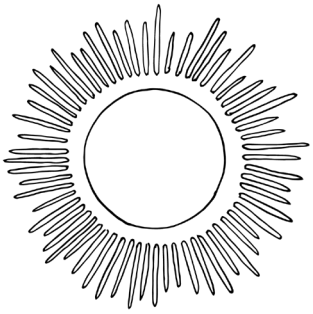
A LINK IN THE CHAIN



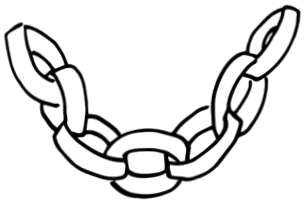
How does a squirrel get its energy to dig holes? How does a hawk have the energy to fly so high in the sky? Where does a sycamore tree get the energy to grow new leaves every spring? The answer to all these questions starts with the sun. Let's explore the transfer of energy from the sun to plants and animals by looking at a food chain!

Energy from the sun travels millions of miles to Earth. Plants have the remarkable ability to capture energy from sunlight through their leaves and change it into stored energy through an amazing process called **photosynthesis**. They chemically combine carbon dioxide and water to form sugars, which they can store in their cells as food. Since plants are able to make, or produce, their own food, we call them **producers.**

How do animals, including humans, get energy to grow, stay warm and fight disease if they can't photosynthesize like plants do? Some animals, called **herbivores,** eat only plant material. By consuming plant material, some of the sun's energy that is stored by plants, is transferred to the animal, giving it the energy to carry out daily tasks as well as store some energy in their own cells. These animals are called **primary consumers**, as they are the first to consume the energy from plants. Rabbits, squirrels, mice, and many insects are examples of primary consumers.

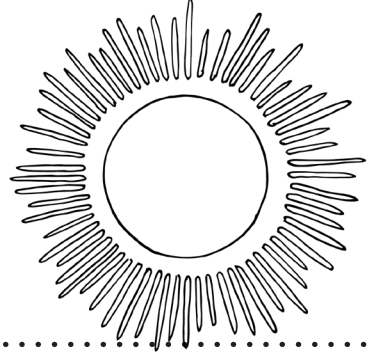
Not all animals eat only plants, so how do they get their energy? Some animals, known as **carnivores**, eat other animals or insects, while **omnivores** eat both plants and animals. For some carnivores, the energy from the sun is transferred to plants, then to primary consumers and then to themselves. This group are the **secondary consumers** in a food chain. Often, the secondary consumers are not the last link in a food chain, since they can also fall prey to other predators. **Tertiary consumers** are animals that eat secondary consumers. Some food chains continue to **quaternary consumers,** animals that eat tertiary consumers. When an animal has no other predators, it is called the **apex predator**; it is the last consumer in a food chain.

Activity: Now let's create a literal food chain! Color in the pictures on the next page. Cut along the dotted lines until you have 6 strips of paper. What order would the plants and animals on these strips of paper be in in a food chain? Who eats who? Make a food chain starting with the sun and ending with the apex predator.



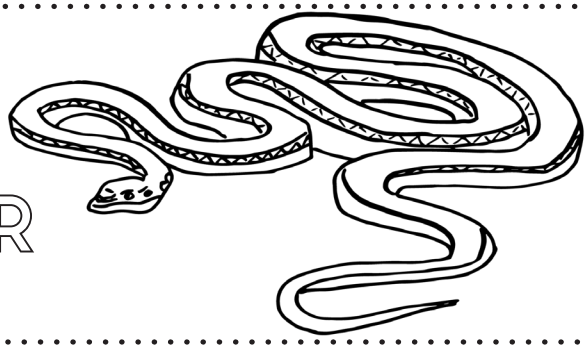
Glue the end of the first strip of paper to the opposite, forming a circle. With your next link in the chain, thread the strip of paper through the first circle before gluing its ends together. You should now have 2 circles linked together. Keep going until you have 6 links in the food chain!

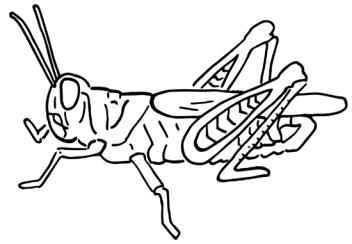
California BOTANIC GARDEN



SUN

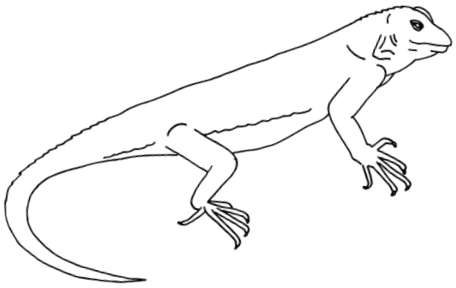
CALIFORNIA STRIPED RACER





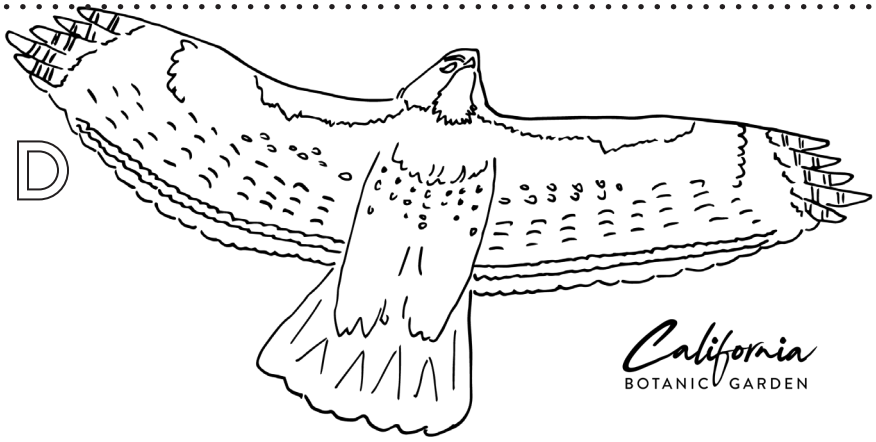
GRASSHOPPER

MINIATURE LUPINE



WESTERN FENCE LIZARD

RED-TAILED HAWK



California
BOTANIC GARDEN