

CHAPTER 09

Adaptations in Different Ecosystem

Adaptation as a response to adverse situations:

Many organisms that live in the hot deserts or Polar Regions migrate to the deeper layers of the earth to protect themselves from the extreme conditions of heat and cold.

Example:

Seasonal adaptations can be seen in amphibians like frog.

To protect themselves from the extremes of hot and cold conditions they burrow deep in the ground and remain motionless until the conditions are favourable.

During this period, the rate of metabolic activities slow down and the animal goes into a nearly sleepy condition called Hibernation (winter sleep) and Aestivation (summer sleep).



Hibernation(Bear)



Aestivation (Snail)

Lichen:

It's the greenish patches on the bark that turn into a greyish or whitish mass and then to a peculiar flaky or greenish growth.



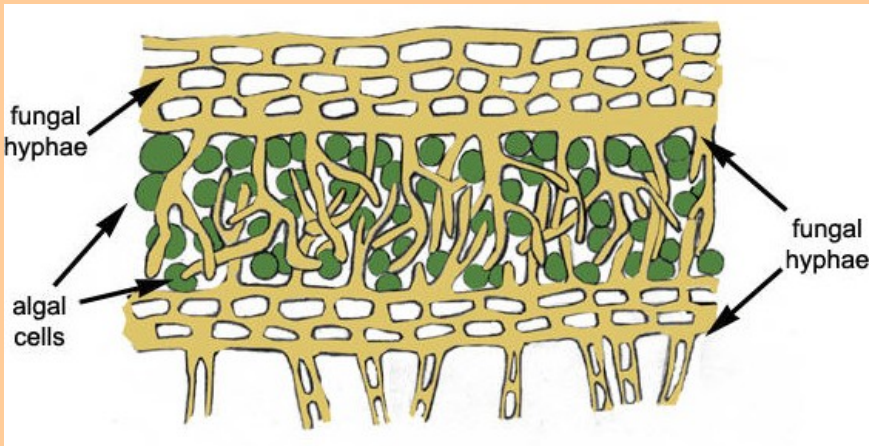
Lichen is also used as a flavouring agent in preparing biryani under the name of 'Patthar Phool'.

The above figure shows the successful adaptation of algae and fungi colonies.

The fungus colony attacks an algal colony where most of the algal colony that fails to compete dies out. The more adaptive forms of Algae live on to form symbiotic relationship with the fungi in colonies called Lichens.

Lichens are mutualistic relationship between fungi and algae.

The fungus provides water and minerals to the alga, while the alga performs photosynthesis and supplies food in the form of sugars to the fungus.



Due to such symbiotic adaptations, lichens are able to survive even in extreme conditions.

Adaptation to environment is not a simple phenomenon.

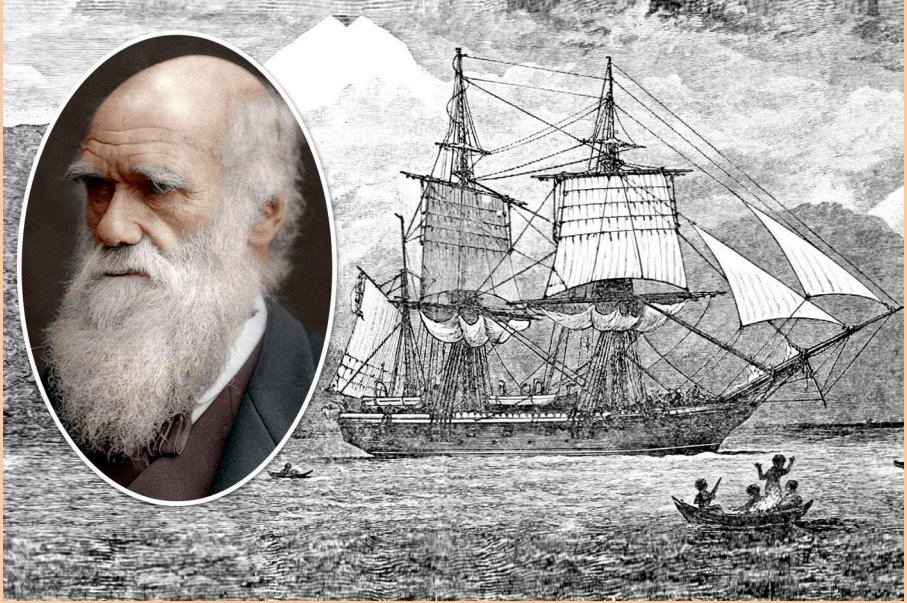
- If we keep a cow in a desert, will it be modified like a camel?

If a giraffe is kept in a forest with short trees or plants it would not convert like a goat.

For many animals, adaptation takes place over a long period of duration.

Story of Darwin's Finches:

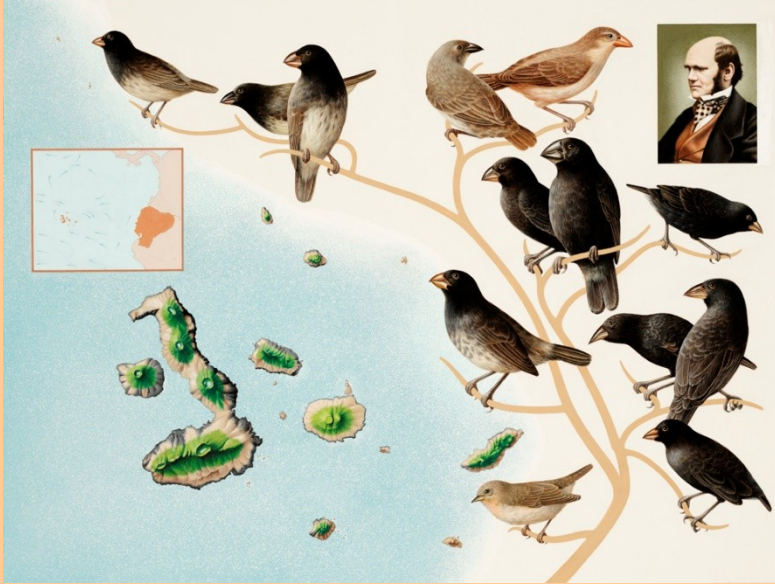
Charles Darwin in the year 1885 landed from the famous ship H.M.S Beagle on one of the Galapagos Islands. He studied about different organisms of the islands.



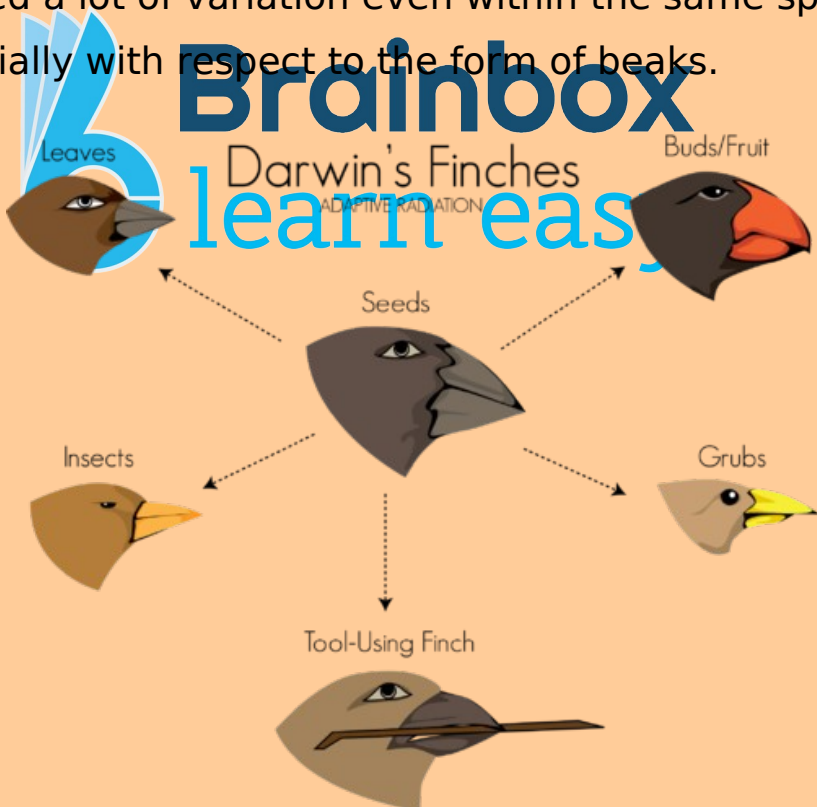
His most remarkable observation had been about Finches and now they are called Darwin's finches in general.

He was amazed to see that different types of finches that differed with respect to beaks and the colour of feather.

He noted that some finches ate seeds, while some ate fruits and the others ate insects.



Darwin observed that the birds had adapted to their immediate surroundings for food and shelter and showed a lot of variation even within the same species, especially with respect to the form of beaks.



There existed a relation between type of food taken and the structure of beak.

- The seedeaters had thick and heavy beaks.
- The fruit eaters had stubby beaks.
- The insect eaters had sharp and long beaks.

Cactus finches had longer, more pointed beaks than their relatives the ground finches did. Thus, he concluded that adaptation was something that an organism is undergoing continuously, even within very closely related forms in a particularly geographically separated area.

