A trophic level is the group of organisms within an ecosystem which occupy the same level in a food chain. There are five main trophic levels within a food chain, each of which differs in its nutritional relationship with the primary energy source. The primary energy source in any ecosystem is the Sun (although there are exceptions in deep sea ecosystems).

The three basic ways in which organisms get food are as <u>producers, consumers, and decomposers.</u>

1-Producers (autotrophs) are typically plants or algae. Plants and algae do not usually eat other organisms, but pull nutrients from the soil or the ocean and manufacture their own food using photosynthesis. For this reason, they are called primary producers. In this way, it is energy from the sun that usually powers the base of the food chain. An exception occurs in deep-sea hydrothermal ecosystems, where there is no sunlight. Here primary producers manufacture food through a process called chemosynthesis

2-Consumers (heterotrophs) are species that cannot manufacture their own food and need to consume other organisms. Animals that eat primary producers (like plants) are called herbivores. Animals that eat other animals are called carnivores, and animals that eat both plants and other animals are called omnivores.

3-Decomposers (detritivores) break down dead plant and animal material and wastes and release it again as energy and nutrients into the ecosystem for recycling. Decomposers feed on waste and dead matter, converting it into inorganic chemicals that can be recycled as mineral nutrients for plants to use again.

Levels of A trophic Chain

The solar radiation from the Sun provides the input of energy which is used by primary producers, also known as autotrophs. Primary producers are usually plants and algae, which perform photosynthesis in order to manufacture their own food source. Primary producers make up the <u>first trophic level.</u>

<u>The second trophic</u> level consists of herbivores, these organisms gain energy by eating primary producers and are called primary consumers.

<u>Trophic levels three, four and five</u> consist of carnivores and omnivores. Carnivores are animals that survive only by eating other animals, whereas omnivores eat animals and plant material.

Food Chain and Food Web

The food chain can be said as the straight and single pathway for the flow of energy in an ecosystem, through different species of organisms. Food web, on the other hand, is defined as the complicated pathway of an ecosystem consist of numerous food chains of the different trophic level, through which the energy flow.
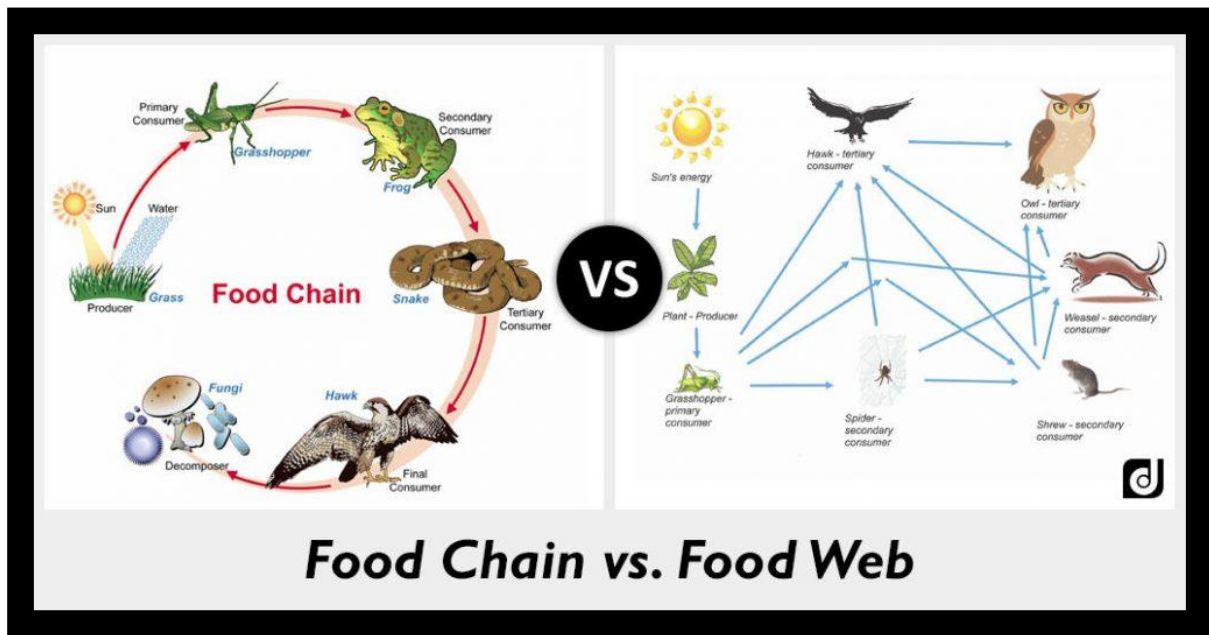

Fig (1): Different between food chain and food web

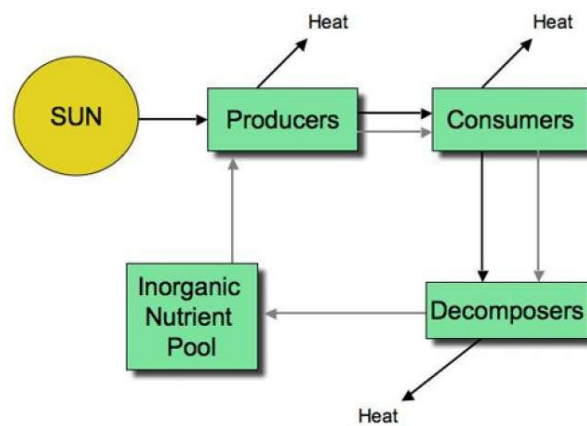All ecosystem have feeding hierarchy which includes the sun (energy source), producer, consumer, and decomposer.

Follow of energy in ecosystem

Energy moves life. The cycle of energy is based on the flow of energy through different trophic levels in an ecosystem. Our ecosystem is maintained by the cycling energy and nutrients obtained from different external sources. At the first trophic level, primary producers use solar energy to produce organic material through photosynthesis.

The herbivores at the second trophic level, use the plants as food which gives them energy. A large part of this energy is used up for the metabolic functions of these animals such as breathing, digesting food, supporting the growth of tissues, maintaining blood circulation and body temperature.

The carnivores at the next trophic level, feed on the herbivores and derive energy for their sustenance and growth. If large predators are present, they represent still higher trophic level and they feed on carnivores to get energy. Thus, the different plants and animal species are linked to one another through food chains.

Decomposers which include bacteria, fungi, molds, worms, and insects break down wastes and dead organisms, and return the nutrients to the soil, which is then taken up by the producers. Energy is not recycled during decomposition, but it is released.

Fig(2): Follow of energy in ecosystem