

Potential mixotrophic relations of copepods and dinoflagellates and their associations with spectral properties of the water bodies in Antofagasta Bay (23°S, Chile), investigated with the aid of remote sensing

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Abstract

Antofagasta Bay is characterized by having a high primary productivity due to the presence of the cold Humboldt Stream. However, due to the current global climate change, also the previously generated biodiversity patterns are changing. The aim of the present study was analysing Antofagasta Bay in order to determine the existence of correlations between optical, i.e., spectral, properties recorded through remote sensing on the one hand, and the presence of dinoflagellates and zooplankton, on the other. The studies were done during two periods, i.e., in February 2019 and February 2020. The results revealed the existence of three main groups of sites: a first group comprising sites sampled in February 2019, with high Band 3 and Band 4 reflectance, high chlorophyll values, and high abundances of *Dinophysis* and copepods; a second group combining four sites visited in February 2019, with high *Gymnodinium* and *Ceratium*, high reflectance in Band 1, Band 2, Band 5, Band 6 and Band 7, and low zooplankton abundance; and finally a third group encompassing all sites sampled in 2020, with high *Prorocentrum* abundance, and low zooplankton abundance, as well as low reflectance. A similar situation with regard to zooplankton and optical properties was earlier reported for Chilean Patagonian lakes. © KONINKLIJKE BRILL NV, LEIDEN, 2022.