

## **Seasonal Variation of Water Quality Parameters in the Embilikala Lagoon in the Bundala National Park of Sri Lanka**

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The Bundala National Park (BNP), the first Ramsar wetland in Sri Lanka, is an important wintering ground for migratory birds. The Embilikala lagoon, one of the three key lagoons in BNP, is affected by the upstream irrigation systems and also recently subjected to the extensive distribution of *Typha angustifolia*. This study is aimed to inquire the seasonal variation of water quality in the Embilikala lagoon. Water samples were randomly collected from ten sampling locations throughout the lagoon, twice in both dry and wet seasons during 2018/19. Conductivity and pH were measured using Sension+ MM150 Portable Multi-Parameter while nitrate-nitrogen ( $\text{NO}_3^-$ -N), ammonia-nitrogen ( $\text{NH}_3$ -N), total nitrogen (TN), total reactive phosphorus (TRP), and total phosphorus (TP) were measured using spectrophotometric methods. Data were statistically analyzed using IBM SPSS 22 software. Differences in water quality in the two seasons were analyzed using independent sample t-test at a 95% confidence level. Higher concentrations of  $\text{NO}_3^-$ -N ( $323.3 \pm 66.5 \mu\text{g/L}$ ),  $\text{NH}_3$ -N ( $243.3 \pm 66.5 \mu\text{g/L}$ ), TN ( $900.0 \pm 40.0 \mu\text{g/L}$ ), conductivity ( $895.83 \pm 89.1 \mu\text{S/cm}$ ), and pH ( $8.59 \pm 0.13$ ) were recorded in the wet season than in the dry season  $\text{NO}_3^-$ -N ( $300.0 \pm 69.2 \mu\text{g/L}$ ),  $\text{NH}_3$ -N ( $230.0 \pm 60.8 \mu\text{g/L}$ ), TN ( $540.0 \pm 101.4 \mu\text{g/L}$ ), conductivity ( $0.39 \pm 0.03 \mu\text{S/cm}$ ), and pH ( $7.98 \pm 0.14$ ). TN, pH and conductivity were significantly different ( $p < 0.05$ ) in the two seasons. Most of the parameters were higher in wet season because of increased surface runoff, sand bar breaching and mixing up the seawater with lagoon water. Higher phosphorus levels in the dry season are related to the upstream agricultural activities with 56% of its total phosphorus is being measured with reactive phosphorous. This study provides an insight into the present status of the Embilikala lagoon and further work is needed for a comprehensive evaluation of water quality dynamics and the impact of the external water and nutrient inputs on the flora of the lagoon.

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