Biology Ch 1

Biology

- **Bio-logy made of two latin/greek words**
- ***Bios and logos***
  - ***Bios means life***
  - ***logy means study***
- ***What is living? (What makes something alive?)***
  - **1. capturing and using energy and materials.(Metabolism)**
  - **2. growth and development.**
  - **3. reproduction**
  - **4. definite life span**
  - **5. adjustment to changing conditions. (Homeostasis)**

Communities Environments & Ecosystem

- Community-
  - A natural occurring group of ***interacting organisms***
    - Organisms depend on each other
    - The communities there are different organisms that have different roles
- Environment-
  - everything *that surrounds* a particular organism both living and non living
- Ecosystem –
  - All the *communities collectively together* that live in an area together and their environments

*Know the difference between the three **

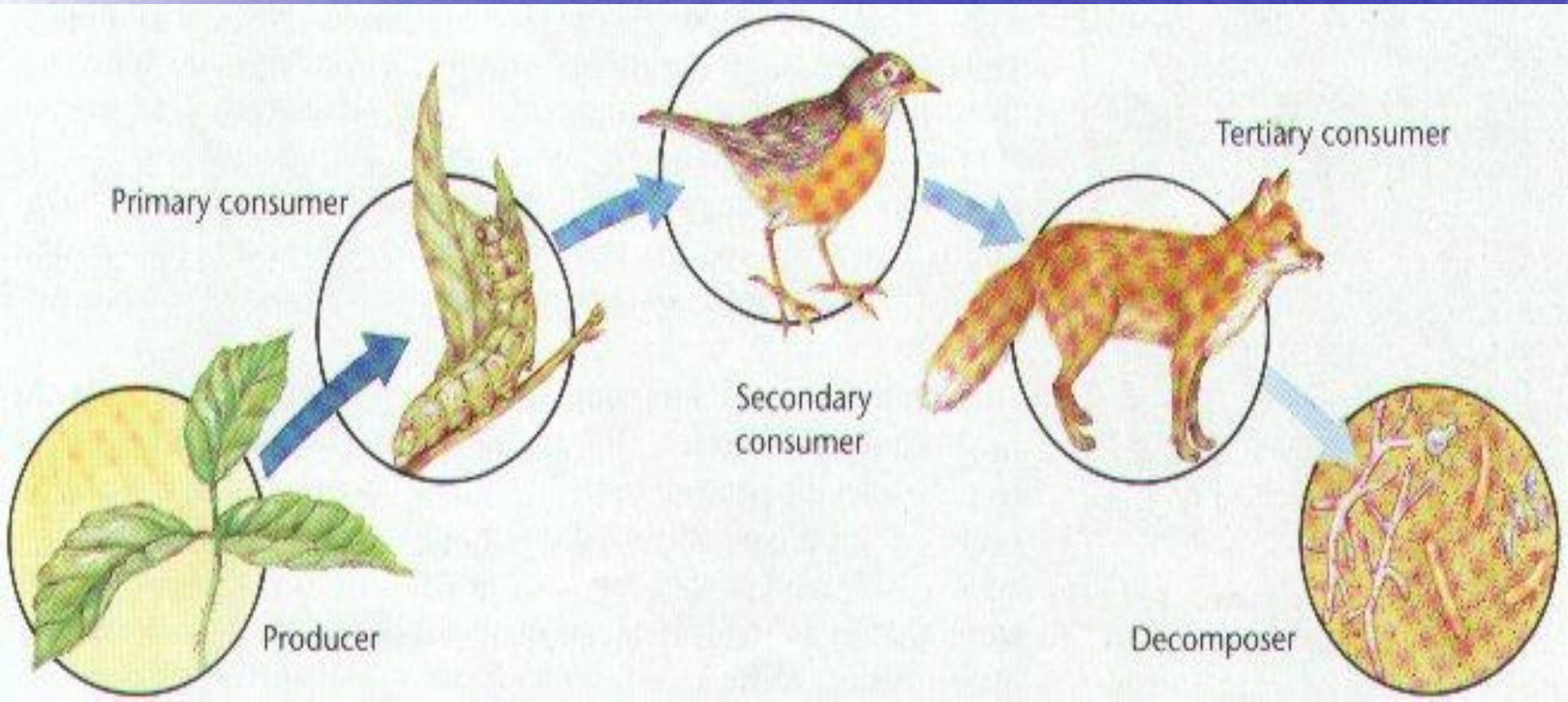
Types of Organisms

- **Producers- Green plant- Organisms that produce their own food**
- **Consumer- Eats other organisms**
  - **Herbivore**
  - **Carnivore**
  - **Omnivore**
  - **Saprophyte: An organism that gets its food from the waste products of other living organisms Example Mushroom**
  - **Decomposer – organism that causes decay**
  - **Symbiosis – two organisms that live together**
    - **Mutualism ++**
      - **Example: Lichen**
    - **Parasite – organisms that obtain their food from another organism (host) and usually harms the host organisms. Example: Tape worm +-**
    - **Commensalism – organism that one benefits and the other is unharmed. +0**

Do outdoor activity

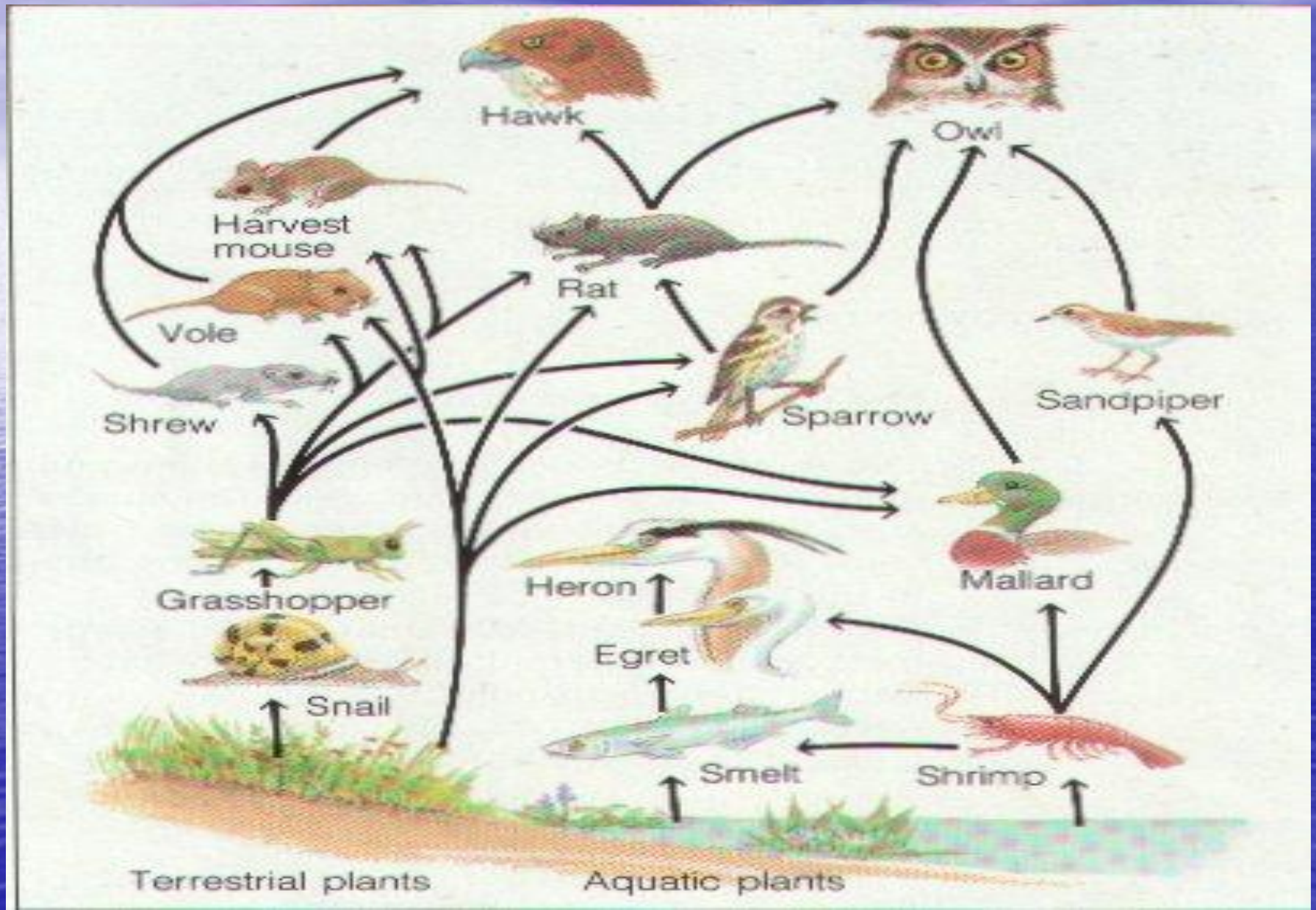
Example of a Food Chain

- **These different types of organisms make up food chains**



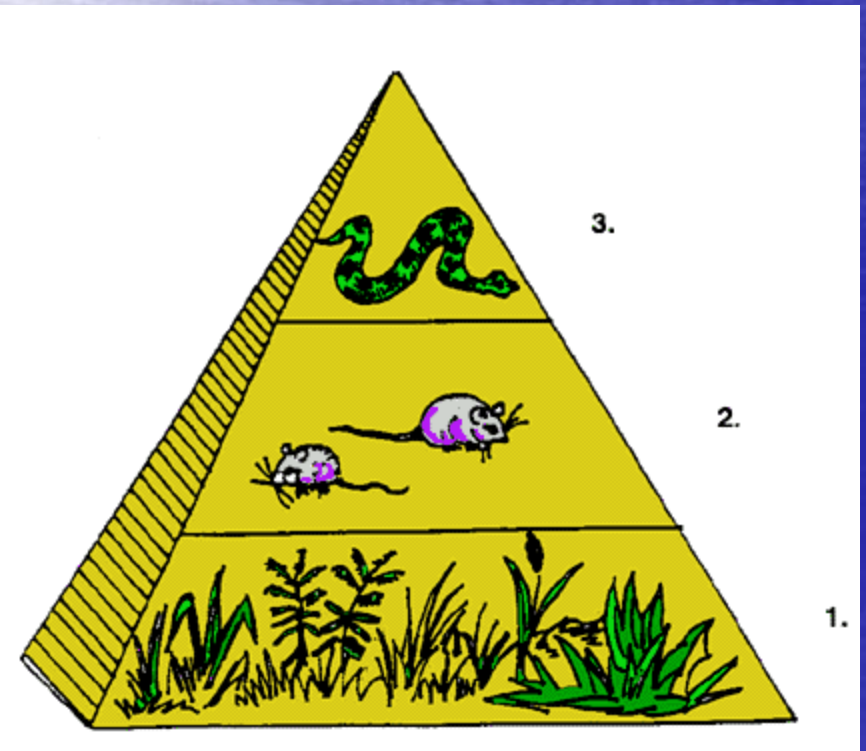
Food Webs

- All the food chains in an area make up the **food web** of the area.



Food production and energy transfer

- Energy is the ability to do work and cause motion
- Energy is lost as heat at each level of consumption on the food Energy pyramid

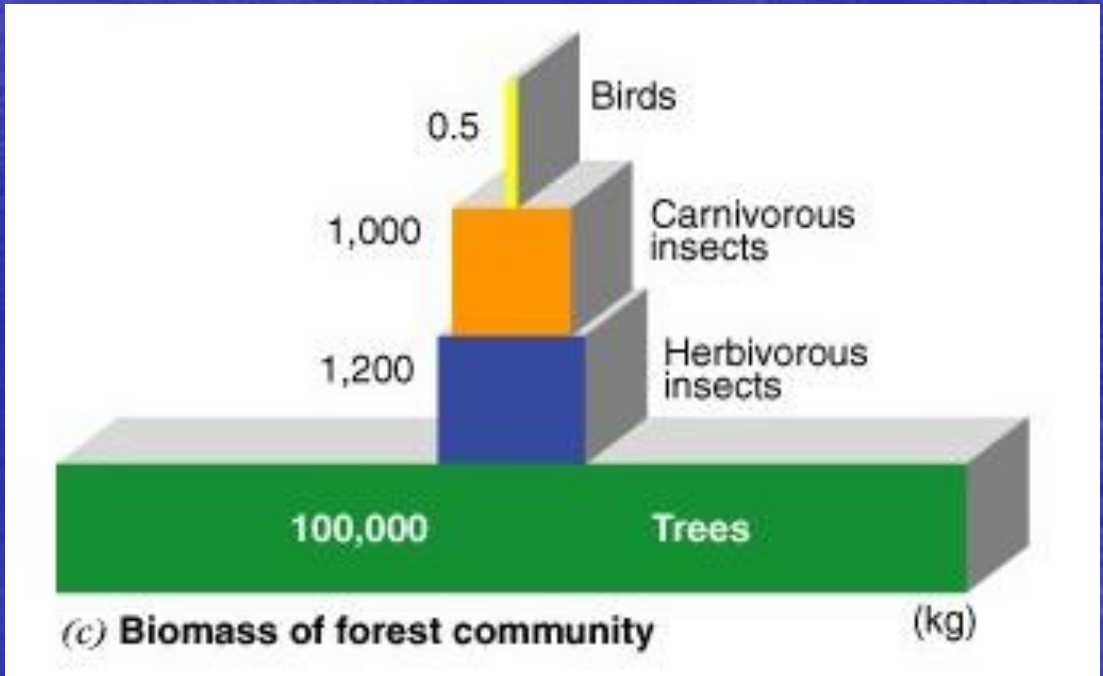


Food Production & Usage

- Food is generally produced by plants through the process of photosynthesis
  - Chlorophyll is needed for photosynthesis
    - The green pigment in plants
  - Photosynthesis produces glucose which is the energy source for most living things
    - $H_2O + CO_2 + \text{Light} + \text{chlorophyll} \rightarrow C_6H_{12}O_6 + O_2$
  - The process of consumers using the energy found in glucose is *respiration*
    - $C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O + \text{energy}$

Producer/Consumer Interaction

- Plants are called producers (energy packagers)
  - Food chain
    - A series of producers and consumers that interact in a community
    - The way that energy flows through a community page 15
    - Energy is lost through each step
    - Food pyramid
    - Materials are recycled through a living system of organisms



(c) Biomass of forest community

Uses of energy in organisms

- Three main uses of energy in living things
  - Growth and Development
  - Maintenance and repair
  - Reproduction

Growth & Development

- 1. Growth is an increase in the amount of living material in an organism

- 2. Development – the series of changes an organism undergoes reaching its final form.

Maintenance and repair

- Maintenance – all things that maintain an organism
    a) Balance of the organism.
    b) Homeostasis
- Repair – replacing & repairing damaged parts

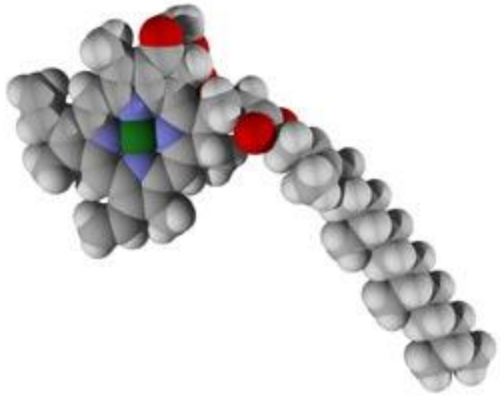
- **Homeostasis**
  - organisms - controlled responses to change.
  - food supply
  - toxic substances - avoided or eliminated.
  - environmental conditions
  - Internal conditions - tolerable ranges - pH, temperature
  - controls - govern adjustments to changes in the internal and external environment.
    - may be needed to complete development.
    - at puberty, hormones trigger maturation

Reproduction

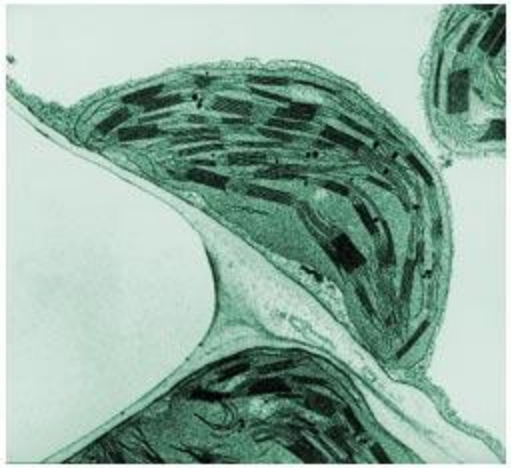
- **reproduction - the production of offspring**
  - **a. sexual and**
  - **b. asexual**
  - Attracting of the mate
  - Growth, development and care of the young

Organization –

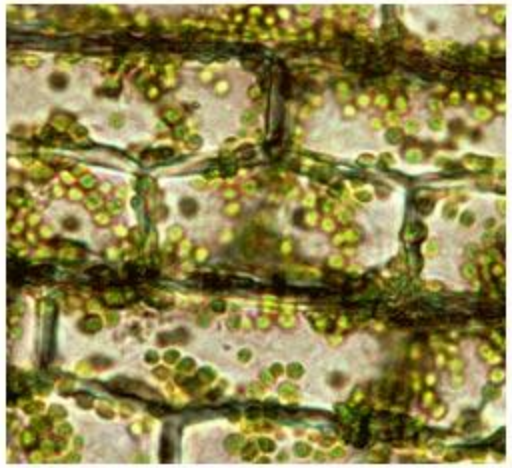
- orderly function of living things (Result of heredity)
- **Multicelled organisms - increasingly complex levels**
  - molecular>organelle>cellular> tissues > organs > organ systems > organisms > populations >communities > ecosystems>biomes>biosphere.



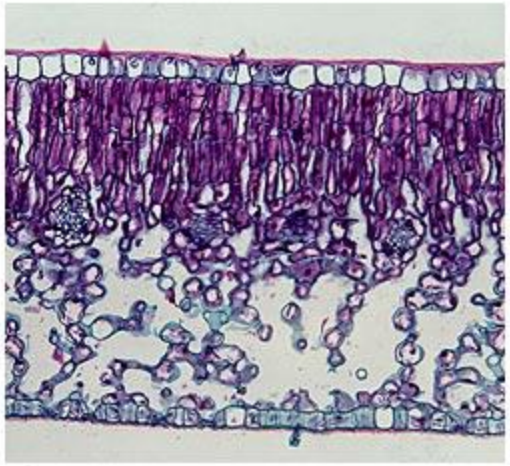
Molecule



Organelle



Cells



Tissues

Organ

Organism