Preventing the spread of zebra mussels during fish hatchery stockings
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Zebra mussels (*Dreissena polymorpha*) have spread rapidly since their introduction to the Great Lakes and are now colonizing the inland lakes and reservoirs of Ohio. Their spread appears to be continuing slowly, but surely, primarily through boating traffic between Lake Erie and the inland waters. However, an introduction into one of Ohio’s five state fish hatcheries or the reservoirs which supply them with water could cause zebra mussels to be inoculated into all of the over 100 reservoirs which the state fish hatcheries stock each year.

In our research, methods were developed to prevent such a rapid spread of the zebra mussel by developing a prophylactic chemical treatment to kill veligers that may be present with the fish being stocked. Short term (2-3h) toxicity tests under high stress conditions were conducted, simulating the environment of transporting fish. Fish species tested include fingerling walleye, saugeye (walleye x sauger), hybrid striped bass (striped bass x white bass), largemouth bass, and channel catfish; catchable (7-9") brown trout, rainbow trout and steelhead; and stockable (8-10") muskellunge. D-stage and post-D stage veligers were collected and tested at Stone Laboratory, Lake Erie. Chemicals tested included the lampricide 3-trifluoromethyl-4-nitrophenol (TFM), potassium chloride followed by formalin, and calcium chloride. These chemicals had shown promise with earlier testing on veligers. In addition, tests were conducted using salts as stress reducing agents for the fish.

TFM was found to be extremely toxic to fingerling fish at low (10-15 mg/L) concentrations even in short term exposures and was discarded as a treatment. Calcium chloride likewise caused high fish mortality in the species tested. The 1h KCl (750 mg/L) pretreatment followed by a 2h formalin (20-25 mg/L) treatment continued to prove a reliable treatment with low fish mortality. In addition, the 100 mg/L formalin required for 100% veliger mortality in 2h exposures (without pretreatment) appears to be a possibility for treating the fish stocked at a larger size (trout and muskellunge). This would be extremely useful since it would reduce handling time during and before transport.

The addition of 0.5% NaCl as a stress reducing agent caused a reduction in fish mortality in the species with which it was tested (walleye and saugeye). However, in veliger testing the 0.5% NaCl interfered with the effects of the KCl pretreatment. At 60 mg/L formalin, with 0.5% NaCl and 750 mg/L KCl pretreatment, fewer than 90% of the veligers tested were killed, whereas 20 mg/L formalin without the NaCl killed 100% of the veligers. 750 mg/L KCl used as pretreatments in the other testing appeared to have a stress reducing effect on fish similar to that of 0.5% NaCl for short term exposures.