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## A new species of *Pachycerianthus* (Cnidaria, Anthozoa, Ceriantharia) from Tropical Southwestern Atlantic

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### Abstract

A new species of *Pachycerianthus* (Cnidaria: Ceriantharia) is described from the Brazilian coast of the southwestern Atlantic Ocean. *Pachycerianthus schlenzae* **sp. nov.** is found in fine sand or mud in shallow waters of Abrolhos and Royal Charlotte Bank. The new species is only known from this area and is most notably different from other species of the genus *Pachycerianthus* in mesentery arrangement and cnidome. In addition to the description, we provide some biological data collected from individuals cultivated under laboratory conditions.

**Key words:** Systematics, DNA Barcoding, Morphology, Cerianthidae

### Introduction

The Abrolhos Bank is an approximately 46,000 km<sup>2</sup> extension of the eastern Brazilian continental shelf in the south of Bahia State, Brazil. The best known area is the Abrolhos Archipelago, which was established as the first National Marine Park of Brazil and which comprises the largest and richest coral reefs of the South Atlantic, with at least 20 species of stony corals, including six endemic to Brazil (Leão *et al.*, 2003). The dynamic interaction of the reef biota and a local geochemical profile of both siliciclastic and carbonate deposition generates a coral reef system with an active terrigenous sedimentation area (Leão & Kikuchi, 1999). Waters of the Brazil Current flow over the Abrolhos Bank in a generally north to south direction (Meyerhöfer & Marone, 1996; Leão & Kikuchi, 1999).

This habitat is part of the Tropical Southwestern Atlantic biogeographic province (Spalding *et al.*, 2007), which is biodiverse with high rates of endemism (*e.g.* for fish species, Moura & Sazima, 2000). The anthozoan fauna was studied in a broad sense (Castro & Pires, 2001; Castro *et al.*, 2010), but the diversity of Ceriantharia and other minor groups of Anthozoa (Zoanthidae and Corallimorpharia) has been neglected.

The family Cerianthidae Milne-Edwards & Haime, 1852 is defined by lacking specialized nematocyst-bearing internal structure called acontoids or cnidorages (den Hartog, 1977). It is composed of four genera known from adults and larvae (*Ceriantheomorpha* Carlgren, 1931, *Ceriantheopsis* Carlgren, 1912, *Cerianthus* Delle Chiaje, 1841 and *Pachycerianthus* Roule, 1904), and several “genera” known from larvae only (Tiffon 1987, Daly *et al.*, 2007). The genus *Pachycerianthus* Roule, 1904 currently comprises 16 valid species (Carter, 1995; Fautin, 2013). Torelli (1961) considered *Pachycerianthus* to be a synonym of *Cerianthus* because morphological characters hardly distinguish the genera. However, Arai (1965) refuted this synonymy because apparently it was only based on a confusion of literature terms. This genus has been little studied using modern tools and taxonomic concepts (*eg.* Carter, 1995), and very little is known about the biology and intraspecific variation of taxonomic characters (morphological and molecular). Here we address the lack of information about members of *Pachycerianthus* by describing a new species from the tropical Southwestern Atlantic Ocean and comparing it with other species of the genus from the Atlantic Ocean.

**TABLE 5.** Estimates of divergence from *P. schlenzae* in sequences of ITS1, ITS2 and 16S for a subset of species in *Pachycerianthus*. Analyses were conducted using the Kimura 2-parameter model (Kimura, 1980). “--” means that the sequence was not obtained for that species.

	In relation to <i>Pachycerianthus schlenzae</i> sp. nov.				
	<i>P. multiplicatus</i>	<i>P. fimbriatus</i>	<i>P. borealis</i>	<i>P. magnus</i>	<i>Ceriantheormorphe brasiliensis</i>
ITS1	14.3%	--	--	10.6%	30.4%
ITS2	6.4%	--	--	9.4%	21.9%
16S	--	--	10%	3.8%	8.4%
COI	--	2.6%	--	4.3%	14.6%

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