Pond Under Pressure

Use evidence to trace an ecosystem change

MS-LS2-4 "Construct an evidence-based argument that articulates how changes to physical or biological components of an ecosystem affect populations. (SEP: 7; DCI: LS2.C; CCC: Stability/Change)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the dry-weather change 1, underline two observations that support a claim about young frogs, and circle one sentence that warns against a claim the evidence cannot prove.

A Dry Spring at Juniper Pond

1 At Juniper Pond, spring rain usually fills shallow edges where chorus frogs lay their eggs. In one dry spring, the waterline moved several meters inward. Mud at the edge cracked, and many egg clusters that had been underwater were left on dry ground. The pond still held water in its deeper center, but that center had small fish that eat tadpoles. A pond watcher counted 40 egg clusters along the edge before the dry spell and found only 12 still underwater a week later.

2 Two weeks later, the watcher counted 31 tadpoles in the shallow water, compared with 110 at the same point in the previous wet spring. That count alone cannot prove that every missing tadpole died from drying. Some may have hatched at a different time, and some may have been eaten. Still, the exposed eggs and smaller area of fish-free shallow water give strong reasons to expect fewer young frogs. Adult frogs can survive a dry spring, so their number may change more slowly than the number of tadpoles.

3 Frogs are part of a wider food web. Herons sometimes hunt young frogs at Juniper Pond, but they also eat fish, so fewer tadpoles would not automatically mean fewer herons. After summer rains, the shallow edge filled again, and the watcher found 55 underwater egg clusters the next spring. This shows that the breeding habitat returned, not that the frog population fully recovered. A claim about recovery would need later tadpole counts from the same part of the season, along with observations of other changes at the pond.

2 ANSWER WITH EVIDENCE

Use the passage

1. What physical change at Juniper Pond could reduce the number of young frogs? Explain how.

2. Use the two tadpole counts to support a claim about how the dry spring affected young frogs.

3. Why might losing shallow water be an even greater problem for tadpoles when fish live in the pond's deeper center?

4. Does finding 55 underwater egg clusters the next spring prove that the frog population recovered? Use passage evidence to explain.

3 YOUR TURN

Your own words

At a school meadow, workers cut most flowering plants. A class counted 26 bees during a ten-minute visit before the cutting and 8 bees during a ten-minute visit afterward, both at the same time of day. Write four sentences arguing how the cutting may have affected bees using the meadow, using the counts, explaining a cause, and identifying another possible cause or evidence you would need.

ANSWER KEY

Pond Under Pressure

GRADES 6-8 · MS-LS2-4

PART 1 · READ AND MARK

Number the dry-weather change 1, underline two observations that support a claim about young frogs, and circle one sentence that warns against a claim the evidence cannot prove. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What physical change at Juniper Pond could reduce the number of young frogs? Explain how.	**The waterline moved inward during the dry spring. Eggs were left on dry ground, reducing the chance that they would hatch.**
2	Use the two tadpole counts to support a claim about how the dry spring affected young frogs.	**The watcher counted 31 tadpoles in the dry spring, compared with 110 at the same point in the previous wet spring. The lower count supports a claim that fewer young frogs were present.**
3	Why might losing shallow water be an even greater problem for tadpoles when fish live in the pond's deeper center?	**The shrinking shallow area leaves tadpoles less fish-free space. Fish in the deeper water eat tadpoles.**
4	Does finding 55 underwater egg clusters the next spring prove that the frog population recovered? Use passage evidence to explain.	**No. The egg clusters show that breeding habitat returned, but the watcher would need later tadpole counts to know whether the number of young frogs recovered.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Cutting flowering plants may have reduced the number of bees using the meadow. The class counted 26 bees in ten minutes before the cutting but only 8 afterward. With fewer flowers, bees may have found less nectar and moved elsewhere to feed. Weather could also affect bee activity, so repeated counts under similar weather would strengthen the claim.

Accept explanations that connect the lower tadpole counts to drying without claiming that drying caused every loss. For the meadow task, look for a claim about bees using the meadow, both counts, a plausible link to flowers, and a stated uncertainty or need for more evidence.