

DEVELOPMENT OF MICROPHYTOBENTHIC COMMUNITIES ON HARD ARTIFICIAL SUBSTRATA IN THE BRACKISH WATERS OF THE GULF OF GDAŃSK

Aleksandra Zgrundo, Zuzanna Sylwestrzak & Justyna Kobos

University of Gdańsk, Institute of Oceanography

Studies on the early stages of development of microphytobenthic communities on hard artificial substrata were conducted in the Gulf of Gdańsk between November 2008 and October 2009. Experimental panels for both flora and fauna analyses were exposed above the seabed for one month at 3.5 m depth in two sites with different habitats. The colonization process (i.e. settlement of micro- and macroalgae) was examined for three subsamples on each occasion and analysis included the taxonomic richness, number of organisms and biomass in 1 cm².

Altogether 56 taxa of microalgae and 5 of macroalgae were identified. Most of the taxa represented were diatoms, both adnate (mostly *Cocconeis* spp.) and erect growth forms (e.g. *Rhoicosphenia abbreviata* and representatives of *Fragilaria*, *Gomphonema* and *Licmophora*). Free-living motile forms (e.g. *Bacillaria paxillifer*, tube-dwelling *Berkeleya rutilans*, *Navicula ramossimsima*) were also well represented. The Cyanobacteria (e.g. *Dolichospermum flos-aquae*, *Lyngbya* sp., *Merismopedia* sp., *Microcystis* sp., *Oscillatoria* sp., *Spirulina* sp.) was the second most important group of microalgae in terms of richness. Macroalgae were observed rarely and mostly as very young growth forms. Microalgae were dominated both in numbers and biomass by *Cocconeis pediculus*, *Fragilaria fasciculata* and *Licmophora* sp. whereas macroalgae by Pheophyta from *Ectocarpacae* family.

No differences in structure of communities and colonization process were observed between the sites. Canonical analysis suggested that the most important factors influencing the development of microphytobenthic communities were associated with seasonally-variable environmental variables such as temperature, light and water dynamics. Pioneer communities were found mostly in autumn and winter. In warmer periods the succession was much faster and communities were dominated by more specialised and light competitive species. Changes in composition and structure of studied assemblages generally followed patterns described in the literature; however, the importance of accidental events (i.e. not recognised as life requirements) was also demonstrated.