World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:19, No:07, 2025

Maximizing Giant Prawn Resource Utilization in Banjar Regency, Indonesia: A CPUE and MSY Analysis

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Abstract : The giant freshwater prawn (Macrobrachium rosenbergii de Man, 1879) is a valuable species for fisheries and aquaculture, especially in Southeast Asia, including Indonesia, due to their high market demand and potential for export. The growing demand for prawns is straining the sustainability of the Banjar Regency fishery. To ensure the long-term sustainability and economic viability of prawn fishing in this region, it is imperative to implement evidence-based management practices. This requires comprehensive data on the Catch per Unit Effort (CPUE), Maximum Sustainable Yield (MSY) and the current rate of prawn resource exploitation. We analyzed five years of prawn catch data (2019-2023) obtained from South Kalimantan Marine and Fisheries Services. Fishing gears (e.g. hook & line and cast net) were first standardized with the Fishing Power Index and then calculated effort and MSY. The intercept (a) and the slope (b) values of the regression curve were used to estimate the catch-maximum sustainable yield (CMSY) and optimal fishing effort (Fopt) levels within the framework of the Surplus Production Model. The estimated rates of resource utilization were then compared to the criteria of The National Commission of Marine Fish Stock Assessment. The findings showed that the CPUE value peaked in 2019 at 33.48 kg/trip, while the lowest value was observed in 2022 at 5.12 kg/trip. The CMSY value was estimated to be 17,396 kg/year, corresponding to the Fopt level of 1,636 trips/year. The highest utilization rate was 56.90%, recorded in 2020, while the lowest rate was observed in 2021 at 46.16%. The annual utilization rates were classified as “medium”, suggesting that increasing fishing effort by 45% could potentially maximize prawn catches at an optimum level. These findings provide a baseline for sustainable fisheries management in the region.

Keywords : giant prawns, CPUE, fishing power index, sustainable potential, utilization rate
Conference Title : ICFA 2025 : International Conference on Fisheries and Aquaculture
Conference Location : Istanbul, Türkiye
Conference Dates : July 29-30, 2025