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**Are zebra mussels really invading? **

In the mid-1980s a new species found its way to North America. The zebra mussel (Dreissena polymorpha), a small, clamlike mollusk that grows to about 25 cm as an adult, was introduced into the waters of the Great Lakes, probably carried in the bilge of a Russian freighter. The zebra mussel can reproduce in less than a year, and a single female can release 1 million eggs each year. In the absence of their natural pathogens, parasites, and predators, the zebra mussel populations in the Great Lakes has grown enormously and are now invading eight major river systems, including the St. Lawrence, Hudson, Mississippi, Ohio, Illinois, Tennessee, Susquehanna, and Arkansas rivers. The mussels are spread from one body of water to another by natural flow, carried on the feathers or feet of migrating waterfowl, or by human transport in bait buckets or on trailered boats. Most of the freshwater systems in North America are now threatened by invasion of the zebra mussel.

The zebra mussels grow in massive colonies, where nearly a half million individuals may grow on each square meter of substrate. These colonies encrust the hulls and rudders of ships, the hinges of lock gates, and block the drains and intake ducts used by industries and power stations. In 1990, for example, Detroit Edison spent over $500,000 to remove zebra mussels from the intake pipes of its power plants.

The zebra mussels also have severe negative effects on the local ecosystem. As filter-feeders, they take in water and filter out algae as food, excreting their waste as sediment. A single individual can filter 1 liter of water each day, and a colony covering 1 square meter of substrate can filter 180 million liters of water per year. Enormous colonies of zebra mussels can reduce the algal populations of lakes and rivers, thus removing a significant portion of the base of the food chain and resulting in a decline in the fish populations. Thus, these mussels are a threat to the local biodiversity.

The tremendous filtering capacity of these organisms may have some positive consequences. Zebra mussels have been a major factor in cleaning Lake Erie after a century of pollution from fertilizers and sewage. After the first 10 years of zebra mussel existence in Lake Erie, light penetration in the water has increased from only a few centimeters to nearly 10 meters. If these organisms could be controlled, they may become a useful tool in the treatment of sewage and pollution. (Adapted from: Bush, Mark B. 1997. Ecology of a Changing Planet. Prentice Hall, Upper Saddle River, N.J.)

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5. Why are zebra mussels a problem in the Great Lakes but not in the lake systems where they came from?
a. the other lakes are too cold for them to reproduce in large amounts
b. they have natural predators in the other lakes
c. they cannot leave these lakes
d. they cannot grow into colonies

6. How might zebra mussels be used to improve lake systems?
a. they can be grown as food for humans
b. they can be used to strengthen dams and levies
c. they clean the water of pollutants
d. they remove algae from the water

7. What do zebra mussels eat?
a. algae b. fish c. insects d. water plants

1. Which of the following best summarizes the author's main point?
a. Zebra mussels are harmful to the great lakes
b. Zebra mussels are harmful to all lakes
c. The importation of zebra mussels should be regulated
d. Many lakes and river systems are polluted

2. Zebra mussels can move from one lake to another by which method?
a. on the feet of birds
b. carried by the wind
c. moving overland for short periods
d. swimming up canal systems

3. Massive colonies of zebra mussels cause problems because:
a. they destroy the engines of boats
b. they block the flow of water through ducts
c. they produce waste that pollutes the water
d. they eat large amounts of fish

4. Which of the following is a consequence of the zebra mussel population in the great lakes
a. cleaner water
b. decline in algae populations
c. decline in fish populations
d. all of these