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HALICLONA (HALICLONA) EPIPHYTICA N. SP. (PORIFERA, DEMOSPONGIAE, HAPLOSCLERIDA), A SEAWEED-DWELLING SPONGE FROM THE COLOMBIAN CARIBBEAN

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ABSTRACT

Haliclona (Haliclona) epiphytica n.sp., a new species of seaweed-dwelling sponge of the family Chalinidae (Porifera, Demospongiae, Haplosclerida) from the Colombian Caribbean, is described. As the only member of the subgenus *Haliclona* (hitherto referred to as the 'oculata' group by De Weerd, 1989) in the Caribbean Sea, it is distinguished from other chalinid species in this area by its regular, anisotropic, ladder-like skeleton of short and robust oxeads.

RESUMEN

Se describe a *Haliclona (Haliclona) epiphytica* n. sp., una esponja (Porifera, Demospongiae, Chalinidae) del Caribe colombiano que vive sobre algas. Como el único miembro del subgénero *Haliclona* (referido al grupo 'oculata' por De Weerd, 1989) en el Mar Caribe, se distingue de las otras especies del género en esta área por su esqueleto en forma de escalera regular de oxeads cortas y robustas.

INTRODUCTION

Continuing with the systematic inventory of the sponges of the Colombian Caribbean (Zea & Rützler, 1983; Wintermann-Kilian & Kilian, 1983, 1984; Zea & Van Soest, 1986; Van Soest & Zea, 1986; Zea, 1987), and the revision of the haplosclerid family Chalinidae of the North Atlantic (De Weerd, 1986, 1989; De Weerd & Van Soest, 1986) and the Caribbean (De Weerd et al., 1991, 1999; De Weerd, in prep.), we

describe in this paper a new species of *Haliclona*, subgenus *Haliclona*, found growing on seaweeds. The species is apparently restricted to the Colombian Caribbean and more closely related to species of the genus living elsewhere in the North Atlantic than to the other species of the Caribbean (De Weerd, 1989, as *Haliclona* n.sp. 1).

MATERIALS AND METHODS

Material was fixed in 10% formalin neutralized

with borax (20 g/l), and preserved in 70% ethanol. General methodology of spicule preparation and tissue sectioning follows Zea (1987). Specimens were deposited at the Instituto de Ciencias Naturales -Museo de Historia Natural - Universidad Nacional de Colombia [ICN-MHN(Po)] in Bogotá, the Instituto de Investigaciones Marinas de Punta de Betín - INVE-MAR (INV-POR) in Santa Marta, and the Zoologisch Museum - Universiteit van Amsterdam (ZMA POR) in Amsterdam. The area is described in Zea (1987).

Phylum Porifera Grant

Class Demospongiae Sollas

Order Haplosclerida Topsent

Family Chalinidae Gray

Genus *Haliclona* Grant

Definition: Chalinidae with unispicular secondary lines.

Subgenus *Haliclona* Grant, 1835

Definition: Choanosomal skeleton consisting of a very regular, ladder-like reticulation of uni-paucispicular primary lines, regularly connected by unispicular secondary lines. Ectosomal skeleton, if present, a unispicular, tangential, isotropic reticulation. Oxeas short, rather robust, fusiform or with acerate points. Spongin moderate to abundant. Microscleres, if present, toxas.

Remarks: The subgenus *Haliclona* (type species *Spongia oculata* Pallas, 1766) is here for the first time applied for the 'oculata' group as distinguished by De Weerd (1989). Pending study of all the type material of described genera within the Chalinidae, this name was tentatively used for one of the eight monophyletic species groups within *Haliclona* s.l. A full treatment of type material and synonyms of the subgenus *Haliclona* will be given in a forthcoming paper (De Weerd, in prep.)

***Haliclona (Haliclona) epiphytica* n. sp.**

Figs 1-2

Haliclona n.sp. 1; De Weerd, 1989: 57.

Holotype: ZMA POR. 15559 (in front of the slaughterhouse, city of Riohacha, Guajira pen-

ninsula, Colombian Caribbean; on the red alga *Laurencia poitei* (Lamouroux) Howe growing on a rock pavement of cobbles cemented by clay, 1 m in depth, col. S. Zea, April 8 1981).

Paratypes: ZMA POR. 5139, ICN-MHN(Po) 0170 (several specimens collected together with the holotype); INV-POR 417 (Santa Marta airport, on the red alga *Bryothamnion seaforthii* (Turner) Kützing stranded on the beach, col. E. Leal, February 19, 1983); INV-POR 419 (Santa Marta airport, on the red alga *Cryptonemia crenulata* (J. Agardh) J. Agardh growing on igneous boulders scattered on a sandy shore, 0.5-1 m in depth, col. S. Zea, June 4, 1983).

Type locality: City of Riohacha, Guajira Department, Colombia (11°33'N 72°55'W).

Description: small encrustations, up to 1-4 cm long, 0.2-1.1 cm wide and 0.15-1.1 cm thick. Several independent individuals grow on the same seaweed. Surface smooth, dense in aspect, generally even. Oscules numerous, sometimes up to 20 on each individual, even with the surface, 0.3-1.4 mm in diameter.

Colour: cream alive, light cream in spirit and dry.

Consistency: somewhat compressible and elastic but fragile, easily damaged.

Skeleton: ectosome: tangential reticulation of single spicules joined by spongin at their ends, forming triangular to polygonal meshes 30-80 µm in diameter.

Choanosome: regular, ladder-like reticulation of uni- to paucispicular ascending lines (1-3 spicules in cross-section), interconnected by single spicules and forming polygonal meshes 25-60 µm in diameter. Spicules joined by spongin at their ends. Skeleton looks somewhat confused in some parts; there are also paucispicular lines of spicules parallel to the surface, as old layers of growth. Choanosomal canals 95-500 µm wide. Spicules robust, short oxeas with acerate points, slightly curved; few styles and styloids; an axial channel is frequently visible. Dimensions (length by width, means in italics, n=50 spicules) 63-69.0-76 x 2.9-5.4-6.9 µm (Riohacha specimens), 68-73.9-83 x 4.8-5.9-6.9 µm (Santa Marta, INV-POR 417), 84-91.1-97 x 3.5-5.0-5.5 µm (Santa Marta, INV-POR 419).

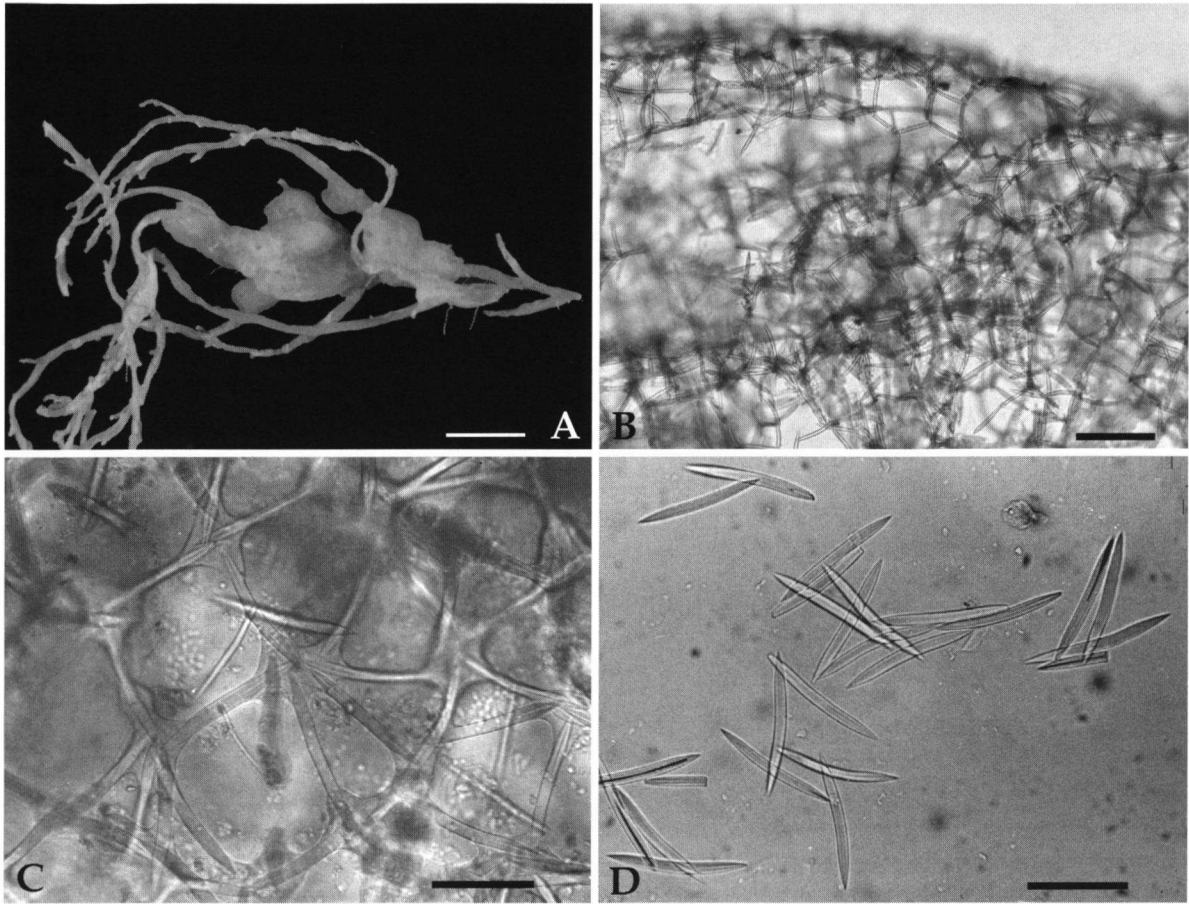


Fig. 1. *Haliclona epiphytica* n.sp. A, holotype (ZMA POR. 15559, scale bar = 0.5 cm); B, cross-section of choanosomal skeleton (scale bar = 150 µm); C, tangential view of ectosome (scale bar = 50 µm); D, oxeas (scale bar = 50 µm).

Habitat: The species grows on seaweeds in intertidal to shallow-subtidal (to about 1 m deep) rocks or rock pavement in or near sandy beaches in sites of turbid waters and relatively strong water movement. It was found living on the red alga: *Laurencia poitei*, *Bryothamnion seaforthii* and *Cryptonemia crenulata*. In a seaweed bed at Riohacha, it was repeatedly observed throughout 1992, but the greatest frequency occurred during the February sampling (F. Parra, INVEMAR, pers. comm., 1993).

Distribution: Guajira and Santa Marta in the Colombian Caribbean.

Etymology: Named after the adjective epiphytic (Greek *epi* = over + *phyton* = plant) in reference to its substratum preference.

DISCUSSION

Haliclona (Haliclona) epiphytica stands out among other Caribbean chalinids by its regular ladder-like choanosomal skeleton of uni-paucispicular primary lines which are very regularly connected by unispicular secondary lines, and its short but robust oxeas. The combination of this type of skeleton and spicules, characteristic of the subgenus *Haliclona*, has not been found in other species occurring in the area, from which it may be concluded that the new species is the only representative of the subgenus in the Caribbean.

This is a remarkable observation, especially since the subgenus *Haliclona* is well represented in the northern part of the North Atlantic (De Weerdt, 1986, 1989), as well as in the (sub)-Antarctic (De Weerdt, unpublished). Whether

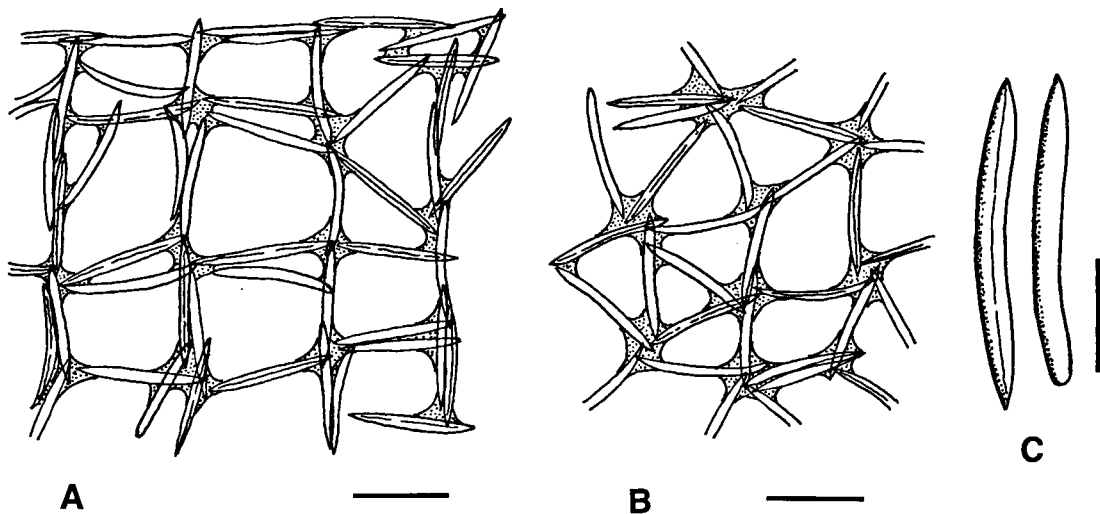


Fig. 2. Drawings of the skeleton of *Haliclona epiphytica* n.sp. A, cross-section of choanosome (scale bar = 50 µm); B, ectosome (scale bar = 50 µm); C, oxeas (scale bar = 25 µm).

Haliclona (*Haliclona*) is equally rare throughout the entire tropical belt can only be established after a thorough world-wide revision of the family Chalinidae. Preliminary studies of Indo-Pacific species by De Weerd (unpublished) indicate that this may well be the case. If it turns out to be restricted to higher latitudes, the local occurrence of *H. epiphytica* in the Santa Marta area may be due to the fact that the north-eastern Colombian coast is an area of seasonal (December-April) cold water upwelling, causing surface water temperatures to be as low as 21°C (summary in Zea, 1993). The area may thus serve as a refugium for species that require lower water temperatures. A further indication of this is the fact that several algal genera and species, occurring in subtropical and warm-temperate areas, are present in the Santa Marta area during the upwelling season, and that several other tropical and Caribbean genera and species are temporarily or entirely absent (Bula-Meyer, 1977, 1985).

Other encrusting Caribbean chalinids that are somewhat similar to *H. epiphytica* in external morphology are *H. albifragilis* (Hechtel, 1965) and *H. manglaris* Alcolado, 1984. *H. albifragilis* is snow white and brittle, with a dense subisotropic skeleton and oxeas of 130-170 x 2.3-5 µm. The species belongs to the subgenus *Halichoelona*, earlier

known as the '*fistulosa*' group (cf. De Weerd, 1989 and De Weerd et al., 1999). *H. manglaris* stands out by its turquoise-green colour and its consistent occurrence on red mangrove, *Rhizophora mangle*, stilt roots. It differs from *H. epiphytica* furthermore by its skeleton, which is rather irregular with a tendency to form rounded meshes and thinner oxeas (2-4 µm) which are pronouncedly fusiform and rather strongly curved. It belongs to the '*arenata*' group, which will be given a proper name in the near future (De Weerd, in prep.).

H. (H.) epiphytica is most closely related to the Mediterranean *H. (H.) varia* (Sarà, 1958, as *Adocia*) and *H. (H.) venata* (Sarà, 1960, as *Adocia*) (cf. De Weerd, 1989), and also very similar to the Mediterranean *H. (H.) griessingeri* Van Lent & De Weerd, 1987. These species are here assigned to the subgenus *Haliclona*. *H. (H.) varia* has a punctate surface due to subectosomal spaces, and a tendency to form long proliferations which attach themselves intermittently to the substrate. The oxeas are longer than in *H. (H.) epiphytica*, viz. 100-118 µm (Sarà, 1958) but equally thick (4-7 µm) (Sarà, 1958) (80-150 x 2.5-8.0 µm in Griessinger, 1971). *H. (H.) venata* has much larger oscules (3 mm), a punctate surface like *H. (H.) varia*, and a leathery, incompressible consistency. The oxeas are longer than in *H. (H.) epiphytica*, viz.

105-135 μm , but equally thick, like in *H. (H.) varia*. *H. (H.) griessingeri* has conspicuous star-shaped exhalant canals running towards the oscula and its oxeas are longer (79-144 μm) and thinner (3.5 μm as a mean, cf. Van Lent & De Weerdt, 1987).

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