

BAL BHARATI PUBLIC SCHOOL PITAMPURA
CLASS XI (SESSION 2020-21)
BIOLOGY
CH- THE LIVING WORLD (PART2)

INSTRUCTIONS-

STEP 1- READ THE CHAPTER- **THE LIVING WORLD**
UNDERLINE THE DIFFICULT TERMS

LEARNING OBJECTIVES:

- 1) To introduce the methods to preserve plants and animals

STEP 2- READ THE NOTES CAREFULLY.

TOPIC COVERED :

Taxonomy
Systematics
Taxonomic Aid

STEP 3: Visit the YOUTUBE LINK

<https://www.youtube.com/watch?v=FKZysxJawT4&t=62s>

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Taxonomy

Taxis = orderly arrangement, nomos = law

Taxonomy Definition: “Taxonomy is the study of principles and procedures of classification.”

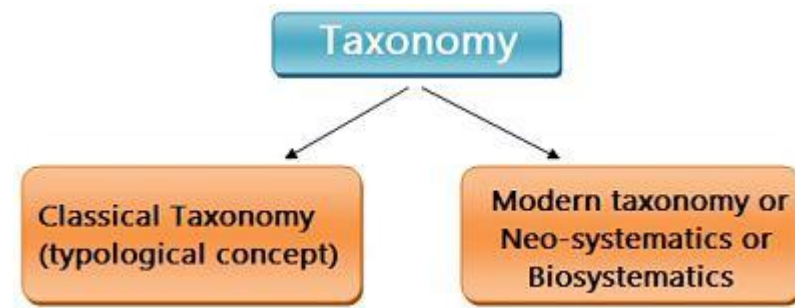
Taxonomy includes study of following 4 points:

1. **Characterization:** The organism to be studied is described for all its morphological and other characteristics.
2. **Identification:** Based on the studied characteristics, the identification of organism is carried out to know whether it is similar to any of the known group or taxa.
3. **Classification:** The organism is now classified on the basis of its resemblance to different taxa. It is possible that the organism may not resemble any known taxa or groups. A new group or taxon is raised to accommodate it.
4. **Nomenclature:** After placing the organism in various taxa, its correct name is determined. If the organism is new to systematics, it is given a new name based on rules and conventions of nomenclature.

Systematics (Branch Related with Taxonomy)

Study of only one organism of a group provides sufficient information about the remaining members of that group. Scientists connected with the study of systematics are called systematists or taxonomists.

Differences between Classical Taxonomy and Modern Taxonomy



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(a) Classical Taxonomy

It deals with morpho species.

It has a typological concept.

Species is considered to be static.

It does not study evolution.

Interrelationship of species is also not studied.

(b) Modern taxonomy

It is also known as Neo systematic or Biosystematics:

It deals with biological species.

It has a population or biosystematics concept.

Species is considered to be dynamic.

It studies primitiveness, advancement and inter-relationships of species.

The systematics includes both taxonomy and evolution.

It takes into account evolutionary relationships between organisms.

Systema naturae- Title of publication By Linnaeus

Branches of systematics:

1. Numerical systematics:

This type of systematics is based on bio-statistical method in identification and classification of animals. This branch is called biometry.

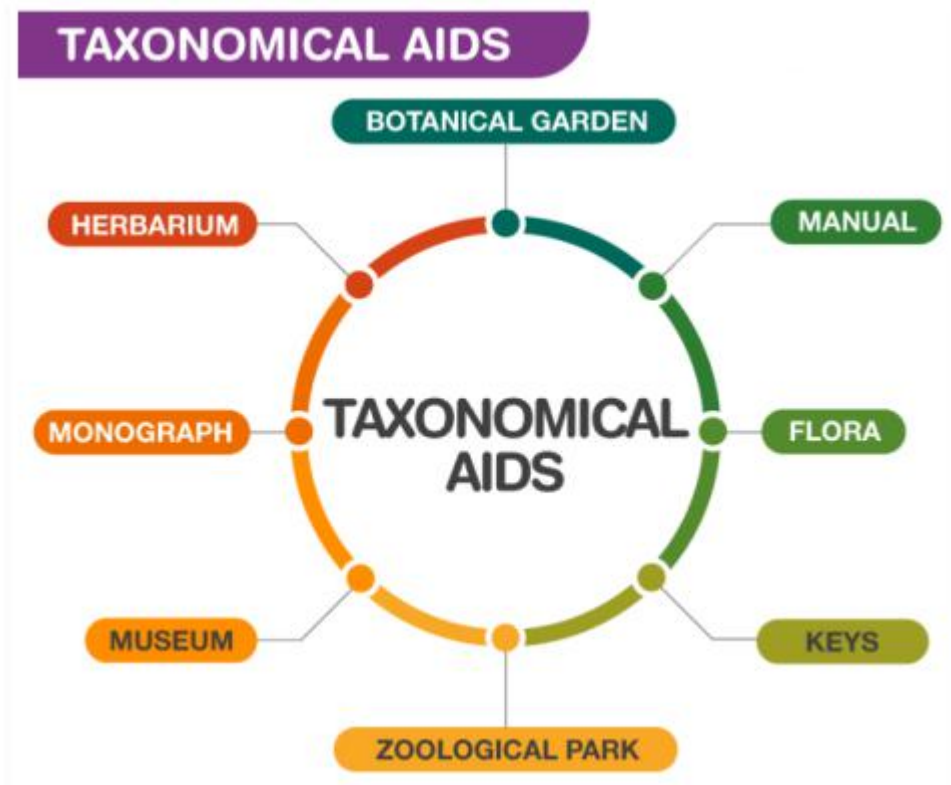
2. Biochemical systematics:

This branch of systematics deals with classification of animals on the basis of biochemical analysis of protoplasm.

3. Experimental systematics:

This branch of systematics deals with identification of various evolutionary units within a species and their role in the process of evolution. Here mutation is considered as evolutionary unit.

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Taxonomical aids are the collections of samples or preserved organisms which help in extensive research for the identification of various taxonomic hierarchy. Classifying organisms into various categories needs a lot of field and laboratory study. This is so important because taxonomic categorization helps in identifying many organisms necessary in various fields like agriculture, industries, bioresources, etc.

The taxonomical Aids are the main source which helps us in studying the relative level of a group of organisms, their **taxonomic hierarchy** and the taxonomic rank.

Taxonomical Aids are required for:

1. Taxonomic studies of various species of plants, animals, and other organisms, which require correct classifications and identification.
2. Identification of organisms require laboratory and field studies.
3. Museum.
4. Herbarium.
5. Zoological Parks.
6. Botanical Gardens.

Let us study some of the taxonomical aids which provide specimens for such intensive studies.

Types of Taxonomical Aids

Herbarium

It is a store that houses a collection of preserved plant species. Plant specimens are preserved in forms of herbarium sheets which are prepared by drying, pressing and preserving the samples on sheets. These sheets are then arranged in their order of classification in the taxonomic hierarchy. These herbarium sheets carry all the information about the respective specimen.

Botanical garden

These are gardens in which specific plants are grown and are labeled according to their **taxonomy**. Thus, the labels carry their scientific names and family. The main purpose of botanical gardens is to identify the plant species under consideration.

Museum

Biological museums are found in schools and colleges; like the biology laboratory that we find in our schools. In these museums, plants and animal species are preserved in jars and containers with the help of appropriate preservatives. They may also be dried and preserved. Birds and larger animals are usually stuffed before preserving and insects are killed and pinned in boxes. We sometimes find skeletons of various animals too.

Zoological park

These are places where animals and birds are kept in protected boundaries. An attempt is made to provide them with a habitat closest to their natural habitats. Thus, we get a chance to learn about their natural habits and behaviour. Zoological parks are open for human visits.

Key

This is a taxonomical aid where plants and animals are recognized based on contrasting characteristics known as keys. Two contrasting keys are generally kept as a pair, thus leading to acceptance of one and rejection of another.

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