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Genetic Diversity of Common Carp Cyprinus carpio L. Strains Maintained in Lithuania

Modern investigations into genetic diversity of common carp, *Cyprinus carpio* L. strains maintained in Lithuania started only recently. In total 43 fin clips from alive old carp reproductors representing 5 different strains, as well as 4 hybrid lines, kept in Šilavotas carp farm were collected in 2020. Initially, genetic diversity was evaluated based on sequencing of mtDNA D-loop of selected 20 specimens and genotyping of all 43 carp individuals using 11 DNA microsatellite loci. Newly created and tested primer pair Carp_F1/Carp_R1 for carp mtDNA targeting D-loop enabled amplification of ~900 bp fragments. Obtained DNA sequences that represented all 5 carp strains (Bubiai, Šilavotas, Germanian, Hungarian and Ukrainian) maintained in Šilavotas carp farm had identical mtDNA D-loop haplotype. Based on microsatellite data analysis, representatives of carp strains and hybrid lines introduced into Šilavotas carp farm at different periods of the second half of the 20th century (originating from Germany, Hungary, Czechoslovakia, Ukraine) possessed 3-6 private alleles unique to each carp strain and hybrid line. Representatives of an old Lithuanian carp strain Bubiai had the higher allelic diversity (37 different alleles) in comparison to the carps attributed to more recently developed Šilavotas strain possessing the lower allelic diversity (28 different alleles). Lithuanian Bubiai carp strain possesses unique allelic and genotypic composition in comparison to all other studied carp strains and hybrid lines indicating Bubiai strain as the most important genetic resource for conservation, maintenance, breeding and applications in selection programs.

Keywords: Cyprinus carpio, carp strains, genetic research, Lithuania

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