



US Army Corps  
of Engineers  
Waterways Experiment  
Station

# Zebra Mussel Research

## Technical Notes

Section 3 — Control Strategies

Technical Note ZMR-3-16

August 1993

### A Proactive Zebra Mussel Infestation Impact Reduction Strategy

- Background and purpose** The U.S. Army Engineer District, Nashville, operates facilities within the Cumberland and Tennessee River systems, such as hydropower plants and navigation locks, that could be operationally impaired if infested with *Dreissena polymorpha*. The District responded proactively with a zebra mussel infestation impact reduction strategy. This strategy sets forth a logical and progressive sequence of actions to counter this rapidly spreading aquatic nuisance species.
- Additional information** This technical note was written by Mr. Richard Tippit, Nashville District. For additional information, contact Mr. Tippit, (615) 736-2020. Dr. Ed Theriot, WES, (601) 634-2678, is Manager of the Zebra Mussel Research Program.
- Approach** The Nashville District implemented a proactive zebra mussel infestation reduction strategy consisting of six steps:
- **Organize an interdisciplinary zebra mussel committee.** An effectively chaired and properly staffed committee can open lines of communication within an organization, ensure that proper expertise is available for problem solving, document accountability for promised actions, and inform management of developments.
  - **Evaluate water quality parameters in light of zebra mussel environmental tolerances to determine levels of susceptibility of given facilities.** Nashville District evaluated its reservoir water quality database in light of cited environmental tolerances for *Dreissena polymorpha*. Among the parameters analyzed were dissolved oxygen, water temperature, calcium levels, and pH. Facilities were rated according to susceptibility, and this information was used to rank funding requirements for the design and implementation of zebra mussel control measures.
  - **Establish a zebra mussel monitoring/detection program.** Settlement plates were placed in the forebays of all Nashville District hydropower facilities. In addition, sidestream aquaria mounted on critical raw water lines inside hydropower plants are monitored for zebra mussels.

- **Identify facility components at risk of infestation, and develop short- and long-term control strategies. In addition, rank system components for which controls are needed.** A thorough inventory of facility components is essential to determining the magnitude of potential problems, and aids in identifying appropriate zebra mussel control strategies. Ranking the susceptibility of components focuses attention on systems that are particularly critical to facility operation, if impaired. This step is essential if installation and activation of controls seems likely, and will facilitate National Environmental Policy Act (NEPA) review, if needed, as well as the process of obtaining discharge permits.
- **Coordinate and prepare necessary environmental documentation and request permits.** The purpose of this step is to carry out zebra mussel control program review under the NEPA. This is required if Federal monies are expended for controls. NEPA documents generated (Environmental Assessment or Environmental Impact Statement) and the data developed during the overall process will assist in obtaining permits, such as NPDES. Several months may be required to accomplish NEPA review and obtain discharge permits. This is important to consider, since problem infestations can develop at facilities in a relatively short time. For more information on the NEPA process in a zebra mussel control program, refer to Technical Notes ZMR-1-05 and ZMR-1-10.
- **Design and implement controls.** This step can proceed smoothly, with little or no delay, if earlier steps in this process have been carried out.

**Conclusions** Following through with Steps 1-4 will place an agency, utility, or other entity concerned with zebra mussels in an advantageous position to deal with nuisance occurrences. Steps 1 through 4 can be accomplished with relatively little expense and should be performed if the occurrence of zebra mussels is a concern. The final two steps could require commitment of considerable monetary and labor resources. However, if based on sound decisions derived from earlier considerations, the actions in Steps 5 and 6 will be much easier to justify and implement, and will result in cost-effective zebra mussel control programs.