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1.0 INTRODUCTION

1.1 Animal Variation

Variability is the fundamental and basic characteristics oflife. Every level of organization of life displays variation in someparameters, in space or time, within and between cells, tissues, organisms,populations and communities. The existence of variations in natural populationsof organisms is a necessary condition for evolution. While variability is botha product and foundation of the evolutionary process, biologists are stillconfronted with the basic problems of explaining the nature, extent and causesof this web of complexity (Reynaldo and Cesar, 2014). Genetic variation is onekey factor in the survival of species. Natural populations are perhaps the bestgene banks which are critical resources for genetic variation for current andfuture application in improvement of farmed species of fish (Dunham, 2004).Morphological differentiation is one of the several approaches which haveproved useful in studying variability. Morphological data alone, however, isinsufficient to explain variability. Molecular biology, biochemical analysisand other methods coupled with morphology are powerful means in understandingvariability and evolutionary relationships among and within populations oforganisms (Reynaldo and Cesar, 2014).

Among populations, genetic diversity can also be gained whenpopulations that are not normally in contact with another hybridize that iswhen isolated population experienced migration, gene flow and genetic drift.This can occur when physical barriers are removed such as when fishes areintroduced to an area or escape, or when migration patterns changes due toenvironmental condition. Populations of many species of organisms may responddifferently, both morphologically and genetically, to a changed environment.Individuals tend to express different phenotypes (morphological, physiologicalor behavioural) when surviving in varied environments (Freeman and Herron,1998). To this end, genetic studies of fish populations play an important rolein the sustenance of genetic diversity (Seeb et al., 2007). Genetic markers canprovide valuable information about geographic structuring, gene flow anddemographic history of populations that can be highly relevant for conservationand management purposes (Maes and Volckaert, 2007).

Water quality tolerance of catfish is diverse due toenvironmental changes. The warmer the water, the less the dissolved oxygenlikewise, the greater the altitude, the less the dissolves oxygen, causingsevere cases and death aquatic organisms including catfish. According toF.A.O., (2003), water quality requirement for catfish are as follows;temperature – 26 to 32oC, dissolved oxygen – 3 to 10 mg/l or > 3ppm, pH – 6to 8, Alkalinity – 50 to 250 mg/l, Ammonia – 0 to 0.03% and Nitrite – 0 to0.6mg/l. It also reported that for advanced fry, the requirement are asfollows; dissolved oxygen – 3-5ppm, temperature – 30oC, ammonia – 0.1 to1.0ppm, nitrite – 0.5ppm, nitrate – 100ppm, pH – 6 to 9, carbon dioxide – 6 to15ppm and salinity – 10 to 16ppt.

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