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BRYOZOANS OF GULF OF MANNAR MARINE BIOSPHERE RESERVE, SOUTHEAST COAST OF INDIA

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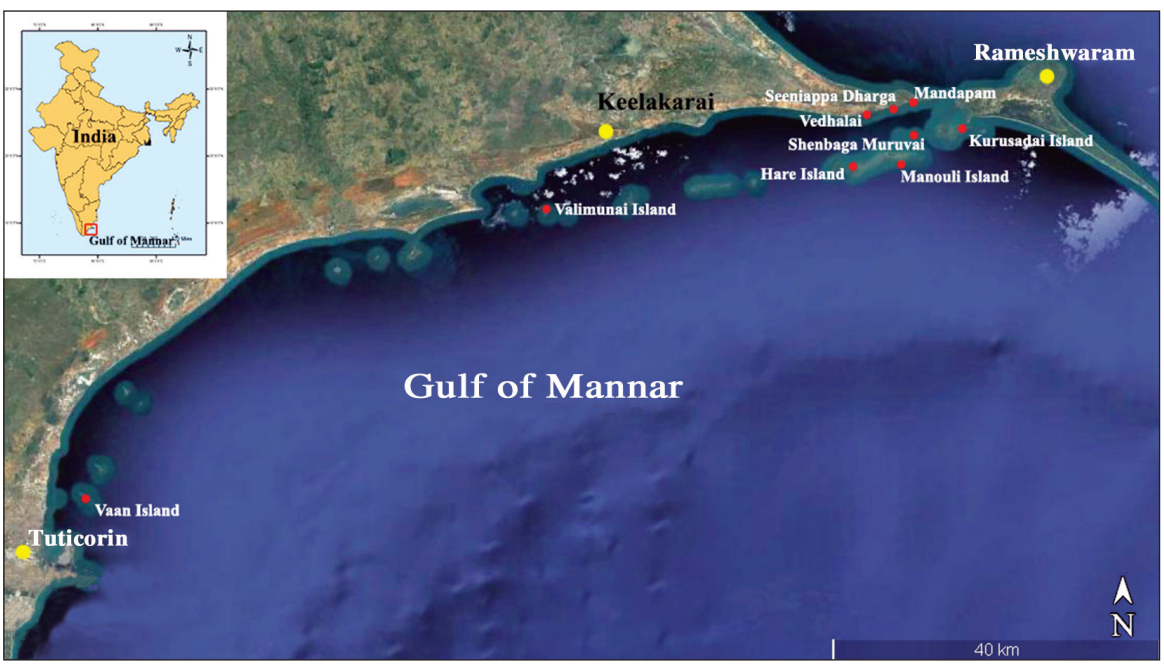
INTRODUCTION

Bryozoans are widely distributed taxa. They are colonial invertebrates, filter feeding and normally found adhered to a substratum as encrusting or erect forms. These are aquatic animals inhabiting both fresh and marine waters. Bryozoans are found commonly in high diversities and greater abundance in most of the shallow water regions worldwide (Gordon, 1986). These are also one of the commonest fowlers found be attached to ship hulls and other substrates which is submerged in water including floating buoys and nets etc. (Tilbrook, 2006).

The circumscribed, bryozoa includes three classes, four orders, 187 families, 808 genera and 5869 species of which the class Gymnolaemata itself contributes about 5240 species (Ctenostomata 319 species, Cheilostomata 4921 species) (Bock and Gordon, 2013). The Class Gymnolaemata is mostly marine. They act as one of the important source of food and even shelter in several marine ecosystems. In India there has been no extensive study made. The most important contributions are by Menon (1967) dealing with bryozoa from selected localities along the southwest and southeast coasts enumerating bryozoan diversity and their substrate preferences and another by Rao (1975) from the north Andhra coast.



Map showing sampling areas in Gulf of Mannar

The notable works on bryozoan of India are by; Thornely, 1905, 1907, 1916; Robertson, 1921; Daniel, 1954; Ganapathi and Rao, 1968; 1969; Pillai and Santhakumaran, 1972; Rao and Ganapati, 1972 a,b; 1975; 1978; 1980, Pillai, 1978; 1981; Joseph, 1978; Swami and Karande, 1987, 1994; Rao *et.al.,* 1984; Nair, 1989, 1991; Raveendran *et.al.,* 1990, Geetha, 1994; Chapgar and Sane, 1996; Nowshad, 1998; Menon and Menon, 2006; Soja, 2006; Soja and Menon, 2005, 2008, 2009; Swami and Udhayakumar, 2010; Goankar *et.al,* 2010; Mankeshwar *et al.,* 2015; The present study reports an account of the bryozoans collected over a period of three years (April 2012- March 2015).

STUDY AREA

Gulf of Mannar Marine Biosphere Reserve

Gulf of Mannar Marine Biosphere Reserve extends to a distance of 140 km from Rameswaram island to Tuticorin and lies between 8°45´N - 9°25´N and 78°5´E-79°30´E. There are 21 islands running almost parallel to the coastline located between 8°47´ N - 9°15´N and 78°12´E - 79°14´ E. These islands are situated at an average distance of about 8 km from the coastline of Gulf of Mannar. It is endowed with three distinct ecosystems namely corals, sea grass and mangroves.

MATERIAL AND METHODS

Sampling of bryozoans was carried out in intertidal region to the depth of 5m in the reef areas by Suba diving and snorkeling. In addition specimens were also collected from exposed rocks, floating objects, boat hull etc.

The specimens were scraped off the substratum using a surgical blade. The scraped specimens was soaked with Sodium hypochlorite (0.5%) for four to eight hours to remove organic tissue then rinsed with water and dried. For identification, colonies were observed under Leica microscope while zooecial dimensions were recorded by means of Scanning Electron Microscope (SEM) technology. The specimens were deposited in the National Zoological Collection of Marine Biology Regional Centre, Zoological Survey of India, Chennai. The collected bryozoan species were identified to the possible lowest taxonomic level by following Menon and Menon (2006) and Tilbrook (2006).

RESULTS AND DISCUSSION

In India, a total of 257 species belonging to 63 families of Gymnolaemates has been identified by various researchers so far. A total of 30 species of bryozoans belonging to 19 families were collected and identified from Gulf of Mannar Marine Biosphere Reserve which is mostly attached with dead coral rocks (Table 1). Of which eight species were recorded for the first time in Indian coastal waters. The bryozoans are listed below in taxonomic order. For each species, information on locality, substratum, description and distribution is given. It has also been observed from the available literature, there are 131 species of bryozoans were recorded from the East coast of India. Of which 73 species were recorded from the Tamil Nadu part (Shrinivaasu *et al.,* 2015). There are 33 species were recorded in Gulf of Mannar region which was collected during 1966 and 1967 (Menon, 1967). Of which, only four species namely *Synnotumae gyptiacum*, *Rhynchozoon larreyi*, *Hippodina feegeensis* and *Thalamoporella hamata* were recorded during the present study. It might be due to seasonality related to environmental conditions. Hence more research should be focused on reef areas to throw more light on the bryozoan diversity in India.

Order CHEILOSTOMATIDA (Busk, 1852)

Family MEMBRANIPORIDAE Busk, 1852

1. ***Biflustra savartii*** (Audouin, 1826)

(Fig. 1)

Reg. no. MBRC/BRY/ 02

Locality: Hare Island (9°12´9.09´´N, 79° 5´1.88´´E).

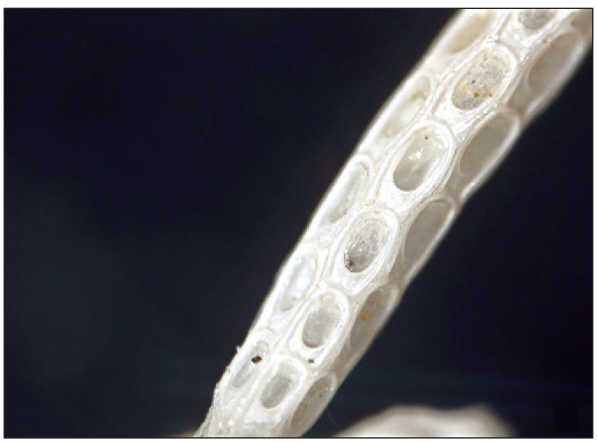


Fig. 1. *Biflustra savartii* (Audouin, 1826)

Substratum: Dead coral rubble.

Description: Colony encrusting or erect, unilaminar or bilaminar. Distinct autozooids mostly quadrangular arranged in regular longitudinal rows and separated by fine grooves. Frontal membrane covers whole of frontal area. Gymnocyst is absent. Cryptocyst is thick, surface granular with lateral edges bearing small denticles. Opesia deep, more or less flat and oval divided into two lateral compartments proximally with a median proximal process varying in size and serrated at its free edge.

Previous records from India: Manglore (Thornley, 1907).

Distribution: Red Sea, Zanzibar, Sri Lanka, Philippines, New Guinea, Australia, California, Atlantic Morocco, Brazil, Puerto Rico, Japan and China (Liu, 1992).

2. ***Jellyella tuberculata*** (Bosc, 1802)

(Fig. 2)

Reg. no. MBRC/BRY/ 19

Locality: Kurusadai Island (9°14'50.11"N, 79°13'8.67"E).

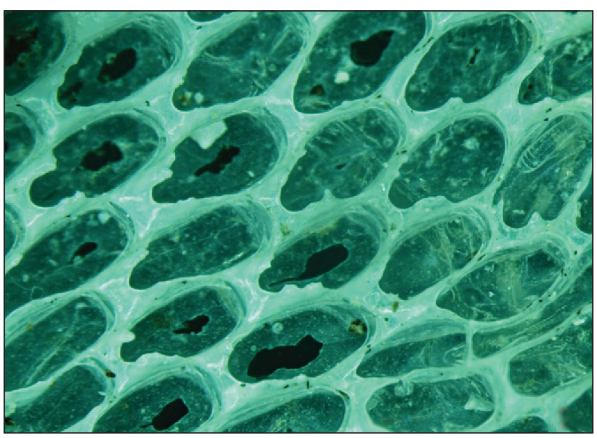


Fig. 2. *Jellyella tuberculata* (Bosc, 1802)

Substratum: Floating plastic and rubber debris.

Description: Colony encrusting, white, forming a unilaminar sheet on the substratum. Autozooids are oblong, arranged in quincuncial series, distinct, and separated by grooves, basal wall uncalcified. Mural rim raised and smooth on its edge. Frontal membrane large. Operculum not quite distal. A pair of strong, rounded tubercles present at the proximal end of each autozooid. Cryptocyst developed distally and proximally, tuberculated on its surface and serrated on its inner border with small branched spinules. Gymnocyst on the proximal part with a pair of globose tubercules.

Previous records from India: Orrisa, N.E. India (Robertson, 1908).

Distribution: Indian Ocean; Pacific Ocean: from Indonesia to China and Japan, from Peru,Galapagos Islands to California and Vancouver; Atlantic Ocean: from Patagonia to North America, Azores, Madeira, and African coast, Europe from Spain to Norway (Liu, 1992).

Family STEGINOPORELLIDAE Hincks, 1884

3. ***Steginoporella magnilabris*** (Busk, 1854)

(Fig. 3)

Reg. no. MBRC/BRY/15 & 32

Locality: Vedhalai (9°15´47.81´´N, 79°6´ 8.83´´E).

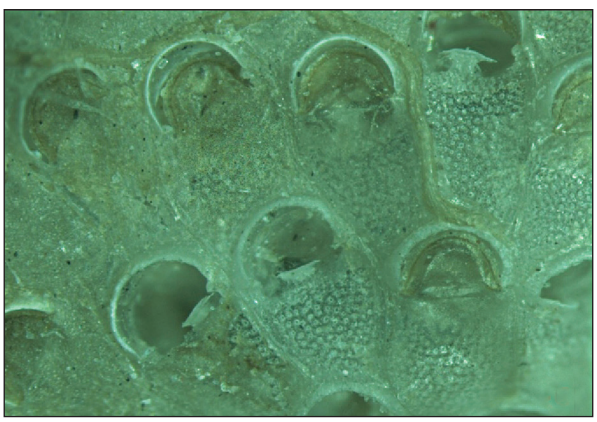


Fig. 3. *Steginoporella magnilabris* (Busk, 1854)

Substratum: Dead coral rubble and gorgonians.

Description: Colony encrusting, forming flat sheets. Autozooids usually large, has raised granular proximal margins with a distinct round distal rim and straight or concave proximally separating the zooecium from the succeeding one. Autozooids are dimorphic with smaller 'A' type zooids and larger 'B' type zooids, which are commonly interspersed. Frontal area covered by thick, opaque membrane, bordered by a raised crenulated mural rim. Cryptocyst is occupying about half the total length of autozooid; central portion is flat, smooth and with numerous fine

perforations. Rounded polypide tube is situated in the centre. Distal edge of the frontal cryptocyst is immediately above the polypide tube, strongly flared as a concave and deeply cupped process with a large pair of robust, marginal flanges. Gymnocyst is prominent and smooth, ending at lateral opercular condyles, below which is a broad "oral shelf. Ovicells are absent.

Previous records from India: Bay of Bengal, Andamans, Ceylon and Burma (Robertson, 1921).

Distribution: Atlantic Ocean, off Brazil, Caribbean Sea, Sierra Leone and Ghana, and the Indo-Pacific, from South Africa and Sri Lanka to Indonesia, Torres Strait and the Queensland coast of Australia. In the Solomon Islands only a single colony was found from Taora Pas-sage between Choiseul, Vealaviru and Solomon Islands (Tilbrook, 2006).

4. ***Steginoporella buskii*** Harmer, 1900

(Fig. 4)

Reg. no. MBRC/BRY/ 16

Locality: Vedhalai.

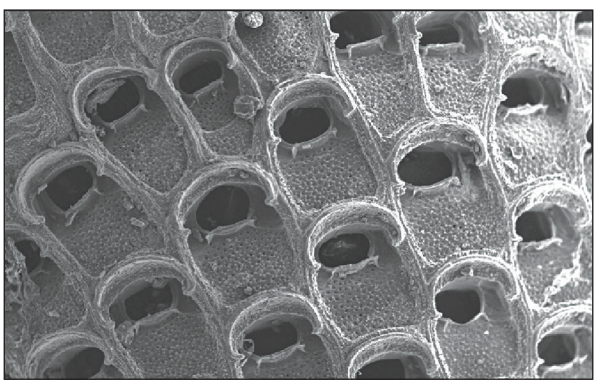


Fig. 4. *Steginoporella buskii* Harmer, 1900

Substratum: Dead coral rubble and gorgonians.

Description: Colony is encrusting, forming flat sheets. Autozooids usually large, rounded distally, concave proximally and distinct. Frontal area is covered by thick, opaque membrane, greenish-coloured, bordered by a thin, raised, mural rim. Autozooids are dimorphic. The A-zooids squarish to rectangular in shape with semicircular operculum, as wide as zooid, less than half as long, crescentic sclerite and a submarginal series of small teeth on inner surface. B-zooids are with larger, wider operculum, as wide as zooid, wishbone-shaped sclerite and a submarginal series of small teeth on inner surface. Gymnocyst barely visible as a smooth, raised distal margin surrounding and supporting operculum, ending at lateral opercular condyles. Cryptocyst are provided with pores sometimes numerous at the region where it ascends, the marginal descending portion is smooth. Polypide tube is rounded, placed centrally and vertically, visible in frontal view. Distal edge of frontal cryptocyst, immediately above the polypide tube, slightly flared as a slightly concave process with a small pair of rather gracile, marginal flanges. The semicircular operculum covers almost the entire distal portion of the zooecia.

Previous records from India: Calicut and Goa, West Coast of India (Soja, 2006).

Distribution: Gulf of Guinea, Guinea, Ceylon, Indonesia, Torres Strait (Harmer, 1926); Arabia, South Africa, Australia, Caribbean, Brazil (Cook, 1964), Arabian Sea (Soja and Menon, 2005).

Family QUADRICELLARIIDAE
Gordon, 1984

5. ***Nellia oculata*** Busk, 1852

(Fig. 5)

Reg. no. MBRC/BRY/ 03

Locality: Hare Island.

Substratum: Dead coral rubble and plastic debris.

Fig. 5. *Nellia oculata* Busk, 1852

Description: Colony is erect, delicate, variously branching reaching upto lengths of 5cm and with

rootlets anchoring to a substratum. Internodes are distally greater in length and tapering proximally, square sectioned usually four or five autozooids on each face with alternating back-to-back pairs, dividing dichotomously with nodes consisting of slender cuticular tubes. Autozooids elongate, distal region of the preceding autozooid overarches the proximal portion of the succeeding one. Operculum large and occupies the distal region. Well-developed gymnocyst produces a raised mural rim giving the autozooid the shape of a boat. Cryptocyst is smooth, better developed proximally than laterally. Two raised adventitious avicularia positioned frontally on large proximal area of gymnocyst. Ovicells are not evident.

Previous records from India: Andaman Island (Thornely, 1907); Laccadives (Robertson, 1921); Off Cochin (Menon and Menon, 2006).

Distribution: Florida (Smitt, 1873); Tortugas Island (Osburn, 1914); Crozet Island, Heard Island (Busk, 1852); Aru Island, Saleyar, Seget, Timer (Harmer, 1926); Victoria (Mac Gillivray, 1880); Queensland (Haswell, 1880); Philippines (Busk, 1884); Siboga stations in the Indo-Australian Archipelago (Harmer, 1926); Ceylon (Thornely, 1905).

Family CANDIDAE d'Orbigny, 1851

6. ***Paralicornia obtecta*** (Haswell, 1880)

(Fig. 6)

Reg. no. MBRC/BRY/ 38

Locality: Vedhalai.

Substratum: Gorgonids.

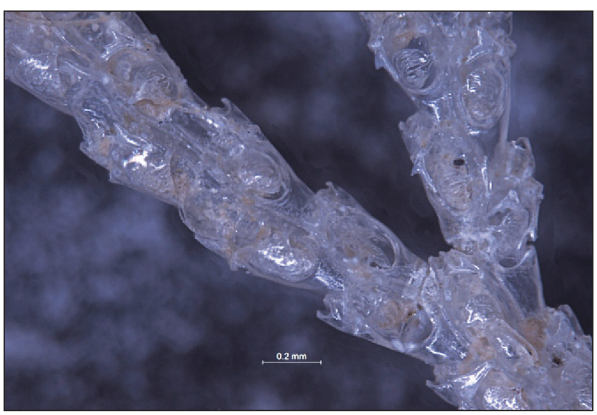


Fig. 6. *Paralicornia obtecta* (Haswell, 1880)

Description: Colony is erect, branching usually dichotomous but sometimes it tend to vary in basal branches. The internodes are with moderate length containing 4-6 zooids. Autozooids are stout and closely set, not much elongated, narrowed at the proximal end, with the outer boarders nearly straight and the distal half occupied by high raised oval opesia. Cryptocyst slightly developed and extends uniformly throughout. Spines usually three external and two internal, the second outer spine are strong and long overreaching the distal region of opesia covering the opesia and proximal region of the ovicells, the others much weaker, and all are jointed at a little distance above the base. Scutum is present, moderately sized with branching caecal canal not completely covering the opesia. The lateral avicularia is always present, small straight triangular mandibles, with the divaricator, depressor and abductor muscles attached to the sides. No frontal avicularia was noticed. Dorsal vibraculum always present elongated vibracular chamber less than half the length of autozooid. Setae are usually long. Single vibraculum is present at the angle off bifurcation. Radical chamber occupies the proximal outer boarder of the vibracular chamber with radicles long and simple. The ovicells are perforated with wavery lines connecting the pore.

Previous records from India: Kovalam, South West Coast of India (Menon and Menon, 2006).

Distribution: Queensland; north end of New Guinea; Strait of Makkassar, Sumbava; Indian ocean; Ceylon; Red sea; White rock, Isla Partida, Gulf of California; Tahiti (Menon and Menon, 2006).

Family EPISTOMIIDAE Gregory, 1893

7. ***Synnotum aegyptiacum*** (Audouin, 1826)

(Fig. 7)

Reg. no. MBRC/BRY/ 18

Locality: Vedhalai.

Substratum: Bivalves.

Description: Colony is erect, proximal areas repent and attached by rootlets. Autozooids are paired, their distal portion constituting an

internode, frontal area long and narrow, wider distally and tapering proximally to a point. Autozooids are usually membranous. A frontal and basal avicularia present at each internode, sometimes a pedunculate avicularium replaces the frontal one, Gonozoids are enlarged appearing proximal to the growing tip. Spines usually absent.

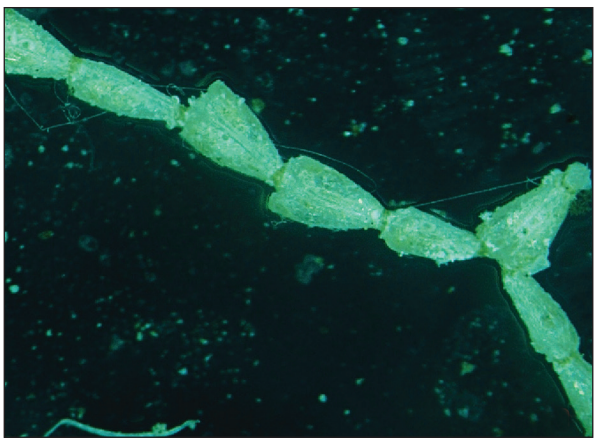


Fig. 7. *Synnotum aegyptiacum* (Audouin, 1826)

Previous records from India: Palk Strait (Robertson, 1921); Andaman and other localities in the Indian Ocean (Thornely, 1907); Amirante Island (Thornely, 1912); Krusadi Island, Minicoy Island (Menon, 1967).

Distribution: Cosmopolitan. The Mediterranean, the Red sea, South Africa, various localities in the Indian ocean, the Indo-Australian Archipelago; Pacific coast of Japan, and coasts of southern California and Mexico (Hancock stations) and the western side of Atlantic (Osburn, 1950).

Family LEPRALIELLIDAE Vigneaux, 1949

8. ***Celleporaria aperta*** (Hincks, 1882)

(Fig. 8)

Reg. no. MBRC/BRY/ 10 & 21

Locality: Vedhalai and Hare Island.

Substratum: Dead coral rubble

Description: Colony encrusting, Autozooids consists of a few layers, not massive. Secondary orifice with median sinus or with 3 or more denticles; intermediate condition frequently found. Usually spines two- four of their bases, long and joined at baseline. Rostrum is normally a minute avicularia assending suboraly, slightly denticulate distally and without basal sinus. Frontal avicularia horizontal and immersed in the wall, or slightly expanded to a spatula-shaped raised and free end; the largest avicularia sometimes indented marginally. Ovicells cucullate (cap-shaped) with the wide orifice facing frontally, longer than wide; sometimes equipped with a more or less complete front wall.

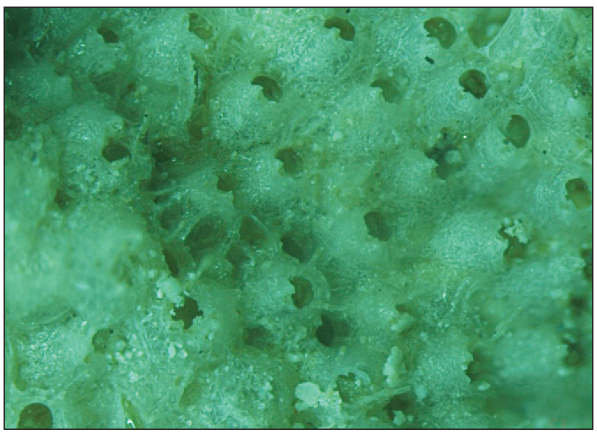


Fig. 8. *Celleporaria aperta* (Hincks, 1882)

Previous records from India: Andhra Pradesh and Odisha (Menon and Menon, 2006).

Distribution: Singapore, Mergiu Archipelago, Burma; Ceylon, Indian Ocean; Queensland; Straight of Makassar, Sulu Archipelago (Menon and Menon, 2006).

Family PHIDOLOPORIDAE Gabb & Horn, 1862

9. ***Rhynchozoon larreyi*** (Audouin, 1826)

(Fig. 9)

Reg. no. MBRC/BRY/ 20

Locality: Vedhalai.

Substratum: Coral rubble.

Description: Colony is encrusting, flat and multilaminar. Autozooids are distinct at the margin of the colony and irregular towards the centre. Peristomes are bilabiate, one of the processes aviculiferous. Marginal pores are present. The frontal wall is imperforate except for the marginal pores. The primary orifice is often semicircular, denticulated distally, with a small distinct sinus limited by a pair of small condyles. Small sub-oral avicularia placed obliquely. Frontal avicularia are small with an acute rostrum, rare and randomly

distributed. Operculum is wide, circular anteriorly and distinct posteriorly. Ovicells non-porous and tuberculated.

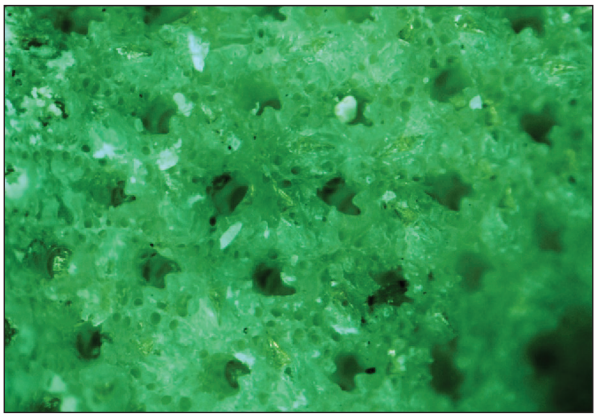


Fig. 9. *Rhynchozoon larreyi* (Audouin, 1826)

Previous records from India: Mandapam, Tamilnadu (Menon, 1967), Lakshadweep (Nowshad, 1998).

Distribution: Egypt; Ceylon; Indo-Australian Archipelago; (Menon and Menon, 2006).

Family PHIDOLOPORIDAE Gabb & Horn, 1862

10. ***Rhynchozoon bispinosum*** (Johnston, 1847) (Fig. 10)

Reg. no. MBRC/BRY/ 27

Locality: Mandapam (9°17´6.78´´N, 79° 9´28.92´´E).

Substratum: Boat scrappings.

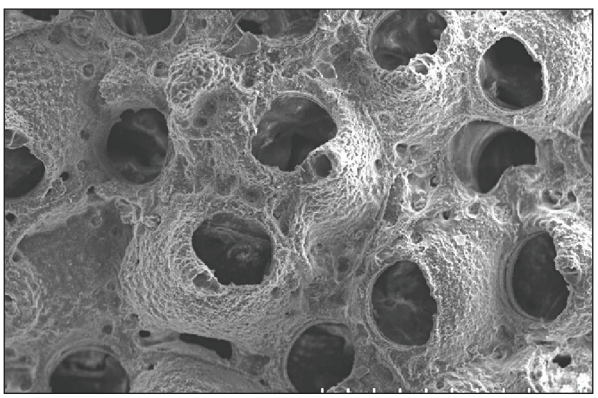


Fig. 10. *Rhynchozoon bispinosum* (Johnston, 1847)

Description: Colony is encrusting. Autozooids are moderate, quincinally arranged. The front is inflated, smooth with traces of costal ridges and areolar pores on either side. Marginal pores are not very obvious. Primary orifice is subcircular, with a broad shallow sinus and slightly beaded vestibular arch. Avicularia present in the suboral chamber usually large, bulbous, larger than autozooids with a hooked mandible. Uncinate process large and hammer shaped sometimes only a trace at the base of the chamber. Frontal avicularia usually rare, mandibles acute and rounded mostly on a somewhat elevated chamber. Spines 2, widely separated, found only on marginal zooecia and soon lost. Ovicells are absent in the examined specimen.

Remarks: Recorded for the first time in India.

Distribution: Europe (Johnston, 1847); Japan; Mediterranean Sea (Geraci and Cattaneo, 1980; Occhipinti, 1986).

11. ***Rhynchozoon spicatum*** Osburn, 1952 (Fig. 11)

Reg. no. MBRC/BRY/ 35

Locality: Vedhalai.

Substratum: Gorgonids.

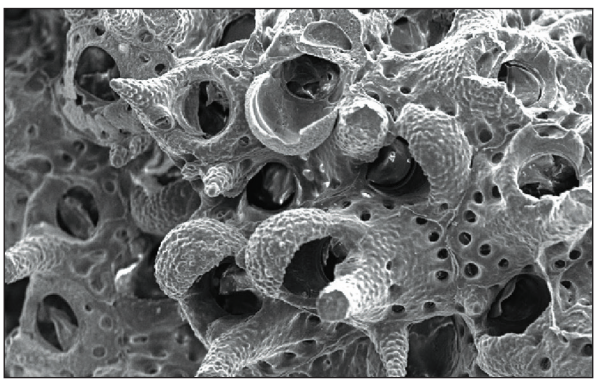


Fig. 11. *Rhynchozoon spicatum* Osburn, 1952

Description: Colony encrusting, often multilaminar. Autozooids are quincunially arranged, marginal ones are distinct separated by deep groves. The front of the autozooids are smooth on the top, with a row of small marginal pores between which low costate ridges extend for a short distance. Distally the front is strongly elevated and ends in a high pointed or rounded umbonate process proximal to the aperture, the small suboral avicularium hidden at its base. The umbonate process may be high and pointed, but usually has the form of a short, stout column with

a rounded tip; as they appear on nearly all of the autozooids. The primary aperture is nearly round, with a broad shallow sinus with the vestibular arch is strongly beaded. Avicularia is polymorphic, the suboral avicularium is small, mandible is acute and directed laterally; frontal avicularia are larger, elevated on a broad base, the mandible elongate and triangular. Oral spines maybe present. Ovicells are prominent, hemispherical and smooth.

Remarks: Recorded for the first time in India.

Distribution: *Rhynchozoon spicatum* was described by Osburn (1950) from Anacapa Island at 77 fathoms, and reported from other southern California areas at 16 fathoms or deeper. It has also been reported from off Isla San Benito, Baja California, in 44 fathoms (Soule and Soule, 1964); Colombian Caribbean (Cadavid *et al*., 2007); Gulf of Mexico (Winston and Maturo, 2009).

12. ***Plesiocleidochasma fallax*** (Canu & Bassler, 1929)

(Fig. 12)

Reg. no. MBRC/BRY/ 23

Locality: Vedhalai.

Substratum: Bivalve.

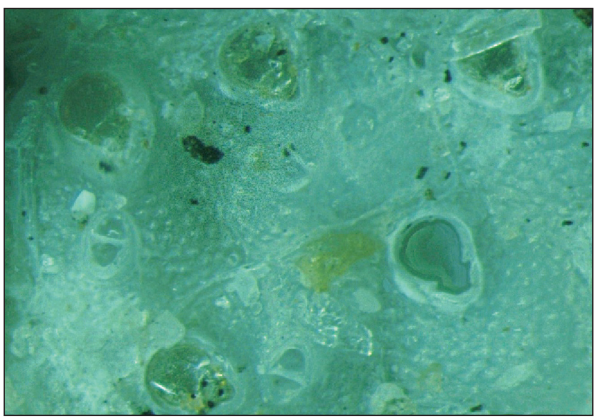


Fig. 12. *Plesiocleidochasma fallax* (Canu & Bassler, 1929)

Description: Colony encrusting, unilaminar. Autozooids are distinct, ovoid or polygonal, reticulate with slightly tuberculated front widely separated by small marginal pores. Orifice more or less cleithridiate (key hole shaped) with a distinct sinus. Peristome is thin; Operculum strongly chitinised with a distinct marginal sclerite. Paired avicularia lateral to the oral region is directed disto-laterally with mandible rounded distally. The autozooids also have a proximally placed spatulate avicularia transversely directed.

Previous records from India: Off Quilon, South West Coast of India, (Soja, 2006).

Distribution: Philippine Island (Canu and Bassler, 1929); Timor and New Guinea (Soja, 2006).

Family TRYPOSTEGIDAE Gordon and Winston. 2005

13. ***Trypostega venusta*** (Norman, 1864)

(Fig. 13)

Reg. no. MBRC/BRY/06

Locality: Hare Island.

Substratum: Dead coral rubble

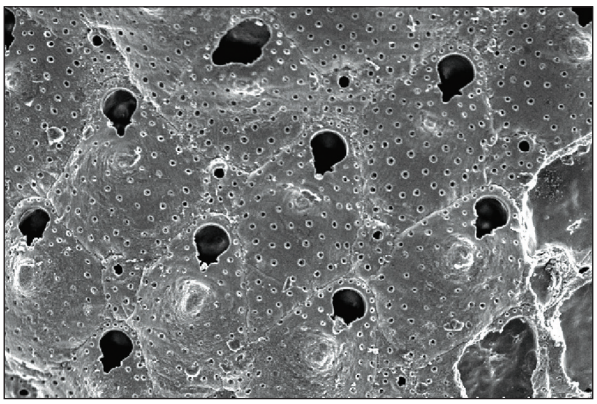


Fig. 13. *Trypostega venusta* (Norman, 1864)

Description: Colonies are thin sheets of glossy white to cream-colored encrustations with regularly arranged Distinct, quinquncial zooecia. The autozooids are hexagonal or rhomboidal or irregularly polygonal, convex and separated by shallow grooves. Orifice deep, rounded slightly raised anterior, proximal region possessing a distinct notch. Zooeciule, which are miniature zooecia appear distal to most autozooids and ovicells. The smooth front of both the zooeciule and autozooids are slightly raised and highly porous. Ovicell prominently rounded, positioned distal to the orifice.

Remarks: Recorded for the first time in India.

Distribution: Guernsey, The Channel Islands, also to be found from southern Great Britain

south to Madeira and into the Mediterranean Sea (Tilbrook, 2006).

Family CLEIDOCHASMATIDAE Cheetham & Sandberg, 1964

14. ***Characodoma biavicularium*** (Canu & Bassler, 1929)

(Fig. 14)

Reg. no. MBRC/BRY/ 22

Locality: Vedhalai.

Substratum: Gastropod shell.

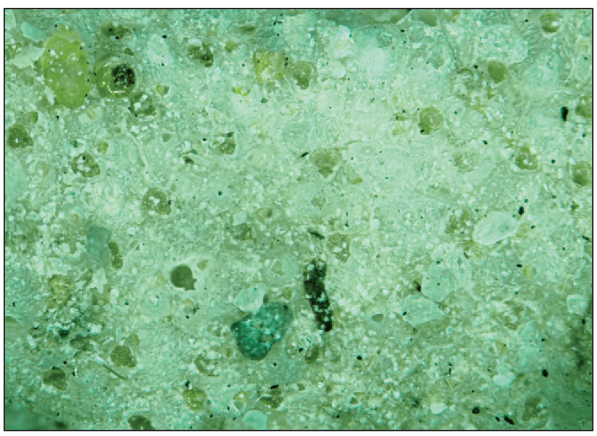


Fig. 14. *Characodoma biavicularium* (Canu & Bassler, 1929)

Description: Colony is erect sometimes encrusting, rootlets not evident. Autozooids are convex regularly tuberculated with convex front, arranged in longitudinal rows alternately and separated by deep grooves, marginal pores present. Orifice is cleithridiate (key hole shaped) with slightly narrow sinus. Peristome is low and smooth. Operculum is with strong marginal sclerite. Avicularia paired, suboral, nearly transverse, raised distally and forming swollen projections oriented in opposite direction. Lateral avicularium with slightly rounded rostrum and with triangular mandible, setiform, projecting beyond the tip of the rostrum. Ovicells are globose with small tubercles, the lip of their orifice raised above the level of the closed operculum.

Previous records from India: Cochin (Menon and Menon, 2006), East and West Coasts, of India (Soja, 2006).

Distribution: Strait of Makassar; Philippines (Soja, 2006).

Family HIPPOPODINIDAE Levinsen, 1909

15. ***Hippopodina feegeensis*** (Busk, 1884)

(Fig. 15)

Reg. no. MBRC/BRY/ 01

Locality: Shenbaga Muruvai (9°14´13.44˝N, 79°9´24.90˝E).

Substratum: Dead coral rubble

Fig. 15. *Hippopodina feegeensis* (Busk, 1884)

Description: Colony is encrusting, often very extensive, unilamilar or multilamilar. Autozooids generally rectangular, slightly inflated when superposed, arranged in regular longitudinal rows, and separated by well-defined calcareous lines. Frontal wall is convex, tuberculate and evenly perforated. The Primary orifice is hoof-shaped and indeted with condyles otherwise with straight lateral sides. Adventitious paired avicularia occupying the disto-lateral region directing inwards with tips not meeting on the median line. Mandibles are acutely triangular. Orifice, oriented medially. Ovicells very large, slightly calcified, rounded and evenly perforated. Hyperstomial ovicells porous with pearly tubercles

Previous records from India: Mandapam, Gulf of Mannar (Menon, 1967), Cochin. (Geetha, 1994).

Distribution: *Hippopodina feegeensis* has a circumtropical distribution Philippines, Australia, Fiji and the Red Sea (Tilbrook, 1999). Indian waters (Menon, (1967) and Soja, (2006).

Family SCHIZOPORELLIDAE Jullien, 1883

16. ***Schizoporella unicornis*** (Johnston in Wood, 1844)

(Fig. 16)

Reg. no. MBRC/BRY/ 17

Locality: Mandapam.

Substratum: Boat scrappings.

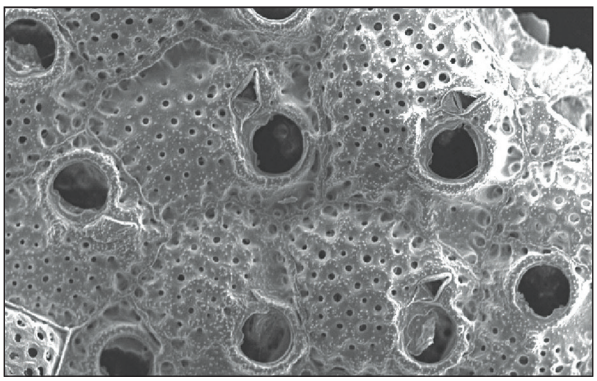


Fig. 16. *Schizoporella unicornis* (Johnston in Wood, 1844)

Description: Colony encrusting, frequently multilaminar. Autozooids are large and broadening before row bifurcations, mostly rectangular in shape with wide, squared distal end with single adventitious avicularia. Frontal shield is convex, covered with numerous irregularly arranged pseudopores and deep marginal areolar pores. Umbo is present behind the aperture but frequently wanting. Primary orifice broader than long forming a wide D-shape, with U- shaped sinus proximally. Condyles are Prominent and are fully visible above proximal edge of the primary orifice, tips are rounded and directed distally, adventitious avicularia mostly single and directed distolaterally from centre line. Rostrum is acute with concave sides and upturned tip. Opesia is rounded, D shaped and the crossbar is without columella. Mandibles are acutely pointed with distal tip curved upwards. Ovicells are porous, striated and often decorated with marginal costae.

Previous records from India: Kerala (Balaji *et al.,* 1999), Maharastra (Gaonkar *et al.,* 2010)

Distribution: Northeast Atlantic, from northwest Africa and Spain to the Faeroes and Western Norway (Hayward and Ryland, 1999)

17. ***Schizoporella japonica*** Ortmann, 1890

(Fig. 17)

Reg. no. MBRC/BRY/ 34

Locality: Vedhalai.

Substratum: Boat scrappings.

Description: Colony is encrusting, unilaminar. Autozooids are rectangular arranged mostly in linear series sometimes quincuncial away from bifurcations, distinct and slightly depressed. Frontal shield is with marginal areolae with distolateral pair larger and regularly distributed pseudopores. Orifice is variable within a colony, sinus shallow and broad with sinuous margins, delimited by horizontal, obtusely pointed condyles; distal margin of the orifice and lip of sinus is with minute tubercles. Operculum is matching the orifice. avicularium is single, proximolateral to orifice, distolaterally directed, inner end of hinge-line level with the condyles, mandibles triangular. Ovicells are prominent, sub globular, with radial ridges and numerous pores, sometimes more than one per distal to an autozooid.

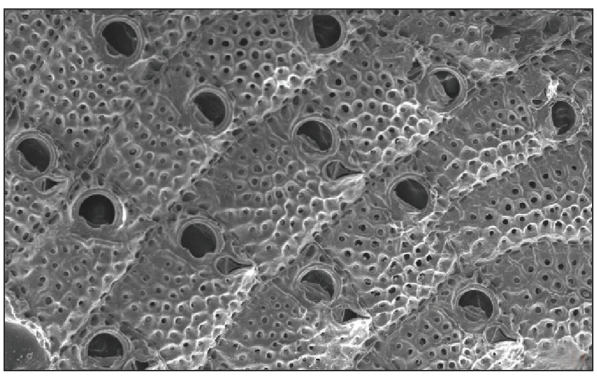


Fig. 17. *Schizoporella japonica* Ortmann, 1890

Remarks: Recorded for the first time in India.

Distribution: Alaska and the Pacific coast of North America, Japan and Western Europe (Ryland *et al.*, 2014).

18. ***Stylopoma incomptum*** Tilbrook, 2001

(Fig. 18)

Reg. no. MBRC/BRY/ 41

Locality: Vaan Island (8°50´27.77´´N, 78°12´39.39´´E).

Substratum: Coralline rocks

Description: Colony is encrusting and extensively multilaminar. Autozooids are irregularly polygonal, slightly convex and separated by distinct grooves. Frontal shield evenly perforated by small round pores, each set in a large depression and surrounded by a sharp

rim of thickened calcification; a central umbo usually present on many autozooids; marginal pores larger and distinct; lateral walls distinct. Primary orifice is as wide as long, D-shaped and the straight proximal border with a slit-like median sinus. The condyles are deep, smooth, lipped, almost rectangular and occupies the majority of the proximal border in each side of the sinus. One adventitious avicularium proximo-lateral to the orifice is mostly present. Rostrum is inclined to frontal plane and disto-laterally directed. The mandibles are short triangular with crossbar complete. Additional adventitious avicularia and Vicarious avicularia is absent. Ovicells not observed.

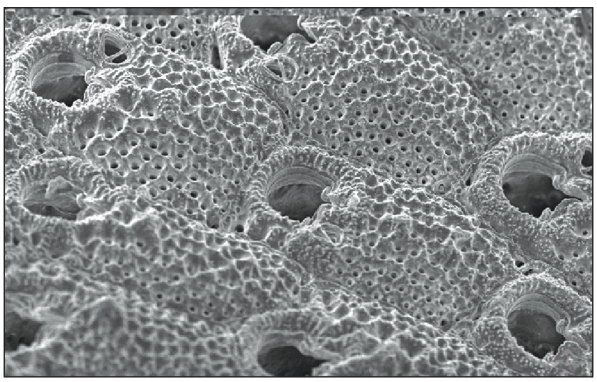


Fig. 18. *Stylopoma incomptum* Tilbrook, 2001

Remarks: Recorded for the first time in India.

Distribution: Sri Lanka (Tilbrook, *et al*., 2001)

Family HIPPALIOSINIDAE Winston, 2005

19. ***Hippaliosina setiformis*** Tilbrook, 2006

(Fig. 19)

Reg. no. MBRC/BRY/ 39

Locality: Vaan Island.

Substratum: Coralline rocks

Description: Colony encrusting, unilaminar. Autozooids irregularly polygonal, slightly convex or flat. Frontal shield is nodular, with numerous small marginal pores. Primary orifice slightly clithridiate, longer than wide as broad distally as proximally, a broad, relatively deep, V-shaped sinus constituting one-quarter orifice length, condyles short, pointed, downcurved. A pair of avicularia on each autozooid, positioned either side of orifice distally, rostrum triangular, raised from frontal plane, directed distomedially across distal end of orifice. In some autozooids one normal avicularium is replaced with an enlarged avicularium, originating proximolatcral to orifice, rostrum very thin, parallel-sided, terminating distolateral to orifice, but on opposite side, mandible setiform, curving basally. Ovicells not observed.

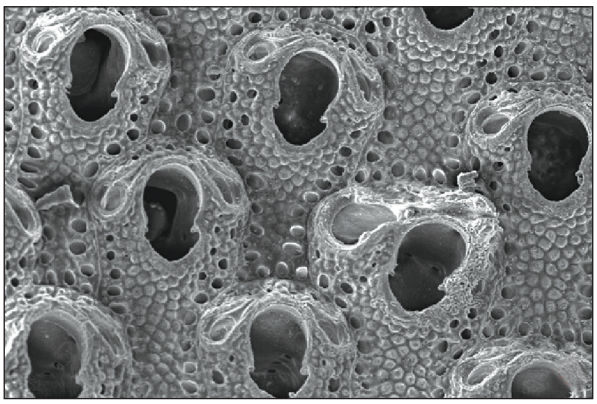


Fig. 19. *Hippaliosina setiformis* Tilbrook, 2006

Remarks: Recorded for the first time in India.

Distribution: Indo-Malaysian region, Torres Strait and the Solomon Islands (Tilbrook, 2006)

Family PETRALIELLIDAE Harmer, 1957

20. ***Mucropetraliella thenardii*** (Audouin, 1826)

(Fig. 20)

Reg. no. MBRC/BRY/ 42

Locality: Paliyarmunai Island (9°9´19.04˝N, 78°43´48.84˝E).

Substratum: Coralline rocks

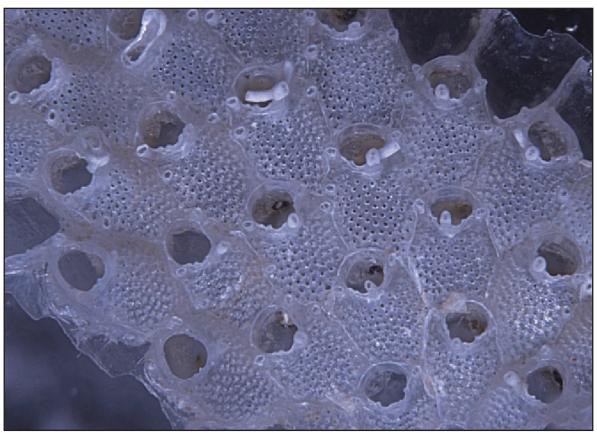


Fig. 20. *Mucropetraliella thenardii* (Audouin, 1826)

Description: Colony encrusting. Autozooids

long, convex with inconspicuous septal lines. Primary orifice is circular, wider than long. Narrow Iyrules. The most conspicuous feature is the presence of variously shaped mucro with branches. Two lateral adventious avicularia, oral in position, placed at the top of raised platforms. A spatulate suboral avicularia noticed in some zooids. The mandible placed on the raised rostrum, which forms a part of the mucro. Ovicells are smaller than in most species of the genus, the lip is considerably raised above the level of the operculum.

Previous records from India: Laccadive Islands and Madras (Robertson, 1921); Indian waters (Thornely, 1916).

Distribution: Egypt (Audouin, 1826); Port Jackson (Waters, 1887); Ceylon (Thornely, 1905), Strait of Makassar, Celebes Sea (Harmer, 1957)

Family MARGARETTIDAE Harmer, 1957

21. ***Margaretta watersi*** (Canu & Bassler, 1930) (Fig. 21)

Reg. no. MBRC/BRY/ 30

Locality: Vedhalai.

Substratum: Gorgonids.

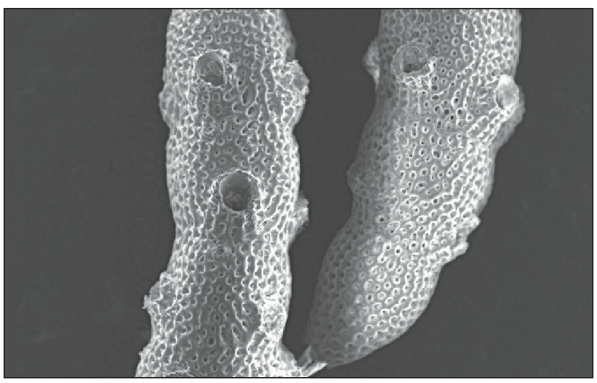


Fig. 21. *Margaretta watersi* (Canu & Bassler, 1930)

Description: Colony is erect with whorls typically 5 in number. Autozooids are not definitely outlined. Internodes stout, straight or curved with wide base consisting of 3 whorls. Peristomes are short and nearly equal length both proximally and distally. The orifice is slightly denticulate. The point of nodal joints and the composition of the colony formed of 5 zooecia distinctly clear, which are separated by clear-cut intermediary walls. Ovicells not noticed.

Remark: Recorded for the first time in India.

Distribution: The Sulu Archipelago, Kei Island, Indian Ocean, as given by Gardiner (Harmer, 1957).

Family TETRAPLARIIDAE Harmer, 1957

22. ***Tetraplaria ventricosa*** (Haswell, 1881) (Fig. 22)

Reg. no. MBRC/BRY/14 & 29.

Locality: Vedhalai and Manouli Island (9°12´31.19´´N, 79° 9´31.82´´E).

Substratum: Molluscan shells and dead corals

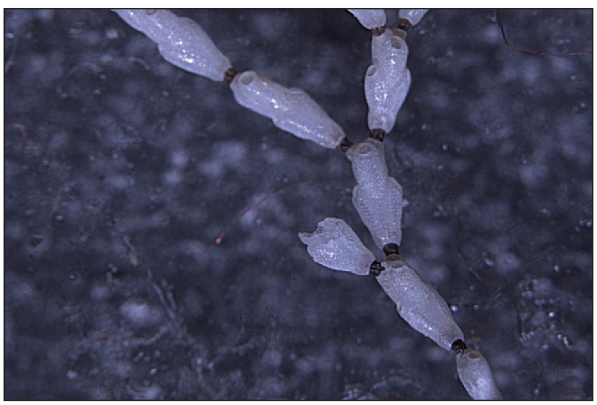


Fig. 22. *Tetraplaria ventricosa* (Haswell, 1881)

Description: Colonies are erect and branching. Cylindrical internodes with 1-5 pairs of zooecia arranged back to back and 90° to the preceding pair. Internodes linked by brown cuticular nodes which form in place of the two distal zooecia and often with distinctive sutural lines. Branching is mostly dichotomus in some internodes monotomus branching was also observed. Zooecia are longer than wide forming pyriform shape separated by deep groves and lateral wall sutures. Orifice is rounded with a sinus on the lower margin. No spines and avicularia was observed. Ovicells slightly flattened and porous separated by lateral wall sutures. Fertile zooecia have slightly larger orifice than others.

Previous records from India: Andamans (Thornely, 1907) Andhra Pradesh coast (Robertson, 1921).

Distribution: Originally described from Holborn Island, Port Denison, Queensland, *Tetraplaria ventricosa* has been recorded in Indo-Pacific distribution in the past. In light of the above, this distribution appears now to be more limited to the southwest Pacific and Coral Sea in particular. In the Solomon Islands this species records are from Ling- gatu Cove, Mbanika Island, Russell Islands and Anuha Reefs, Anuha Island, Florida Islands (Tilbrook, 2006).

Family MICROPORELLIDAE Hincks, 1879

23. ***Microporella ciliate*** (Pallas, 1766)

(Fig. 23)

Reg. no. MBRC/BRY/11 & 31

Locality: Vedhalai and Manouli Island.

Substratum: Dead corals and gorgonians

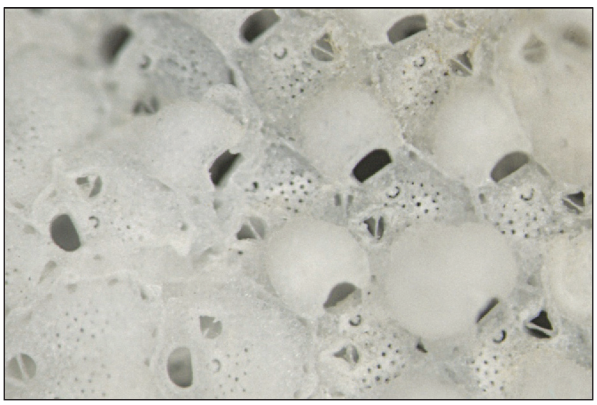


Fig. 23. *Microporella ciliate* (Pallas, 1766)

Description: Colonies are encrusting with developing extensive unilaminar sheets. The zooecia are rounded rhombic in frontal outline and separated by deep grooves. Frontal shield with numerous small pseudopores, slightly inflated and smooth. Umbo not noticed. Orifice is smaller relatively with the zooid size, wider than long and nearly semicircular with evenly rounded front and straight proximal border with fine teeths between the condyles. Peristome slightly developed. Oral spines not observed might be hidden. Ascopore is moderately large in the midline a little proximal to the aperture and set within a reniform smooth depression. Ovicells are hyperstomial, prominent and moderately large with frontal surface pustulose. Avicularium larger, adventious and unpaired usually located on one side a little proximal to the ascopore, mandible long triangular to setose.

Previous records from India: Andamans, Gopalpore, Orrisa (Robertson, 1921), Chavra, Kerala (Menon and Menon, 2006), Cochin, Kerala (Geetha, 1994).

Distribution: American pacific coast, British Columbia waters, Panama, Galapagos Islands, Mediterranean, Naples, Mexico and Brazil (Menon and Menon, 2006), Soja (2006).

Family SMITTINIDAE Levinsen, 1909

24. ***Parasmittina egyptiaca*** (Waters, 1909)

(Fig. 24)

Reg. no. MBRC/BRY/ 24

Locality: Hare Island.

Substratum: Dead coral rubble

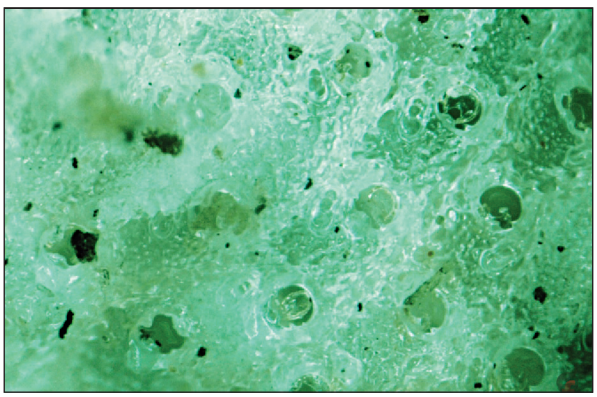


Fig. 24. *Parasmittina egyptiaca* (Waters, 1909)

Description: Colony is encrusting, unilaminar in most cases, occasionally multilaminar. Autozooids are quadrangular to hexagonal, regularly arranged in files or in quincunx, separated by deep grooves or superposed. Pores small and areolae large; tubercular. Primary orifice square to rounded, slightly broader than long with two small rounded spaces proximo-laterally, created by two small proximally directed pointed cardelles and a median dentate lyrule. Secondary orifice is with a narrow or broad sinus, demarcated by two cusps usually observed when narrow. Peristome is moderate, at most slightly raised and interrupted distally, with two lateral, triangular lappets joined together by a low, proximal collar. Lyrula is short and often narrow. Frontal shield is moderately convex

and markedly nodular. Rostral tip is somewhat broad. Avicularia usually polymorphic 1) small, acute or oval, directed proximally, 2) sometimes a large spatulate and 3) oval or acute, mostly small, becoming excessively numerous in the superposed regions. Ovicells are of moderate size, globular, raised, ectooecium sometimes extensive with regularly arranged small pores.

Previous records from India: Quilon, Menon and Menon (2006) and West Coast, Soja (2006).

Distribution: Sudanese Red Sea, Suez Canal region, Sulu Archipelago, Sumbawa, Banda Sea, New Guinea and Aru Island (Soja, 2006).

25. ***Parasmittina parsevalii*** (Audouin, 1826)

(Fig. 25)

Reg. no. MBRC/BRY/ 26

Locality: Hare Island.

Substratum: Dead coral rubble

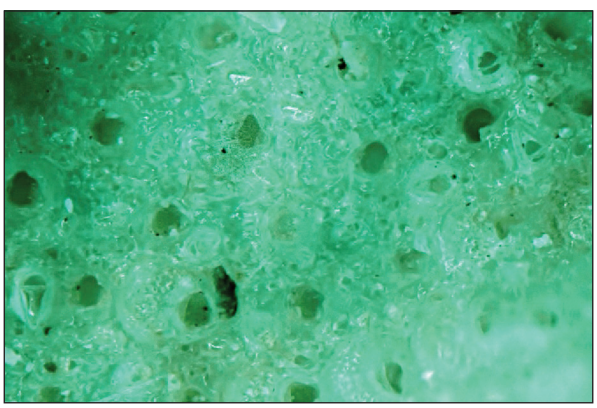


Fig. 25. *Parasmittina parsevalii* (Audouin, 1826)

Description: Colony is encrusting, multilaminar or occasionally grows into free unilaminar fronds. Autozooids rectangular to irregularly polygonal but loses the typical shape when superposed, convex, arranged in longitudinal lines and separated by thin calcareous lines. Frontal wall is coarsely nodular, with a single series of large, round marginal areola. Peristome tubular, moderately developed, smooth and extending onto the distal border of the orifice, its free edge developing knob-like processes; not extending around proximal edge of orifice. Orifice is circular or slightly triangular proximally. Primary orifice could be seen through the peristome, slightly wider than long, distal edge more or less straight, with a few indistinct denticulations. Lyrules short and truncate, with sharply cusped corners, occupying about half proximal orifice; condyles small incurved, basally deflected with a finely serrated edge. Avicularia are numerous and polymorphic. Two types of small avicularia, one acute and the other rounded, distributed in almost every zooecium. They could be directing proximally or distally, and in rare cases, transversely. When transverse, usually occupy the lateral side of the peristome. Gigantic adventitious avicularia is present in some autozooids, extending from lateral to orificc proximally, for whole length of autozooid, rostrum spatula shaped, deeply cupped, with a coarsely denticulate distal rim. Ovicell spherical, slightly immersed, ectooecium present at the rim. Peristome may invade the proximal rim extending onto its frontal surface.

Previous records from India: Cochin by Menon and Menon (2006) and Soja (2006) East and West Coasts of India

Distribution: Egypt, Burma, Sumbawa, Strait of Makassar, Paternoster Island, Sulu Archipelago, Saleyer, South of Celebes, south-east Celebes, West Flares, Banda Sea, Aru Island; Great Barrier Reef (Soja, 2006).

26. ***Parasmittina raigii*** (Audouin, 1826)

(Fig. 26)

Reg. no. MBRC/BRY/ 28

Locality: Hare Island.

Substratum: Dead coral rubble

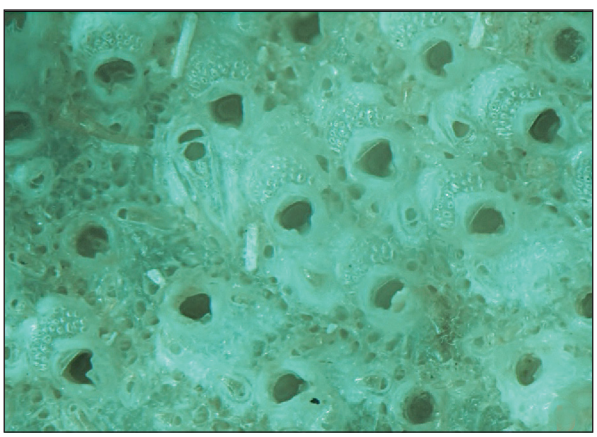


Fig. 26. *Parasmittina raigii* (Audouin, 1826)

Description: Colony is encrusting, unilaminar or multilaminar. Autozooids are variable in size, often large and arranged in regular files. Frontal shield is glistening, nodular. The marginal pores usually medium-sized, in young zooids often small. Orificial spines were 2-3 with thick, prominent bases, present in almost all non-ovicellate zooids. Peristomes are raised laterally into a pair of acute or rounded cusps limiting a sinus of variable width, often interrupted distally on non-ovicellate zooids and raised distally on ovicellate zooids. Primary orifice is broader than long. Lyrula is moderate or wide, with distal edge slightly convex and distinct pointed corners; condyles narrow and down curved. Adventitious avicularia often sporadic, single or paired, polymorphic with three morphs, 1) small, oval-shaped avicularium 2) large avicularium with broad opesial part and 3) some longer than average, large avicularium with very broad opesial part, relatively short, triangular, pointed rostrum. Ovicells are small, globose, and broader than long with evenly distributed minute pores except on the distal rim of calcified frontal wall of the distally adjacent autozooid.

Previous records from India: Kattiwar, India (Thornely, 1916).

Distribution: Victoria, New Guinea, West Flores, South east Celebs, Sulu Archeipelago and Sumbawa; Indian Ocean; Burma, Mergui Archipelago, Australia (Menon and Menon, 2006).

27. ***Parasmittina winstonae*** Liu, 2001

(Fig. 27)

Reg. no. MBRC/BRY/ 40

Locality: Paliyarmunai Island.

Substratum: Dead coral rubble

Description: Colony encrusting, unilaminar or multilaminar. Autozooids are variable in size, often large and arranged in regular files. Frontal shield is glistening and nodular. The marginal pores are usually medium-sized. Orificial spines were 2 with thick, prominent bases, present in almost all zooids. Peristomes are raised laterally into a pair of acute or rounded cusps limiting a sinus of variable width, often interrupted distally. Primary orifice is broader than long. Lyrula is moderate with distal edge slightly convex and distinct pointed corners; condylesare narrow and downcurved. Adventitious avicularia often sporadic, single or paired, polymorphic with three morphs, 1) small, oval-shaped avicularium 2) large avicularium with broad opesial part and 3) some longer than average, large avicularium with very broad opesial part, relatively short, triangular, pointed rostrum. Ovicells were not observed from the current specimen.

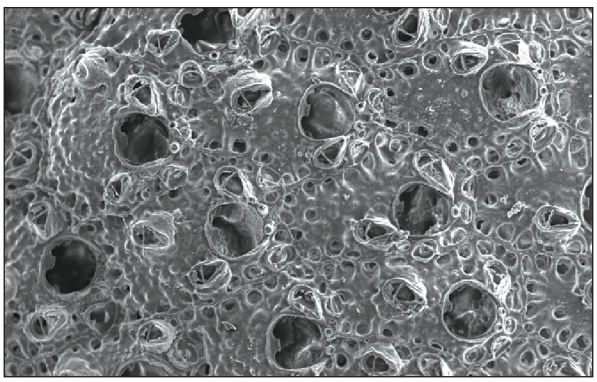


Fig. 27. *Parasmittina winstonae* Liu, 2001

Remarks: Recorded for the first time in India.

Distribution: Known to be described from South China Sea, and also reported from Solmon Islands (Tilbrook, 2006)

Family BITECTIPORIDAE MacGillivray, 1895

28. ***Schizomavella linearis*** (Hassall, 1841)

(Fig. 28)

Reg. no. MBRC/BRY/ 08

Locality: Hare Island.

Substratum: Dead coral rubble

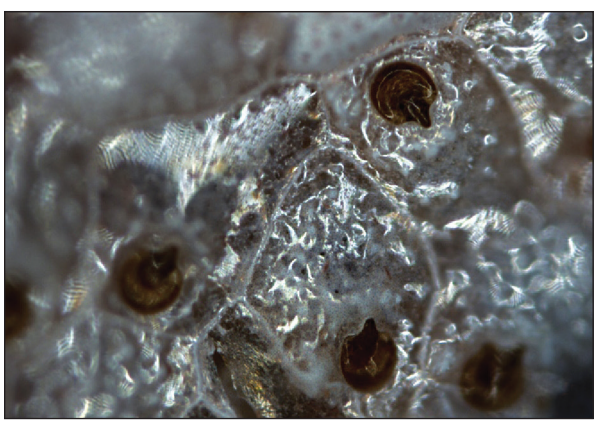


Fig. 28. *Schizomavella linearis* (Hassall, 1841)

Description: Colony is encrusting forming broad spreading sheets, unilaminar or multilaminar. Autozooids are radiating in linear series, shape variable from rectangular to polygonal, convex and separated by distinct grooves. Primary orifice as wide as long, with a short U-shaped median; condyles distinct, rounded, broader than long. Oral spines present. Frontal wall is small and inconspicuous with numerous scattered pores. Avicularia small, single or paired placed proximo-lateral to sinus, with short, triangular and acute rostrum.

Previous records from India: Kerala (Menon and Menon, 2006)

Distribution: This is one of the commonest species of the genus in British waters. It extends north to the Faroe Islands; it appears to be present in the western Mediterranean (Hayward and Thrope, 1995).

Family THALAMOPORELLIDAE
Levinsen, 1902

29. ***Thalamoporella hamata*** Harmer, 1926

(Fig. 29)

Reg. no. MBRC/BRY/ 04 & 13

Locality: Hare Island and Vedhalai.

Substratum: Dead coral rubble

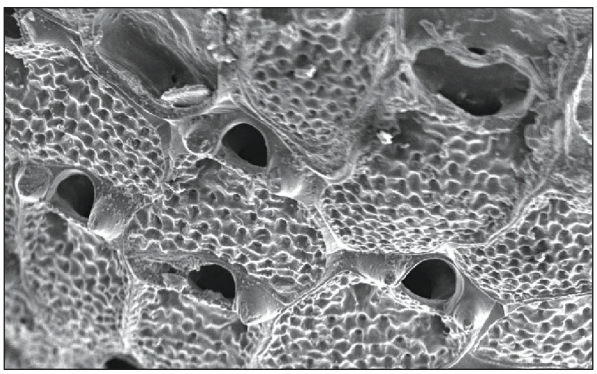


Fig. 29. *Thalamoporella hamata* Harmer, 1926

Description: Colony encrusting, unilamilar, distinct frontal areas with tubercules. Autozooids are almost rectangular and separated by shallow grooves. Gymnocyst reduced, visible only around distal orificial rim and present in all zooecia. Cryptocyst is imperforate, granular, single, central, opesia with straight proximal margins and completely covered by operculum. Calcification of the cryptocyst seems to begin from the lateral sides of the front. Opesiules minute, oval and of approximately equal size often obliterated by overhanging calcareous cryptocyst. Orifice is horseshoe-shaped, longer than wide with raised distal margin and condyles not visible in frontal view. Avicularia common, vicarious in structure, directed distolaterally and torqued away from sibling zooid, mandible acutely triangular with long.

Previous records from India: Krusadi Island (Menon and Nair, 1967) and Cuddalore, East Coast of India (Soja, 2006).

Distribution: North Ubian, Sulu Archipelago, west of north end of New Guinea (Menon and Menon, 2006).

Family THALAMOPORELLIDAE
Levinsen, 1902

30. ***Thalamoporella gothica*** (Busk, 1856)

(Fig. 30)

Reg. no. MBRC/BRY/ 05

Locality: Seeniappa dharga (9°15′37 23″N, 79°5′33.17″E).

Substratum: Intertidal rock

Fig. 30. *Thalamoporella gothica* (Busk, 1856)

Description: Colony encrusting. Autozooids are large, with a rhomboidal aperture measuring wider than high and having a thin rim. Adoral area is without tubercles or sometimes present as reduced thin mounds. Front is granular with small pores. Opesia with two big sinuses placed on either side of the polypide tube. Oral shelf

Table 1. Check list of Bryozoans in the waters of Gulf of Mannar Marine Biosphere Reserve

Sl. No.	Species	Menon (1967)	Present study
	Phylum BRYOZOA		
	Class GYMNOLAEMATA		
	Order CHEILOSTOMATIDA (Busk, 1852)		
	Sub-order FLUSTRINA Smith, 1878		
	Family AETEIDAE Smitt, 1868		
1	*Aetea anguina* (Linnaeus, 1758)	+	-
	Family MEMBRANIPORIDAE Busk, 1852		
2	*Biflustra savartii* (Audouin, 1826)	-	+
3	*Jellyella tuberculata* (Bosc, 1802)	-	+
4	*Membranipora membranacea* (Linnaeus, 1767)	+	-
	Family ELECTRIDAE d'Orbigny, 1851		
5	*Electra pilosa* (Linnaeus, 1767)	+	-
	Family FLUSTRIDAE Fleming, 1828		
6	*Spiralaria serrata* (Macgillivray, 1869)	+	-
	Family STEGINOPORELLIDAE Hincks, 1884		
7	*Steginoporella magnilabris* (Busk, 1854)	-	+
8	*Steginoporella buskii* Harmer, 1900	-	+
9	*Labioporella sinuosa* Osburn, 1940	+	-
	Family ONYCHOCELLIDAE Jullien, 1882		
10	*Smittiporaa byssicola* (Smitt, 1873)	+	-
	Family QUADRICELLARIIDAE Gordon, 1984		
11	*Nellia oculata* Busk, 1852	-	+
	Family CANDIDAE d'Orbigny, 1851		
12	*Paralicornia obtecta* (Haswell, 1880)	-	+
13	*Tricellaria peachii* (Busk, 1851)	+	-
14	*Scrupocellaria mansueta* Waters, 1909	+	-
15	*Scrupocellaria spatulata* (d'Orbigny, 1851)	+	-
16	*Scrupocellaria bertholetii* (Audouin, 1826)	+	-
17	*Scrupocellaria talonis* Osburn, 1950	+	-
	Family BUGULIDAE Gray, 1848		
18	*Bugula crosslandi* Hastings, 1939	+	-
19	*Bugulella clavata* (Hincks, 1887)	+	-
	Family EPISTOMIIDAE Gregory, 1893		
20	*Synnotumae gyptiacum* (Audouin, 1826)	+	+

Table 1. contd.

Sl. No.	Species	Menon (1967)	Present study
	Family LEPRALIELLIDAE Vigneaux, 1949		
21	*Celleporaria aperta* (Hincks, 1882)	-	+
22	*Celleporaria pilaefera* (Lamouroux, 1821)	+	-
23	*Celleporaria granulosa* (Haswell, 1881)	+	-
	Family CELLEPORIDAE Johnston, 1838		
24	*Turbicellepora redoutei* (Audouin, 1826)	+	-
	Family CALLOPORIDAE Norman, 1903		
25	*Tremogasterina granulata* Canu & Bassler, 1928	+	-
26	*Tremogasterina lanceolata* Canu & Bassler, 1928	+	-
	Family PETRALIELLIDAE Harmer, 1957		
27	*Mucropetraliella philippinensis* (Canu & Bassler, 1929)	+	-
	Family PHIDOLOPORIDAE Gabb & Horn, 1862		
28	*Rhynchozoon larreyi* (Audouin, 1826)	+	+
29	*Rhynchozoon bispinosum* (Johnston, 1847)	-	++
30	*Rhynchozoon spicatum* Osburn, 1952	-	++
31	*Rhynchozoon compactum* (Thornely, 1905)	+	-
32	*Rhynchozoon globosum* Harmer, 1957	+	-
33	*Triphyllozoon tubulatum* (Busk, 1884)	+	-
34	*Plesiocleido chasmafallax* (Canu & Bassler, 1929)	-	+
	Family TRYPOSTEGIDAE Gordon and Winston, 2005		
35	*Trypostega venusta* (Norman, 1864)	-	**++**
	Family CLEIDOCHASMATIDAE Cheetham& Sandberg, 1964		
36	*Characodoma biavicularium* (Canu & Bassler, 1929)	-	+
	Family HIPPOPODINIDAE Levinsen, 1909		
37	*Hippopodina feegeensis* (Busk, 1884)	+	+
	Family SCHIZOPORELLIDAE Jullien, 1883		
38	*Schizoporella unicornis* (Johnston in Wood, 1844)	-	+
39	*Schizoporella japonica* Ortmann, 1890	-	++
40	*Stylopoma incomptum* Tilbrook, 2001	-	**++**
	Family HIPPALIOSINIDAE Winston, 2005		
41	*Hippaliosina setiformis* Tilbrook, 2006	-	**++**
	Familly PETRALIELLIDAE Harmer, 1957		
42	*Mucropetraliella thenardii* (Audouin, 1826)	-	+
	Family MARGARETTIDAE Harmer, 1957		
43	*Margaretta watersi* (Canu & Bassler, 1930)	-	**++**

Table 1. contd.

Sl. No.	Species	Menon (1967)	Present study
	Family TETRAPLARIIDAE Harmer, 1957		
44	*Tetraplaria ventricosa* (Haswell, 1881)	-	+
	Family MICROPORELLIDAE Hincks, 1879		
44	*Microporella ciliata* (Pallas, 1766)	-	+
	Family SMITTINIDAE Levinsen, 1909		
45	*Parasmittina egyptiaca* (Waters, 1909)	-	+
46	*Parasmittina parsevalii* (Audouin, 1826)	-	+
47	*Parasmittina raigii* (Audouin, 1826)	-	+
48	*Parasmittina winstonae* Liu, 2001	-	++
49	*Parasmittina tubula* (Kirkpatrick, 1888)	+	-
50	*Parasmittina elongata* (Okada & Mawatari, 1936)	+	-
	Family BITECTIPORIDAE MacGillivray, 1895		
51	*Schizomavella linearis* (Hassall, 1841)	-	+
	Family THALAMOPORELLIDAE Levinsen, 1902		
52	*Thalamoporella hamata* Harmer, 1926	+	+
53	*Thalamoporella gothica* (Busk, 1856)	-	+
	Family ALCYONIDIIDAE Johnston, 1838		
54	*Alcyonidium polyoum* (Hassall, 1841)	+	-
	Family VESICULARIIDAE Hincks, 1880		
55	*Amathia convoluta* (Lamarck, 1816)	+	-
56	*Zoobotryon verticillatum* (DelleChiaje, 1822)	+	-
	Family AEVERRILLIIDAE Jebram, 1973		
57	*Aeverrillia setigera* (Hincks, 1887)	+	-
	Family CRISIIDAE Johnston, 1838		
58	*Crisia elongata* Milne Edwards, 1838	+	-

+ denotes presence and – denotes absence

++ denotes new record to Indian coastal waters

well developed. Opesiules are plain and very asymmetrical in frontal view. The basal insertions are variable either as a rod or an L-shape, but not hooked. Avicularia is present, ovoid shape tapering distally to a sub acute point of a gothic arch and with acutely pointed mandibles. Operculum is complete with a basal sclerite. Ovicells not found.

Previous records from India: Cape Comorin, Quilon and Cochin, West coast of India (Soja, 2006).

Distribution: Mazatlan, California, Africa (Soja, 2006).

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