

**Sex ratio, gonad and condition indices of mangrove clam, *Polymesoda (Geloina) erosa* (Bivalvia: Corbiculidae) in Marudu Bay, Sabah, Malaysia: Implication for broodstock selection in artificial breeding program**

**ABSTRACT**

The mangrove clam, *Polymesoda erosa* is among the commercially important bivalve species in Marudu Bay, Malaysia. However, a recent study has shown that this species experiences a high level of fishing exploitation. To sustain this species, one potential strategy is to restock hatchery-produced seeds through sea ranching. However, this requires the successful artificial production of seeds, which currently has not been achieved. The present study was conducted to determine the sex ratio and maturity level of different shell length classes of the clam to guide the selection of broodstock for artificial propagation in the future. A total of 240 mangrove clam specimens were randomly collected from the mangrove swamps in Marudu Bay and sorted into four shell length classes: 5.50-6.49 cm, 6.50-7.49 cm, 7.50-8.49 cm and 8.5-9.49 cm. The clams were subjected to gonad histological examination and condition analysis. Results showed that the natural stock of clams exhibited close to a 1:1 male-to-female sex ratio with no hermaphroditism observed. Clams within the 5.50-8.49 cm shell length classes had high gonad index, indicating that most of the clams at this size are fully mature. Statistical analysis revealed a significant difference ( $p = 0.027$ ) in condition index between two shell length classes: 5.50-6.49 cm and 7.50-8.49 cm. This could be attributed to differences in energy utilization; young clams utilize more energy for growth, whereas adult clams utilize energy for growth, reproduction, and metabolic maintenance. This study suggests that using mangrove clams with shell length between 5.50 cm and 8.49 cm will likely result in high spawning success in an artificial breeding program.