

Genetic Diversity and Stock Delineation of Philippine Populations of the Orange Mud Crab, *Scylla olivacea*

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Abstract

The orange mud crab, *Scylla olivacea*, is regarded as an important fishery resource due to high demand and high market value. However, mud crab populations are threatened by over exploitation and habitat degradation, and would benefit from resource management interventions. The study examined patterns of genetic diversity and connectivity of orange mud crab populations across the Philippines, with the aim of identifying putative management units. A total of 387 *Scylla olivacea* were collected from ten localities across the Philippine archipelago. Phylogenetic analysis of mitochondrial control region (mtDNA-CR) DNA sequences revealed cryptic diversity among *Scylla olivacea* specimens with four mitochondrial lineages recovered. Analysis of molecular variance revealed that Philippine populations do not constitute a single genetic stock ($\theta_{ST}=0.00262$; $P=0.00015$). Thirteen microsatellite loci were also utilized as additional markers to infer population structure and estimate genetic variation. Overall, *S. olivacea* populations exhibit high haplotype diversity (mean $h=0.9803$) and nucleotide diversity (mean $\pi=3.46\%$), which may be indicative of a large, stable population within Philippine archipelagic waters. This study provides information on genetic diversity and population structure of *S. olivacea*, which will be useful towards developing management and conservation strategies for sustainable development of natural *S. olivacea* populations in the Philippines.