

Title: Eradicating Zebra Mussels: What Works?

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The invasion of U.S lakes and rivers by the invasive species of zebra mussels called *Dreissena polymorpha* has caused catastrophic harm to the local ecosystem by reproducing and outcompeting native mussel species as well as harm to pipes leading into water sources by binding to surfaces and reproducing to the point that the mussels clog pipes. In addition, recreation areas must be closed due to the sharp shells making areas unusable. In the past, research has focused on individual molluscicides and their eradication of zebra mussels, as well as their effect on native flora and fauna. My research will contrast the effectiveness of four eradication chemicals across four temperatures from 7°C to 22°C. The four chemicals include two EPA certified molluscicides (EarthTec QZ and Zequanox) and two promising new molluscicides (Niclosamide and KCl), which have yet to be approved by the EPA. The questions considered include the following. Which molluscicide is the most effective over all temperatures? How well do the EPA-registered molluscicides compare with non-EPA molluscicides? How does the duration of exposure to the chemical affect the eradication of zebra mussels? How do chemical molluscicides compare to biological molluscicides? Does the number of mussels killed depend on the combination of different durations or temperatures for the four molluscicides? These questions will be analyzed with parametric and nonparametric statistics with post hoc comparisons as needed. Graphical data displays of scatter plots and stratified boxplots will be used to convey the findings. Through an increased understanding of what helps to eradicate zebra mussels, we can prevent the fouling of water resources and the loss of natural ecosystems.