

Pond Under Pressure

Trace how human actions and changing conditions reshape a wetland ecosystem.

LS.9 "The student will investigate and understand that relationships exist between ecosystem dynamics and human activity. Key ideas include changes in habitat can disturb populations; disruptions in ecosystems can change species competition..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each human activity or changed factor. Number the sentences that tell what happens to a population or to competition, so you can trace cause-and-effect relationships.

Changes at Willow Pond

- ① At Willow Pond, a shallow wetland beside a growing neighborhood, spring rains once filled cattail edges where chorus frogs laid eggs. Builders cleared shrubs and packed soil for new parking lots. During storms, water now rushes off the pavement into the pond instead of soaking into the ground. The pond's water level rises quickly, then drops during dry weeks. Fewer sheltered, shallow pools remain for frog eggs and tadpoles. A habitat change can disturb a population even when the animals themselves are not directly removed.
- ② Fertilizer washed from lawns also carries nitrogen and phosphorus into the water. These nutrients help algae grow into a thick green layer. The algae blocks sunlight from underwater plants, so many plants die. Snails that eat algae increase, while insects that used the plants for food and hiding places decrease. As food becomes limited, young fish and tadpoles compete more for the remaining insects. The disruption changes competition because organisms no longer have the same resources or spaces to use.
- ③ Winter road salt adds another pressure. Meltwater carrying salt can raise the pond's salinity, an abiotic factor. Frog eggs and tadpoles are sensitive to salty water, and fewer may survive. Salt can also affect tiny aquatic organisms that fish eat, changing the food web. The pond is shaped by biotic factors, such as algae, plants, snails, fish, and frogs, and abiotic factors, such as water level, sunlight, nutrients, and salinity. Reducing polluted runoff and leaving planted buffer strips can help stabilize habitat conditions.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How did parking-lot construction change the pond's breeding habitat for frogs?

2 Explain how fertilizer from lawns eventually caused young fish and tadpoles to compete more.

3 How could road salt affect both the frog population and the food available to fish?

4 Name one biotic factor and one abiotic factor from the passage. Explain how a change in each can affect pond organisms.

3 YOUR TURN _____ Your own words

Choose a different ecosystem. Write exactly three sentences that name a human activity, describe a habitat or abiotic change, and predict changes to two populations, including one change in competition.

PART 1 • READ AND MARK

Underline each human activity or changed factor. Number the sentences that tell what happens to a population or to competition, so you can trace cause-and-effect relationships. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How did parking-lot construction change the pond's breeding habitat for frogs?	Clearing shrubs and packing soil caused runoff and changing water levels. Fewer sheltered, shallow pools remained for frog eggs and tadpoles.
2	Explain how fertilizer from lawns eventually caused young fish and tadpoles to compete more.	Fertilizer nutrients caused algae to grow. Algae blocked sunlight, underwater plants died, and insects decreased. With fewer insects available, young fish and tadpoles competed more for food.
3	How could road salt affect both the frog population and the food available to fish?	Salt raises salinity, which can lower survival of frog eggs and tadpoles. It can also affect tiny aquatic organisms that fish eat, changing fish food availability.
4	Name one biotic factor and one abiotic factor from the passage. Explain how a change in each can affect pond organisms.	A biotic factor is algae. More algae can block sunlight and cause underwater plants to die. An abiotic factor is salinity, and higher salinity can reduce survival of frog eggs and tadpoles.

PART 3 • YOUR TURN (SAMPLE ANSWER)

In a forest stream, cutting trees beside the bank removes shade and warms the water. Cold-water trout may decrease, while algae may increase because more sunlight reaches the stream. As algae spreads, it can compete with stream plants for nutrients and space.

Accept any accurate three-sentence ecosystem scenario that includes a human activity, a habitat or abiotic change, predicted changes in two populations, and a plausible competition change. Population predictions should logically follow from the stated change.