

ABSTRACT

The natural population of Nile tilapia is under threat from aquaculture activities due to the dissemination of populations with less genetic strength. This reduces resilience and fitness of the natural populations upon interbreeding with the culture stock. The study will undertake an assessment of the genetic diversity and structure of Nile tilapia, *Oreochromis niloticus* germplasm in Lakes Victoria, Turkana and Baringo together with fish farms and hatcheries in Kenya for enhanced conservation and aquaculture management of the species. The natural population of Nile tilapia is under threat from aquaculture activities due to the dissemination of populations with less genetic strength. Inference of population structure and diversity will identify the good strains for the development of aquaculture. Next generation sequencing will be used to undertake molecular genetic analysis microsatellites will be applied in DNA amplification for inferences on hybridization due to cage culture. The genetic information from the study will be important in formulating management policies and frameworks for the establishment of aquaculture systems and best practices to mitigate the alteration of the natural population germplasms.