

Title: Tiger prawns' stock identification across the Indo-West Pacific and implication for the WIO fishery

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To investigate the genetic diversity and population structure of tiger prawn, tissue samples of *Penaeus monodon* and *Penaeus semisulcatus* were collected around Madagascar and in Tanzania. Mitochondrial Control Region (CR) and seven microsatellites loci were used as genetic markers. The obtained sequences were combined with those from previous studies. Sequences of *P. monodon* consisted of 761 CR sequences, which were collapsed into 199 haplotypes, while for *P. semisulcatus*, 162 sequences were collapsed into 159 haplotypes. The (Indo-Malay Archipelago) IMA and (Western Pacific) WP had a higher genetic diversity than the Western Indian Ocean (WIO), the Southern Indian Shelf (SIS), and the Bay of Bengal (BoB) supporting the hypothesis highlighting that the origin of tiger prawn in the Indo-West Pacific (IWP) is likely the region of the coral triangle. AMOVA suggest a significant and very great genetic differentiation across the IWP ($\phi_{st} = 0.73$, $p \leq 0.01$ in *P. monodon*; $\phi_{st} = 0.57$, $p \leq 0.01$ in *P. semisulcatus*) but also a significant differentiation within the WIO ($F_{st} = 0.1$, $p \leq 0.01$ in *P. monodon*; $F_{st} = 0.12$, $p \leq 0.01$ in *P. semisulcatus*; $\phi_{st} = 0.02$, $p \leq 0.01$ in *P. monodon*; $\phi_{st} = 0.04$, $p \leq 0.01$ in *P. semisulcatus*). The hierarchical AMOVA suggest the presence of the following populations across the IWP: (1) Kenya, Tanzania, (2) northwest Madagascar, (3) southern Madagascar, (4) northern Madagascar, (5) eastern Madagascar, (6) Persian Gulf, (7) South Indian Shelf and Bay of Bengal, (8) Gulf of Thailand, Eastern Indian Ocean, and South China Sea, (9) Philippines and Taiwan, and (10) Western Pacific. In general, geographic distance was not the motive of the observed genetic differentiation and population expansion was responsible for the genetic signature. However, recent population bottleneck is observed for sites that are geographically isolated (Persian Gulf), or site with no major sea currents occurring (south China, Gulf of Thailand, and Vietnam), and sites within shallow water ($Z < 100\text{m}$).