Characterising macroinvertebrate community structures in an urban stressed river in Eastern Cape province, South Africa.

Abstract

Benthic macroinvertebrates are excellent indicators of human impacts on stream ecosystems because they provide valuable services and integrate the effects of multiple stressors over time and space. The main objective of this study was to examine the effects of urban land-use on the benthic macroinvertebrates community structure and feeding interactions among different functional feeding groups (FFGs) in Bloukrans river. Water quality and macroinvertebrate community data were collected in two seasons from 18 sites in two different stream order categories following standard methods. Bloukrans river had significantly high levels of all nutrients due to the adjacent urban areas. Multivariate analyses results in this study showed that nitrate, phosphate, salinity and pH had the strongest negative relationship with macroinvertebrate assemblages. Based on functional feeding groups (FFGs), collector-gatherers dominated in the Bloukrans River and they represented 71.3% of the invertebrate assemblages. FFG ratios also indicated that all the eighteen sites were strongly heterotrophic, showed below expected linkage with riparian input and stable substrates were limited. Overall, this study demonstrates the potential usefulness of macroinvertebrate functional feeding groups to evaluate ecological conditions in urban streams of Bloukrans river.