

Abstract

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Biological assessment is a useful alternative for understanding the ecological quality of aquatic ecosystems because biological communities integrate the environmental effects of water. The present study aimed to measure physical and chemical parameters, the qualitative and quantitative of phytoplankton, chlorophyll-a- and biological diversity indices. Water samples were collected monthly from Euphrates river from three sampling stations during the period from December 2018 to November 2019, and the results showed that water temperature ranged between (14.3 °C -34.16°C), turbidity (Tur) (16.11 to 62.7) NTU, pH values (6.9-8.1), secchi depth (SD) (0.28 -1.26)m, salinity (1.269-2.063)‰, dissolved oxygen (DO) (5.2-12.1) mg.l⁻¹, Biological oxygen demand (BOD) (2.25-11.66) mg.l⁻¹, total alkalinity (127.66-176.66) mg.CaCO₃.L⁻¹, total hardness (TH) (316.67-573.33) mg.CaCO₃.l⁻¹, calcium(Ca⁺) and magnesium (Mg⁺) ions were (17.368-110.89) and (50.98 - 71.26) mg.l⁻¹, respectively, Silicate values (1.79-2.91) µg.l⁻¹. nitrate (NO₃), nitrite (NO₂) (3.608-8.46) µg.l⁻¹ (0.936-2.421) µg.l⁻¹ respectively, while phosphate (PO₄) (0.145-0.571) µg.l⁻¹, chlorophyll-a- 0.125 µg.l⁻¹ to to 2.289 µg.l⁻¹.

Fifty species of phytoplankton were identified ,62% Bacillariophyceae (31 species), followed by Chlorophyceae, Cyanophyceae and Chrysophyceae represented by 10, 7, and 2 species, respectively. Seasonal variations in total number of phytoplankton showed one model distribution. Total number of phytoplankton ranged between (192.5×10³ - 54.06×10³ individual.l⁻¹). Shannon Weaver index ranged between(1.32 -2.475) , Simpson index between (0.67- 0.99), eveness index ranged between (0.018 to 0.05) and richness index ranged between (0.361 -1.805). The results showed that Euphrates river tend to be high diversity. A significant difference showed between: the seasons. A positive correlation observed between physical and chemical parameters with biological diversity index.