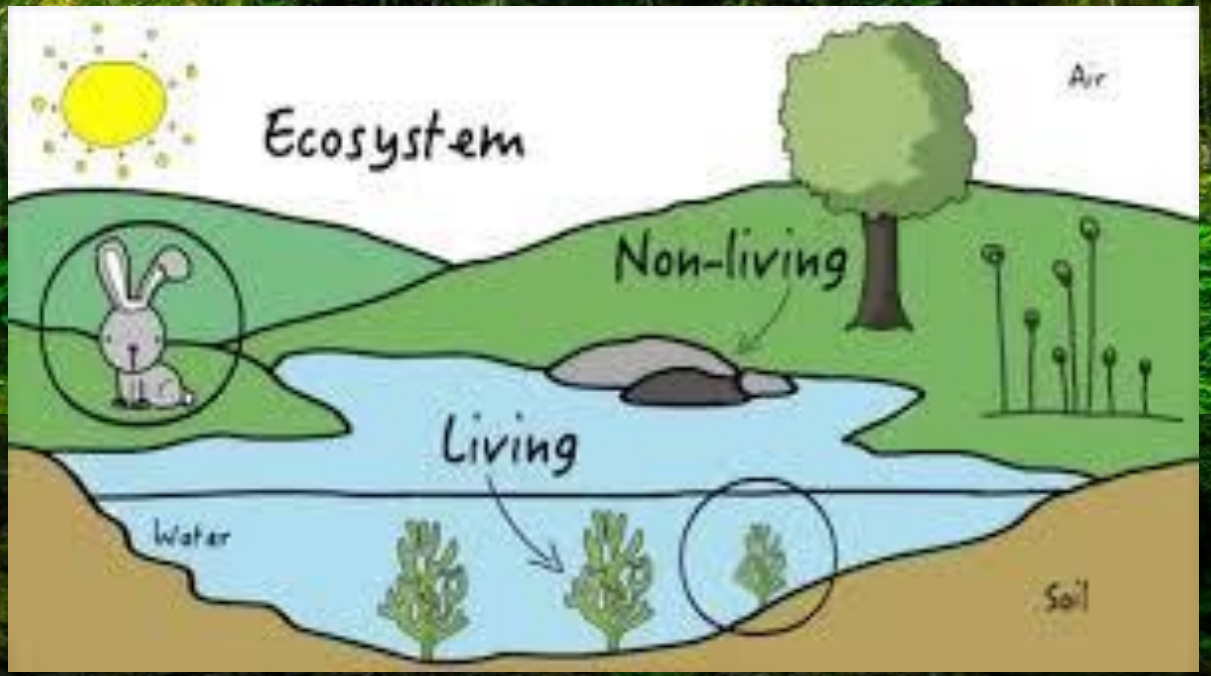
ECOLOGY



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CHE 110: Environmental Studies

Unit - 2

Ecosystems

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Introduction

- Greek word “Oikos” meaning “home” and “logos” meaning “study”
- Ecology: The study of organisms in their natural habitat interacting with their surroundings
- Ecosystem: A self-regulating group of biotic communities of species interacting with one another and with their non-living environment exchanging energy and matter

Ecosystem

- An *ecosystem* is a natural unit consisting of all plants, animals, and micro-organisms in an area functioning together with all the non-living physical factors of the environment.
- According to British ecologist Arthur Tansley (1935), an ecosystem is a system that arises from the integration of all living and non-living factors of the environment.
- An ecosystem is a self-sustained community of plants and animals existing in its own environment.
- The term ecosystem may be defined as a system resulting from the integration of all the living and non living factors of the environment. Desert, Forest, Ocean, Grasslands, Mountains, etc. are all ecosystems
- An ecosystem can be as large as the Sahara Desert, or as small as a puddle!!!

Classification

- Classification of ecosystem
  - Natural ecosystem
    - Aquatic
      - Fresh water
        - *Running water* **Lotic Ecosystems**
        - *Standing water* **Lentic Ecosystems**
      - Marine
    - Terrestrial
      - Grassland
      - Forest
      - Desert
  - Artificial / Engineered ecosystem

Structural unit

- Abiotic
  - Physical
    - Climatic (Sunlight, temperature, humidity, rainfall, wind)
    - Edaphic (soil type, soil moisture, soil reaction)
    - Geographic (Latitude, longitude, Altitude)
  - Chemical
    - Major nutrients
    - Trace elements
    - Pollutants
    - Organic substances

Limiting Factors

- Factors which restrict the further growth of population
  - Availability of food
  - Water
  - Shelter
  - Space
  - Nutrients

Continue…

- Biotic
  - Producers
    - Photo-autotrophs: Carry out photosynthesis. Using energy from sunlight, carbon dioxide and water are converted into organic materials to be used in cellular functions.
    - Chemo-autotrophs: create their own energy and biological materials from inorganic chemicals (*Nitrosomonas*, Iron bacteria, Methanogens)
  - Consumers
    - Herbivores
    - Carnivores
    - Omnivores
    - Detritivores
  - Decomposers

Functional unit

- Food chain (sequence of eating and being eaten), food web, trophic structure
- Energy flow
- Cycling of nutrients

https://www.youtube.com/watch?v=R8q_iRRabT4