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Aplysina gerardogreeni AND *Aplysina aztecus* (PORIFERA: DEMOSPONGIAE), NEW SPECIES FROM THE MEXICAN PACIFIC*

***Aplysina gerardogreeni y Aplysina aztecus* (PORIFERA: DEMOSPONGIAE), NUEVAS ESPECIES DEL PACÍFICO MEXICANO**

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ABSTRACT

Two sponges of the Order Verongida are described: *Aplysina gerardogreeni and Aplysina aztecus,* collected by dredging during an oceanographic cruise and by SCUBA diving at different sites on the Pacific coast of México. *Aplysina gerardogreeni* is massive, with small tubes on top, ochre-yellow, spongin fibers not distinguishable between primaries and secondaries, 30-150 µm in diameter, pith 33-80% of the fiber diameter, meshes 200-2000 µm wide and choanocyte chambers 12-17 µm. *Aplysina aztecus* is globose-like and supported by a stalk, bright yellow, spongin fibers not distinguishable between primaries and secondaries, 50-200 µm in diameter, pith 30-95% of the fiber diameter, meshes 285-2000 µm wide, and choanocyte chambers 23 µm.
KEY WORDS: New species, Sponges, Porifera, Verongida, *Aplysina,* Mexican Pacific.

RESUMEN

Se describen dos especies nuevas del Orden Verongida, Porifera: *Aplysina gerardogreeni y Aplysina aztecus,* colectadas mediante arrastre, durante un crucero oceanográfico y por buceo SCUBA en diferentes localidades del Pacífico mexicano. *Aplysina gerardogreeni* es de constitución masiva, provista de tubos pequeños en la cima, amarillo-ocre, fibras de espongina no distinguibles entre primarias y secundarias, 30-150 µm de diámetro, médula 33-80% del diametro de la fibra, mallas 200-2000 µm de abertura y cámaras coanocíticas de 12-17 µm. *Aplysina aztecus* presenta forma de globo sostenido por un pedúnculo, amarillo brillante, fibras de espongina no distinguibles entre primarias y secundarias, 50-200 µm de diámetro, médula 30-95% del diámetro de la fibra, mallas 285-2000 µm de abertura y cámaras coanocíticas de 23 µm.
PALABRAS-CLAVE: especies nuevas, esponjas, Porifera, Verongida, *Aplysina,* Pacífico mexicano.

INTRODUCTION

Sponges of the Order Verongida have been of considerable interest to biochemists because they contain a wide variety of brominated compounds (*e.g.*, Tymiak *et al.*, 1985). *Aplysina* (Verongida) is a rich source of marine antibacterial compounds, such as aeroplysinin-1 (Rinehart *et al.*, 1981). Bromophenols have been suggested to be useful in the chemotaxonomy of the genus *Aplysina. Aplysina fistularis (Verongia aurea, Verongia thiona)* has been shown to exhibit antifouling activities (Thomson, 1985). Several new brominated metabolites were recently characterized by Cruz *et al.* (1990) from *Aplysina thiona* collected at Puerto Escondido Bay in Oaxaca, México. Until recently, only *A. fistularis* was known from southern California and México. Two new species of *Aplysina* were recently discovered from the Mexican Pacific. The purpose of this paper is to describe these two new species so that chemists will be able to adequately compare the biochemistry of brominated metabolites in several members of the genus *Aplysina* from the Mexican Pacific.

Many poriferans remain undescribed in the world at normal SCUBA diving depths (0-43 m). This is especially

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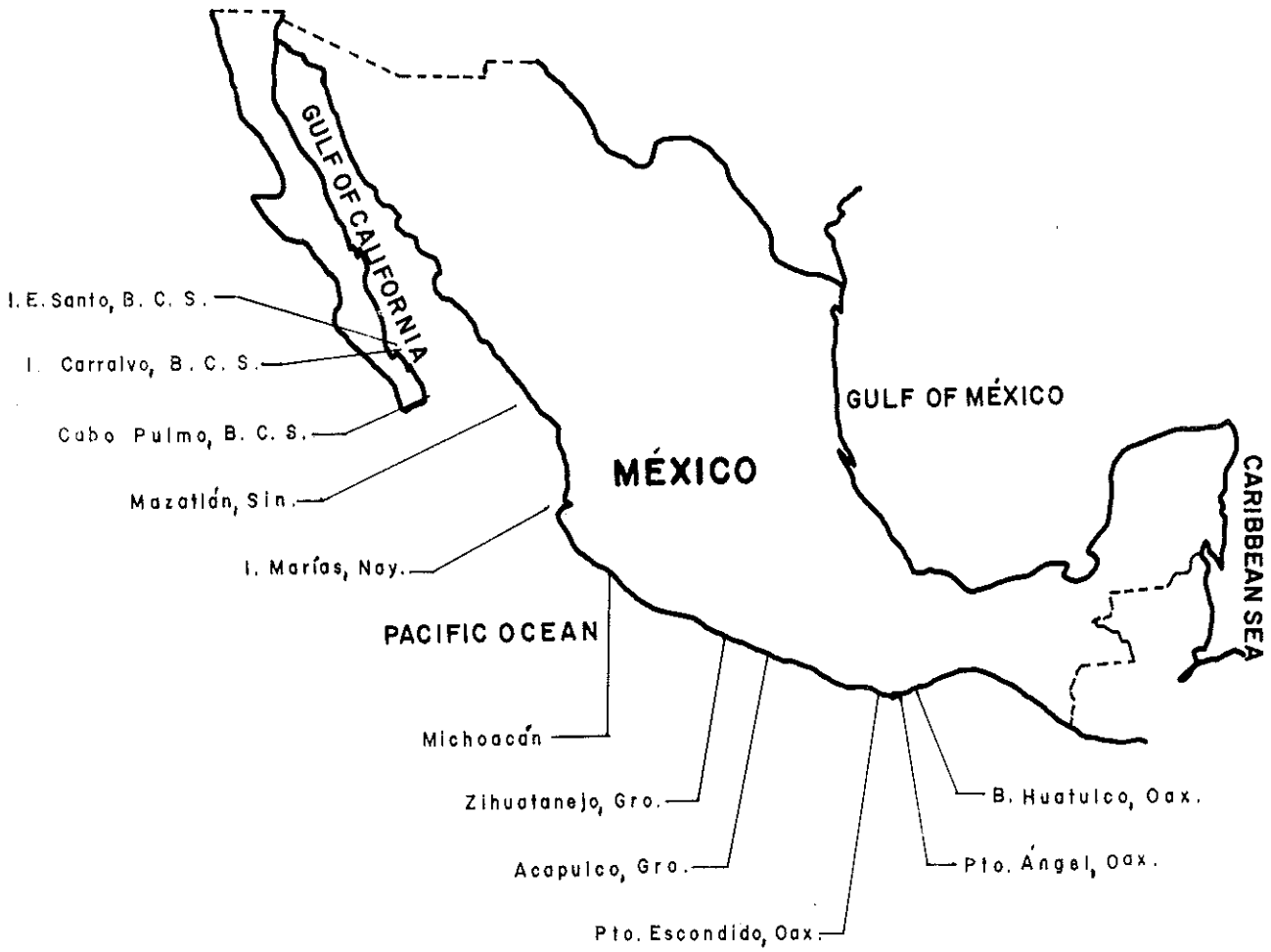

Figura 1. Map of México with collecting sites.

true of the Mexican Pacific. Records of sponges from this area are incomplete and include species from Acapulco (Carter, 1882), the Gulf of California (Dickinson, 1945; Hofknecht, 1978), and Mazatlán (Green & Gómez, 1986). Moreover, sponges have been collected along the Pacific coast of México for pharmacological studies. Sponges in this study were taken from the Gulf of California to Oaxaca (Fig. 1). They were collected by dredging at depths of 20 to 100 m from the R/V El Puma. Other collections were made by SCUBA near rocky shores at depths of 0 to 25 m.

From these collections, 13 species were described from Mazatlán (Green & Gómez, 1986). Holotypes are deposited in the invertebrate collection of Marine Pharmacology Laboratory, Instituto de Ciencias del Mar y Limnología, UNAM.

SYSTEMATICS
Order Verongida Bergquist, 1978
Family Aplysinidae Carter, 1875
Genus *Aplysina* Nardo, 1833
Aplysina gerardogreeni n. sp.
(Plates 1 and 2)

Localities: Cerralvo and Espíritu Santo Islands, B.C.S.; Mazatlán, Sinaloa; Islas Marías, Nayarit; Acapulco and Zihuatanejo, Guerrero; B. Huatulco, Puerto Ángel and Puerto Escondido, Oaxaca, México. Depth 6-33 m, on rock.

The shape is massive and lobular. The sponge measures 10-18 cm wide and 3-6 cm high; the lobules measure 3-25 mm high and 5-10 mm in diameter. Each lobule has an oscule at the top; the oscules measure 450-3000 μm in diameter. The color in life is ochre-yellow at the base, and reddish on the top; in alcohol the sponge turns dark purple.

Plate I. *A. gerardogreeni* n. sp.

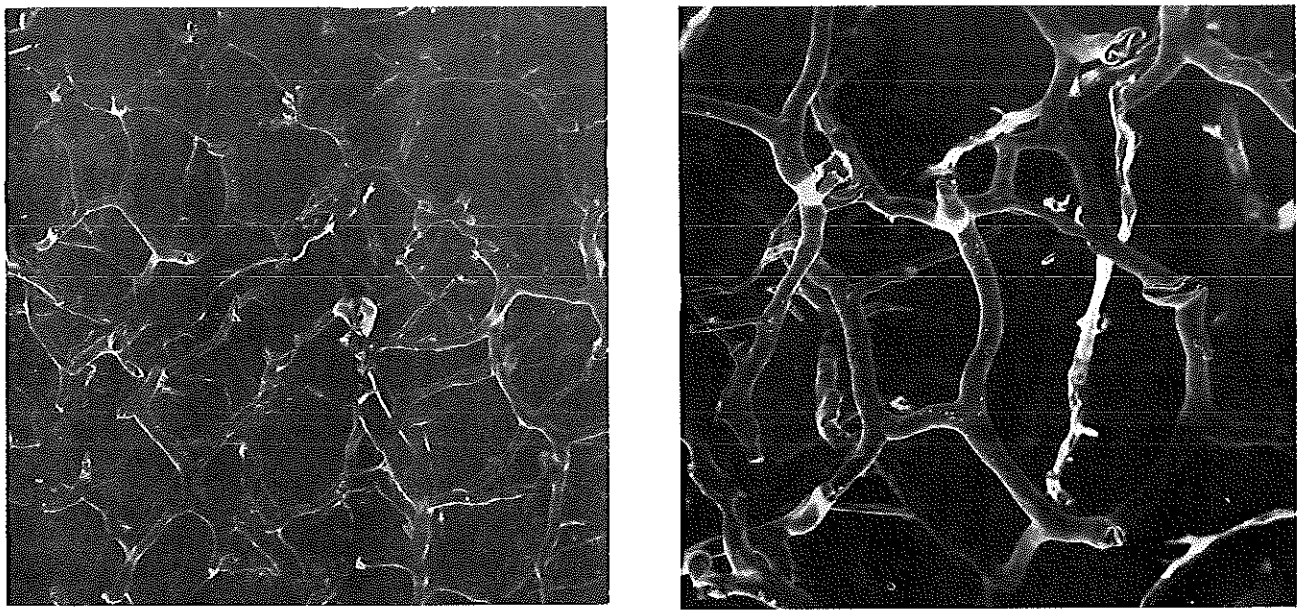

Plate II. *A. gerardogreeni* n. sp., detail of the skeleton.

The consistency in life and in alcohol is firmly spongy. It is hard when dry.

The surface is finely conulose, the conules measuring <1 mm high.

The dermis measures 60-278 μm thick. It is distinguishable from the choanosome by its condensed pigmentation. Pores are not apparent.

The choanosome is difficult to macerate. The atrium measures 1-2 mm in diameter. The choanocyte chambers measure 12-17 μm in diameter. An irregular polygonal fibroreticulation is present. The spongin fibers are amber-colored, stratified and pithed, without distinction between primaries and secondaries. Their diameters measure 30-150 μm, the thicker diameters often located at the center and base of the sponge. The pith occupies 33-80% of the

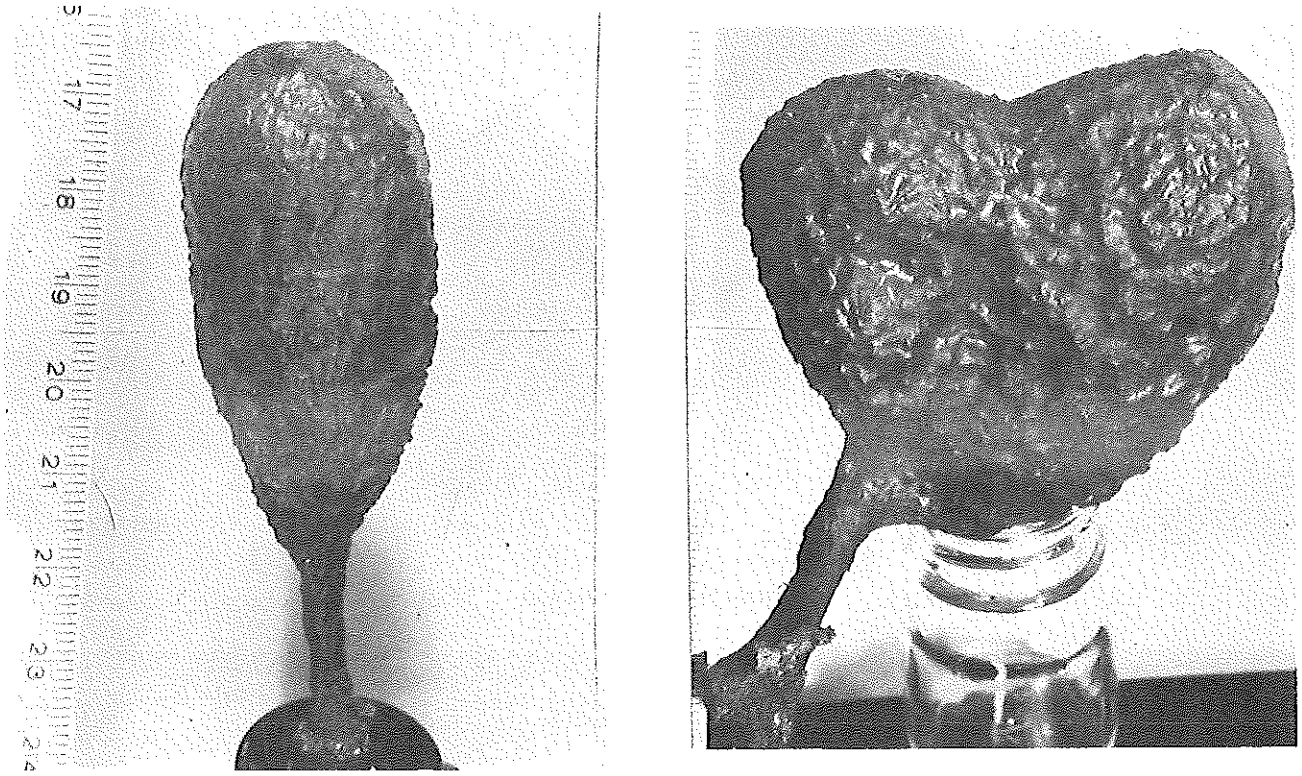

Plate III. *A. aztecus* n. sp.

Plate IV. *A. aztecus* n. sp., detail of the skeleton.

TABLE 1
Aplysina gerardogreeni n. sp.
compared with the closest species

Species	Fibers	Pith	Meshes
A. gerardogreeni	30 - 150 µm	33- 80%	200-2000 µm
A. fistularis	60 - 180 µm	20 - 33%	1000-2000 µm

fiber diameter. The meshes measure 200-2000 µm (x = 495 µm).

Remarks: *Aplysina gerardogreeni* is superficially similar to *A. fistularis*, but is more massive and lobular. Moreover, the pith diameters of the spongin fibers show virtually no overlap in size in the two species (Table 1). *Aplysina gerardogreeni* appears to be abundant along the Pacific coast of México on rocky substrata to 33 meters depth. This species produces brominated metabolites with antimicrobial activity (Cruz *et al.*, 1990). The new species name is dedicated to the late Dr. Gerardo Green, researcher on Mexican sponges, and a friend and fellow scientist.

Aplysina aztecus n. sp
(Plates 3 and 4)
Localites: Espíritu Santo IS., Baja California Sur; Nayarit and Michoacán, México; depth 14-70 m, on sand. Acapulco and Zihuatanejo, Guerrero, México; depth 14-43 m, on rock.

The shape is typically a stalked globe, sometimes two or three globes joined together; no transitional shapes during development were found. The total height is up to 13 cm, the globe often 3-4 cm in greatest diameter, and the stalk 3 cm long and 5-6 mm in diameter. The color in life is bright yellow on rock and pink with yellow tinges on sand. In alcohol the color turns dark purple. The consistency of the globe is firmly spongy and the stalk is hard; all parts are hard when dry.

The surface is very finely conulose in some areas and smooth in others. Oscules are often located on the top of the globes, with some at the lateral edge. They measure 2-10 mm in greatest diameter, the largest oscules located at the top of the globe. The dermis is easy to detach and is differenciated from the choanosome by condensed pigment cells; the thickness of the dermis is 85-600 µm. Pores measure 28-93 µm (x = 36 µm) in diameter and are surrounded by a fibroreticulation of hexagonal meshes.

TABLE 2
Aplysina aztecus n. sp.
compared with the closest species

Species	Fibers	Pith	Meshes
A. aztecus	50-200 µm	30-95%	285-2000 µm
A. pedunculata	primary: 300-400 µm secondary: 40-200 µm	- -	primary: 50-75 µm secondary: 12-60 µm

The choanosome is cheese-like; it is traversed by an atrium with an average diameter of 4 mm, opening at the oscule. Aquiferous canals measure 37-500 µm in diameter. Cylindrical choanocyte chambers measure 23 µm in diameter. The skeleton consists of polygonal, elongated meshes; in peripheral regions becoming dendritic. Spongin fibers are amber-colored, stratified and pithed. There is no distinction between primary and secondary fibers. Meshes measure 285-2000 µm wide, the smallest ones located at the periphery of the sponge. Spongin fibers measure 50-200 µm thick. The pith usually occupies 30-95% (x = 75%) of the fiber diameter. The finely granular pith tends to fill the entire fiber as it reaches the sponge surface.

Remarks: *Aplysina aztecus* is more restricted in distribution in the Mexican Pacific than is *Aplysina gerardogreeni*, and not found less than 14 m deep. This species outwardly resembles *Aplysina (Verongia) pedunculata* Lévi, 1969, from the Vema Sea Mount, South Africa. However, their choanosomal characteristics are quite different (Table 2). The species name *aztecus* is used as a noun, referring to the ancient inhabitants of México.

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