

Research Article

Preliminary Data On The Occurrence And Distribution Of Shallow Water Marine Sponges (Porifera) Around Maltese Coasts

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Summary. Data on the ecology of the Maltese Porifera is lacking altogether. Very documented basic information on the occurrence of commercial sponge species in Maltese coastal waters is unavailable. This study presents the results of a four year diving survey aimed at studying the occurrence and distribution of shallow water sponges around the Maltese Islands. In all, 33 species of Porifera have been identified, most of which are new records for the Maltese Islands. Information on the bathymetric distribution and abundance of these species is given. Although an extensive area has been covered in our survey, we have not recorded any commercial sponges. It is therefore likely that these species do not occur locally, at least in shallow inshore waters.

Keywords: Porifera, sponges, Maltese Islands, sponge disease, species lists, check-lists, sponge fisheries.

Sponges are a ubiquitous component of the marine benthos. Some species have considerable commercial importance as their fibrous skeleton is the familiar bathroom sponge and they have been exploited by man since antiquity. Until recently there has been a thriving fishery for sponges in the Mediterranean centered mainly on Greece, Tunisia and Turkey (FAO, 1994). Despite both their commercial importance and interesting biology, there is a lack of even the most basic biological and ecological information on the Maltese sponge fauna.

In July 1990, a FAO regional workshop was held in Malta to discuss the situation concerning the occurrence of a disease which had afflicted both commercial and non-commercial species of sponges since 1986 (FAO, 1994). This disease had a large economic impact on the Mediterranean commercial sponge fisheries, having practically eliminated this industry in some countries (Vacelet, 1991). Studies made during the past four years have suggested that the disease is due to a bacterium which normally plays a part in the digestion of the sponge skeleton of dead sponges by secreting a collagenase enzyme. In conditions stressful to sponges, this bacterium becomes virulent and also attacks the skeletal tissue of live sponges (Vacelet *et al.*, 1994). At the time of the Malta FAO workshop, the authors were asked to supply data on the local occurrence of commercial sponges and on the incidence of the sponge disease. The only information available concerning sponge fisheries in Malta were the collections of some local fishermen (see below). A literature search for information on the local commercial and non-commercial sponge fauna revealed only a single publication, which recorded nine non-commercial species of Porifera (Micallef and Evans, 1968). These identifications are suspect, however, as the identification source used by the authors is a semi-popular guide to Mediterranean marine life of which the only feature is a hand-drawn

of the species occurring in the Mediterranean and in any case, identification of sponges is difficult without detailed histological examination. The lack of local information on commercial sponges and of a local sponge fishery contrasts with the important sponge fisheries in several nearby Mediterranean countries such as Italy, Tunisia and Greece. However, local fishermen from Wied iz-Zurriq confirmed that foreign fishing boats had in the past collected commercial sponges off Filfla Island. From the fishermen's descriptions of the diving gear used by the sponge fishermen at that time, such an activity must have been carried out several decades ago. There is also a documented record in local newspapers of the 1890s concerning commercial sponge fishing activities in Malta (J. Ingamm, personal communication, 1991).

The lack of basic data on the local sponge fauna, such as an accurate species list, prompted the authors to initiate a survey having three primary aims:

1. To compile a checklist of the shallow water Porifera of the Maltese Islands and to provide basic ecological information on their bathymetric distribution and abundance.
2. To establish whether any commercial sponges exist locally.
3. To monitor the local occurrence of the sponge disease.

As a preliminary to this survey, J. Vacelet (Station Marine d'Endoume, Marseille) together with J. J. J. (JAB), carried out five dives at different sites around mainland Malta to assess the incidence of the sponge disease amongst local sponge populations, to record the most commonly occurring non-commercial species, to gain experience in their field identification and to search for commercial species. Data on the incidence of the

sponge disease amongst non-commercial sponges obtained during this preliminary survey have been published in Vacceli *et al.* (1994) and FAO (1994).

Materials and methods

A total of 31 SCUBA dives were carried out at depths ranging from zero to 45m in 17 different localities around the Maltese Islands (Figure 1). In view of the indications of a past sponge fishery off Filfla, nine out of the 31 dives were made off this island. During most dives, divers working in pairs moved underwater along 6-metre wide belt transects at predetermined bearings. The length of these transects varied depending on the depth of the water at the site concerned. All sponges encountered in the transects were identified and recorded *in situ* where possible, but specimens were also collected for later identification in the laboratory. An estimate was made of the abundance and a particular look-out was kept for diseased individuals and commercial species. A few specimens which are included in our species list were obtained from samples collected by trawling at 40-115m off mainland Malta (Tables I and II), whilst others were collected during other studies. Most of the identifications to species level have been checked by J. Vacceli of the Station Marine d'Endoume, Marseille, France. The collection has been deposited at the museum

of the Department of Biology University of Malta.

Results

In all, 33 species of sponges have been identified, most of which are new local records. Table I gives a classified list of the species recorded while Table II provides data on the localities surveyed.

The most abundant species in shallow (1-15m), exposed waters appeared to be *Sarcotragus spinosus* and *Ircinia variabilis*. The latter also occurred, although less abundantly, at depths of 20-25m. In more sheltered shallow waters (2-4m), especially along the rocky headlands of several islets, *Chondrilla muuda* appeared to have the highest abundance. In sciaphilic environments throughout the 15-35m depth range, *Crawbea crumbe* and *Agelosomides* had the highest abundance and *Dirudusia reniformis* and *Pekosia jkijformis* were common in the 35-25m depth range in some of the sites surveyed. At Filfla, *Cacospongia scutellaria* was the most abundant species in the 20-35m depth.

No commercial sponge species were encountered during this survey. Only single individuals of non-commercial sponges apparently afflicted by the sponge disease were encountered during dives carried out in 1993 and 1994.

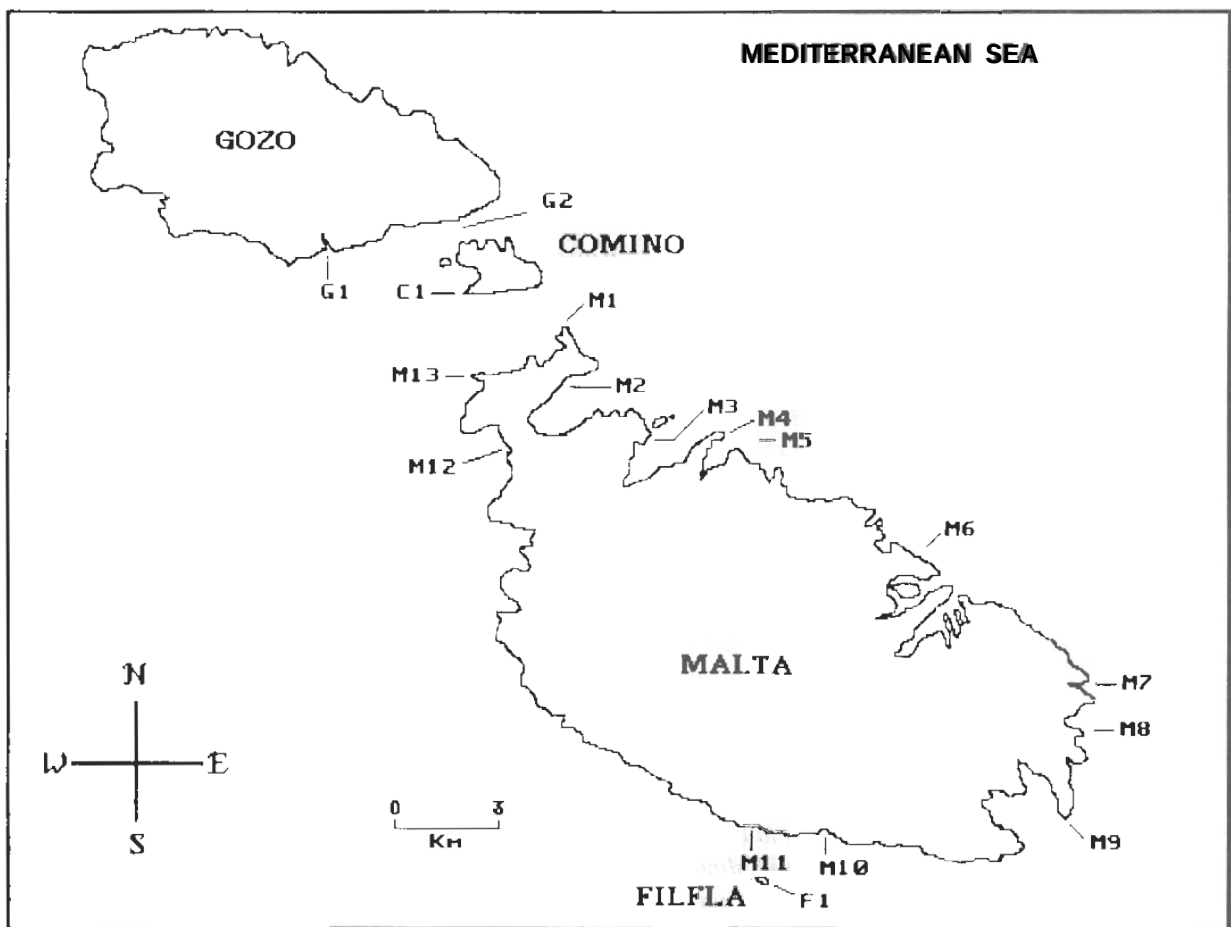


Figure 1: Map of the Maltese Archipelago showing the localities surveyed for sponges.

	Species	Site
Class CALCAREA		
	Subclass CALCINEA	
1	<i>Clathrina clathrus</i> (SCHMIDT)	M6
	Subclass CALCARONEA	
2	<i>Leuconia</i> sp.	Xghajira
3	<i>Petrobiona nmsiliana</i> (VACELET)	M13
4	<i>Sycon elegans</i> (BOWERRANK)	M12
5	<i>Ute glabra</i> (SCHMIDT)	Xghajira
Class DEMOSPONGIAE		
6	<i>Canthellarscum</i> (SCHMIDT)	M6
7	<i>Agelas oroides</i> (SCHMIDT)	M1, M5, M9, M10, M12, M13, C1, F1
8	<i>Anchinoe</i> sp.	M1
9	<i>Anchinoe paliperu</i> (ROWE & BARK)	C1
10	<i>Aplysina rreophoba</i> (SCHMIDT)	M2, M4
11	<i>Axineffera verrucosa</i> (ESPBR)	C1
12	<i>Batzella rrops</i> (TOPSEKT)	M1, M10
13	<i>Cacospongia scdaris</i> (SCHMIDT)	M2, M3, M4, M6, F1
14	<i>Cacospongia mollior</i> (SCHMIDT)	M6, M13
15	<i>Chondrilla munila</i> (SCHMIDT)	M2, M3, M4, M6, M7, M10, M10, M11, G2
16	<i>Chondrosia reniformis</i> (NEMO)	M1, M2, M4, M6, M7, M8, M9, M10, M11, M13, C1, C2
17	<i>Crambe crambe</i> (SCHMIDT)	M1, M2, M4, M5, M6, M9, M10, M11, M12, M13, C1, G1, G2, F1
18	<i>Dicryoneis aincrsa</i> (SCHMIDT)	M3
19	<i>Dysidea</i> cf. <i>fragilis</i> (XIONTAGU)	M1
20	<i>Dysirlea</i> sp.	M1
21	<i>fissiospongia</i> sp.	M1
22	<i>Haliclona</i> sp.	Off Ras il-Wahs
23	<i>Ircinra dendroides</i> (SCHMIDT)	C1
24	<i>Ircinio oros</i> (SCHMIDT)	M1, M8, M9, M13, C1
25	<i>Ircinia variabilis</i> (SCHMIDT)	M1, M2, M4, M5, M6, M8, M9, M10, M12, M13, C1, G1, M9, M10, F1
26	<i>Oscarella lohularis</i> (SCHMIDT)	M6
27	<i>Petrosia iciformis</i> (POIRET)	M1, M5, M6, M8,
28	<i>Raspniona aculeata</i> (JOHNSTON)	Off Qammieh
29	<i>Sarcotragus spinosula</i> (SCHMIDT)	M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11,
30	<i>Scopalina lophyropoda</i> (SCHMIDT)	C1, G1, G2, F1
31	<i>Siphonochalina</i> sp.	Off Qammieh
32	<i>Spirontrellina cunctinix</i> (SCHMIDT)	M1, M9, M10, M11
33	<i>Tethyo aurantium</i> (PALLAS)	M12, G1

Table 1. Classified list of species recorded. The sites where the species were recorded are indicated by a code corresponding to their position in Fig. 1. Sites indicated by their actual name were not surveyed by SCUBA diving but the specimens were obtained from other workers.

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