

Services: Educational Content

Sample Type: English Test

Name: EIKEN

Useage: Primarily in Japan

Available in: English, Japanese and Spanish

EIKEN

Reading Section

Part 3

Zebra Mussels in the Great Lakes

In the 1980s a new species of mussels was discovered in the Great Lakes. Experts identified it as *Dreisseni polymorpha*, the zebra mussel. The species, up to that point, was native only to the Caspian and Black Sea basins in Eurasia. It was well-known for its ability to stick to any hard surface and to clog water pipes because of its small size. Scientists also observed that the mussels could quickly adapt to any habitat. The only explanation of how they got into the United States was determined to be that they attached themselves to freight ships that travel across the Atlantic Ocean. Due to a lack of proper cleaning, these vessels introduced this harmful species to the biggest sweetwater system of the world, which became fully contaminated by it by the early years of the third millenia.

The biggest problem with zebra mussels is that they literally suck the life out of lakes and seas. They do this by filtering the water with an enormous capacity, eating up to 90% of the plankton, which serves as the main food source of fish. But

there is also an indirect way they harm their environment. The water they invade becomes clearer, which allows sunshine to penetrate into greater depths. That, in return, causes aquatic plant life to flourish. When those plants decompose, it burns up oxygen, enabling disease-causing bacteria to thrive. The mussels then suck up those bacteria, so when they are eaten by the few fish species that consume them, they also become infected and, in turn, infect the birds that prey on them. For these reasons, biologists often compare zebra mussels to cancer cells that spread uncontrollably, destroying life wherever they appear.

Zebra mussels have spread across North America and are now found in 25 US states and two Canadian provinces. Though their elimination seems like an impossible task, steps have been taken by the authorities to prevent ships from bringing in more specimens. It is a generally accepted fact that the mussels were introduced when ships discharged their ballast water into the waterways of mainland rivers and lakes. In 1993, the US Coast Guard made it mandatory for ships to get rid of their ballast water before reaching the ports or connecting waterways of the country. However, this regulation did not prove enough because even seemingly empty tanks contained large amounts of tiny organisms. In 2008 the Environmental Protection Agency (EPA) obligated every overseas vessel to clean its ballast tank using chlorine, ozone and UV light regardless of whether it was empty of water or not. The agency is planning to expand this rule to every ship that arrives at the region by 2021.

35. How did the zebra mussels arrive in the United States?

Alternative:

- 1 They were brought in from the Atlantic Ocean by freight ships.
- 2 They were accidentally picked up by vessels in various overseas ports.
- 3 They were carried in by early settlers from Eurasia who lived around the Great Lakes.
- 4 They were released into the mainland rivers together with species that were intentionally introduced.

36. What do we learn about zebra mussels?

- 1 Their habit of eating harmful bacteria has caused the quality of waters of the Great Lakes to improve.
- 2 Due to their small size, they are relatively difficult to be filtered out of water by existing technology.
- 3 Birds of prey have been known to die because of consuming them in large numbers.
- 4 Aquatic habitats have been altered in certain areas because of their tendency to eat up what other species feed on.

37. Why was the US Coast Guard's regulation ineffective?

- 1 It did not address the exact issue that was causing the contamination of mainland waters.
- 2 The implementation of the new law lacked the resources it would have needed to succeed.
- 3 It was not practical to remove all the ballast water from the huge freight ships that came from overseas.
- 4 The pipes used for pumping out the water contaminated with the mussels became clogged very fast.

Answers, analyses and clues:

Zebra Mussels in the Great Lakes

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across the Atlantic Ocean. Due to a lack of proper cleaning, these vessels introduced this harmful species to the biggest sweetwater system of the world, which became fully contaminated by it by the early years of the third millenia.

The biggest problem with zebra mussels is that they literally suck the life out of lakes and seas. They do this by filtering the water with an enormous capacity, eating up to 90% of the plankton, which serves as the main food source of fish. But there is also an indirect way they harm their environment. The water they invade becomes clearer, which allows sunshine to penetrate into greater depths. That, in return, causes aquatic plant life to flourish. When those plants decompose, it burns up oxygen, enabling disease-causing bacteria to thrive. The mussels then suck up those bacteria, so when they are eaten by the few fish species that consume them, they also become infected and, in turn, infect the birds that prey on them. For these reasons, biologists often compare zebra mussels to cancer cells that spread uncontrollably, destroying life wherever they appear.

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Question 35: Answer analysis and clues:

Correct answer: 2

1 They did not come from the Atlantic, but from the Caspian and Black seas.

3. The mussels appeared in the 1980s, so they were not brought by early settlers. Do not get distracted by the word “Eurasia.”
4. There is nothing in the text that indicates that some species were intentionally introduced into the Great Lakes.

Question 36: Answer analysis and clues:

Correct Answer: 4

1. They do eat harmful bacteria, but it does not improve the quality of water. It makes other species who eat the mussels sick.
2. They are, indeed, small, but there is nothing in the text that indicates that authorities tried to filter them out of the lakes with any kind of technology.
3. Birds do not consume the mussels, they consume the fish that eat the mussels.

Question 37: Answer analysis and clues:

Correct Answer: 1

2. The text does not mention the price (=resources) of emptying the ballast tanks.
3. Again, the size of ships is not mentioned as the reason the regulation did not work.
4. The mussels clog pipes, but that’s not a reason for the regulation to be ineffective.