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## **Environmental impact assessment of main drains on water and fish quality of Lake Qaroun at Fayoum governorate**

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## ABSTRACT

Lake Qaroun, which is one of the largest lakes in Egypt with an area reached fifty five thousands fedans, suffers from the inputs of agricultural drainage water, sewage and industrial wastewater through two main drains at El-Fayoum Governorate (El-Bats and El-Wadi) without prior treatments.

So the aim of the present field study is to analyze and compare the quality of water, sediment and fish (*Tilapia zillii*) samples collected from the two main drains (El-Bats and El-Wadi) and three different sites along Lake Qaroun (Eastern sector where El-Bats drain discharges its effluents, southeastern sector where agricultural drainage water of El-Wadi drain discharges its effluents directly into the lake and the Northeastern sector of the lake where no discharged effluents recognized).

Results revealed significant differences among the studied parameters in water, sediment and *Tilapia zillii* fish collected the studied sites of collection with an increase in values of ammonia, nitrite, heavy metals (Zn, Cu, Pb and Cd) and a decrease in dissolved oxygen content in water samples collected from the main drains (El-Bats and El-Wadi) and their outlets in Qaroun lake in comparison to that collected from the northeastern sector of the lake where no discharged effluents recognized. Moreover, the highest concentrations of heavy metals were recorded in sediment and vital organs of fish collected from El-Bats and El-Wadi drains and their outlets in Qaroun lake in comparison to that collected from the northeastern sector of the lake. Furthermore, deterioration of the water quality and bioaccumulation of heavy metals in vital organs of fish affect its physiological status with a significant decrease in condition factor, RBCs, Hb, Ht values and significant increase in WBCs, glucose content, serum total protein, albumin, globulin and disturbance in liver and kidney functions and histopathological alterations with evident damage in gills, liver, kidney and muscles in comparison to that of fish collected from the northeastern sector of the lake where no effluents discharged.

Results of the present study reflect the ecological status of Qaroun Lake, deterioration of its water quality as well as fish stock that helps the policy maker to make effective decisions for proper management of the lake.