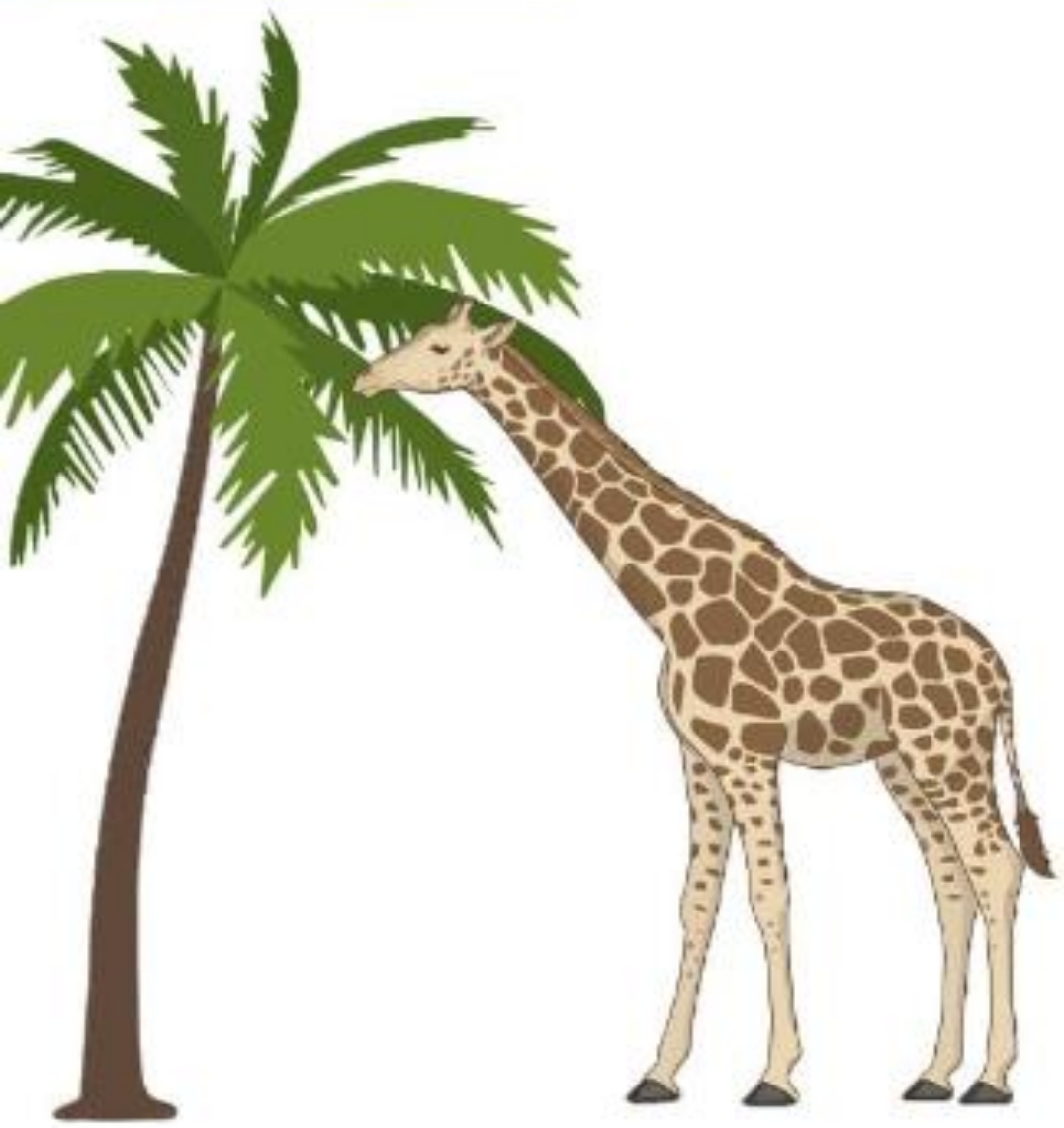
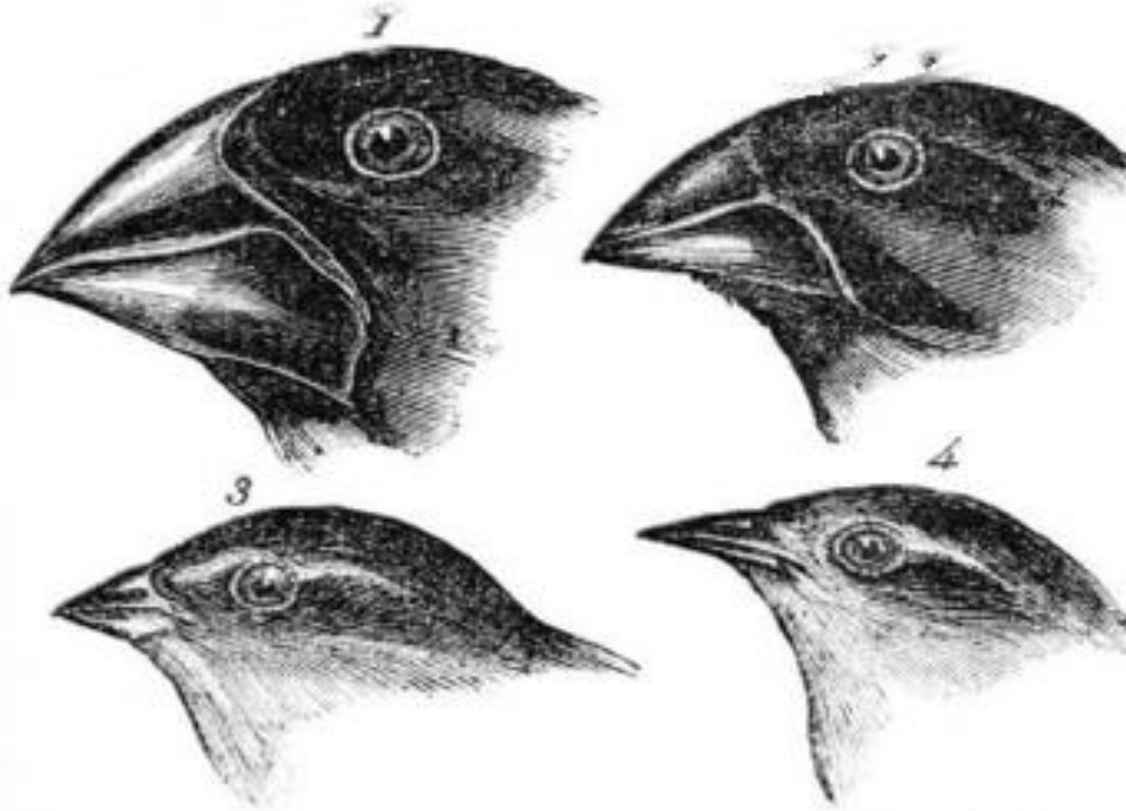
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# BT-201 Ecology, Biodiversity & Evolution II





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[ AQUARIUS ]

**Due Date: 19 July, 2023**

**Words Limit: 200-250**

## Solution:

### Variations:

Variations are the differences in the genetic makeup or phenotype of various organisms. Variation arises due to crossing over, recombination, mutation & environmental effects on the expression of genes present on chromosomes.

### Adaptation:

Adaptation is defined a heritable behavioral, morphological, or physiological trait that has evolved through the process of natural selection, and maintains or increases the fitness of an organism under a given set of environmental conditions.

## Link Between Variation and Adaptation:

Adaptations develop when certain variations or differences in a population help some members survive better than others. The variation may already exist within the population, but often the variation comes from a mutation, or a random change in an organism's genes. Variation allows some individuals within a population to adapt to the changing environment. Because natural selection acts directly only on phenotypes, more genetic variation within a population usually enables more phenotypic variation. Some new alleles increase an organism's ability to survive and reproduce, which then ensures the survival of the allele in the population. Genetic variation is advantageous because it enables some individuals and, therefore, a population, to survive despite a changing environment.

**Example:**

Darwin's finches are an excellent example of the way in which species' gene pools have adapted in order for long term survival via their offspring. Their beaks have evolved over time to be best suited to their function. For example, the finches who eat grubs have a thin extended beak to poke into holes in the ground and extract the grubs. Finches who eat buds and fruit would be less successful at doing this, while their claw-like beaks can grind down their food and thus give them a selective advantage in circumstances where buds are the only real food source for finches.

**Regards:**

**VU Expert Zoologists:**