

### Abstract

The current study is conducted to identify the composition of mollusks, as well as to study some physical and chemical factors associated with water quality and the environmental habitat in Euphrates River. The study included the selection of three stations located along the Euphrates River in Al-Muthanna province, water, sediment and mollusks samples were collected monthly during the period from November 2019 to October 2020.

The results of the study showed that the values of air and water temperatures ranged between (14-45.33) °C and (11.33-38.67) °C respectively. The highest mean of electrical conductivity (EC) was 3026.6 (µS/cm), whereas the lowest mean was 1203.3 (µS/cm). The maximum value of total dissolved solids (TDS) was 2766.6 (mg/l), while the minimum value was 833.3 (mg/l). The highest mean of water flow in the study stations was 0.38 m/sec, while the lowest was 0.17 m/sec, the highest turbidity value was 134.63 (NTU), while the lowest value was 11.59 (NTU).

Total suspended solids (TSS) recorded the highest mean was 136.66 (mg/l) while the lowest mean value 21 (mg/l), and pH values ranged between (6.63-8.60), and the minimum and maximum concentrations of dissolved oxygen (DO) and biological oxygen demand (BOD) were (5.15, 10.10) and (1, 12.33) (mg/l) respectively. The total alkalinity, total hardness, hardness calcium, and magnesium values were within the range (131.33-181.66, 423.33-1386.6, 125-320) mg.caco<sub>3</sub>/l and (72.49-259.2) mg/l respectively. The values of nitrate and nitrite ranged between (0.053-6.89) and (0.030-3.05) µg. l<sup>-1</sup> respectively, and reactive phosphate (0.06-0.77) µg. l<sup>-1</sup>.

The result of sediment analysis showed that the lowest value of total organic carbon in the sediments was (0.055 %), while the highest value was (3.12 %) and the grain size analysis of the three stations of the study was (silt as 90%, sand as 5%, and clay as 5%), and the type of texture was silty in all stations.

The number of species collected in the current study at three stations on the Euphrates River was 577 individuals distributed among six species, the total density of these species was 242.84 Ind. /m<sup>2</sup>.

The relative abundance index, showed that the species *Melanopsis nodosa* was dominant and *Corbicula fluminalis* less abundant. The values of Shannon-Weiner diversity index ranged between (0.39-2.95), where the lowest values were recorded in August-2020 and the highest in October 2020, while values of Simpson diversity index were ranged (0.1-0.93), the lowest values were recorded in April 2020 and the highest were recorded in October 2020, both indices recorded the same highest and lowest values in same stations (1 and 2) respectively. The results showed that Euphrates River water has low values of biological diversity for the mollusks community.