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***Vansoestia caribensis* gen. nov., sp. nov.: first report of the family Ianthellidae (Verongida, Demospongiae) in the Caribbean**

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Abstract

A thin fiber-less sponge from Caribbean reefs (Bocas del Toro, Panama) with close genetic affinities (based on 18S and 28S nuclear ribosomal RNA gene sequences) to large fan-shaped fiber-bearing sponges (*Ianthella* and *Anomoianthella*) from the Indo-Pacific Ocean is here presented. We describe its overall external morphology, histological features, and ultrastructure. Its genetic distance from the only previously known fiber-less verongid genus, *Hexadella*, prompted the need to erect a new genus to classify this species. This novel species constitutes the first record for a member of the family Ianthellidae in the Caribbean. The characterization of the family Ianthellidae (*sensu* Cook and Bergquist, 2000) is here modified by: i) highlighting the cavernous nature of the choanosome, with many lacunae and channels reported for all genera included in the family; ii) extending the family distribution to the Caribbean; and iii) adding a fourth genus to the group of verongids with eurypylous chambers. The possession of a cellularized cortex (10–300 µm in thickness) is here proposed as a potential synapomorphic character of the *Ianthella*–*Anomoianthella*–*Vansoestia* clade. The main issues regarding the suprageneric classification of verongids are discussed.

Key words: *Ianthella*, *Anomoianthella*, sponges, cortex, synapomorphy, clade

Introduction

The order Verongida (Bergquist, 1978) comprises approximately 90 marine species with tropical to temperate distributions, with nine genera that possess a characteristic fiber skeleton composed of chitin and spongin (Bergquist and Cook, 2002a), and one fiber-less genus (*Hexadella* Topsent, 1896). Verongid species are found in various growth forms, such as fans (up to a few meters in diameter), tubes, branches (single or in clusters; erect or repent), and thin or thick crusts. Species of Verongida are conspicuous components of the benthic fauna on both exposed and cryptic hard substrates on coral reefs, reef walls, and other rocky substrates (Díaz *et al.*, 2013; Bergquist and Cook, 2002 a, b, c, d). All verongid sponges produce complex brominated tyrosine-derived compounds, which have generated interest in the pharmaceutical industry and promoted several scientific investigations (Wu *et al.*, 1986; Erwin and Thacker, 2007; Erpenbeck and van Soest, 2007; Reveillaud *et al.*, 2012).

Recent studies using a molecular phylogenetics approach (including gene sequences of mitochondrial cytochrome oxidase subunit I [COI] and the small [18S] and large [28S] subunits of nuclear ribosomal RNA) have challenged traditional taxonomic and phylogenetic interpretations within this order, and shed new light on its relationships with other orders of Demospongiae (Erpenbeck *et al.*, 2012; Redmond *et al.*, 2013; Thacker *et al.*, 2013). Erpenbeck *et al.* (2012) suggested that molecular information (28S and COI), and the morphology of