

# Voyage on the Beagle – Evolution

1. Record the information you gather from each of the letters in the table below.

Who sent the letter?	What new information did it contain?	How is this different from what people of the time already thought?

## 2. Investigating Evolution

Which type of beaks died out on your island? \_\_\_\_\_

Explain why they died out.



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Which beak(s) were the most successful on your island? \_\_\_\_\_

Explain why the number of birds with this beak type increased over time.

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Explain why reproduction of the successful birds produced offspring with the same beak shape.

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3. Write the definition for evolution.

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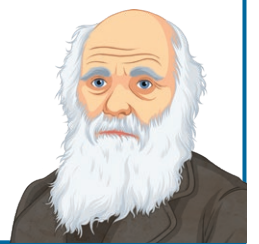
4. When does a new species form?

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5. In the space below, record the five main points you need to include when writing about evolution.



6. Explain how the beak shape of *Geospiza scandens* has evolved.

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# Voyage on the Beagle – Evolution Answers

1. Record the information you gather from each of the letters in the table below.

Who sent the letter?	What new information did it contain?	How is this different from what people of the time already thought?
Richard Owen, Anatomist, Royal College of Surgeons	The fossils discovered were of giant versions of armadillos, sloths and anteaters that are now extinct.	These were discoveries of new species that were no longer on earth. It suggested succession of animals, that older species were replaced with newer ones. This differed from the belief that all animals on earth had been created at once.
John Gould, Ornithologist, Zoological Society	That the birds were different species of the ground finch that had variation between them.	It suggested that the environment could affect the characteristics of related organisms.
Humphrey Davy, London Zoological Society	That orangutans have human-like behaviour.	People of the time believed that humans were higher, more important species than animals. However, this letter suggests that humans had an ape-ancestry - that they had shared ancestors with apes. It suggests that humans are another branch of the tree, instead of the top rung of a ladder.
George Smith, UK Kennel Club	The way in which we selectively breed dogs to produced desired characteristics in offspring.	That it's possible for certain characteristics to be selected, so that they are present in offspring. Over time this can change the characteristics in a population.
Charles Lyell, Geological Society	That the shape of the land changes over time.	The changes that were observed happen over long periods of time. For the landscape to have formed, the earth must be millions of years old and not the thousands of years that people thought at the time.

2. Investigating Evolution

Which type of beaks died out on your island?

**This will vary depending on the food on this student's island.**

Explain why they died out.

**They were not able to eat enough food to survive and reproduce.**

Which beak(s) were the most successful on your island?

**This will vary depending on the food on this student's island.**

Explain why the number of birds with this beak type increased over time.

**This beak was better adapted for the food on the island, so the bird was able to survive and reproduce. Its offspring would have the same adaptation so their numbers would increase.**

Explain why reproduction of the successful birds produced offspring with the same beak shape.

**The alleles for the beak shape were passed on from the parents to the offspring.**

3. Write the definition for evolution.

**A change in the inherited characteristics of a population over time through a process of natural selection which may result in the formation of a new species.**

4. When does a new species form?

**When two populations of a species become so different in phenotype that they can no longer interbreed to produce fertile offspring, they have formed two new species.**

5. In the space below, record the five main points you need to include when writing about evolution.

**Students will choose different ways to record the information, but they need to have included the main points: variation, competition, adaptations, natural selection and inheritance.**

6. Explain why the beak shape of *Geospiza scandens* has evolved.

**There will have been variation in beak size between individual birds, these birds will have competed with each other for food on the island. The food supply on the island is cactus, so birds with long thin beaks that can get past the spikes will have been better at getting food so more likely to survive. The birds that survive are able to reproduce and pass the alleles for their successful beak to the next generation. Over time, the number of birds with the long thin beak will have increased.**