

## A New Species of Genus *Plakortis* Schulze 1880 (Porifera: Homoscleromorpha) from Badabalu, Andaman and Nicobar Islands, India

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**Vibha V. Ubare and PM. Mohan (2016)** Recently revealed Class: Homoscleromorpha play a significant role in sponge systematics. The smaller size, cryptic habits and unresolved species complex are greater obstacles for the taxonomic identification of this class. Out of < 100 species, only 6 species have been described from the Indian region. Till date, only one species of the genus *Plakortis*, that is, *P. simplex* has been described from this region. The present study provides a detailed description of new species of the genus *Plakortis*, Schulze 1880. *P. badabaluensis* sp. nov. is characterized by the two size classes of diods (one is thick and the other is thin), triods and smooth microrhabds; with well differentiated ectosome, presence of subectosomal lacunae and confused choanosome. The identification of this new species has increased the number of plakinid species from one to two in the Andaman and Nicobar Islands, India. Further detailed studies are required to explore this type of cryptic species in this region.

**Key words:** Homoscleromorpha, *Plakortis*, Taxonomy, Badabalu, Pongibalu, Andaman Islands.

### BACKGROUND

Marine sponges are very important and dominant in the benthic communities of oceans. They are one of the most primitive multicellular animals grouped under the phylum Porifera. Sponges are the most ancient multicellular living animal on earth today (Hooper and Van Soest 2002). Most zoologists are of the opinion that sponges diverge earlier than the main line of evolution and gave rise to other group of animals (Jacob 1973; Knoll 2011; Brain et al. 2012; Riesgo et al. 2014).

Homoscleromorpha Bergquist, 1978 is a small group of Porifera with unique traits such as: flagellated pinacocytes, basement membrane linings such as choanoderm and pinacoderm, oval to spherical choanocyte chambers with large choanocyte, and a viviparous cinctoblastula

larva (Van Soest et al. 2012, 2014). The homoscleromorpha is the only sponge lineage in which cell layers are very similar to those of eumetazoans, both in larvae and adults, and can be considered as a true epithelium (Ereskovsky et al. 2009). Further, recent molecular analyses also clearly separated the Homoscleromorpha from the Demospongiae clade (Gazave et al. 2012). Previously, homoscleromorpha was under a family or a suborder of the subclass Tetractinellida, within the class Demospongiae. At present, it is the fourth major lineage composed of two families, Oscarllidae Lendenfeld, 1887 and Plakinidae Schulze, 1880 (Gazave et al. 2010). It contains < 100 described species. Based on morphological traits, they have been traditionally subdivided into 8 genera *Corticium*, *Oscarella*, *Placinolopha*, *Plakina*, *Plakinastrella*, *Plakortis*, *Pseudocorticium* and *Tetralophophora*. All are exclusively marine

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and mainly located in shallow waters ranging from 8 to 60 m, but few are also recorded from abyssal depths, that is, up to 2460 m (Murciy and Diaz 2002; Gazave et al. 2010). The genera are distinguished by four morphological characters: 1) the presence of a siliceous skeleton; 2) presence of a cortex associated with leuconoid aquiferous system and well developed mesohyl or a sylleibid aquiferous system with poorly developed mesohyl and ectosome; 3) number of spicule size classes; and 4) the presence of different types of ramification in the actines of calthrops (tetractinal spicules) with three distinct general morphology have been recognized (Murciy and Diaz 2002; Gazave et al. 2010, 2012; Ereskovsky et al. 2013). Some of the morphological features are shared with the eumetazoans, which are absent in other groups of sponges. It is a taxonomically poorly studied group among the sponge clade as a result of insufficient sampling due to small size, rarity and cryptic habits of many species, as well as the presence of unresolved species complexes.

The Indian coastline runs over a distance of 7500 km, even with the vast coastal region, the only area that has been studied in detail by various spongologist is the Gulf of Mannar (Burton 1930). In addition, few occasional reports are available in certain parts of India. Most of the studies on marine sponges of India are from Southern India (Ali 1956; Thomas 1970a, b and c; 1973a, 1976a and b, 1984), Lakshadweep and Minicoy Islands (Thomas 1973b, 1979, 1980a and b, 1989), North-west India from the Gulf of Kutch and Cambay (Gulf of Khambat) (Dendy 1916; Thomas 1976b; Thomas et al. 1996). The fauna of Andaman and Nicobar Islands is very distinct and diverse (Ramakrishna et al. 2010). The taxonomic information of the sponges of Andaman and Nicobar Islands is far from complete and prompted the necessity of this work (Pattnayak 2006). Few researchers like Burton (1928), Burton and Rao (1932), Thomas (1977) and Pattnayak (2006) are the foremost contributors in the history of sponges from the Andaman and Nicobar Islands. Also, the recent reports of Immanuel and Raghunathan (2011), Krishnan et al. (2012) and Vinod et al. (2012) are acknowledged.

Till date, from the Class Homoscleromorpha, the species *Plakina monolopha* Schulze, 1880, *Plakina trilopha* Schulze, 1880, *Placinolopha acantholopha* (Thomas, 1970), *Corticium acanthastrum* Thomas, 1968, and *Corticium candelabrum* Schmidt, 1862 have been identified and described in India (Thomas 1968 and 1970b).

Only one species: *Plakortis simplex* Schulze, 1880 was check listed by Krishnan et al. (2012) in the Andaman and Nicobar Islands. This genus is well known world-wide for its several interesting natural products and bioactive compounds. This chemical diversity makes the genus *Plakortis* an interesting target group for pharmacological studies (Murciy 2011).

The aforementioned studies on sponge in the Andaman Islands have paved the way for further exploration of this subject. Therefore, an attempt has been made to describe more sponges from this region. During the process of identification of sponges in this region, the present new species evolved and has been described as a new report.

## MATERIALS AND METHODS

The specimens were collected by Skin Diving from both regions: Badabalu (Lat. 11°30'37.04"N, Long. 092°41'09.28"E) and Pongibalu (Lat. 11°30'51.88"N, Long. 092°39'22.44"E) (Fig. 1). All underwater photographs were taken using underwater Sony Cyber Shot 13.6 Mega Pixel Camera. The collected specimens were fixed in 70% ethanol and deposited in the Zoological Survey of India (ZSI), Regional center of Andaman and Nicobar Islands and Department of Ocean Studies and Marine Biology (DOSMB), Pondicherry University, Port Blair. Spicule slides were prepared by dissociating small fragment of the sponge in boiling Nitric acid. Thick hand cut sections were made using surgical blade for skeleton and were observed under light stereomicroscope Leica M205C with inbuilt camera. Five to 20 Spicules of each kind were measured per individual through light microscope Carl Zeiss AXIO Vert.A1 with inbuilt camera. Spicule measurements were expressed as range length/ range width in  $\mu\text{m}$  (number of measurements). The description has been compared with the existing literature (Table 1).

## RESULTS

### Systematics

Class - Homoscleromorpha Bergquist 1978  
 Order - Homosclerophorida Dendy 1905  
 Family - Plakinidae Schulze 1880  
 Genus - *Plakortis* Schulze 1880

**Definition:** The skeleton formed by diods and triods is either in variable abundance or may be absent. Different types of microscleres such as microrhabds, quasiamphiasters, spined diods and spheres were also present in some species. Calthrops are absent in this genus (Muricy 2011).

*Plakortis badabaluensis* sp. nov. (LSID urn:lsid:zoobank.org:act:D746456C-2AEB-43B3-

926C-706EC11EF12C) Specimen examined (4). Holotype: ZSI/ ANRC 12102, Badabalu, depth 4.5 m, coll. M. Muruganatham, 15 February 2014. Paratypes: ZSI/ ANRC 12103, Pongibalu, depth 4.0 m, coll. PM. Mohan, 01 March 2014; DOSMB-00107: Badabalu, depth 3.5 m, coll. PM. Mohan; 15 February 201; DOSMB-00108, depth 5.5 m, coll. M. Muruganatham; 15 February 2015.

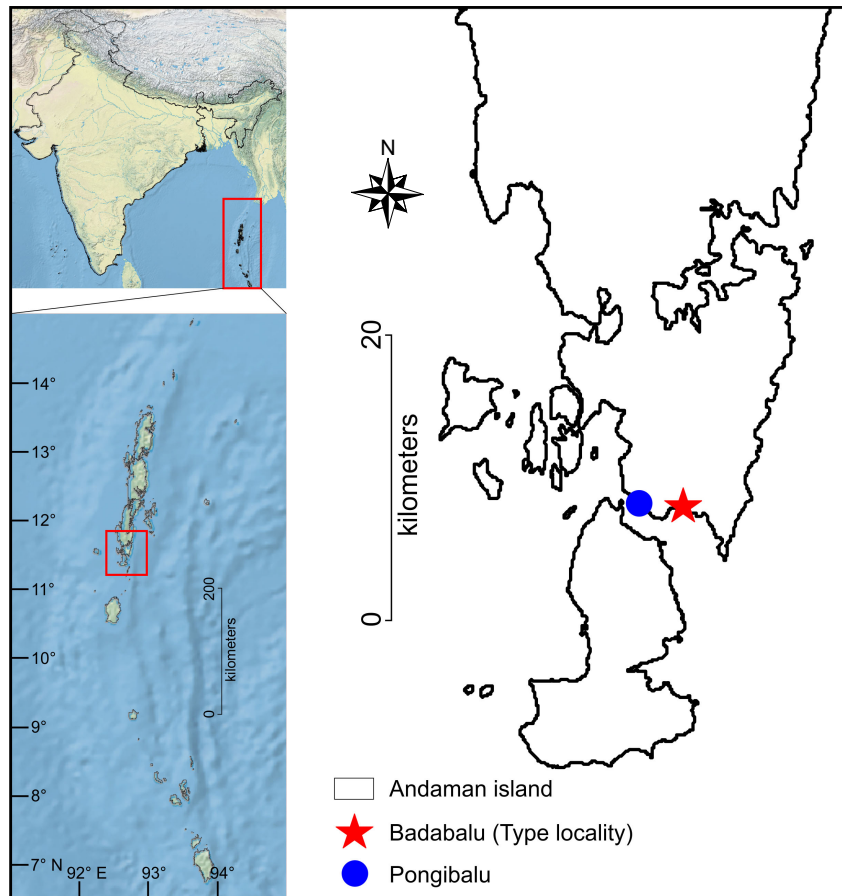


Fig. 1. Study Area.

**Table 1.** Comparison of the morphological and anatomical features of *Plakortis badabaluensis* sp. nov. with other species of *Plakortis* genus

|                        | Form               | Colour                      | Oscule Shape | Surface         | Consistency | Diods                       |
|------------------------|--------------------|-----------------------------|--------------|-----------------|-------------|-----------------------------|
| <i>P. simplex</i>      | Incrusting         | Bright rosy lavender        | Not visible  | Smooth/roughend | Soft        | (Centrotylote) 60-150/3-6   |
| <i>P. nigra</i>        | Thickly encrusting | Black                       | Few          | Smooth/porous   | Firm        | Thin, 20-90                 |
| <i>P. copiosa</i>      | Cushion shaped     | Brown outside, cream inside | -            | -               | Fragile     | 55-100                      |
| <i>P. erythraena</i>   | -                  | Brown/tan                   | -            | -               | -           | 10-90/1-22                  |
| <i>P. galapagensis</i> | -                  | Beige (alcohol)             | -            | Smooth          | Soft        | 126-165/4-8 and 27-92/1.5-4 |

Table 1. (continued)

|  | Form                                    | Colour   | Oscule Shape                           | Surface                                    | Consistency                               | Diodes  |
|--|---|--|--|--|---|---|
| <i>P. kenyensis</i>                            | Massive                                 | Buff-cream   | -                                      | -  | Tough                                     | 80-260/2-7  |
| <i>P. zyggompha</i>                            | Lamellate                               | Blue(alcohol)  | -                                      | Smooth                                     | Cheesy                                    | -   |
| <i>P. halicondriodes</i>                       | Cake-shaped                             | Chocolate-brown/<br>lighter  | Small excentrically                    | Even, pilose                               | Dense and firm                            | 160/4-5   |
| <i>P. angulospiculatus</i>                     | Thickly encrusting                      | Dark brown,<br>grey to yellow or<br>greenish   | Flush with surface<br>with rim         | Smooth with<br>papillae                    | Compressible                              | 25-205/1-7  |
| <i>P. japonica</i>                             | Thin encrusting                         | Pinkish-white (dry)  | Not visible                            | Smooth                                     | -   | 40-200/2-8  |
| <i>P. albicans</i>                             | Thinly to massively<br>encrusting       | White to ivory,<br>small purple<br>patches   | Circular shaped,<br>slightly elevated  | Smooth and<br>sculptured                   | Compressible<br>but firm                  | 12-137.5/1.3-7.5                                      |
| <i>P. insularis</i>                            | Thickly encrusting<br>to massive        | Chocolate-brown/<br>light brown  | Flush with surface                     | Smooth                                     | Soft                                      | 25-125/1-4  |
| <i>P. microrhabdifera</i>                      | Massively<br>encrusting                 | Light brown<br>with dark brown<br>patches  | Conspicuous,<br>Circular               | Smooth                                     | Compressible                              | 50-138/2-8  |
| <i>P. lita</i>                                 | Thickly encrusting                      | Black, dark brown,<br>grey brown/brown<br>or grey-brown                              | Terminal oscules                       | Smooth,<br>slimy                           | Soft                                      | 23-145/0.5-8.0  |
| <i>P. quasiamphiaster</i>                      | Thickly encrusting<br>to massive        | Reddish-brown,<br>paler  | Rounded                                | Smooth                                     | Compressible                              | 28.7-179.6/0.8-7                                      |
| <i>P. communis</i>                             | Thickly encrusting<br>to cushion-shaped | Dark or light<br>brown, khaki-<br>brown, greyish-<br>brown                           | Flush or elevated                      | Smooth                                     | Firm to soft                              | 27-143/1-6  |
| <i>P. bergquistae</i>                          | Thickly encrusting                      | Light brown to<br>orange(alcohol)  | Contracted                             | Smooth                                     | Firm,<br>cartilaginous                    | 2 types: 91-163/2-6;<br>202-356/5-11                  |
| <i>P. fromontae</i>                            | Thickly encrusting<br>to cushion-shaped | Black/cream  | Contracted                             | Smooth                                     | Firm,<br>cartilaginous                    | 25-223/2-10   |
| <i>P. hooperi</i>                              | Thinly encrusting<br>to cushion shaped  | Brown-beige  | Large, contracted<br>in alcohol        | Smooth                                     | Slightly<br>compressible                  | 79-148/2.5  |
| <i>P. myrae</i>                                | Thinly encrusting<br>to cushion shaped  | Light brown  | Elevated with rim                      | Smooth                                     | Soft,<br>compressible                     | 66.6-119.0/2-4  |
| <i>P. edwardsi</i>                             | Thickly encrusting<br>to massive        | Light to dark brown<br>with different<br>patches                                     | Flush with surface                     | Smooth                                     | Soft,<br>compressible                     | 2 types: 110-128/2.6-<br>3.0; 22.4-31.1/0.56-<br>1.09 |
| <i>P. dariae</i>                               | Thinly encrusting<br>to cushion shaped  | Light green with<br>thin brownish<br>patches   | Flush with surface                     | Smooth                                     | Soft,<br>compressible                     | 2 types: 67.3-112.2/1.6-<br>2.8; 30-59.5/0.8-2.1      |
| <i>P. petrupaulensis</i>                       | Thinly encrusting                       | Light brown with<br>dark patches/<br>yellowish cream                                 | Circular or elliptical<br>with rim     | Smooth                                     | Firm,<br>cartilaginous,<br>compressible   | 28-76/1-3   |
| <i>P. spinalis</i>                             | Thinly encrusting                       | Grey   | Contracted                             | Irregular,<br>rugose,<br>coriaceous        | Cartilaginous                             | 29-103/1-4  |
| <i>P. potiguarensis</i>                        | Thickly encrusting                      | Brown with beige<br>patches  | Circular, contracted<br>with light rim | Smooth                                     | Cartilaginous                             | 32-89/1-3   |
| <i>P. clarionensis</i>                         | Encrusting to<br>cushion shaped         | Dark and light<br>brown on the<br>surface and<br>choanosome pale<br>yellow (alcohol) | Circular shaped                        | Uneven,<br>rugose with<br>rounded<br>bumps | Cartilaginous<br>but internally<br>fleshy | 17.5-77.5/1.25-3.0                                    |
| <i>Plakortis<br/>badabaluensis</i> sp.<br>nov. | Thickly encrusting<br>to cushion-shaped | Dark chocolate<br>brown/light brown  | Circular with thin<br>rim              | Smooth                                     | Soft, fragile                             | 2 types: 64.1-133.1/3.4-<br>6.3; 77.9-116.6/1.3-5.0   |

**Diagnosis:** *Plakortis* was dark chocolate brown in colour externally and light brown internally. The choanosome formed elliptically shaped meshes of approximately 103 × 63 - 325 × 200 µm in diameter. Ectosome differentiated

with subectosomal lacuna. The ectosome and choanosome were both pigmented. Choanosome confused and vaguely reticulated. Microstrongyloid microrhabd was found to be present.

**Description:** Sponge is thickly encrusting,

**Table 1.** (continued)

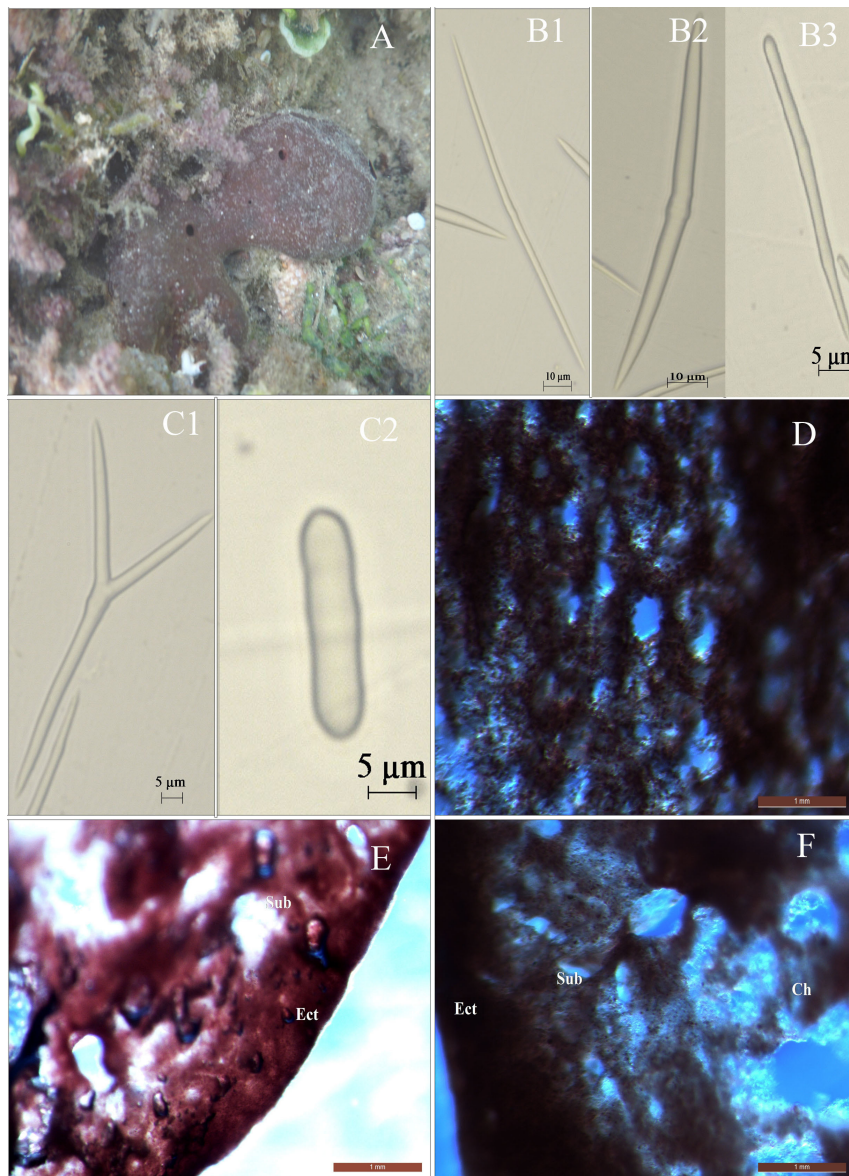
|   | Triods               | Other spicules                     | Ectosome                                     | Choanosome                             | Reference                              |
|---|----------------------|------------------------------------|--|--|--|
| <i>P. simplex</i>                       | 25-50/3-6            | -                                  | Thin fleshy dermis                           | -                                      | Schulze 1880                           |
| <i>P. nigra</i>                         | absent               | -                                  | -  | -                                      | Lévi 1953                              |
| <i>P. copiosa</i>                       | 18-37/4-4.5          | -                                  | -  | -                                      | Pulitzer-Finali 1993                   |
| <i>P. erythraena</i>                    | 20-25/1-2            | -                                  | -  | -                                      | Lévi 1958                              |
| <i>P. galapagensis</i>                  | 17-36/1.5-4          | -                                  | -  | -                                      | Desqueyroux-Faúndez and Van Soest 1997 |
| <i>P. kenyensis</i>                     | Rare 30-60           | -                                  | -  | -                                      | Pulitzer-Finali 1993                   |
| <i>P. zyggompha</i>                     | absent               | -                                  | Dense  | -                                      | de Laubenfels 1934                     |
| <i>P. halicondriodes</i>                | absent               | -                                  | -  | -                                      | Wilson 1902                            |
| <i>P. angulospiculatus</i>              | Rare, 15-80/1-3      | -                                  | Distinguished, multi spicular tract          | Dense, confused                        | Carter 1879; Moraes and Muricy 2003    |
| <i>P. japonica</i>                      | 30 × 4               | -                                  | Not distinguished                            | -                                      | Hoshino 1977                           |
| <i>P. albicans</i>                      | Rare-6.3-47.5        | -                                  | Alveolar arrangement                         | Dense, confused                        | Cruz-Barraza and Carballo 2005         |
| <i>P. insularis</i>                     | 20-50/1-3            | -                                  | Loose, confused                              | Loose, confused                        | Moraes and Muricy 2003                 |
| <i>P. microrhabdifera</i>               | absent               | Microrhabds, 3-12/1-2              | Distinct, 50-250 thick                       | Confused, dense                        | Moraes and Muricy 2003                 |
| <i>P. lita</i>                          | 1-66/0.5-2.5         | Microrhabds, 1-25/0.5-2.0          | Dense, irregular reticulation                | Confused                               | de Laubenfels 1954; Muricy 2011        |
| <i>P. quasiampfiaster</i>               | 10.5-78.4/1-5        | Quasiampfiaster, spheres           | Distinct, 100-1012                           | Dense, confused                        | Díaz and Van Soest 1994; Muricy 2011   |
| <i>P. communis</i>                      | 30-60/1-5            | Spheres                            | Tangential reticulation, well differentiated | Confused or vaguely reticulate         | Muricy 2011                            |
| <i>P. bergquistae</i>                   | 30-122/5-20          | -                                  | Reticulate, multispicular tracts             | Poorly differentiated, denser          | Muricy 2011                            |
| <i>P. fromontae</i>                     | Rare-6-44/0.5-5.0    | Spheres                            | Double reticulation                          | Confused                               | Muricy 2011                            |
| <i>P. hooperi</i>                       | 17-61/2-3            | Microrhabds, 2-8/0.5-1.0, Spheres  | Confused, undifferentiated                   | Confused                               | Muricy 2011                            |
| <i>P. myrae</i>                         | 17.8-53.5/1.8-3.3    | Microrhabds, 5.0-12.4/0.44-0.97    | Distinct                                     | Dense, confused                        | Ereskovsky et al. 2013                 |
| <i>P. edwardsi</i>                      | 28.1-59.4/2-2.6      | Absent                             | Loose, confused                              | Dense, confused                        | Ereskovsky et al. 2013                 |
| <i>P. dariae</i>                        | Rare-20-43.5/2.2-2.7 | Absent                             | Distinctly reticulate                        | Confused, reticulate                   | Ereskovsky et al. 2013                 |
| <i>P. petrupaulensis</i>                | absent               | Microrhabds, 1-18/0.5-3.0, spheres | Disorganized, vaguely reticulate             | Disorganized                           | Domingos et al. 2013                   |
| <i>P. spinalis</i>                      | 24.7-49.4/1-5        | Microrhabds, 5-14/2-6, spheres     | Differentiated, reticulate                   | Dense, disorganized                    | Domingos et al. 2013                   |
| <i>P. potiguarensis</i>                 | 22-32/1-3            | Microrhabds, 4-25/1-2              | Disorganized, single mesh reticulation       | Scares, disorganized                   | Domingos et al. 2013                   |
| <i>P. clarionensis</i>                  | 10-30                | Absent                             | Nondetachable, pigmented, differentiated     | -                                      | Cruz-Barraza et al. 2014               |
| <i>Plakortis badabaluensis</i> sp. nov. | 16.1-61.4/1.9-5.2    | Microrhabds, 13.3-43.8/3.8-6.1     | Differentiated, dense                        | Confused with round to elliptical mesh | Present study                          |

cushion shaped, with size up to 10-15 cm wide and 1-2 cm thick. Colour *in vivo* is dark chocolate brown externally and light brown internally (Fig. 2A); when preserved in ethanol the specimen was black in colour externally and light brown internally. The surface is smooth, oscules are circular in shape with thin rim after fixation contracted, and 1-4 mm in diameter. Consistency is soft, fragile, crumbly and easy to tear. Neither exudates nor smell were observed.

**Spicules:** Diodes abundant (Figs. 2B1, B2), 2 size classes- thick and thin. Thick diodes are

irregular, smooth, slightly curved, the central region is thick, sinuous, s-bent, and sometimes show a well-developed protuberance; while the endings are acerate  $64.1-106.8-133.1/3.4-6.3 \mu\text{m}$  (N = 20). Thin diods with significant quantity are almost straight, some are slightly curved in the central region; the endings are pointed  $77.9-96.2-116.6/1.3-5.0 \mu\text{m}$  (N = 20). Styloid modification is also present in significant number (Fig. 2B3).

However, Triods are rare, have irregular Y-shaped base with sharp to rounded ends. Actines  $16.1-37.0-61.4/1.9-5.2 \mu\text{m}$  (N = 10; Fig. 2C1).



**Fig. 2.** (A) Specimen *in situ*. (B1) Thin Diodes. (B2) Thick Diodes. (B3) Styloid shaped Diodes. (C1) Y-shaped Triods. (C2) Microrhabds. (D) T.S Showing Ectosomal Meshes. (E) L.S. Showing Ectosome (Ect) and Subectosomal Lacune (Sub). (F) L.S. Showing Ectosome (Ect), Subectosomal Lacune (Sub) and Choanosome (Ch).

Microrhabds are significant in number, smooth, microstrongyloid 13.3-24.3-43.8/3.8-6.1  $\mu\text{m}$  (N =7; Fig. 2C2).

**Skeleton:** Ectosomal skeleton: Ectosome is well differentiated, dense and darker than choanosome. In longitudinal sections, the ectosome was observed to be 0.2-0.3 mm thick with dark pink and black colour pigments. In transverse sections, the skeleton is dense with round to elliptical meshes (Figs. 2D, E). Subectosomal lacunae are present and it is higher than wide in shape, 41-208/38-147  $\mu\text{m}$  (Fig. 2E).

**Choanosomal skeleton:** It is confused, with round to elliptical meshes and measures 103-325/63-200  $\mu\text{m}$  in diameter. It also shows dark pink and black colour pigmentation (Fig. 2F).

**Ecology:** This species was found in a bay of the Andaman Sea, which extended to mix with the Bay of Bengal. The whole area has a rocky bottom with patches of sand seen everywhere. The depth of this species occurrence was noticed from is about 3 - 5 m and attached to the rocky outcrop. This sponge was surrounded by corallimorphs, algae, ascidians and corals (Fig. 2A).

**Distribution:** Badabalu and Pongibalu are situated around the Port Blair town, of the Andaman and Nicobar Islands, India.

**Etymology:** The name *badabaluensis* refers to the type locality of the species in Badabalu, Andaman and Nicobar Islands, India.

## DISCUSSION

The morphological and anatomical characters of *P. badabaluensis* sp. nov were compared with all the twenty six species available worldwide under this genera (Table 1). *Plakortis badabaluensis* sp. nov. is grouped under *Plakortis* with microrhabds, which include 7 species, that is, *Plakortis lita* de Laubenfels, 1954; *Plakortis microrhabdifera* Moraes and Muricy, 2003; *Plakortis hooperi* Muricy, 2011; *Plakortis myrae* Ereskovsky Lavrov and Willenz, 2014; *Plakortis petrupaulensis* Domingos, Moraes and Muricy 2013; *Plakortis potiguarensis* Domingos, Moraes and Muricy 2013; and *Plakortis spinalis* Domingos, Moraes and Muricy 2013. The new species is mostly similar to *P. lita* in the dark brown colour, thickly encrusting, and with smooth surface. Subectosomal lacunae are present, with choanosomal skeleton forming reticulation with elliptical meshes. Moreover, Diodes are abundant, but triods are rare. They differ by the slimy surface and sometimes show large tubes with small

terminal oscules and smaller size of diods (23-145  $\mu\text{m}$ /0.5-0.8  $\mu\text{m}$ ), styloid modification is rare and irregular, strongyloid microrhabds is smaller in size (1-25  $\mu\text{m}$ / 0.5-2.0  $\mu\text{m}$ ), while the choanosomal meshes are large (200-600  $\mu\text{m}$  in diameter) (Muricy 2011). *P. microrhabdifera* is distinguished by light brown colour with exudate, microrhabds are irregularly twisted, triods are absent, but with well-developed tangential alveolar arrangement of spicule tracts in the ectosome (Moraes and Muricy 2003). *P. hooperi* is thinly encrusting, brown-beige in colour with irregular surface, releases abundant mucous and has acetone like smell, deformed microstrongyles, and its ectosome is undifferentiated (Muricy 2011). *P. myrae* differed by light brown colour, abundant triods, the microrhabds are irregularly twisted, the presence of choanosome with alveolar arrangement of diods (60-80  $\mu\text{m}$  in diameter) (Ereskovsky et al. 2013). *P. petrupaulensis* is distinguished by thinly encrusting, light brown in colour, the diods are small (28-76  $\mu\text{m}$  /1-3  $\mu\text{m}$ ) and triods are absent, microrhabds are tuberculate, absence of subectosomal lacunae, and the ectosome and choanosome are undifferentiated. *P. potiguarensis* differed by small diods (37-89  $\mu\text{m}$ /1-3  $\mu\text{m}$ ), the microrhabds are irregular, and shows absence of subectosomal lacunae. Similarly, *P. spinalis* is thinly encrusting, gray in colour, the surface is irregular, it is rugose, and coriaceous. The diods are small and with spines (29-103  $\mu\text{m}$ / 1-2  $\mu\text{m}$ ), while the microrhabds are highly tuberculate (Domingos et al. 2013).

## CONCLUSION

The Andaman and Nicobar group of Islands are highly diverse and are present in the Bay of Bengal, but the phylum Porifera is inadequately revised. Not only poriferans but also other marine organisms are yet to be taxonomically classified.

The genus *Plakortis* is considered cosmopolitan and has very simple identification characters, but its uniformity in external characters made this genus taxonomically very difficult to resolve the species complex. The present study has increased the number of species reported from the Andaman and Nicobar Islands.

## List of abbreviations

ZSI/ ANRC- Zoological Survey of India/ Andaman and Nicobar Regional Center.

DOSMB- Department of Ocean Studies and

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