

Diatom communities on seagrass in the Arabian Gulf: species analysis and population dynamics.

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Microphytobenthic communities contribute greatly to primary production in shallow marine environments, regulate the flow of nutrients and oxygen between the sediment and the water column, and play an important role in meio- and macrofauna relationships. Besides, Microphytobentos can grow on many biotic and abiotic surfaces and the community structure is strongly influenced by the surface and environmental conditions. In the microphytobenthos, there are all microalgal classes, but diatoms (Bacillariophyceae) are the most abundant. Diatoms are unicellular algae with frustules of a siliceous nature, characterized by high photosynthesis efficiency and high productivity rates. Despite its ecological importance in marine aquatic ecosystems, microphytobenthic communities are poorly studied and highly underestimated. Our research focuses on the epiphytic diatom community within a specific basin to decrypt the species composition and their relative abundance. Using scanning electron microscopy, our study investigates and catalogs the different diatom species associated with the only three seagrasses found along the Saudi Arabian Gulf coast during the winter and summer seasons to understand how the community structure in this extreme and unexplored habitat. Preliminary studies have shown that diatoms are the main component of the benthic community on the seagrasses that are present in the Gulf (*Halodule uninervis*; *Halophila stipulacea*; *Halodule uninervis*). Total abundances range from a maximum of 24407400 to a minimum of 161600 cells/cm². The diatom community was dominated by the genus *Cocconeis* (96.2%), with four species. Abundances are higher in the central stations of the Gulf than in the north and south stations, likely due to environmental conditions.

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