

**ABSTRACT**

A comparative study on some limnological and hydrobiological aspects of three southern coastal water bodies- Rekawa, Kalametiya and Lunama were carried out from March 1984 to June 1985. The three lagoons at Rekawa, Kalametiya and Lunama differed in geomorphology, hydrography, hydrology, and in physicochemical parameters. The main parameters dealt with were morphometry, temperature, salinity, dissolved oxygen content, light transparency, suspended matter, organic content and BOD of bottom sediments, pH, alkalinity, soluble reactive phosphate concentration, chlorophyll 'a' concentration, primary productivity and zooplankton abundance; in both time and space.

The hydrographical regime of Rekawa lagoon was seasonal and closely followed the monsoon cycle but changed however from September 1984 due to an irrigation scheme. The Kalametiya lagoon is comparable to a running water body. The Lunama lagoon remains almost stagnant.

Seasonal variation of temperature in all three lagoons closely followed changes in air temperature; salinity variations were closely related to the monsoon rain patterns. In all the three lagoons the major factor controlling dissolved oxygen was temperature. In Rekawa the factors controlling transparency, suspended matter, organic content of bottom sediments was wind, while in Kalametiya it was rainfall. The pH and alkalinity were closely related to the salinity variations, and soluble reactive phosphate was available at sufficiently high levels throughout the year.

Overall production rates and its seasonal fluctuation was much higher at Rekawa than Kalametiya and Lunama. Annual gross primary production in Rekawa, Kalametiya and Lunama were 2975 kg C ha<sup>-1</sup>yr<sup>-1</sup>, 2175 kg C ha<sup>-1</sup>yr<sup>-1</sup> and 1890 kg C ha<sup>-1</sup>yr<sup>-1</sup> respectively. The net:gross production ratios, and the assimilation ratios were calculated and correlation analyses were performed to evaluate how the physicochemical parameters and hydrobiological factors are related to the productivity changes in the three lagoons. Seasonal abundance of zooplankton was not associated with the salinity regime, but it was significantly correlated with biovolume of phytoplankton, as well as chlorophyll 'a' and primary productivity, suggesting food was more important than salinity. Interrelationships between different parameters within and between lagoons were evaluated.

