Abstract

Kalar Kahar Lake is an important wetland and it has great importance. Water, sediments, fish, plants and algae samples were collected in winter and summer seasons to determine the seasonal variations in different samples of the lake. Physico-chemical parameters and heavy metals determination was determined in samples of Kalar Kahar Lake. This study also determines about the sequestration potential of Algae mats that were present in Kalar Kahar Lake.Pollution of Kalar Kahar Lake was determined through pollution index and bioaccumulation factor was determined in fish to check the possible health hazards that can be caused by heavy metals. Physico-chemical parameters of water and sediments were determined. Temperature was 16^0C and 26^0C in winter and summer seasons. pH was 7.6 and 6.9 in in winter and summer respectively. COD values showed high values in summer. Parameters included salinity, sulphate, phosphate, nitrate, TDS, TSS were high in the season of summer than in season of the winter. In samples of sediments calcium, chloride, phosphate, nitrate and organic carbon were high in summer seasons than in winter seasons. Heavy metals were determined in fish, algae, sediments, plant and water. Pb and Cu also showed variations in both seasons in these samples. Cu was high during the season of winter than in summer. In winter season Cu was 0.41 mg/kg-0.43 mg/kg in sediment samples. Cu was 0.14 mg/kg-0.16 mg/kg in summer season in sediments. In water samples Cu was 0.04 mg/l-0.07 mg/l in winter and 0.01 mg/l-0.04 mg/l in summer season. In plant Cu was 0.3 mg/kg-0.9 mg/kg. In fish samples Cu was 0.05 mg/kg-0.1mg/kg. Pb was high in concentration. In winter season 1.09 mg/l-1.16 mg/l Pb was present. In summer season Pb was 0.9 mg/l-1.12 mg/l in water samples. In sediment samples Pb was 1.3 mg/kg-1.5 mg/kg in winter season. In summer season Pb was 0.9 mg/kg-1.1 mg/kg in samples. Pb was also present in plants and fish. In fish samples it was 0.9 mg/kg-1.1 mg/kg. In plant samples lead was 0.9 mg/kg1.2 mg/kg. Pearsons co-relation was applied on results and it showed relation between different parameters of lake and SPSS was used for it. THQ, HI and EDI of metals is also determined. HI of both metals Cu and Pb was less than 1 that lies in class II. Carbon content was determined through elemental Analyzer in algae, it was 30% and 18% in winter and summer season respectively. Algae of Kalar Kahar Lake can sequester carbon in winter and summer that is 10.45 $g/m^2/d$ and 6.7 $g/m^2/d$ respectively.