The Effect Of Water Properties On The Reproductive Viability Of Quagga Mussels

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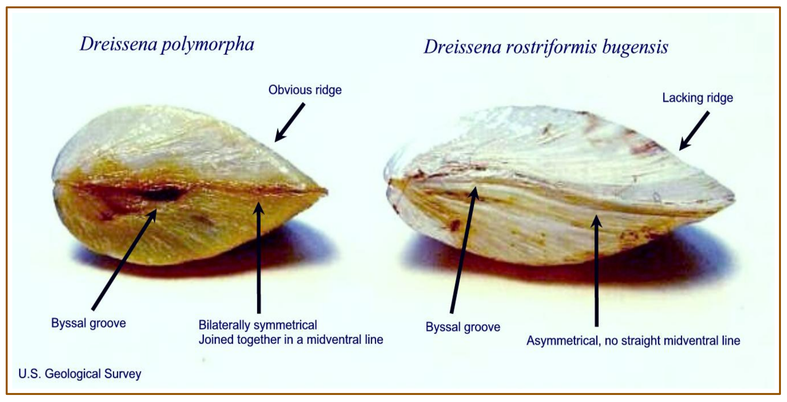
INTRODUCTION

Quagga and Zebra mussels are very concentrated in the Great Lakes region of Michigan, but are also found all over the United States. These mussels are considered pests because they absorb metals, trace elements, and a chemical contaminant in their tissues are passed up the food chain. When these are passed, there is a possibility of fish die offs and fowl botulism. This research was done to grasp a deeper understanding of the Quagga and Zebra Mussel issue in our nation.

RESEARCH QUESTION

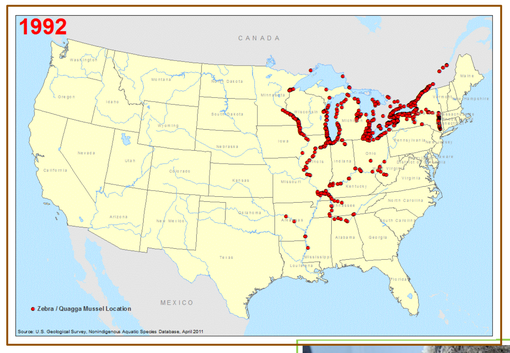
What do Quagga and Zebra Mussels do to their habitats? What are their effects on the environment?



BACKGROUND INFORMATION

The two new invasive species, Quagga (Dreissena bugensis) and Zebra (Dreissena polymorpha) were discovered in California water bodies in 2007 and 2008. Their species cause ecological harm to aquatic habitats and economic problems.

The reason why Quagga and Zebra mussels are so detrimental is because they reproduce very fast and therefore become very concentrated in areas. The mussels then take up space and compete for it with the native species. Quagga and Zebra mussels are filter feeders meaning they filter phytoplankton out of huge volumes of water, so they change the physical and biological properties of the water. Since their is less plankton , a potential effect caused by increased water clarity and therefore increased light penetration, is the growth of aquatic weed infestations. The mussel's wastes significantly lower the oxygen levels, lowering the pH to an acidic level and generate toxic byproducts. The mussels have been paired with outbreaks of botulism poisoning in wild birds. Also, Quagga and Zebra mussels can cause economic harm by clogging pipes and covering infrastructure from boat engines and docks to clam gates and irrigation channels.



DISCUSSION

Quagga and Zebra mussels are invasive species that harm aquatic habitats biologically and economically. These mussels were first discovered in Lake Mead in Nevada on January 6, 2007. In the 80s, they were found very concentrated in the Michigan Great Lake. Zebra Mussels arrived in North America from Europe in the 1980s. These filter feeders move substantial amounts of phytoplankton, zooplankton, and suspended particulates from the water, which reduce the food sources for small plankton and small fish, altering the food web. With the filtering out of suspended particulates and phytoplankton, water clarity increases, allowing sunlight to penetrate the water deeper triggering increases vegetation growth that can affect oxygen levels resulting in fish die offs. These mussels are also known to cause fowl botulism.

In California, there have been some precautions and procedures for detecting these mussels. The California Sea Grant Extension Program and UC Cooperative Extension have compiled a detailed plan for identifying the mussels. It was developed to help direct early detection monitoring efforts for small lakes, reservoirs, and streams in California that are believed to be free of quagga and zebra mussels.

FUTURE RESEARCH

If I was to do any more research, I suppose I would try and collect these mussels and test the water properties. I would test the water properties to find out the optimal reproductive conditions for the mussels.

ACKNOWLEDGEMENTS

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