

INFLUENCE OF TRACE METALS POLLUTION ON THE COMMUNITY STRUCTURE OF SOFT BOTTOM MACROFAUNA IN INTERTIDAL AREAS OF THE DAR ES SALAAM COAST, TANZANIA

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Dar es Salaam is the largest and a major industrial city in Tanzania with a population of about 2.5 million people. Due to rapid increase in population, most open spaces have been converted to residential and industrial areas, resulting in uncontrolled disposal of domestic and industrial sewage. Because sewage is rarely treated, pollution is usually transported by rivers and streams to coastal areas. Despite efforts undertaken to assess the level of pollution in sediments and or fauna of the Dar es Salaam coast, very little efforts have been made to try to address the influence of these pollutants on faunal community structure in Dar es Salaam coastal areas. Thus the main objective of the present study is to assess the influence of trace metal pollution on the community structure of soft bottom macrofauna in intertidal areas of the coast.

Samples for this study were collected during a field trip in summer, 2010. Six stations along the coast were selected and at each station three replicate samples of sediments were collected by using a frame with surface area 0.0962m² and height 0.20m. The sediments were well mixed and a small fraction of it placed in small plastic bottles for analysis of heavy metals, organic matter content and grain size distribution. The remaining sediments were sieved through a 0.5mm sieve and retained organisms preserved in plastic bottles with ethanol. Salinity of water at each station was determined by using a refractometer. The samples were transported to the Vrije Universiteit Brussel (VUB) for analysis. Currently, sediment samples are analysed in the Analytical and Environmental Chemistry Lab of the VUB and identification of macrofauna is going on in the APNA (Algemene Plantkunde en Natuurbeheer) Lab. After sediment analysis and species identifications, the total number of organisms, species number, and Shannon-Wiener diversity index will be calculated for each station. Statistical significance tests will be conducted in order to compare different stations. If the data show a normal distribution, a one way ANOVA (Analysis of Variance) will be conducted. Otherwise, a non parametric Kruskal-Wallis ANOVA by ranks will be used. A multivariate analysis of the community structure will be done with the software PRIMER 6.0. Samples will be compared using cluster analysis and multidimensional scaling (MDS). ANOSIM will be used to test for significant differences. Abiotic parameters will also be analysed with the same methods used for analysis of community structure. A BIOENV correlation analysis will be performed to determine which abiotic parameters best explain the changes in the assemblage of macrofauna.