

## Fission process of the zoanthid *Palythoa caribaeorum* Duchassaing & Michelotti, 1860 (Zoantharia: Sphenopidae) in Southwest Atlantic, Brazil

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The zoanthid *Palythoa caribaeorum* Duchassaing & Michelotti, 1860 (Sphenopidae) is widely distributed in shallow water communities along the Brazilian coast (Floeter et al. 2007). One attribute that helps to explain this wide distribution is the ability of this species to reproduce both by sexual and asexual strategies (Costa et al. 2011). New colonies can be formed by fission, a process defined as an asexual reproduction by spontaneous division of the body into two or more parts, each one growing into a complete organism (Acosta et al. 2001). Fission contributes adaptatively to *P. caribaeorum*

by increasing the number of clone-mates and, consequently, maximizing its population sizes (Acosta et al. 2005). This process represents an important form of asexual reproduction and helps to explain ecological and evolutionary successes of this zoanthid on the Western Atlantic (Acosta et al. 2005). Although the fission process of *P. caribaeorum* was already reported by Acosta et al. (2005), Acosta et al. (2007), Bastidas and Bone (1996), it was rarely been documented through high-quality photography.

In this way, here we documented the fission reproduction of *P. caribaeorum* and provided a photography record of this

asexual reproduction. We performed the observation on 25 January 2012 at 11:23 hat Ponta do Bananal (23° 06'02" S, 44° 15'28" W), Baía da Ilha Grande (BIG), Rio de Janeiro, Brazil. The BIG is located in the south of the state of Rio de Janeiro, with about 350 km of perimeter in the waterline (Creed et al. 2007), inserted in a hydrographic region that covers 200 km<sup>2</sup>, and houses the largest number conservation units in the State of Rio de Janeiro. The annual precipitation of the region is 2500 mm, and the salinity of the bay varies around 35-36. During summer, the increase in water temperature is due to the entry of local hot currents into the bay (Signorini 1980). Consequently, the tropical waters of BIG vary from 21 to 32°C during the year (De Paula and Creed 2004). Considered a biodiversity sanctuary because it has rich marine fauna and flora, BIG has a high diversity benthic species and reef fish species, and its coastal zone is considered a priority area for coastal and marine conservation (Creed et al. 2007). In order to obtain high-quality images underwater, we used a point-and-shoot

camera (Canon Power Shot G12) inside a waterproof case. Posteriorly, we performed corrections of exposure, brightness, contrast and sharpness of the selected photograph in laboratory using the software Adobe Photoshop® CC.

The zoanthid was fixed on a rock three meters underwater with both body parts (Fig. 1, points A and B) firmly fixed to the substrate and with a polyp between them (Fig. 1, arrow). Polyp represents an individual that together form the colony of corals, is a tubular structure with an inner cavity that opens only at one end where the individual feeds (Brusca and Brusca 2003). We hypothesized two possible scenarios which could explain what we observed: (1) the basal coenenchyme of a single colony, which is the common tissue that surrounds and binds the polyps in corals, is covering two rocks (A to B), restricting its body format to form two colonies (A and B) or (2) part of the original colony (B) detached from the rock and the basal coenenchyme stretched and attached to a new rock (A). The stretched aspect of the polyp and the



Figure 1. Fission process in *Palythoa caribaeorum*. Newly formed colony (A) connected by basal coenenchyme to an original colony (B). The arrow represents a stretched polyp between the two body parts of the zoanthid. Polyp is an individual formed by tubular structure with an inner cavity where the individual feeds. Coenenchyme is the common tissue that surrounds and binds the polyps. Source: Teixeira & Creed.

coenenchyme attaching colonies A and B suggests that scenario 2 is most likely. In addition to provide visual information about the fission process, here we reinforce the importance of scientific photography for environmental research. The present work is the first to document in high quality photography the process of asexual

reproduction by fission of the zoanthid *P. caribaeorum*.

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