Types of Natural Selection

Evolutionary Theory & Adaptation

Adaptation – physical and behavioral changes that enable successful reproduction

- Those that are more successful leave behind more descendants
- Those genes will start to dominate a gene pool
  - → evolutionary change at the population / species level

Genetic Variation

- The raw material for Natural Selection is **genetic variation** – differences in DNA (caused by mutation)
- All of the genes that exist in a population – **gene pool**
- **Gene flow** – the movement of alleles into and out of a gene pool

- As new genes and alleles are introduced in a population, if they offer a survival or reproductive advantage, they will be passed on.
- The more advantage it offers, the more frequent it will become in the gene pool

Directional Selection

Directional Selection – selective pressures favor one phenotype

- Most often seen where there are environmental changes.
- Individuals having this phenotypic trait are more likely to survive and reproduce, so it becomes more frequent in the population.

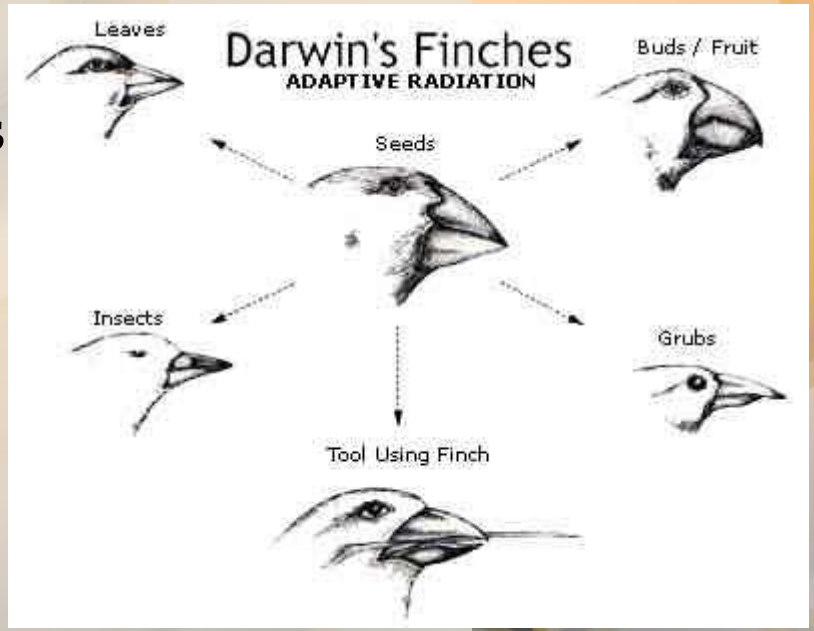
Ex:

- Giraffe necks.
- Dark vs. Light colored moths.

Disruptive Selection

Disruptive Selection – selective pressures favoring extremes on both ends of the phenotypic range

- Does not favor mid-range/intermediate phenotypes
- Increases diversity in a species.



Ex: Darwin's finches

- Midsized seeds became scarce on the Galapagos
- Birds were forced to rely on large or small seeds
- Adapted to have unusually large, or unusually small, beaks

Stabilizing Selection

Stabilizing Selection – selective pressures favor the middle of the phenotypic range.

Opposite of disruptive selection. Reduces diversity in a species.

Ex: Infant birth weight in humans.

Infants that are on either end of the spectrum (large and small) have increased mortality. Infants in middle of the range are most likely to survive and pass on their genetic information.

Graphing Natural Selection

- Graphs can be used to show how allele frequency (how often a trait shows up in the population) changes with each type of natural selection.