US Army Corps
of Engineers
Waterways Experiment
Station

Zebra Mussel Research Technical Notes

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Environmental Effects of Zebra Mussels: Riverine Studies Initiated in 1991 and 1992

Background

R. M. Sinclair's prediction that zebra mussels would eventually reach waterways of the United States (Sinclair 1971) has come to pass; as of the early spring of 1992 zebra mussels have been collected in the Mississippi, Illinois, Ohio, Tennessee, Cumberland, and Hudson Rivers (see *Dreissena polymorpha* Information Review, Vol 2, No. 6). Scientists at the U.S. Army Engineer Waterways Experiment Station (WES), in conjunction with researchers from the University of Southern Mississippi (USM), the Illinois Natural History Survey, the U.S. Fish and Wildlife Service, and Columbia-Greene Community College in Hudson, New York, are collecting data on invertebrates from selected large rivers as part of a program to develop environmentally sound methods and strategies to control zebra mussels. These studies have been designed to evaluate the effects of zebra mussel infestations on native biota, as well as provide a basis for evaluating environmental effects of specific control methods. Funds from this research come from the St. Louis District of the U.S. Army Corps of Engineers; Headquarters, U.S. Army Corps of Engineers; and the U.S. Environmental Protection Agency.

Additional information

This technical note was written by Dr. David C. Beckett, USM, Hattiesburg, MS, and Dr. Andrew C. Miller (WES). For more information, contact Dr. Miller, (601) 634-2141. Dr. Ed A. Theriot, WES, (601) 634-2678, is Manager of the Zebra Mussel Research Program.

Research plans

In the summer of 1991 and 1992, researchers from USM and WES investigated invertebrate communities in the upper Mississippi River habitats that are most likely to be colonized by zebra mussels. Performed in conjunction with yearly studies of native mussel beds by personnel from WES and divers from the Tennessee Valley Authority (see *Dreissena polymorpha* Information Review, Vol 2, No. 3), researchers determined epizoic invertebrate composition and densities on unionid mussels, as well as invertebrate composition and densities on the rocks of wing dams and on macrophytes in backwaters. Bottom samples from the main channel borders and backwaters were also taken. Researchers from USM, the U.S. Fish and Wildlife Service at La Crosse, Wisconsin, and WES also sampled the invertebrate communities on navigation buoys in Pools 3, 9, and 10 in the upper Mississippi River in the autumn of 1991. In coopera-

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tion with the U.S. Coast Guard, these studies will be expanded in 1992 and beyond. Yearly sampling of these buoys and analysis of the invertebrate communities will serve as an early warning of zebra mussels in specific river reaches, as a quantitative estimation of the change in magnitude of the zebra mussel invasion with time, and as an assessment of the changes in the native invertebrate community resulting from competition with zebra mussels for food and space.

Preliminary studies at selected sites in the Hudson River near Hudson, New York, were initiated with personnel from Columbia Green Community College in 1991. Studies in the Hudson River will be expanded in 1993.

Zebra mussels have had considerable effect on the native biota in Lake St. Clair and Lake Erie, the sites of their heaviest North American infestations. Their proclivity to colonize unionid mussels has had devastating effects on native species (Mackie 1991). Baseline data from large river systems, which function much differently from lacustrine habitats, can be used to ensure that zebra mussel control methods do not negatively affect native biota. In addition, this information will assist resource mangers in dealing effectively with possible alterations to aquatic habitats, ecological processes, and changes in native biota.

References

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