Beetles on Rock

Use population data to explain natural selection.

L.8.4B "Students will demonstrate an understanding of how similarities and differences among living and extinct species provide evidence that changes have occurred in organisms over time and that similarity of characteristics provides evidence of..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sentence that tells which beetles birds can spot more easily. Circle the first and last counts for each color in the table to track how the traits change.

A Color Shift on Volcanic Rock

1. On a field of dark volcanic rock, both pale and dark ground beetles lived among scattered plants. Each color was an inherited variation already present in the population. Birds hunting by sight could spot pale beetles more easily against the rock. Dark beetles often escaped and had more chances to reproduce.

2. A biologist visited the same rock field at three points over ten beetle generations. At each visit, the biologist counted the colors of 100 beetles found using the same method. The table reports those samples, not every beetle in the field. A sample can show a pattern, but it cannot reveal the fate of every individual.

BEETLE COLORS IN SAMPLES OF 100

Generation	Pale beetles	Dark beetles
0	70	30
5	40	60
10	15	85

3. The color shift did not happen because pale beetles decided to turn dark. Over generations, inherited traits can become more or less common when some beetles survive and reproduce more than others. If birds stopped hunting in this field, the same color pattern might not continue. Natural selection depends on inherited variation and the environment.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did the number of each color change from generation 0 to generation 10? Use counts from the table.

2. How might hunting birds have helped cause the pattern in the table?

3. A student says pale beetles turned dark to hide. Use two details from the passage to explain why that claim does not fit.

4. Why can the table show a population pattern but not prove what happened to every pale beetle?

3 YOUR TURN

Your own words

Imagine a sandy habitat darkens after a fire. A mouse population already has inherited light and dark fur, and owls hunt by sight. In three sentences, predict how the two fur traits might change over generations, explain why, and give one reason your prediction is not guaranteed.

ANSWER KEY

Beetles on Rock

GRADE 8 · L.8.4B

PART 1 · READ AND MARK

Underline the sentence that tells which beetles birds can spot more easily. Circle the first and last counts for each color in the table to track how the traits change. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did the number of each color change from generation 0 to generation 10? Use counts from the table.	**Pale beetles decreased from 70 to 15, while dark beetles increased from 30 to 85 in the samples.**
2	How might hunting birds have helped cause the pattern in the table?	**Birds could spot pale beetles more easily on dark rock. More dark beetles may have survived to reproduce and pass on dark color.**
3	A student says pale beetles turned dark to hide. Use two details from the passage to explain why that claim does not fit.	**Both colors were inherited variations already present in the population. The table shows changes in counts across generations, not individual beetles changing color.**
4	Why can the table show a population pattern but not prove what happened to every pale beetle?	**The biologist counted samples of 100 beetles at each visit, not every beetle in the field.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Dark fur may become more common while light fur becomes less common over generations. Owls may spot light mice more easily on the dark ground, so surviving dark mice may leave more offspring that inherit dark fur. This pattern is not guaranteed because other factors, such as new predators, could affect survival.

Accept explanations that connect an inherited trait, the environment, survival, and reproduction. For the open task, the prediction may be cautious, but it should not claim that individual mice change fur color because they need to hide.