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FREE LEARNING NOTES FOR ZAMBIA

FORM 2

Biology

Feeding relationships and energy flow

Lesson notes for learners · Competence-Based Curriculum

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Every living thing needs food for energy to grow, move and survive. Where does the energy in our food really begin? In nature, organisms depend on one another for food, whether it is grass and cattle in a village, or fish and the birds that catch them in the Luangwa river. In this note you learn who eats whom, how energy moves between living things, and how scientists group organisms into kingdoms.

AFTER THESE NOTES YOU SHOULD BE ABLE TO

- Say what a feeding relationship is
- Name producers, consumers and decomposers and give examples
- Describe a food chain and a food web
- Explain how energy flows from the sun through living things
- Name the six kingdoms of organisms

KEY WORDS

producer	an organism, usually a green plant, that makes its own food
consumer	an organism that cannot make its own food and feeds on plants or other animals
decomposer	an organism such as a fungus or bacterium that breaks down dead plants and animals and returns nutrients to the soil
food chain	a simple line showing how energy moves from one living thing to another through feeding
food web	a network of many connected food chains in an ecosystem
energy flow	the movement of energy from the sun to producers and then to consumers through feeding

1 Producers, consumers and decomposers

The main source of energy for most living things is the sun. Green plants use sunlight, water and air to make their own food by photosynthesis. Because they make their own food, they are called producers.

Animals cannot make their own food. They are consumers and depend on plants or other animals for energy. A herbivore eats only plants, a carnivore eats other animals and an omnivore eats both. A primary consumer is an animal that eats plants. A secondary consumer eats animals that feed on plants. A tertiary consumer is a top predator that feeds on other carnivores. Fungi and bacteria that feed on dead plants and animals are decomposers, and they return nutrients to the soil.

2 Food chains and energy flow

A food chain is a simple line that shows how energy moves from one living thing to another. For example, grass grows in the field, a rabbit eats the grass, a fox eats the rabbit, and when the fox dies, fungi decompose its body and return nutrients to the soil.

Energy moves from one organism to the next when one eats the other. This movement of energy is called energy flow. A food web is a network of many connected food chains. The feeding position of an organism in a food chain is its trophic level.

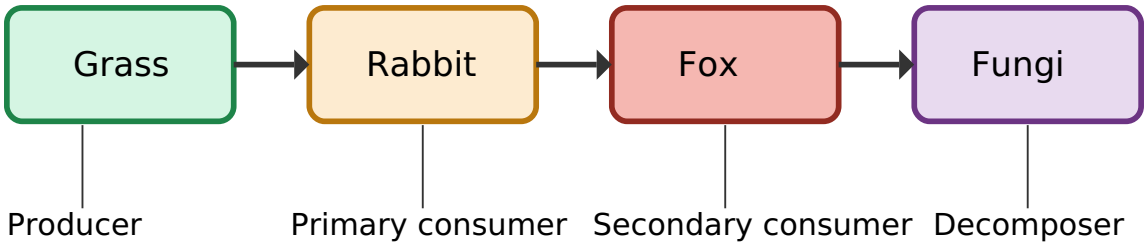

Figure 1. A food chain: grass, rabbit, fox and fungi

3 Classifying organisms

Scientists classify living things to make sense of the variety of life. Organisms are placed in six kingdoms based on their cell type, structure and how they get food. Animals move and eat other organisms, like dogs and humans. Plants make their own food by photosynthesis, like trees and maize. Fungi absorb nutrients from decaying matter. The other kingdoms are protists such as amoebas, Eubacteria, which are simple bacteria found in soil, water and on your skin, and Archaebacteria, which live in extreme conditions like hot springs.

TRY THIS

Walk round your school grounds and find one producer, one animal that eats plants and one decomposer such as a fungus on wood. Draw a food chain using arrows from the one being eaten to the one eating it. Then say which kingdom each organism belongs to.

REMEMBER

- Producers make their own food using sunlight; consumers feed on other organisms
- Decomposers break down dead matter and return nutrients to the soil
- A food chain shows how energy moves; a food web joins many food chains
- Energy flows from the sun to producers and then to consumers
- Organisms are classified into six kingdoms

? Check yourself

1. What is a producer? Give an example.
2. What is a decomposer? Give an example.
3. What is the difference between a food chain and a food web?
4. Name the six kingdoms of organisms.
5. What is a secondary consumer?
6. In a game park in the Luangwa valley, grass is eaten by an impala, the impala is eaten by a leopard, and when the leopard dies fungi break down its body. (a) Name the producer. (b) Name the primary and the secondary consumer. (c) Explain what the fungi do for the soil and the grass.
7. A farmer in a village near Feira says that the energy in her maize really begins with the sun. (a) Do you agree? (b) Explain how energy gets from the sun to a person who eats the maize. (c) Name the producer and the consumer in this chain.

ANSWERS

1. An organism that makes its own food, usually a green plant such as maize.
2. An organism that breaks down dead plants and animals and returns nutrients to the soil, such as a fungus or a bacterium.
3. A food chain is a single line of feeding; a food web is a network of many connected food chains.
4. Animals, plants, fungi, protists, Eubacteria and Archaebacteria.
5. An animal that eats other animals which feed on plants.
6. (a) Grass. (b) The impala is the primary consumer and the leopard is the secondary consumer. (c) The fungi decompose the body and return nutrients to the soil, which helps grass grow.
7. (a) Yes. (b) The maize uses sunlight, water and air to make food by photosynthesis, and the person gets the energy by eating the maize. (c) The maize is the producer and the person is the consumer.

Written by 25Schools to follow the Form 2 Biology syllabus of the Zambian competence-based curriculum. Free for learners to read, download and share. More notes and quizzes at 25schools.com.