



## Article

### ***Porites fontanesii*, a new species of hard coral (Scleractinia, Poritidae) from the southern Red Sea, the Gulf of Tadjoura, and the Gulf of Aden, and its phylogenetic relationships within the genus**

FRANCESCA BENZONI<sup>1</sup> & FABRIZIO STEFANI<sup>2</sup>

<sup>1</sup>Università di Milano-Bicocca, Dipartimento di Biotecnologie e Bioscienze, Piazza della Scienza, 2, 20126 Milano, Italy

<sup>2</sup>Water Research Institute-National Research Council (IRSA-CNR), Via del Mulino 19, 20861 Brugherio (MB), Italy

E-mail: <sup>1</sup>francesca.benzoni@unimib.it; <sup>2</sup>fabrizio.stefani@unimib.it

#### Abstract

A new zooxanthellate reef-dwelling scleractinian coral species, *Porites fontanesii* **sp. nov.** (Scleractinia, Poritidae), is described. The examined material was collected from the Southern Red Sea, the Gulf of Tadjoura, and the Gulf of Aden. *Porites fontanesii* **sp. nov.** was most frequently observed along the Yemen south Red Sea and the north-western Gulf of Aden coasts. Although a complete molecular phylogeny of *Porites* is not available yet, the relationships between *P. fontanesii* **sp. nov.** and twenty other species of the genus were explored through analysis of the available rDNA sequences. *Porites fontanesii* **sp. nov.** was seen to be a distinct species basal to, and well divergent from, one of the two main clades so far identified in the genus rDNA phylogeny.

**Key words:** Cnidaria, Anthozoa, coenosteum, rDNA

#### Introduction

The scleractinian genus *Porites* Link, 1807 is one of the most taxonomically challenging and ecologically important genera of hard corals in extant and fossil reefs (Bernard 1905, 1906; Vaughan 1907; Veron & Pichon 1982; Veron 2000). It is characterized by a highly perforated and granulated skeletal structure deriving from a complex pattern of growth and fusion of trabeculae and synapticalae (Chevalier & Beauvais 1987 [p. 521, Fig. 333C]; Vaughan & Wells 1943). The hallmark of the genus is the typical septal plan (Bernard 1905 [p. 19, Fig. 3]; Veron & Pichon 1982 [p. 11, Fig. 2]; Veron 2000 [vol. 3, p. 277]) in which 12 septa are found arranged in four lateral pairs, a ventral triplet, and a dorsal septum opposed to the triplet. *Porites* species are described on the basis of this arrangement, and on the presence or absence of a columella, and the number and position of pali and denticles.

Although the genus itself is well defined, a considerable morphologic diversity and plasticity at the species level (Vaughan 1907; Gleason 1992; Jameson, 1997; Muko *et al.* 2000; Forsman *et al.* 2009; Weil 1992) coupled with small dimensions of the corallites have led to a complex taxonomic history of this taxon (Veron & Pichon 1982). In the past, a large number of nominal species belonging to other genera were included in *Porites* (Bernard 1905) and many were synonyms (Veron & Pichon 1982). Approximately 120 nominal species of *Porites* have been described (Veron & Pichon 1982). Among these Veron (2000, 2002) recognized some of those as valid and described new taxa for a total of 52 species, and, more recently, two new species, *Porites decasepta* Claereboudt 2006 and *Porites randalli* Forsman & Birkelend 2009, were described and one, *Porites hawaiiensis* Vaughan, 1907 (Forsman *et al.* 2010), resurrected.

A previously unknown *Porites* was observed and sampled between 2005 and 2010 in different expeditions to the south-eastern Red Sea, in the north-western Gulf of Aden and along the northern shores of Socotra island (Yemen), and in 2010 in the Gulf of Tadjourah (Djibouti). The specimens collected display uniform and characteristic macro and micro skeletal features which differentiate them from any other known species of *Porites*