# ECOSYSTEM

# PREPARED BY AYESHA

### ECO SYSTEMS

 Ecosystem - living things in a given area, non-living chemical and physical factors of their environment, linked together through nutrient cycle and energy flow

**Types of Ecosystem** 

Aquatic

Natural

Artificial/Man-made

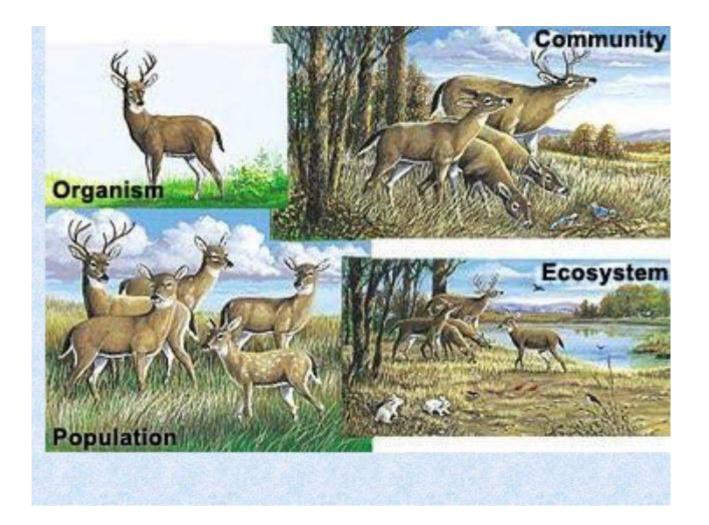
Terrestrial (Forest, Grass land, Desert) Marine

Fresh water

riesii water

Lotic -river, stream or spring.

Lentic -lake, pond or swamp.



Population Population + Population COMMUNITY

# Name the three members in every community.

**Producers** 

Consumers

Decomposers

# All energy in a food web comes from the...

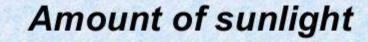
## What makes ecosystems different?



3

2

# Amount of water



Type of soil

# **Ecology:**

Study of the distribution and abundance of organisms, the flows of energy and materials between abiotic and biotic components of ecosystems.

# **Ecosystem Structure:**

The living components of an ecosystem / The roles of organisms in an ecosystem:

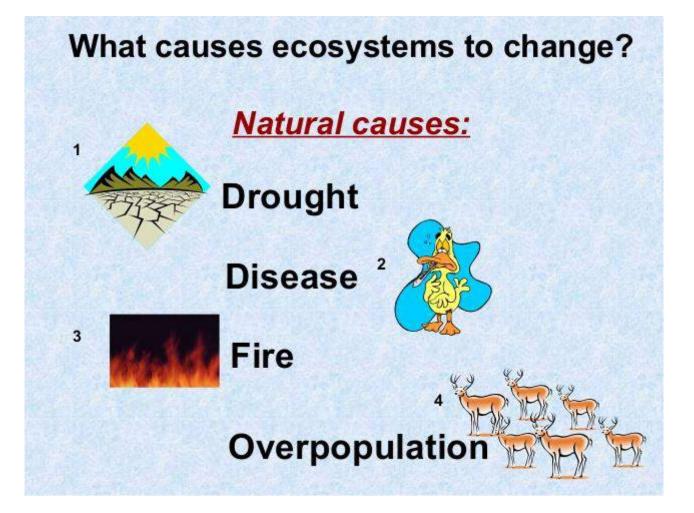
- **Producer** (autotrophy): make food; plants, algae
- **Consumer** (heterotrophy): eat other organisms
- Decomposer: eat dead organic matter; bacteria and fungi

# **Classes of Consumers**

Herbivore – primary consumer – eats plants

Carnivores – secondary – meat eaters; eat herbivores

Omnivores - eat plants/animals.



## What causes ecosystems to change?

### **Changes caused by humans:**



Water pollution

**Air pollution** 



2

4



Land pollution



Construction



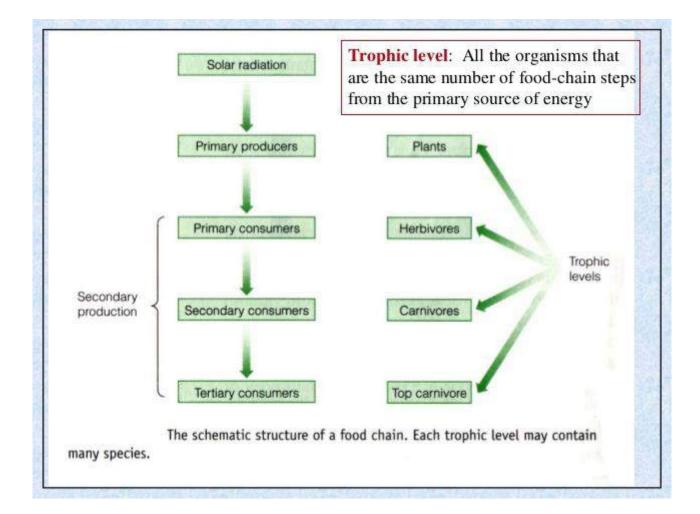
# Ecosystems: Fundamental Characteristics ABIOTIC components

- Solar energy provides practically all the energy for ecosystems.
- Inorganic substances, e.g., sulfur, boron, tend to cycle through ecosystems.
- Organic compounds, such as proteins, carbohydrates, lipids, and other complex molecules, form a link between biotic and abiotic components of the system.

#### Ecosystems: Fundamental Characteristics

### **BIOTIC components**

- The biotic components of an ecosystem can be classified according to their mode of energy acquisition.
- In this type of classification, there are:
- Autotrophs and Heterotrophs
- Organisms that produce their own food from an energy source, such as the sun, and inorganic compounds.
- Organisms that consume other organisms as a food source.



# **Trophic Levels**

- A trophic level is the position occupied by an organism in a food chain.
- Trophic levels can be analyzed on an energy pyramid.
- Producers are found at the base of the pyramid and compromise the first trophic level.
- Primary consumers make up the second trophic level.
- Secondary consumers make up the third trophic level.
- Finally tertiary consumers make up the top trophic level.

# Trophic Levels Found on an Energy Pyramid

- The greatest amount of energy is found at the base of the pyramid.
- The least amount of energy is found at top of the pyramid.



Source: corpuschristiisd.org/user\_files/91702/Ecosystem.ppt

# FOREST ECOSYSTEM (TERRESTRIAL ECOSYSTEM)

- A forest is an area with a high density of trees.
- World's total land area is 13,076 million hectares
  - Of which total forests account for about 31% of the world's land area.
- In India, the forest cover is roughly 19% of the total land area.
- The forest ecosystems are of great concern from the environmental point of view.

### FOREST ECOSYSTEM (TERRESTRIAL ECOSYSTEM)

- It provides numerous environmental services like;
  - · Nutrient cycling,
  - · Maintaining biodiversity
  - · Providing wildlife habitat
  - · Regulating stream flow
  - Storing water
  - Reducing flooding
  - Preventing soil erosion
  - Reclaiming degraded land & many more....

### Structure and Function of FOREST ECOSYSTEM

#### **Biotic components**

#### I. Producer Organisms

In a forest, the producers are mainly trees.

Trees are of different kinds depending upon the type of forest developed in that climate.

Apart from trees, climbers, epiphytes, shrubs and ground vegetation.

Dominant species of trees in major types of forest ecosystems are:

Tectona grandis, Acer, Betula, Picea, Pine, Cedrus.

### Structure and Function of FOREST ECOSYSTEM

### **Biotic components - Consumers**

In a forest, consumers are of three main types;

#### a) Primary Consumers

These are Herbivores which feed directly on producers. Eg:

\* Ants, Beetles, Bugs, spiders etc. feeding on tree leaves.

Larger animals such as Elephants, Deer, giraffe etc. grazing on shoots and/or fruits of trees.

#### b) Secondary Consumers

These are carnivores and feed on primary consumers.

Eg: Birds, Lizards, Frogs, Snakes and Foxes.

#### c) Tertiary Consumers

These are secondary carnivores and feed on secondary consumers

\* These include top carnivores like Lion, Tiger.

### **Biotic components – Decomposers**

These include wide variety of saprotrophic microorganism like;

- Bacteria
- Fungi
- Actinomycetes (Streptomyces).

They attract the dead or decayed bodies of organisms & thus decomposition takes place.

Therefore, nutrients are released for reuse.

# **THANK YOU**