

Assessment of Marine Water Quality for Recreation and Bathing Purposes in Charty Beach, Jaffna, Sri Lanka.

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Assessment of marine water quality parameters is an essential step to identify the ongoing issues in the beach, which can affect the ecosystem and the safety of the users. The present study was carried out for five months from December 2020 to April 2021 at Charty beach, Jaffna, Sri Lanka. The physical parameters were measured on-site using smarTROLL multiparameter (Insitu 458389), and a five-tube MPN test for microbiological analysis was carried out. The average temperature (29.24°C), pH (8.18), turbidity (8 NTU), and dissolved oxygen (6.7 mg L^{-1}) were all found to be within the international marine water quality standards for recreational sites. The measured average nitrate (2.66 mg L^{-1}) and phosphate value (0.15 mg L^{-1}) exceeded the maximum values of international marine water quality standards. The highest nitrate and phosphate values were recorded during December 2020 which is in the year's rainy season. This may occur because of the surface runoff containing fertilizers and detergents due to the rainfall. Total coliform ($34.85\text{ MPN}100\text{ mL}^{-1}$) and *E. coli* count ($2.64\text{ MPN}100\text{ mL}^{-1}$) have lied within the threshold limits of WHO and international marine water quality standards for recreational sites. The highest total coliform count was also recorded during December 2020. It could be the result of rain-induced faecal contamination caused by surface runoff containing domestic and animal faeces. The total coliform and *E. coli* counts exhibited a strong correlation ($\gamma=0.91$ and $\gamma=0.89$, respectively) with rainfall data. So, based on the overall results of the marine water quality parameters, Charty beach can be considered a beach appropriate for recreational and bathing activities. Although the variation of the microbial parameters with time can cause an impact on the safety of the users, frequent and long-term monitoring with the evaluation of trophic index, water pollution index and planktonic analysis are recommended. .

Keywords: *Charty Beach, Faecal Pollution, Marine Water Quality, Recreational Waters, Water Pollution*