

Studies on Aerobic and Anaerobic Bacteria in Sediment and Their Importance in Water Quality Assessment

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The expansion of human population and the resultant anthropogenic activities have led to the continued deterioration of our environment. This has revealed the importance of environmental indicators, such as microbial indicators, that help to detect the early changes in water quality and therefore the health of aquatic environments. This study sought to determine whether or not the ratios of viable aerobic and anaerobic bacteria cultured from sediment core samples could be utilized as bioindicators of water quality. Seven sampling sites located throughout the Lake Simcoe and Lake Couchiching watersheds in central Ontario were involved in the study. Temperature, conductivity, chlorophyll *a* concentration, pH, dissolved oxygen content, total suspended solids, total phosphorus concentration, total nitrate concentration and total organic carbon were analyzed for their potentially relevant correlations with the existing bacterial communities in the sediment samples. Results indicated a strong positive correlations between dissolved oxygen content, total phosphorus concentration, and pH with the ratios of aerobic and anaerobic growth. The information derived from this study concludes that aerobic and anaerobic bacterial distributions within sediment can indicate changes in water quality and therefore constructively contribute to water quality monitoring and assessments.