PHYTOPLANKTON BLOOMS IN SAMSUN BAY OF THE SOUTHERN BLACK SEA

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Abstract
This study has been planned to determine monthly variations in the phytoplankton composition and nutrients present in the least studied south shores of the Black Sea, known one of the most eutrophic seas in the world. During the course of this research, carried out between October 2002 and October 2003, three peaks in the total phytoplankton were observed. *Pseudo-nitzschia pungens* (Grunow) Hasle and *Eutreptiella gymnastica* Throndsen, *Proboscia alata* (Brightwell) Sundström and *Skeletonema costatum* (Greville) Cleve, *Dactyliosolen fragilissimus* (Bergon) Hasle bloomed in October, May and July, respectively. These findings were also supported by Chl *a* values and the biodiversity index of Shannon-Wiener (*H*').
Keywords : Biodiversity, Black Sea, Blooms, Eutrophication, Phytoplankton.

Introduction
Anthropogenic forcing and climatic changes are considered to be responsible of a worldwide increase in nuisance phytoplankton blooms which threatens ecosystem and public health. Besides, some fish kills due to these blooms can be spectacular in size. One of the most impacted seas in the world, the Black Sea has been eutrophied since 1960's. In this sea, a great deal of river discharge with proliferated nutriens caused a destabilized marine ecosystem which lead to HAB phenomena especially along the coasts.

Methods
This study was performed at five stations in the neritic waters of the Samsun Bay, located between estuaries of the Kizilirmak and the Yesilirmak, two big rivers flowing in the southern Black Sea region of Turkey. Samples were collected monthly by a 2 l Hydro-Bios Water Sampler (0.5 m depth) and fixed with lugol solution and counted by phase-contrast microscopy. The below-mentioned values were analysed according to standard methods [1]. Taxonomic identifications were performed according to the following authors: Rampi and Bernhard (1978), Hasle and Syvertsen (1997), and Lange-Bertalot (2000).The most stable index of Shannon-Wiener (*H*') was preferred for the estimation of diversity [2].

Results
Temperature and N / P ratio was given in the fig.1. Total phytoplankton reached their maximal values in July 2003 (1200 x 10^3 cells L^{-1}). In addition to July 2003, three more peaks were detected in October 2002 (382 x 10^3 cells L^{-1}), May 2003 (689 x 10^3 cells L^{-1}) and June 2003 (4.05 x 10^3 cells L^{-1}), respectively (Fig. 2). Chl *a* levels were determined to be between 0.24 mg m^{-3} in October 2003 and 0.25 mg m^{-3} in May 2003. The highest diversity was determined at a depth of 0.5 m in August 2003 (*H*'=4.42). October 2002, on the other hand, was recorded as the month with the lowest diversity values found at a depth of 2.5 m (*H*'=1.28).

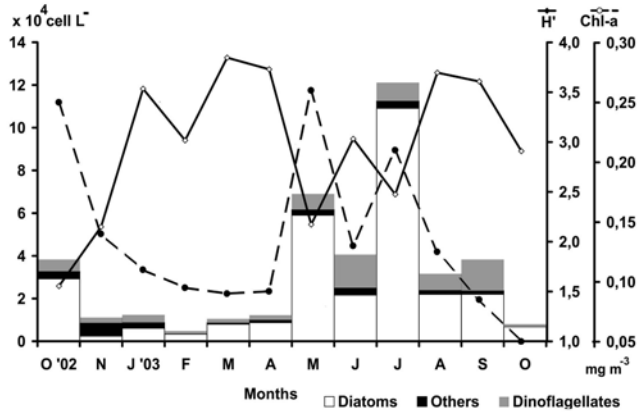

Fig. 1. Temperature and N/P ratios in Samsun Bay.

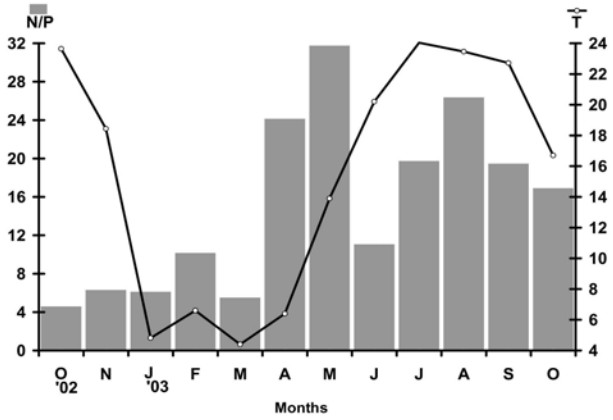

Fig. 2. Monthly variations of phytoplankton cell density, Shannon-Wiener's biodiversity index and Chl-a.

Discussion
Three unusual peaks of total cell density were detected in October 2002, May 2003 and July 2003. *P. pungens* - *E. gymnastica*, *P. alata* - *S. costatum* and *D. fragilissimus* bloomed respectively in these months. The results of Shannon-Wiener's diversity index have shown that the index decreased in October, May and July. Therefore, Chl *a* values increased in the months mentioned above. This is what allows, if not authorises, us to define the neritic waters of the Samsun coastline as eutrophic according to these findings.

References

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