

All living things — plants and animals — need energy to live. A squirrel needs energy to climb a tree, birds need energy to move their wings for flight, and a fish needs energy to swim. Humans need energy for all kinds of things, from thinking to laughing to playing soccer to sleeping.

When we look at food chains, and food webs, we are looking at where living things acquire energy and who they give the energy to.

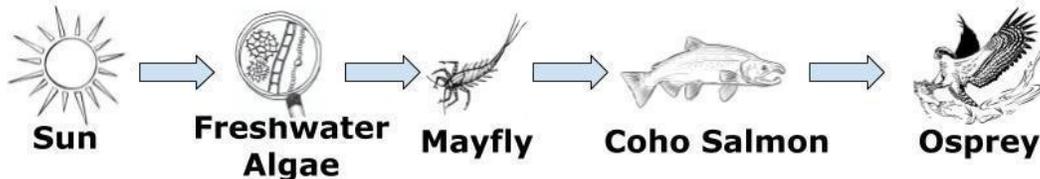
Energy is difficult to define, and has different definitions, depending on the context. In this context, **energy can be defined simply as what organisms get from food that allows them to do things.** Energy has no physical form; it's not a substance. When we say energy is transferred from one organism to another, we're not talking about a physical thing being passed from place to place; rather we're talking about **transferring the capacity to do things**, like, living and growing.

In an ecosystem, all energy starts with the sun. **Producers** (plants, algae and some bacteria) use a process called photosynthesis to create food (a nutrient called glucose) from sunlight (along with carbon dioxide and water). Producers do not rely on any other living organisms for nutrition.

**Consumers** are living things that get their energy from food. Food is the fuel consumers need to survive, grow, and reproduce. Food is energy "packaged" in a form that is digestible by an organism. A sandwich might seem ordinary in many ways, but it's full of energy! Consumers' bodies are good at getting what they need from what they eat.

**Decomposers** are living things that get their energy from dead and decaying organisms, and in the process, break down these no longer living things. Without decomposers hard at work at every trophic level, dead matter and waste would pile up, locking up essential nutrients that all living things need to survive, grow, and reproduce. They also often serve as the base of the food chain, as many of them are a major food source for bigger animals like birds and fish.

A **food chain** demonstrates, in a linear fashion, one example of how energy and nutrients could pass through a producer, primary consumer, secondary consumer and tertiary consumer, using species specific to a particular ecosystem. One example of a food chain would be:



Most organisms can eat, and be eaten by, many different living things. **Food webs** show all of the possible food chains in an ecosystem, in one model. They are more complicated, but more accurate. See the back of the attached student worksheet for a look at a Columbia Springs food web.

**GLOSSARY:**

Model: A way to represent information

Producer: Living things (usually plants) that use photosynthesis to get their energy from the sun. They do not rely on other living things for food.

Consumer: Living things that get their energy from food.

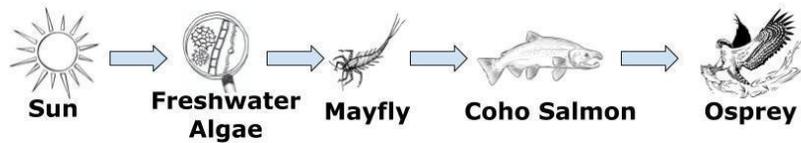
Herbivore: A consumer that only eats plants.

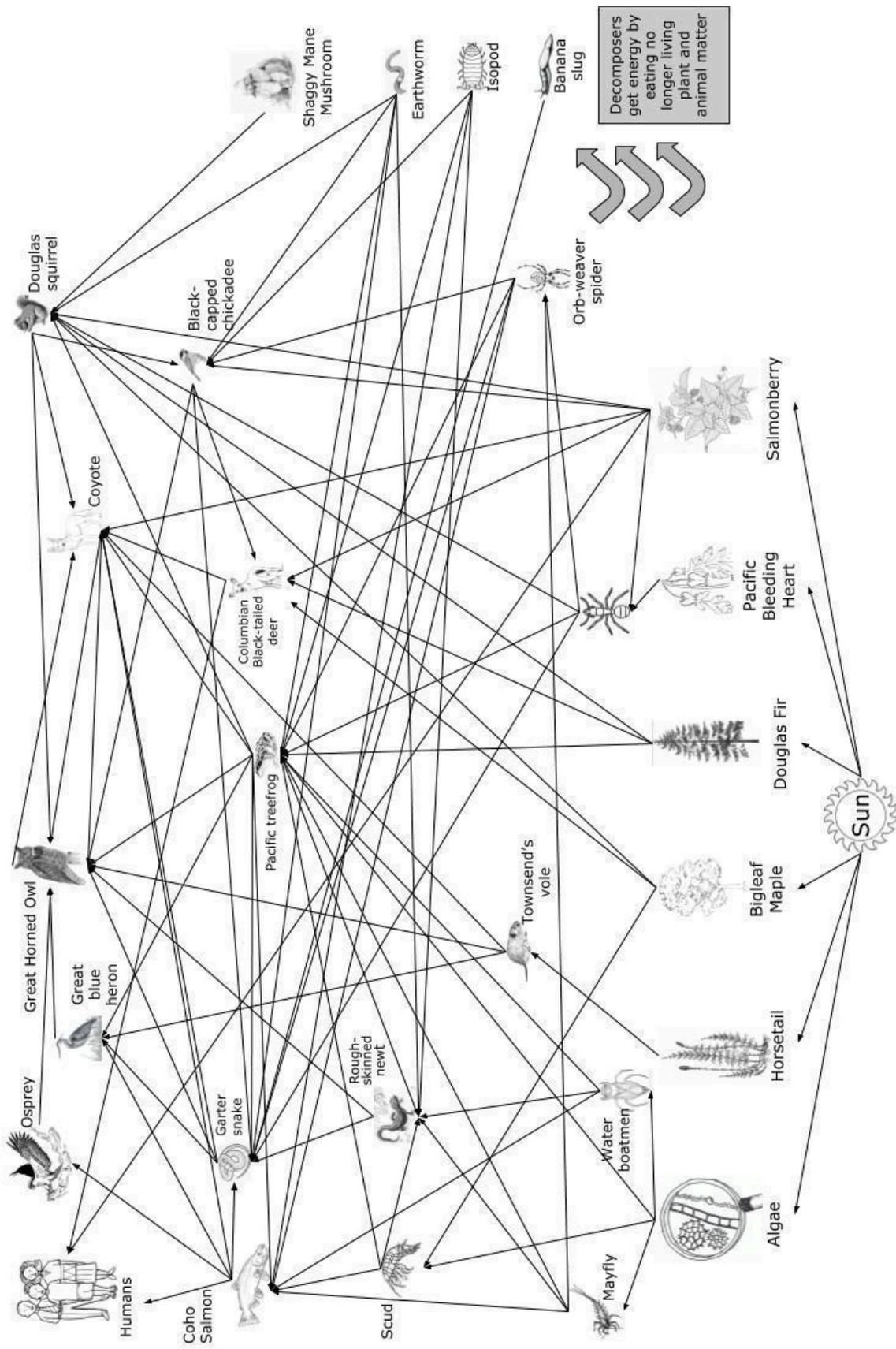
Omnivore: A consumer that eats plants and animals/bugs.

Carnivore: A consumer that eats only animals/bugs.

Decomposer: Living things that get their energy from decaying or dead organisms, and in the process, break down these no longer living things into smaller and smaller pieces, recycling their nutrients and energy back into the soil.

Example food chain:





Decomposers get energy by eating no longer living plant and animal matter

