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Status of water quality, pollution and stratification in Udawalawa reservoir

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The water quality of the Udawalawa reservoir was assessed through a monitoring of physico-chemical parameters. Sampling was carried out at monthly intervals during the period of September 2007 to September 2008 by selecting eleven sampling points in the reservoir. Physico-chemical characteristics of water in both surface and bottom including Temperature, pH, Turbidity, Biochemical Oxygen Demand (BOD), Electrical Conductivity, Total Dissolved Solids (TDS), Dissolved Oxygen (DO), Ammoniacal nitrogen ($\text{NH}_4^+\text{-N}$), Nitrate ($\text{NO}_3^-\text{-N}$), Nitrite ($\text{NO}_2^-\text{-N}$), Phosphate (PO_4^{3-}), and Chlorophyll-a content in surface and bottom of the reservoir were measured.

Results of surface samples indicated that, the mean values and standard deviation of nitrate, nitrite, phosphate and ammoniacal nitrogen ($\text{NH}_4^+\text{-N}$) concentrations in study sites were $0.62 \text{ mg/l} \pm 1.02$, $0.07 \text{ mg/l} \pm 0.14$, $0.14 \text{ mg/l} \pm 0.11$ and $0.11 \text{ mg/l} \pm 0.07$ respectively. The mean value of pH was 7.8 ± 0.24 and mean water temperature recorded was $28.2^\circ\text{C} \pm 1.06$. Turbidity was recorded in high concentrations during the period rainy season and recorded mean values was $8.06 \text{ NTU} \pm 4.78$. During the study period, highest chlorophyll-a content was recorded as $16.62 \mu\text{g/l}$ and mean value was $5.1 \mu\text{g/l} \pm 5.8$. Water quality results of bottom samples indicated that, the mean values of nitrate, nitrite, phosphate and ammoniacal ($\text{NH}_4^+\text{-N}$) concentrations in study sites were $0.89 \text{ mg/l} \pm 1.02$, $0.10 \text{ mg/l} \pm 0.15$, $0.15 \text{ mg/l} \pm 0.11$ and $0.12 \text{ mg/l} \pm 0.08$ respectively. The mean value of pH was 7.5 ± 0.34 and mean water temperature recorded was $27.1^\circ\text{C} \pm 0.53$. Turbidity was recorded in high concentrations during the period rainy season and recorded mean values were $41.5 \text{ NTU} \pm 18.2$. The maximum depth recorded was 22m and beyond 10- 12 m of depths, nutrients and temperature difference were observed. The results revealed that the water quality parameters were within the Sri Lankan limits for fish and aquatic life. When comparing surface and bottom results, vertical stratification is identified, and turbidity is higher in bottom this may restrict abundance of fish to different strata.