Genetic diversity and connectivity of *Seriatopora hystrix* along the East Coast of Africa

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Coral reefs worldwide are declining due to direct and indirect anthropogenetic stressors such as pollution, destructive fishing practices, ocean acidification and climate change. Scleractinian corals are ecosystem engineers which create a habitat for many other species. As corals are sedentary, connectivity among subpopulations, and the reseeding of diminished populations depend on the dispersal patterns of coral larvae. Reproduction strategies such as number of larvae released, larval buoyancy, and larval survival, as well as environmental factors such as the strength and direction of currents determine the capacity of long distance dispersal (Baird, 2001).

Seriatopora hystrix is a widespread scleractinian coral common in Indo-Pacific reefs. It displays asexual reproduction by fragmentation or detachment of individual polyps and sexual reproduction by brooding larvae (Maier, 2010). The planula larvae carry symbiotic algae (zooxanthellae) from the parental colony, and can settle on the substrate directly after release to the water column. This suggests a shorter distance of dispersal when compared to broadcast spawning corals that release gametes for external fertilization.

This study aims to assess the genetic diversity, genetic structure, and gene flow of *S. hystrix* along the East African Coast using highly variable microsatellite markers. In total, 243 fragments from individual colonies of *S. hystrix* were sampled at 2, 5, and 3 locations in Kenya, Tanzania and Mozambique, respectively. Fifteen microsatellite markers designed for *S. hystrix* were selected from literature: 10 from the Great Barrier Reef, Australia (Underwood *et al*., 2006) and 5 from the Red Sea (Maier *et al*., 2001). Primers were tested using a QIAGEN multiplex PCR kit. Thirteen microsatellites gave amplified products for most of the samples and will be used for further fragment length analysis which includes Genetic diversity analysis (GenALEX), F-statistics(FSTAT) and cluster analysis (STRUCTURE).

The results of this study will provide a better understanding of the dispersal and connectivity patterns of this species, which provides important information for management planning and conservation through the design of marine protected areas.

References

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