

CONTRASTING ECOLOGICAL REGIMES OF MICROBIAL PLANKTON ALONG BEAGLE CHANNEL AND BURDWOOD BANK IN SUB-ANTARCTIC WATERS

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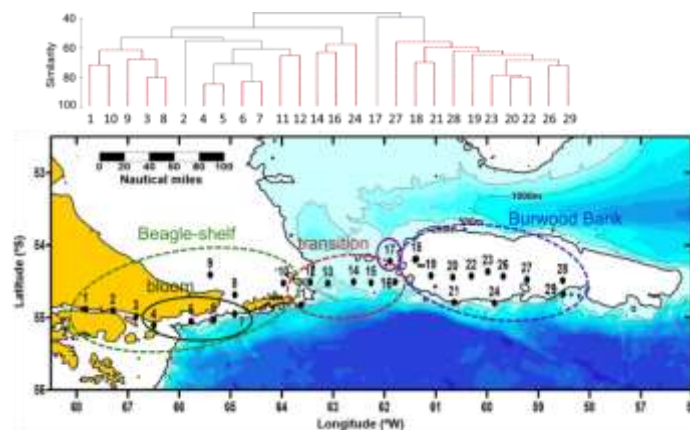
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Marine microbial plankton hold high structural and functional diversity, however, high-resolution data are lacking in a large part of the Global Ocean. The Burdwood Bank hosts rich benthic biodiversity in low chlorophyll waters of the southern Patagonian Shelf, Argentina. So far, the microorganisms that sustain the productivity over the bank have not been described. During austral summer 2016, we assessed the microbial plankton (0.2-200 μm cell size) diversity and biomass along a longitudinal transect (54.2-55.3°S, 58-68°W) from the Beagle Channel (BC) to the BB, characterized by contrasting hydrography. Results displayed a marked zonation in the composition and structure of the microbial communities. Protistan phytoplankton biomass was 28 times higher in the BC than in oceanic waters above the BB, attributed mainly to large diatom blooms. In contrast, over the BB, small coccolithophores such as *Emiliana huxleyi*, nanoflagellates and phototrophic picoplankton dominated. In turn, the biomass of microheterotrophs above the BB doubled the biomass in the BC due to large ciliates and dinoflagellates. Notably, toxic phytoplankton species and their associated phycotoxins were detected, in particular high abundance of *Dinophysis acuminata* and pectenotoxins above the bank, highlighting their prevalence in open subpolar regions. Picoeukaryotes and *Synechococcus* were remarkably important over the bank, both at surface and deep waters. Their biomass surpassed that of phototrophic protists by 5 times, emphasizing the importance of small-sized phytoplankton in low chlorophyll waters. The homogeneous water column and high retention over the bank seem to favor the development of picophytoplankton and microzooplankton and their exportation to the benthos. Overall, our findings unfold the plankton configuration in the Southern Patagonian Shelf, ascribed as a sink for anthropogenic CO₂, and highlight the diverse ecological traits that microorganisms develop to adjust their yield to changing conditions.

Key words: *Microbial biodiversity, phycotoxins, SW Atlantic.*



Microbial plankton zonation based on Bray Curtis similarity index during austral summer.