Genetic population structure, diversity and connectivity of the commercially important cephalopod *Octopus cyanea* (Gray, 1849) in the Western Indian Ocean

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Octopus cyanea continues to be an important resource for artisanal fisheries and coastal livelihoods of communities in Tanzania, Mozambique and Madagascar (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) have been suggested as the essential tools for conservation and sustainable management of octopus and other marine species (4). However, for the proper design of a 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. DNA extraction, PCR, and sequencing will be performed to understand the genetic population structure, diversity and connectivity of *O. cyanea* in Tanzania and Mozambique. These data will be combined with existing data that have been collected previously in Madagascar.

The study will provide recommendations for fishery management and a proper design of a fully functioning network of MPAs in the Western Indian Ocean. Tanzania, Mozambique and Madagascar are signatories of the Convention on Biological Diversity (CBD) that aims to increase the protected areas by 10 % of their territorial waters, findings from this study will be critical for the designation process.

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