Reproductive Biology and Condition Index of Meretrix meretrix in Marudu Bay, Malaysia: Implications for Conservation and Management

ABSTRACT

The Asiatic hard clam, Meretrix meretrix, is a crucial bivalve species that supports artisanal fisheries in Marudu Bay, Sabah, Malaysia. However, the clam population has declined due to overexploitation. The objective of this study was to investigate the gonad development of the clam in response to environmental variations. Five hundred specimens were collected and analyzed for gonad and condition indexes over ten months. The population of clams was dioecious with a ♀ dominance (♂:♀ ratio of 1:1.058), and hermaphrodites were infrequent (0.4%). The clam exhibited year-round spawning with increased peaks in July-August and November-December. Monthly variation was observed in the condition index ($P<0.05$) but not in the gonad index ($P>0.05$). The condition index was correlated with environmental variables, while the gonad index was only linked with total rainfall. This study provides essential insights into the reproductive biology of Meretrix meretrix, which can aid in its sustainable management and conservation.