

Spatial variability of microphytobenthic pigments in intertidal sediments from the Tagus estuary

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Microphytobenthos is a major component of the total primary productivity on intertidal mudflats. High Performance Liquid Chromatography (HPLC) was used for the estimation of microalgae biomass in intertidal sediments of the Tagus estuary, Portugal. The pigment composition was also used for taxonomic purposes, since several pigments or pigment combinations are found only in certain algal classes. On a dry weight basis, pigment concentrations were generally higher in the mud than in the sand, but the reverse was true on an area basis. Benthic algal biomass was highly stratified in a muddy site with higher concentrations at depths of 0-180 μm or 180-360 μm . For a sandy site, relatively constant concentrations were found throughout the sediment profile (0-3500 μm), which is probably related with deeper light penetration in this type of sediment. At the sandy site, pigment concentrations were higher at stations with longer time of exposure. The most abundant pigments determined by HPLC in the sediments analysed (chlorophylls *a* and c_1+c_2 , fucoxanthin, diadinoxanthin, diatoxanthin and β -carotene) indicate that the microphytobenthic community is strongly dominated by diatom species. Zeaxanthin was found in all sites at very low concentrations, indicating low cyanobacteria biomass. The absence of chlorophyll *b* in most of the samples excludes the possibility that chlorophytes and/or euglenophytes contributed significantly to the microphytobenthic community of the studied sediments. High proportions of pheophorbides *a* in the muddy site are likely due to intense grazing activity of benthic invertebrates.