

TAXONOMY

Ist SEM (CC1T)

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Taxonomy

The word "taxonomy" is derived from the Greek words *Taxis* (= arrangement) and *nomos* (= law). It was first coined by A.P. de Candolle, a French Botanist in 1813 as a French word "Taxonomie." Later in 1819, he spelled it as "Taxeonomie". But it was criticised by some others and then the ^{form} correct word presently in use should be spelt as "Taxonomy".

Definition of Taxonomy

- ① "Taxonomy is the theory and practice of classifying organisms."
(Mayr and Ashlock, 1991).
- ② Simpson (1961) defines it as "the theoretical study of classification, including its ^{basic} principles, ^{methods} procedures and ^{rules} rules."
③ According to Mayr (1969) - "the theoretical study of classification and its practice."

Classification

① Classification is the ordering of animals into groups (or sets) on the basis of their ^{relationships} relationships, that is, of association ^{by contiguity} by contiguity, similarity or both (Simpson, 1961).

② According to Blackwelder (1967) classification is the arrangement of individuals into groups (taxa) and the groups into a system in which the data about the kinds determine their positions in the system and their order are reflected by the positions.

Stages in Taxonomy

It is now well known that taxonomy of a given group passes through several stages.

① α -Taxonomy →

This is the level at which the species are characterised and named.

② β -Taxonomy →

This refers to the arrangement of the species in a natural system of lower and higher categories.

Relation

The relationship of taxonomy to systematics is somewhat like that of theoretical physics to the whole field of physics.

Taxonomy is the study of principles and practices of classification, and as such, it is only a part of systematics. So taxonomy includes classification and nomenclature, but leans heavily on systematics for its concept.

In simple systematics include both taxonomy and evolution. There are two parts of systematics -

The first part, taxonomy, concerned with describing and naming the many kinds of organisms that exist today and those that have existed before and also those that are becoming extinct.

Importance of Taxonomy

- ① It works out forms a vivid picture of the existing organic diversity of our earth and is the only science that does so.
- ② It provides much of the information permitting a reconstruction of phylogeny of life.
- ③ It reveals numerous interesting evolutionary phenomena and thus make them available for causal study by other branches of Biology.
- ④ Mimicry and other evolutionary areas have also been clearly understood through taxonomy.

Taxonomy has played quite a wider role in the important fields of applied biology. such as -

- i) agriculture and forestry
- ii) biological control of pests
- iii) in public health.
- iv) Quarantine
- v) wild life management
- vi) National defence
- vii) Environmental problem
- viii) Soil fertility etc.

Microtaxonomy & Macrotaxonomy:

Microtaxonomy: In 1975, Mayr and Ashlock first put forward the concept of microtaxonomy. This stage is applicable only for dealing with the problems relating to species. This taxonomy works at the species level.

Microtaxonomy involves the study of concepts of species like Typological species concept, Nominalistic species concept, Biological species concept, Evolutionary species concept. Microtaxonomy deals with problems like the evolution of species, estimation of the population of species in the living world or in special groups of organisms to which any two, three, or all species definitions apply.

MACROTAXONOMY:

Macrotaxonomy is the science of classification. This stage deals with the problems and principles of higher taxa ~~and~~ only. Macrotaxonomy involves study of homology, analogy, ^{analogy} affinities, systematic status and phylogeny.