

CHAPTER 4
HANDOUT



Answering Darwin's Questions

BLM 4.2.3

Darwin's Observations and Questions Arising from Them

Darwin used the answers to questions based on his observations to formulate his theory of natural selection. What were the two main ideas expressed in his publication *On the Origin of Species*?

The following questions, found in Table 4.1 on page 125 of the student textbook, helped Darwin develop his ideas on evolution and natural selection. Suggest possible answers to Darwin's questions and link them to the two main ideas that he expressed in *On the Origin of Species*.

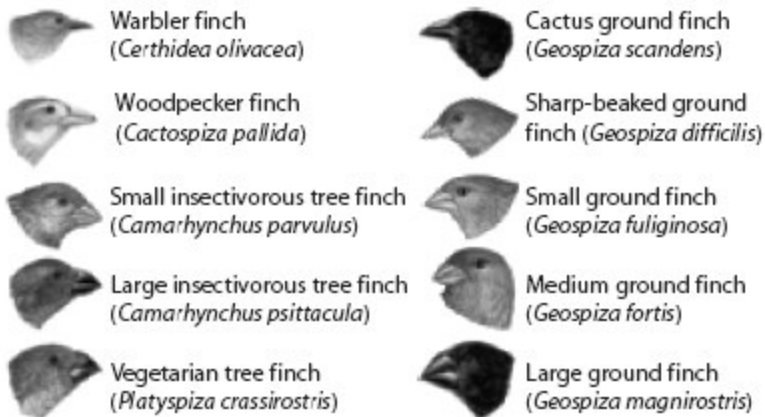
Observations	Questions
<p>1. The flora and fauna of the different regions the <i>Beagle</i> visited were distinct from those Darwin had studied in England and Europe. For example, the rodents in South America were structurally similar to one another but were quite different from the rodents Darwin had observed on other continents.</p>	<p>If all organisms originated in their present forms during a single event, Darwin wondered, why was there a distinctive clustering of similar organisms in different regions of the world? Why were all types of organisms not randomly distributed?</p>
<p>2. Darwin observed fossils of extinct animals, such as the armadillo-like glyptodont, that looked very similar to living animals.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>glyptodont, an ancient 4 m, 2 t animal from South America</p> </div> <div style="text-align: center;">  <p>modern armadillo from South America (1.5 m)</p> </div> </div>	<p>Why would living and fossilized organisms that looked similar be found within the same region?</p>

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3. The finches and other animals Darwin saw on the Galápagos Islands closely resembled animals he had observed on the west coast of South America.

Why did the Galápagos species so closely resemble organisms on the adjacent South American coastline?

4. Galápagos species (such as tortoises and finches) looked identical at first, but actually varied slightly between islands. Each type of Galápagos finch, for example, was adapted to eating a different type of food based on the size and shape of its beak. Ten finch species that occur on one of the islands, Santa Cruz, are shown here.



Why was there such a diversity of species in such a small area? Could these species have been modified from an ancestral form that arrived on the Galápagos Islands shortly after the islands were formed?

5. Through his experience in breeding pigeons and studying breeds of dogs and varieties of flowers, Darwin knew that it was possible for traits to be passed on from parent to offspring, and that sexual reproduction resulted in many variations within a species.

Could a process similar to artificial selection also operate in nature?