Sorting the Gulf Ecosystem

Students categorize photos and other representations of organisms as plants, invertebrates, fish, birds, reptiles, mammals, or amphibians. Then they use a diagram of the Gulf of Mexico ecosystem to identify species that live in the Gulf of Mexico and categorize them.

GRADES
1, 2, 3

SUBJECTS
Biology, Earth Science, Oceanography, Geography, Physical Geography

CONTENTS
1 Link, 1 PDF

OVERVIEW

Students categorize photos and other representations of organisms as plants, invertebrates, fish, birds, reptiles, mammals, or amphibians. Then they use a diagram of the Gulf of Mexico ecosystem to identify species that live in the Gulf of Mexico and categorize them.

For the complete activity with media resources, visit:
http://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/

DIRECTIONS

1. Build background about types of plants and animals.

Draw a 7-column chart on the board with the following headings: Plant, Invertebrate (animals without a backbone), Fish, Bird, Reptile, Mammal, and Amphibian. Have students cut out photos, pictures, or other representations of each type of organism, and tape them in the correct columns.
2. Compare living things in the Gulf of Mexico.

Project the MapMaker Interactive and point out the Gulf of Mexico to students. Then download and display the Layers of Life diagram from the October 2010 issue of *National Geographic* magazine. Explain to students that the Gulf of Mexico is home to many species of plants and animals. Ask students to identify each type of organism on the Layers of Life diagram as one of the seven types of organisms. When students properly identify a plant or animal, point out some of the features of that organism; for example, if students identify the brown pelican as a bird, point out that birds have feathers and wings to help them fly. Then make a hash mark or write the name of the organism in the correct column on the chart.

3. Discuss the types of living things students identified.

After the class has sorted all of the organisms, count the number of organisms in each column. Ask: *Which group has the most organisms in it? The least?* Then summarize the information for students by restating that there are many different types of plants and animals living in the Gulf of Mexico. They are all part of the *food web*. As humans, we are also part of this food web. It is important to try to keep this *ocean environment* clean so that all of these plants and animals stay safe and healthy.

**Informal Assessment**

Assess student comprehension based on their answers to the questions in the activity and their ability to categorize plants and animals based on the features illustrated in the diagram.

**Extending the Learning**

Ask each student to draw a picture of his or her favorite marine organism or an imaginary organism, and to label one or more features of that organism. Invite students to share with the class, in a show-and-tell format, how their organism uses the feature(s) for survival.

**OBJECTIVES**
Subjects & Disciplines

- Biology
- Earth Science
  - Oceanography
- Geography
  - Physical Geography

Learning Objectives

Students will:

- identify the different physical features of plants and animals
- group organisms based on their similarities and differences
- compare the features of similar organisms and predict how these features are used for survival

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Hands-on learning

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
  - Analyzing
  - Understanding

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

OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

• **Principle 5e:**
The ocean is three-dimensional, offering vast living space and diverse habitats from the surface through the water column to the seafloor. Most of the living space on Earth is in the ocean.

• **Principle 6e:**
Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (such as point source, non-point source, and noise pollution) and physical modifications (such as changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

**Preparation**

**What You’ll Need**

**MATERIALS YOU PROVIDE**

• Colored markers
• Construction paper
• Crayons
• Globe
• Magazines with animal photos
• Safety scissors
• Transparent tape
REQUIRED TECHNOLOGY

- Internet Access: Optional
- Tech Setup: 1 computer per classroom, Projector
- Plug-Ins: Flash

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction

BACKGROUND & VOCABULARY

Background Information

The Gulf of Mexico is home to a wide variety of organisms. There is a high diversity of life because of the multitude of different marine ecosystems and the temperate waters of the Gulf. Ecosystems include freshwater and saltwater marshes, mangrove forests, coral reefs, and open ocean communities. This makes the Gulf of Mexico one of the most productive marine ecosystems on Earth.

Prior Knowledge

["compare and contrast"]

Recommended Prior Activities

- None

Vocabulary

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of Speech</th>
<th>Definition</th>
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<tr>
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<td>Term</td>
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<td>-----------------</td>
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<tr>
<td>amphibian</td>
<td>noun</td>
<td>an animal able to live both on land and in water.</td>
</tr>
<tr>
<td>ecosystem</td>
<td>noun</td>
<td>community and interactions of living and nonliving things in an area.</td>
</tr>
<tr>
<td>environment</td>
<td>noun</td>
<td>conditions that surround and influence an organism or community.</td>
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<tr>
<td>food web</td>
<td>noun</td>
<td>all related food chains in an ecosystem. Also called a food cycle.</td>
</tr>
<tr>
<td>invertebrate</td>
<td>noun</td>
<td>animal without a spine.</td>
</tr>
<tr>
<td>mammal</td>
<td>noun</td>
<td>animal with hair that gives birth to live offspring. Female mammals produce milk to feed their offspring.</td>
</tr>
<tr>
<td>ocean</td>
<td>noun</td>
<td>large body of salt water that covers most of the Earth.</td>
</tr>
<tr>
<td>organism</td>
<td>noun</td>
<td>living or once-living thing.</td>
</tr>
<tr>
<td>reptile</td>
<td>noun</td>
<td>animal that breathes air and usually has scales.</td>
</tr>
</tbody>
</table>

For Further Exploration

Articles & Profiles

- [National Geographic News: Gulf Oil Spill—One Year Later](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)

Interactives

- [National Geographic Magazine: Interactive—Layers of Life](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)
- [National Geographic Magazine: Interactive Map—The Geography of Offshore Oil](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)

Websites

- [National Geographic Environment: The Ocean](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)
- [National Geographic Environment: The Ocean—Gulf Oil Spill](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)
- [National Geographic Animals](https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/print/)