

Mediterranean Marine Science

Vol 10, No 2 (2009)



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doi: [10.12681/mms.114](https://doi.org/10.12681/mms.114)

To cite this article:

ZAMMIT, P., LONGO, C., & SCHEMBRI, P. (2009). Occurrence of *Paraleucilla magna* Klautau et al., 2004 (Porifera: Calcarea) in Malta. *Mediterranean Marine Science*, 10(2), 135–138. <https://doi.org/10.12681/mms.114>

Mediterranean Marine Science
Volume 10/2, 2009, 135-138

Occurrence of *Paraleucilla magna* Klautau *et al.*, 2004 (Porifera: Calcarea) in Malta

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Abstract

The calcareous sponge Paraleucilla magna, first recorded from the Mediterranean in 2001 (southern Tyrrhenian, southern Adriatic and northwest Ionian coasts of Italy), is recorded from Malta (Central Mediterranean) where it was found forming part of the fouling community on small, surface marker-buoys around a fish-farm in Marsaxlokk Bay.

Keywords: Sponges; Alien species; Maltese Islands; Fouling; Central Mediterranean.

The sponge *Paraleucilla magna* was relatively recently described from the Brazilian Atlantic Coast, where it is one of the most abundant calcareous sponges (KLAUTAU *et al.*, 2004). A study on fouling assemblages in Marsaxlokk Bay, a busy harbour in Malta, led to the discovery of this species (Fig. 1), which has recently been recorded in Italian waters from Taranto, Porto Cesareo, Brindisi and Naples (LONGO *et al.*, 2007), but which was previously unknown outside Italy (ZENETOS *et al.*, 2008).

Identification of the species was made by one of us (CL) based on spicule morphology and skeletal architecture as reported in LONGO *et al.* (2007) (Fig. 2 and Table 1). The sponge occurred on small spherical buoys having a circumference of 0.6m and a total immersed surface area

of 0.0575m², floating on the water surface and used to mark the boundary of a fish farm at Il-Qajjenza in Marsaxlokk Bay. Of 12 buoys sampled, 11 supported the sponge. Buoys differed as to the time they had been in the water, with the newest floats having been immersed for not longer than four months and the oldest for more than two years. However, there was no difference in percentage cover of the sponge on the different types of floats; percentage cover ranged between 0.66% and 1.18%, with an overall value, considering all sampled buoys together, of 2% \pm 1.11. On the buoys the sponge co-existed with ascidians, bryozoans, algae, sessile polychaetes and bivalves, including the alien bivalve *Brachidontes pharao-nis*, which has already been recorded from Malta (CACHIA *et al.*, 2004).

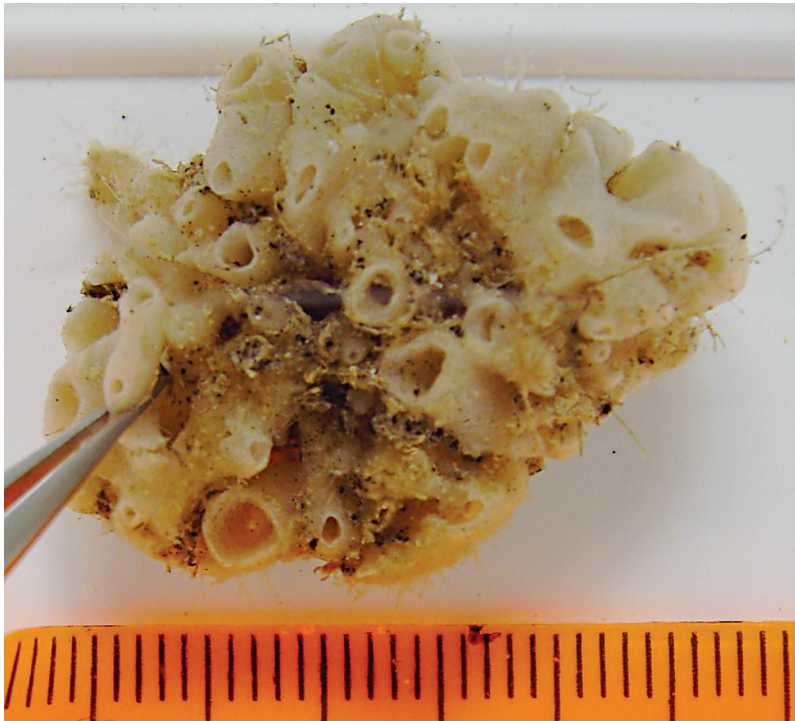


Fig. 1: Live specimen of *Paraleucilla magna* collected from just below sea-level from floating marker buoys at Il-Qajjenza, Marsaxlokk Bay in July/August 2007. Scale in mm. (Image: P.P. Zammit).

Table 1

Measurements of spicules from *Paraleucilla magna* from Marsaxlokk Bay, Malta.
Figures represent the range and mean value with standard deviation in parentheses,
based on 25 measurements for each spicule type.

	Length (μm)		Thickness (μm)
cortical triactine	paired actine	unpaired actine	
	120-324 (202.8 \pm 59.2)	108-252 (178.2 \pm 50.6)	12-36 (22.8 \pm 7.7)
cortical tetractine	apical actine	basal actine	
	204-480 (342.6 \pm 80.5)	132-372 (257.4 \pm 66)	24-48 (33.6 \pm 8.3)
subatrial triactine	paired actine	unpaired actine	
	144-336 (240 \pm 54.2)	120-564 (299.8 \pm 99.1)	12-48 (28.2 \pm 8)
subatrial tetractine	paired actine	unpaired actine	
	144-456 (286.2 \pm 74.7)	120-480 (268.2 \pm 72.6)	12-48 (32.4 \pm 7.8)
atrial triactine	paired actine	unpaired actine	
	120-384 (195.6 \pm 66)	48-216 (91.8 \pm 44.6)	12-36 (19.8 \pm 8)



Fig. 2: Cross section of *Paraleucilla magna* from Marsaxlokk Bay, Malta, showing the skeletal architecture. (Image: C. Longo).

LONGO *et al.* (2007) considered *Paraleucilla magna* to be an alien species in the Mediterranean and suggested that bivalve aquaculture and shipping were the most probable vectors responsible for its spread. The reasons given by these authors were that (i) the genus *Paraleucilla* had never been recorded before in the Mediterranean Sea and that its distribution encompassed the Indo-Pacific and Red Sea; (ii) all the

sites in which LONGO *et al.* (2007) found *P. magna* had been well studied in the past by sponge taxonomists who had never found this species; and (iii) the main sites where LONGO *et al.* (2007) found *P. magna* (Taranto, Brindisi and Naples) are major Mediterranean ports, with a huge volume of shipping. Although there are some indications that *Paraleucilla magna* also occurs along the NW coasts of the West Basin of the

Mediterranean (Michelle KLAUTAU, Universidade Federal do Rio de Janeiro, Brazil, personal communication, 2009), we are of the opinion that present evidence suggests that *P. magna* is an alien species in the Mediterranean that is spreading in some areas.

Although the sponge fauna of the Maltese Islands has not been systematically studied, this species has never been noted before in studies on the fouling assemblages in Marsaxlokk Bay, suggesting that it is a recent introduction to Malta. The most probable vector for entry of *Paraleucilla magna* into Maltese waters is maritime transportation, since Marsaxlokk Bay hosts a major transshipment port serving thousands of ships, although its occurrence on marker buoys around a fish farm may also suggest entry via aquaculture related activities.

Although no studies on reproduction were made, it seems likely that *Paraleucilla magna* has established breeding populations within Marsaxlokk Bay, given the not insubstantial cover of this species on many buoys. However, so far it does not appear to have colonized other structures apart from the marker buoys around the fish farm. The water at the Il-Qajjenza site where the species occurred was turbid with suspended sediment and receives some organic input from the fish farm but there were no evident signs of eutrophication.

Acknowledgements

We are grateful to Dr. Simeon Deguara and Malta Fishfarming Ltd for granting permission to study the boundary floats at their fish farm, Dr Argyro Zenetos (Hel-

lenic Centre for Marine Research, Greece) for her useful suggestions, Dr Michelle Klautau, (Universidade Federal do Rio de Janeiro, Brazil) for information on *Paraleucilla magna*, and three anonymous referees for their comments on an earlier draft of this paper.

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Submitted: February 2009

Accepted: June 2009

Published on line: September 2009