

## Spatial and Diurnal Variation of Plankton in Pallikudawa Bay Coastline Tangalle; Southern Sri Lanka

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Plankton abundance and diversity in upper and lower water layers in Pallikudawa bay were studied at different time periods (*i.e.* 8.00–10.00 am, 10.00–12.00 noon, 12.00–2.00 pm, 2.00–4.00 pm) for three months (May-June) in 2018. The water quality parameters (*viz.* temperature: °C, turbidity: NTU and salinity ppm) were measured at seven selected locations within the bay at each time interval. The 55 µm mesh size cod – end of plankton net was used to filter water samples. The filtered water samples were fixed in lugol's solution and then used for identifying phytoplankton whereas the water samples were fixed in 5 % formalin were used for identifying zooplankton. The highest upper layer abundance of phytoplankton ( $\pm 182.2$ ) was observed at the time interval of 12.00–2.00 pm and minimum abundance ( $\pm 105.6$ ) was found at the time interval of 2.00-4.00 pm and showed a significant diurnal variation (two-way ANOVA:  $P < 0.05$ ). Mean Phytoplankton Diversity (MPD) of the upper layer (Shannon-Weiner index) showed the highest diversity during 12.00 – 2.00 pm ( $\pm 2.074$ ) and the lowest diversity during 8.00–10.00 am ( $\pm 0.508$ ). Similarly, in the lower water layer, the MPD changed significantly over the time duration (one-way ANOVA:  $P < 0.05$ ). Mean zooplankton diversity (MZD) was also highest during 12.01-2.00 pm ( $\pm 2.896$ ) in upper layer while the lowest diversity was observed during 8.00-10.00 am ( $\pm 1.223$ ). MZD of lower layers showed the highest during 2.00-4.00 pm ( $\pm 3.60$ ). The 112 plankton species was recorded and among them, 40 phytoplankton species and 27 zooplankton species were identified during the study. The data of this baseline study shows high diversity of plankton in the Pallikudawa bay during the study period.

**Keywords:** Abundance, Diversity, Phytoplankton, Pallikudawa bay, Zooplankton