

# Weather climate and ecosystems learn sheet.

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:

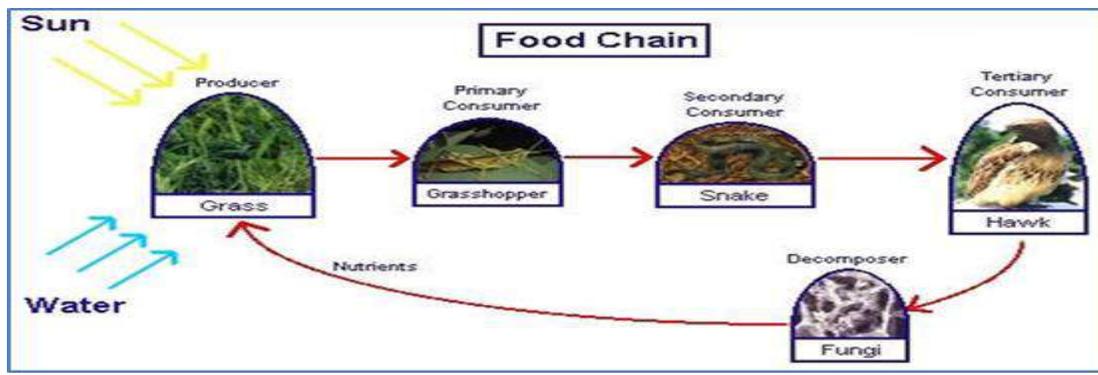
- Abiotic: These are non-living, such as air, water, heat, rock.
- Biotic: These are living, such as plants, insects, and animals. They can be further subdivided into autotrophs (producers) and heterotrophs (consumers) that include herbivores, carnivores, and omnivores, detritivores (decomposers).

## 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

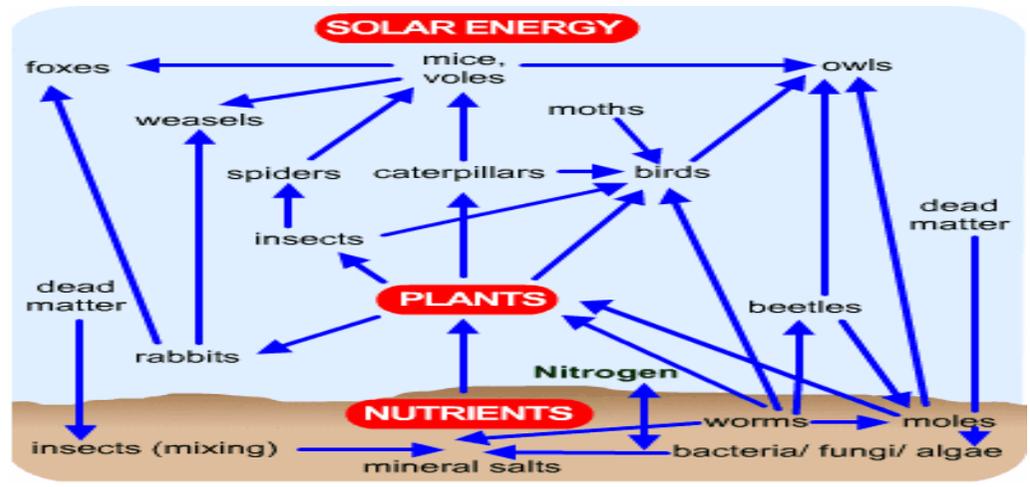
**Energy found within any plant and animal material is known as biomass.**



## 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



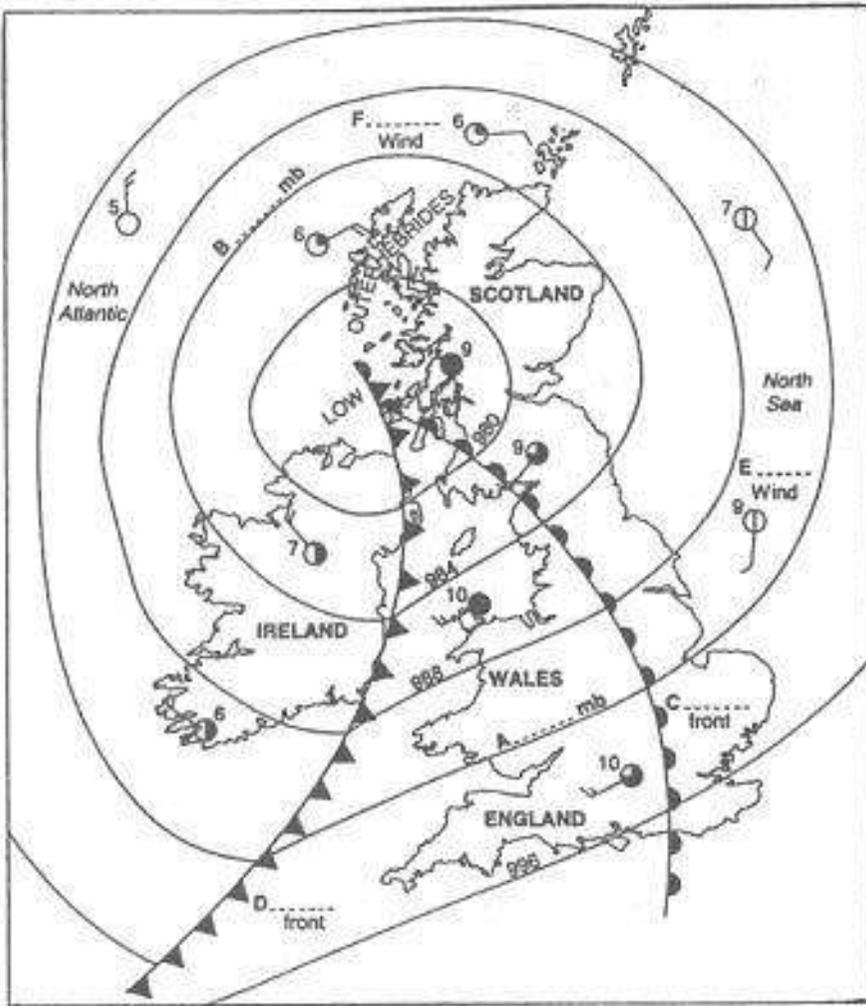
## Small Scale Ecosystem

A sand dune is an accumulation of sand formed by the wind, by waves and by eroding sandstone. As a result of dunes being dependent on the ever constant forces of wind and water their structure is constantly changing.

- Sand dunes are found at the top of a beach, above the usual maximum reach of the waves.
- They form from wind blown sand that is initially deposited against an obstruction such as a bush, driftwood, seaweed or rock. (strand line)
- As more sand particles are deposited the dunes grow in size, forming rows at right angles to the prevailing wind direction.
- Vegetation, such as Marram Grass and Sand Couch, begins to grow on the dun, its roots will help to bind the sand together and stabilise the dunes.

Sand dunes can be important ecosystems supporting unique plant life and a healthy population of small animals and insects.





High and low pressure systems shown by synoptic charts.

Synoptic charts have isobars which show areas of the equal pressure.

Where the pressure increases into the centre it is high pressure, where the pressure decreases into the centre it is low pressure. An occluded front happens when the cold front catches up to the warm front.

Synoptic Weather chart:

- A
- B
- C
- D
- E
- F

Describe the weather using the symbol.

