

CRUSTACEAN ZOOPLANKTON AND WATER QUALITY OF MURCHISON BAY: DYNAMICS IN A POLLUTED BAY, LAKE VICTORIA, UGANDA

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Lake Victoria is greatly polluted though it still serves as a source of potable water. Murchison Bay, the main water abstraction point for Kampala, receives wastewater from the City via the Nakivubo channel. This study investigated the mechanisms driving the biological and physical interactions that maintain the bay's water quality. Samples were collected bi-weekly for three years at 1m depth intervals from four stations located 0, 2.5, 4.8 and 15.6km from the Nakivubo channel inlet towards the lake and analyzed for physico-chemical parameters and zooplankton abundance. Conductivity, total phosphorus, orthophosphate and total nitrogen were highest at the inlet, and showed sharp reduction at 2.5 km, followed by a gradual decrease towards the lake. There was a 2% daily water exchange between the bay and the lake diluting the incoming wastewater 10 times. Forty seven species of zooplankton (34 rotifers, 7 cladocera, 1 calanoid and 5 cyclopoids) were observed. Cyclopoids were most abundant. Species abundances decreased towards the lake, with a spike for crustaceans at the 2.5 km station. Zooplankton diversity did not differ significantly across stations indicating unrestricted distribution of species. The abundance of all cladocera, calanoid, cyclopoid nauplii and early copepodites (C1-C4) never showed any seasonality. The late cyclopoid copepodites (C5-C6) had the annual maxima (February–March) and minima (June–July), and were distributed throughout the water column from November – March and restricted at the bottom between June–July. These observations coincided with the stratification and mixing cycle of the lake. The daily flushing of water in and out of the bay as seiches was the main factor diluting pollutants and regulating crustacean diversity in the bay. The study showed that bays having strong water exchange with the main lake can sustainably provide potable water. However, the contribution of such bays to the overall lake pollution should not be underestimated.

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