions of gorgonians in most parts of the Asian region and isolated distributional records, many of them inadequately substantiated.

Taxonomic literature on gorgonians from the Indo-Malayan region includes the monographs of the Siboga (Nutting 1910 a-f; Stiasny, 1937) and Snellius (Stiasny, 1940) expeditions which describe the fauna of the Malay Archipelago. Stiasny (1941) and Mai-Bao-Thu and Domantay (1970, 1971) described this fauna from the Philippines. In the Indian Ocean, Hickson (1906a, b) and Faure (1977) described the

gorgonian fauna of Maldives and the Mascarene Archipelago. Van Ofwegen (1987) described species of the family Melithaeidae from the Indian Ocean and Malay Archipelago. In Singapore, 12 genera of gorgonians were found (Goh and Chou 1996) and in Thailand 28 genera are known (Alderslade *et al.* 1989; Worachananant 2000). In the year 1970s, various gorgonian species, particularly 22 species from 7 families and 15 genera was an important export from India. A quantitative analysis of the exports during the 1975-84 period revealed that as much as 80.6 tonnes were exploited from India (Thomas and Rani Mary George, 1987). According to Thomas *et al.* (1995), In India 27 species of gorgonians belonging to 8 families and 19 genera have been reported. Among them 12 species of gorgonians from 4 families and 9 genera have been reported from the northeast coast of India. However in Andaman and Nicobar Islands, 10 species from 4 families and 9 genera have been recorded (Venkataraman *et al.*, 2004). Hence, an attempt has been made in the present study to assess the diversity and distribution of gorgonians at Ritchie's Archipelago, Andaman and Nicobar Islands.

### MATERIALS AND METHODS

The distribution of gorgonians at Ritchie's Archipelago was determined from a series transects laid during the period from 2009 to 2011. The line intercept transect was employed at the study area by SCUBA diving from 5-30 m depth. The number of transects examined within an area was based on the size of the area and the density of gorgonians available in the area. The data obtained through the study were analyzed with on several biological indexes such as species richness (SR, the total number of species observed), abundance (the number of individuals of each species), the Shannon index ( $H'$ , calculated as  $H' = - \sum p_i \log_2 p_i$ , where  $p_i$  is  $n_i$  is the

number of individuals of the  $i^{\text{th}}$ -species, and N is the total number of individuals), and the evenness index ( $J'$ , indicating how the abundances are partitioned across the species). The specimens were identified based on the morphological characteristics of the colonies and sclerite structure (Plate-1 to 13). Sclerites were extracted using 5% Sodium hypochlorite (Bayer, 1961).

## RESULT

A total of 13 species under 12 genera of gorgonians were found at Ritchie's Archipelago, South Andaman Islands. These genera are *Melithaea*, *Mopsella*, *Echinogorgia*, *Menella*, *Rumphella*, *Junceella*, *Dichotella*, *Muricella*, *Ellisella*, *Nicella*, *Isis* and *Echinomuricea*.

The highest diversity of gorgonians (12 genera) was found at Havelock Island, followed by 7 genera at John Lawrence Island and 5 genera at Henry Lawrence Island. The density showed that *Junceella* was the dominant genus (63% at John Lawrence, 50% at Henry Lawrence and 26.32% at Havelock) followed by *Melithaea* (25% at Henry Lawrence, 10% at John Lawrence and 5.26% at Havelock), *Rumphella* (12% at Henry Lawrence, 5.26% at John Lawrence and Havelock). *Menella*, *Dicotella*, *Muricella*, *Nicella* and *Echinomuricea* were not recorded at John Lawrence. While *Mopsella*, *Echinogorgia*, *Menella*, *Ellisella*, *Nicella*, *Isis* and *Echinomuricea* were not reported at Henry Lawrence Island (Figure-1).

The diversity of gorgonians at the three islands, the variance of species diversity, Richness and Evenness are given in Figure -2. The highest species diversity, richness and

evenness were recorded at Havelock Island (0.93, 3.32 and 0.88) and lowest diversity, richness and evenness were reported at John Lawrence Island (0.67, 0.88 and 0.58) during the study period.

## SYSTEMATIC POSITION

**Subclass** : Octocorallia  
**Order** : Gorgonacea  
**Family** : Melithaeidae  
**Genus** : *Melithaea*

### 1. *Melithaea ochracea* (Linnaeus, 1785)

**Material Examined:** ZSI/ANRC: 5420, Live colony height: 1 meter; width: 40 cm; depth: 8 meter; Havelock (Lat. 12°03'33.4 N, Long. 092°57'71.6 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

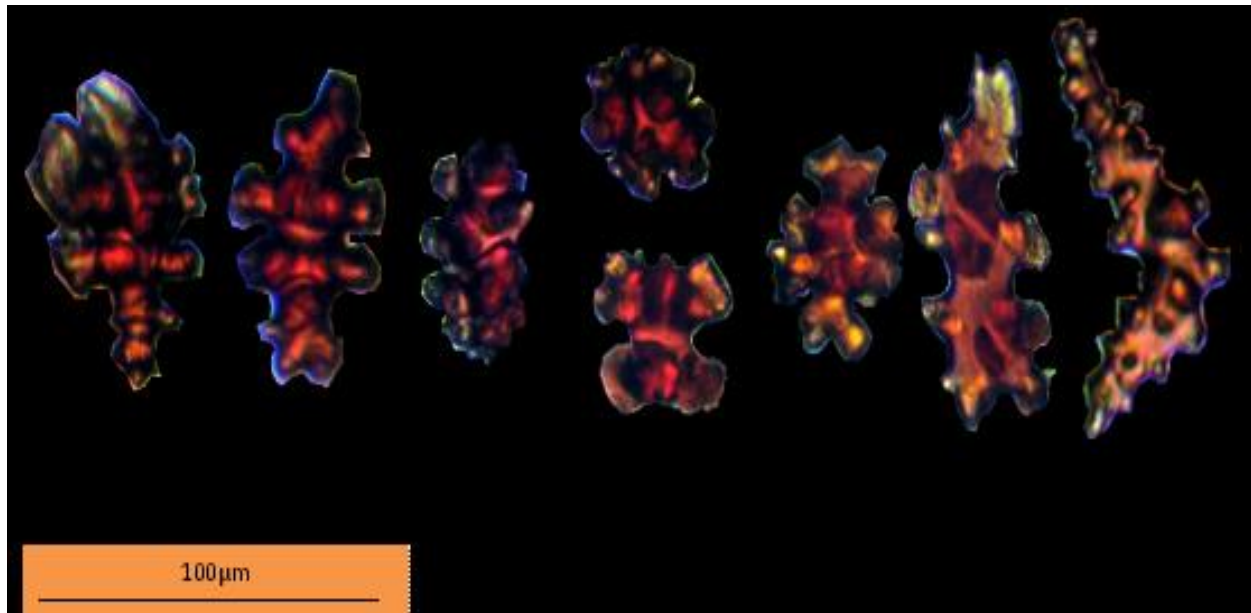
**Description:** Colony Red in colour when alive and dried. Size of the colony is up to one meter and bushy in structure. Colonies are densely branched in one plane forming large fans. Branchlets within a fan may sometimes fuse, netlike. Calyces dome like, placed on three sides of the branches.

**Sclerites:** (Plate – 1) Colourless and less than 0.1 mm in size. The surface cortex contains clubs, capstans and double discs. The polyp contains disc-spindles and unilateral spinose spindles. The nodes and internodes have flattened rods.

**Depth range and Habitat:** 5 to 10 m; reef slope and bottom. It was observed mostly in turbid environments.

**Distribution:** Ambon island, Banda Island, Ceram Island - - Indonesia, Singapore, Philippines, India: Andaman and Nicobar Islands.

PLATE- 1



**Genus** : *Mopsella*

### 2. *Mopsella rubeola* (Wright & Studer, 1889)

**Material Examined:** ZSI/ANRC: 5421, Live colony height: 60 cm; Length: 30 cm; depth: 10 meter; John Lawrence (Lat. 12°00'57.4 N, Long. 092°56'80.9 E),

Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony orange in colour when alive and dried. Size of the colony is up to one meter and bushy in structure,

branched in one plane, forming large fans. Calyces dome like, placed on three sides of the branches.

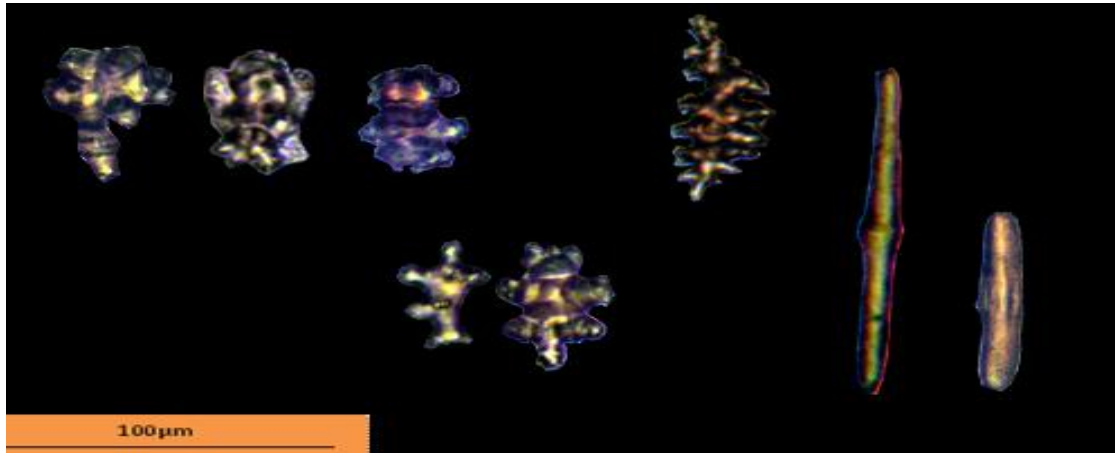
**Sclerites:** (Plate – 2) The most characteristic sclerites are leaf-clubs, capstans, foliate capstans, unilaterally foliate spheroids, leaf-spindles, rods and spindles. Leaves often narrow, spine-like. Largest unilaterally foliate spheroid 0.18 mm long and 0.10 mm wide. Spindles up to about 0.20 mm

long. Calyces with leaf-clubs up to 0.20 mm long and 0.10 mm wide.

**Depth range and Habitat:** 5-10 m; lower reef slope and bottom. It was observed mostly in turbid environments.

**Distribution:** Midway reef, Alaska; Andaman and Nicobar Islands.

PLATE- 2



**Family** : Subergorgiidae

**Genus** : *Annella*

**3. *Annella mollis* (Nutting, 1910)**

**Material Examined:** ZSI/ANRC: 5427, Live colony height: 50 cm; Length: 30 cm; depth: 20 meter; John Lawrence (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony dirty yellow in colour when alive and brown when dried. Size of the colony is up to 2 meter and densely reticulates fans. The axis consists of horny material with long, smooth, partially fused sclerites embedded in it. The meshes are generally elongate. The colourless polyps are slightly flattened spindles arranged and monomorphic

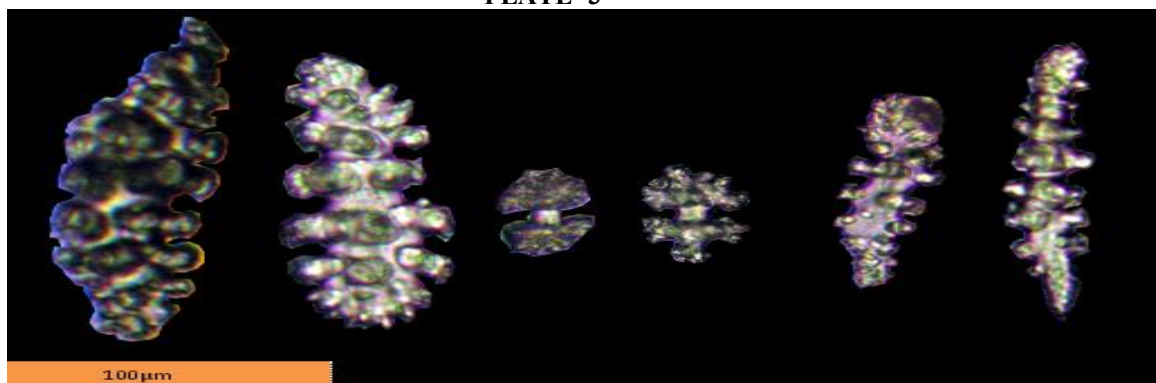
and retractile, and arranged on all sides of the branchlets. The species appears to be quite common throughout the coral reefs.

**Sclerites:** (Plate –3) Colourless and more than 0.1mm in size. The surface cortex contains warty spindles, along with numerous, characteristics, small double heads. The polyps have slightly flattened spindles arranged as collaret and points.

**Depth range and Habitat:** 20m depth; reef edge or reef end. It was observed mostly in channels and turbid environment.

**Distribution:** Pacific Ocean, Red sea, Madagascar and, India: Andaman and Nicobar Islands.

PLATE- 3



**Sub order** : Holaxonia  
**Family** : Plexauridae  
**Genus** : *Echinogorgia*

**4. *Echinogorgia flora* Nutting, 1910**

**Material Examined:** ZSI/ANRC: 5422, Live colony height: 30; Length: 15 cm; depth: 25 meter; Havelock (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** In both the living and dry persevered conditions, the colony was yellow in colour. The axis is dark brown in older parts while pale brown in the terminal parts. Colonies were bushy and branched in one plane, division of branches was often in an irregularly dichotomous pattern. Branches were circular in outline, diameter may vary from 2-3mm blunt stalk, branches and branchlets may have

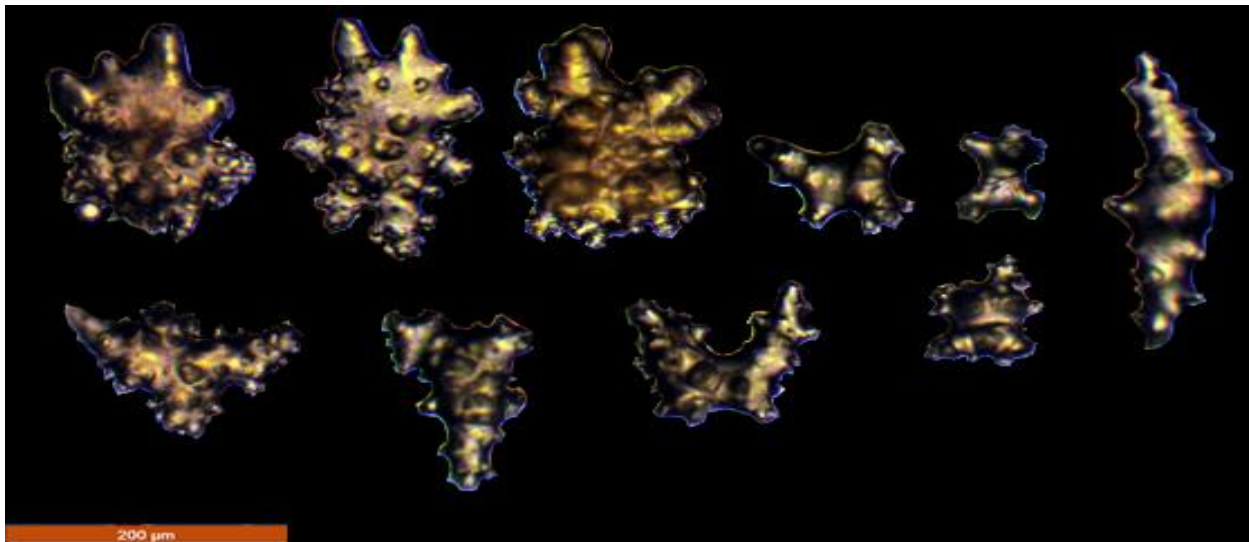
more or less the same diameter. Calyces distributed all over, contiguous and flush with the surface and polyps retractile. Calyces wall and the general surface

**Sclerites:** (Plate – 4) Colourless and less than 0.5 mm in size. The surface contains leaf like expansion, oval, orbicular and transparent in some case the expansion may bear tubercles or striations ornamenting it. The spindles are angulated or not.

**Depth range and Habitat:** 5-10 m; reef flat and rubble area. It was observed mostly in fast flowing turbid water, below depths of high irradiance.

**Distribution:** New Caledonia, Australia, Papua New Guinea, Indonesia, Singapore, Philippines, Sri Lanka, Madagascar, Red Sea and India: Vizhinjam and Andaman coast.

PLATE- 4



**Genus** : *Menella*

**5. *Menella indica* Gray, 1870**

**Material Examined:** ZSI/ANRC: 5423, Live colony height: 30 cm; Length: 15 cm; depth: 25 meter; Havelock island (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony yellow in colour when alive and dirty yellow when dried. Size of the colony is up to 30 cm height. Colonies are un-branched and whip like, but occasionally richly branched. Branches often quit thick. Side branches usually arising at near right angles from the main branches and curving upwards. Colonies do not form nets. The polyps are yellow in colour, monomorphic and totally retractile with in low to prominent, hemispherical calyces.

**Sclerites:** (Plate – 5) The characteristic sclerite form is a leaf – scale which is shaped somewhat like a ping – pong bat that has had its handle replaced by a tuberculate or root structure observed at the calyx and surface. The subsurface layer contains tripod shaped of spindles and the polyps have rod like and bow shaped. Sclerites are colourless.

**Depth range and Habitat:** 10 - 20m; lower reef slope and bottom. It was observed mostly in fast flowing turbid environments.

**Distribution:** New Caledonia, Australia, Papua New Guinea, Indonesia, Singapore, Malaysia, Sri Lanka, Madagascar, Mauritius, South Africa, Red Sea, India: Bay of Bengal, Andaman Islands.

**Sub order** : Calcaxonia

**Family** : Ellisellidae

**Genus** : *Junceella*

**6. *Junceella juncea* (Pallas, 1766)**

**Material Examined:** ZSI/ANRC: 5424, Live colony height: 3 meter; depth: 25 meter; John Lawrence (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony dark red in colour when alive and dried. Axis white internally and pale brown externally. Size of the colony is more than 2 meters. Colonies are usually un-branched and whip like, rarely branched. Diameter of the colony and line on either side. The calyces papillae and directed towards the growing tips. The polyps are small, clubs.

**Sclerites:** (Plate – 6) The sclerites are dumbbell shaped and size up to 0.1 mm, subsurface have clubs, size 0.1mm.

**Depth range and Habitat:** 20m; current-Swept muddy bases of reef, and moderately common on mid shelf reefs at

greater depth. Uncommon on outer shelf reefs. Also occurs in turbid coastal inter-reef environment and muddy estuaries.

**Distribution:** Red sea, South China, Indo Pacific, Great Barrier Reef, Micronesia, New Caledonia and India: Gulf of Mannar and Andaman and Nicobar Islands.

PLATE- 5

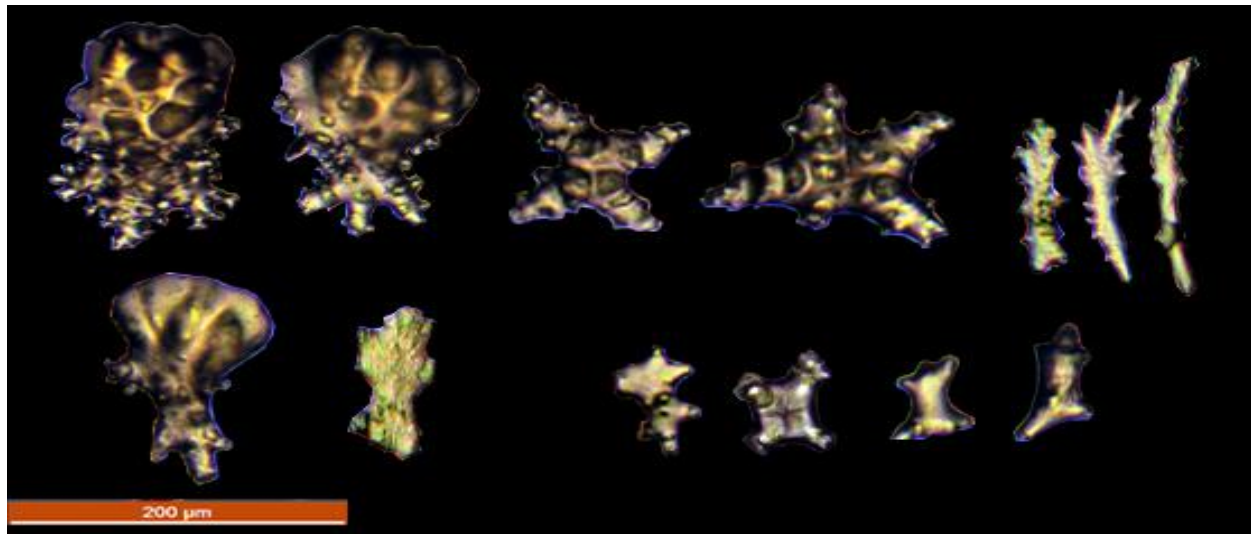
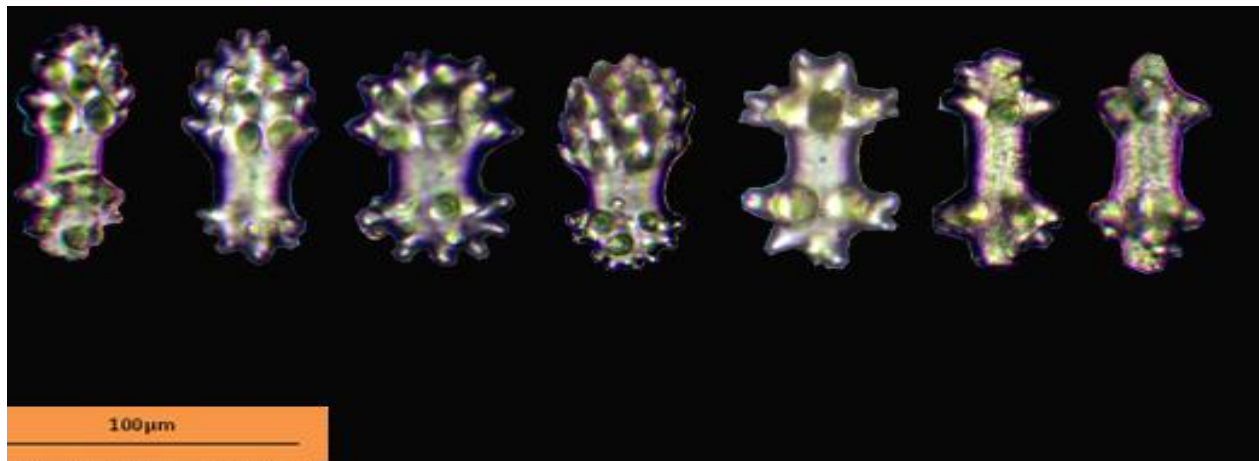


PLATE- 6



**Genus** : *Nicella*

**7. *Nicella flabellata* (Whitelegge, 1897)**

**Material Examined:** ZSI/ANRC: 5426, Live colony height: 30 cm; Length: 12 cm; depth: 30 meter; John Lawrence (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony dirty red or brown in colour when alive and dried. Size of the colony is up to 30cm in height and 12 cm broad. Specimens commonly show a tendency towards dichotomous branching, made irregular by out of place lateral branches. Colonies do not form nets. Polyps may be

very conspicuous and Monomorphic but not retractile and arranged all around the branches or biserially.

**Sclerites:** (Plate – 7) Mostly colourless, the surface layer contains small double heads, above a thick subsurface layer of flattened rods or spindles generally without a distinct waist. These subsurface layer sclerites can be two to four times the length of the double heads.

**Depth range and Habitat:** 30m; rare, has been found at diving depth and rare at depths less than 50m. It was observed mostly in muddy reef flats and turbid environment.

**Distribution:** Caribbean from Nicaragua to Dominican Republic, Bahamas, North and East Mexico, India: Andaman Islands.

PLATE- 7

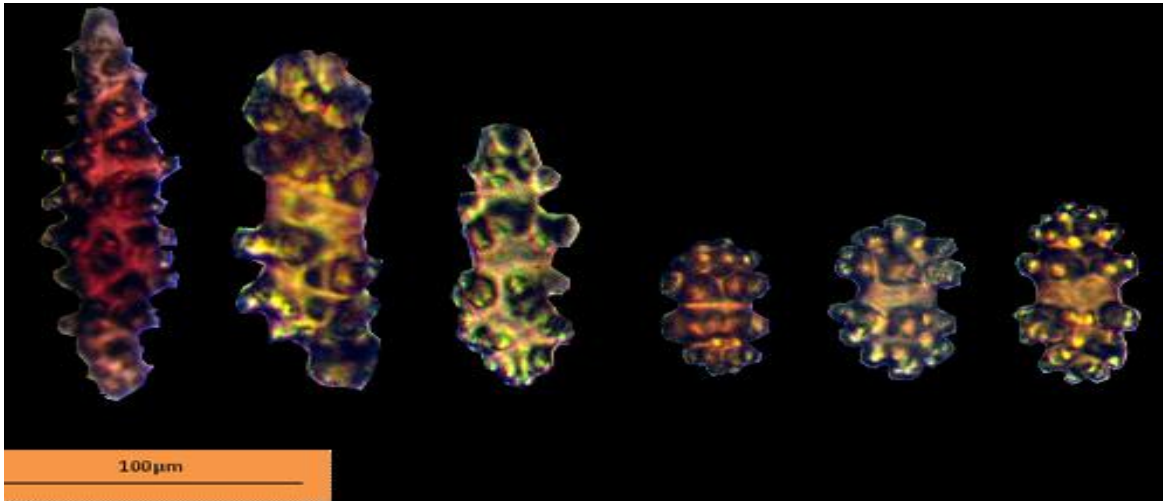


PLATE- 8

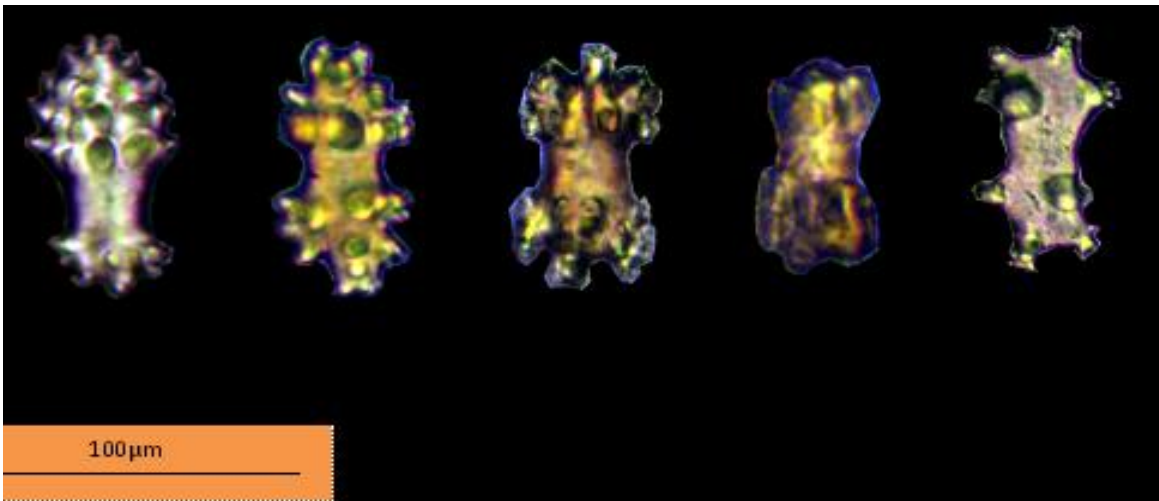
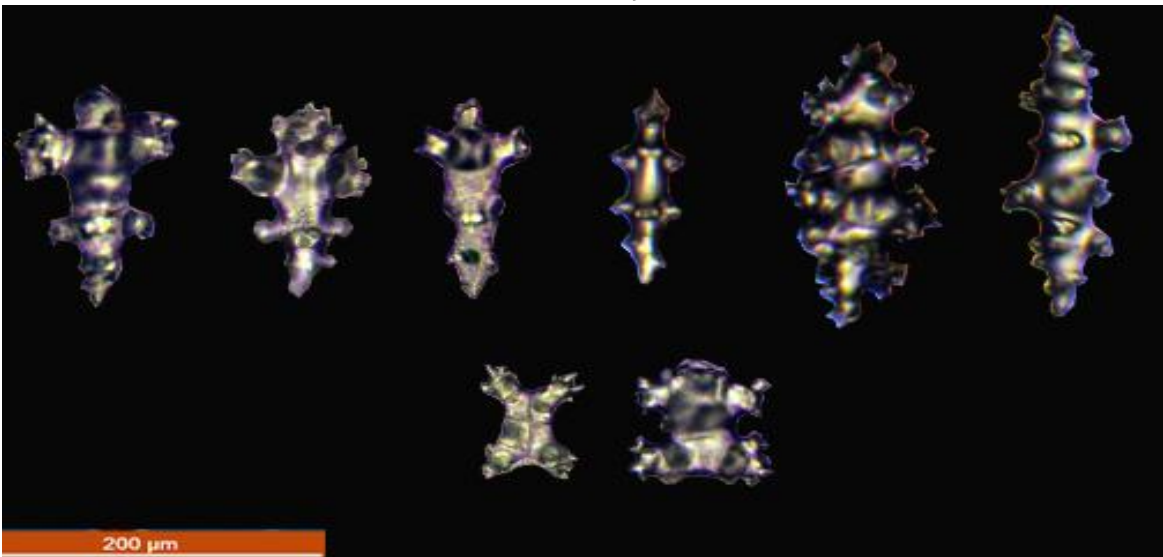


PLATE- 9



Genus : *Dichotella*  
8. *Dichotella gemmacea* (Milne Edwards & Haime, 1857)

Material Examined: ZSI/ANRC: 5425, Live colony height: 1 m; width: 45 cm; depth: 30 meter; John Lawrence (Lat.

12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony reddish brown in colour when alive and dried. Size of the colony is up to 1m in height and 30 cm broad. Specimens commonly show a dichotomous branched fans or bushes. Colonies do not form nets. Polyps may be very conspicuous and Monomorphic but not retractile and arranged all around the branches.

**Sclerites:** Plate – 8. Sclerites are usually colourless. The surface of the coenenchyme contains clubs where the head is formed from a cluster of distally pointed tubercles. The subsurface contains symmetrical capstans.

**Depth range and Habitat:** 30m depth; common at depths less than 50m. It was observed mostly in reef flats and turbid current water.

**Distribution:** Central Indo-Pacific, New Caledonia, India: Andaman Islands.

**Family** : Gorgoniidae Lamouroux, 1812

**Genus** : *Rumphella* Bayer, 1955

### 9. *Rumphella aggregata* (Nutting, 1910b)

**Material Examined:** ZSI/ANRC: 5306, Live colony height: 1 meter; Length: 43 cm; depth: 18 meter; South Button Island (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony dirty white to grey in colour when alive and brown when dried. Size of the colony is up to one meter and bushy in structure. Colonies are forming compact large shrubs with whip - like branches. The branches are smooth, thick and have blunt tips. The polyps are yellowish brown in colour, monomorphic and retractile in the smooth branching surface.

**Sclerites:** (Plate – 9) Colourless and less than 0.1mm in size. The surface contains terminal wart. The subsurface layer contains spindles with acute ends (0.1mm), four radiates (0.04 to 0.06mm), Blunt spindles with acute ends (0.05 to 0.08) and the polyps have flattened rods (0.06mm).

**Depth range and Habitat:** 10 - 20m; lower reef slope and bottom. It was observed mostly in turbid environments.

**Distribution:** Gilbert Islands, Onotoa Atoll, Approx. 3.25 Mile NW from Tabuarorae Maneaba, India: Andaman and Nicobar Islands.

### 10. *Rumphella antipathies* (Linnaeus, 1758)

**Material Examined:** ZSI/ANRC: 5307, Live colony height: 1 meter and Length: 28 cm; depth: 13 meters; Jolly buoy Island (Lat. 11°30'20.0 N; Long. 92°36'80.0 E), Mahatma Gandhi Marine National Park, South Andaman; Reef slope with high turbid water.

**Description:** Polyp apertures small, brown to greenish grey with brown polyps when alive and also dried. Colonies grow up to one meter, like bushes. The branches are smooth, thick and have blunt tips.

**Sclerites:** (Plate – 10) Colourless and less than 0.1mm in size. Surface contains terminal warts, but subsurface contains Blunt spindles with acute ends (0.04 to 0.06mm), Rod with tubercles (0.06 to 0.08mm) and four radiate (0.04mm) and polyps also have flat rods (0.08mm).

**Depth range and Habitat:** Unlike *R. aggregata*, distributed at 15-20m depth. Found in reef slope and protected lagoons.

**Distribution:** *Gorgonia antipathies* are quite similar to this species. Hiles and Isa L. (1899) recorded *R. antipathes* from Funafuti; the U.S. National Museum has specimens from Arno in the Marshall Islands and Onotoa in the Gillberts. Linnaeus also reported at Ifaluk Atoll in the central Caroline Islands and India: Andaman and Nicobar Islands.

**Family** : Acanthogorgiidae

**Genus** : *Muricella*

### 11. *Muricella ramosa* (Thompson & Henderson, 1906)

**Material Examined:** ZSI/ANRC: 5428, Live colony height: 12 cm; width: 8 cm; depth: 15 meter; Hendry Lawrence (Lat. 12° 05'00.0 N; Long. 093° 04'31.2 E), Ritchie's Archipelago, South Andaman; Reef areas.

**Description:** Colony dirty red or brown in colour when alive and dried. Size of the colony is up to 12 cm in height and 7 cm broad. It grows in one plane as open fans, with irregular lateral branching. Old colonies small branches often bend and grow out perpendicular to the fan. The coenenchyme layer between the polyps is thick and obscures the axis.

**Sclerites:** (Plate – 11) Mostly colourless, the polyp tentacles contain small rods and the polyp body is covered with blunt spindles with large warts. The spindles tend to be arranged along the body wall in angled double rows. Surface layer contains small capstans and spindles similar to those in the polyps, but many of these spindles are very large.

**Depth range and Habitat:** 15m; rare, has been found at diving depth and rare at depths less than 50m. It was observed mostly in reef slopes and turbid environment.

**Distribution:** Indonesia, Red Sea, South Africa, and India: Andaman Islands.

**Family** : Isididae

**Genus** : *Isis*

### 12. *Isis hipuris* Linnaeus, 1758

**Material Examined:** ZSI/ANRC: 5429, Live colony height: 50 cm; width: 12 cm; depth: 5 – 15 meter; John Lawrence (Lat. 12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony bright yellow to green or brown. Size of the colony is up to 50 cm in height and 12 cm width. Branches are always smooth and cylindrical. A very thick outer layer covers the characteristic, white and dark brown segmented axis. The white calcareous internodes are conspicuously ridged. Colonies can be sparingly or richly branched, mostly grow fan like in a single plane, they can be extremely bushy. Most branches are usually quite short.

**Sclerites:** (Plate – 12) The surface layer contains small clubs with a whorl of 3 large warts surrounding a terminal wart on the head. Below there is a subsurface layer of 6 to 8 radiate capstans, spindles, ovals and spheroids.

**Depth range and Habitat:** 5-15m; common and widely distributed in shallow moderately clear waters. It is particularly abundant on mid shelf reefs, where it occurs in shallow water away from wave action. Rare in turbid coastal areas.

**Distribution:** Philippines, Taiwan, Palau, Indonesia, Papua Andaman Islands.  
New Guinea, Great Barrier Reef, Ryukyu Islands, India:

PLATE- 10

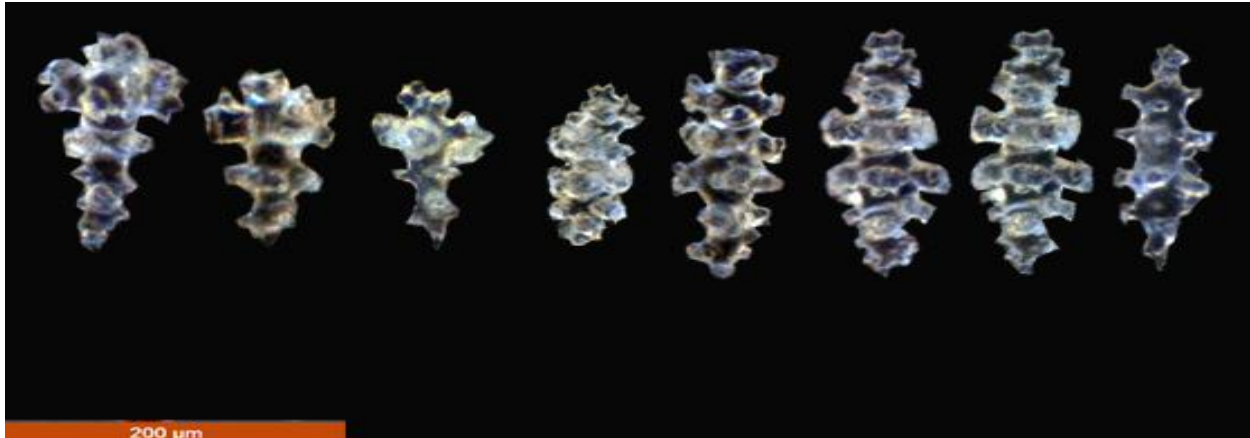


PLATE- 11

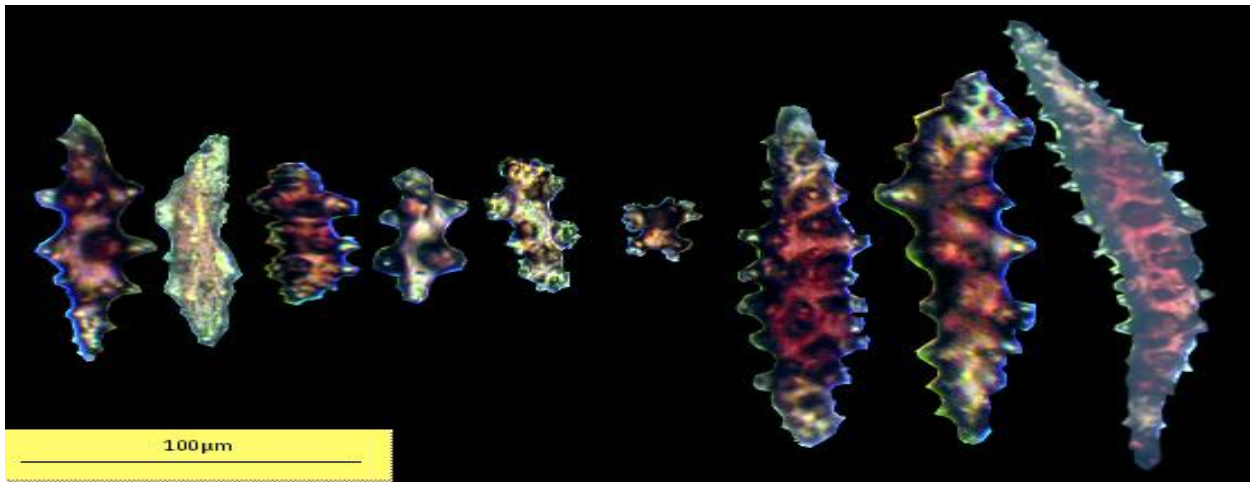
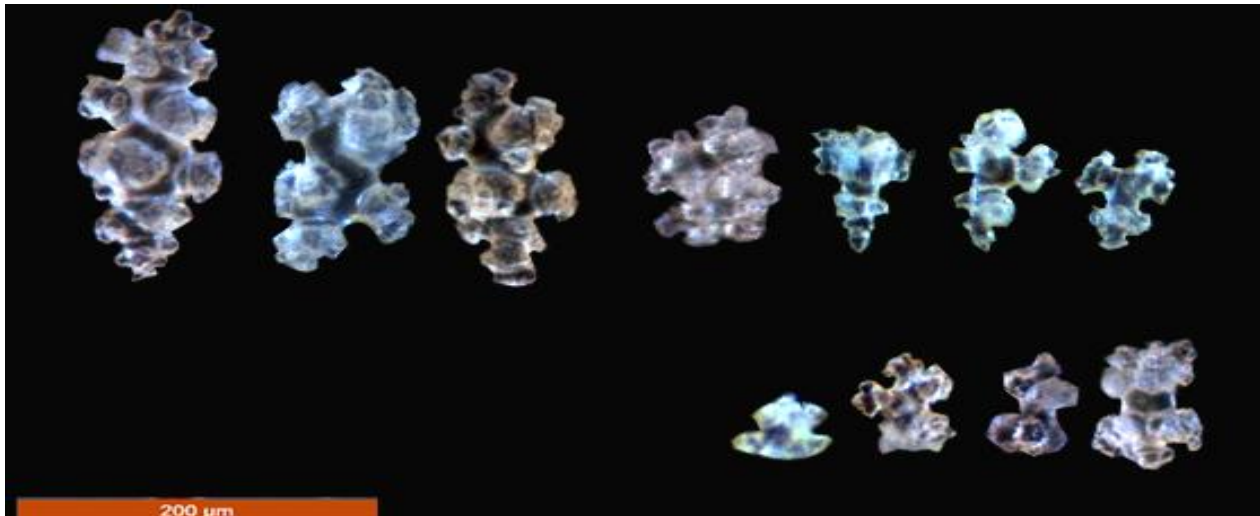


PLATE- 12



**Family** : Plexauridae  
**Genus** : *Echinomuricea*  
**13. *Echinomuricea indica* (Thomson & Simpson, 1909)**  
**Material Examined:** ZSI/ANRC: 6057, Live colony height: 16 cm; width: 10 cm; depth: 15 meter; Havelock (Lat.

12°13'06.8 N; Long. 93° 01'50.7 E), Ritchie's Archipelago, South Andaman; Reef slope with high turbid water.

**Description:** Colony red and brown. Size of the colony is up to 16 cm in height and 10 cm width. Branches are confined strictly to one plane, but owing to the sinuous nature of the



branches the whole presents a characteristic appearance. The branches generally arise at right angles and though maintaining their original direction curve and flex so as to be almost semicircular or S- shaped. The axis is horny, slender and black. The surface is very smooth and glistening. The polyps are disposed over the whole surface in some places apparently in spirals, but in others quite irregularly.

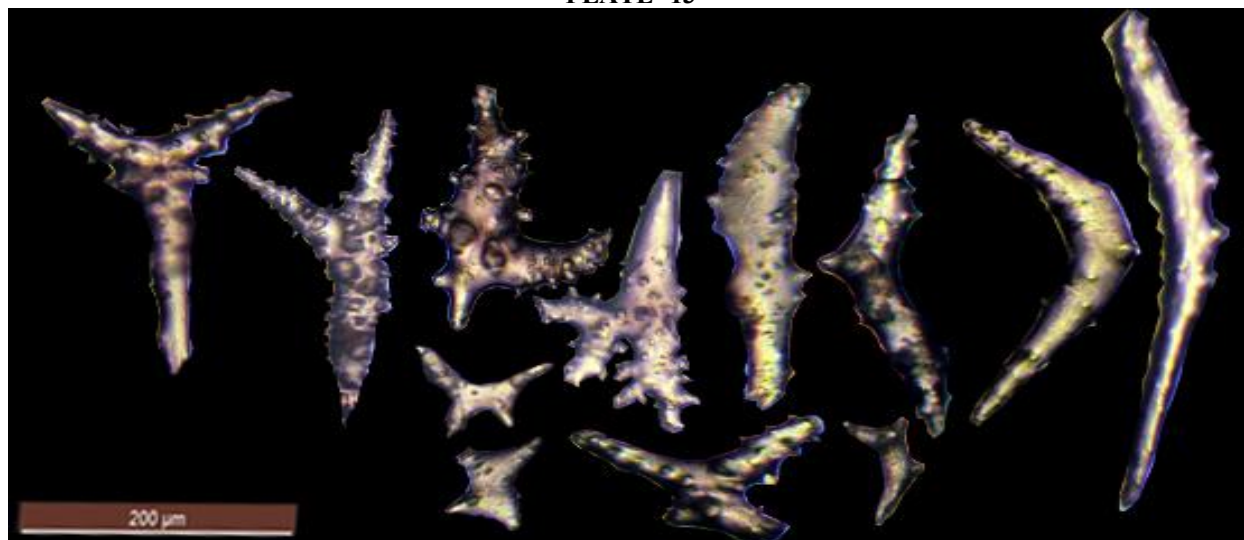
**Sclerites:** (Plate – 13) The characteristic sclerites are the thornscales of the calyces, which have a single, long spine arising from a spreading warty base. Modified forms of

these with a large base or a couple of spines, can also be found in the calyces and in the colony surface along with warty spindles and branched forms. The spine on a thornscales can be very smooth or it may be modified with smaller spines. The polyp head contains large spindles and rods in a collaret and points arrangement

**Depth range and Habitat:** 15m; uncommon and widely distributed in both clear and turbid coastal areas.

**Distribution:** Central Indo-Pacific, New Caledonia, Arakan, India: Gulf of Mannar and Andaman Islands.

PLATE- 13



## DISCUSSION

The 12 genera of gorgonians reported in the present study are *Melithaea*, *Mopsella*, *Echinogorgia*, *Menella*, *Rumphella*, *Junceella*, *Dichotella*, *Muricella*, *Ellisella*, *Nicella*, *Isis* and *Echinomuricea*. The genera are reported for the first time along Ritchie's Archipelago, South Andaman coast. 9 genera were new to Andaman and Nicobar Islands (except the three genera *Muricella*, *Ellisella* and *Isis*). In India, 5 genera (*Melithaea*, *Mopsella*, *Menella*, *Rumphella* and *Dichotella*) were reported for the first time as verified with previous reports (Thomson *et al.*, 1909; Thomas and Rani Mary George, 1987; Thomas, *et al.*, 1995; Thomas, 1996; Venkataraman *et al.*, 2004).

In Indonesia, 225 species of gorgonians were recorded, in the Philippines, 36 genera, Gulf of Thailand, 15 genera and in Singapore, 12 genera (Mai-Bao-Thu and Domantay 1970; Grigg and Bayer 1976; Nigel *et al.* 1996; Loyjiw *et al.* 2008). So many factors which control octocoral abundance have been discussed by several authors around the world (Bayer, 1961; Goldberg, 1973; Kinzie, 1973; Opreko, 1973;

Zeevi and Benayahu 1999; Fabricius and Alderslade 2001). Trawling causes physical and biological damage of gorgonian beds that are irreversible, extensive and long lasting (Hall, 1999; Kaiser and de Groot, 2000).

In India, commercially important species of gorgonians have been reported by Thomas, 1996. The total estimated quantity

of gorgonians exported to various countries during the period 1975 to 92 is 1061 tonnes valued at 35.6 lakhs rupees (Thomas, 1996). The 'Black' and 'Red' types were the first to be exported from India and these 'types' started showing signs of depletion at first. Both these types had high demand in foreign markets however 'Flower' and 'Monkey tail' types were exported only in stray numbers as they had poor demand (Thomas and Rani Mary George, 1987). A comprehensive underwater study needs to be undertaken to bring to light the precise climatic and anthropogenic impact. The occurrence of gorgonians in the sub-tidal and deep water also warrants the need for conducting further detailed studies.

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