

Pod 1. Ecosystems

An **ecosystem** is a community of plants and animals and the environment in which they live: A **biome** is a large naturally occurring community of flora (plants) and fauna (animals) occupying a major habitat, e.g. a forest or tundra. An ecosystem/biome relies on two basic processes

- The flow of energy
- The recycling of nutrients

Ecosystems have two main elements:

- Abiotic: These are non-living, such as air, water, heat, rock.
- Biotic: These are living, such as plants, insects, and animals. They can be further sub-divided into autotrophs (producers) and heterotrophs (consumers) that include herbivores, carnivores, and omnivores, detritivores (decomposers).

Physical processes and interactions - Energy flow

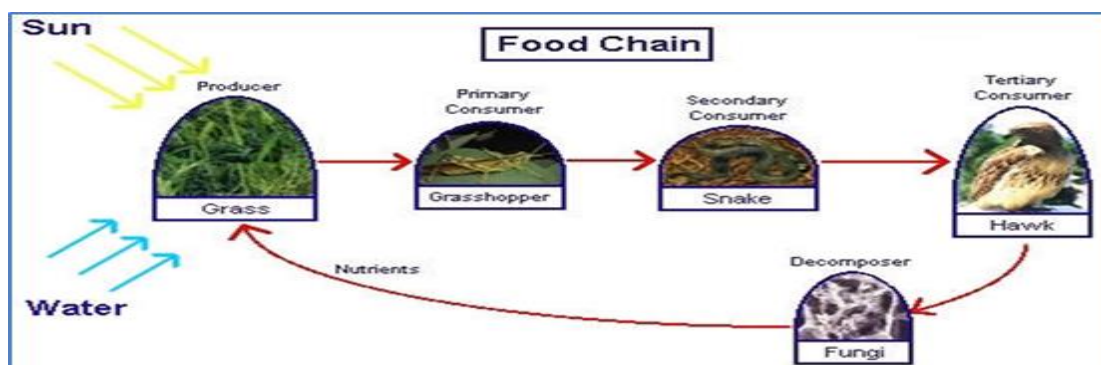
The sun is the source of all energy for all life on earth, and provides both heat and light energy. Despite this, it is kept by the biosphere for only a short time, before it is re-radiated back out to space. The initial process in energy flow is that of photosynthesis where light energy from the sun is trapped by green plants and turned into chemical energy, which can then be used for plant growth.

Energy is then passed along through the ecosystem as food in a food chain or in a more complex food web. Every link in the chain acquires food and feeds on the link prior to it. Each link is also consumed by the link that follows it, for example, blackbirds eat green plants, but in turn are eaten by tertiary consumers such as hawks. Food chains are the process whereby energy that is trapped in carbon compounds is transferred through an ecosystem

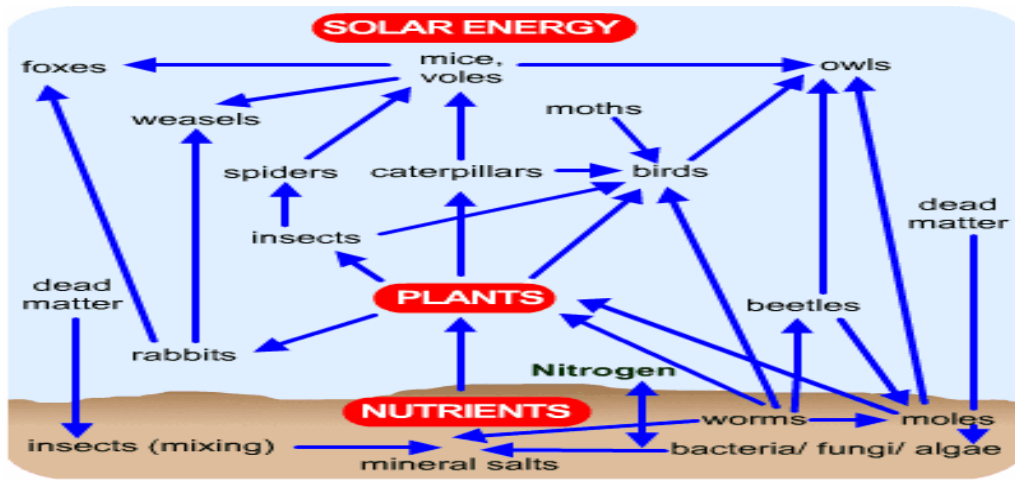
Energy found within any plant and animal material is known as biomass.

Physical processes and interactions - Nutrient stores and flows

Chemicals are an important part of an ecosystem, as they are needed to produce organic material that is moved around the ecosystem and continually recycled. Examples include both **carbon** and **nitrogen**, which are absorbed by plants as gases and salts. The gases come from the atmosphere and the salts come from the soil. At the basic level in each cycle plants take up chemical nutrients, utilize them and then forward them to herbivores and then carnivores.



Ecosystem/biome food web



1. What is an ecosystem?
2. Define the terms biotic and abiotic.
3. What is the source of all energy for life on earth?
4. How do plants absorb energy from the sun?
5. What is the difference between a food chain and a food web?
6. Draw a food chain for the savanna.