When Ponds Change

Evaluate evidence of stability and change at a beaver pond.

HS-LS2-6 "Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms under stable conditions; however..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline evidence that the pond was relatively stable, circle evidence that conditions or organisms changed, and number two sentences that explain how interactions affected the community. Use your marks to evaluate the claims below.

The Changing Pond at Cedar Bend

1. At Cedar Bend, a beaver dam held a shallow pond for four springs with similar rainfall. Each May from 2017 through 2020, volunteers walked the same 100-meter shoreline. They recorded 60 to 74 frog egg masses and found eight to ten kinds of aquatic insects in the same number of net sweeps. Willows fed the beavers, which repaired the dam. Pond plants sheltered frog eggs, while dragonfly larvae ate some tadpoles and herons ate adult frogs. These linked interactions helped sustain a familiar community. The counts varied, but neither measure showed a steady rise or fall.

2. Then rainfall dropped sharply for two years. Streamflow weakened, the beavers left, and a section of the dam washed away. In May 2022, volunteers counted six egg masses and three kinds of aquatic insects. In May 2023, they counted three egg masses and two insect kinds, using the earlier methods. Most of the shallow pond became exposed mud, where grasses and grasshoppers appeared. A dry bed offered less breeding space for frogs and less water for aquatic insects. Reduced flow and the broken dam together help explain why the community changed.

3. One visitor claimed that herons leaving the pond caused the frog decline. Yet volunteers first noted fewer egg masses while herons were still visiting, and losing a frog predator would not, by itself, explain why aquatic insect kinds also declined. Another visitor claimed that Cedar Bend had become a permanent grassland. Grasses and grasshoppers now live where pond organisms were common, so a shift in the kinds of organisms is supported. Still, two dry years cannot show whether grasses will persist if rain returns and beavers rebuild. Continued counts of water depth, organisms, and rainfall would test that stronger claim.

2 ANSWER WITH EVIDENCE

Use the passage

1. A student claims the pond was relatively stable from 2017 through 2020. Which evidence supports the claim, and why does it support stability rather than no change at all?

2. Evaluate this claim: "The beavers alone kept the pond community stable." Use two interactions from the passage in your reasoning.

3. How well does the evidence support the visitor's claim that herons leaving caused the frog decline? Include evidence about timing and another organism.

4. Does the evidence show that Cedar Bend has become a permanent grassland? State what it does show and what remains uncertain.

3 YOUR TURN

Your own words

Invent a different ecosystem and a disturbance. In one paragraph, state a claim about whether its community stayed stable or shifted, give two invented before-and-after observations, explain two interactions, and identify one observation needed to test whether the change will last.

ANSWER KEY

When Ponds Change

HIGH SCHOOL · HS-LS2-6

PART 1 · READ AND MARK

Underline evidence that the pond was relatively stable, circle evidence that conditions or organisms changed, and number two sentences that explain how interactions affected the community. Use your marks to evaluate the claims below. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A student claims the pond was relatively stable from 2017 through 2020. Which evidence supports the claim, and why does it support stability rather than no change at all?	**The same shoreline surveys found 60 to 74 frog egg masses and eight to ten kinds of aquatic insects each spring, with no steady rise or fall. The counts varied within those ranges, so stability did not mean identical counts.**
2	Evaluate this claim: "The beavers alone kept the pond community stable." Use two interactions from the passage in your reasoning.	**The claim is too narrow. Beavers repaired the dam, but willows fed the beavers, and pond plants sheltered frog eggs. Several linked interactions contributed to the community.**
3	How well does the evidence support the visitor's claim that herons leaving caused the frog decline? Include evidence about timing and another organism.	**It supports the claim poorly. Egg masses declined while herons were still visiting, and herons leaving does not explain the decline in kinds of aquatic insects.**
4	Does the evidence show that Cedar Bend has become a permanent grassland? State what it does show and what remains uncertain.	**The loss of pond habitat and the appearance of grasses and grasshoppers support a shift in the community. Two dry years do not show that the shift is permanent, especially if rain returns and beavers rebuild.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

In a prairie, grasses feed rabbits, and foxes eat rabbits. Grasses also shelter ground-nesting birds. Before a two-year drought, the same plot held about 40 rabbits and 12 bird nests each spring. After drought and shrub growth, it held 9 rabbits and 2 nests, while shrub cover rose from 5% to 65%. I claim the community shifted: reduced grass meant less food for rabbits and less shelter for birds. The rabbit decline alone would not show that foxes caused the shift. Repeated surveys after rainfall returns would test whether shrubs persist or the prairie recovers.

Accept answers that distinguish relative stability from identical counts and an observed community shift from a proven permanent change. For Part 3, invented observations should support the claim, and the interactions should offer plausible mechanisms rather than merely name organisms.