**Station 1: Read It! Food Webs**

Ecology is the study of the relationships between different forms of biological life and their natural surroundings. Ecosystems are composed of living (biotic) and nonliving (abiotic) factors. All living things are dependent on both nature and each other for their survival. This dependence is called ecological interdependence and it can take numerous forms--from food webs to habitat creation.

All the living things in an ecosystem have a role to play. Plants are producers. Inside their green leaves they have round discs called chloroplasts. They are in stacks called grana. A green substance called chlorophyll fills the chloroplasts. It is what gives plants their green color. The chloroplasts allow plants to use water, sunlight, and carbon dioxide to produce their own food. That’s why they are called autotrophs, or producers. When an animal eats a plant, energy that the plant got from the sun is transferred to the animal. Any living thing that eats another living thing is called a heterotroph. Heterotrophs can be herbivores, carnivores, or omnivores, because all of those organisms must get their energy by consuming another organism. An animal that eats plants is called an herbivore. Since it is the first animal in the food chain, it is also the primary consumer. A consumer is an animal that eats plants or other animals. Consumers that eat only other animals are called carnivores. Consumers that eat both plants and animals are called omnivores. Producers are critical to the survival of all living organisms in an ecosystem. Consumers depend on producers for the food which gives them energy. None of the other living things in the ecosystem would survive for long without producers.

The most easily understood method of ecological interdependence is a brutish one: living things eat other living things to survive. The predator and prey relationship was one of the first feeding relationships that scientists understood. In the feeding relationship, predators were seen as being at the top of a food chain. As ecology has grown as a field, so has the understanding of feeding relationships. The concept of food cycle arose to account for the fact that all organisms, including predators, die, and are consumed other organisms like insects and bacteria. The recognition that food cycles are linked led to the development of the concept of a food web, where all organisms are potentially food and each organism feeds on more than one type of organism.

Symbiotic relationships evolve over time. There are three types of symbiotic relationships: mutualism, parasitism, and commensualism. In mutualism, the two species involved both benefit from their interaction. For example, bees and flowers rely on one another. The bee gathers nectar from the flower and makes it into honey for food. In nectar-gathering process, pollen attaches to the body of the bee. When the bee visits the next flower, some pollen rubs off and pollinates the flower, thereby, helping the flowers reproduce. In parasitism, one species benefits and one species is harmed by the relationship. For example, ticks depend on other living animals for food, blood. While the tick benefits from this relationship, the host species does not, potentially contracting diseases from the tick like Rocky Mountain Spotted Fever or Lyme Disease. In commensualism, one species benefits from the relationship, and one species receives no benefit, but is also not harmed. An example of a commensualism relationship is the whale and the barnacle. Barnacles often form along the mouths of whales and get a habitat and food from the whale, but the whale receives no benefit and is not harmed by the presence of the barnacles.

Many animals create their own shelter that in turn creates habits for other species. When beavers construct wooden shelters in ponds, for example, they create habitats for other species as well. Beaver dams are constructed in streams, but the completion of a beaver dam creates a slow-moving pond of water. This allows species of fish that cannot live in fast-moving water to prosper, and the beavers get to eat the fish. Likewise, the creation of a slow moving body of water allows nutrients that would otherwise wash downstream to settle. This nutrient-rich water supports the growth of new plant life that allows other herbivorous species to thrive.