

Beaks and Change

Trace how inherited variation and environmental conditions shape populations.

SC.7.L.15.2 "Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline words or phrases that show inherited variation, circle environmental conditions, and put a star beside sentences that explain how the population changes across generations.

Finches Through a Drought

- ① On Santa Luz Island, a population of seed-eating finches did not all have identical beaks. Some young finches inherited deeper, stronger beaks, while others inherited narrower beaks. These differences came from genetic variation, meaning individuals carried different versions of genes. Before a long dry season, the island had many soft seeds and hard seeds. Both beak types could find enough food, so neither type had a clear survival advantage. Predators were also uncommon on the island.
- ② During the drought, soft seeds became scarce, but hard seeds remained. Finches with deeper beaks were more likely to crack the hard seeds, stay alive, and raise chicks. Many narrow-beaked finches survived too, but on average they left fewer offspring. Natural selection did not change a finch's beak during its lifetime. Instead, birds with helpful inherited traits contributed more genes to the next generation, so deep-beak gene versions became more common in the population over time.
- ③ After many generations, the island population had a higher proportion of deep-beaked finches than it had before the drought. This population evolved because the frequency of inherited gene versions changed across generations. If some finches later moved to a nearby island with mostly tiny seeds, different environmental conditions could favor narrower beaks there. Over time, the two populations could become more different, adding to the diversity of organisms, and could eventually form separate species if they became reproductively isolated.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What genetic variation was present in the finch population before the drought?

2 Which environmental change during the drought favored deep-beaked finches? Explain why.

3 Why did deep-beak gene versions become more common in the population?

4 How could different seed types on two islands increase diversity among the finches over time?

3 YOUR TURN _____ Your own words

Create a three-sentence example about another animal population. Include an inherited variation, an environmental change, and explain how natural selection could change the population across generations.

PART 1 • READ AND MARK

Underline words or phrases that show inherited variation, circle environmental conditions, and put a star beside sentences that explain how the population changes across generations. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What genetic variation was present in the finch population before the drought?	Some finches inherited deeper, stronger beaks, while others inherited narrower beaks.
2	Which environmental change during the drought favored deep-beaked finches? Explain why.	Soft seeds became scarce while hard seeds remained. Deep-beaked finches were more likely to crack the hard seeds for food.
3	Why did deep-beak gene versions become more common in the population?	Finches with deeper beaks were more likely to survive and raise chicks, so they contributed more genes to the next generation.
4	How could different seed types on two islands increase diversity among the finches over time?	Different seed types could favor different inherited beak traits. Over generations, the two populations could become more different and might eventually form separate species if reproductively isolated.

PART 3 • YOUR TURN (SAMPLE ANSWER)

In a rabbit population, some rabbits inherit thicker fur and others inherit thinner fur. When several winters become colder, thick-furred rabbits are more likely to survive and have offspring. Across many generations, genes for thicker fur become more common, so the population changes.

Accept any accurate example that identifies inherited genetic variation, an environmental factor that affects survival or reproduction, and a population-level change over generations. Do not accept claims that individual organisms change inherited traits because they need them.