

Reproductive Biology and Spawning Pattern of Oyster *Magallana bilineata* in Mengkabong Bay, Sabah, Malaysia

ABSTRACT

Magallana bilineata is a commercially important oyster species in Malaysia. Despite its economic significance, the biology and ecology of this species, particularly its reproductive cycle, are poorly understood in the region. Therefore, this study aimed to investigate the reproductive cycle of *M. bilineata* in Mengkabong Bay, Tuaran, Sabah and its correlation with environmental factors. A total of 105 oyster specimens were collected and examined to determine the sex ratio, gonad developmental stages, maturity index (MI), and condition index (CI). The results revealed a sex ratio of 1:2.36 (♂:♀) in the oyster population of the bay, with a significantly higher proportion of females ($P < 0.05$). Hermaphroditism was detected in 1.90% of the samples. *M. bilineata* was found to spawn throughout most months in the bay, with the highest MI and CI values recorded in November 2019 when most oysters were in mature or maturing stages. Salinity was found to be the primary factor influencing male gonad maturation, while temperature was the primary factor influencing female gonad maturation. Understanding the reproductive biology of this species is crucial for predicting its future survival and facilitating assisted spawning and hatchery spat production, thereby ensuring the conservation and sustainability of the oyster fishery in Malaysia.