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## **Twelve new Demospongiae (Porifera) from Chilean fjords, with remarks upon sponge-derived biogeographic compartments in the SE Pacific**

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## Abstract

This article reports on 12 new species originating from the Chilean fjords region, namely *Clathria (Microcionia) mytilifila* sp. nov., *Haliclona (Reniera) caduca* sp. nov., *Latrunculia (L.) ciruela* sp. nov., *Latrunculia (L.) copihuensis* sp. nov., *Latrunculia (L.) verenae* sp. nov., *Latrunculia (L.) yepayek* sp. nov., *Myxilla (Burtonanchora) araucana* sp. nov., *Neopodospongia tupecomareni* sp. nov., *Oceanapia guaiteca* sp. nov., *Oceanapia spinisphaera* sp. nov., *Suberites cranium* sp. nov. and *Tethya melinka* sp. nov. The material studied was collected between 5 and 30 m depth at latitudes comprised between 42° and 50°S, and is part of a large collection of Chilean sponges gathered by an international team in a series of expeditions. Identification keys are provided for SE Pacific *Suberites* and *Latrunculia*, and the known species of *Myxilla (Burtonanchora)* and *Neopodospongia*. A trans-Pacific link to the New Zealand fauna was retrieved for the latter genus. Distribution ranges apparent from the materials studied here are judged too preliminary to allow any inference on biotic boundaries in the SE Pacific. A revision of earlier assertions about these biogeographic units and their boundaries concluded that very little support remains other than for existence of a Magellanic fauna. This is in part a consequence of revising the taxonomy of sponge species originally deemed to underpin these areas. Specifically, the former proposal of a Central to Southern Chile biogeographic unit (33–56°S) has been markedly undone.

**Key words:** taxonomy, sponges, Chile, endemism, *Clathria*, *Haliclona*, *Latrunculia*, *Myxilla*, *Neopodospongia*, *Oceanapia*, *Suberites*, *Tethya*

## Resumen

Doce nuevas Demospongiae (Porifera) de la región de los fiordos chilenos, con notas sobre los compartimentos biogeográficos derivados de esponjas en el Pacífico SE. En este artículo se describe 12 nuevas especies originarias de la región de los fiordos chilenos, viz.: *Clathria (Microcionia) mytilifila* sp. nov., *Haliclona (Reniera) caduca* sp. nov., *Latrunculia (L.) ciruela* sp. nov., *Latrunculia (L.) copihuensis* sp. nov., *Latrunculia (L.) verenae* sp. nov., *Latrunculia (L.) yepayek* sp. nov., *Myxilla (Burtonanchora) araucana* sp. nov., *Neopodospongia tupecomareni* sp. nov., *Oceanapia guaiteca* sp. nov., *Oceanapia spinisphaera* sp. nov., *Suberites cranium* sp. nov. y *Tethya melinka* sp. nov. El material estudiado fue colectado entre 5 y 30 m de profundidad, entre 42° y 50°S de latitud, e integra una gran colección de esponjas chilenas obtenidas a partir de una serie de expediciones internacionales de exploración. Las especies nuevas son comparadas con algunas especies de sus géneros, y cuando posible, con todas. Se proporcionan claves de identificación para las *Suberites* y las *Latrunculia* del Pacífico SE y para todas las especies conocidas de *Myxilla (Burtonanchora)* y *Neopodospongia*. Un trazo trans-Pacífico a la fauna de Nueva Zelanda se recuperó para el último género. Los rangos de distribución aparente del material aquí estudiado son considerados demasiado preliminares para permitir alguna inferencia sobre los límites bióticos en el Pacífico SE. Una revisión de las aserciones anteriores sobre estas unidades biogeográficas y sus límites concluyó que queda muy poco apoyo que no sea por la existencia de una fauna de Magallanes. En parte, esta es una consecuencia de revisar la taxonomía de especies de esponjas originalmente propuestas para respaldar estas áreas. En concreto, la propuesta anterior de una unidad biogeográfica incluyendo Chile Central y Austral (33–56° S) ha sido notoriamente destruida.

**Palabras clave:** taxonomía, esponjas, Chile, Pacífico Sureste, *Clathria*, *Haliclona*, *Latrunculia*, *Myxilla*, *Neopodospongia*, *Oceanapia*, *Suberites*, *Tethya*

## Introduction

Despite being diverse and abundant, the sponges of Chile have been little studied: their inedibility and associated lack of commercial value, combined with their historically unstable classification, makes them an unattractive target for taxonomists. The consequence of this is that not even 100 species of Demospongiae had been reported from this area in the late 1980's (Desqueyroux & Moyano 1987); this low number is in marked contrast to the > 5000 km long coastline, actually comprising tens of thousands of kilometers if the perimeters of all the islands and canals are combined (Försterra *et al.* 2005). A sizeable proportion of this earlier biodiscovery effort was due to historical oceanographic expeditions, namely those of the H.M.S. Alert (1876–1880, Ridley 1881), the H.M.S. Challenger (1873–1876, Ridley & Dendy 1887), the S.Y. Belgica (1897–1899, Topsent 1901), and notably Plate's collection (Thiele 1905) with over 60 new records. Later in the 20<sup>th</sup> century a series of publications by Desqueyroux-Faúndez (also as Desqueyroux, see reference list) added approximately another 20 records for the area.

that a different reconstruction of Gondwana is needed, where Australia and New Zealand would have been connected to south-western South America, rather than to eastern Antarctica.

The reasoning constructed above for trans-Pacific evolutionary affinities finds echo if a closer look at *Neopodospongia* spp. is undertaken. It appears that *N. tupecomareni* **sp. nov.** may be a sister taxon of *N. exilis*. Apart from a considerable match in terms of spicule categories and dimensions, we can further add here a noticeable match in aciculospinothax micromorphology, in that both species' larger category of these microscleres possesses an apex without longitudinal spur-like projections, as opposed to apices with such projections, observed in the remaining species of *Neopodospongia* (Stephens 1915, Pl. V, Fig. 2A; Sim-Smith & Kelly 2011, Figs. 4B, J).

The likely close affinity between the Chilean *M. (B.) araucana* **sp. nov.** and the Boreal East Atlantic *M. (B.) pedunculata* escapes any likely biogeographic scenario where extensive extinction or markedly insufficient sampling are not important components. We refrain from speculating here, as a nearly infinite set of possibilities might explain this pattern. Also, the chance cannot be discarded that *Myxilla (Burtonanchora)* does not constitute a monophyletic taxon, as already hypothesised by van Soest (2002b), which would render meaningless any effort to derive phylogenetic relationships for its included species.

Important collections from 29°S (Punta Choros) to 53°S (Punta Arenas) are currently under study and will hopefully shed new light on biotic boundaries in the SE Pacific, enabling an evaluation of the veracity of the marine ecoregions system as a surrogate for sponge distribution compartments in this region. Taxonomic studies in the SW Atlantic, such as that by Goodwin *et al.* (2011), will ultimately be needed too, if any reciprocal illumination on southern South America marine sponges' biogeography is sought.

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