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MARINE SPONGES OF GULF OF MANNAR AND PALK BAY

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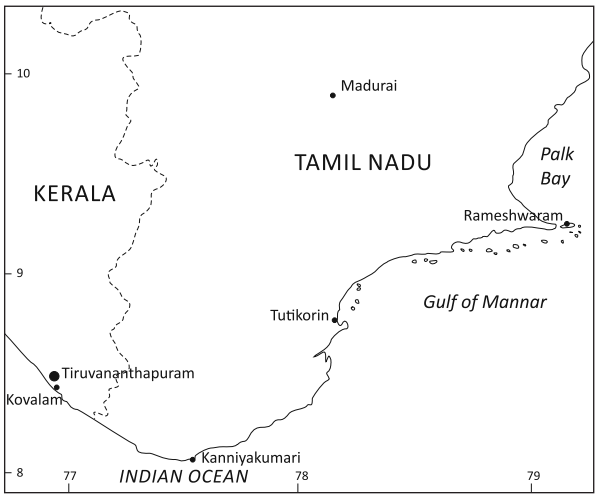
INTRODUCTION

The Gulf of Mannar and Palk Bay are one of the important Biosphere Reserves of India. It consists of 21 islands spread over an area of 623 hectares (10, 500 km^2). The area between the Pamban to Tuticorin barrier reef was declared a National park in 1986 and later converted into Biosphere Reserve in 1989. Of the 21 islands, seven islands belong to Mandapam group, seven islands to Keelakarai group, three islands to Vembar group and four remaining islands to Tuticorin group. This Marine National Park, one of the richest coastal regions in Asia, contains over 3,600 species of flora and fauna. (Nammalwar, 2008) The present study is on the Poriferans (Sponges) of this region based on extensive collections made during Dec. 2007. Poriferans have a paleontological significance as they originated about 570 million years ago (Thomas, 1998).The sponge species and its distributions are well studied by several workers in the past. Dendy (1905) reported the Gulf of Mannar as one of the richest centers of sponge distribution. Burton (1930, 1937) added to our knowledge of the sponge fauna of Gulf of Mannar. An extensive survey of the marine sponges of the Gulf of Mannar and Palk bay was conducted during the years 1964-67 by Thomas (1968). Thomas (1986) made a monographic work containing 275 sponge species from Gulf of Mannar and Palk Bay. Subsequently Pattanayak and Manna (2001) recorded 451 species for the whole of India, under 3 classes, 17 orders, 65 families and 169 genera. From the Gulf of Mannar and Palk Bay 321 species belonging to 129 genera were reported of which 257 species belonging to 63 genera are endemic to this region. It is fascinating that 67 % of the India's sponge species were recorded at the Gulf of Mannar and Palk Bay regions. The Class Demospongiae was the dominant group of sponges in the study area.

MATERIALS AND METHODS

The sponges were collected along the inner reefs of the seven dominant islands and seven coastal areas of the Gulf of Mannar Biosphere reserve. They are Poomarichan Island, Mandapam, Manauli island, Keelakarai, Pullivasal island, Ervadi, Hare island, Pamban Bridge, Manauliputti island, Rameswaram, Krusadai island, Vedalai, Single island and Adiayaman beach. A total of 70 sponge specimens were collected in the intertidal area and studied. Clearing of the hand sections were done in carbol-xylol and mounted in glycerine. Spicules were boiled in nitric acid, mounted in euparol and examined under Labomed microscope and photograph of spicules to be added. Measurements were made with the micrometer and are given in mm.



Map of gulf of mannar of Palk Bay

The following 72 Sponge specimens were identified from the survey tour to Gulf of Mannar and Palk Bay, Tamil Nadu as belonging to 30 species under 11 families.

SYSTEMATIC ACCOUNT OF SPONGES OF GULF OF MANNAR AND PALK BAY

Phylum: PORIFERA Grant, 1836

Class DEMOSPONGIAE Sollas, 1885

Subclass TETRACTINOMORPHA Levi, 1953

Order HADROMERIDA

Family CLIONIDAE Gray

1. *Cliothosa quadrata* (Hancock, 1849)
2. *Cliona lobata* Hancock
3. *Speciospongia inconstans* (Dendy, 1887)

Family SUBERITIDAE

4. *Suberites carnosus* (Johnston, 1842)

Family TETHYIDAE

5. *Stellitethya repens* (Schmidt, 1870)

Order POECILOSCLERIDA

Family MICROCIONIDAE

Sub family MICROCIONINAE

6. *Clathria* (*Clathria*) *gorgonoides* (Dendy, 1910)

Family RASPAILIIDAE

Sub family ECHINODICTYINAE

7. *Echinodictyum clathratum* Dendy, 1905

Sub order MYXILLINA

Family DESMACIDIDAE

8. *Desmapsamma anchorata* (Carter, 1882)

Order HALICHONDRIDA

Family AXINELLIDAE Carter

9. *Auletta elongata* Dendy, 1905
10. *Axinella durissima* (Dendy, 1905)
11. *Axinella donnani* (Bowerbank, 1873)
12. *Axinella halichondroides* Dendy, 1905
13. *Axinella manus* Dendy, 1905

Family BUBARIDAE

14. *Bubaris vermiculata* (Bowerbank, 1866)

Order HAPLOSCLERIDA

Suborder HAPLOSCLERINA

Family CALLYSPONGIIDAE De Laubenfels

15. *Callyspongia clathrata* (Dendy, 1905)
16. *Callyspongia* (*cladochalina*) *diffusa* (Ridley, 1884)
17. *Callyspongia* (*cladochalina*) *spinosissima* (Dendy, 1887)

Family CHALINIDAE Gray

18. *Haliclona pigmentifera* (Dendy, 1905)
19. *Haliclona* (*Gellius*) *fibulata* (Schmidt, 1862)
20. *Sigmadocia petrosioides* (Dendy, 1905)

Family NIPHATIDAE

21. *Gelliodes pumila* (Lendenfeld, 1887)

Suborder PETROSINA

Family PHLOEODICTYIDAE

22. *Oceanapia sagittaria* (Sollas, 1902)

Order DICTYOCERATIDA

Family THORECTIDAE

Subfamily THORECTINAE

23. *Ircinia fusca* (Carter)

Order DICTYOCERATIDA

Family IRCINIIDAE

24. *Fasciospongia cavernosa* (Schmidt, 1862)

25. *Fasciospongia anomala* (Dendy, 1905)

Family SPONGIIDAE

26. *Hyattella intestinalis* (Lamarck, 1814)

27. *Spongia* (*spongia*) *hispida* Lamarck, 1814

Subfamily PHYLLOSPONGIINAE

28. *Phyllospongia papyracea* (Esper) ssp. p*olyphyll*a de Laubenfels

Family DYSIDEIDAE

29. *Dysidea fragilis* (Mantagu, 1818)

30. *Lamellodysidea herbacea* (keller, 1889)

1. ***Cliothosa quadrata*** (Hancock, 1849)
(Fig. 1)

1849. *Cliona quadrata* Hancock, p. 344, pl. 5, fig. 6

2006. *Cliona quadrata,* Pattanayak, p. 33, pl. III E, fig. 18

2013. *Cliothosa quadrata* Van Soest *et al.*

Material Examined: 10 exs, station Mandapam, Date. 23.12.07. Reg. No. S-53., Coll. G. Sivaleela & Party.

Description: Sponge colour is dark brown. Consistency is Soft and friable. Boring on corals, cavities are formed inside the substratum, Megascleres: tylostyles, head spherical, 0.4 X 0.016-0.018.

Distribution: South Atlantic, Mediterranean Sea.

2. ***Cliona lobata*** Hancock
(Fig. 2)

1849. *Cliona lobata* Hancock, p. 341, pl. 12, figs. 4, 8.

1937. *Cliona lobata* Burton, p. 16, pl. 8, fig, 53.

Material Examined: 8 exs, sta Pullivasal island. Date, 25.12.07. Reg. No. S-52. Coll. G. Sivaleela & Party.

Description: Common on calcareous objects, colour bright red when alive .

Spicules: Tylostyles, size, 0.119X 0.004 mm, Spirasters, 0.01-0.065 X 0.002-0.003 mm.

Distribution: Atlantic Ocean, and Indo pacific

3. ***Spheciospongia inconstans*** (Dendy, 1887)
(Fig. 3)

1887. *Suberites inconstans* Dendy, p. 154.

1902. *Spirastrella inconstans*, Sollas, p. 216., pl. 14, fig. 3.

2013. *Spheciospongia inconstans,* Van Soest *et al*.

Material Examined: 7 exs, sta: Krusadai island. Date, 25.12.07. Reg. No., S-52. Coll. G. Sivaleela & Party.

Description: Sponge, massive, globular, meandrine or finger shaped. Basal portion often buried in sand or coral rock. Colour pale yellow internally and light brown externally in living condition. Oscules scattered in massive forms whereas terminal in digitate forms. Skeleton arrangement as in the above species. Types of the spicules are tylostyles and spirasters.

Spicules: Tylostyles size, 0.119-0.121 X 0.002-0.021 mm, Spirasters size, 0.002-0.0125 mm.

Distribution: Red Sea to Pacific Ocean**.**

4. ***Suberitus carnosus*** (Johnston, 1842)
(Fig. 4)

1842. *Halichondria carnosus*, Johnston.

1941. *Suberitus carnosus*, Rao, p. 426.

1986. *Suberitus carnosus* Thomas, pl.V, fig. 35.

Material examined: 1 ex, sta: Sayalkudi. Date, 24.7.09. Reg. No., Coll. G. Sivaleela & Party.

Description: Sponges are encrusting, colour orange, yellow when alive, ramose or even clathrous. Colour, orange, pale yellow or blue when alive. Consistency fleshy; oscules terminal; circular, slit-like and highly contractile. Skeleton composed of tylostyles in ascending tracts; smaller spicules may be present in the dermal parts in brushes. Spicule type is tylostyles. Size, 0.180-0.576 mm.

Distribution: Cosmopolitan.

5. ***Stellitethya repens*** (Schmidt, 1870)
(Fig. 5)

1870. *Tethya repens*, Schmidt, p.

1924. *Donatia repens*, p. 1036

Material Examined: 1, ex, sta. Pullivasal Island. Date, 25.12.07. Reg. No. S-51., Coll. G. Sivaleela & Party.

Description: Sponge encrusting, surface

nodular. Colour, brick red when alive. Surface hispid and is due to the presence of megascleres projecting partly from the surface. Oscules slit –like and contractile. Surface may lodge silt in large quantities. Cortex well developed. Skeleton in radial bundles terminating at the dermal brushes. Smaller brushes may be present in between the main bundles, espically at the dermal region. Spicule types are tylostyles, spherasters and chiasters. *Spicules*: Tylostyles- slightly curved, 0.266mm, 0.002 mm. Spherasters small with -6 rays. 0.003 mm in diameter.

Distribution: Atlantic ocean, Mediterranean Sea.

6. ***Clathria* (*clathria*)** *gorgonoides* (Dendy, 1916) (Fig. 6)

1916. *Echinodictyum gorgonoides* Dendy, p.

1937. *Echinodictyum gorgonoides*, Burton, p. 31, pl. 4, fig. 25.

Material examined: 5exs, sta, Krusadai island Date 28.12.09. Reg. No. S-50., Coll. G. Sivaleela & Party.

Description: Sponge composed of small branches and growing in one plane as in gorgonoides. Colour brick red when alive, consistency is compressible with good resiliency. Surface is hispid and without oscules .The skeleton composed of primaries and secondaries. *Spicules*: Tornotoxeas- 0.121-0.152x 0.002-0.004 mm. Acathostyles size, 0.088-0.11 x 0.006- 0.012mm

Distribution: Widely distributed in Indian Ocean.

7. ***Echinodictyum clathratum*** Dendy, 1905 (Fig. 7)

1968. *Echinodictyum clathratum* Thomas, p. 246, pl. 1, fig. A, B.

Material examined: 2 exs, sta: Sayalkudi (Tuticorin), 24.7.09. Reg. No. S-49. Coll. G. Sivaleela & Party

Description: Sponge stalked, with foliaceous branches arising from the stalk. Colour dark grey with leathery consistency. Oscules and pores absent. Primaries and secondaries are composed of spicules. *Spicules*: long oxea. Size – 1.7x 0.012mm, small oxea, 0.6 x 0.005 mm, styles size- 3.2 x 0.029 mm, small styles size- 0.89 x 0.004 mm, Acanthostyles, size- 0.1 x 0.006 mm

Distribution: known only in Tuticorin coast (Sayalkudi)

8. ***Desmapsamma anchorata*** (Carter, 1882) (Fig. 8)

1927. *Desmacidon carterianum* Arndt, vol. **25**: 133-158.

1882. *Fibularia anchorata* Carter, 266-301, 346-368, pls XI-XII.

1886. *Desmapsamma reptans* Ridley & Dendy, (5)**18**: 325-351, 470-493.

Material examined: 2 exs, sta: Sayalkudi (Tuticorin). Date, 24.7.09. Reg. No. 48. Coll. G. Sivaleela & Party

Description: Sponge a clathrous mass of slender branches. Oscules on projections or scattered irregularly. Colour of the dermal part pale white and interior, orange when alive. Consistency, compressible when alive but highly friable on drying. Dermal skeleton is formed of oxeas, microscleres and arenaceous objects. Types of spicules are oxeas, sigmas and isochelas.

Distribution: Australian region.

9. ***Auletta elongata*** (Dendy, 1905) (Fig. 9)

1905. *Auletta elongate* Dendy, p. 195, pl. 13, fig. 7.

1937. *Acanthella elongate* burton, p. 37, pl. 7, fig. 42.

Material examined: 4 exs, sta: Single Island. Date, 29.12.07. Reg. No.,S-17. Coll. G. Sivaleela & Party.

Description: Sponges erect stipitate and tubular structure. Surface is minutely hispid and leathery appearance. Oscules present on the surface texture- compressible and resilient. Colour yellowish grey in the spirit. Skeleton composed of stout longitudinal fibres with plumose columns. Spicules styles size, 0.58 x0.02 mm. Oxeas– 0.38 mm. Strongyles- 0.089. mm.

Distribution: Gulf of Mannar, Bay of Bengal.

10. ***Axinella durissima*** (Dendy, 1905)
(Fig. 10)

1986. *Axinella durissima,* p. 187, pl. 12, fig. 5

Material examined: 16 exs, sta: Mandapam, vedalai, Single island. Date, 26.12.07, 28.12.07. Reg. No., Coll. G. Sivaleela & Party.

Description: Sponge is massive and vertically elongated. Colour is orange when alive. Surface even, oscules numerous, compound. Main skeleton composed of megascleres. *Spicules*: Oxeas, size, 0.397 x 0.024 mm. Styles size-0.95 x 0.02 mm.

Distribuition: Widely distributed in Indian Ocean**.**

11. ***Axinella donnani*** (Bowerbank, 1873)
(Fig. 11)

1873. *Isodictya donnani*, Bowerbank, p. 28, pl. 6.

1886. *Axinella donnani*, Thomas, pl. IV, fig. 23.

Material examined: 3 exs, sta.: Manauliputti island, Tuticorin Date 25.12.09. Reg. No. S-29. Coll. G. Sivaleela & Party.

Description: Sponge lamellar, lamellae branched and anastomosing or cup shaped. Surface minutely hispid. Colour is yellow or orange when alive and with tough texture. Oscules are arranged in groups, often in a radiating pattern, pores scattered. Fibres are cored and echinated with styles. Spicule types are styles and oxeas. *Spicules*: Styles, 0.137- 0.024 mm. Oxeas, size-0.12-0.002 mm.

Distribution: Indian Ocean.

12. ***Axinella halichondroides*** Dendy, 1905
(Fig. 12)

1905. *Axinella halichondroides,* p. 190, pl. 12, fig. 1.

Material examined: 4 exs, sta: Mandapam. Date, 23.12.07. Reg. No., S-46. Coll. G. Sivaleela & Party

Description: Sponge is encrusting with monticular elevations. Colour light brown. Consistency firm and compact. Oscules at the tip of elevated structures. Surface conulose. Sckeleton is plumose arrangement. *Spicules*: Oxeas, size, 0.118 x 0.01 mm.

Distribuition: Gulf of Mannar.

13. ***Axinella manus*** Dendy, 1905
(Fig. 13)

1905. *Axinella manus,* p. 188, pl. 12, fig. 8.

Material examined: 2 exs, sta. Sayalkudi (Tuticorin).Coll. Date, 24.7.09. Reg. No. S-35. Coll. G. Sivaleela & Party

Description: Sponge is erect and palmately branched. Tips of branches conical and curved inwards.stalk cylindrical and branches flattened. Colour is light gray, tough, compressible and resilient. Surface granular and conulose. Oscules are small. Skeleton consists of spicules and plumosely arranged. *Spicules*: styles, size, 0.295 x 0.016 mm. Oxeas. Size 0.116 x 0.002 mm.

Distribuition: Gulf of Mannar.

14. ***Bubaris vermiculata*** (Bowerbank, 1866)
(Fig. 14)

1880. *Hymerhaphia vermiculata var.erecta* Carter, p. 46.

Material examined: 3 exs, sta.: Pullivasal Island, Date…25.12.09. Reg. No., S-29. Coll. G. Sivaleela & Party.

Description: Sponge is encrusting, erect, and composed of a number of vermicular strongyles rising vertically. Surface hispid, colour grayish yellow. Oscules are not visible. Skeleton consists of strongyles, styles. *Spicules*: Strongyles, smooth, 0.245 – 0.001 mm, styles, 0.012 – 0.0013 to 0.014-0.03

Distribuition: Atlantic Ocean.

15. ***Callyspongia clathrata*** (Dendy, 1905)
(Fig. 15)

1937. *Callyspongia spinosissima,* p. 21.

Material examined: 12 exs, sta, Pullivasal island. Date, 25.12.07. Reg. No. S-45. Coll. G. Sivaleela & Party

Description: Sponge is erect, composed of cylindrical branches. Colour yellowish brown. Oscules are scattered. The main skeleton is coarse and irregular. *Spicules*: oxeas, size, 0.0116mm X 0.002-0.001 mm.

Distribuition: Indian ocean.

16. ***Callyspongia* (*cladochalina) diffusa***
(Ridley, 1884)
(Fig. 16)

1937. *Callyspongia diffusa*, Burton, p. 20.

Material examined: 12 exs, sta, Pullivasal Island. Date, 25.12.07, Reg. No. S-40, Coll. G. Sivaleela & Party

Description: Sponges are erect, tubular, flabellate or repent. Consistency compressible with good resiliency. colour is purple. Oscules and pores are minute. Surface is hispid due to hispidity. Connectives are multispicular. *Spicules*: Oxeas Size-0.045-0.109 X 0.002-0.004 mm

Distribuition: Indo-Pacific.

17. ***Callyspongia* (*cladochalina) spinosissima***
(Dendy, 1887)
(Fig. 17)

1905**.** *pachychalina subcylindrica* Dendy, p. 148, pl. 10, fig. 1, 2.

1887. *Callyspongia spinosissima* Thomas, pl. II, fig. 15.

Material examined: 12 exs, sta, Mandapam. Date, 23.12.07, Reg. No. S-6, Coll. G. Sivaleela & Party.

Description: Sponges composed of angular branches of acculeation. Dermal skeleton of a well developed fibres in the tertiary level. The main skeleton is composed of primaries and connectives. *Spicules*: Oxeas, size-0.012 x 0.002 mm.

Distribuition: Indian Ocean.

18. ***Haliclona pigmentifera*** (Dendy, 1905)
(Fig. 18)

1937. *Adocia pigmentifera*, p. 19, pl. 1, fig. 8.

Material examined: 12 exs, sta, Pullivasal island. Date, 25.12.07, Reg. No. S-41 Coll. G. Sivaleela & Party.

Description: Sponge is pyriform. Skeleton is isodictyal pattern. Fibres are rarely present. Colour is dark green. *Spicules*: Oxeas, size, 0.112 X 0.003 mm.

Distribuition: Red Sea.

19. ***Haliclona* (*Gellius*) *fibulata***
(Schmidt, 1862).
(Fig. 19)

1880. *Reniera fibulifera,* p. 48.

Material examined: 5 exs, sta. Ervadi, Poomarichan island and Mandapam, Date: 23.12.07, 25.12.07, 22.12.07. Reg. No. 1, Coll. G. Sivaleela & Party.

Description: Sponge is *Callyspongia* appearance. branches are clathrous structure**.** colour is dark green due to alga. Consistency hard and slightly compressible. Oscules scattered. Pores minute. The main skeleton consists of spicules. *Spicules*: Oxeas, size. 0.0012-.0.21 x 0.001- 0.003 mm. Sigmas. often notch at the centre. Size is 0.001 mm.

Distribuition: North Atlantic Ocean, Mediterranean sea, Indo–Australian.

20. ***Sigmadocia petrosioides*** (Dendy)
(Fig. 20)

1905. *Gelliodes petrosioides*, Dendy, p. 138. pl. 9, fig. 3.

1886. *Sigmadocia petrosioides*, pl. II, fig. 3.

Material examined: 6 exs, sta, Mandapam. Date, 22.12.07. Reg. No., S-2, Coll. G. Sivaleela & Party.

Description: Sponge surface is hispid due to more no of spicules. Meshes are triangular. Main skeleton is composed of oxeas and sigmas. Texture is hard. Oscules and pores are scattered.

Distribution: Indian Ocean.

21. ***Gelliodes pumila*** (Lendenfeld, 1887)
(Fig. 21)

1934. ***Adocia pumila*** Burton, p. 537, pl1, figs. 1-9.

Material examined: 6 exs, sta, Mandapam, Date, 22.12.07. Reg. No., S-19. Coll. G. Sivaleela & Party.

Description: Body finger shaped,with a oscule. Colour is pale grey.consistency is tough; slightly compressible.oscule terminal diameter 6 mm. Dermal skeleton is polygonal. spicules: Oxeas. Slightly curved, size 0.11-0.211 x 0.002-0.013. sigmas chord length; 0.012-0.18 mm.

Distribution: Indian Ocean, Australian region.

22. ***Oceanapia sagittaria*** (Sollas, 1902)
(Fig. 22)

1986, *Orina sagittaria*, Thomas, pl. II, fig. 6.

Material examined: 5 exs, sta, Tuticorin, Date 24.7.09., Reg. No. S-3. Coll. G. Sivaleela & Party.

Description: Sponge is spherical with fistules, basal and fistules are attached to the substratum colour pale gray externally when alive. Consistency, hard but friable on drying. Osculesat the tip of fistules, pores are irregular in outline. *Spicules*: Oxeas, size. 0.167-0.210 X 0.011 mm. Sigmas- Notch at the centre- 0.012-0.129 X 0.001 mm.

Distribuition: Indo-Pacific.

23. ***Ircinia fusca*** (Carter, 1880)
(Fig. 23)

1986. *Ircinia fusca* Thomas, pl. I, fig. 6.

1880. *Hircinia fusca* Carter, p. 36.

Material examined: 5 exs, sta, Tuticorin, Date 24.7.09., Reg. No., S-3. Coll. G. Sivaleela & Party.

Description: Sponge surface is conulose .Colour is dark brown and pale yellow internally. Texture is leathery. Dermal region contain sand particles. This species having long, spherical filaments with oblong heads diameter upto 0.009 mm.

Distribuition: Indo-Pacific region.

24. ***Fasciospongia cavernosa*** (Schmidt, 1862)
(Fig. 24)

1986. *Fasciospongia cavernosa*, Thomas, pl. I, fig. 13.

1948. *Fasciospongia cavernosa,* p. 119.

Material examined: 7 exs, sta, Mandapam, Ervadi, Vedalai, Thondi, Single island, Krusadi and Pullivasal island Date. 23.12.07, 25.12.07, 28.12.07, 29.12.07, 28.12.07, 25.12.07., Reg. No., S-15. Coll. G. Sivaleela & Party.

Description: Sponge is thickly encrusting, fistular, colour is yellow. Texture is hard and incompressible. Oscules are scattered. Surface is conulose.

Distribuition: Mediterranean Sea, Red sea, Indo-Australian.

25. ***Fasciospongia anomala*** (Dendy, 1905)
(Fig. 25)

1948. *Fasciospongia anomala,* p. 120.

Material examined: 7 exs, sta, Tuticorin, Date, 24.7.09, Reg. No., S-42. Coll. G. Sivaleela & Party.

Description: Sponge texture is firm and compressible. Surface is composed of sand grains. Skeleton is irregular which is inseparable into primaries & secondaries

Distribution: Gulf of Mannar.

26. ***Hyattella intestinalis*** (Lamarck, 1814)
(Fig. 26)

1948. *Hyattella intestinalis*, p. 41, pl. 6, fig. 13.

Material examined: 10 exs, sta. Mandapam, Vedalai, Single Island, Adiaman beach and Manuali island Date. 23.12.07, 28.12.07, 29.12.07, 24.12.07. Reg. No. S-39. Coll. G. Sivaleela & Party.

Description: Sponge is minutely conulose. Oscules terminal. Texture hard with poor resiliency.

Distribuition: Atlantic Ocean, Mediterranean Sea, Indian Ocean.

27. ***Spongia* (*Spongia*) *hispida*** Lamarck, 1814
(Fig. 27)

1905. *Euspongia tenuiramosa,* p. 213.

Material examined: 2 exs, sta, Manauli Island. Date, 27.12.07. Reg. No. S-8. Coll. G. Sivaleela & Party.

Description: Body is ramose with angular to nodose branches, surface conulose. colour is purplish brown to black. Texture compressible with good resiliency. Skeleton consists of quadrangular network of sponging fibres.

Distribuition: Indo-Audtralian

28. ***Phyllospongia papyracea*** (Esper) ssp. polyphylla de Laubenfel
(Fig. 28)

1948. *Phyllospongia papyracea* (Esper) ssp. P*olyphyll*a, p. 47, pl. 9, fig. 8.

Material examined: 2 exs, sta. Pullivasal island, Date, 25.12.07. Reg. No. S-13 & S-43. Coll. G. Sivaleela & Party.

Description: Sponge is cup shaped. Branches with lobed margins. Wall of the branch is dark brown when alive. Texture is leathery. Skeleton is consists of spongin fibres. Primaries contain sand grain.

Distribuition: Gulf of Mannar

29. ***Dysidea fragilis*** (Mantagu, 1818)
(Fig. 29)

1986. *Dysidea fragilis,* Thomas, p. 1, fig. 15.

Material examined: 6 exs, sta, Manauli island, Thondi. Date, 27.12.07., Reg. No. S-34, Coll. G. Sivaleela & Party.

Description: Sponge is encrusting and digitate. colour is green to yellow. Consistency is friable. surface is conulose, conules with blunt tips. oscules are terminal on digitate forms. Pores are minute.

Distribuition: cosmopolitan.

30. ***Lamello*dysidea herbacea** (keller, 1889) (Fig. 30)

1941. *Dysidea herbacea*, p. 464, pl. 13, fig. 10.

Material examined: 6 exs, sta, Manauli Island. Date, 27.12.07. Reg. No. S-44. Coll. G. Sivaleela & Party.

Description: Sponge shape is finger or petaloid branches. Oscules are slit–like and contractile. Skeleton composed of primaries and connectives.

Description: Red sea to Pacific Ocean.

SUMMARY

From the present collections from the Gulf of Mannar a total of 72 exs of sponges were collected and identified as belonging to 30 species under 11 families and 19 genera. In the 7 islands surveyed species richness were found to be high in Mandapam area. All species reported belong to the Class Demospongiae of which the dominant species are the two species of boring sponges namely *Cliona lobata* and *Cliona quadrata* followed by the 28 non-boring species *Cliona lobata* and *Hyattella cribricutis* are abundant in Pullivsal island, whereas *Sigmadocia pumila*, *Callyspongia spinosissima Dysidea fragilis* and *Dysidea herbacea* were more in Manauli island, Sayalkudi (Tuticorin) and Krusadai islands. *Fasciospongia cavernosa* was abundant in Ervadi, Mandapam and Vedalai areas. The genera *Axinella* is more in Tuticorin group of islands. The genera common in all the islands and coastal areas were *Fasciospongia*, *Callyspongia, Sigmadocia, Axinella Hyattella, Dysidea* in their order of abundance.

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PLATE-1

Fig. 1. *Cliothosa quadrata*

Fig. 2. *Cliona lobata*

Fig. 3. *Speciospongia inconstans*

Fig. 4. *Suberitus carnosus*

Fig. 5. *Stellitethya repens*

Fig. 6. *Clathria (clathria) gorgonoides*

Fig. 7. *Echinodictyum clathratum*

Fig. 8. *Desmapsamma anchorata*

PLATE-2

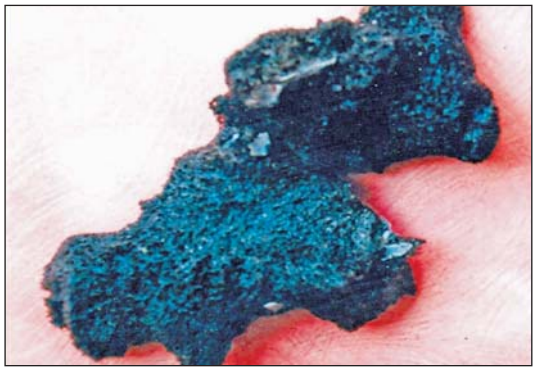

Fig. 9. *Auletta elongata*

Fig. 10. *Axinella durissima*

Fig. 11. *Axinella donnani*

Fig. 12. *Axinella halichondroides*

Fig. 13. *Axinella manus*

Fig. 14. *Bubaris vermiculata*

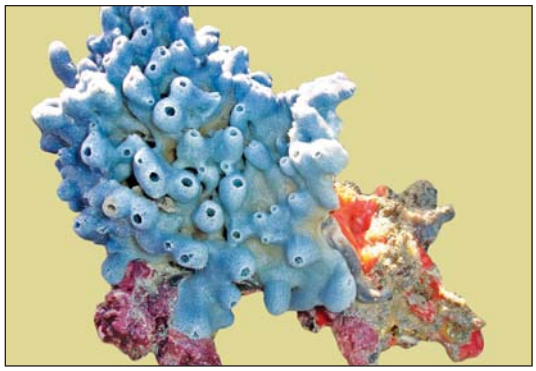

Fig. 15. *Callyspongia clathrata*

Fig. 16. *Callyspongia (cladochalina) diffusa*

PLATE-3

Fig. 17. *Callyspongia (cladochalina) spinosissima*

Fig. 18. *Haliclonma pigmentifera*

Fig. 19. *Haliclona (Gellius) fibulata*

Fig. 20. *Sigmadocia petrosioides*

Fig. 21. *Gelliodes pumila*

Fig. 22. *Oceanapia sagittaria*

Fig. 23. *Ircinia fusca*

Fig. 24. *Fasciospongia cavernosa*

PLATE-4

Fig. 25. *Fasciospongia anomala*

Fig. 26. *Hyattella intestinalis*

Fig. 27. *Spongia (spongia) hispida*

Fig. 28. *Phyllospongia papyracea*

Fig. 29. *Dysidea fragilis*

Fig. 30. *Lamello dysidea herbacea*

PLATE-5

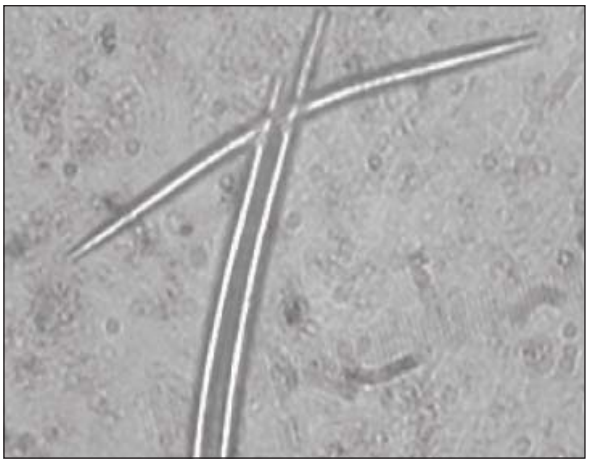

Fig. 31. *Haliclona pigmentifera*

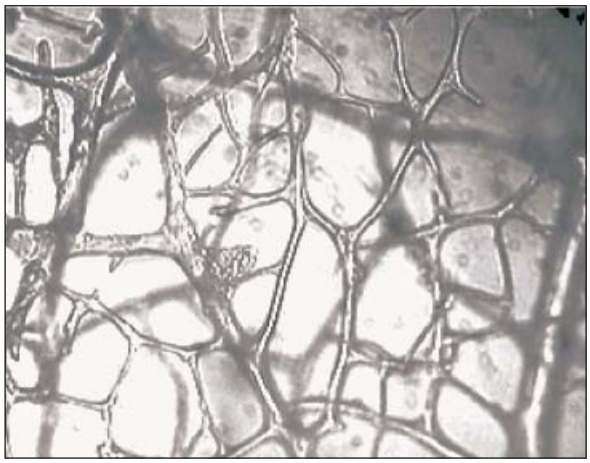

Fig. 32. *Dysidea fragilis*

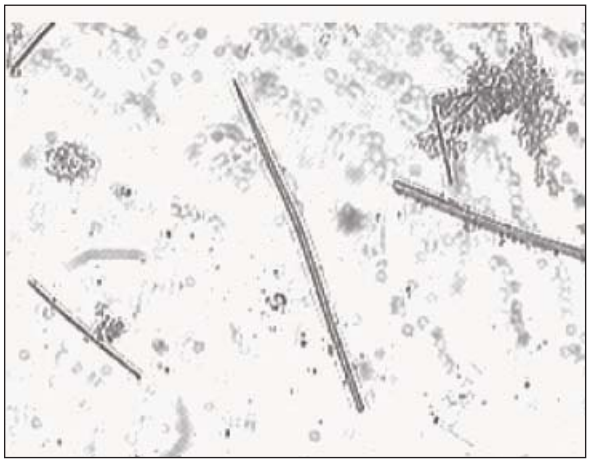

Fig. 33. *C.spinosissima*

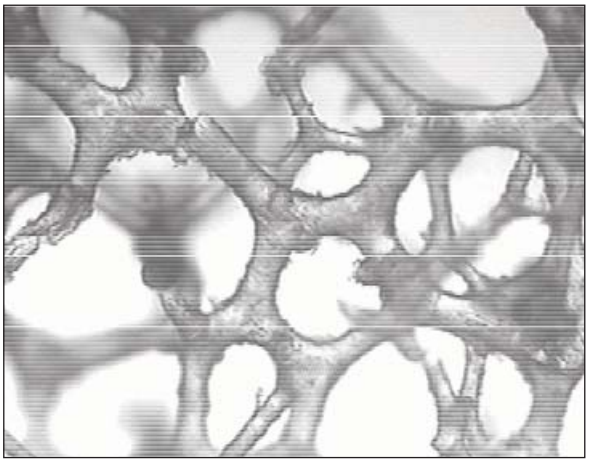

Fig. 34. *Hyattella cribriformis*

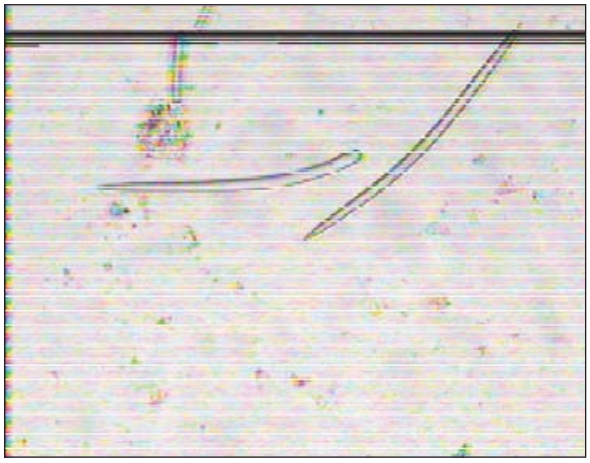

Fig. 35. *Acanthella elongate*

Fig. 36. *Axinella durisissima*

PLATE-6

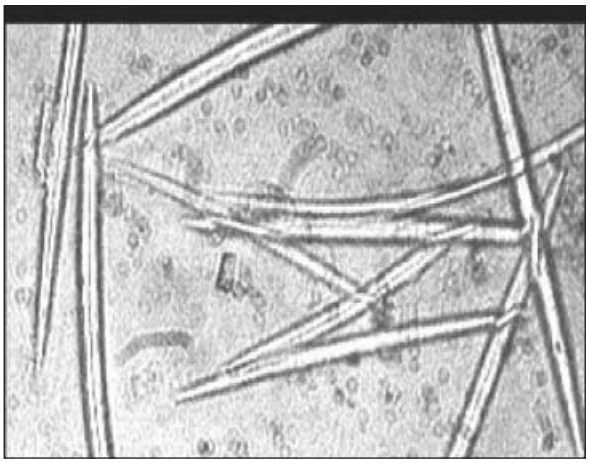

Fig. 37. *Callyspongia clathrata*

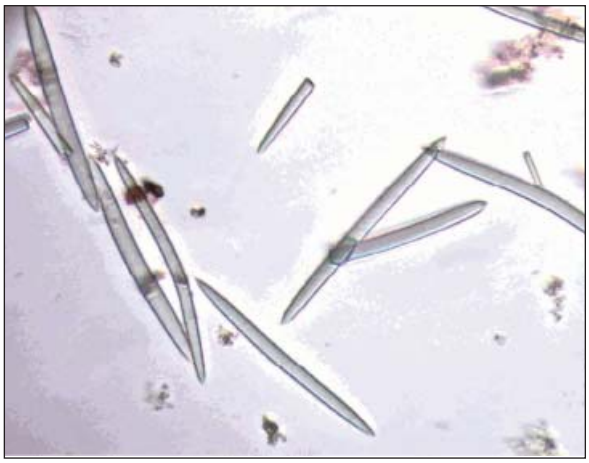

Fig. 38. *Callyspongia diffusa*

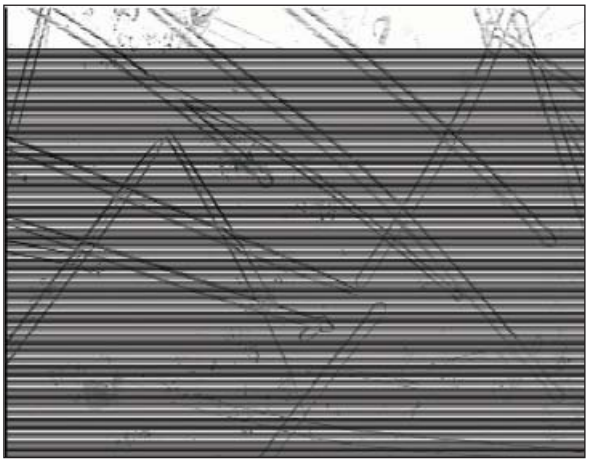

Fig. 39. *Cliona lobata*

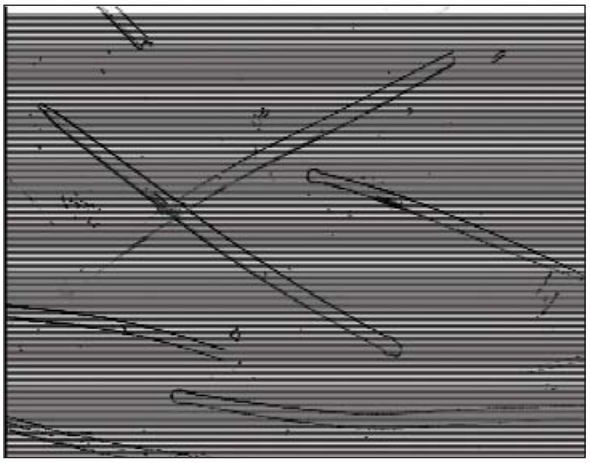

Fig. 40. *Cliona quadrata*

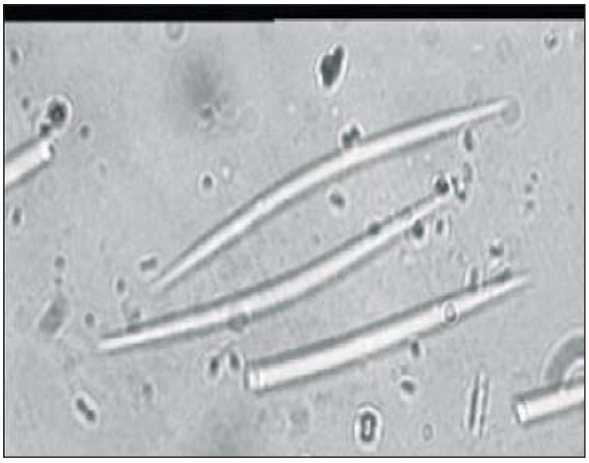

Fig. 41. *Oceanapia sagittaria*

Fig. 42. *Sigmadocia petrosioides*

PLATE-7

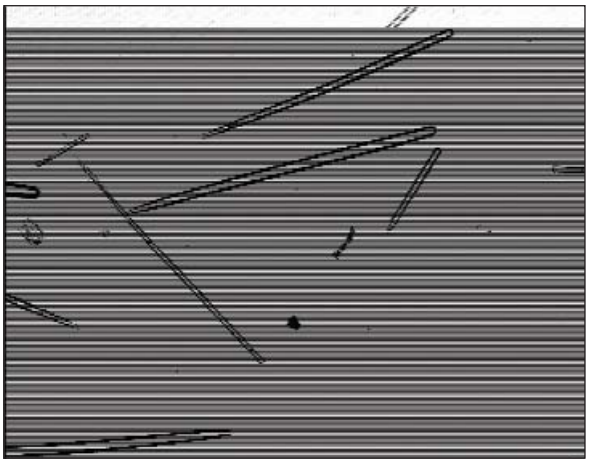

Fig. 43. *Echinodictyum clathrata*

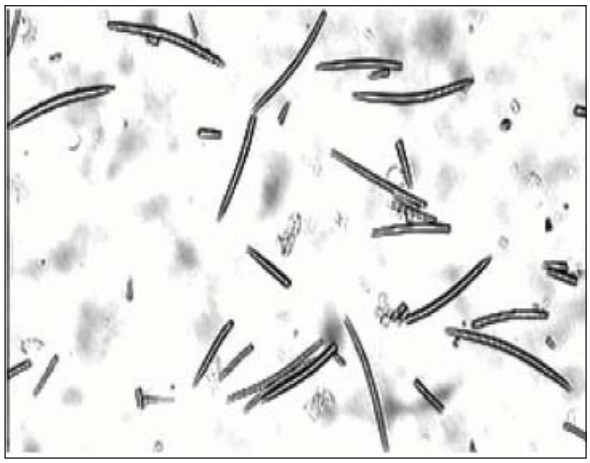

Fig. 44. *Sigmadocia pumila*

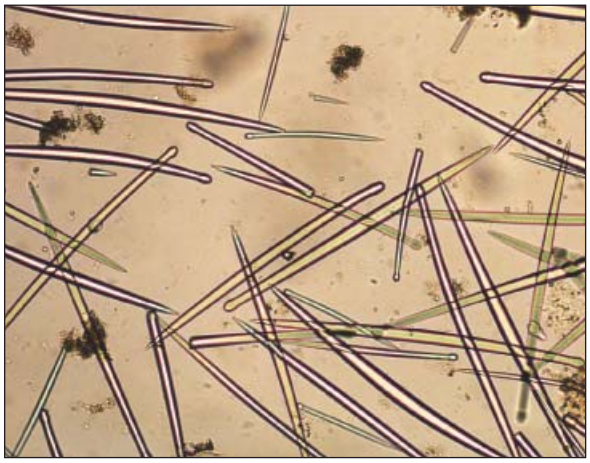

Fig. 45. *Spirastrella inconstans*

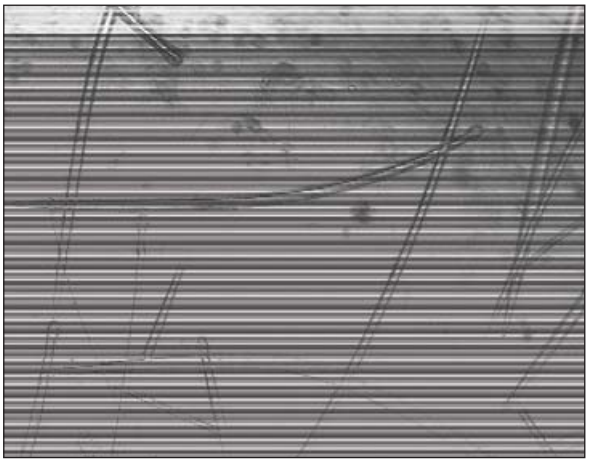

Fig. 46. *Suberitus carnosus*

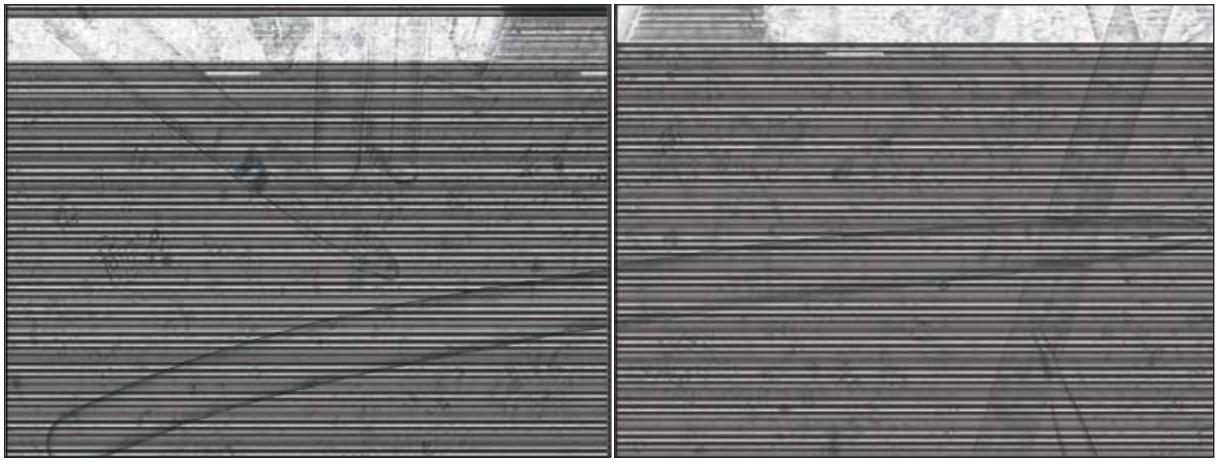

Fig. 47. *Axinella donnani*

PLATE-8

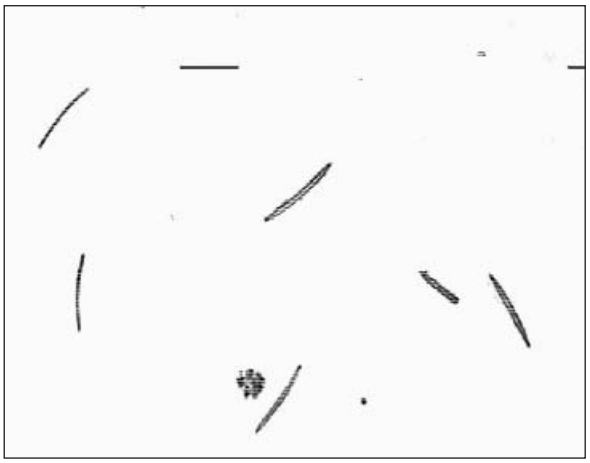

Fig. 49. *Callyspongia diffusa*

Fig. 50. *Desmapsamma anchorata*

Fig. 51. *Ircinia fusca*