

Darwin's Observations and Inferences:

observation 1 = organisms have potential to reproduce in large numbers

observation 2 = natural populations remain pretty much constant in size

observation 3 = natural resources are limited, there isn't enough for everyone

inference 1 = there exists a **continuous struggle for existence** among members of a population

observation 4 = **organisms** are not all the same, they **vary** in their features

observation 5 = some of this **variation is heritable**, passed from parent to offspring

inference 2 = there are **differences in survival and reproduction** among the varying organisms in the population

inference 3 = over generations, this differential survival and reproduction leads to changes in the appearance of the population & leads to appearance of new adaptations

Definition of Natural Selection

The theory that evolution occurs by natural selection asserts that, of the range of different individuals which make up the population of a given species, those individuals having certain characteristics contribute more offspring to the succeeding generation than those having other characteristics; and if such characteristics have an inherited basis, the composition of the population is thereby changed in the next generation.

Conditions for Natural Selection

1. variation
 - individuals must possess different features
2. inherited basis
 - variation must have genetic basis
3. differential survival & reproduction
 - struggle for existence leads to some individuals surviving and reproducing more successfully than others