

THE LITTORAL AND PELAGIC DISTRIBUTION OF *ASTERIONELLA FORMOSA* ON THE SURFACE WATER OF SAPANCA LAKE

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Abstract

The littoral and pelagic phytoplankton distribution in regions on the surface of the Sapanca Lake water was studied between December 1999 and February 2001 from 4 stations on a monthly basis. During the study, the dominant type of phytoplankton was the *Asterionella formosa* of the Bacillariophyta division.

Keywords : *Diatoms, Surface Waters, Pelagic.*

Introduction

Phytoplankton is one of the top living species groups that react fast to pollution in lakes. The composition of phytoplankton in designated water mass shows there is a trophic structure [1]. The aim of this study was to determine the difference in composition of the phytoplankton in the littoral and pelagic regions and to study the distribution of the dominant phytoplankton types.

Materials and Methods

Four stations were designated in the west side of the lake, in both the littoral and pelagic regions (Fig. 1).



Fig. 1. The research stations at Sapanca Lake.

The samples were taken in nansen bottles and were flipped with lugol [2]. The surface water temperature of the lake and the dissolved oxygen quantity was measured with Oxi330/set make temperatures and the oxygen by meters, the pH on the other hand, was measured with the Knick make pH-meter. Seki discs were used when measuring the permeability of the light. The ratios of OrthoPhosphate (PO₄-P) and Nitrate Azote (NO₃-N) in the water samples, was done with the help of Dr. Lange make kits at only the sample station points which were by the shore (Table 1).

Tab. 1. The individual numbers (individual/cm³) of Phytoplankton and the physical and chemical parameters in the littoral and pelagic regions of Sapanca Lake.

St.	LITTORAL REGION							PELAGIC REGION				
	Temp. °C	pH	Secchi disc m	O ₂ mg/l	NO ₃ -N mg/l	PO ₄ -P mg/l	Ind. /cm ³	Temp. °C	pH	Secchi disc m	O ₂ mg/l	Ind. /cm ³
1	15,8	8,1	1,98	8,36	0,172	0,028	30,5	15,5	8,2	3,98	8,63	86,8
2	15,8	8,2	2,49	9,19	0,204	0,029	65,2	15,9	8,2	3,61	9,15	100,4
3	15,8	8,2	2,59	8,52	0,150	0,024	85,5	15,8	8,2	3,58	8,64	108,0
4	15,6	8,2	2,08	8,83	0,215	0,049	83,8	15,5	8,2	4,12	9,35	80,7

Results and Discussions

In the research period, 54 taxa was found in the seven divisions belonging to phytoplankton. Bacillariophyta, Chlorophyta and Cyanophyta were the dominant members of phytoplankton. Members of the Bacillariophyta group were found to be mostly dominant on the surface when it came to number of type and number of individual. *A. formosa* is the dominant type within the group. This species was found more in the pelagic region stations of 1., 2. and 3. than they were in the stations of the littoral regions. *A. formosa* was found more in the 4th station of the littoral region than in the pelagic region. The changes in the composition of species are a result of an increase in nutritional salt [1]. *A. formosa* is usually an indicator species of eutrophic structure. It has been stated that the taxa can be found in high numbers in mesotrophic and eutrophic and even in oligotrophic waters [3,4]. *A. formosa* was stated as being phytoplankton characteristic

and nutritionally rich in warm lakes in spring and when of high number has known to be the reason of the lessening in matter of dissolved Nitrate and Phosphate like nutrients in the water [5]. Nutrients seem to lessen in periods when *A. formosa* is of a higher number. In the research carried out by Numan [6] in 1958, it was seen that the lake was of oligotrophic status, however in the research done by Aykulu et al. [7], it was seen that the lake was heading towards mesotrophic characteristic. In this study, it is obvious from the results that the lake is changing from oligotrophic character over to mesotrophic character.

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