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FIRST REPORT OF *OSTREOPSIS* CF. *OVATA* BLOOM IN THE GULF OF TRIESTE

PRIMA SEGNALAZIONE DI UNA FIORITURA DI OSTREOPSIS CF. OVATA NEL GOLFO DI TRIESTE

Abstract –The first abundant occurrence of *Ostreopsis cf. ovata* was observed along the rocky coasts in the Gulf of Trieste at the end of September 2009. This species has been already sporadically recorded in this area since September 2006 but no toxic effect on human health has been registered yet. The maximum value reached in this period was 13×10^6 cells l^{-1} and it was found on rocks in shallow waters. The results of sampling carried on macroalgae in two coastal sites were also reported in order to compare the growth on different substrata.

Key-words: benthic dinoflagellate, Gulf of Trieste, *Ostreopsis cf. ovata*, toxic species.

Introduction – The Italian coasts have been seasonally interested by plankton blooms since 1970 and bloom events caused by benthic dinoflagellate *Ostreopsis ovata* have been recently recorded in 2005 along Ligurian coasts (Abbate *et al.*, 2007; Mangialajo *et al.*, 2008). This toxic species lives on different substrata, such as macroalgae and rocks. *Ostreopsis cf. ovata* was observed in the Gulf of Trieste in September 2006 (Monti *et al.*, 2007), while the first bloom was recorded in September 2009 along the rocky coast in shallow waters. In this study, we report the first bloom of *O. ovata* and the results of a monitoring programme of the associated microphytobenthic community.

Materials and methods - From May to October 2009 three samples from two macroalgal species with their surrounding water were collected at the depth of about 2m in a sheltered site (SCI) and in an exposed one (SCE). To check the presence of *Ostreopsis*, the rinsing water from dripped thalli was fixed with neutralised formalin and analyzed according to Utermöhl method. In order to express the concentration of benthic dinoflagellate in cells g^{-1} fw, cells g^{-1} dw as well as in cells cm^{-2} , the fresh and dry weight of the thalli and the thallus surface were determined according to Totti *et al.* (2010). In both stations, water samples were collected by net, and fixed and analyzed to evaluate the distribution of all toxic dinoflagellates along the water column. Environmental parameters (T, salinity, PAR, dissolved oxygen) were determined to characterize both sites. From September 29th to October 8th in another site, 900 m far from the monitored sites along the shore, samples of waters containing visible mat were collected through syringe to assess the abundance of *Ostreopsis ovata* in the benthic community (method under investigation).

Results and conclusions - From May to August the benthic toxic dinoflagellates *Prorocentrum lima*, *Coolia monotis* and *Amphidinium cartarae* were reported on macrophyte samples at low concentrations: at the SCI they were always lower than 5000 cells g^{-1} fw, while in the SCE they were always lower than 8000 cells g^{-1} fw. *O. cf. ovata* was observed since the beginning of September in both coastal sites on *Dictyota dichotoma* and *Padina pavonia*. The highest concentration in SCE (Fig. 1) was recorded in the sample collected on September 21st when it reached 3.3×10^5 cells g^{-1} fw (corresponding to 1.6×10^6 g^{-1} dw and 5.2×10^3 cm^{-2}), while in SCI (Fig. 1)

O. cf. ovata was observed on October 5th at lower abundance (2.8×10^5 cell g⁻¹ fw corresponding to 1.4×10^6 g⁻¹ dw and 2.6×10^3 cm⁻²).

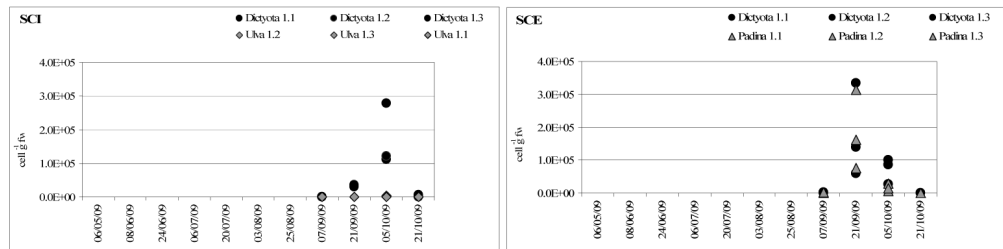


Fig. 1 - Abundance of *Ostreopsis cf. ovata* on thalli expressed as cells g⁻¹ fw in SCI and SCE sites.
Abbondanza di *Ostreopsis ovata* sui talli espressa come cells g⁻¹ pf nei siti SCI e SCE.

Along the water column, *O. cf. ovata* was recorded at both stations with a concentration of 120-280 cells l⁻¹ on September and October. On September 29th in an enclosed bay, 900 m far from the regular monitoring sites, a bloom event of *O. cf. ovata* occurred on rocks in absence of macrophytes. In the mat covering the rocks along the littoral, *O. cf. ovata* was present with a maximum of 13×10^3 cells ml⁻¹ (syringe sample). The day after, the concentration of *O. cf. ovata* in the mat decreased to 3×10^3 cells ml⁻¹ and it gradually lowered until October 8th when it was absent. During the bloom event, temperature and salinity of the water were 22.5 °C and 36.6, respectively; on October 7th both values decreased to 20.9 °C and 30.6. In conclusion, in the Gulf of Trieste, *O. cf. ovata* confirms its occurrence in late September. In the same period of the bloom on the mat, *Ostreopsis* was also associated with *Dictyota dichotoma* and *Padina pavonia*. From these preliminary observations, the bloom seemed gradually to disappear with the decrease of temperature and salinity. In the Gulf of Trieste, as well as in the Conero Riviera (Totti *et al.*, 2010), hard substrata, sheltered conditions and scarce hydrodynamism seem to favour the bloom of *Ostreopsis*. Anyway, in the Gulf of Trieste noxious effects on human health were not associated with the bloom. The monitoring of this benthic species may be considered a basic parameter, which should be integrated in future water quality programme considering that the investigated area is a recreational site during the summer.

References

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