

Occurrence of Scleractinian Coral Species *Pavona Explanulata* (Lamarck, 1816) from Gulf of Mannar Biosphere Reserve, India

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ABSTRACT

Three colonies of hard coral species *Pavona explanulata* belonging to the family Agariciidae were first time recorded from Gulf of Mannar Biosphere Reserve, India. Colonies were documented from Krusadai Island on 30th January, 2019. Colonies are sub massive and skeletons are yellowish brown in colour. Polyps of the specimens are extended during the day time. The tip of each polyp gives pale green appearance during the day time. Detailed morphological characteristics and distributional record of *Pavona explanulata* are described in the present study.

Keywords: New record, scleractinian coral, *Pavona explanulata*, Krusadai Island, Gulf of Mannar Biosphere Reserve.

INTRODUCTION

Coral reefs are made of highly diverse and complex ecosystem which is considered as the centre of high biological productivity (Spalding et al. 2001). Reefs provide various goods and services to coastal inhabitants through aquaculture production and tourism development. But over the past few decades, these important tropical ecosystems are being threatened to extinction at alarming rate owing to serious natural and anthropogenic disturbances (Hoegh-Guldberg, 2011). Coral reefs in Gulf of Mannar Marine National Park (GoMMNP) and Biosphere Reserve (GoMBR) are developed around a chain of 21 islands which are located between latitude 08° 35' N & 09° 25' N and longitude 78° 08' E & 79° 30' E along a 170km stretch from Tuticorin to Rameswaram (Gopalakrishnan et al. 2012). Reefs are mainly of fringing and patchy type, occurring at depth range between 20cm and 5m. Reef flat is extensive in almost all the reefs in the Gulf of Mannar. Till date, a total of 4223 marine flora and fauna have been reported from GoMBR, among which 117 scleractinian coral species were documented from here (ENVIS, 2015). However, while

doing underwater survey in Krusadai Island of GoMBR, a scleractinian coral species *Pavona explanulata* belonging to the family Agariciidae have been documented for the first time from Gulf of Mannar water with description of the species.

MATERIALS AND METHODS

Extensive underwater surveys were conducted in Krusadai Island under Mandapam group of Islands in GoM during the month of January-February, 2019. Collection of specimens were not encouraged as per the Wildlife Protection Act, 1972, in which all scleractinian species have been listed in Schedule –I category on conservation priorities. Therefore, while diving, three colonies of *Pavona explanulata* were documented and photographed with NIKON Coolpix underwater camera. Locations of the observation sites (Site1: N09°14.814', E79°13.247'; Site2: N09°14.282', E79°12.332') were marked with GARMIN e-Trex handled GPS device (Fig.1). Species identification was confirmed with earlier literature on corals from abroad and India (Veron, 2000; Venkataraman et al. 2012; Waheed et al. 2015).

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Figure1. a. Arrow showing the area of Gulf of Mannar; b. yellow dot indicating Krusadai Island; c. Location of observation site of *P. explanulata* in Krusadai Island

RESULTS AND DISCUSSION REMARKS

Systematic Account

- Phylum: Cnidaria
- Class: Anthozoa
- Order: Scleractinia

- Family: Agariciidae
- Genus: *Pavona*
- Species: *Pavona explanulata* (Lamarck, 1816)

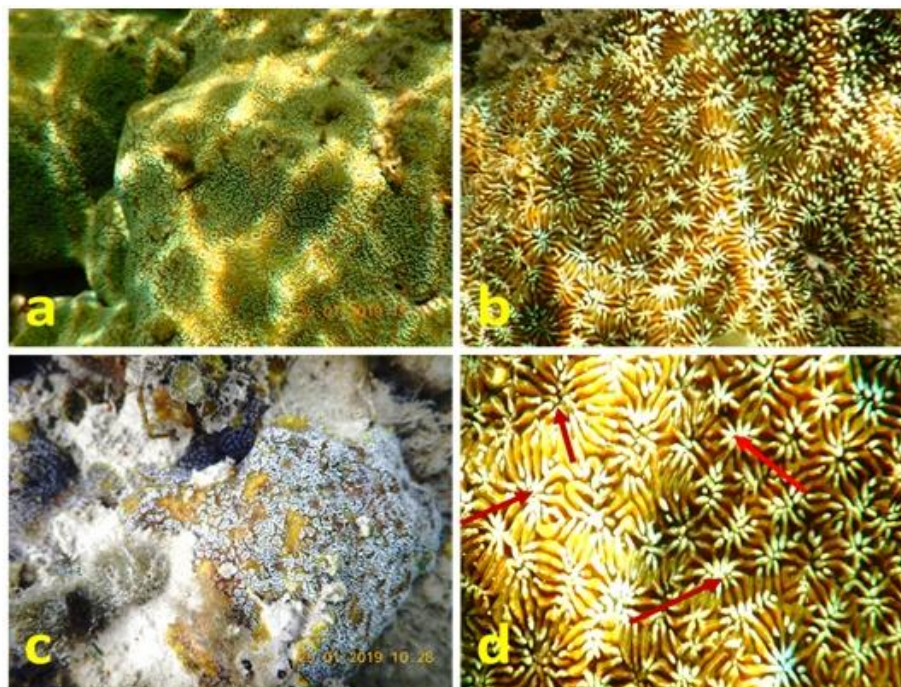


Figure2. a. Submassive colony: brown in color and extended polyps in pale green. b. Theca or wall in between corallites poorly developed. c. Encrusting colony; d. close view of corallite structure, arrows show the arrangement of columella towards fossa

Morphological Characteristics

Submassive (Fig.2a) and encrusting (Fig.2c) form of colonies were observed. Corallites are brown or mottled brown in colour and polyps

are off white to pale green in colour. Polyps are extended during the daytime. Corallites are arranged in irregular pattern, widely spaced and circular. There is no well-developed theca in

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between corallites and that give the corallium a smooth surface appearance (Fig.2b). The columella comprised of multiple patterns that radially combined to the fossa (Fig. 2d).

Distribution

P. explanulata is commonly distributed in shallow reef environment. In worldwide, this species is recorded from Madagascar (Pillay et al. 2002), Persian gulf (Sheppard, 1991; Coles, 1996; Carpenter et al. 1997), Great Barrier Reef (Veron, 1986), Cocos Keeling Island (Venkataraman et al. 2012), and Japan (Nishihira and Veron, 1995). In India, *P. explanulata* is reported earlier from Andaman and Nicobar islands (Venkataraman et al. 2012). In present study, this species is first time reported from Gulf of Mannar water, Southeast coast of India

REMARKS

P. explanulata found at a shallow depth of 1.8m and near shore fringing reef of Krusadai Island. The genus *Pavona* sp. Generally are sub massive, massive, laminar or foliaceous. Corallites have poorly defined walls. They have small shallow depressions, usually with a central columella, sometimes separated by ridges. *P. explanulata* has a close resemblance with *P. maldivensis* which have circular, plocoid or flattened corallite shape and the wall or theca in between corallites are prominent (Waheed et al. 2015). The family Agariciidae represented 5 species belonging to the genera *Pavona* sp. and *Pachyseris* sp from GoMBR. Additional new record of this coral species increases the taxonomic list of genus *Pavona* sp in GoMBR.

Scleractinian corals contribute maximum efforts to form a coral reef ecosystem with a close association of Symbiodinium algae called zooxanthellae which supports rich species diversity in marine ecosystem. Interestingly, Coral reefs in Go MBR harbors numerous marine organism of global significance and, thus it is considered as one of the world's significant region in marine biodiversity perspective (Ranjith et al.2016). It improves the sustainable livelihood to the coastal population by implementing aquaculture and eco-tourism along the coastline. Over the past few decade, coral reefs in Gulf of Mannar are facing several threats which include coral bleaching, sedimentation, coral mining, destructive fishing, shoreline operation and biological invasion (Kamalakaran et al. 2010; Chandrasekharan et al. 2008; Edward et al. 2018). But despite of several disturbances, the

reef exist with full of marine resources. Hence, finding of new distributional record of coral species bring hope to do further intensive underwater investigation on marine biodiversity of this important biosphere reserve. Further, awareness on conservation of corals are need to spread to local government and coastal inhabitants which consequences better protection and management of these valuable marine resources in future.

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