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Study on Dynamic of Phytoplankton in the Southern Part of Caspian Sea

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Abstract

Due to various Physic and Chemical factors of rivers leading to the sea, the situation seems different topography Throughput rate initial production in the different seasons are different. During 2012 in spring, summer, autumn and winter, in a study of 8 transects of 40 stations. In each transect from Astara to the Turkmen. 5 stations at depths of 5.10.20.50.100m were selected for sampling. The total number of 182 species from seven branches Bacillariophyta, Pyrrophyta, Cyanophyta, Chlorophyta, Euglenophyta, Xantophyta and Chrysophyta phytoplankton were identified. Including 81 species of Bacillariophyta, 33 Cyanophyta, 25 Pyrrophyta, 31 Chlorophyta, 9 Euglenophyta, 1 Xantophyta and Chrysophyta had 1 specie. Our study demonstrates that across Southern Caspian Sea, varying in environmental conditions and morphology, pronounced season and temperature gradients favor the distribution of bulk phytoplankton into more defined layers and seasons, while the depth of the peak and the heterogeneity of individual phytoplankton groups were differentially affected by habitat structure.

Keywords: Phytoplankton; Caspian sea; Dynamic; Diversity; Species

Introduction

Since phytoplankton are the base of life and productivity of aquatic ecosystems, sustainable ecological study of the Caspian Sea, particularly the distribution and identification of species composition, density and biomass, seasonal and regional variations in phytoplankton before each study seems necessary [1]. Due to various circumstances physical and chemical rivers leading to the sea, seabed topography in different situation appears to be of primary production in the eastern and western between the Caspian Sea in the season, may be altered. Identifying species and determining the distribution and biomass of the changes and how they are affected by environmental changes [2] and we are environmentally conscious [3]. We also compare the current situation with previous studies; we find that the number and types of plankton biomass have been what it is. During 2012 in spring, summer, autumn and winter, in a study of 8 transects of 40 stations. In each transect from Astara to the Turkmen. 5 stations at depths of 5. 10. 20. 50. 100 m were selected for sampling by Niskin sampler [4] (Figure 1).

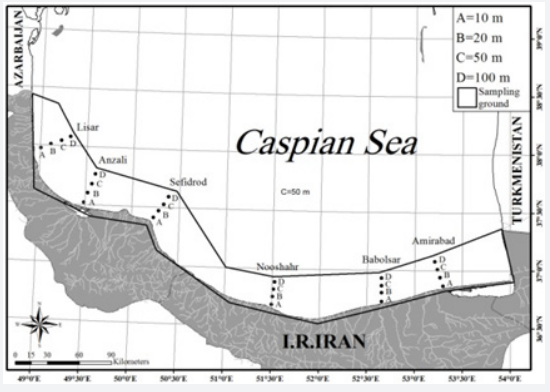

Figure 1: Map transects and stations in the Caspian Sea.

Discussion

The total number of 182 species from seven branches Bacillariophyta, Pyrrophyta, Cyanophyta, Chlorophyta, Euglenophyta, Xantophyta and Chrysophyta phytoplankton

were identified [5]. Including 81 species of Bacillariophyta, 33 Cyanophyta, 25 Pyrrophyta, 31Chlorophyta, 9 Euglenophyta, 1 Xantophyta and Chrysophyta had 1 specie.

Studies have shown that density and biomass of Bacillariophyta were 228 (±471) per cubic meter×10^6) and 6157 (±290mg per cubic meter) respectively and Pyrrophyta were 28.17 (±27.14) cubic meter×10^6 in cubic meters) and 3349 (±336mg per cubic meter) and Cyanophyta 120.40 (±123.87(per cubic meter×10^6 per cubic meter), biomass (55±57mg per cubic meter) were the branches of the dominant phytoplankton. Abundance and biomass in different seasons have been significant differences ($p<0.05$) [6,7]. Most of Bacillariophyta (61 species) was in autumn and then in winter (48 species). Dominant species of Bacillariophyta were *Pseudonitzschia seriata, Rhizosolenia fragilissima, Stephanodiscos* sp., *Melosira varians, Nitzschia acicularis* and *Cyclotella menenghiniana* Pyrrophyta was greatest diversity of branches in summer, autumn and winter (19 species), which includes Exuviaella cordata, *Exuviaella marina, Prorocentrum praximum* and *Prorocentrum scutllum*. In the autumn density of Cyanophyta was 285.7 (±137.1) cubic meters×10^6 and biomass was 95±54mg per cubic meter and 18 species were observed. The dominant species in this category were *Oscillatoria* sp., *Nodularia spumigena* and *Oscillatoria agardhii* [8].

Most species of Chlorophyta branche in autumn and winter and summer median region with the highest density [9] at the density of 26.2% and most of it is *Binuclearia lauterbornii*. Identified as the branches Euglenophyta were Trachelomonas, Euglena and Phacus that were observed in all seasons. In winter, the highest mean biomass was 9±0.818mg per cubic meter and the highest density of in summer was (0.5±0.5) in cubic meters×10^6. In winter the depth of 10 meters and surface of Babolsar, Amir Abad and Anzali, a kind of Chrysophyta and in surface of Tonekabon and Anzali a species of Xantophyta were observed that had negligible density and biomass.

Conclusion

The biological survey in each ecosystem has an important role that relate to the amount of aquatic source [10] there. The study of phytoplankton is essential that helps us to achieve our goal and to indicate primary production, as algae play an important role in aquatic water bodies [5]. Our study demonstrates that across Southern Caspian Sea, varying in environmental conditions and morphology, pronounced season and temperature gradients favor the distribution of bulk phytoplankton into more defined layers and seasons, while the depth of the peak and the heterogeneity of individual phytoplankton groups were differentially affected by habitat structure. Phytoplankton habitat structure was relatively different between the different seasons [11].

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