

## PHYSICOCHEMICAL PARAMETERS INFLUENCING THE ABUNDANCE AND SPECIES RICHNESS OF FISHES IN MALWATHU OYA, SRI LANKA

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The riverine environment is ideal for different species of local fishes of Sri Lanka as they have evolutionarily adapted to breed and live in lotic waters. *Malwathu Oya* is a dry zone perennial river in Sri Lanka. Different species of endemic, indigenous and exotic fish species co-habit in this river. The main livelihood of the villagers in the area is agriculture. Utilized water from these agricultural lands (e.g., paddy lands) directly or indirectly is diverted to the river from different locations. These anthropogenic activities may cause stresses on co-habiting fish species of *Malwathu Oya*. The study was carried out in the upper part of *Malwathu Oya* (8°08'35.5"N 80°35'17.6"E -8°15'44.1"N 80°27'11.4"E) to study the abundance and species richness of co-habiting fish, the water quality parameters and their effects on the fish fauna. Water quality parameters (temperature, pH, dissolved oxygen, biological oxygen demand, total hardness, total solids, total dissolved solids, total suspended solids, nitrates, phosphate and chlorides) and effect of water quality on fish and fish diversity indices (species richness, and abundance) were studied monthly from March 2012 to February 2014 at 12 sites along 30 kilometres of the river. Correlation and multiple regression techniques were used to define the effect of water quality parameters on fish assemblage. Twenty nine fish species were recorded. Abundance of *Etroplus suratensis* and *Oreochromis niloticus* were found to be significantly higher ( $p < 0.05$ ) in numbers than the other species of fish. Positive correlation was found between fish assemblage parameters and physicochemical variables. Abundance and species richness of indigenous fish were low in areas where dissolved oxygen ( $< 4.8$  mg/L) was low and pH ( $> 8$ ) and turbidity ( $> 140$  NTU) were at a high level ( $p < 0.05$ ). Nevertheless, exotic species were dominant in the areas where nitrate ( $> 4.0$  mg/L), pH ( $> 8$ ), chlorides ( $> 5.4$  mg/L), and phosphate ( $> 0.03$  mg/L) levels were high ( $p < 0.05$ ). Prevailing conditions in this lotic aquatic resource due to pollutants favours the exotic fish resulting in reducing the density of local fish species.

**Keywords:** Indigenous fish, Malwathu Oya, Species richness, Water quality