The influence of environmental parameters on the abundance, distribution and species composition of macro-invertebrates in Fletcher Dam, Zimbabwe

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Abstract

A survey of macro-invertebrates was conducted at seven sites in Fletcher Reservoir. Sampling was performed by active searching, sweep netting and soil coring. Water temperature, conductivity, dissolved oxygen, pH, vegetation cover and substrate composition were determined. Data were analysed using the PRIMER statistical package and Pearson correlation; and diversity and evenness indices were calculated. The reservoir had dense marginal and floating vegetation, low conductivity and low pH. None of the 37 species recorded were found at all the seven sites. Species composition was different among sites (average similarity 33%). Conductivity was positively correlated to the abundance of Bulinus africanus ($r = 0.56$), but negatively correlated to species richness ($r = -0.77$). Dissolved oxygen was negatively correlated to vegetation cover ($r = -0.88$), probably because of the high oxygen demand caused by decomposition processes. Some of these results support our observations that macro-invertebrates in the reservoir are unevenly distributed in space and time, and that they respond to changes in water quality. Moreover, that none of the species was dominating suggests that the reservoir is not affected by high levels of pollution.