

Seasonal variations in phytoplankton composition and physical-chemical features of Demirdöven Dam Reservoir, Erzurum, Turkey

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Abstract: The seasonal and vertical distribution of nutrients and dynamics of the phytoplankton were studied during 2000–2001 in Demirdöven Dam Reservoir. A total of 115 taxa belonging to Bacillariophyta, Chlorophyta, Cyanophyta, Euglenophyta and Dinophyta have been identified in the phytoplankton. Chlorophyta were dominant in terms of density of organisms. *Sphaerocystis schroeteri*, *Staurastrum longiradiatum* and *Cyclotella ocellata* were the most abundant species. Phytoplankton growth and its seasonal succession were affected by environmental factors, particularly water temperature. Total densities of phytoplankton were the highest between 0 and 5 m, and decreased with depth.

Key words: phytoplankton, physical-chemical parameters, reservoir, seasonal succession, Turkey.

Introduction

Lakes and reservoirs are dynamic systems with high spatial and temporal variability of physical processes and biological responses (NOGUEIRA, 2000). Composition and development of phytoplankton is immediately influenced by changes of physical and chemical conditions of water. Therefore, phytoplankton has been recognized as an indicator of water quality and trophic status of lakes (RAWSON, 1956; WETZEL, 1983; TRIFONOVA, 1998; REYNOLDS et al., 2002). The indicator properties of phytoplankton are determined by its species composition and quantitative parameters of development, so the species composition, abundance, biomass and distribution of algae over water area are recorded completely (YARUSHINA et al., 2003)

The aim of this study was to investigate the relationship between seasonal variations of phytoplankton composition and the relevant environmental factors in a small reservoir.

Study site

Demirdöven Dam Reservoir (DDR) is located in the north-east of Turkey, 45 km from Erzurum, at latitude $41^{\circ} 21'$ and longitude $40^{\circ} 21'$ (Fig. 1). The northern part of the reservoir is surrounded by the Çobandede and the Agmelek Mountain and its eastern and southern part is surrounded by the Pasinler plain, which is an agricultural land. DDR was built in 1995 for the purposes of irrigation. The maximum storage capacity of the reservoir is 44.5 million m^3

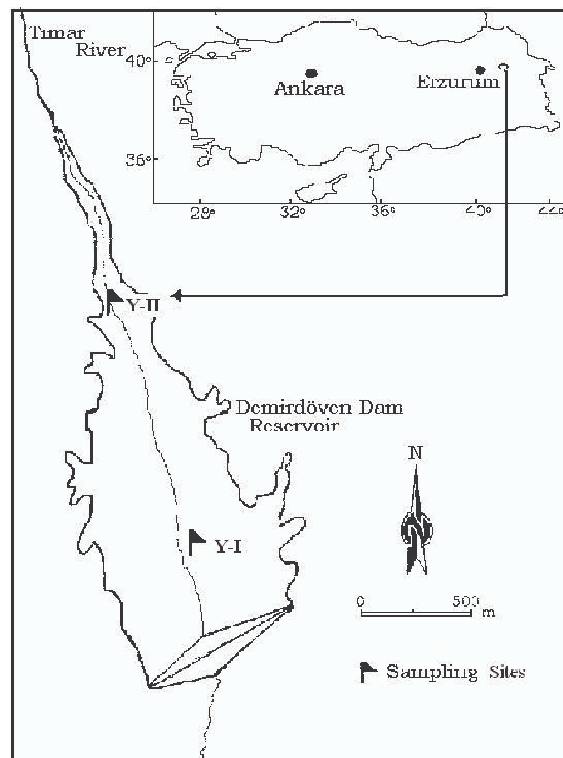


Fig. 1. Map of Demirdöven Dam Reservoir and location of the sampling sites.

and the area covered by the reservoir is 1.45 km^2 . The average depth of the lake is 50 m. The Tımar River carries