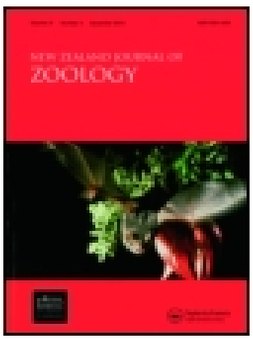

New Zealand Journal of Zoology

ISSN: 0301-4223 (Print) 1175-8821 (Online) Journal homepage: http://www.tandfonline.com/loi/tnzz20

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To cite this article: JF Araya & K Rützler (2016): First record of Terpios fugax Duchassaing and Michelotti, 1864 (Demospongiae: Suberitidae) in the Eastern Pacific Ocean, New Zealand Journal of Zoology, DOI: 10.1080/03014223.2016.1225580

To link to this article: http://dx.doi.org/10.1080/03014223.2016.1225580

NEW ZEALAND JOURNAL OF ZOOLOGY, 2016
http://dx.doi.org/10.1080/03014223.2016.1225580

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SHORT COMMUNICATION

First record of *Terpios fugax* Duchassaing and Michelotti, 1864 (Demospongiae: Suberitidae) in the Eastern Pacific Ocean

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ABSTRACT

The brightly blue shallow water species *Terpios fugax* Duchassaing and Michelotti, 1864 was originally described from the Caribbean and has been extensively recorded in the Atlantic Ocean, but rarely found in the Indian and Pacific Oceans. In the Pacific Ocean it has been only reported from Sulawesi, Indonesia and from the Caroline and Marshall Islands. Here we report the first record of *Terpios* in the Eastern Pacific, based on the presence of *T. fugax* at Caldera, Región de Atacama, northern Chile. Although this species may have been inadvertently introduced to the area by human activity, it should also be considered that the geographically distant populations of this sponge (from the Caribbean to the Eastern Pacific) may represent different species.

ARTICLE HISTORY
Received 2 June 2016
Accepted 16 August 2016

KEYWORDS
Chile; demosponges; new records; shallow water; southeastern Pacific; sponges

Introduction

The Demospongiae is the most species-rich Porifera class, and in Chile it is represented by near to 100 species (Desqueyroux & Moyano 1987), among which the Suberitidae Schmidt, 1879 (Demospongiae: Hadromerida) is represented by about 12 taxa (Desqueyroux & Moyano 1987; Lee et al. 2008). Among the Suberitidae Schmidt, 1870 (Demospongiae: Hadromerida), *Terpios* Duchassaing and Michelotti, 1864 groups thinly encrusting (a few mm at most), small, and often vividly coloured sponges, often microhispid in texture and with a gelatinous consistency; its spicules are predominantly tylostyles, with peculiarly flattened or lobate tyles in a single size category (Rützler & Smith 1993; van Soest 2002). *Terpios fugax* in particular, a bright blue sponge—a colouration derived from filamentous symbiotic blue-pigmented bacteria (Rützler & Smith 1993)—presents small encrusting specimens found in a rather wide geographic range. In this work, as part of ongoing studies reviewing the invertebrate fauna of the Región de Atacama, in northern Chile (Araya & Araya 2015a, 2015b; Araya et al. 2016, 2016; Araya & Aliaga 2016; Araya & Valdés 2016), we present the first record of this species in the Eastern Pacific, extending considerably its geographic range from its previous record at the Marshall Islands in the North West Pacific (de Laubenfels 1954).

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Materials and methods

From several observed *Terpios* specimens, two were collected and photographed in situ during prospective field collections around the Port of Caldera (27°01′20″ S, 70°48′24″ W), Región de Atacama, northern Chile. The species identification was made following the works of de Laubenfels (1954) and Rützler & Smith (1993). Samples of both specimens were digested in commercial bleach and microscopic slides of dissociated spicules were prepared according to usual procedures (Rützler 1978). A voucher specimen was deposited in the collections of the Museo de Zoología de la Universidad de Concepción, Concepción, Chile.

Results

Systematics

Class Demospongiae Sollas, 1885
Subclass Heteroscleromorpha Cárdenas, Perez and Boury-Esnault, 2012
Order Suberitida Chombard and Boury-Esnault, 1999
Family Suberitidae Schmidt, 1870
Genus *Terpios* Duchassaing and Michelotti, 1864

Type species: *Terpios fugax* Duchassaing and Michelotti, 1864, by subsequent designation (Topsent, 1900).

Terpios fugax Duchassaing and Michelotti, 1864

(Figure 1A–C)

Terpios fugax Duchassaing and Michelotti, 1864: 102. De Laubenfels, 1954: 209, text figure 142. Rützler and Smith, 1993: 384, figs. 1, 9, table 1. Van Soest, 2002: 243, fig 13. *Terpios* cf. *fugax* Calcinai et al. 2013: 8, fig. 3A–E, table 2.

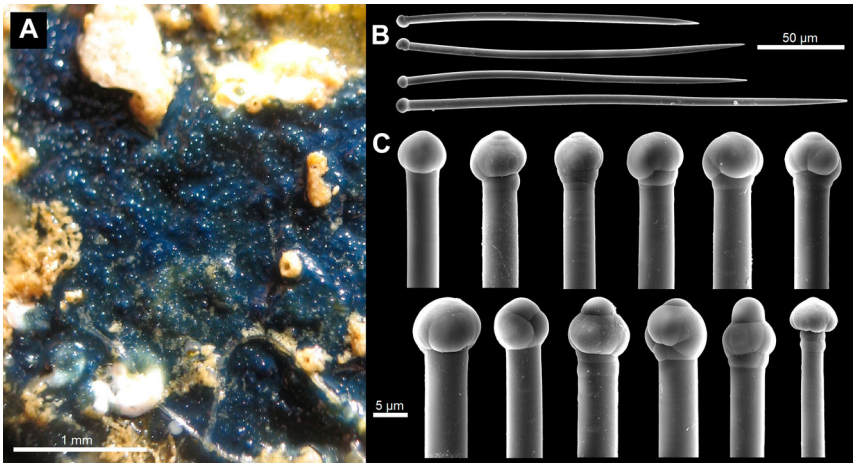

Figure 1. *Terpios fugax* Duchassaing and Michelotti, 1864. **A,** In vivo view of specimen encrusting a rock at Playa Ramada (27°00′35″ S, 70°48′07″ W), Caldera, Chile; **B,** tylostyles (SEM) of illustrated specimen; **C,** tylostyle heads (SEM) of illustrated specimen.

Material examined. Two specimens collected under rocks at Playa Ramada (27°00′35″ S, 70°48′07″ W, one specimen deposited: MZUC 37640), and one at Calderilla (27°05′15″, 70°51′29″ W), in about 1 m depth on rocky bottoms, near the port of Caldera, Región de Atacama, northern Chile.

Description. Specimen crusts very small (maximum about 1 cm^2), of bright blue to very dark blue colour, and extremely thin (less than 1 mm thick). Spicules found in tracts radiating from substrate to surface. Spicules represented by one class of tylostyles, 176–263 × 3.3–6.2 μm (length × shaft diameter), with slightly compressed/depressed and irregularly lobed tylostyles' heads (4–10 or more projections per tyle) of 7.0–10.1 × 5.1–10.4 μm (width × length).

Discussion

Terpios fugax was originally described from the Caribbean (Duchassaing & Michelotti 1864) and has been extensively recorded in the Atlantic Ocean, from Bermuda (de Laubenfels & Hindle 1950) to Florida (de Laubenfels 1936), the Northern Gulf of Mexico (Rützler et al. 2009), Belize (Rützler et al. 2000) and Brazil (Monteiro & Muricy 2004; Muricy & Hajdu 2006; Muricy et al. 2011). Further records are known from the Indian Ocean (Pattanayak 1999), while in the Pacific Ocean this species has only been recorded at the Caroline and Marshall Islands (de Laubenfels 1954) and most recently at Sulawesi, Indonesia (Calcinai et al. 2013). The present note represents the first record of the species in the Eastern Pacific Ocean, extending its previous distribution from the North Pacific Ocean at the Marshall Islands to the continental coasts of northern Chile in the South Pacific Ocean, some 11,530 km or 120° away.

This new distributional record of *T. fugax*, a species that is clearly limited to hard bottoms, may be explained by introduction of larvae in ballast water of ships, or of adults encrusting calcified fouling organisms on ship hulls, such as oysters or barnacles. However, it should also be considered that the geographically distant populations of this sponge may indicate the presence of different (cryptic) species, as was proposed for the records of *T. fugax* in the Mediterranean Sea, which are now treated as *T. gelatinosa* (Bowerbank, 1866) (van Soest 2002). The bright blue colour of these species is quite characteristic but it is caused by symbiotic bacteria and may not be species specific. Neither is the encrusting morphology or small size (a few square centimetres or less), which are common to many sponges. The shape of the single spicule category (tylostyles) is typical for the genus but not necessarily for a species, and the size ranges and means can vary with environmental conditions, such as silica content of seawater.

Terpios fugax, or a close relative, may be present throughout Polynesia and the South Pacific Ocean, but due to its small size and cryptic life style (lower surfaces of rock or coral) it is easily overlooked during general surveys. Further field collecting in the area may indicate its true distribution in the Pacific Ocean. Molecular studies may help to identify genetic trends among the different communities, and to determine whether they radiated from a centre of origin, such as the Caribbean.

Acknowledgements

We are most grateful to Marta Esther Araya (Caldera, Chile) for her essential help in the field collections, to Yolanda Villacampa (National Museum of Natural History, Smithsonian Institution) for taking the SEM photographs, to Molly Ryan (National Museum of Natural History, Smithsonian Institution) for composing the SEM plate, and to the reviewers and editor for their helpful corrections and suggestions, which greatly improved this manuscript.

Associate Editor: Dr Jonathan Banks.

Disclosure statement

No potential conflict of interest was reported by the authors.

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