

Natural Selection – Darwin’s Five Points

Read the following situations below and identify the 5 points of Darwin’s natural selection.



1) There are 2 types of worms: worms that eat at night (nocturnal) and worms that eat during the day (diurnal). The birds eat during the day and seem to be eating ONLY the diurnal worms. The nocturnal worms are in their burrows during this time. Each spring when the worms reproduce, they have about 500 babies but only 100 of these 500 ever become old enough to reproduce.

a. What worm has natural selection selected AGAINST? _____ FOR? _____

Darwin's 5 points [listed below]: Identify the 5 points in the scenario above.

Population has variations. _____

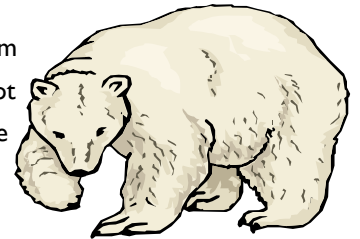
Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

2) There are 3 types of polar bears: ones with thick coats, ones with thin coats and ones with medium coats. It is fall, soon to be winter. The temperatures are dropping rapidly and the bears must be kept warm, or they will freeze to death. Many of the bears have had ~2 cubs each but due to the extreme temperatures, many mothers only have one cub left.



a. What bear will natural selection select AGAINST? _____ FOR? _____

Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____



3) In ostriches, there are 2 types: ones that run fast and those that run slowly. The fast birds can reach up to 40 miles an hour. Jackals love to eat ostrich, and they can reach speeds of up to 35-40 miles per hour. A flock of ostrich will lay ~ 10 eggs (each mother only lays 1), but many rodents break into the eggs and eat the fetus before they hatch.

a. What ostrich will natural selection select AGAINST? _____ FOR? _____

Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

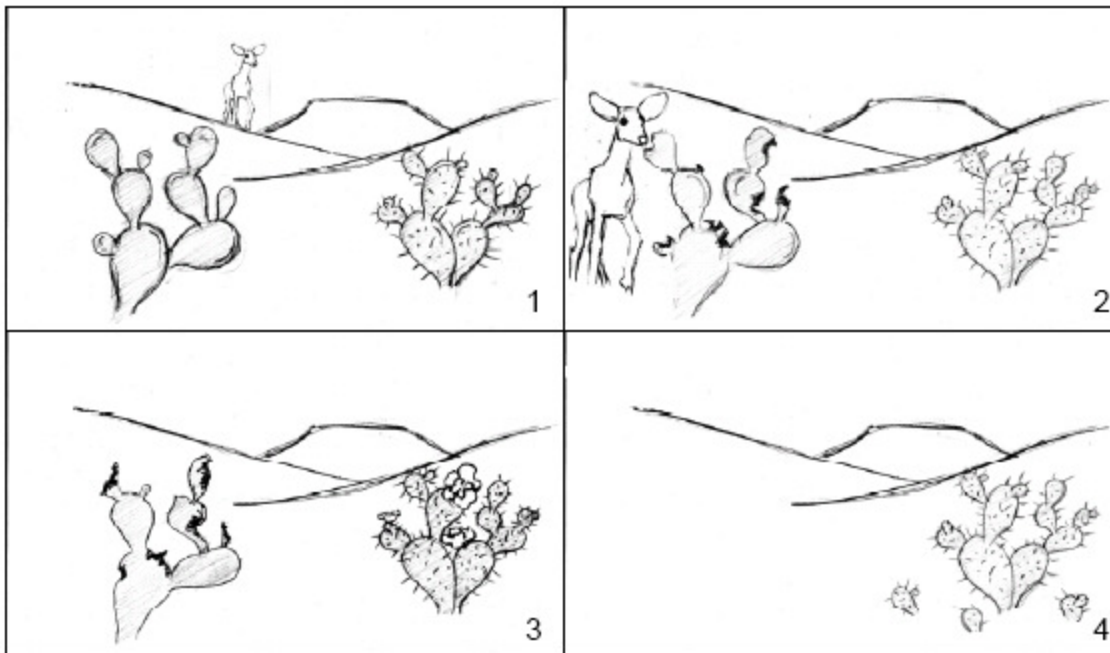
Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

4. Below is a series of pictures representing changes in a population of cacti over many generations.



- Why would a deer be more likely to eat the left cactus than the right cactus?
- In figure 3, the right cactus has flowers, but the cactus that has been eaten by the deer is too damaged to make flowers. Figure 4 shows the situation several months later. What has happened?
- Do you think that evolution by natural selection is occurring in this cactus population? Explain why or why not.
- What adaptation seems to increase the fitness of the cacti on the right? How do you think this adaptation increases the ability of cacti on the right to survive and reproduce?

5. You have seen, in all of these examples, how natural selection favors those individuals with certain traits. Based on what you have seen AND on what you know about genetics, answer the following questions:

- Is the dominant characteristic ALWAYS the one that is most seen in a population? [think about our work with human genetics!!]
- Assume that in the cactus population, the presence of thorns is a recessive characteristic. Will the frequency of the allele for thorns become greater or lesser over time?
- Describe FIVE or more different things that can affect the rate of change in the gene pool of an organism.
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