

## **Spatial variation of macrobenthic community in relation to water and sediment quality parameters in the Ja-Ela canal, Sri Lanka**

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The present study was conducted to assess the spatial variation of macrobenthic community in relation to water and sediment quality in the selected sites of the Ja-Ela canal, which is a freshwater stream located in Gampaha district. Five study sites to cover the entire length of the stream, which are adjacent to different land uses were sampled for water and sediment quality parameters and macrobenthic invertebrates from April to October 2015. The variations of water and sediment quality parameters were assessed using Principal Component Analysis (PCA). Shannon-Weiner diversity index ( $H'$ ), Hilsenhoff Family Biotic index (FBI), Taxa richness (TRI), and Ephemeroptera, Plecoptera and Trichoptera (EPT) index of macrobenthic invertebrates were calculated for each site. MINITAB 14 and PRIMER 5 statistical software packages were used in the statistical analysis. Results revealed significant spatial variations of the macrobenthic community and the physico-chemical parameters in sediment (Organic carbon content, particle size distribution) and the over lying water (pH, dissolved oxygen, conductivity, visibility, total dissolved solids, BOD, COD, total nitrogen, dissolved phosphorous total phosphorous concentrations) of the study sites. Altogether 16 families of macrobenthic invertebrates belonging to Phylum Annelida, Phylum Mollusca and Arthropoda were recorded. The values of the biotic indices ranged as follows:  $H'$ : 1.88-2.38, FBI: 6.17 - 6.97; TRI: 8.4 - 13.6, EPT: 0.2-6.2. Significantly higher biotic index values were recorded from the reference site. The EPT index showed significantly strong correlation ( $R^2 > 0.6$ ,  $P \leq 0.05$ ) with the physico-chemical parameters in sediment and the over lying water of the study sites while the other biotic indices showed moderately strong correlations. Therefore, it was evident that the spatial distribution of macrobenthic invertebrate community in Ja Ela canal is governed by a combination of some key physico-chemical parameters of the sediments and overlying water.