

Genetic population structure and connectivity patterns of some highly artisanal-targeted fish species in coastal Tanzania

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In this study, we assess the genetic population structure and connectivity patterns of three highly targeted coastal fish species in tropical Tanzania. Two of the species (*Tylosurus crocodilus* and *Hemiramphus far*) are important migrators utilizing different habitat types throughout their life cycle, whereas the third one (*Nemipterus bipunctatus*) is a non-migratory demersal species. Based on the existence of the East African Coastal Current that crosses from the southern Tanzania to the north and potentially affecting larval dispersal pathways, we hypothesize low genetic connectivity between populations at the mainland and the nearby islands of Zanzibar, Pemba and Mafia. In addition, we hypothesize a genetic differentiation in population structure between the southern part of Tanzania and other mainland populations, because of the effects from the South Equatorial Current. About 30 specimens were collected from each of seven locations (representing important fishing grounds for the artisanal fishery) across the Tanzanian coast (spanning a distance of about 1400 km) and the associated islands. Several combined sets of primers will be used to amplify a part of the mitochondrial cytochrome oxidase subunit I (COI). PCR products of the right size (approximately 700 bp) will be confirmed on agarose gel and bidirectionally direct sequenced. Sequence alignment will be done manually, followed by calculating pairwise F_{ST} values and molecular variance for estimation of genetic structuring within and among populations. Results from this study are suggested to give valuable information on genetic differences in population structure and connectivity patterns of some important tropical coastal fish species, and to provide beneficial knowledge for efficient designing of reserve area networks, which are currently important management tools for migratory species in coastal waters.