



US Army Corps
of Engineers
Waterways Experiment
Station

Zebra Mussel Research

Technical Notes

Section 3 — Control Strategies

Technical Note ZMR-3-03

Control of Zebra Mussel Infestations on Floating Plant of the Buffalo District of the Corps of Engineers

Background In summer 1988, zebra mussels were first observed on two tugs and derrick boats operating in Lakes Erie and Ontario. Diver inspection of a severely infested tug revealed that the underwater portion of the hull was almost completely covered with a 13- to 25-mm (0.5- to 1-in.) layer of mussels. Individuals were bysally bound to the hull and then to one another. The sea chest screens were covered so thickly that divers were able to locate them only after compressed air was blown through the sea chest from inside the tug.

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Concerns Mussels on the sea chest screens can interrupt the intake of raw water necessary to cool engines and other machinery. Mussels can clog internal piping systems, including the fire protection system. Infestations can reduce efficiency of operation and increase fuel consumption. One infested tug gained 0.77 m/sec (1.5 knots) during transit to dry-dock after zebra mussels were partially scraped off the hull during passage through ice.

Remedial actions taken Tug hulls in the Buffalo District coated with mussels were cleaned during dry-docking. Sandblasting was inefficient because shells quickly shredded, exposing soft tissues that absorbed the sandblast. Hydroblasting was not effective at 3,450 to 4,800 kPa (500 to 700 psi) pressure. Mechanical removal by scraping was the most effective cleaning method. Blasting with CO₂ pellets would have been effective in this case. See Technical Note ZMR-2-04. Operating vessels under ice conditions, a normal operating procedure, can be considered an effective strategy for zebra mussel removal.

**Prophylactic
measures taken**

The hulls of these infested tugs had a five-year-old coating consisting of an epoxy top coat over a zinc-rich inorganic primer. After scraping to remove mussels, the hulls were lightly sandblasted, followed by two coats of epoxy and then two coats of copper-based antifouling paint. Devoe ABC No. 3 was used on one tug and Ameron Amercoat 70ESP was used on another. Inspection of hulls the next fall indicated no mussel infestation had occurred, except in the areas where the keel blocks had prevented application of antifouling paint or where paint had been abraded.

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