FAUNA : INVERTEBRATES

Porifera – Sponges

LIM SWEE CHENG

The state of Porifera in Singapore

There are some 250 distinct sponge species that has been documented across various habitats, including man-made structures, inter-tidal flats, coral reefs, deep seafloor at 200 m depths in the "Singapore Deeps" over the last three decades (see Hooper et al., 2000; Lim & Tan, 2008; De Voogd & Cleary, 2009; Lim et al., 2008 and 2009; Lim et al., 2012). Among these species, 131 species are included in this edition of the Singapore Red Data Book while the remaining half could only be determined to genus level and distinct Operational taxonomic unit (OTU), and hence are excluded from the list. Further taxonomic studies and revisions are required to clarify the systematics before they can be named with certainty. Nevertheless, this list serves as a crucial baseline of sponge biodiversity fauna that could inform us of changes of the fauna due to environmental factors in the future.

Notably, most of these species were recorded after large-scale land reclamations began in the 1960s. Most of these species seem to be well adapted to turbid and sedimented environments. Sponge species which are sensitive to sediments could have disappeared from Singapore waters during the decades of land reclamations before they were recorded. In this current Red List, only the Neptune's Cup Sponge (*Cliona patera*) is classified as Critically Endangered (CR: D). Historical records from 200 years ago, as documented by John Crawfurd, the second British Resident of Singapore, depict its once-abundant presence in Singaporean waters (see Crawfurd, 1830).

However, there had been no record of the sponge in Singapore waters since 1908 (Hanitsch, 1908) for over a hundred years, until its recent rediscovery (Lim et al., 2012). The reasons for the disappearance were unknown but the reclamations of Telok Ayer Bay in 1887 and Telok Ayer Basin in the early 1900s probably played a part to their demise as sponges are sessile and filter-feeding animals which are adversely affected by increased sediment load in the environment. Unfortunately, only a few sponge species were recorded prior to these major changes in the environment, limiting our understanding. The comprehensive information presented in this edition of the Singapore Red Data Book would help better inform us of changes in sponge fauna in response to environmental shifts.

Scientific Name:
Cliona patera
(Hardwicke, 1820)

Common Name:
Neptune's Cup Sponge

Order/Family:
Clionaida/Clionaidae

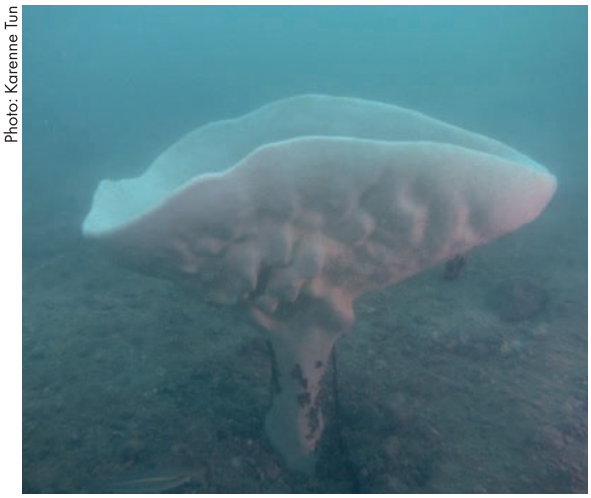
Photo: Karenne Tun

National Status: Critically Endangered (CR)

Habitat and Ecology: *Cliona patera* is the largest sponge species in Singapore waters that can grow over 1 m in diameter and height. It has a bowl/wine-glass shaped upper body supported by a stalk with rooting processes that anchor the sponge to the seafloor with sandy and coral rubble substrate at around 10–30 m depth in Singapore waters.

Distribution: In Singapore, this species is restricted to the waters off several islands in the Singapore Strait. It has also been reported in the waters of Thailand, Cambodia, and waters off Darwin (Australia).

Threats: Habitat loss and modification, sedimentation, and predation by turtles.

Scientific Interest and Potential Value: *Cliona patera*, also widely known as the Neptune's Cup Sponge, was the one of the first animals described in Singapore over two centuries ago. The sponge was abundant in Singapore waters according to the second British Resident of Singapore, John Crawfurd, when he was holding office in 1823–26 (Crawfurd, 1830). The sponge was very popular in the past; almost every major natural history museum in the Europe has at least one specimen of the sponge. However, there had been no record of the sponge in Singapore waters since 1908 (Hanitsch, 1908) for over a hundred years until it was rediscovered in 2011 (Lim et al., 2012).

Conservation Measures: A few individuals have been transplanted to the Sisters' Islands Marine Park for protection under maritime and conservation regulations, and they are being monitored regularly.

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