STUDIES ON USE OF BACTERIAL POPULATIONS AS A BIOLOGICAL INDICATOR IN AQUATIC ECOSYSTEMS WITH SPECIAL REFERENCE TO BOLGODA NORTH LAKE

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Investigated densities of bacterial populations in relation to the environmental prameters in Bolgoda North Lake for a period of six months from January to June 2000.
Surface water samples were collected from six sampling stations in the lake at monthly intervals. Densities of bacterial population (total viable colony count), total coliforms and faecal coliforms were enumerated as biological indicators in all the samples collected. Temperature, pH, electrical conductivity, salinity, sechi disk depth, dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD), Orthophosphate and nitrate contents were measured as environmental (physical-chemical) parameters. Examined correlation among biological indicators and some selected water quality parameters.

High densities of bacterial populations were found in water samples collected from sampling stations at the extreme upper part of the North Lake near out-lets of drains which bring domestic, urban and industrial (textile) effluents. Low densities of bacterial populations were reported from sampling stations at the lower part of the North Lake.

Results revealed that some chemical parameters have an influence on the density of bacterial population. The density of bacterial population showed a significant positive correlation with biochemical oxygen demand and phosphate concentration, while a significant negative correlation with dissolved oxygen content of the surface water of the lake. However, the density of bacterial population did not show a significant correlation with nitrate content.

The density of bacterial population is an useful biolocial indicator for monitoring of organic pollution in inland surface waters since high DO, BOD values and high PO_4^{-3} content indicate organic and nutrient pollution parameters of surface water quality.