

Stock Assessment of Exploited Major Fish Populations in the Mangrove Estuary of Marudu Bay, Sabah, Malaysia

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Abstract

Stock status, yield per recruit, mortality rates and exploitation of major fishes were determined by analyzing length frequency data collected from the mangrove estuarine area of Marudu Bay, Sabah, Malaysia between October 2012 and September 2013. There were five sampling stations for the study. Each sampling station was approximately 1/2 km apart from each other. Fishes were caught by a multi mesh gill net. In total, 40 species of fish belonging to 29 families were identified from the mangrove estuarine waters of Marudu Bay, Sabah, Malaysia. The abundance of 40 species was found to be correlated (positive or negative) with the water parameters. The highest and significant regression coefficient was observed for *Pseudorhombus cinnamoneus* which indicated that 29% of their abundance was influenced by the major water parameters and the remaining 71% by other unknown factors. The growth, mortality, recruitment and relative yield per recruit of the five selected dominant fish species (*R. kanagurta*, *G. oyena*, *A. mate*, *S. sihama* and *S. melanura*) from Marudu Bay were investigated based on monthly length-frequency data, using FiSAT software. In terms of length-weight relationships, *G. oyena*, *S. sihama* and *S. melanura* showed a negative allometric nature of growth while *R. kanagurta* and *A. mate* showed a positive allometric nature of growth in the mangrove estuary of Marudu Bay. Only *G. oyena* showed a continuous recruitment pattern with only one major cohort produced per year while the four other species (*R. kanagurta*, *A. mate*, *S. sihama* and *S. melanura*) showed two major recruitment events per year indicating two cohorts were produced in a year. Results from the analysis of the exploitation rate (E) based on the fishing mortality estimates, indicate that the fishery of the selected five dominant fish species in the mangrove estuary of Marudu Bay were slightly below the optimum level of exploitation. This implies that the fish stocks in Marudu Bay are still abundant but any further unrestrained increase in fishing effort in the future might driving the fish stocks down and leads to economic losses.