



Darwin's Theory of Evolution

Section 15.1

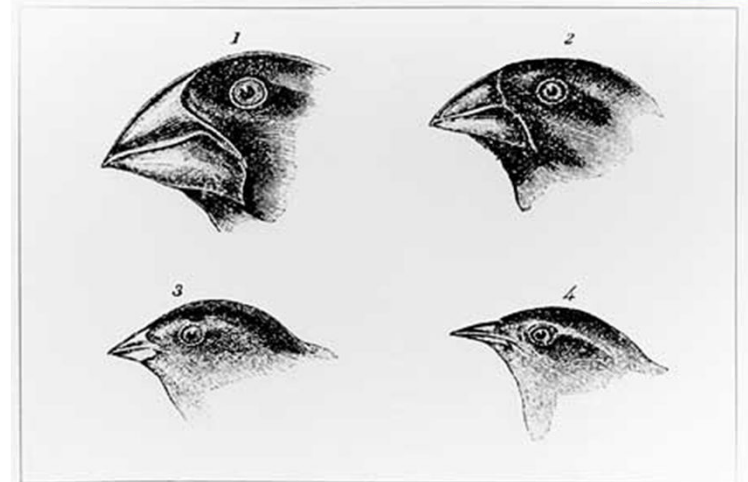
Developing the Theory of Evolution

- When Darwin started his travels, people believed the Earth was 6000 years old
 - This was in 1831
 - Everyone believed the animals and plants had never changed
- Traveled to South America to study biological and specimens
- Traveled for 5 years and collected many samples

Developing the Theory of Evolution

- He eventually landed on the Galapagos Islands
 - Collected finches – a type of bird
 - Noticed that they had differences depending on where he found them
 - Also noticed that tortoises could be identified based on their shells
 - All species he took back to England were native to South America – no one had ever seen them before
 - How did they change from their European relatives?

Developing the Theory of Evolution



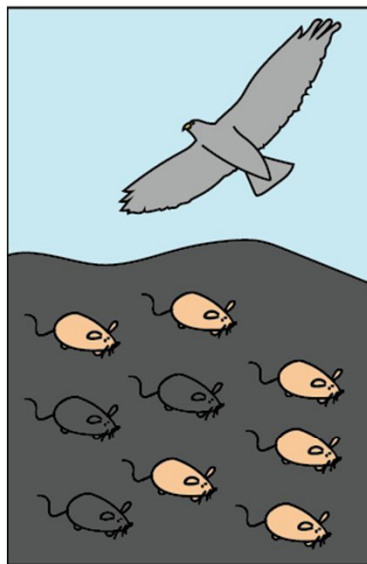
Developing the Theory of Evolution

- Hypothesized:
 - New species could appear gradually over time
 - Includes small changes in ancestral species
 - Observed this in pigeons through **artificial selection**
 - Picking the traits you want and breeding to get them
 - So how could that work with human populations?

Natural Selection

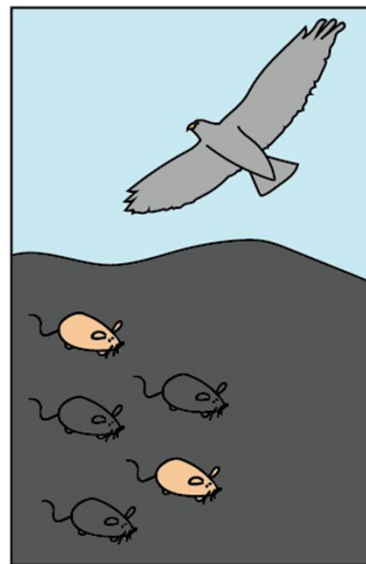
- In a species, those less equipped for survival die off
 - 1) individuals in a population show differences or variations
 - 2) variations can be inherited
 - 3) organisms can have more offspring than will survive
 - 4) variations increasing reproductive success have a better chance of being passed on

Natural Selection



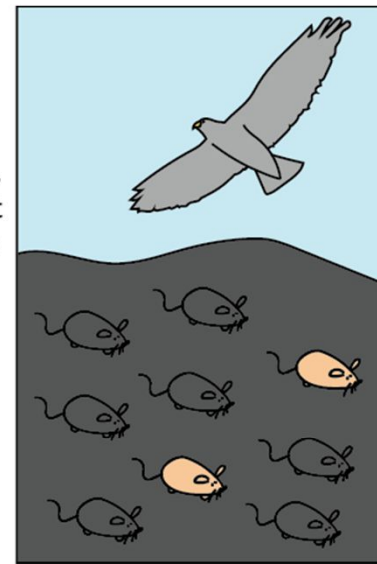
A population of mice has moved into a new area where the rocks are very dark. Due to natural genetic variation, some mice are black, while others are tan.

Some mice are eaten by birds



Tan mice are more visible to predatory birds than black mice. Thus, tan mice are eaten at higher frequency than black mice. Only the surviving mice reach reproductive age and leave offspring.

Mice reproduce, giving next generation



Because black mice had a higher chance of leaving offspring than tan mice, the next generation contains a higher fraction of black mice than the previous generation.