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Spatial variation of metal ion concentrations in water bodies of the Bundala National Park, Sri Lanka

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There is growing concern about increased urban and agricultural runoff, salt production and other human activities that disturb the ecosystem balance in water bodies within the Bundala National Park (BNP). In this work, the concentrations of selected metal ions of three lagoons namely, Malala, Embilikala, and Bundala within BNP, were determined monthly for a period of 18 months, to monitor water quality.

Iron (Fe^{3+}) content of the samples was measured using a UV/Visible spectrophotometer. The atomic absorption spectrophotometer was used for the determination of Na^{+}, K^{+}, Ca^{2+}, Mg^{2+} and Mn^{2+} ion concentrations in water samples. The highest average concentration of sodium (2800 ppm), potassium (893 ppm), magnesium (2138 ppm), calcium (420 ppm), iron (Bundala south 0.5 ppm and Bundala north 1.0 ppm) and manganese (86 ppb) concentrations were recorded from the Bundala lagoon largely due to sea water intrusion as well as due to the discharge of effluents from the saltern (Bundala Lewaya). The lowest concentrations of sodium (52 ppm) and iron (0.1 ppm) were recorded at the northern part of the Embilikala lagoon probably due to the dilution effect with large volumes of fresh water received from the irrigation canals. The possible reason for the relatively high mean concentrations of Ca and Mg from the Embilikala lagoon is the leaching of ions from the soil. Overall results suggest that dilution due to freshwater in Embilikala and Malala lagoons and the addition of effluents from the saltern into Bundala lagoon have contributed to the observed changes of the natural metal ion levels.

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