

Chapter 3: Ecosystems

An **ecosystem** is a community of living organisms (biotic factors) interacting with their physical environment (abiotic factors). Ecosystems can be large like a forest or small like a pond.

1. Understanding Ecosystems

Biotic Factors (Living Components)

1. **Producers (Autotrophs):** Plants that produce their own food through photosynthesis. (*Example: Trees, Grass, Algae*)
2. **Consumers (Heterotrophs):** Organisms that depend on other organisms for food.
 - **Herbivores (Primary Consumers):** Eat plants. (*Example: Deer, Rabbits*)
 - **Carnivores (Secondary/Tertiary Consumers):** Eat other animals. (*Example: Lions, Frogs*)
 - **Omnivores:** Eat both plants and animals. (*Example: Humans, Bears*)
3. **Decomposers:** Break down dead plants and animals, recycling nutrients. (*Example: Bacteria, Fungi*)

Food Chain & Food Web

- **Food Chain:** A simple sequence showing how energy flows from one organism to another.
Example: Grass → Deer → Tiger
 - **Food Web:** A complex network of interconnected food chains in an ecosystem.
 - **Pyramid of Numbers:** A diagram showing the number of organisms at each level in a food chain.
-

2. Interdependence Between Organisms

- **Symbiosis:** Two organisms live together and benefit each other. (*Example: Lichens – Algae & Fungi*)
 - **Parasitism:** One organism benefits while harming the other. (*Example: Lice on human scalp, Tapeworm in intestines*)
 - **Predation:** One organism hunts and eats another. (*Example: Lion and Deer, Snake and Frog*)
-

3. Abiotic (Non-Living) Components

- **Air:** Provides oxygen for respiration and carbon dioxide for photosynthesis.
 - **Soil:** Supports plant growth and stores nutrients.
 - **Water:** Essential for survival and biochemical reactions.
 - **Climatic Factors:**
 - ✓ **Sunlight** – Source of energy for photosynthesis.
 - ✓ **Temperature** – Affects growth and survival of organisms.
 - ✓ **Humidity** – Influences water loss and weather conditions.
 - ✓ **Wind** – Affects seed dispersal, evaporation, and temperature.
-

4. Forest Ecosystem: Flora and Fauna

A **forest ecosystem** consists of dense vegetation and diverse wildlife.

Flora (Plants):

- ❁ Tall trees like **Teak, Sal, Banyan**
- ❁ Shrubs and bushes like **Bamboo**
- ❁ Grasses and ferns

Fauna (Animals):

- **Carnivores:** Tigers, Lions, Foxes
 - **Herbivores:** Deer, Elephants, Giraffes
 - ❁ **Omnivores:** Bears, Crows
 - ❁ **Decomposers:** Fungi, Earthworms
-

Conclusion

Ecosystems are a balance of living and non-living factors. In a forest, plants, animals, and decomposers interact to maintain ecological balance. Understanding ecosystems helps in conserving nature and protecting biodiversity. 🌲❁🌍