FIRST DATA ON THE BENTHIC ASSEMBLAGES OF HARMFUL MICROALGAL SPECIES IN THE GULF OF TARANTO (NORTHERN IONIAN SEA)

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Abstract

The benthic assemblages of harmful microalgal species have been detected for the first time in the Gulf of Taranto (Northern Ionian Sea).The most abundant species was *Ostreopsis* cfr. *ovata*, which was present in all the samples collected. The microalgal association was mostly composed of *Ostreopsis* cfr. *ovata*, *Coolia monotis*, *Amphidinium carterae* and *Coscinodiscus* sp., and showed features typical of both the Mediterranean and tropical assemblages.

Keywords: Algae, Toxic Blooms, Ionian Sea, Phytobenthos

Introduction

The biogeographical spreading of benthic dinoflagellates constitutes a major issue since the majority of them are capable of producing toxins [1], and raises questions about their origin and possible dispersal mechanisms [2, 3]. Among these dinoflagellates, the most known species *Ostreopsis* have today exceeded the biogeographical boundaries once considered for them (tropical and sub-tropical areas) and their presence in the Mediterranean Sea is actually well-documented [4]. In the tropical regions *Ostreopsis* genera are usually found in association with *Gambierdiscus*, *Prorocentrum* and *Amphidinium* species [5]. In the Mediterranean Sea, the assemblages of *Ostreopsis* with *Coolia monotis*, *Prorocentrum lima* and *Coscinodiscus* sp. [6, 7] have been detected. The aim of this study is to describe for the first time the benthic assemblages of harmful micro-algal species in the Gulf of Taranto (Northern Ionian Sea).

Material and mehods

In August 2008 samples of sediment were collected from three stations, located along the coastline of the Northern Ionian Sea (Mediterranean Sea) (1 = Mar Piccolo of Taranto; 2 = Mar Grande of Taranto; 3 = Lido Bruno) (Fig. 1). Samples of sediment (50–150 gr wet weight) were collected from depths between 0.5 and 1.5 m, placed in plastic bottles with filtered seawater and kept in the dark. In laboratory, sediment samples were vigorously shaken; the material was then passed through 250 and 100 mm mesh sieves to remove large particles, and was finally fixed with lugol's solution. The sediment was dried and then weighed. The fixed material was settled in 2–10 ml chambers for the appropriate time according to Utermöhl's sedimentation method [8]. Samples were examined and counted with an inverted microscope. The epiphytic abundance was expressed as cells gr^{-1} dry weight of sediment (dws).

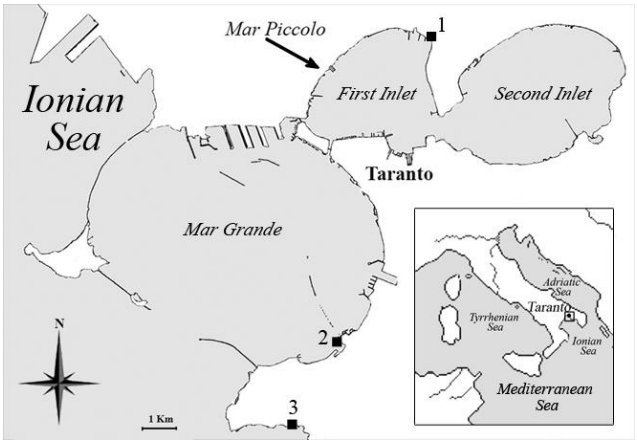

Fig. 1. Map of the Gulf of Taranto with sampling stations.

Results and discussion

The microalgal assemblages of sediments was dominated by dinoflagellates, the most of them potentially toxic (Table 1). *Ostreopsis cfr.* ovata, which was present in all the examined samples, reached the highest concentration at the stn. 3. The harmful dinoflagellates *Coolia monotis*, *Prorocentrum lima* and *Amphidinium carterae* were also abundant. Among diatoms, the genera *Coscinodiscus* and *Nitzschia* were important components of the assemblage. The benthic microalgal association detected in the Gulf of Taranto (*Ostreopsis* cfr. *ovata*, *Coolia monotis*, *Prorocentrum lima* and *Coscinodiscus* sp.) was similar to that found in other Mediterranean coastal areas, such as the Catalan [6], and the Northern Adriatic coasts [7]. Furthermore, the presence of *Amphidinium carterae*, typical of the tropical associations, and observed along the Southern Thyrrenian coast [9].has been confirmed also in the Nothern Ionian Sea. In conclusion, the establishment of tropical microalgal associations, besides the steady presence of "alien" species such as *Ostreopsis ovata*, seems to confirm the ongoing process of Mediterranean "tropicalization", even if the presented data must be considered only preliminary.

Tab. 1. List and abundances of the microalgal taxa detected in the sediments of the Gulf of Taranto.

	Toxic species	stn. 1 10^3 cells g^{-1} dws	stn. 2 10^3 cells g^{-1} dws	stn. 3 10^3 cells g^{-1} dws
diatoms				
Coscinodiscus sp.		54.9	73.2	54.9
Haslea wawrikae				
Navicula sp.		18.3		
Nitzschia sp.		36.6	54.9	27.45
Striatella sp.		3.66	1.83	3.66
other diatoms				
dinoflagellates				
Amphidinium carterae	*	18.3	36.6	25.62
Akashiwo sanguinea				
Coolia monotis	*	12.81	14.64	27.45
Gonyaulax spinifera				
Gymnodinium sp.		25.62	73.2	36.6
Ostreopsis cfr. *ovata*	*	109.8	91.5	237.9
Prorocentrum cfr. *lima*	*	7.32	12.81	9.15
Prorocentrum minimum	*			
Prorocentrum sp.1		3.66	3.66	9.15
others				
Dinobryon sp.				
phytoflagellates < 15 μm				
cyanobacteria		21.96	9.15	12.81

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