

## Genetic population structure; diversity and connectivity of the commercially important cephalopod *Octopus cyanea* (Gray; 1849) in Tanzania and Mozambique

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*Octopus cyanea* continues to be an important resource for artisanal fisheries and coastal livelihoods of communities in Tanzania and Mozambique (1). Substantial growth in international market demand worldwide causes a strong increase in artisanal fishing. This is leading to a high exploitation pressure (2); raising concerns regarding the sustainability of the fishery (3).

Marine Protected Areas (MPAs) has been suggested as the essential tools for conservation and sustainable management of octopus and other marine species (4). However; for proper design of fully functioning network of Marine Protected Areas (MPAs); information about connectivity among populations and larval dispersal need to be taken into consideration (5). Genetic tools using DNA markers can be used to reveal gene flow and hence larva exchange among populations (5).

Arm tip tissue samples have been collected from a total of 368 *O. cyanea* individuals originating from four sites in Tanzania (Tanga; Dar es Salaam; Kilwa; Mtwara and Zanzibar) and Mozambique (Pemba; Quelimane; Vilankulo and Maputo); respectively. They were stored in 99.9 % ethanol before further analysis at the Marine Biology laboratory of the Vrije Universiteit Brussel (VUB). DNA extraction; PCR and sequencing will be performed in order to understand the genetic population structure; diversity and connectivity of *O. cyanea* in Tanzania and Mozambique.

The study will provide recommendations for fishery management and a proper design of a fully-functioning network of MPAs. It also aims to reveal whether the species should be managed as one management unit or separate units in the two countries. As both Tanzania and Mozambique are signatories of the Convention on Biological Diversity (CBD) that aim to increase the protected areas by 10 % of their territorial waters; findings from this study will be critical for the designation process.

Keywords: Connectivity; Marine Protected Areas; Fishery management; Sustainability

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