

Students are responsible for all notes and activities handwritten in class for all quizzes and tests as well as for a notebook grade at the conclusion of each chapter. The information below is taken from the SC Department of Education Science Support Documents which can be found at https://www.ed.sc.gov/apps/cso/standards/supdocs_k8.cfm?#area_5. All classroom activities and topics of study for this chapter are based on the standards listed below.

5-2.4 Identify the roles of organisms as they interact and depend on one another through food chains and food webs in an ecosystem, considering producers and consumers (herbivores, carnivores, and omnivores), decomposers (microorganisms, termites, worms, and fungi), predators and prey, and parasites and hosts.

It is essential for students to know that all organisms need energy to live and grow. This energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy.

Producers

- Plants are called producers because they are able to use light energy from the Sun to produce food (sugar) from carbon dioxide in the air and water.

Consumers

- Animals cannot make their own food so they must eat plants and/or other animals.
- They are called consumers.
- There are three main groups of consumers.
 - o Animals that eat only plants are called *herbivores*.
 - o Animals that eat only animals are called *carnivores*.
 - o Animals that eat both animals and plants are called *omnivores*.

Decomposers

- Consumers (including microorganisms, termites, worms, and fungi) that get the energy they need by breaking down dead or decaying matter.
- These decomposers speed up the decaying process that releases nutrients back into the food chain for use by plants.

One way to show how energy is passed through an ecosystem is through a food chain.

- A *food chain* is a series of plants and animals in which each organism is a source of food (energy) for the next in the series.
- In a typical food chain, plants use the Sun's energy to make their own food and then are eaten by one kind of animal which in turn is eaten by another kind of animal.
- Most organisms are part of more than one food chain and eat more than one kind of food in order to meet their energy requirements.
- Interconnected food chains form a *food web*.
- Most food chains have no more than six organisms.
- There cannot be too many links in a single food chain because the animals at the end of the chain would not get enough food (energy) to stay alive.
- The role of an organism can be identified by its placement on the food chain.
- Decomposers are not typically noted on a food chain; they will break down any organism on the food chain when it dies.

An example of a grassland food chain:

Sun

→

Grass

→

Grasshopper

→

Toad

→

Snake

→

Hawk

→

Organisms can also be identified based on how they interact with other organisms.

- *Predators* are animals that hunt and kill other animals for food.
- *Prey* are animals that are hunted and killed as food for other animals.
- A *parasite* is an organism that spends a significant portion of its life in or on a living *host* organism usually causing harm to the host without immediately killing it.
- *Hosts* are organisms or cells that serve as a home or a source of food for a parasite.

5-2.5 Explain how limiting factors (including food, water, space, and shelter) affect populations in ecosystems.

It is essential for students to know an ecosystem only has a certain amount food, water, space, and shelter to support a certain number of organisms.

- The relationship between numbers of organisms and the resources available in an ecosystem is often described as the *balance of nature*.
- A condition or resource that keeps a population at a certain size is known as a *limiting factor*.
- If any of the limiting factors change, animal and plant populations may also change.
- Some changes may cause a population to increase; others may cause a population to decrease. Increases in population may result in overcrowding. Sometimes a population will grow too large for the environment to support. Some examples that may cause a population to increase may be:
 - If there are more plants than usual in an area, populations of animals that eat that plants may increase.
 - If the population of predators increases, the population of prey will decrease.
 - If the population of prey increases, the population of predators will also increase because of the availability of food.
- Other changes in limiting factors may cause a population to decrease. Some examples may be:
 - If the water supply in an area decreases, the population that needs that water may decrease. Then the population of animals that eat that animal could decrease too.
 - If trees are cut down, die because of disease or parasites, the population of the animals that use the trees for food or shelter will decrease.
 - If organisms no longer have enough space to survive, they will either have to move or will die. This change in space may be due to human influence or natural hazards.