Identification of Two Channel Catfish Stocks, *Ictalurus punctatus*, Cultivated in Northeast Mexico

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Abstract

The channel catfish farming in Mexico began in the 1970s. One of the most important areas of production is its northeastern region. Traditionally, the channel catfish farmers have attempted to preserve their original genetic stock. After more than 30 years of production, the genetic relationship between stocks has not been assessed. The goal of this study was to evaluate the genetic differentiation between five channel catfish farm populations, using 13 microsatellite markers. A total of 154 fin clip samples were collected from five channel catfish farms in Tamaulipas. We also included 31 individuals of the commercial strain NWAC103. In each population, we calculated parameter of genetic variability: inbreeding coefficient (FIS), pairwise differentiation (FST) and genetic distance (DC). For the inference of populations and individual assignment two Bayesian methods were used. Genetic variability parameters were NA= 9.54 to 11.08 and AE=5.40 to 6.67. Hardy-Weinberg equilibrium deviations were observed for all farm populations examined, and a deficit of heterozygotes was found. Signals of inbreeding were observed, particularly for the ACU hatchery. Populations EKA and ACU showed higher genetic differentiation values with respect to the commercial strain (FST=0.107; FST=0.082, respectively). Moderated genetic differences (FST=0.067; DC=0.080) were observed between the EKA and ACU. Clustering analysis revealed a well-defined group between EKA and TPA. In the Bayesian analysis three groups were defined. The first group was formed by EKA and TPA, the second group included ACU, LAJ and PRO. In the third group was the commercial strain. In the assignment of individuals, EKA and ACU were represented by exclusive genotypes. Identification of two genetic stocks, one located in the EKA and the other in the ACU population, will be relevant for future management of these hatcheries. Additionally, Page 2 of 36 Journal of the World Aquaculture Society Journal of the World Aquaculture Society For Peer Review the information from microsatellites and the statistical procedures 25 presented will be important tools for genetic monitoring of these farm populations.