



## Energy Flow: Interconnectedness of Organisms in Ecosystems

# Building Food Chains

### Key Question

How is energy transferred in ecosystems through food chains?

### Objectives

- Students will **model** the interrelationships of ecosystems.
- Students will **manipulate** ecological relationships through food chains and using EOL Species Cards.

Grade: 2-5

Time: 45 minutes

Location: Classroom

### Materials

- Computer and Internet access
- Downloadable PDF deck of [EOL Species Cards](#) (one set per group of 3-4 students)
- Food chain images (see appendix)
- Journals/notebooks
- Pencils

### Culminating Activity

After learning about food chains, students will practice building food chains and design their own backyard food chains.

### Directions

#### Engage: Food chain “rock-paper-scissors” (10 minutes)

In an open area, organize students in a circle. Explain that we will be playing a game of rock-paper-scissors, ecosystem edition! Students will find a partner and sit on the ground. Right now, each pair is representing the grass in the ecosystem. The winner then becomes a grasshopper (represented by hopping) and finds another grasshopper to play against, and the grass must play against another grass. Two grasshoppers will play: the one who wins becomes a toad (walks and sticks out tongue), and the grasshopper who did not win will put hands over head like a mushroom and sit down, indicating that that person decomposes.

Anyone who “decomposes” dramatically calls “I’m decomposing!” and slowly crouches down, then can begin again as grass. This models that once broken down, the nutrients can be taken in by a plant and energy continues to flow. It is important to remind students that decomposers do not *become* grass.

Players play against anyone at the same level, and the winner advances to the next level, the other “decomposes” and starts over as grass. It is important to remind students that decomposers do not become Each level is represented by these signals:

- Grass: sit
- Grasshoppers: hop
- Toad: walk and stick out tongue
- Hawk: flap
- Fungi: crouch with arms arched head like a mushroom, then sit to become grass!

This activity models how energy flows from one organism to the next in a food chain.

### Explore/Explain: Evaluate understanding by having students draw a food chain (5 minutes)

On the board, tape images of the following: sun, grass, insect, toad, hawk, fungi. Draw the diagram below with a blank for each image and an arrow between. Based on the previous activity, ask a volunteer to place each image in order for how they think each organism obtains energy from another. Pool everyone’s ideas, and explain that the class just created a **food chain**.

\_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_

Key: (Sun → Grass → Grasshopper → Toad → Hawk → Fungi)

The grass uses the sun’s energy to produce its own food. The grasshopper eats the grass, the toad eats the grasshopper, and the hawk eats the frog. After the hawk dies, it provides energy to decomposers, such as fungi, which break down the organism and return its nutrients to the system.

### Elaborate: Create more food chains with Species Cards (25 minutes)

Put students into small groups (3-4 individuals). Provide a set of EOL Species Cards for each group, and have students work together to make three **different** food chains with at least four steps in each. As they create the chain, students should discuss why they think each organism belongs where it does. Each group can present one food chain to the class. As each group presents, have one student draw their group’s food chain on the board. After each group presents, highlight the organisms that are repeated among different food chains.



### Evaluation: Backyard Food Chains (Take-home assignment)

Provide students with the prompt: **What does a food chain look like in your backyard?**

Students will spend time in their backyard or open space in their community and create a food chain of at least **four** organisms that they find. They can create a food chain using any type of media: drawing, computer, or build model.

Students can use [EOL Species Cards](#) as a resource for urban species in various regions ([Southeastern Region](#), [New England Region](#))

## Extension

Visit one of the [EOL Places](#) (New England, Florida panhandle, Sonoran Desert) to show students how overlapping food chains create food webs. The [EOL Okaloosa County Urban Habitat Food Web](#) shows species commonly seen in southeastern schoolyards and urban communities.

## Next Generation Science Standards

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.



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This activity was developed by the Encyclopedia of Life Learning + Education Group as part of the Okaloosa SCIENCE grant, supported by the Department of Defense Education Activity (DoDEA) under Award No. H#1254-14-1-0004. Opinions, interpretations, conclusions, and recommendations are those of the author and are not necessarily endorsed by the Department of Defense. Learn more about this grant at: [www.okaloosaschools.com/okaloosascience/](http://www.okaloosaschools.com/okaloosascience/)



## Appendix: Food Chain Images









Image Attribution:

["The sun shines on everyone"](#): leecullivan via Flickr CC BY-NC-ND

[Bermudagrass \(\*Cynodon dactylon\*\)](#): Leticia Soriano Flores CC-BY-NC

[Differential Grasshopper \(\*Melanoplus differentialis\*\)](#): Rob Curtis CC-BY-NC-SA

[Red-tailed Hawk \(\*Buteo jamaicensis\*\)](#): Dori via Wikimedia Commons CC-BY-SA

[Ruby Bonnet \(\*Mycena viscidocruenta\*\)](#): Arthur Chapman CC-BY-NC-SA