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Plankton community structure from Annaba Bay (SW Mediterranean) under contrasting hydrologic influences

The aim of this study was to analyze the seasonal distribution and composition of the plankton community and to assess changes in the environmental conditions that may affect the population's structure and abundance. The plankton was monthly sampled during February 2010-January 2011 at two contrasting sites of Annaba Bay, Algeria. The phytoplankton and zooplankton biomasses and the hydrologic parameters (temperature, salinity, dissolved oxygen, macronutrients) were jointly measured. The inner bay (site 1, southern part) which is directly impacted by estuarine, industrial and household inputs had very low levels of dissolved oxygen, but high levels of nutrient and strong plankton biomasses occurred throughout the year. During the warm period (April-October), this eutrophicated and hypoxic area experienced several bloom events mainly from dinophyceae species. Blooms and mass development episodes of the heterotrophic dinoflagellate *Noctulica scintillans* extended here for many months (February-May), being frequent over the whole southern bay. This eutrophicated area also supports the dominance of numerous opportunistic copepod and cladoceran species, which tolerate the fluctuation, hypoxic waters and the weak resilience characterizing the area. The outer bay (site 2, northern part) directly influenced by the intrusions of the modified Atlantic water current, was well-oxygenated, but showed very low levels of nutrients and plankton biomasses. Site 2 was also characterized by high diversity and low densities of both the phytoplankton and zooplankton communities. The number of copepod species of this area was 3-fold higher than that of the area close to the continental inputs, but their abundance was 3-fold lower. Moreover, the oligotrophic northern part of the bay was mainly cohabited by the neritic, oceanic and deep species, which are supplied during the cold and mixing period (November-March). Compared to the previous studies of 1992, the plankton from Annaba Bay has significantly changed, with the dominance of the dinoflagellates over diatom taxa and the prevalence of the copepods *Paracalanus indicus* and *Oithona similis* over *Acartia* species and *Oithona nana*. The contrasting hydrologic conditions prevailing the bay result in a particular structure of the planktonic system and the functioning of the coastal ecosystem.

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