



TEACHER GUIDE

FOOD WEBS GRADES 3-5

COMMON MISCONCEPTIONS

- **Dead things just disappear.**
Dead animals and plants decay and decompose rather than simply disappearing. When a dead thing seemingly disappears it is because decomposers such as worms, insects, bacteria, and fungi are breaking down the matter and returning nutrients to the soil.
- **Things just decay naturally without a decomposing agent.**
Decomposers are rarely seen without looking closely. Insects and worms can be small and hidden under and within the organism they are decomposing. Bacteria and some fungi are microscopic.
- **Students don't recognize that matter is conserved in the life processes through food webs.**
Nature has a recycling system. The building blocks that comprise living things are used, changed, and reused through food webs and ecosystems. It's a cycle!

FOOD CHAINS VS. FOOD WEBS

Food chains are an entry point for student understanding of how animals and plants interact and how energy moves through an ecosystem. By expanding our view to food webs, we get a more complicated - but also more realistic - view of how ecosystems function and the importance of each piece. By looking at the interactions between different components of the system, students start to understand the interdependence among organisms in nature, and how small changes might impact larger systems.

ECOSYSTEM DYNAMICS

Through this activity students start to expand on their understanding of food and relationships within an ecosystem. They start to see that predator/prey interactions are tied to more than just a meal. That these different relationships play larger roles in balancing an ecosystem. Predators (consumers) are critical for population control of prey. In turn, the animals (consumers) that eat plants (producers) regulate plant populations. Decomposers recycle nutrients in an ecosystem, which also affects plant populations. Without organisms in each of these roles an ecosystem could collapse.

HUMAN IMPACTS

In studying food webs, we see that interactions between the different organisms are complex and multi-leveled. Changes to an insect population can affect the apex predator population through a domino effect. It is important not to think of humans as outsiders to food webs. We play a role as consumers and also have other impacts on the balance in the ecosystem.

When discussing human impacts such as over-hunting and deforestation with students, be sure that students understand how each action impacts the next—the chain reaction that ultimately affects the food web. For example, it may be easy for students to understand that over-hunting of predators reduces predator populations, and less obvious that fewer predators might lead to more prey and ultimately overgrazing leading to ecosystem collapse.

It is also important for students to think through how human solutions lead to food web balance. For example, how does an amphibian crossing help keep the whole food web in balance? Fewer amphibians killed by cars on the road means more prey for organisms that feed on them. What might happen to the food web if amphibian crossings were not installed?

CYCLE OF MATTER

Matter can neither be created nor destroyed. The matter that makes up living things cycles through the carbon cycle, which is often covered beyond elementary school. However, in the context of a food web, students can be reminded that matter also cycles: as organisms come into life they feed on other matter in their environment in order to grow. Organisms grow larger thanks to the matter in the food they eat. Any organism that is not eaten will eventually die and decompose with the help of fungi and bacteria. That “releases” the matter back into the environment in forms that plants use (soil nutrients and carbon dioxide). Once plants grow using this matter, animals eat the plants and the cycle keeps going. Students are made up of matter that may have once been part of a tree or a dinosaur or even a star!

