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 Máldese Porifeir is taking altagetheth Bydaydoc datened basid information on the occurrence of continential appropriates in Maldese Porifeir is taking altagetheth Bydaydoc datened basid information on the occurrence of continential appropriates in Maldese educed waters is non-valiable. This study presents the results of a four year diving survey almed to the occurring and distribution of the Maldese Islands. In all. 33 species of Porifera have been identified, most of which are new records for the Maldese Islands. In all. 33 species of Porifera have been identified, most of which are new records for the Maldese Islands. Information on the bathymetric distribution and alundance 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 occurribeally, at least in shallow inshore infactorers.

Kqwords: Porifera. sponges. Mallese Islandsspongediseases species lists, scheckelikts, ispongerfisheries.

Sponges are a ubiquitous conjporent! of the marine benthos. Some speciess have considerable commercial importance as their fibrous skeletom is the familiar bathroomh sponge and they have been exploited dby num since antiquity. Until recently there has been a thriking fishery for spongession the Meditemanearineentereddriwinity on Greece. Tunistia and Tunkey (FAO. 1994). Despite both their conviriential importance and illeresting biology, there is a lack of oven the most basic tbiological and ecological information ille Matelsespongo faufnama.

In July 1990. a FAO regional workshop was held in Malta lo discussible situation concerning the loc corrence nee of a discase which had affilited both commercial and nd non-commercial species of spongess since 1986 (FAO. 1994). Thus disease had a large conomini impact on the Mcditcrraniean commercial sponge fisheries, having practically eliminated this iridnstry in souloecountricses (Vacclet, 1991). Studiussmaded dringsthelpasta four years ars have suggested that the disease is dub tota bacterium in which normally plays a part in Ihc digestion of the spongim skelctori of dead sponges by secreting a collagenase enzymec. Inncociditions stressfichtor spongeses. this bactenium becomes virulent and also atlacks studie skelenttissue ofofive spanges (Vacdeclet et ui., 1994). At the time of the Malaat aF FAOD workshopp, the eauthors were re asked to supply dala on the local occurrence of contenercial sponges arithmenthe incidence of the sponge discase. The only information available concerning spouge fishericssin/Malaatwere the hecollections of sonile local fishermen (see below). A lilerdhure search for information on the local conunercial and noncomtiercial sponge fauna revealed only a single publication, which recorded ninc non-commercial spwiess off Porifficial (Micallef and Evanss, 1968). These identifications are suspect, however, astheodeathlifarionn source used by the authors is a senli-popular goodectoo Mcditerraneammaninedrfcfsylvible lorollyl yfeanunes a ahandfillul

of the species soccovrilig in the Mcditerranean and nd in ariy case, identification of sponges is difficult without detailed histological examination. The lack of local informationi on commercial spongeses and of a local sponge fisher? contrastes with the important sponge fisheries in several nearby Mediterranean countricsesuchch as Italy. Tunisia anidd Greecee Howevers I doah fishermeren from Wied iz-Zunnigg conflimmed that forcign lishing boats had in the past collected commercial sponges off Filfla Island From the fishermen's descriptions of the dilying gear used by the sponge fishdrane at a hahatirhene. such an activity nusst have been carriedout screenal decades ago. There is also a documented record in local newspapers of the 1890s concerning comerciatcial sponge fishrig activities in Malla (J. Inguanan. personal contrinurucation. 1991).

The lack of basic dataon hie local sponge hum., southas an accurate wies lid. prohpted the autilors to initiale a survey having the eprimary aims:

1. To compile a checklist of the shallow water Porifera of he Maltese Idands and to provide basic coddpogldinifformiteon on their bathymetric distribution and abundance.

2. To cslablish whether any commercial sponges esist locally.

3. To monitorthbdooahl occurrence of the spongedisease.

As a preliminary to this snrvcy, J. Vacelet (Station Marine dilEndonme, MárseiHil):)togethère withtlonen of ofisus (JAB), carried out five dives sattdifférent sites caround nd mainlandi Malta to assess the inluid noe coff the sponge disease amongst local sponge popplations, sloterecord thère niost commonly occurring non-combercial al species, to gaim experience in their field itlentification and to search arch for commercial species. Data arouthe biricid decord of the

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

Materials and methods

A total of 31 SCUBA dives wante coarrido outdatd depths ranging from zero to 45m in 17 different localities around the Maltese Islands (Figure 1). In view of the indications of a past spongefishery off Fiffla, noise out of the 31 dives were made off this is island. During most dives, divers working in pairs moved underwateral along 6-metre wide belt transacts at predetennined bearings. The length of these transects vanied depending on the depth of the water at the site concerned. All sponges encountered in the transects were identified and recorded irr silu where possible, but specinterssweereadsoodlected for later identification in the laboratory. An estimate was made off this abundance and a particular look-out was kcpt for dimsed individuals and contrinercial speciess. A Tewspeciniens which are inidireded in our species list were obtained from sanipks collected by trawBingat 40-1Wm1coffmaidand Malta (Tables I and 11). whilstcothers were callccted during other studics. Most of the identifications to species level haw bccn checked by J. Vacelel of the Station Marine dlEndourne, Marseille. France. The collection has been deposited at the museum

Results

In all. 33 species of sponges have beeriddentifild, 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 specifies in shallow ((1155m),exposed waters appeared to be Sarcoimges spinos had and Ircinin variabilis. The latter also occurred, although less abunidantly, actidepths of 20-251 In more sheltered shallow waters (24m), especially along the rocky heatlands of several idets, *Chondnilla mudea* appeared to have the highest abundance. In sciapbilic environments throughout the 15-3511 tied thrange. *Crawbe crambe* and *Agelos omides* had the highest abundance were common in the 5-25 field pharms and *Pekosia jki formis* were common in the 5-25 field pharms the most abundant spocies in the 20-35 m depth.

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



Figure 1: Map of the Maltesu Archipelago showing the localities uncyed: for sponges.

Class CALCAREA	Species	Site
Subclass CALCINEA	Clathrina clathrus (SCHMIDT))	M6
Subclass CAL CARONEA		
2	Lauconia sp	Xahaji ra
3	Petrobiona massiliana (VACELET)	MI3
4	SyconceleannsBOWERRAVK)	M12
5	Ute glabra (SCHX4IDT)	Xghajira
Class DEMOSPONGIAE		
6	dcanthellrrscum (SCHMIDT))	M6
7	Agelas oroides (SCHMHIA))	ML. MS., M9. M10.
		M12. M1B3 COL, F1
8	Anchinoe sp.	M1.
9	Améhinoe/pa‡ipertn(ROW ERBNK))	CI
10	Aplysrnn rrerøphoba(SCHMIDT))	M2. M4
I I	.4xlnef/nverrucosa (ESPBR)	CI
12	Batzella rnops (TOPSEKT))	M1., W10 0
13	Cacospongia scdariss (SCHMIDT))	M2, MB. M4. M6. F1
14	Cacospongia mollior (SCHMIDT))	M6. M13
15	Chondrilla minila (SCHMIDT))	M2. M3. M4,
16		MIU. MI 1, G2
16	Cnonarosia remjorntis(NMDD)))	$\mathbf{MI}_{\bullet}, \mathbf{MZ}_{\bullet}, \mathbf{M4}, \mathbf{MG}_{\bullet}, \mathbf{M7}, \mathbf{M9}, \mathbf{M9}, \mathbf{M9}, \mathbf{M9}$
		M11 M(12) C C
17	Cramba cramba (SCUNUDT)	MIND MA MS MAG
17	Crumbe crumbe (Schmibt)	$\mathbf{MO} \mathbf{MIII} \mathbf{MIIII} \mathbf{MIIIII} \mathbf{MIIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIII} \mathbf{MIIIIIII} \mathbf{MIIIIIII} \mathbf{MIIIIIIIIIIIII \mathbf{MIIIIIII} \mathbf{MIIIIIII} MIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII \mathbf{MIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII$
18	f>icryong//aincrsa (SCHMIDT))	M3.
19	Dysidea cf. fragilis: (XIONTAGU)	MI
20	Dysirlea sp.	MI
21	fisciospongia a sp.	MI
22	Haliclonn sp.	Off Ras il-Wahs
23	Ircinra dendroides (sar Hww)'r))	Cl
24	Ircinio oros (SCHXIIDT)	MI, M88.M99, M1B3.C11
25	Ircinia variabilis (schama))	M1, M2, M1, M5.
		M6, M3, M9, M10)
		M12, M13. Cl. GG 1
		M9, M110), F11
26	Oscarella lohularis (SCHMIDT))	M6
27	Petrosia/iciformiss (POIRET)	MI , M5 5, M6 6 M8 8,
28	Raspnciona aculenta (JOHNSTON))	Off Qarmmieh
29	S'arcolragus spinosula(SCHMIDT))	MIL, N422, N433 M44,4,
		M5, M6, M77, N488,
		M9, M10, M11 11.
20	Complex Laboration (C1 , G1, G2, F1
3U 21	Scopalina lopnyropoda (SCHMDT))	
31	Sipnonocnalima sp.	UE Damanich
32	Spirmureinocuncinimax (SCHMADT)	
33	រ «បុរម្ភរប auranuum (PALLAS))	WILZ, Will

Table I. Classified list of spacies accorded. Illoc sites where the species were recorded are indicated by a code corresponding to that in Fig. 1. Sites indicated by their actual name wave not surveyed by SCUBA diving but the specimens were obtained from other workars.

Code	Name of site	Date of divels	Max. depth	Bottom type
MI	Ahrax Point	May `'90	25m	Bedrodk/Bonlides/Posizizionicennica nleadows
		Aug '90	151m	BedroidkiBouldersil/sosii1/oniaeonicn meadows
M2 Mell	Mellieha Bay	Aug '91	1.5m	BedrockBBoldcdcPs1/Posidoneanica meadows
		Sept '91	20m	BedrockBoulder/sPosiclonioceavica meadows
		Oct '91	1.5m	Bedrock/Bouldes/3190s#donceamica mcadows
M3	St Paul's Bay	Oct '94	15m	BedrocW/Posidonia@ceanica meadows
M4	Qawra Point	May '90	35 1 n	BedrocW/Posidonia oceanica meadows
M5 Qawra ree	Qawra reef	Sept '91	27m	BedrocW/Posiilonia oceanica meadows
		Scpt '91	27m	BedrocW/Posidonia uceanica meadows
M6	Sliema	May '90	30m	BedrocW/Posidonia oceanica meadows
M7	Zongor Point	May '92	15 x11	BcdrocW/Posidonia oceanica meadows
MR	Muusar	Jau '93	35m	Bedrock/Boutders//Pusiciliondecavicarmeadows
M)	Deletmara	Aug '92	30m	BcdrocW/Posidonia oceanica meadows
MIO Wied iz-Zurricq	Will iz-Zurricq	Aug '91	30m	BedrocW/dsidonia/oceanica/meaddwss
		Aug '91	35011	BcdrocW/Posidonia oceanico meadows
MI I	Ghar Lapsi	Mag '90	15 m	Bedrock/Posidonia oceanica meadows
MI2	Anchor Bay	Oct '90	1.5mm	Bedrock/Boulldcr/s1Posidonice anica meadows
M13 (Cirkcwwa	May '90	30m	BedrockiPosiilonio oceanico tncadows
		Aug '91	2.5111	BcdrocklPosiilonia occanica meadows
C1	Irgicga Point	Oct '91	30n1	BedrocWBoulldersIPo/sidonioccanica nheadows
Gl G2	Imgarr ix-Xini Hondoq	Oct '91	25m	BedrocW/dsiddmin?oceanica/meaddwss
1997	ir-Rummien	Aug '93	IGm	BcdrocWBoulders/Posidionioocennica meadows
FL	Filfla	Aug '92	30tm	Boulders/Saraid
		Aug '92	30 111	Bouldcrs/Sand
	Aug '92	25 th11	Boafders/Sand	
		Aug '92	25m	Bcdrock/Boulders/Sarid
	Aug '92	25m	Bedrock/Boullders//Samd	
		Sept '92	30m	Boulders/Sand
		Sept' 92	2Snu	Bedrock/Bouilders/Samd
		Scpt '94	30m	Bcdrock/Bouilders//Sand
		Sept '94	25m	Boulders/Sand
ļ	OfT @anrmiteh	Aug '92	40ttn	BcdrocWSand
1	Off Ras il-Waku	Mar '93	1501m	Sand/mud
1	Xg hajra	AUE'90	0-0.51111	Mediolittoralillyper infralittoral Bedrock

'Table11. Details: ofthe: sites surveyed for sponges.

Concluaionsv

As expected, the majority off sponges recorded during, this study belong to the class Demospongiae. Due to lile search and sanlpling, melhods employed in this study, snlall sized epiberithic and epiployitic species such as [hose found in meadows of the scagrass l'osidiontin oceanicat may hawebeennoverhookedd AAs a result, our species list tis cotisid trabyly shorter than for other parts of the Meditermaneam (see effore amplifie Pansirii and Pronzatto, 1985; Carballto and Garcia-Gomez, 1994) and mamy more species snocdoub to cean; there are currently about 554 known species of triaritic Porifera in the Mediterranean (Rénaisin 1990)) Neverthdless, on the basis of our results we are ableetoo slate that:

1. The shallow water spongerfame abith eMaltese lslands appears to be similar to that of other parts of of the Mediteman.

2. There do not appear to the aany dagg commercial sponge beds in Maltese shallow coastal waters that could be economically exploited and indeed. no commercial sponge species were recorded.

We suggest that fillure work on the local marine sponge fauna should aim at quantifying species abundance, compiling a more complex species is translatid dativing the more important species involved in interspecific relationships with other marine plants and animals.

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