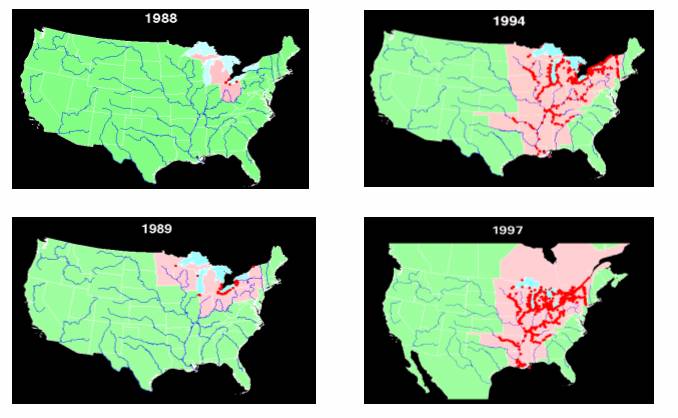
*Zebra Mussels*

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*What:* Zebra Mussels (Dreissena Polymorpha) are freshwater mussels that are native to the Black Sea and Caspian Sea in Eurasia. These creatures are often the size of a fingernail but can grow to a maximum of 2 inches. Zebra mussels usually have a striped pattern that is commonly seen on their shells, although not all have this pattern. Now, more than 230 lakes inhabit zebra mussels.



*Where, When & How:* Zebra mussels were first detected in Lake St Clair in 1988 after being introduced into great lakes from the ballast water of ocean ships which pass through the St Lawrence Seaway. A ship will carry large quantities of ballast water when there is no cargo resulting in water to be discarded in the port when new cargo needs to be loaded. Since then, they have become invasive creatures in North America, Great Britain, Ireland, Spain and Sweden

*Consequences:*

(Blue – social, Green – environmental, Purple – economic)

NEGATIVE:

* Female zebra mussels can produce 100,000 – 500,000 eggs per year and newly born zebra mussels will begin to attach to objects after 2 - 3 weeks.
* Zebra mussels are prone to monotypic colonization and can damage waterways, harbours, ships, power plants and water treatment plants.
* Zebra mussels are destructive to water treatment plants because water intakes bring microscopic free-swimming larvae directly into the facilities and also cling on to underwater pipes and clog them.
* Their shells are extremely sharp and are known for cutting people’s feet.
* Known as filter feeders as they filter plankton from surrounding waters which increase water clarity, thus resulting in an increase in the growth of aquatic vegetation in deeper and denser waters. If there are high numbers of mussels in lakes over a large area, this filter feeding could affect the food chain immensely as it reduces food for larval fish.
* Believed to have been the reason for avian botulism poisoning in the late 1990s as it led to the deaths of thousands of birds due to their capable water filtering which has the tendency to accumulate pollutants and toxins.
* Responsible for the near extinction of various species in the Great Lake system as it out-competes native species for food and grows on native clams and mussels, thus suffocating them.
* Many power plants and water users have been forced to spend millions on the cleaning of zebra mussels from their facilities and equipment.
* Money has been spent on the retrofitting of facilities with devices which monitor and keep zebra mussels out; these costs can then be passed on to consumers.
* The cost of zebra mussel management in the Great Lakes surpasses US$500 million a year according to the Center for Invasive Species Research at the University of California Riverside.

POSITIVE:

* Has helped increase the population and size of the smallmouth bass in Lake Erie and yellow perch in Lake St Clair.
* Cleanses the water in inland lakes which increases the sunlight penetration and growth of native algae in deeper waters.
* Helps increases water visbility filters out pollutants.
* Zebra mussels filter an estimated 0.95 liters of water a day when confined to small tanks.

*Solutions:*

* The USGS is now focused on documenting zebra mussel geographic distributions and to learn as much as possible about its behaviour and biology. By doing this, strategies aimed to contain and control its spread can be made.
* Maintain good boat hygiene by washing boats off with warm, soapy water.
* Discouraging the transportation of water from live wells and bait buckets from one body of water to another.
* Placing various strategies like flushing and toxic constructed piping in power plants.