NATURE IN SINGAPORE 2010 **3**: 217–219
Date of Publication: 3 September 2010

ATYPICAL MORPHOLOGY OF *TURBINARIA PELTATA* FROM A SINGAPORE NON-REEFAL ENVIRONMENT

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INTRODUCTION

The widely-distributed scleractinian coral, *Turbinaria peltata* (Esper, 1794) can be found in turbid, non-reefal biotopes (Veron & Pichon, 1980). Colonies consist typically of unifacial horizontal plates or sometimes vertical columns. It is common in Singapore's coral reefs (Huang et al., 2009), and also present among non-reefal environments. Here, we report an unusual growth form exhibited by one colony established on the seawall of a marina along the East Coast of Singapore.

DETAILS OF SIGHTING

At a seven-year old sloping granite seawall that forms part of the Singapore Armed Forces Yacht Club marina along the southeastern shore of mainland Singapore (1°18′55 ″N, 104°00′55″E) (Fig. 1), the species is one of the more abundant of the naturally colonising scleractinians.

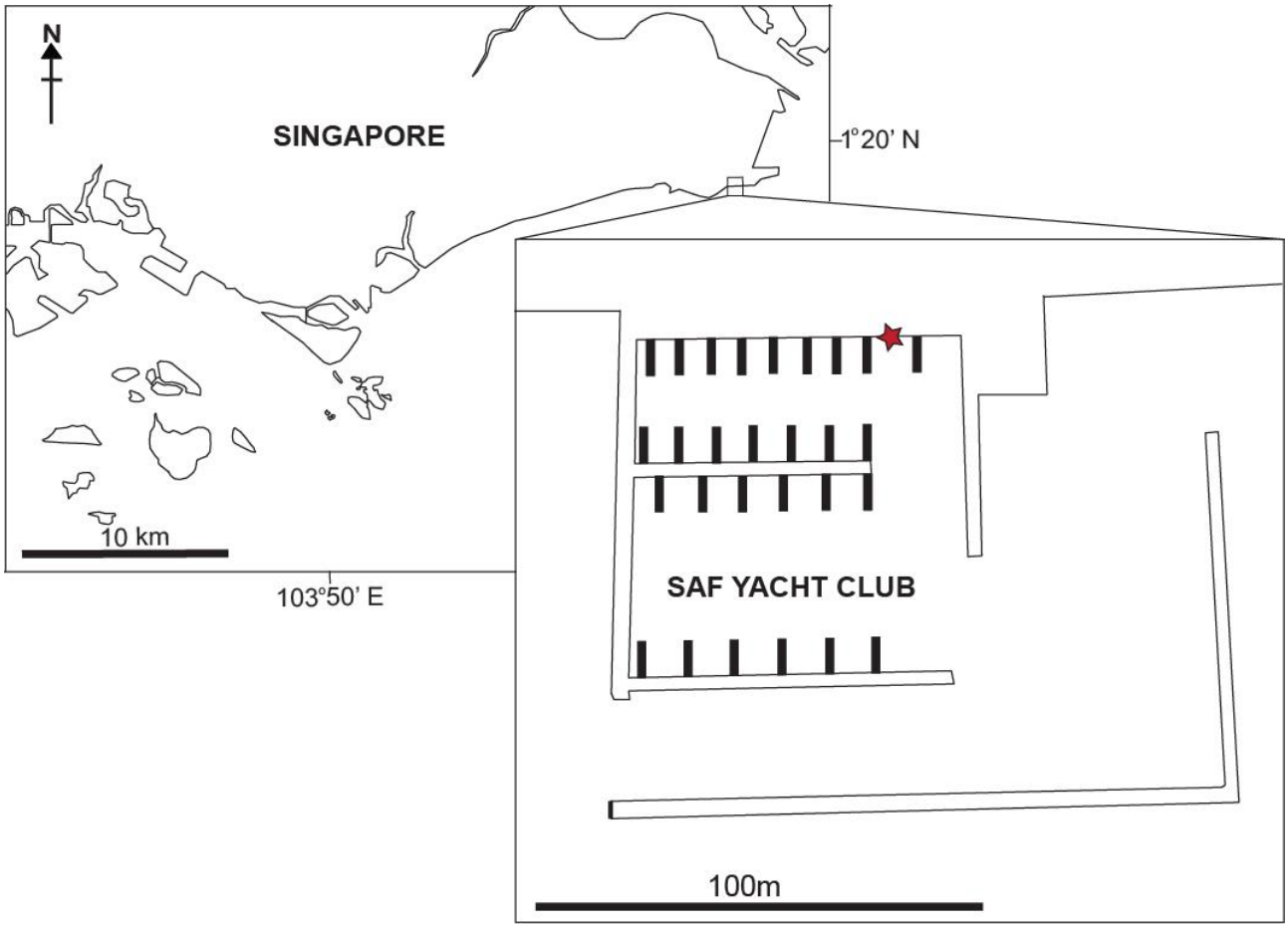

Fig. 1. Map of Singapore and study site (inset). The red star indicates the location of the *Turbinaria peltata* colony which displayed atypical growth, on the seawall.

Fig. 2. Juvenile *Turbinaria peltata* with atypical extensions from the sides of the colony. (Photograph by: Tay Ywee Chieh).

The area was a sandy shore prior to reclamation and seawall construction. No coral reefs were known to exist along that stretch of the shore in the past. The seawall apparently provided a suitable hard substrate for the settlement of coral larvae transported by sea currents. Based on a survey conducted in Feb.2010, the marina's inner seawall was colonised by more than 50 species of scleractinians. Among them, a juvenile *Turbinaria peltata* colony (~ 4 cm wide) found at a depth of 4 m below mean sea level exhibited an unusual morphology (Fig. 2).

Protruding from almost opposite sides near the exterior base of the typical cup were two slender elongated 'arms', one bearing a single polyp and the other, three polyps near the apex. Both branches were as tall as the cup itself.

DISCUSSION

The funnel shape of *Turbinaria peltata* has been shown to concentrate sediments in the centre of the colony in calm-water environments (Riegl et al., 1996). Formation of the funnel-shaped *Turbinaria peltata* colony in question appears to be in the initial stages, and is likely to be related to the light regime and reduced tidal flow within the marina. However, the extensions from the sides of the colony are not characteristic of the species. The atypical growth could be a response to sediment build-up, although this was not observed in any of the other con-specific colonies at the same site. Some damage that occurred near the base during the early development of the colony may also be responsible for the development of the 'arms'.

This atypical growth has not been seen in any other *Turbinaria peltata* colonies both in the natural reefs and non-reef environment of Singapore. Plasticity experiments conducted on the congeneric *Turbinaria mesenterina* showed that convoluted colonies transplanted to deep water became more horizontally planar, while those with planar morphologies became more convoluted following transplantation to shallow water (Willis, 1985). Plasticity in *Turbinaria peltata* has not been studied (Todd, 2008), but the unusual morphology observed here appears to be an exceptional case of deformity rather than a generalised plastic response to environmental factors. The possibility exists that these 'arms' are skeletal tumors, but they do not resemble growth aberrations observed in other scleractinian species e.g. elevated nodules in *Porites compressa* (see Cheng & Wong, 1974), raised patches in massive *Porites* colonies (Raymundo et al.,

2005), and protuberances—hemispherical in *Montipora informis* (see Yamashiro et al., 2000), and roughly circular in *Platygyra* colonies (Loya et al., 1984).

ACKNOWLEDGEMENTS

We thank the management of the Singapore Armed Forces Yacht Club for granting access to the marina, and the staff of DSRG Asia-Pacific Pte. Ltd. for ensuring our safety during field trips. We also thank the anonymous reviewer for the comments for improving the manuscript.

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