Abundance of giant clams (*Tridacna sp.*) on protected versus unprotected coral reefs in the Western Indian Ocean

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Along the East African coast, we encounter three species of giant clams *Tridacna* sp. in marine protected areas (MPAs) as well as non-protected areas. The studied species are *T. maxima*, *T. squamosa* and *T. squamosina* (previously known as *T. costata*).

Giant clams are mixotrophic, being capable of generating biomass through both primary and secondary production. Primary production is controlled by *Symbiodinium microadriaticum*, their symbiotic photosynthetic zooxanthellae algae. Thus giant clams are susceptible to stress-induced bleaching (expulsion of their symbiotic zooxanthellae) often associated with increased sea surface temperatures.

Furthermore, has the abundance of giant clams been greatly reduced due to overfishing and loss of habitat. Four main reasons for giant clam overfishing are increased human population, improved technology available to fishermen, expanded international/ inter-island trade and poaching of giant clam meat and expanded international trade in shell specimens as ornaments.

Besides it is important to know that tridacnids are vulnerable species to stock depletion, because of their late sexual maturity, sessile adult phase and broadcast spawning strategy. Fertilization success requires sufficient numbers of spawning individuals. Low densities result in reduced (or zero) recruitment and eventual population collapse in the long-term.

Free-swim surveys have been conducted in the Western Indian Ocean in order to estimate abundance. By using multivariate statistics, we aim get an answer to the question if there is a significant difference between the abundance of giant clams in MPAs and non-protected areas.

Keywords: Western Indian Ocean; Marine Protected Areas; *Tridacna sp.*