

RESOURCE LIBRARY | ACTIVITY : 1 HR 15 MINS

Endangered Species and Their Biomes

Students explore Earth's five major biomes, extensive communities classified by similarities, and some of the threatened species that exist within them. Maintaining their planetary steward worldview, students gather data on the ecosystems, habitats, and species within the biomes. Students then research one biome and one endangered species within the biome.

GRADES

6, 7, 8

SUBJECTS

Biology, Ecology, Conservation, Earth Science, Geology, Oceanography, Geography, Human Geography, Physical Geography, Social Studies, Civics, Economics

CONTENTS

18 Links, 1 PDF, 8 Resources

OVERVIEW

Students explore Earth's five major biomes, extensive communities classified by similarities, and some of the threatened species that exist within them. Maintaining their planetary steward worldview, students gather data on the ecosystems, habitats, and species within the biomes. Students then research one biome and one endangered species within the biome.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/endangered-species-and-their-biomes/>

DIRECTIONS

Engaging in the Fight Against Extinction Unit Driving Question: *How can we, as planetary stewards, take an active role in saving species from extinction?*

The Sixth Mass Extinction? Lesson Driving Question: *How have humans impacted the Earth for better and for worse?*

1. Have students explore images to develop an understanding of how humans and nature influence species survival.

- Have students navigate to Joel Sartore's [Gallery: Conservation Stories](#) and have them look through the photos.
- After students have looked through the images and captions, use the following prompts to conduct a whole-class discussion about observations that support their previous learning about human and natural impacts affecting species:
 - *In what images do you see evidence of human or natural influence on the survival of a species?*
 - *Describe the habitats of some of these animals, or choose one of the animals and describe/identify the habitat where this animal lives.*
- Create a class Know and Need to Know chart to gather students' initial knowledge and lines of inquiry.
- Explain to students that their final unit project is to develop a pamphlet that shares information about an endangered species, and the Know and Need to Know chart will be the main tool they will be using to guide their research and collect information.

2. Introduce students to the five major world biomes through encyclopedic entries and an infographic.

- Distribute the *Introductory Research on Biomes* handout to each student and preview the information students will be gathering during the rest of this activity.
- Read aloud the first two paragraphs of the encyclopedic entries on [biome](#) and [ecosystem](#) to students to develop background knowledge.
 - Help students differentiate between biomes, ecosystems, and habitats by displaying the infographic [Biomes, Ecosystems, and Habitats: What's the Difference?](#)
 - Clarify that the habitats and species that live within specific biomes will vary depending on where the biome is located.
- Display and read through the infographic [What Are the Major Types of Biomes?](#) highlighting the differences between the five types of biomes.

- Explain that while areas are marked to represent the location of specific biomes, they are not the only location where each biome can be found.

3. Scaffold students' understanding of how animals come to be classified as threatened or endangered.

- Explain to students that they are going to be researching specific threatened and endangered species whose habitats are found within these biomes.
- Read the *Following the Science* section in the National Geographic article [How Do We Decide Which Species are Endangered or Threatened?](#)
 - Share with students that the IUCN stands for the International Union for the Conservation of Nature, an organization that is tasked with gathering data about the environment and supporting governments in making policies using that data.
 - Have students discuss with a neighbor: *Based on this article, how confident are you about how species are classified? Do you think the IUCN is a trustworthy organization?*

4. Assign students to research teams focused on one biome and have the team select an endangered species from that biome to focus on throughout the unit.

- Remind students: *For your project, you will be creating a conservation pamphlet that focuses on one animal that needs our attention. To do that work, we first need to build our background knowledge and get to know these biomes and species.*
- In research teams, have students read the encyclopedia article on their assigned biome (listed below) by browsing the appropriate initial resource. Have at least two teams research each biome; each team researches a unique animal later in this step.
 - [Tundra Biome](#)
 - [Aquatic Biome](#)
 - [Forest Biome](#)
 - [Desert Biome](#)
 - [Grassland Biome](#)
- Next, have each team select a species from their biome. The options for each biome are:
 - Tundra: [polar bear](#) or [wood bison](#)
 - Desert: [desert tortoise](#) or [Peninsular bighorn sheep](#)
 - Grasslands: [black-footed ferret](#), [black rhino](#), or [American burying beetle](#)

- Aquatic: blue whale, Galápagos penguin, or hawksbill turtle
 - Forest: pygmy three-toed sloth, harpy eagle, bonobo, Sumatran tiger, or orangutan
- Have teams report out their selected biome and species before collecting the Introductory Research on Biomes handout from each student.

5. Debrief the activity by revisiting the class Know and Need to Know chart.

- Have students suggest information they've learned that should be added to the Know column.
- Revisit the lesson driving question: *How have humans impacted the Earth for better and for worse?*
 - Solicit student volunteers to provide some examples from their research that support an answer to the driving question.

Tip

Continue the unit word wall by adding key terms to it throughout the lesson.

Tip

Assessment: Address misunderstandings in small groups at the beginning of group work during the next activity.

Tip

Step 1: A *Know & Need to Know* chart is an information organization tool that can be used to gauge prior knowledge and track learning throughout a research-based project. Students start by listing information they already know about a topic in the Know column of the chart, and then they begin generating questions that will move them toward understanding potential answers to the driving question(s). As they discover answers to their questions, they can strike out their question in the Need to Know column and add the learned information to the Know column.

Modification

Step 2: Students read about biomes and ecosystems in the provided links and develop their own explanations for how they are different.

Modification

Step 4: Encourage students who would like more information to skim this infographic on threats: [*The Threats Facing Biomes Today*](#).

Modification

Step 4: Have students research endangered species of the biome as homework and be prepared to present their findings to their team to determine the group's focal species.

Informal Assessment

Collect the [*Introductory Research on Biomes*](#) handout at the end of this activity to review students' documents for general understanding.

Extending the Learning

Check the National Geographic's [*Explorer Classroom*](#) site to potentially connect with [*Rae Wynn-Grant \(NG Explorer\)*](#), an ecologist specializing in conservation biology or other relevant explorers.

Create a closed classroom website, blog, discussion board, or shared document for student teams to share questions, ideas, comments, and concerns as they conduct their research across this two-week unit.

Geo-Inquiry: Have students investigate the geographic distribution of biomes and the human impact on the prairie and its animals by participating in [*Altered Biomes*](#), an Esri GeoInquiries activity.

OBJECTIVES

Subjects & Disciplines

Biology

- [*Ecology*](#)

- Conservation

Earth Science

- Geology
- Oceanography

Geography

- Human Geography
- Physical Geography

Social Studies

- Civics
- Economics

Learning Objectives

Students will:

- Research one of the world's five major biomes and select a focal species that lives in that biome.

Teaching Approach

- Project-based learning

Teaching Methods

- Discussions
- Reading
- Research

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Information, Media, and Technology Skills
 - Information Literacy

- Media Literacy
- Learning and Innovation Skills
 - Communication and Collaboration
- 21st Century Themes
 - Environmental Literacy
 - Global Awareness
- Critical Thinking Skills
 - Analyzing
 - Applying
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Analyzing Geographic Information
 - Organizing Geographic Information

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

• CCSS.ELA-LITERACY.WHST.6-8.9:

Draw evidence from informational texts to support analysis, reflection, and research.

THE COLLEGE, CAREER & CIVIC LIFE (C3) FRAMEWORK FOR SOCIAL STUDIES STATE STANDARDS

• D3.1.6-8:

Gather relevant information from multiple sources while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.

Preparation

What You'll Need

REQUIRED TECHNOLOGY

- Internet Access: Required

- Tech Setup: 1 computer per learner, 1 computer per pair, Interactive whiteboard, Monitor/screen, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Heterogeneous grouping
- Large-group instruction
- Large-group learning
- Small-group learning
- Small-group work

BACKGROUND & VOCABULARY

Background Information

Biomes are defined as major communities on Earth, classified by climate, predominant vegetation and characterized by species' adaptations to that particular environment. Latitude and annual rainfall are also used to classify biomes.

While there are many ideas about how many biomes exist, there are five major categories of biomes on Earth: aquatic, desert, forests, grasslands, and tundra. The animal species living within the biome depends heavily upon the continent, country, or even smaller region in which the biome is located.

Prior Knowledge

[]

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
aquatic	<i>adjective</i>	having to do with water.
biome	<i>noun</i>	area of the planet which can be classified according to the plant and animal life in it.
climate	<i>noun</i>	all weather conditions for a given location over a period of time.
conservation ecology	<i>noun</i>	study of Earth's biodiversity, with the goal of protecting species, habitats, and ecosystems. Also called conservation biology.
desert	<i>noun</i>	area of land that receives no more than 25 centimeters (10 inches) of precipitation a year.
driver	<i>noun</i>	any natural or human-induced factor that directly or indirectly sets a change to an <u>ecosystem</u> in motion.
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
endangered species	<i>noun</i>	organism threatened with extinction.
extinction	<i>noun</i>	process of complete disappearance of a species from Earth.
forest	<i>noun</i>	ecosystem filled with trees and underbrush.
grassland	<i>noun</i>	ecosystem with large, flat areas of grasses.
habitat	<i>noun</i>	environment where an organism lives throughout the year or for shorter periods of time.
tundra	<i>noun</i>	cold, treeless region in Arctic and Antarctic climates.

For Further Exploration

Articles & Profiles

- [National Geographic: Threatened Species Explained](#)
- [National Geographic: Endangered Species Explained](#)
- [National Geographic: Extreme Animals That Live in the Grasslands](#)
- [National Geographic: Extreme Animals That Live in Deserts](#)
- [National Geographic: The Tundra Biome Explained](#)

Video

- [National Geographic: Why the Ocean Matters](#)



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