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4种鲟鱼养殖亲鱼群体遗传多样性分析

Genetic Diversity of the Reserved Broodstocks in Four Species of Sturgeon

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英文关键词： *Acipenser baerii*　*A.gueldenstaedtii*　*A.ruthenus*　*A.schrenckii*　Reserved broodstock　Mitochondrial control region　Genetic diversity

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中文摘要：

近年鲟鱼人工繁殖技术促进了鲟鱼养殖业的发展,但在选育初期未对后备亲鱼进行遗传背景分析,为了抑制种质资源退化和防止近交衰退,繁育场需要对现有后备亲鱼进行遗传背景分析。本文利用线粒体控制区(D-loop)部分序列对4种养殖鲟鱼后备亲鱼群体(共120个样本)的遗传多样性进行了分析。研究发现不同种鲟鱼D-loop部分序列长度不同(451～469 bp),种间存在1～18 bp的插入/缺失,种内无插入/缺失位点。每个群体至少包含4个单倍型,序列相似性大于98%。不同单倍型间有4～12个简约信息位点,遗传距离0.002～0.024。核苷酸多样性以史氏鲟(*Acipenser schrenckii*)最低(π=0.002),小体鲟(*A.ruthenus*)最高(π=0.010),单倍型多样性则以俄罗斯鲟(*A.gueldenstaedtii*)最低(*H*=0.352),西伯利亚鲟(*A.baerii*)最高(*H*=0.706)。通过分析认为,4种鲟鱼后备亲鱼群体遗传多样性偏低,建议在利用这4种鲟鱼后备亲鱼进行种质保存和繁殖时要充分注意遗传距离及近交繁殖的影响。

英文摘要：

Artificial propagation of Sturgeon has promoted the development of sturgeon aqualture in recent years. However, the genetic relationship among reserved broodstocks has not been analyzed. In order to avoid the degradation of germplasm resources and prevent inbreeding despression, the genetic background of reserved broodstocks should be investigated. In this research, partial sequence of mitochondrial control region (D-loop) was used to examine the genetic diversity of reserved broodstocks in four species of sturgeon. Different length of D-loop sequences between 451-469 bp were obtained from a total of 120 samples. There were 1-18 bp interspecific indels, while no intraspecific indels were detected. Each group contained at least four haplotypes which had greater than 98% sequence similarity. There were 4-12 pasimony informative sites between different haplotypes and genetic distance among intraspecific haplotypes varied from 0.002-0.024. The highest nucleotide diversity was presented in Sterlet (*Acipenser ruthenus*) (π=0.010) while the lowest was in Amur Sturgeon (*A.schrenckii*) (π=0.002). The highest haplotype diversity was showed in Siberian Sturgeon (*A.baerii*) (*H*=0.706) while the lowest was in Russian Sturgeon (*A.gueldenstaedtii*) (*H*=0.352). These results indicate that there is a low genetic diversity in the four reserved broodstocks and that inbreeding impact and genetic distance should be seriously considered in the fry production and germplasm conservation of the four species of sturgeon.

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