

Biodiversity and Temporal and Spatial Variation of Phytoplankton Populations in Dorudzan Reservoir, Fars Province

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Received date: 2019.11.14

Reception date: 2020.01.16

Abstract

Dorudzan Reservoir supplies a considerable portion of drinking water for Shiraz, hence it is vital to protect its quality. Phytoplankton plays a key role in the cycle of material and energy in aquatic ecosystems, yet no data is available on their diversity and density in Dorudzan reservoir ecosystem. This research investigates phytoplankton communities in 9 stations in the lake, during winter 2015 to autumn 2016. A total of 45 genera of 10 classes were identified, including Chlorophyceae (green algae: 16 genera of 9 families), Cyanophyceae (blue-green algae: 7 genera of 7 families), Bacillariophyceae (diatoms: 13 genera of 6 families), Xanthophyceae (yellow-green algae: 1 genus), Dinophyceae (2 genera of 2 families), Euglenophyceae (2 genera of 2 families), Chrysophyceae (1 genus), Coscinodiscophyceae (1 genus), Trebouxiophyceae (1 genus), and Florideophyceae (1 genus). Species composition and their densities showed variations among different habitats in the lake. The highest density in their seasonal cycle was observed in the autumn (4514/L), and in littoral habitat and riverine section, according to their spatial distribution. Some genera (*Ceratium*, *Dinobryon*, *Fragilaria*, *Pediastrum*, *Spirogyra*, and *Staurastrum*) were present in all seasons. The highest and the lowest diversity of the phytoplankton based on Margalef Index was in summer (1.8) and winter (0.7), and it was lower in the benthic habitat compared to the limnetic and the littoral. In comparison with most of the studied reservoirs in the country, Phytoplankton diversity is higher in the Dorudzan. As the green algae and diatoms were observed in all seasons, and blue-green algae never bloomed, from the point of the density of various phytoplankton, this reservoir might be regarded as an oligotrophic lake. Results of this research suggest that the seasonal and spatial distribution and density of phytoplankton in Dorudzan Reservoir is quite specific, due to its different water temperature situation, and specific availability of nutrients in various layers.

Keywords: Algae, reservoir, Dorudzan, ecology, Fars.