

THE LIVING WORLD



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INTRODUCTION



- **Biology** - The term **biology** is derived from the Greek word *bios* means 'life' and *logos* means 'to study'.
- Biology thus can be defined as the **study of life and living organisms**.
- Broadly divided into-
 - **Botany**
 - **Zoology** &
 - **Microbiology**
- **Biology a science of exception.**
- **Life** - Life can be defined as the property or quality of the living organisms that distinguishes from dead or non-living in some biochemical processes (metabolism) and functions like reproduction, movement, growth, etc.



CHARACTERISTICS OF LIVING THINGS



1. **Body made up of cell/cells**
2. **Definite size and shape**
3. **Growth**
4. **Reproduction**
5. **Metabolism**
6. **Movement & Locomotion**
7. **Consciousness & response to stimuli**
8. **Definite pattern of life cycle and a definite life span**
9. **Adaptation & Evolution**
10. **Mutation**



GROWTH



- Growth is an important characteristic feature of living beings.
- It can be referred to as increase in:
 - Size
 - Shape
 - Weight
 - Mass
 - Length/height &
 - Number
- Non-living objects also grow in mass by accumulation of material on its surface, called **accretion**.
- Growth in a living being takes place due to internal processes, i.e. cell division, called **intussusception**.
- Plants show continuous growth throughout their life span (**unlimited growth**), while animals show growth up to a certain age (**limited growth**).



REPRODUCTION



- All living beings produce their offspring by the process of reproduction.
- Reproduction is an important process for continuing the lineage of a species.
- Reproduction may be of two types - asexual and sexual
 - Algae, Fungi reproduce by asexual spores.
 - Yeast and Hydra by budding.
 - *Planaria* (flat worms), Moss, etc. by regeneration.
 - Unicellular organisms like bacteria, unicellular algae, *Amoeba*, etc., reproduction is synonymous with growth, i.e., increase in number of cells.
- Sexual reproduction takes place in variety of plants and animals and even in micro-organisms.



METABOLISM



- All living organisms are made up of chemicals/molecules belonging to various classes, sizes and functions.
- These chemicals within a living organism are constantly being made and changed into some other biomolecules by some reactions.
- The sum total of all these bio-chemical reactions occurring in our body is metabolism.
- Metabolism is of two types—
 - **Anabolism: constructive processes** (eg. Photosynthesis)
 - **Catabolism: destructive processes** (eg. Respiration)
- No non-living object exhibits metabolism.



MOVEMENT & LOCOMOTION



- Living organisms exhibit spontaneous movement.
- Higher plants do not move from one place to another, but the movement is recorded like
 - Movement of protoplasm
 - Climbing of creepers
 - Opening of petals of flower
 - Geotropic & Phototropic movement
 - Nastic & epinastic movement
- Locomotion is performed by all **animals** and some **lower plants** like algae (*Chlamydomonas*, *Volvox*, etc.) and **Bacteria**.



RESPONSE TO EXTERNAL STIMULI



- Living organisms respond to their surroundings or environment.
- Respond to environmental stimuli could be physical, chemical or biological.
- Plants respond to external factors like light, water, temperature, other organisms, pollutants, etc.
- Organisms can sense and respond to environmental clues.
- Photoperiod affects reproduction in seasonal breeders, both plants and animals
- Organisms handle chemicals entering their bodies and aware of their surroundings.
- Human being, the only organism, which has self-consciousness.



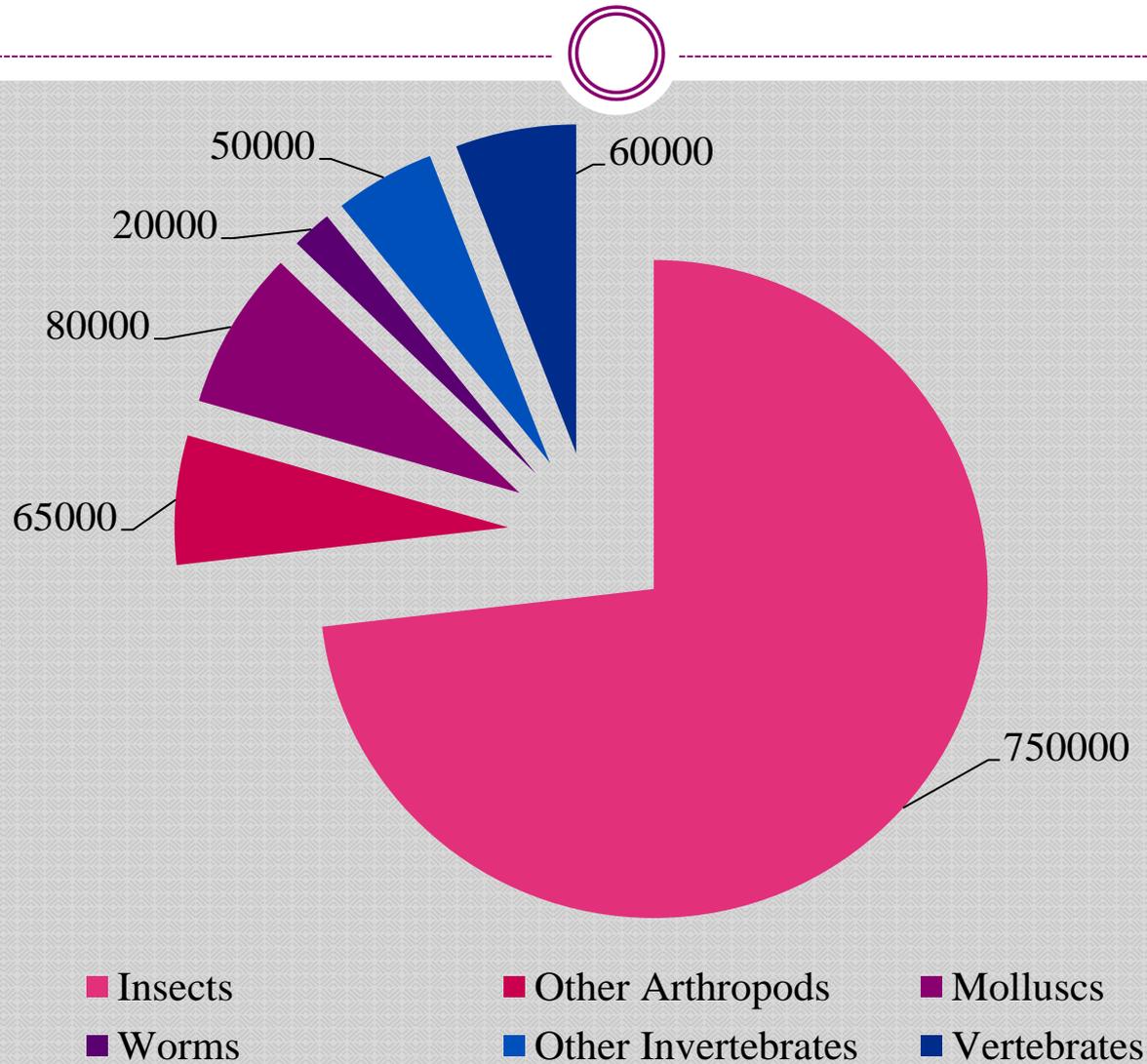
DIVERSITY IN THE LIVING WORLD



- **Biodiversity** - The enormous variety of organisms present on earth is called biodiversity.
- About **7-10 million species** might be present on earth.
- Scientifically identified about **2 million species** (**1.7-1.8 million** acc. to NCERT book).
 - **1.25 million species of animals.**
 - **0.5 million species of plants.**
- Acc. To Global Biodiversity Information Facility and Species 2000, there might be around **5-30 million species** present on earth, occurring in dense forests and deep sea waters.
- Every year around **15000 new species** are being discovered.

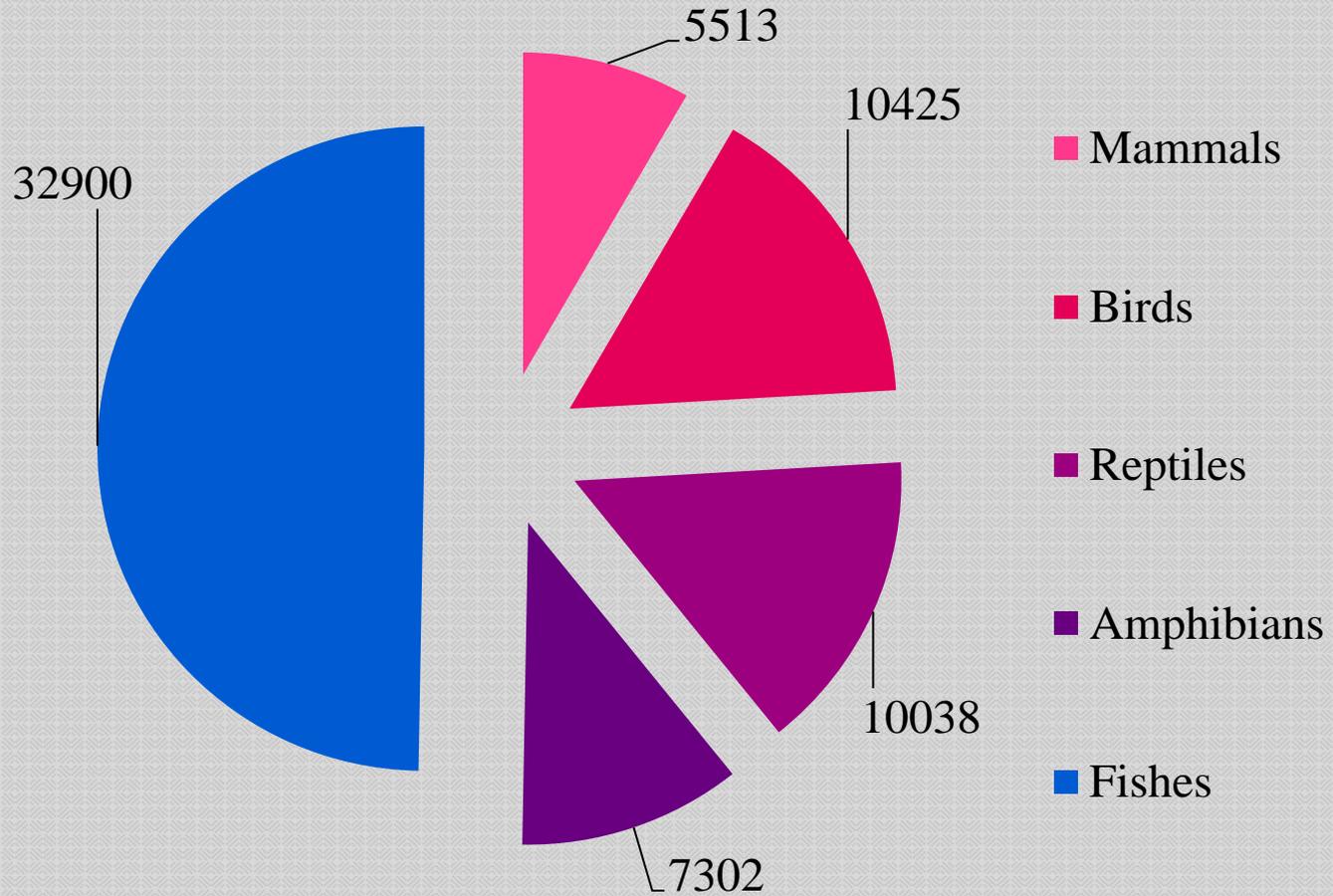


Estimate of Animal Species



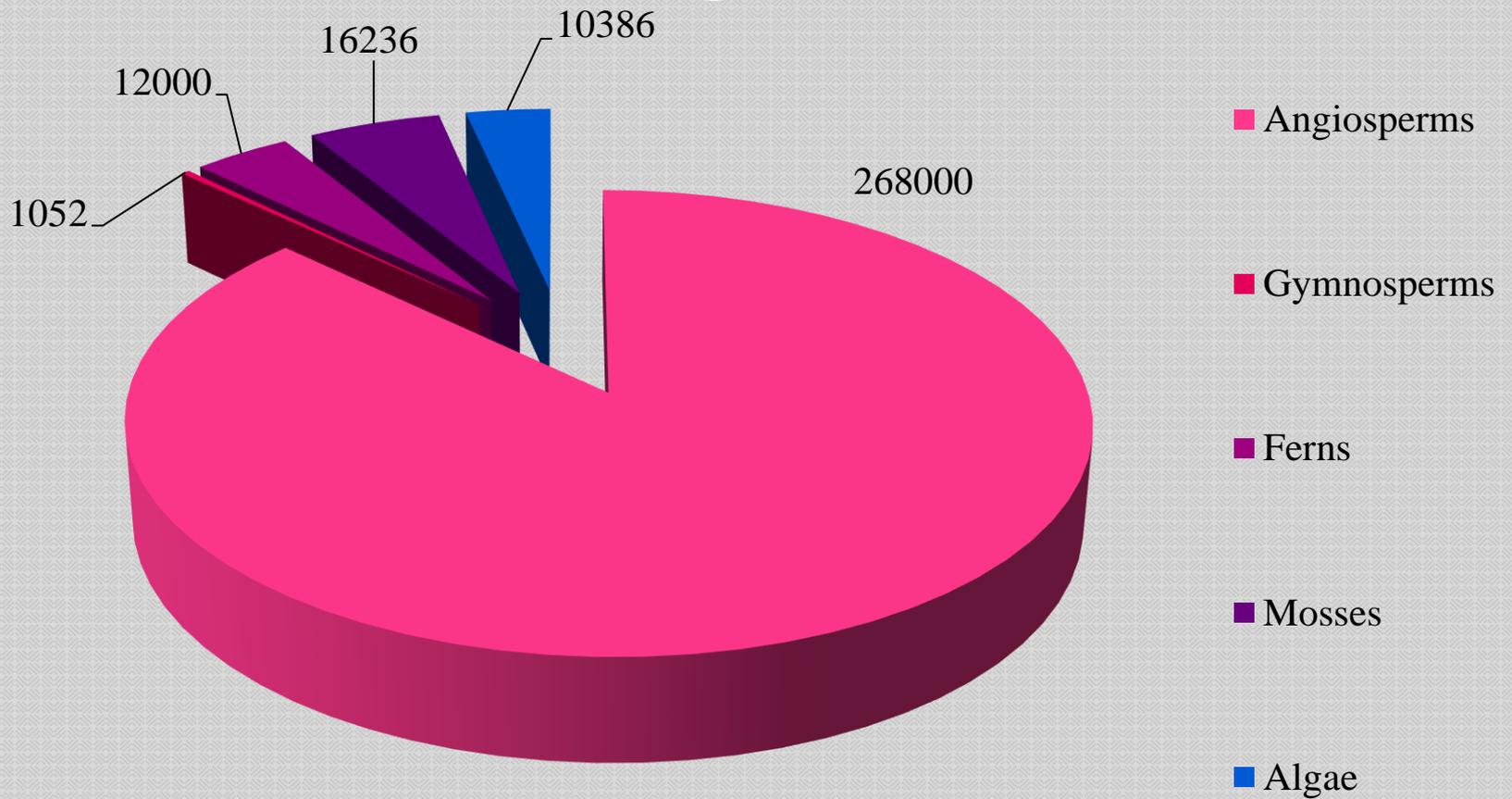


Estimate of Vertebrates





Estimate of Plants





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N.B. Please mention your name at the end of your answers.



THANK YOU.....

SEE YOU IN MY NEXT CLASS.....