

Darwin's observations in the Galápagos Islands

The seeds of Darwin's theory about evolution by means of natural selection can be found in his observations of the geology and biology of the Galápagos Islands. Many people read Darwin's popular book, The Voyage of the Beagle, but they did not make the connection between these observations and evolution of new species. Can you find these connections that so many people overlooked when they read the Galápagos chapter?

In 1835, Charles Darwin visited the Galápagos Islands for five weeks. During his stay, Darwin visited several of the islands of the archipelago, and he made observations about the plants, animals and geology of the Islands. From these observations, Darwin came to a startling conclusion that new life had "recently" appeared on the Galápagos Islands compared to the mainland of South America. In The Voyage of the Beagle, Darwin wrote about this discovery in the following way, "Hence, both in space and time, we seem to be brought somewhat near to that great fact - that mysteries of mysteries - the first appearance of new beings on this earth." Twenty-four years later, his observations on the Galápagos were used to support his theory of evolution presented in his book, The Origin of Species by means of Natural Selection or, The Preservation of Favoured Races in the Struggle for Life, that was published in 1859.

Goals:

To understand why the distribution of animals provides information useful in understanding concepts of natural selection and descent with modification.

To understand the role that geology played in Darwin's conclusion that new life forms evolved from animals that migrated from western South and Central America.

Read

Chapter 17 "Galápagos Archipelago" from *The Voyage of the Beagle* by Charles Darwin

Visit

Some web site about the Galápagos Islands

<http://www.geo.cornell.edu/geology/Galápagos.html>

http://volcano.und.nodak.edu/vwdocs/volc_tour/Galápagos/gal_pgs.html

<http://www.darwinfoundation.org/>

<http://www.rit.edu/~rhrsbi/GalápagosPages/Galápagos.html>

Write. Answer the following question. Use information from the Chapter.
NO QUOTES.

1. Why was the observation that ages of the Galápagos Island volcanoes were different from those of South America important to Darwin concerning the appearance of new life on Earth.
2. The geology and climate are similar on all the islands. Consequently, Darwin expected to find all tortoises to be same. What did Darwin discover at dinner with Vice-governor Lawson concerning the tortoise diversity? Why was this discovery so surprising?
3. Darwin noted that many of the terrestrial animal and non-migratory birds were endemic to the Galápagos. Would you expect to see a similar pattern in the land plants or in the marine animals? Explain.
4. Darwin did not find frogs on the Galápagos. Why is this observation important to understanding the how animals came to populate the Islands?
5. Explain the relationship between the Iguanas of the Galápagos and those of found in Central America. How did the Iguanas get to the Galápagos?
6. What is so unusual about the two species of Iguana found on the islands? Are they unique or they related?
7. "Hence, both in space and time, we seem to be brought somewhat near to that great fact - that mysteries of mysteries - the first appearance of new beings on this earth." List three observations that support Darwin's revolutionary statement.