

Ecosystems and Food Chains

Chapter 13: Our Environment · Topic 1

Key Concept

At each trophic (feeding) level, only about 10% of the energy is transferred to the next level, with the remaining 90% lost mainly as heat through metabolic processes like respiration and movement — this '10% law' explains why food chains rarely extend beyond four or five levels, and why there must be many more producers than top predators to sustain an ecosystem's energy needs. Multiple interconnected food chains form a more complex, realistic food web within any given ecosystem.

Quick Revision Notes

- An ecosystem includes biotic (living) and abiotic (non-living) components.
- Energy flows through food chains: producers → herbivores → carnivores → decomposers.
- The 10% law: only about 10% of energy transfers between trophic levels, rest lost as heat.
- Multiple food chains interconnect to form a more complex food web.

Practice Questions

- 1 Draw a simple food chain showing four trophic levels.
- 2 Explain the 10% law of energy transfer in an ecosystem.
- 3 Why must an ecosystem have many more producers than top predators?