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Population Dynamics of the Giant African River Prawn *Macrobrachium vollehovenii* Herklots 1857 (Crustacea, Palaemonidae) in the Cross River Estuary, Nigeria

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Abstract

Growth, mortality, recruitment, yield-per-recruit and present rate of exploitation of the African river prawn *Macrobrachium vollehovenii* were studied in the Cross River Estuary, Nigeria. The research was based on length-frequency data collected between January 1997 and June 1998, and FAO-ICLARM Software (FiSAT) routine runs. Growth parameters obtained from the seasonalized von Bertalanffy growth function were L_{∞} 213.63 and 198.99 mm, $K = 1.24/\text{year}$ and $1.24/\text{year}$; $C = 0.95$ and 0.95 ; $WP = 0.6$ and 0.45 , for *M. vollehovenii* males and females, respectively. Using the seasonalized length-converted catch curves, the instantaneous rate of total mortality Z was estimated as 3.93/year and 6.85/year for males and females. Natural mortality M , fishing mortality F , and exploitation rate E of both sexes were 2.21/year and 2.27/year, 1.72/year and 4.58/year, and 0.44 and 0.67, respectively. The length at first capture L_c estimated from the probability of capture routine was 44.25 mm and 73.41 mm for males and females. One recruitment peak was observed for males, and two of unequal strength for females. Length-weight relationship gave 'b' values of 3.483 and 3.329 for males and females, respectively. The relative yield-per-recruit analysis predicted maximum exploitation rates (E_{\max}) of 0.42 and 0.47 as against current exploitation rates of 0.44 and 0.67 for males and females and suggest that only female *M. vollehovenii* are being over-exploited. Hence, it is proposed that fishing on females during the reproductive season is reduced, and that the return of egg-bearing females into the waters is enforced.