

**Reproductive biology and fishery potential of penaeid prawns of Bagamoyo coastal waters**  
**Emelda Daniel Teikwa**  
**Master of Science (Marine Biology)**  
**University Of Dar es Salaam, College of Natural and Applied Sciences, 2002**

Some aspects of the biology and fishery potential of penaeid prawns of Bagamoyo coastal and nearshore waters have been studied. Samples for the study were obtained monthly for one year from inshore waters adjacent to the Ruvu estuary while additional samples were bought at the beach from artisanal fishermen. In the laboratory, samples were identified to the species level before morphological examination was made. The species composition, population abundance and growth of penaeid prawns were described. *Penaeus indicus*, *P. monodon*, *P. japonicus*, and *Metapenaeus monoceros* were recorded in Ruvu estuary and nearshore waters, with *P. indicus* being more abundant. Estimation of relative abundance revealed higher abundance during rainy season than dry season. For length-weight relationship, males and females *P. indicus* showed similar growth rates while males and females *P. monodon* exhibited different growth rates. The recruitment peak for both *P. indicus* and *P. monodon* coincided with the period of high rainfall, suggesting that rainfall enhances recruitment frequency. The sex ratio in *P. indicus* was found to be significantly different from 1:1 ratio while for *P. monodon* the overall sex ratio did not vary significantly from 1:1. February and May were found to be the spawning periods for *P. indicus*, while for *P. monodon* peak spawning period was observed in January and April. The average size at first maturity was found to be 3.4 cm and 3.9 cm carapace length for males and females *P. indicus* respectively. For *P. monodon* it was 3.51 cm and 4.22 cm for male and female respectively. Fecundity was also assessed and found to increase with prawn size. An examination of catch rate and effort data revealed a significant relationship between catch and effort. The negative value of correlation coefficient ( $r$ ) obtained suggests that an increase in effort was associated with a decrease in catch rate. Analysis of the twelve-year data revealed a maximum sustainable yield (MSY) of 860 metric tons which may be taken for an average of ( $f_{msy}$ ) 228 days each year.