

# Organisms & their environment

## Ecosystem:

A system where organisms interact and maintain balance. Key roles:

- Producers: Make their own food (usually via photosynthesis).
- Consumers: Feed on other organisms for energy, classified as primary, secondary, or tertiary.
- Herbivores: Eat plants.
- Carnivores: Eat other animals.
- Decomposers: Break down dead material for energy.

## Energy Flow:

Energy originates from the sun, transferred through organisms in a food chain. Most energy is lost (about 90%) at each trophic level through respiration, movement, and waste.

## Trophic Levels:

Show an organism's position in the food chain (e.g., producers, primary consumers, etc.). Fewer higher-level consumers due to energy loss.

## Food Chains & Webs:

- Food Chain: Shows direct energy flow between organisms.
- Food Web: A network of interconnected food chains.

## Food Pyramids:

- Pyramid of Numbers: Depicts the number of organisms but can be misleading (e.g., many aphids on one tree).
- Pyramid of Biomass: More accurately shows energy available at each trophic level.

## Cycles:

Carbon, Water, and Nitrogen Cycles: Critical for recycling essential elements in ecosystems.

## Population Size:

- Population: Group of one species in the same area.
- Community: Different species populations interacting in an ecosystem.

## Population Growth Phases:

- Lag Phase: Slow growth with few individuals.
- Log Phase: Exponential growth under ideal conditions.
- Stationary Phase: Population reaches carrying capacity (limited by resources).
- Decline/Death Phase: Environmental changes cause a population decrease.

## Factors affecting population:

Food, predation, and disease.

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