

Progress report on genetic study of *Lampsilis higginsii*

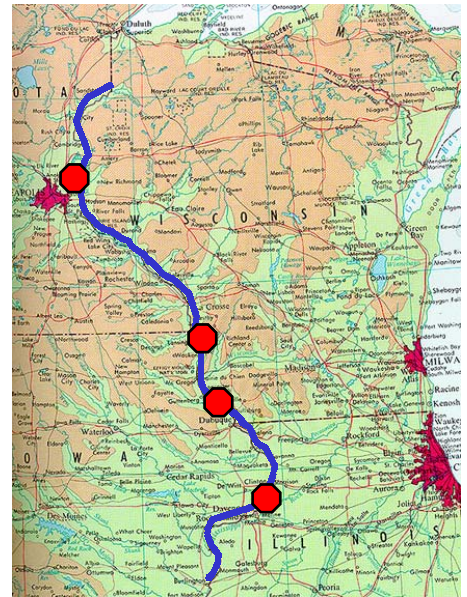
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Genetic studies are contributing important information to aid recovery of Higgins Eye, a Federally Endangered species of freshwater mussel.

Existing populations are in immediate threat of extinction due to zebra mussel infestations. The relocation plan includes provisions for moving animals to areas where the zebra mussel does not yet occur and for rearing juveniles in hatcheries. It is necessary to determine whether populations in the Mississippi River and its tributaries are genetically distinct and should be managed separately or whether the populations are genetically similar and translocations are justified. Information from genetic studies is also important when determining the number of individuals to be used in relocation and propagation programs.



We sampled 30 mussels from each of 4 locations (red dots) along the St. Croix and Mississippi rivers. We extracted DNA and used 3 mitochondrial genes as our index of genetic variation.

We found several different types of mitochondrial DNA (mtDNA) in *L. higginsii* (see chart, left). We have analyzed all individuals from the Mississippi and St. Croix Rivers.

In *L. higginsii*, each sampling location contained several different types of mtDNA and most forms were found in several localities.

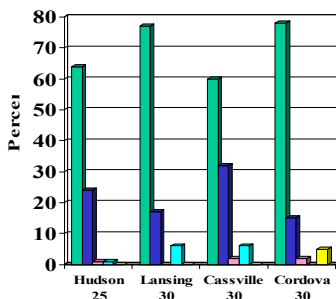
Endangered *L. higginsii* has a high level of genetic variation compared to other Endangered Species.

Some individuals identified as *L. higginsii* had the mtDNA characteristic of the common species, *L. siliquoides*.

Based on mitochondrial DNA, *Lampsilis higginsii* does not contain genetically distinct populations in the portions of the St. Croix and Mississippi rivers that were studied.

As many individuals as possible should be collected for translocation and propagation to preserve the high level of genetic variation present.

mtDNA forms (haplotypes)



Types A (green), B (dark blue), and C (pink) are found only in *L. higginsii*.

Type S (aqua) is found in *L. higginsii* and is the same as that found in *L. siliquoides*.

Type X (yellow) is found in *L. higginsii* and is the same as an unknown species.