

A revision of the genus *Mycale* (Poecilosclerida: Mycalidae) from the Mexican Pacific Ocean

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Abstract

Knowledge about the sponge fauna from the Mexican Pacific Ocean has increased substantially in recent years, but most of these modern taxonomic studies have been focused on hadromerids. The aim of this study was to contribute to the knowledge of the order Poecilosclerida. At present, seven species of *Mycale* have been described or recorded from the Pacific coast of Mexico, but only three of them are considered valid: *M. contax*, *M. cecilia* and *M. aff. magnirhaphidifera*. After a revision of the material collected during the last eight years throughout the East Pacific coast of Mexico, along with the type material, and the literature available, eight species of *Mycale* are considered valid, three of them; *M. magnitoxa* sp. nov., *M. dickinsoni* sp. nov., and *M. ramulosa* sp. nov., are proposed as new to science. In addition, *M. adhaerens* is reported for the first time from the Mexican Pacific Ocean. Another *Mycale*-species that was identified was *M. psila*, which constitutes its second Lamberd record for the Mexican Pacific Ocean. The systematic, distribution and detailed species descriptions are based on newly collected material and previous descriptions from the literature.

Contents

Introduction	165
Material and methods	166
Results	167
<i>Systematic part</i>	167
Discussion	167
<i>On Mycale diversity</i>	167
<i>Regarding the presence of the Caribbean</i>	
<i>M. aff. magnirhaphidifera in the east Pacific Ocean</i>	168
Acknowledgements	169
References	169
Appendix	172

Introduction

Knowledge on the sponge fauna from the Mexican Pacific Ocean has increased substantially in recent years

(Gómez *et al.*, 2002; Carballo *et al.*, 2003; Carballo *et al.*, 2004a; Carballo and Cruz-Barraza, 2005, 2006, 2008; Cruz-Barraza and Carballo, 2005, 2006, 2008). Most of these modern taxonomic studies have been focused on hadromerids of the sublittoral and littoral rocky areas, which have yielded a total of 40 valid hadromerid species so far. However, an understanding of the species composition, distribution, and biogeographic and ecologic relationships of the Mexican Pacific fauna is not yet possible, until other diverse sponge groups such as poecilosclerids, haplosclerids, etc., are studied as thoroughly as the hadromerids.

This new contribution to the taxonomy of Pacific sponges is focused on *Mycale* Gray, 1867, which is characterized by having a complex set of morphologic characters that makes their identification straightforward. *Mycale* has up to eight categories of microscleres, recognized by their distinct shape, a large variety of skeletal arrangements, and the common presence of different size categories in some spicules (Hajdu and Desqueyroux-Faúndez, 1994). It is one of the most diverse sponge genera, with almost 250 species described in the world (Doumenc and Lévi, 1987; Hajdu, 1999; Van Soest, 2010). This suggests a considerable adaptative radiation (Hajdu and Desqueyroux-Faúndez, 1994; Hajdu *et al.*, 1995; Carballo and Hajdu, 1998).

There were several suggestions to split the genus into subgenera. Dendy (1921), and later De Laubenfels (1936a) proposed a subdivision of *Mycale* by the presence/absence of some specific microsclere categories. This proposal was controversial and finally was abandoned by a subgeneric classification based on the arrangement of the ectosomal skeleton (Topsent, 1924; Van Soest, 1984; Bergquist and Fromont, 1988). Although currently largely accepted, this scheme of classification was shown to be plastic at the species level,

