

# Diurnal Vertical Distribution of Zooplankton with Variations of Basic Physico Chemical Parameters in Muruthawela Reservoir

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## Abstract

The study was carried out to observe the vertical variation of zooplankton density throughout 24hrs at the deepest location (18m) of Muruthawela reservoir in Southern Sri Lanka with reference to the physico-chemical parameters (Temperature, pH, Dissolved Oxygen, Conductivity, Nitrate, Phosphate). The results showed that, the zooplankton of the sampling site was mainly composed of Cladocerans (*Neodiantomous sp*, *Phyllodiantomous sp*, *Diaphanosoma excisum*, *Diaphanosoma augustaensis*, *Bosmina sp.*, *Moina micrura*, *Ceriodaphnia*), Copepods (*Thermocyclops*, *Mesocyclops*, *Eucyclops*), Rotifers (*Keratella Valga*, *Brachionous caliciflorus*, *Monostyla bula*), Protozoans (*Ephistylis sp.*) and Nauplii stages. Cladocereans showed a significant (One-way ANOVA,  $p < 0.05$ ), vertical variation of their density along the water column with the peak value (123ind/L) in surface layers at 11pm. Conversely, at day hours their highest population density (94ind/L) was recorded in the deeper layers (18 m). However, there was no significant difference of density of other zooplankton groups in the water column. There were no significant differences of physico-chemical parameters during the 24 hours and this diurnal variation pattern of zooplankton can be considered as a result of the significant variation of light intensity throughout the day (One-way ANOVA,  $p < 0.05$ ). The mean values of the nitrate and phosphate in the water column during the day were  $0.107 \pm 0.0$  mg/L and  $0.0037 \pm 0.0$  mg/L respectively and these values achieved at eutrophic level. The daily variation of zooplankton population density within the water column of the reservoir can be considered as an ecological factor for the daily variation of predatory fish population of *Hypophthalmichthys nobilis*, *Cyprinus carpio*, *Oreochromis niloticus* and *Oreochromis mossambicus* etc. According to the personal communication with the local fishermen in the area, the fish production is decreasing day by day, due to the lack of food in the reservoir. Therefore, there is a possibility to predict the distribution of predatory fish feed on zooplankton by analysing the abundance of zooplankton in the water column of the reservoir.

**Keywords:** Cladocerans, copepods, Vertical migration, Reservoir

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