

Chapter 15: THE THEORY OF EVOLUTION

15.1 Natural Selection and Evidence for Evolution

Charles Darwin and Natural Selection

Evolution- change in populations over time

Charles Darwin (1809-1882)

Fossils shape ideas about evolution

- Fossils raise questions about- how species came about, why species went extinct, and how are they related to existing species
- Key evidence- from geologists that the earth is old, species changed over a long period of time

Darwin on HMS Beagle

- 1831- got job as naturalist on HMS Beagle. Took 5 year journey. Collected and studied diverse species around the world.

Darwin in the Galapagos

- Galapagos Islands- group of islands 1000 km off South America
- Why important- found animals unique to islands but similar to mainland. Inspired idea that species change over time.

Darwin continues his studies

- Darwin influence by:
 - Malthus- Human overpopulation, survival of the fittest
 - Work with pigeons- artificial selection- favorable traits passed down to offspring
 - Charles Lyell- Hypothesized that geological processes remain unchanged, concluding that the Earth is quite old.

Darwin explains natural selection

- Darwin's idea on Natural Selection
 - Individuals within a species are not all the same and there are variations with some traits
 - Many traits are heritable and are passed down from parents to offspring.
 - Natural Selection favors some traits over others.
- Wallace- came up with same idea studying species on separate islands
- On the Origin of Species by Natural Selection- published by Darwin in 1859