HOST FISHES FOR FOUR FEDERALLY ENDANGERED FRESHWATER MUSSELS (UNIONIDAE) IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT BASIN

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ABSTRACT

We determined host use and glochidial metamorphosis success of four federally endangered mussel species from the Apalachicola-Chattahoochee-Flint River Basin. Fishes of 19-27 species in a total of 14 families were tested as potential hosts for each mussel species. Metamorphosis of *Pleurobema pyriforme* was observed only on six minnow species (Cyprinidae): *Cyprinella venusta, Nocomis leptocephalus, Notropis amplamala, N. lutipinnis, Pimephales promelas* and *Semotilus atromaculatus*, and metamorphosis success was >27% for all six species. Metamorphosis of *Medionidus penicillatus* was observed only on four darter species (Percidae): *Etheostoma inscriptum, E. swaini, Percina crypta,* and *P. nigrofasciata*, but metamorphosis success varied among species and was highest on *E. inscriptum* (40%) and *P. nigrofasciata* (39%). Metamorphosis of *Hamiota subangulata* was observed only on three species of black basses (Centrarchidae): *Micropterus cataractae, M. coosae,* and *M. salmoides*, and metamorphosis success was >78% on all three species. Metamorphosis of *Amblema neislerii* was observed on 23 species in seven families, indicating that this species is a host generalist, but metamorphosis success varied widely among species. These data augment existing host information for these species and provide a clearer picture of host breadth and the relative suitability of host species.

KEY WORDS *Amblema neislerii, Pleurobema pyriforme, Hamiota subangulata, Medionidus penicillatus,* life history, glochidia

MITOCHONDRIAL DNA VARIATION IN THE EASTERN PONDMUSSEL, *LIGUMIA NASUTA* (BIVALVIA: UNIONOIDA), IN THE GREAT LAKES REGION

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ABSTRACT

Most freshwater mussel species in the Great Lakes colonized the region from the Mississippi River basin and few appear to have colonized from Atlantic coast rivers. The Eastern Pondmussel, *Ligumia nasuta*, is widespread along the Atlantic coast but occurs elsewhere only in the Great Lakes, suggesting that it is one of the few Great Lakes species of Atlantic origin. Great Lakes populations are now imperiled following invasion of the lakes by dreissenid mussels. We examined patterns of diversity in the mitochondrial CO1 and ND1 genes in *L. nasuta* populations in the Great Lakes and in Atlantic coast rivers. Genetic diversity was low in Great Lakes populations and included only one CO1 and two ND1 haplotypes, all of which were also found in Atlantic coast populations. Genetic diversity was higher in Atlantic coast populations and included four CO1 and six ND1 haplotypes. Pairwise Φ_{ST} revealed significant genetic differentiation for both genes between Atlantic coast and Great Lakes populations but not within Great Lakes populations. These results suggest that all populations of *L. nasuta* in the Great Lakes are derived from a single, small founder group that colonized from an Atlantic coast river. As such, Great Lakes populations may be considered a single management unit and conservation efforts based on propagation or translocation should be limited to use of Great Lakes source stock to prevent introduction of non-native haplotypes.

KEY WORDS Endangered mussels, genetic variation, Laurentian Great Lakes, phylogeography, glaciation, Atlantic coast