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Recent Benthic Foraminifera in Lake Manzala, Egypt: A Bioindicator for Ecological Stress

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The Lake Manzala lies in the north-east Nile Delta region, between latitudes 31° 00′ - 31° 35′ N and longitudes 31° 45′ - 32° 15′ E. The Lake aquatic system is highly dynamic; however, it has been heavily affected during the last few decades by the continuous surplus of untreated industrial, domestic and agricultural land-based discharges. The current work investigates the foraminiferal assemblage distribution and evaluates the foraminiferal community responses to environmental stressors in Lake Manzala. Sediment samples were collected from 25 stations, distributed throughout the lake, during 2014. Foraminiferal community structure, organic matter and heavy metals, including Fe, Pb, Cu, Cd, Zn, Ni and Co were analyzed.

The results revealed that the Lake Manzala sediments are characterized by high organic matter and heavy metals concentrations. Species richness is low in all stations; indicating that the lake is under severe ecological stress. The lowest diversity exists in the east and south sectors of the Lake which are characterized by low salinity and high organic matter and heavy metals concentrations. Dwarf and brittle tests are the direct response to low salinity and anoxic conditions. The euryhaline species, *Ammonia tepida*, dominates the foraminiferal assemblage in this brackish-water ecosystem. The scarcity of sensitive Miliolids and living individuals are also considered an indication of the ecological stress in the lake. The increase in Foraminiferal Abnormality Index (FAI) and the severe deformation are related directly to increase in heavy metals contents. In conclusion, this study indicates that foraminiferal assemblages are a reliable bioindicator to multiple anthropogenic stressors in Lake Manzala.

Biography:

Dr. Ahmed Mohamed Badr-ElDin currently works as Lecturer of Marine Geology, Oceanography, Faculty of Science at Alexandria University. He had received a Ph.D. in Marine Geology from Alexandria University in 2008. He published two papers in refereed journals and Participated in a number of local, regional and international conferences and also supervised four MSC theses in Alexandria University. Ahmed Mohamed Badr-ElDin was awarded a Post-Doctoral Fellowship at Kagoshima University, Japan, 2010. He was also a participant in Erasmus Mobility Programme - Southampton University, Great Britain, 2018.