

Organic Matter Sources and trophic interactions among fish species in Pangani Estuary –
Tanzania

Alistidia Paul Mwijage

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University of Dar es Salaam, College of Agricultural Science and Fisheries Technology, 2009

Estuaries are primary habitat that serves as feeding and nursery grounds for most juvenile marine fish. However, estuaries in Tanzania have been affected by anthropogenic activities in the upstream of the river catchments including the use of these areas as fishing grounds by the artisanal fishers. These human activities contribute to determine the abundance and diversity of OM sources that support the nutrition of fish; and also to define the complexity of the estuarine food webs. The four complementary methods: stomach contents, stable isotopes ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) fatty acid (FA) biomarkers and trophic flow modeling approach were used to describe the OM Nutritional sources and trophic interactions among the dominant marine fish in the Pangani estuary. Among the Fish species investigated (*Hilsa Kelee*, *Valamugil buchhanani*, *Arius africanus*, *Carangoides chrysophrys* and *Epinephelus malabaricus*), PERMANOVA, Pseudo – F = 125.27: P = 0.001), stable isotopes (PERMANOVA, pseudo –F 300.29: p = 0.001), and FA composition (PERMANOVA, pseudo-F = 74.75; p = 0.001). Moreover, the stable isotopes results revealed slight differences in the most important OM sources relied by individual species from depleted in $\delta^{13}\text{C}$ values to relatively enriched in $\delta^{13}\text{C}$ OM Sources among the estuarine zones. Yet, the combined methods – stable isotopes, FA biomarkers and Eco path modeling emphasized that terrestrially – derived OM Supplement the main benthic micro-algae basal food sources is an indication resources to sustain the overall estuarine food web. The reliance on benthic diatom – dominated estuarine and marine basal food sources in an indication of low estuarine food connectivity to the fresh water related food web. This situation is most likely threatening the resilience and stability of the estuarine food web structure. This was also highlighted by Ecopath trophic flow model which indicated that the Pangani estuarine food web structure is less resilient to any perpetuation when compared with the other tropical estuarine systems