

Full Length Research Paper

Notes on three new records of scleractinian corals from Andaman Islands

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Andaman group of islands being a part of India (megadiverse country) shows a great deal of ecological diversity both in terrestrial and marine ecosystems. Coral Reefs are the building blocks of marine ecological niche for the sustainable existence of marine biodiversity and advocates the other associated faunal communities for their betterment, as well as their way of life towards the future generation. Three scleractinian corals *Montipora gaimardi* Bernard, 1897, *Podabacia lankaensis* Veron, 2000, *Podabacia sinai* Veron, 2000, are identified as the new record to Indian water from this group of islands of Andaman Archipelago. These three corals belong to Acroporidae and Fungiidae families. The present study describes the taxonomical features of the identified scleractinians based on their morphology and corallites structures.

Key words: Scleractinia, Andaman Islands, Montipora, Podabacia.

INTRODUCTION

Andaman Sea is a semi-enclosed basin connected by the three main channels to the Bay of Bengal on one side and to the Pacific on the other sides. The Preparis channel, on the north, which is 285 km wide, the ten degree Channel, which is about 150 km wide, separating the Andaman groups from Nicobar groups, while the Great Channel, south of Great Nicobar Island is about 189 km wide. Large part of the bottom contained hard rock, a series of ridges and depressions, which include Alcock Sea Mount and Narcodum- Barren Basis (Swell, 1925). Andaman Sea is gifted with rich legacy of corals and their associated fauna (Rao, 2010). Coral reefs of the world cover an estimated area of 600000 km² (Smith, 1978; Kleypas, 1977). Over half of these (54%) coral reefs lie in the Mediterranean Indian Ocean (Scheer, 1985). The corals of the Andaman Islands belong to the Indo-West Pacific faunal province (Hoeksema and Dai, 1992). The coral reefs of Andaman and Nicobar Islands are the biodiversity hot spot of India (Jeyabaskaran,

1999). The importance of coral reef ecosystems may be seen in their numerous ecological, aesthetic, economic and cultural functions. Coral reefs, in particular, are critical habitat that supports diversity of both residential and migratory fauna species especially for those considered to be endangered and vulnerable. The structure of a reef provides homes and food for many types of plants, fish and invertebrates (Nelson, 1999). Coral reefs are the largest structures made by living things and exist as extremely productive ecosystems in tropical and sub-tropical areas of the world. These ecosystems are packed with the highest densities of animals to be found anywhere on the planet. Thronging with life, they rival even the tropical rainforests in terms of diversity (Mark, 2000). Coral reefs, in particular, are critical habitat that supports diversity of both residential and migratory faunal species especially for those are considered to be endangered and vulnerable. Coral and rocky reefs constitute are considered as important ecosystems in our planet, being their astonishing diversity, productivity, abundance and beauty are some of the main characteristics (Goldman and Talbot, 1976) According to recent studies, coral reefs constitute one of the country's main marine assets (Schleyer et al., 1999;

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Rodrigues et al., 1999). The present paper deals on the taxonomical features of the three identified scleractinian corals and their key characters as these are noted as record to Indian Water.

MATERIALS AND METHODS

The survey was made at several sites (Figure 1) of Andaman group of islands during the month of January to May, 2010 by using self-contained underwater breathing apparatus (SCUBA) diving and snorkeling. Line intercept transect and quadrat methods (English et al., 1996) were applied to investigate the diversity and distribution of the corals. During SCUBA diving, species recording was made by underwater digital photography (Sony - Cyber shot, Model-T900, marine pack, 12.1 megapixels) for detailed identification. Identification was done by *in situ* observation and photographs in conjunction with Veron (2000), Wallace (1999) and Sheppard (1987). Specimens were also collected to study their morphological and taxonomic characters. After completion of the examination of taxonomic features, all the collected specimens were registered and deposited in the National Zoological Collection of Zoological Survey of India, Andaman and Nicobar Regional Centre, Port Blair.

RESULTS

During the present study, three species of scleractinian corals were identified as new record to Indian Waters. One species belonged to the genus *Montipora* (Family-Acorporidae) and two species belonged to genus *Podabacia* (Family- Fungiidae). On the basis of taxonomical features of their corallites structure, the following description was made.

Montipora gaimardi (Bernard, 1897)

Place of record in Andaman and Nicobar Islands: Surumai Dikri (Latitude 11°25.504'N and Longitude 92°40.301'E), Rutland Island, Andaman. The sample was collected from a depth of 4.5 m of the surveyed area (Figures 2 and 3).

Material examined: One sample was examined. The length was 102 mm, width was 86 mm and height was 69 mm, Reg. No. ZSI/ANRC- 4737.

Description: Colonies have thick encrusting bases and branches which may be open or form a compact clump. The coenosteum forms a complex of fine ridges. The corallites are in and between these ridges.

Key character: No axial corallite, corallites < 2 mm diameter, columella absent, branches with basal structures...Genus *Montipora*, Colony dominated by branching growth form, branches thick, branches not submassive, colonies without explanate bases, *Montipora gaimardi*.

Colour: Brown or green, some times with pale branch tips.

Similar species: *Montipora cactus* and *Montipora australiensis*, which have corallites in and between

coenosteum ridges.

Occurrence: Common.

Distribution: Australia, Indonesia, Irian Jaya, Japan, Philippines, Solomon Islands and Tonga.

Cites appendix: II

EC regulation: B

IUCN red list category and criteria: Vulnerable, 2010

Podabacia lankaensis (Veron, 2000)

Place of record in Andaman and Nicobar Islands: Rail Island (Latitude 12°59.033'N and Longitude 92°54.137'E), Andaman. The sample was collected from a depth of 7 m (Figures 4 and 5):

Material examined: One material was examined. It is slightly oval in structure. Radius of the polyp is 7.9 cm in longest side and 7.7 cm in shortest side, Reg. No. ZSI/ANRC- 4738.

Description: Colonies are loosely attached or free-living, encrusting or laminar, and unifacial, with irregularly lobed margins and an irregularly contorted surface. There is no central corallite. Peripheral corallites are inclined towards the plate margins. Septo-costae are similar to those of *Halomitra*.

Key character: Colony are attached to substrate, colony mostly explanate...Genus *Podabacia*: Colony irregularly contorted *Podabacia lankaensis*.

Colour: Grey-brown white margins.

Similar species: This species combines various characters of *Lithophyllon*, *Podabacia* and *Halomitra*. Corallites are smaller, less regular and more inclined on the colony surface than are those of *Podabacia motuporensis*.

Occurrence: Rare.

Distribution: Sri Lanka.

Cites appendix: II

EC regulation: B.

IUCN red list category and criteria: No entries found.

Podabacia sinai (Veron, 2000)

Place of record in Andaman and Nicobar Islands: Surumai Dikri (Latitude 11°25.504'N and Longitude 92°40.301'E), Rutland Island, Andaman. The sample was collected from a depth of 6.5 m (Figures 6 and 7).

Material examined: One material was examined. It is slightly oval in one side and other side is irregular in shape. Radius of the longest side is 8.5 cm. and shortest side is 7.3 cm, Reg. No. ZSI/ANRC- 4739.

Description: Colonies are attached, laminar, unifacial and may form tiers. Plates have usually lobed margins and commonly have radiating costal ridges. Corallites are small and not inclined towards the plate margins. Septo-costae are similar to those of *Halomitra*.

Key character: Colony attached to substrate, colony

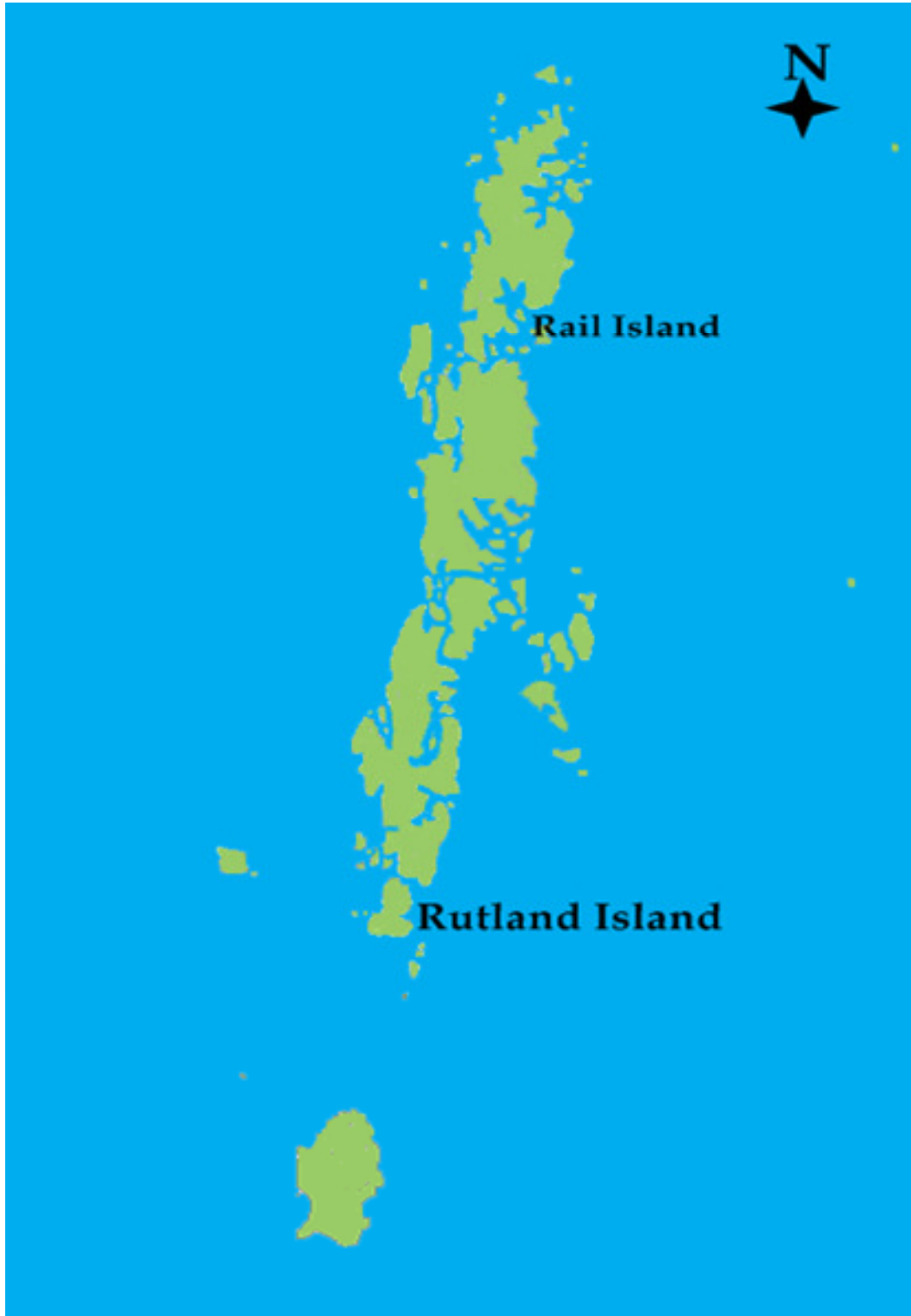


Figure 1. Study areas of Andaman Island".

mostly explanate...Genus *Podabacia*: Colony not contorted, colony with lobed margins *Podabacia sinai*. Colour: Pale brown with white margins.

Similar species: *P. motuporensis*: Is very similar, but have smaller corallites and finer costae. *Podabacia* crustacean: Forms larger colonies and has larger



Figure 2. *Montipora gaimardi* (Bernard, 1897).



Figure 4. *Podabcia lankaensis* (Veron, 2000).



Figure 3. Corallites of *Montipora gaimardi*.



Figure 5. Septal arrangement of *Podabcia lankaensis*.

corallites.

Occurrence: Uncommon.

Distribution: Egypt.

Cites appendix: II

EC regulation and criteria: Data deficient.

DISCUSSION

Coral reefs are some of the most productive ecosystems,

providing habitat for numerous species and serving important ecological functions (Precht, 2006). Coral reefs support extraordinary biodiversity although they are located in nutrient-poor waters. On the basis of a taxonomical character, three scleractinian corals are identified from this group of islands as the new record to Indian water. Pillai (1983) listed 135 coral species from Andaman, and found that Andaman Islands were less diverse (31 genera with 82 species) than the Nicobar Islands (43 genera with 103 species). Presence of these corals in the mentioned region is the indicator of



Figure 6. *Podabacia sinai* (Veron, 2000).



Figure 7. Septal arrangement of *Podabacia sinai* (Veron, 2000).

progressiveness of marine biodiversity. The Government of India and UNDP GEF field mission (2001 diving studies) reported a total 198 species of scleractinian coral from Andaman groups of island of which 111 are supposed to be new records to India (on verification with other studies only 94 species are found to be new records and this also include some non-scleractinian corals). Venkataraman et al. (2003) described 228 species of corals belonging to 58 genera and 15 families. The presence of the corals will increase the associated faunal communities on the selected places (Licuanan, 2004). 223 species of scleractinian have been reported from the Andaman Islands (Turner et al., 2009). Later Tamal et al. (2010, 2011) recorded seven and five scleractinian corals from Andaman and Nicobar Islands as an indicator of increasing Scleractinian database. This identification of scleractinian corals will be helpful for the preparation of conservation and management action plan for the scleractinian corals of Andaman Islands. Further

surveys are required in near future to get more apprehensive data on different types of species.

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