



US Army Corps
of Engineers
Waterways Experiment
Station

Zebra Mussel Research

Technical Notes

Section 3 — Control Strategies

Technical Note ZMR-3-01

Controlling Zebra Mussel Infestations on Flap Gates Associated with Drainage Structures

- Background and purpose** This technical note presents strategies for controlling zebra mussel infestations in flap gates associated with drainage structures.
- Flap gates are installed at the downstream end of a pipe that discharges into a river, lake, or other drainage way. The flap gate allows for drainage during moderate or low water. During high water in the receiving river or reservoir, the flap gate remains shut so that trash, debris, and raw water do not enter the pipe. Often the discharge line and outlet are below normal water levels and therefore difficult to inspect. If the flap gate becomes fouled with zebra mussels when closed, it may not open when needed so that interior land does not drain properly. Alternatively, if the gate becomes fouled with zebra mussels and associated debris so that it does not close, flood waters will enter protected areas at high river stages.
- Additional information** Contact the authors of this technical note, Dr. Andrew C. Miller, U.S. Army Engineer Waterways Experiment Station (WES), (601) 634-2141, Dr. John Ingram, WES, (601) 634-3048, or Mr. Tim Race, U.S. Army Construction Engineering Research Laboratory, (217) 373-6769, for additional information. Dr. Ed A. Theriot, WES, (601) 634-2678, is Manager of the Zebra Mussel Research Program.
- Inspections** Because of the likelihood of zebra mussel infestations in waterbodies in the northeastern and central United States in 1992 or 1993, personnel should inspect flap gates carefully at least once a year when water temperature is greater than 12° C (54° F). Examine the outer portion of the gate, the hinges, and the downstream end of the pipe. If not observed in these areas, zebra mussels are unlikely to exist farther up the pipe. If the flap gate is underwater or in an area difficult to inspect, attach a section of polyvinyl chloride (PVC) pipe or plate (an appropriate test substrate) or a concrete or ceramic tile to a nylon rope or cable in a protected area near the flap gate. Zebra mussels will attach to the test substrate which can be easily pulled out of the water and inspected.
- Recommended strategies** Once found, zebra mussels can be removed from the flap gate and adjacent piping with high-pressure water, wire brushes, scrapers, or by other physical means. Surfaces can be coated with nontoxic foul-release paint with a slick surface that zebra mussels do not remain attached to during high flow. Alternatively, copper or cuprous oxide containing toxic antifouling paints could be applied.

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