

Skill Check

- ✓ Initiating and Planning
 - Performing and Recording
- ✓ Analyzing and Interpreting
- ✓ Communicating

Materials

- graph paper
- coloured pencils
- access to the Internet

Zebra Mussels and Chlorophyll a in Lake Ontario

Year	Number of Zebra Mussels (per m ²)	Chlorophyll a (µg/L)
1990	0	4.4
1991	230	3.3
1992	500	3.4
1993	800	3.0
1994	1080	3.5
1995	1130	2.3
1996	770	3.6
1997	250	3.5
1998	410	3.3
1999	25	5.6
2000	25	2.8
2001	20	3.3
2002	10	3.6
2003	5	5.9
2004	no data	4.5

Math Skills

Go to **Math Skills Toolkit 3** for information about constructing a graph.



Zebra Mussels in Lake Ontario

Zebra mussels feed on phytoplankton, which are microscopic producers in aquatic ecosystems. The presence and productivity of phytoplankton are often inferred from the amount of chlorophyll a in the water. The table below contains data on the population of zebra mussels and the concentration of chlorophyll a in Lake Ontario from 1990 to 2004.

Question

How do zebra mussels affect the biotic and abiotic conditions in an aquatic ecosystem?

Prediction

Preview the data in the table, and make a prediction about the relationship between the two variables.

Organize the Data

Graph both sets of data on the same graph. Be sure to include a key to indicate what each data line represents.

Analyze and Interpret

1. Explain the relationship between changes in zebra mussel numbers and the concentration of chlorophyll a.
2. Infer how zebra mussels change the biotic conditions in an aquatic ecosystem. How could the changes affect the biodiversity of the ecosystem?
3. When the number of phytoplankton in water decreases, the clarity of the water increases. Light can penetrate deeper into the water as a result. How might this change to abiotic conditions in an aquatic ecosystem affect the biodiversity of the ecosystem?

Conclude and Communicate

4. Summarize your results in one paragraph.

Extend Your Inquiry and Research Skills

5. **Research** In 2006, Transport Canada implemented the Ballast Water Control and Management Regulations. Find out more about these regulations. Explain how the regulations are an example of different countries and government agencies working together to protect an ecosystem.

