

Isolation and identification of bacterial pollutants from the Berg and Plankenburg Rivers in the Western Cape, South Africa

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Abstract

Bacterial species present in the Berg and Plankenburg Rivers (Western Cape, South Africa) were isolated from water and biofilm samples and population shifts between sampling sites were phylogenetically identified. Deoxyribonucleic acid (DNA) extraction of representative isolates was performed and amplified using 2 different primer sets. Various Enterobacteriaceae species were present at all of the sites, confirming faecal contamination. Phylogenetic analyses also showed that, in general, Gram-negative micro-organisms dominated at all of the sites sampled in both the Berg and Plankenburg river systems. Pathogens and opportunistic pathogens, such as *Pseudomonas aeruginosa*, *Staphylococcus* sp., and *Bacillus cereus*, were isolated from the Berg River. Similarly, in the Plankenburg River system, *Aeromonas* sp., *Acinetobacter* sp., *Stenotrophomonas* sp. and *Yersinia enterocolitica* were also isolated. This raises major health concerns as human population densities along both rivers are high, thus resulting in increased human exposure to these organisms.

Keywords: *Enterobacteriaceae*, faecal contamination, informal settlement, river water, waterborne illnesses