

RESOURCE LIBRARY  
ACTIVITY : 30 MINS

## Introduction to Keystone Species

Students are introduced to ecosystems, food webs, and keystone species. They draw a simple food web and predict the impact keystone species have on an ecosystem.

### GRADES

3 - 5

### SUBJECTS

*Biology, Geography, Physical Geography*

## OVERVIEW

Students are introduced to ecosystems, food webs, and keystone species. They draw a simple food web and predict the impact keystone species have on an ecosystem.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/introduction-keystone-species/>

## DIRECTIONS

### 1. Preteach the vocabulary.

Write ecosystem, food web, and *species* on the board. Ask students what they already know about these concepts from science class, books they have read, or other contexts. Write their ideas on the board. Then explain each concept to students:

- Tell students that an *ecosystem* is an environment in which living things interact with non-living things and each other. Provide them with an example, such as the ecosystem in a pond, lake, or ocean.
- Explain that food webs exist within an ecosystem. A *food web* is made up of a group of animals and plants in which animals eat more than one kind of food. Provide students with an example, such as one food web in the Yellowstone National Park ecosystem: elk eat

grass, shrubs, and bark; wolves eat elk, moose, deer, and bison. Tell students that ecosystems have many food webs.

- Explain that a *species* is a group of living things that share common characteristics and are capable of interbreeding to produce fertile offspring. Provide students with examples, such as humans and sharks.

## 2. Illustrate the concept of a food web.

Help students make connections between these concepts and their surroundings. Make sure they understand that there is an ecosystem outside of the school that includes species and food webs. As a whole class, draw a simple food web of local animals, such as mice, insects, snakes, owls, and any other species that live in your area.

## 3. Ask students to brainstorm what it might mean to be a keystone species.

First, illustrate a keystone. Draw a simple, rounded archway made of stones on the board. Point to the topmost stone, the keystone, and tell students that the stone is important because it is holding up the arch; if taken away, the arch would fall. Ask: *How do you think keystone species got that name? What might happen if one of the species in a food web vanished?* Have students brainstorm the possible effects of a keystone species disappearing. Possible responses may include:

- other species might have to leave
- other species might not be able to find food
- other species might have huge numbers because no one is eating them
- other species might die

Have students make a real-world connection by thinking about what would happen if one of the most important species in your area disappeared. Use the food web of local animals as an example.

# Extending the Learning

Students may not realize that they are part of an ecosystem too. Have them describe their ecosystem and draw a simple food web that includes them.

## OBJECTIVES

# Subjects & Disciplines

Biology

Geography

- Physical Geography

## Learning Objectives

Students will:

- draw a simple food web
- predict and confirm the effects of a keystone species disappearing

## Teaching Approach

- Learning-for-use

## Teaching Methods

- Brainstorming
- Discussions
- Hands-on learning

## Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
  - Applying
  - Understanding
- Geographic Skills
  - Acquiring Geographic Information
  - Analyzing Geographic Information

## National Standards, Principles, and Practices

## NATIONAL GEOGRAPHY STANDARDS

- **Standard 8:**

The characteristics and spatial distribution of ecosystems and biomes on Earth's surface;

## NATIONAL SCIENCE EDUCATION STANDARDS

- **(K-4) Standard C-1:**

The characteristics of organisms

- **(K-4) Standard C-3:**

Organisms and environments

### **Preparation**

### **What You'll Need**

### **MATERIALS YOU PROVIDE**

- Paper
- Pencils
- Pens

### **PHYSICAL SPACE**

- Classroom

### **GROUPING**

- Large-group instruction

## BACKGROUND & VOCABULARY

# Background Information

An ecosystem is home to interconnected species that form food webs. A keystone species is a species that has a major influence on the structure of an ecosystem. Its presence affects many other members of the ecosystem.

# Prior Knowledge

## Recommended Prior Activities

- [Food Web Fun](#)
- [Keystone Species in Shark Bay](#)

## Vocabulary

Term	Part of Speech	Definition
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
food web	<i>noun</i>	all related food chains in an ecosystem. Also called a food cycle.
keystone species	<i>noun</i>	organism that has a major influence on the way its ecosystem works.
predator	<i>noun</i>	animal that hunts other animals for food.

## FUNDER



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