



## Description and molecular phylogeny of *Tethya hibernica* sp. nov. (Porifera, Demospongiae) from Northern Ireland with remarks on the European species of the genus *Tethya*\*

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\* In Memoriam Prof. Michele Sarà (1926–2006) from Genoa, a friend, a knowledgeable sponge fellow and a great teacher on everything related to the genus *Tethya*

### Abstract

A new species of the genus *Tethya* (Porifera, Demospongiae, Hadromerida) from the North European Sea is described, *T. hibernica* n. sp. from Rathlin Island in Northern Ireland. *Tethya hibernica* has a spherical body with tubercles on the surface. The colour in life is ochreous to yellow and shows in alcohol a white colour with greyish core. The oxy-spherasters are evenly and densely scattered throughout the whole cortex. Their diameter is about 31 – 60 µm and the R/C value range between 0.40 and 0.78. Micrasters form a discrete layer allocated to the exopinacoderm surface and support the endopinacoderm of the lacunae. Both the main and the auxiliary megascleres are stronglyloxeas. *Tethya hibernica* possesses in contrast to the closely related *T. norvegica* auxiliary megascleres.

In addition to the morphological description we analysed a fragment of the cytochrome oxidase subunit I (COI) mtDNA gene for *T. hibernica* and the other European species *T. aurantium*, *T. citrina* and *T. norvegica* to check for differences in nucleotide and amino acid sequence between the species. We found that *T. hibernica* is more closely related to the North-West Atlantic species *T. norvegica* and *T. citrina* than to *T. aurantium* or other non-European species. In conclusion, it is possible to differentiate the new species *T. hibernica* clearly from all other European species both by morphological and molecular methods.

**Key words:** Porifera, Demospongiae, *Tethya*, new species, *Tethya hibernica* sp. nov., Ireland

### Introduction

The genus *Tethya* Lamarck, 1814 (Porifera, Demospongiae, Hadromerida, Tethyidae) comprises most of the species of the family Tethyidae, with 82 valid species (Van Soest et al., 2005) and a high number of recognized but not yet described species (Sarà, 2002). The distribution is nearly cosmopolitan, mainly in tropical waters with a high biodiversity in the area of Australia and New Zealand (Sarà, 1998). Almost 85% of the known species are located in the Indo-Pacific and only one species is described for the Arctic seas. For Antarctica only spicules in the sediment refer to the occurrence of the genus *Tethya*. They occur in depths from 0–805 m, but the most of the species have been found in shallow waters (Sarà, 2002).

Pallas described the first *Tethya* species for Europe under the name *Alcyonium aurantium* (Pallas, 1766). Only one year later the same species was described again as *Tethya lyncurium* from Linnaeus (1767). In the year 2002 Sarà has defined a neotype of *T. aurantium* from the Bay of Neapel, because the type specimens were lost (Sarà, 2002). For a long time it was presumed that *T. aurantium* was the only species of the genus