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DINOFLAGELLATE, *PERIDINIUM*: A SUCCESSFUL COLONIZER IN NUTRIENT-POOR MAUSSAKELLE RESERVOIR

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Maussakelle reservoir provides the main water supply to the Laxapana Hydroelectric Power Station, one of the main hydropower stations in Sri Lanka. The villagers nearby depend on this reservoir for drinking water and fishing. The presence of algal blooms in reservoirs may cause health problems as well as they can interfere with operational procedures in hydroelectric power stations by clogging filters and turbines. Hence, this study aimed to identify bloom-forming algae and potential environmental factors that induce excessive growth of algae in Maussakelle reservoir. Water samples were taken from 20 different locations in the reservoir. *In-situ* physicochemical properties of water were measured using a multi-parameter water quality meter and a dual-channel chlorophyll and phycocyanin sensor. The results revealed that the phytoplankton community in the reservoir was dominated by a single species of dinoflagellate, *Peridinium*, with an average cell density of 67.57 cells ml^{-1}. The P and N contents indicated poor nutrient status in the reservoir. Phosphate-P in all sampling sites were < 0.0001 mg $dm^{-3,}$ and nitrate-N ranged between 0.09 – 0.16 mg dm^{-3}. The successful growth of *Peridinium* indicates their resilience under low nutrient levels and reduced competition from other phytoplankton. *Peridinium* cell density is significantly correlated to nitrate-N (r = 0.85) and ammonium-N (r=0.83), suggesting the importance of N for the growth of *Peridinium.* Since *Peridinium* produces high levels of toxins at low P levels, there is a high possibility of accumulating these toxins in the reservoir. Our findings alarm the potential health risks to those communities that rely on the reservoir for drinking water. In parallel to the high *Peridinium* density, an elevated carotenoid concentration was also detected, signifying a strong correlation (r^2=0.969). Further, the spatial distribution pattern of *Peridinium* and carotenoid pigments in the reservoir highlights the application of carotenoid spectral reflectance as a biomarker in remote sensing of *Peridinium* and related dinoflagellate blooms in freshwaters.

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