**Build a Food Web Activity**

A food web is a more accurate depiction of how energy moves through an ecosystem. Food chains show only a single set of energy transfers, ignoring that most organisms obtain energy from many different sources, and in turn provide energy to many different organisms.

In this activity, you will be building a food web for a typical prairie ecosystem.

You have been provided with images of a number of organisms that are native to a prairie ecosystem as well as a description of the normal diet for most of those organisms.

**Directions:**

 1. Read and understand the “Group Member Roles” page.

 2. As a group cut out the pictures of the organisms (and the Sun) from the paper provided.

 3. Assign each group member one of the four roles.

4. The iconographer must organize ALL of the pictures into a food web on your whiteboard. Try to keep the producers near the bottom and the higher predators near the top. Use the provided reference sheet to figure out who eats whom.

5. The arrowologist must draw lines showing the energy transfer relationships on your board. Remember: The arrowhead should point AT the organism that is CONSUMING the other organism (Ex: arrows should point FROM producers TO primary consumers)

6. Along each line connecting two organisms, the labelisicist must identify the relationship that exists between the two:

 • Producer $\rightarrow $ Primary consumer

 • Primary consumer $\rightarrow $ Secondary consumer

 • Secondary consumer $\rightarrow $Tertiary consumer

 • Tertiary consumer $\rightarrow $Quaterniary consumer

 • Consumer $\rightarrow $ Decomposer

 • Producer $\rightarrow $ Decomposer

 (Are there any relationships that are difficult to describe in the terms given above?)

**GROUP MEMBER ROLES:**

**1. Scholar:**

This group member has access to the fact sheet that explains what each organism eats. They MUST NOT ALLOW any other group members to look at this sheet, but can answer questions about any particular organism.

**2.** **Iconographer:**

This group member is allowed to touch, organize and move the pictures on the whiteboard. Other group members (except the scholar) can make suggestions and offer advice. But only the iconographer can manipulate the pictures.

**3. Arrowologist:**

This group member must draw in ALL of the arrows that show how energy flows from one organism to another. Arrows are drawn as described in step 5.

**4.** **Labelisicist:**

This group member must label each arrow as described in step 6.





Bacteria

**Trophic Activities:**

**Oak Trees**

Oak trees are deciduous and drop their leaves as days grow shorter, usually between October and December. Oak trees produce nuts, known as acorns. Each acorn contains one seed.

**What Foxes Eat**

Foxes are omnivores and eat small mammals (mice, rabbits), birds, reptiles, frogs, eggs of birds and reptiles, insects, worms, fish, crabs, mollusks, fruits, berries, vegetables, seeds, fungi.

**What Rabbits Eat**

Rabbits are herbivores that consume grasses and seeds.

**What Coyotes Eat**

Coyotes are carnivores and eat small mammals, birds, reptiles and frogs. They will also sometimes eat the eggs of birds and reptiles. Coyotes are larger than foxes and will normally outcompete them for larger prey like rabbits. Coyotes will also scavenge and eat carrion.

**What Grasshoppers Eat**

Grasshoppers are insects that consume grasses clover and other small plants. They are strict herbivores.

**What Rattlesnakes Eat**

Rattlesnakes mainly feed on small mammals and birds. They also eat snakes such as other rattlesnakes and garter snakes, lizards, frogs and large insects such as grasshoppers.

**What Scrub Jays Eat**

Scrub Jays are omnivorous. They eat acorns, assorted seeds, peanuts, insects, tree frogs, turtles, snakes, lizards and young mice.

**What Meadowlark Eat**

Meadowlark are omnivorous. They eat many kinds of insects and worms as well as berries and seeds.

**What Frogs Eat**

Frogs are predators that hunt and eat insects.

**The Sun**

The Sun is a mass of incandescent gas, a gigantic nuclear furnace. The sun is a fusion reactor (as are all stars). The main reaction in our Sun is converting hydrogen to helium. This releases huge amounts of energy that hurtles out into space in all directions. A tiny fraction of that energy ends up reaching Earth, where plants and other producers capture that energy and convert it to sugar via PHOTOSYNTHESIS.

**What Hawks Eat**

Hawks are very effective predators with excellent eyesight. The typical diet of a hawk consists of mice, rabbits, lizards, frogs and other smaller birds. Hawks are carnivorous.

**Mushrooms**

Mushrooms are fungus. They are decomposers that break down decaying plant matter.

**What Squirrels Eat**

Squirrels are rodents, which is a type of small mammal that includes mice and rats. Squirrels do not only eat nuts. In fact squirrels are omnivores that eat nuts, berries, grasses as well as fungus (mushrooms) and small insects.

**Bacteria**

Bacteria is found in every ecosystem on Earth. These microscopic, unicellular belong to the group of organisms called monera. Bacteria are found in the air and soil. Bacteria are decomposers that break down waste and dead organisms. The nutrients from this decay helps to make the soil healthy so plants can grow.

**What Deer Eat**

Deer are primary consumers that eat only plants. Deer mainly eat the leaves of young trees, shrubs and bushes. They also will graze on grasses and eat berries and seeds.

**What Mice Eat**

In the prairie ecosystem mice are herbivores. They eat grains and seeds as well as grasses and berries.

**Elderberry**

The elderberry bush produces edible berries and flowers, although the leaves and stems are poisonous.

**What Lizards Eat**

Lizards are a very diverse group of organisms. Some are carnivorous, some are herbivores and some are omnivores. The lizards in the prairie ecosystem are omnivorous. Their diet consists of grasses and insects.