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### Authors

Peck, Andrew  
McIntyre, Heidi ,  
Farris, Jerry  
et al.

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## **HABITAT RESTORATION PLAN AND PROGRAMMATIC BIOLOGICAL ASSESSMENT FOR *POTAMILUS CAPAX* (GREEN 1832) IN ARKANSAS**

**Andrew Peck** (Phone: 870-972-3082, Email: [andrew.peck@smail.astate.edu](mailto:andrew.peck@smail.astate.edu)), Environmental Sciences Program, Arkansas State University, Jonesboro, AR 72467

**Heidi McIntyre, Jerry Farris, Alan D. Christian**, Department of Biological Sciences, Arkansas State University, Jonesboro, AR 72467

**John Harris**, Arkansas State Highway and Transportation Department, Environmental Division, Little Rock, AR 72203

**Randal Looney**, Federal Highway Administration, Arkansas Division, Little Rock, AR 72201

### **Abstract**

The fat pocketbook, *Potamilus capax* (*Mollusca: Unionidae*), was designated as “Endangered” in June 1976 by the USFWS in the entire range of the species. The present general distribution of *P. capax* has been reported from the upper Mississippi River on the borders of Minnesota, Wisconsin, Iowa, Illinois, and Missouri, the Ohio River System on the borders of Indiana, Illinois, and Kentucky, especially its tributary the Wabash River in Indiana and Illinois, the White River of Missouri and Arkansas, and the St. Francis River system in Arkansas. Relocation of freshwater mussels prior to large-scale bridge construction, repair, or replacement has been broadly utilized for conventional management of construction impact. The success of that practice related to long-term viability of relocated specimens, however, has not been fully validated. This research was jointly funded by the Federal Highway Administration (FHWA) and the Arkansas State Highway and Transportation Department (AHTD) in 2003 as an Environmental Streamlining Initiative to provide more information regarding the likelihood of specific impacts to mussels attributed to sediment plumes downstream of highway construction activities. The research proposes to support a programmatic Biological Opinion for *P. capax*, which will provide a protocol for highway projects that may impact the species. Relocation can then be assessed for its ability to minimize loss of endangered freshwater mussel species, and in particular, *P. capax*.

The objectives of this project are: 1) to determine the success of relocation efforts for *P. capax* associated with highway construction projects by investigating survival, movements, mortality, fitness (as indicated by condition factor), and fecundity of relocated and non-relocated adults and sub-adults, 2) to determine the success of propagation efforts resulting from highway construction projects by investigating the survival of juveniles returned to identified habitats and used for population enhancement (recruitment), and 3) to determine relative impacts at highway construction sites to *P. capax* and associated mussel assemblage by comparing pre- and post-construction abundance and composition, sediment deposition downstream of the construction, and individual mussel fitness. Data acquired will be submitted to the Fish and Wildlife Service as documentation of the likelihood of impacts for the programmatic Biological Assessment. These data will be utilized by the Fish and Wildlife Service in crafting the programmatic Biological Opinion.

Initial observations have indicated relocated *P. capax* and *Quadrula quadrula* exhibit very different movement patterns post-relocation. For example, many resident and relocated *P. capax* are capable of moving 10 miles or more over a 12-hour period, while resident and relocated *Q. quadrula* have remained stationary up to four months after relocation. A continuation of this pattern may reveal that species-specific life history characteristics potentially influence movement patterns following relocation. Fatalities have occurred in the resident, relocated, and propagation animals of both species, though time to and cause of fatality are not known.