

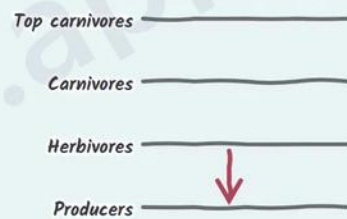
one way for energy, round and round for matter, and why the chain is always short

The parts of an ecosystem

- an **ecosystem** is the living community of a place together with the non living surroundings it interacts with
- the **abiotic** components are light, temperature, water, air and soil
- **producers** make their own food by photosynthesis, so they are **autotrophs**: green plants and algae
- **consumers** cannot, so they are **heterotrophs**: herbivores eat producers, carnivores eat other consumers, omnivores eat both
- **decomposers** break down dead matter and waste, returning the nutrients to the soil: bacteria and fungi
- without decomposers the nutrients would stay locked in dead bodies and the cycles would stop entirely

Food chains and food webs

- a **food chain** is a single line of who eats whom, always starting with a **producer**
- each step is a **trophic level**: producers first, herbivores second, then carnivores
- a **food web** is the many overlapping chains of a real ecosystem, since most organisms eat more than one thing
- a web is more realistic and more stable than a single chain, because a species that fails can be replaced by another
- the arrows point in the direction the energy travels, from the eaten to the eater, which is the opposite of what people first draw
- chains rarely run beyond four or five levels, and the reason is the energy loss at every step



the trophic levels stacked with producers at the base: each rung is supported by the one below and carries only a small fraction of its energy, which is why the upper rungs hold so few individuals