DISTRIBUTION AND DENSITY OF THE BENTHIC MICROALGA
CHRYSOPHAEUM TAYLORII LEWIS & BRYAN
FROM NORTHERN TO CENTRAL-EASTERN SARDINIAN COASTS

Abstract – In August 2009 the distribution and density of the alien microalga Chrysophaeum taylorii Lewis & Bryan (Pelagophyceae) were investigated on hard benthic substrates in seventeen sites from northern to central-eastern Sardinia, in order to estimate the distribution and abundance of this species in the area.

Key-words: algal blooms, distribution, introduced species, phytobenthos.

Introduction – Chrysophaeum taylorii Lewis & Bryan is a benthic microalga, typical of coral reefs (Schaffelke, 2004), responsible for the production of mucilaginous material. In the summer of 2007 hard benthic substrates in Tavolara-Punta Coda Cavallo Marine Protected Area (TPCC MPA) and in La Maddalena Marine National Park (LM NP) were affected by the first C. taylorii bloom recorded in the Mediterranean Sea (Lugliè et al., 2008). Although monitoring activities carried out in 2008 at TPCC MPA confirmed the presence of the species in this area (Caronni et al., 2009), no data were available for the rest of the coast, LM NP included. The aim of this study is to estimate the occurrence of C. taylorii across several hundreds of kilometres of coasts, from LM NP southward along the central-eastern costs of Sardinia.

Materials and methods – In August 2009, seventeen sites were selected along the coast from La Maddalena Archipelago to Arbatax Gulf. At each site two microbenthos samples were collected by sucking water and biological material with a cut-off syringe from a rocky surface (15 cm²), according to Abbate et al. (2007). All samples were collected at 1.5 m of depth, where the highest C. taylorii cell density had been previously recorded, and fixed with Lugol’s solution. Cells identification and count were performed in two subsamples for each sample according to Utermöhl’s sedimentation method (Abbate et al., 2007). A two-way ANOVA (GMAV 5) was used to investigate for differences due to the site (17 levels) and to the sample (2 levels) nested within site (n=2).

Results – C. taylorii was found in thirteen of the seventeen investigates sites. The microalga was not found in Santo Stefano, Capo Comino, Isolotto Ogliastra and La Caletta samples while the highest average densities of the species were recorded in Moneta, Porto Ottiolu and Sos Aranzos samples (98343 cells cm⁻²; 80045 cells cm⁻²; 77937 cells cm⁻² respectively). Data about distribution and density of C. taylorii in the study area are reported in detail in Tab. 1.

The performed two way ANOVA showed statistically significant differences in the microalgae cell densities both between samples (ANOVA, F₁₇,₃₄ =6.5 P<0.05) and among different study sites (ANOVA, F₁₆,₁₇ =270817.73 P<0.05).

DISTRIBUTIONE E DENSITÀ DELLA MICROALGA BENTONICA
CHRYSOPHAEUM TAYLORII LEWIS & BRYAN DALLE COSTE
NORD A QUELLE CENTRO ORIENTALI DELLA SARDEGNA
Conclusions – The significant differences in *C. taylorii* densities between samples in the same site highlight the variability of this microalga abundance between close areas, as already suggested in other studies (Caronni *et al.*, unpublished data). The presence of *C. taylorii* at both LM NP and TPCC MPA two years after the first record suggests that this species has been settling steadily along the north-east Sardinian coast, confirming its “identity crisis” (Sparrow & Heimann, 2007). *C. taylorii* abundance was significantly variable among sites; remarkable densities were found in most of the northern investigated sites, while among the central-eastern sites high abundances were registered only in Porto Ottiolu, thus indicating that *C. taylorii* is expanding its distribution along this coast, as hypothesized by Luglié *et al.* (2008).

References


