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Research Article



RESEARCH ARTICLE

# Shifts in the protist community associated with an anticyclonic gyre in the Alboran Sea (Mediterranean Sea)

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**One sentence summary:** Genetic analysis of natural samples reveals that the interactions among different fractions of the plankton (phototrophs, heterotrophs and non-free living forms) determine the community response to environmental changes.

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## ABSTRACT

The diversity of protists was researched in the Alboran Sea (SW Mediterranean Sea) by means of high-throughput sequencing technologies based on the amplification of the V9 region of 18S rRNA. Samples were collected at different depths in seven stations following an environmental gradient from a coastal upwelling zone to the core of an oligotrophic anticyclonic gyre (AG). Sampling was performed during summer, when the water column was stratified. The superphyla Alveolata, Stramenopila and Rhizaria accounted for 84% of the total operational taxonomic units (OTUs). The most diverse groups were Dinophyceae (21% of OTUs), Marine Alveolates-II (MALV-II; 20%), Ciliophora (9%) and MALV-I (6%). In terms of read abundance, the predominant groups were Dinophyceae (29%), Bacillariophyta (14%), MALV-II (11%) and Ciliophora (11%). Samples were clustered into three groups according to the sampling depth and position. The shallow community in coastal stations presented distinguishable patterns of diatoms and ciliates compared with AG stations. These results indicate that there was a strong horizontal coupling between phytoplankton and ciliate communities. Abundance of Radiolaria and Syndiniales increased with depth. Our analyses demonstrate that the stratification disruption produced by the AG caused shifts in the trophic ecology of the plankton assemblages inducing a transition from bottom-up to top-down control.

**Keywords:** Mediterranean Sea; high-throughput sequencing technologies; V9 region; eukaryotic plankton community; heterotrophic microplankton; trophic modes

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