**Benthic Microbial Processes in the Coastal Region of Lake Erie: Problems and Prospects for the Forseeable Future.**

Robert T. Heath (rheath@kent.edu) and J.A. McGreevy. Department of Biological Sciences and Water Resources Research Institute Kent State University, Kent, OH 44242-0001.

It is widely recognized that many important biogeochemical processes occurring in part or wholly in the sediments of Lake Erie coastal communities are microbially mediated. Yet the microbial taxa involved in these vital processes are largely unknown, and the factors that control their abundance and distribution are poorly identified and seldom studied. Recent advances in molecular biological techniques when applied microbial ecology now permit investigations at various levels of operational taxonomic units. Prokaryotic and eukaryotic taxa can be identified without being cultured, and various taxonomic groups can be identified in situ. Besides nutrient inputs, microbially mediated processes can be affected by interactions between sediment bacteria and bacterivorous grazers, bacterial competitors for substrate, and bacterial parasites. Our purpose here is not to provide a comprehensive review of sedimentary biogeochemical cycles but to identify new directions for benthic microbial research in the foreseeable future. Drawing on recent examples in benthic microbial ecology, we show how such studies provide novel insights in benthic processes.