



Create a Food Web

Outdoor Classroom Field Investigation Lesson Plan & Resources

Online Lesson Plan & Resources: <https://www.alabamawildlife.org/oc-activity-food-web/>

Students will find evidence of a food web that exists within the school's outdoor classroom and create a model to show the transfer of matter and energy within the environment between producers, consumers, and decomposers.

Background Information (online as a PDF)

The background information below can be used to help introduce the topic, engage the students, and build a foundation to discuss the topic:

An ecological **food web** is a natural interconnection of **food chains**—a hierarchical series of organisms each dependent on the next as a source of food (matter) and energy. A food web provides a graphical representation of what eats what in an ecological community and traces the flow of energy and nutrients through an ecosystem. Food provides animals with the materials (matter) that they need for body repair and growth, along with the energy that they need to move around and to maintain body warmth. Every living thing, from a one-celled alga to an African elephant, needs food to survive and therefore is part of a food chain and a larger food web.

The energy released from food was once energy from the sun that was captured by plants in the chemical process called photosynthesis. The word **photosynthesis** includes the word “photo” which means light and “synthesis” which means putting together. Most plants are able to “synthesize” or “make/put together” their own food by using carbon dioxide (from the air), water (absorbed by its roots in the soil), and sunlight. The plants' leaves absorb energy from the sun in the form of sunlight, and then use this energy to convert the carbon dioxide and water into sugars (or food). Because plants produce their own food, they are referred to as the “**producers**” in a food chain or food web.

Plants pass on some of the matter and energy that they produce when animals eat (or “consume”) the plants. These animals are referred to as “**primary consumers**” and are typically **herbivores** that only eat plants. Then **secondary consumers**, which can be meat-eating **carnivores** or **omnivores** that eat both plants and animals, eat the herbivore primary consumers. Secondary consumers are then eaten by **tertiary consumers**, which are eaten by the top predator called the **apex predator**.

Decomposers are the final part of a food chain or food web as they eat the remains of dead plants and animals. Decomposers can include fungi, bacteria, scavengers such as vultures, and a multitude of “bugs” including millipedes, centipedes, pill bugs, snails, spiders, beetles, ants, flies, and earthworms. These decomposers help break down the organic waste and return it to the soil as inorganic nutrients. This completes the life cycle and makes nutrients available to plants through the soil, allowing the whole process to take place again through another food chain or food web.

A healthy ecosystem is one in which multiple species of different types are each able to meet their needs (including food sources) in a relatively stable web of life. An ecosystem's food web can collapse if the ecosystem experiences fire, drought, the introduction of a non-native invasive plant or animal, the introduction of a new apex predator, or anything else that changes the amount of producers available for the consumers.

