The planktonic community structure and fluxes nutrients in the Sefid-Rood River Estuary (South Caspian Sea).


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Abstract: The aim of this study was to examine spatial and temporal variability in phytoplankton and zooplankton abundance and diversity in Sefid-Rood River Estuary (SRE). Variability of Chlorophyll a and inorganic nutrient concentration were determined during a year (November 2005- October 2006) in five sampling stations. Total chlorophyll a concentration during the investigation ranged between zero to 22.8 µg L⁻¹ and the highest levels were consistently recorded during Summer and the lowest during winter with a annual mean concentration 4.48 µg L⁻¹. Nutrient concentration was seasonally related to river flow with annual mean concentration: NO₂, 0.05±0.2, NO₃, 1.13±0.57 and NH₄, 0.51±0.66 mg L⁻¹, total phosphate 0.13±0.1 and SiO₂, 5.68±1.91 mg L⁻¹. Bacillariophytes, Cyanophytes, Chlorophytes, Pyrophytes and Euglenophytes were the dominant phytoplankton groups in this shallow and turbid estuary. The diversity and abundance of phytoplankton had a seasonal pattern while Diatomas and Chrysophytes were dominant throughout the year but Cyanophytes observed only during the Summer. Zooplankton community structure was dominated by copepods which 68% of the total Zooplankton. In the winter and summer seasons two increased in the number of zooplankton community and usually toward the sea had occurred. Zooplankton also showed a significant spatial and temporal variation. The high turbidity and temperature prime characteristics of SRE seem to be determining factors acting directly on Phytoplankton and Zooplankton temporal variability and nutrient fluctuations.

Everywhere in this estuary nutrients appeared to be in excess of algal requirement and did not influence an phytoplankton and zooplankton composition. Also there was a positive correlation between chlorophyll a and temperature and a negative one with DIN and TP.