

# Web of Life

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**Subjects:** Science, Ecology, Biology

**Location:** Classroom; outdoors

**Duration:** 1 hour

**Vocabulary:** Producer; Consumer; Diversity; Ecosystem

**ND State Curriculum Standards:** 5-PS3-1; 5-LS1-1; 5-LS2-1; 4-LS1-1



**Objectives:** Students will be able to explain how energy is transferred between organisms, and demonstrate this transfer either verbally or with a diagram. Students will also define diversity, and explain its importance in a healthy ecosystem.

**Background:** “When we try to pick out anything by itself, we find it hitched to everything else in the Universe” (John Muir). All things in nature are connected, and living organisms are bound together in a complex system of connections. This system is often referred to as a food web, or more simply as a food chain. A food web contains numerous producers, primary and secondary consumers, and decomposers, which work to create, store and transfer energy from one organism to the next. To maintain a healthy food web, an ecosystem needs a wide variety, or diversity, of organisms of all types.

## Materials:

- Classroom whiteboard or equivalent
- Web of Life worksheets (included)
- Pencils/Pens

## Optional:

- Coloring supplies
- Scissors, glue and extra paper
- Large ball of string

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## Procedures:

Begin with a basic explanation/review of food chains. Draw or write out on the board as you review, using arrows to show energy transfer, to create a visual representation for the students. Explain that a producer (e.g. grass) creates energy from the sun and soils; the producer is then eaten by a consumer (e.g. bison) so that organism can gain energy. The bison is a *primary* consumer, because it gets its energy directly from a producer. Organisms which get their energy from primary consumers are called *secondary* consumers (e.g. wolf). When an organism dies or creates waste, that energy is transferred back into the food web via consumers (e.g. vulture or coyote) or decomposers (e.g. fungi or micro-organisms).

Using the Web of Life worksheet, students can draw arrows to establish connections and create a food web; alternatively, students may color and cut out the organisms from the worksheet, then construct a food web by gluing the cutouts onto a separate piece of paper and drawing arrows. Remind students that one organism can have multiple food sources, and can also be a food source for multiple animals.

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## Evaluation & Extension:

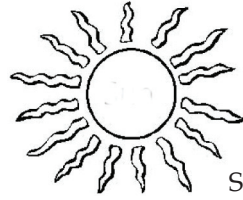
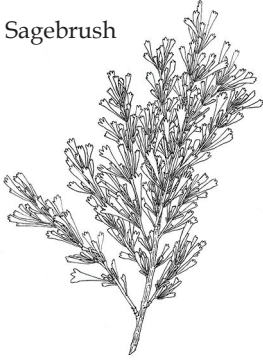
Review with your students using the Web of Life answer key to show them the possible connections between organisms. Using questions and discussion, have them consider what would happen to the food web if something was removed from it (take out one grass, and now animals rely too heavily on the other grass; get rid of a large predator, and now its prey animals start to become over-populated). When an ecosystem is home to a large variety of organisms, it is said to have a high amount of *diversity*. Help students understand that a healthy food web requires good diversity. You can also discuss human’s place in the food chain, and ways we can impact the natural cycle.

As an extension, you create a real food web by forming a circle and tossing a ball of string; each participant represents an organism, and students must determine the relationship between themselves as they pass around the string. This creates a great visual representation of a food web, and is an excellent way to demonstrate the relationships which exist and how energy is transferred between organisms.

# Web of Life Worksheet

Color in the images, then cut them out to create your own food web by gluing them onto a piece of paper and drawing arrows to show the energy transfer between organisms.

Big Sagebrush



Sun

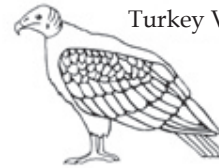


Ricegrass



Racer

Golden Eagle



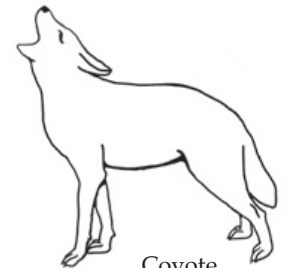
Turkey Vulture



Wheatgrass



Black-tailed  
Prairie Dog



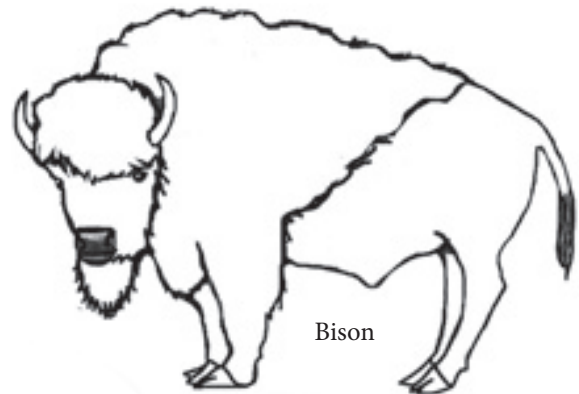
Coyote



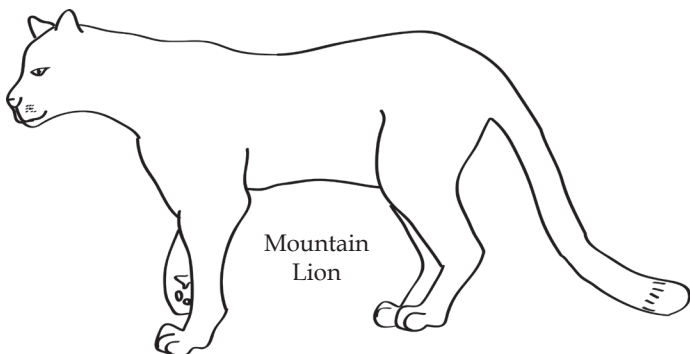
Pronghorn



Grasshopper



Bison



Mountain  
Lion