SPECIES CONCEPT

Evolution is the successive modification in inherited traits over a huge span of time, usually over generations. The theory of evolution was first proposed by an English biologist named Charles Darwin. In 1859, he mentioned about evolution in his book 'The Origin of Species'.

Charles Darwin noted that living organisms change their physical and anatomical structure over a long period of time for better adaptations to the changing environment. The change is by natural process and those organisms which do not adjust to it, find it difficult to survive. This put forward the concept of natural selection and Darwin called it 'Survival of the fittest'. Speciation is an evolutionary process which resulted in natural selection.

What is Speciation?

A species is a group of organisms with similar characteristics and can interbreed to give fertile offspring. Speciation is an evolutionary process of the formation of new and distinct species. The species evolve by genetic modification. The new species are reproductively isolated from the previous species, i.e. the new species cannot mate with the old species.

Species concept

"Species are often defined as a group of individuals with similar characteristics, where they can interbreed to produce fertile offsprings."

Important Concept Of Species

Four most important concepts of species are:

1. Typological Species Concept

In this concept, there is a finite number of varieties of living organisms that exist on earth. These types do not exhibit any relationship with each other. Such varieties are termed as species. This inequality is regarded as an unimportant and irrelevant phenomenon.

Aristotle and Plato stated this concept in their philosophies. In the year of 1954 and 1956, Cain regarded the Typological species concept as the morphospecies concept. As the members of the species or a taxon can be identified by their essential characteristics, a group of scientists refer to this as essentialist species concept.

Morphospecies concept states that the species can be differentiated from other species by their physical features and can be identified by their morphological attributes. This is called the morphological species concept.

2. Nominalistic Species Concept

The nominalistic species concept is the concept of Occam and his followers, of the belief that nature only produces individuals. Species are the creation of man. In nature, they lack definite exis-tence. These concepts do not have any scientific basis.

It believes that the species have been inven-ted to be referred to big numbers of individuals jointly. During the 18th century in France, this concept was in demand and even now is used by some botanists.

3. Biological Species Concept

In the middle of the 18th century, a fresh concept called the biological species concept appeared. This concept was acknowledged in the later half of the nineteenth-century once Darwin's "Origin of Species" was published (in 1859). This is also known as Newer Species concept.

Jordan was the first to formulate this concept in 1905. Later in 1940, Mayr supported this concept. As per this concept, "a species is a group of interbreeding natu-ral population that is reproductively iso-lated from other such groups". Mayr described that the members of a species exhibit these attributes:

Reproductive community: For the purpose of reproduction the individuals of a species recognize one another as potential mates.

Ecological Unit: The species' mem-bers differ from each other due to many attributes, but all the members cooperatively form a unit. They interact with other species as a unit in any environment.

Genetical unit: Species comprises a large, inter-communicating gene pool, although the individual is simply a non-permanent vessel comprising a small part of the contents of the gene pool for a shorter duration.

4. Evolutionary Species Concept

The flaws of the biological species concept had led the palaeontologists to formulate the evolutionary species concept.

Simpson (in 1961) had defined it as "an evolu-tionary species is a lineage (an ancestral- descendant sequence of populations) evol-ving separately from others and with its own unitary evolutionary role and tendencies".

Wiley (in 1978) had provided a revised definition of the evolutionary species concept. He stated that "an evolutionary species are a single lineage of ancestral-descendant popu-lation which draws its identity from other such lineages and has its own evolutionary tendencies and historical fate".