

components, namely (1) space (2) food (3) water (4) and cover or shelter.

Earth has four significant habitats –

- (1) Terrestrial
- (2) Freshwater
- (3) Estuarine (Where rivers meet the ocean) and
- (4) Ocean.

The human gut is the habitat of a tapeworm and the rotting log a habitat of a fungus.

SPECIES

A species is defined as a group of similar populations of organisms whose members are capable of interbreeding, and to produce fertile offspring (children). A tiger, a lion, a lotus and a rose are examples of different species. Every species has a scientific name, understood by people of all over the world. Humans belong to species of *Homo sapiens*. Only members of the same species can interbreed to produce fertile offspring. Every species has its own set of genetic characteristics that makes the species unique and different from other species.

The number of species surviving in the world today is the outcome of two processes - speciation and extinction.

Speciation

- It is the process by which new species are formed, and evolution is the mechanism by which speciation is brought about.

Extinction

- It means the dying out of a variety of or a species. It is generally a natural occurrence.
- The primary reason for these extinctions is environmental change or biological competition.
- Extinction occurs when species cannot evolve fast enough to cope with the changes taking place in their environment.

EVOLUTION

A valid theory of evolution was propounded by Charles Darwin and Alfred Wallace in 1859. This theory has been extended in the light of progress in genetics and is known as Neo-Darwinism. It has the following features:

- Organisms tend to produce more offsprings that can be supported by the environment.
- Mutation (a change in genetic material that results from an error in replication of DNA) causes new genes to arise in a population. Further, in a sexually reproducing population, meiosis and fertilisation produce a new combination of genes every generation, which is termed recombination. Thus, members of the same species show 'variation' and are not identical. Variations are heritable.
- An evolutionary force which Darwin termed natural selection, selects among variations i.e. genes that help the organism to adapt to its environment. Such genes are reproduced more in a population due to natural selection. Those offspring which are suited to their immediate environment have a better chance of surviving, reaching reproductive age and passing on the suitable adaptations to their progeny. Evolution, thus, results in adaptation and diversity of the species.