

## Partnerships for Ohio River Mussels

by Richard Neves

At the turn of the century, the Ohio River basin was home to 127 of the 297 freshwater mussel species native to North America. Since that time, however, human changes in the environment have taken their toll; 11 mussel species are extinct, and 46 others are classified as endangered or species of concern. Now there is a new threat to these already distressed mollusks--the zebra mussel. The spread of this non-native species, the worst pest to invade the waterways of North America, puts native mussels in the entire Ohio River at great risk. The lower Ohio River downstream of Louisville, Kentucky, already is heavily infested. Zebra mussels severely encrust most native mussels in this area.



**FANSHELL MUSSEL: federally endangered but still present in Ohio River system.**

Among the approximately 35 native mussels in the lower Ohio River are 5 endangered species: the pink mucket (*Lampsilis abrupta*), orangefoot pimpleback (*Plethobasus cooperianus*), fat pocketbook (*Potamilus capax*), clubshell (*Pleurobema curtum*), and fanshell (*Cyprogenia stegaria*). The Fish and Wildlife Service's (FWS) Ohio River Valley Ecosystem Team has identified mussels as one of its highest resource priorities. A subgroup of the team helped create new partnerships in 1995 among the FWS, nine States, and numerous private cooperators, and developed a plan that identifies immediate and long-term actions needed to achieve mussel conservation goals.

Members of the ecosystem team conducted field work at eight Ohio River sites in 1995. Zebra mussel densities ranged from 4 per square meter (1.2 square yard) at the upstream station to almost 4,000 per square meter at downstream sites. Mortality of native mussels was as high as 73 percent. The prognosis is for continued high mortality in 1996 and 1997 if zebra mussel densities continue at current levels.

A group of concerned State and Federal biologists began a mussel salvage operation in the summer of 1995. With support from West Virginia, Kentucky, and Ohio, and assistance from the FWS and National Biological Service (NBS), two teams of State and Federal divers led by Janet Clayton (West Virginia Department of Natural Resources) and Patty Morrison (Ohio River Islands National Wildlife Refuge) began collecting animals from the West Virginia portion of the Ohio River, where zebra mussel densities are now low. They collected about 3,000 native mussels of numerous species, including one pink mucket, and brought them ashore to an assembly line of biologists and volunteers participating in the rescue effort. The mussels were scrubbed to remove zebra mussels and debris, marked with numbered tags, measured and logged into the record book, and transported to a quarantine facility at the refuge. Refuge personnel volunteered space in a barn for large tanks where the mussels were monitored for 30 days to be sure they were free of zebra mussels. Following quarantine, the 3,000 native mussels were transported to two locations in West Virginia: the NBS Leetown Science Center and the White Sulphur Springs National Fish

## Hatchery.

Those being held in 4 ponds at Leetown are part of a cooperative NBS-funded research project involving Virginia Tech (Drs. Bruce Parker and Richard Neves) and NBS staff. Ph.D. student Catherine Gatenby from Virginia Tech, who coordinated and supervised all phases of the collection and quarantine program, will evaluate the survival and growth of these mussels. They are being held in suspended pocket nets, used in the Japanese pearl culture industry, and in cafeteria-style glass racks on the pond bottom. Previous studies by the Virginia Cooperative Fish and Wildlife Research Unit at Virginia Tech confirmed the suitability of ponds for holding riverine mussels. Another objective of the research is to determine whether these mussels will spawn and produce juvenile mussels for the recovery of species that are vulnerable to zebra mussels. The third objective of Gatenby's research will be to develop suitable algal diets for rearing juvenile mussels in captivity. NBS biologists at Leetown are monitoring the condition of these animals, and survival has been greater than 95 percent.

The native mussels being held at White Sulphur Springs also will be monitored for reproductive success. Part of the research is an experimental project that involves using the host fish that mussel larvae parasitize to produce metamorphosed juveniles, which will be raised in outdoor facilities. The mussels are being held in glass racks at the bottom of a fenced pond. This research will not effect trout production at the hatchery.

During the summer of 1995, Kari Duncan, Acting Hatchery Manager at White Sulphur Springs, recruited another partner into this cooperative research effort. Chi Chi's Restaurants, Inc., has donated surplus glassware storage racks to the cause. Racks that once held margarita glasses are now serving as condominiums for pink heelsplitters and elephant ear mussels. Dr. Parker also has secured the assistance of the Martek BioSciences Corporation in Columbia, Maryland, and Omega Tech of Boulder, Colorado, to donate algal species for testing as possible food for the native mussels. In addition to these corporate sponsors, many volunteers of all ages have assisted with the collection, quarantine, and transportation of native mussels to their new homes in the West Virginia ponds.

The freshwater mussel subgroup also has focused on public education to highlight the value of Ohio River resources that could be lost, not only from zebra mussels but other impacts to the river basin. With an outreach plan in preparation, the team has funded a native mussel display at an Ohio museum, has initiated conservation lectures to groups throughout the Ohio River basin, and is planning a zebra mussel fact sheet for boaters. Without an ecosystem approach to resource management in the Ohio River basin, most of these initiatives and partnerships would not have been possible. This project exemplifies the cooperative spirit that can be mustered for wildlife conservation, even for invertebrates like freshwater mussels.

---

Dr. Neves is Chief of the Virginia Cooperative Fish and Wildlife Research Unit at Virginia Tech University in Blacksburg, Virginia.

---



[E-Mail Us!](#)

Phone: 612/713-5360  
V/TTY: 800-657-3775

[Disclaimer](#)

[Region 3 Endangered Species Home Page](#)  
[National Endangered Species Home Page](#)  
[Region 3 Home Page](#) [USFWS Home Page](#)

U.S. Fish and Wildlife Service  
Division of Endangered Species  
BHW Federal Building

1 Federal Drive  
Fort Snelling, Minnesota 55111-4056