

# FIRST RECORD OF *OSTREOPSIS OVATA* BLOOM IN THE GULF OF TRIESTE (NORTHERN ADRIATIC SEA)

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## Abstract

In a shallow tidal pool in the Gulf of Trieste the first observed bloom of *O. ovata* occurred in September–October 2009. Water samples were collected for the light microscope analyses and nutrient analyses. Hydrological data were recorded using a multiparametric probe. *O. ovata* was observed by epifluorescent light microscope. Cell abundance was higher than 3 million cells per liter.

*Keywords: Adriatic Sea, Dinoflagellates, Toxic Blooms*

## Introduction

*O. ovata* is an epiphytic potentially toxic dinoflagellate ([1] and references therein). Some *Ostreopsis* species can produce palytoxin that can accumulate in the trophic web, thus representing a potential although so far undefined sanitary risk [2]. Recently, *Ostreopsis* spp. produced blooms in the Tyrrhenian and southern Adriatic Sea. These blooms have been related to human health problems [3]. Monti et al. (2007) report the first record of *O. cfr. ovata* in the Gulf of Trieste and close to the town of Rovinj (Croatia) in October 2006. Up to summer 2009 in the Gulf of Trieste we have not been aware of any bloom in the water column though the presence of this dinoflagellate has been revealed by ARPA-FVG in several shallow coastal sites of the gulf (Bulletins of the Institute for Environmental Protection and Research - ISPRA). From June 2009 to July 2009 ARPA-FVG carried out a study in the Gulf of Trieste in order to investigate the hydrological and biological characteristics of the marine coastal water in relation to the presence of this potentially toxic microalgae. In early autumn the presence of a bloom of *O. ovata* was observed in a tidal pool in the coastal zone of the gulf. During this event some water samples were collected in order to study the composition and the abundance of the microalgal community and nutrient composition. Hydrological parameters were collected as well.

## Material and Methods

On 29th September, 01st and 07th October 2009 water samples were collected in a tidal pool in the Gulf of Trieste. During sampling temperature, salinity and dissolved oxygen values were recorded using a multiparametric Idronaut mod. 316 probe. The hydrological data have been submitted to a quality control. Nutrients analyses were performed colorimetrically for ammonium, silicate, phosphate, nitrate and nitrite using standard autoanalyzer techniques [4]. The composition and the abundance of the microalgal community were analyzed following UNI EN 15204 (2006) [5].

## Results and Discussion

From the onset of *O. ovata* in the Gulf of Trieste the coastal area most affected by the presence of this species has been a coastal zone known as Canovella De'Zoppoli (Duino-Aurisina). This area is characterized by the presence of a tidal pool well demarcated from the rest of the beach and in contact with the open sea only during high tide. The tidal pool is characterized by a pebbly bottom and it is sheltered from wind blowing and from wave actions by a natural reef; its depth ranges between 0.2 and 1.5 m. Macroalgae are almost absent. During the microalgal bloom a mucilaginous brown pellet coated all the pebbly bottom and some brown macro-aggregates were floating on the water surface. Water surface temperature was 22.3°C and dissolved oxygen reached 142% of saturation. The high values of oxygen saturation were probably due to the elevated photosynthetic activity of the microalgal community. The microscopic analyses revealed the prevalence of *O. ovata*. The highest abundance of the dinoflagellate was 3076416 cells per liter in the water in contact with the pebbles previously rubbed, 2636928 cells per liter in the surface water of the tidal pool and 46800 cells per liter in the surface water picked up in a small dock adjacent to the tidal pool. The geomorphological characteristic of the tidal pool, its sheltered position from the wind and wave action, together with the good weather conditions with windless and cloudless sky that occurred for a period before the appearance of the bloom, have probably supported the development of *O. ovata* that found in this site the ideal conditions for its proliferation. As soon as weather conditions changed the bloom abruptly decreased. Fortunately swimmers usually attend the surrounding areas and very little this one affected by the phenomenon and thus the health risk appears to be reduced. Mussel culture are more than 200 m away from the site and sampling at the water column near the culture have detected insignificant abundance of *O. ovata*. Notwithstanding the site will be

monitored in the future considering carefully the health aspect.

## References

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