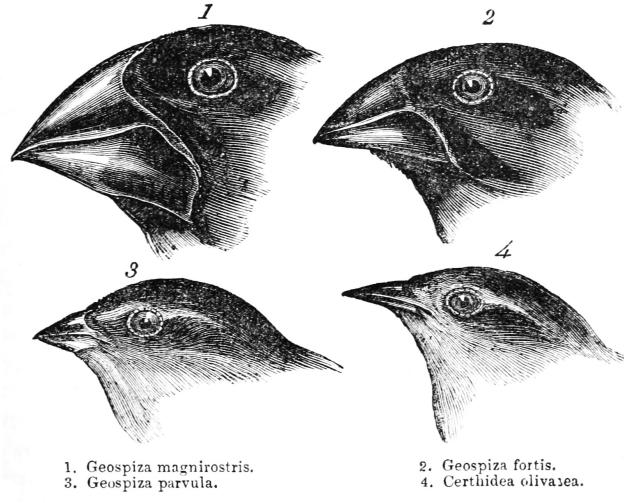


What Is Natural Selection?

Natural selection is how populations become adapted to their environment

Natural selection is the process through which groups of organisms change over time. These changes help groups of organisms, or **populations**, to be more **adapted**, or better suited, to their environment. Individuals with traits that help them to survive produce more offspring. Over time, populations change because individuals with traits that favor survival reproduce more than individuals with other traits. The survival of populations can depend upon their ability to adapt to a changing environment.



1. *Geospiza magnirostris.*
3. *Geospiza parvula.*

2. *Geospiza fortis.*
4. *Certhidea olivacea.*

Natural selection happens because individuals in a population vary in their traits. Traits that increase survival are passed onto offspring.

The image at the top of the page shows beak shapes of different types of finches. Beak shape is one example of a trait or characteristic that might vary from one individual bird to the next. Beak shape influences what types of food a bird could eat. Birds with large, strong beaks can crack open seeds and nuts. Birds with slender, sharp beaks might be good at picking out insects that are hiding in the bark of a tree.

If you look around any time you are in a public place, you will notice that the people around you vary in height, leg length, eye color, and many other traits. This is true of all types of organisms. The cheetah, for example, is the fastest land animal. How did it get that way? Cheetahs that had traits that made them faster, such as powerful legs and strong hearts, must have survived better than slower cheetahs.

The cheetahs that survive out of the many born in a population of cheetahs have more offspring. These cheetahs, the next generation, are likely to have the same traits as their parents. They will be faster, too, and more likely to catch prey and survive.

Natural selection is how populations change over time. Natural selection is a key mechanism of biological evolution, and can result in the rise of new species.

Over many generations, the population of cheetahs described above becomes mostly, or all, faster animals. This is one of the key ways that biological evolution occurs. **Biological evolution** is the change in characteristics or traits of organisms over generations, with these traits being passed on from parents to offspring through DNA, genetic information.

When some populations become very different from others, this can result in new species. The development of new species is called **speciation**. Speciation occurs when different populations of a species become not different but unable to reproduce with each other. A population of birds, for example, could become isolated from other populations when they migrate to an island. Over time, they would develop new physical traits that could help them survive better on that island. If they also developed new calls and other mating behaviors, they would eventually become reproductively isolated – unable to breed with related birds from other populations. This population would now be a new species because they would breed only with other members of their species.

Show your understanding by answering the questions below.

1. Five key terms are highlighted in the reading. Define each of the terms below, using the definition in the reading or finding similar information through a web search.

2. How does natural selection help groups of organisms (populations) survive over time?
 3. What causes natural selection?
 4. Natural selection sometimes results in the rise of new species? Explain how this happens. Give an example from the reading or find one through an internet search.