

The Living World

Introduction to the Living World

Introduction

- The **living world** is full of wonder and incredible variety.
- Living organisms range from:
 - Galloping horses and migrating birds
 - To microscopic life forms that are invisible to the naked eye
- These organisms are found in virtually every habitat on **Earth**, including:
 - Cold mountain regions
 - Deciduous forests
 - Vast oceans
 - Arid deserts
 - Scorching hot springs
- Whether it's the ecological interactions between organisms or the complex molecular activities inside a cell, we are led to ask a fundamental question:

What is Life?

- This central question involves **two main** aspects:
 - What distinguishes the living from the non-living? (Scientific/Technical perspective)
 - What is the purpose of life? (Philosophical perspective)
- As scientists, we primarily focus on the first question:
What is living?

Diversity in the Living World

Observing Biodiversity

- If you observe your surroundings, you will see numerous living organisms such as:
 - Potted plants
 - Insects and birds
 - Pets and wild animals
 - Microorganisms (not visible to the naked eye)



Potted plants



**Insects and
birds**



**Pets and wild
animals**



Microorganisms

- The more area you observe (e.g., a forest), the more types of organisms you'll encounter.

Definition of Species

- Each different kind of organism (plant, animal, microbe) is referred to as a **species**.
 - Known and described species: **1.7–1.8 million**
 - Biodiversity refers to the variety and number of organisms on Earth.
 - New species are continuously being discovered.

The Need for Nomenclature

Local vs Scientific Names

- Organisms often have local names that vary by region and language.
- This creates confusion when communicating about them globally.

Scientific Naming (Nomenclature)

- To avoid this confusion, scientists use standardized scientific names.
- **Nomenclature** is the process of assigning a universal name to each organism.

Identification

- Before naming, an organism must be:
 - Accurately observed
 - Properly described
 - Correctly identified
- Accurate identification is essential for effective communication and further study in biology.

Rules of Nomenclature (Scientific Naming of Organisms)

- To ensure consistency, biologists follow **international codes**:
 - **ICBN** (International Code of Botanical Nomenclature) – for plants
 - **ICZN** (International Code of Zoological Nomenclature) – for animals

Binomial Nomenclature

Definition

- Binomial Nomenclature is a system of naming species using two Latin words:
 1. Genus name (starts with a capital letter)
 2. Specific epithet (starts with a small letter)
- This system was introduced by **Carolus Linnaeus**.

Example:

- Scientific Name: *Mangifera indica*
 - *Mangifera* → Genus
 - *indica* → Species (specific epithet)

Author Name

- After the species name, the name of the scientist who first described it is written in abbreviated form.
- Example: *Mangifera indica* **Linn.**

Universal Rules for Writing Scientific Names

1. Biological names are usually in Latin and written in italics.
2. The genus name comes first and starts with a **capital letter**.
3. The species name comes next and starts with a **small letter**.
4. When handwritten, both names are underlined separately.
5. The author's name can be added at the end in abbreviated form.
 - Example: **Mangifera indica Linn.** (Linn. refers to Linnaeus)

Classification

- Since it's impossible to study all organisms individually, we use classification—a system to group organisms into categories based on shared characteristics.

Commonly Recognized Groups:

- Plants
- Animals
- Insects
- Dogs, Cats, etc.
 - When we hear "**dog**", we associate it with specific characteristics.
 - Same with terms like "**mammals**" or "**wheat**".
 - These are called: Taxa

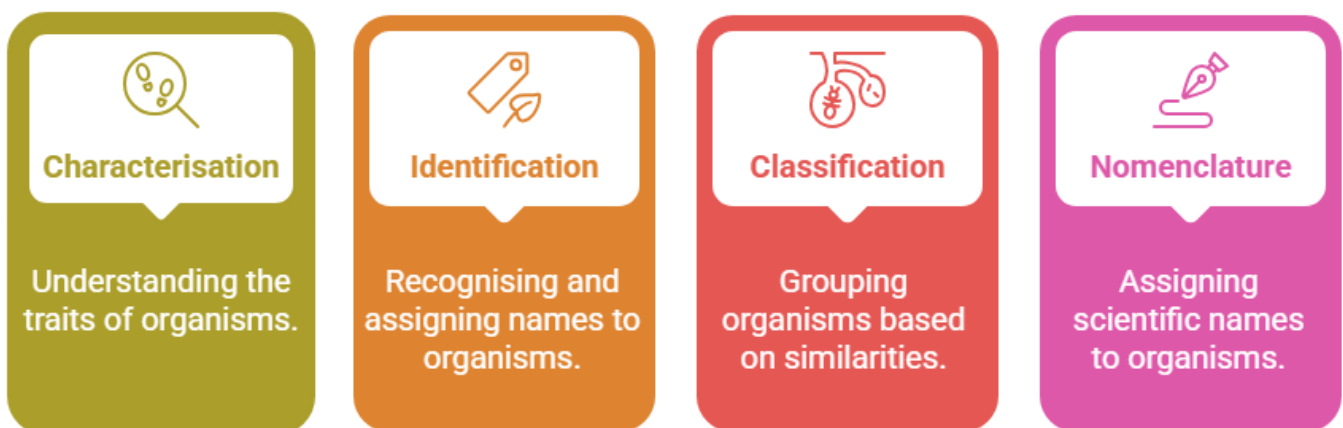
Taxa – a group or category of organisms.

- Examples of Taxa at Different Levels:
 - **Dog** → Mammal → Animal
 - **Wheat** → Plant
- Each level represents a taxon (plural: taxa), ranging from broad to specific.

Taxonomy

- Taxonomy is the branch of biology concerned with the identification, naming, and classification of organisms.
 - **Characterisation** – Understanding traits of organisms
 - **Identification** – Recognising and naming organisms
 - **Classification** – Grouping organisms
 - **Nomenclature** – Naming organisms

Taxonomy Components



Basis of Modern Taxonomic Studies

- External structure (morphology)
- Internal structure (anatomy)
- Cell structure
- Developmental process
- Ecological information

Taxonomy helps organize knowledge and make the study of life forms manageable and systematic.

Systematics

Definition:

- **Systematics** is the scientific study of organism diversity and their evolutionary relationships.
- It includes taxonomy but goes further by focusing on evolutionary links.
- The term comes from Latin "*Systema*", meaning systematic arrangement.
- **Linnaeus** introduced the term in his work *Systema Naturae*, laying the foundation of modern classification.

Scope of Systematics:

- Identification
- Nomenclature
- Classification
- Study of evolutionary relationships

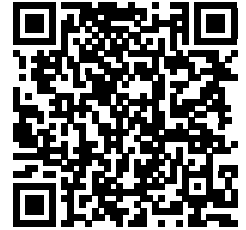


FREE PREVIEW

[Click here to visit our website](#)

SCHOOL NOTES & NCERT SOLUTIONS

Complete notes and
NCERT solutions are
available on
FirstHope app only.



[Scan or click here](#)

Click here to get the app

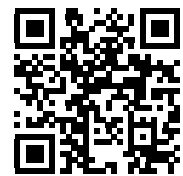


Available on Google Play

JOIN THE FIRSTHOPE COMMUNITY

Join our Telegram channel

Click here to join Telegram



[Scan or click here](#)

@FirstHope_CBSE_Notes

Instagram

@firsthope.school

[Click here to follow >](#)

YouTube channel

@firsthope.school

[Click here to watch >](#)

FirstHope website

firsthope.co.in

[Click here to visit our website >](#)

CBSE / Class 9 / Class 10 / Class 11 / Class 12

Preview notes and NCERT solutions. Full PDFs in the FirstHope app.