Big Cats and Their Habitats

Students use media resources to identify big cats and map the species ranges of the world's big cats. Then they determine each big cat's corresponding habitat and create a graphic organizer that summarizes the information.

GRADES
3 - 5

SUBJECTS
Biology, Ecology, Geography, Physical Geography

CONTENTS
3 PDFs, 8 Links, 6 Images

OVERVIEW

Students use media resources to identify big cats and map the species ranges of the world's big cats. Then they determine each big cat's corresponding habitat and create a graphic organizer that summarizes the information.

For the complete activity with media resources, visit:
http://www.nationalgeographic.org/activity/big-cats-and-their-habitats/

Program

DIRECTIONS
1. Activate students’ prior knowledge about big cats.
Set the stage for the activity by activating students’ prior knowledge about big cats. Discuss with students what they think of when they think of “big cats.” Ask: What images come to mind? What are some types of big cats that you can think of? Elicit from students that big cats include lions, tigers, leopards, cheetahs, and other large predatory cats.

2. Discuss big cats’ distinguishing physical features.
Distribute the Big Cats Habitats worksheet. Ask students to read the directions for Part 1. Project the National Geographic Wild Animals website page for each big cat in the order listed on the worksheet’s chart: African lion, Bengal tiger, jaguar, leopard, mountain lion, ocelot, and Siberian tiger. Only show students the cat’s photo, not the species range map located below the photo. Cover the species range map with a piece of blank paper. Ask: What type of big cat is this? How do you know what it is? As each image is shown, prompt students to describe the specific physical characteristics of each cat, including its size, and the color and pattern of its coat. Ask: What color is the cat’s coat? Are there any patterns on its coat? Does it have any markings on its face? After reviewing all big cat pages, discuss how the cats look similar to or different from one another. Ask: How do the cats look similar to or different from one another? Have students sketch each big cat in the chart and take notes using the Big Cats Habitats worksheet.

3. Have students identify the species range of each big cat.
Divide students into groups of four or five and distribute dry erase markers and one World Physical Tabletop Map to each group. Read aloud the directions for Part 2 of the worksheet. Explain that a species range is the native, geographic area in which an organism can be found. Tell students that they will use their tabletop maps to locate and label the range of each big cat. Take time to revisit each big cat web page. Make sure students correctly identify each big cat. This time, show the rest of the information in each big cat’s animal page, including the species range maps. Help students identify the continent and region that make up each big cat’s species range. Have them color and label the range for each big cat on their tabletop maps. Tell them to use different colors or patterns to distinguish between each of the cat’s ranges. Have students record the continent where each cat lives in the Big Cats Habitats worksheet.

4. Discuss how satellite imagery can be used to distinguish between different types of big cat habitats.
Tell students that a habitat is the environment where an organism lives. Explain that big cats live in many different habitats within continents and species ranges the class identified. Ask:
What types of habitats do big cats live in? Elicit from students that most big cats live throughout parts of Africa, Asia, and Central and South America, and their habitats can be very different. Display the Big Cat Habitat Locator Satellite Map. Ask students what they think the image is showing. As a hint, tell them to read the habitats listed under the Habitat Locations column in their charts. Explain that the map uses satellite imagery to show habitat locations where each of the big cats in their charts can be found. Explain that the images are color photographs that can provide clues to what the habitats look like and what types of environments they are. More detail can be seen in a satellite image by increasing the size of the image, or zooming in on it. Have students read aloud each habitat location from the chart and find it on the first image in the satellite image gallery.

5. Have students identify and distinguish between different types of big cat habitats.
Explain to students that they will now observe detailed satellite imagery of the specific habitat locations listed in their charts. One at a time, have volunteers read aloud the habitat descriptions from the chart. Tell students to think about the habitat descriptions as they observe each of the satellite images. Read aloud the directions for Part 3 of the worksheet. Students will determine the habitat type that each satellite image represents. The options are: savanna, mangrove swamp, tropical rain forest, forests of all types, or boreal forest. Then ask students to match one of the five habitat types to each big cat and write their answers in the chart column labeled Habitat Type. Encourage students to make careful observations and to look at the satellite images for things like color and texture, for example, flat/hilly or wet/dry areas. As needed, provide the following clues for each satellite image:

- **Habitat 1: Tropical Rain Forest (Amazon Basin, Brazil, South America)**—In this image, there is a dense forest with a small river or stream cutting through it and some other water features, possibly ponds or swamps. The dense forest and abundance of water features are indicators that this is a rainforest habitat.

- **Habitat 2: Forests (Idaho and Utah, western United States, North America)**—In this image, forested areas are represented by dark green. The terrain is also very hilly or mountainous with other habitat types present, possibly on the steeper slopes where tree stands are less likely to grow.

- **Habitat 3: Savanna Habitat (Maasai Mara National Park, Kenya, Africa)**—In this image, dark green represents stands of trees, lighter green represents grasslands, and brown and yellow represent bare earth.
• Habitat 4: Boreal Forest Habitat (northeastern Russia, Asia)—In this image, snow-capped hills lead down to a forested river valley. The snowy landscape indicates that this image was taken at a cool, northerly latitude.

• Habitat 5: Mangrove Swamp Habitat (Sundarbans, Ganges River Delta, India, Asia)—In this image, a network of rivers snakes through the landscape and many smaller streams branch off of it. Most of the vegetation surrounding these smaller stream networks is mangrove forest. Note the brown and yellow area with angular edges—this indicates human settlements and agricultural fields.

Discuss student responses as a class and clarify any misconceptions by discussing the images and re-reading the habitat descriptions as needed.

6. Have students summarize what they learned about big cats and their habitats.
Have students answer to the questions in Part 4 of the worksheet. Use the provided answer key to discuss their responses. Next, divide students into small groups and assign them one of the seven big cats listed in the worksheet. Tell students that each group will create a Big Cat Habitat mobile for their assigned big cat using information they recorded on their worksheets. Tell them to be creative and use graphics and pictures, rather than just words, to create their mobiles. Supply students with craft supplies and instruct them to design and create a mobile that includes (at a minimum): their big cat’s name, habitat type, habitat description, and habitat location. Sketch or display a sample mobile to clarify what you want them to create. As time allows, have students present and discuss their mobiles. Then display the mobiles and tabletop maps in the classroom.

Tip
Refer to Big Cats Background Information and the Big Cats and Their Habitats Worksheet and Answer Key for additional information about big cats and their habitats.

Informal Assessment
Use the provided answer key to assess students' comprehension of big cat habitats and species ranges.

Extending the Learning
Have students identify and discuss specific adaptations that each big cat uses to survive in its particular habitat or species range.
OBJECTIVES

Subjects & Disciplines

- Biology
  - Ecology
- Geography
  - Physical Geography

Learning Objectives

Students will:

- identify the distinguishing features of different big cat species
- describe, locate, and distinguish between the habitats and species ranges of different big cat species

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Information organization
- Multimedia instruction

Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - Global Awareness
- Critical Thinking Skills
  - Analyzing
• Creating
• Understanding
• Geographic Skills
  • Acquiring Geographic Information
  • Answering Geographic Questions
  • Asking Geographic Questions
  • Organizing Geographic Information

National Standards, Principles, and Practices

NATIONAL COUNCIL FOR SOCIAL STUDIES CURRICULUM STANDARDS

• Theme 3:
  People, Places, and Environments

NATIONAL GEOGRAPHY STANDARDS

• Standard 3:
  How to analyze the spatial organization of people, places, and environments on Earth’s surface
• Standard 4:
  The physical and human characteristics of places
• Standard 8:
  The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

NATIONAL SCIENCE EDUCATION STANDARDS

• (5-8) Standard C-4:
  Populations and ecosystems
• (5-8) Standard C-5:
  Diversity and adaptations of organisms
• (5-8) Standard F-2:
  Populations, resources, and environments
• (K-4) Standard C-1:
  The characteristics of organisms
• *(K-4) Standard C-3:*
  Organisms and environments

• *(K-4) Standard F-4:*
  Changes in environments

**Preparation**

**What You’ll Need**

**MATERIALS YOU PROVIDE**

• Colored pencils
• Construction paper
• Dry erase markers
• Glue sticks
• Index cards
• Magazines
• Paper
• Paper clips
• Pencils
• Scissors
• String

**REQUIRED TECHNOLOGY**

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

**PHYSICAL SPACE**

• Classroom

**GROUPING**

• Large-group instruction

**OTHER NOTES**
Using the MapMaker Kit Assembly video as a guide, print, laminate, and assemble the World Physical Tabletop Maps.

BACKGROUND & VOCABULARY

Background Information

Big cat species live in a variety of habitats ranging from savannas and tropical rain forests to mangrove swamps and boreal forests. Big cat species that have a wide range and live in a variety of habitats include leopards, mountain lions, ocelots, and jaguars. Other big cats, including the Siberian tiger, Bengal tiger, and African lion, have more limited ranges and are adapted to fewer habitat types. Mapping tools and satellite imagery can help scientists to study the ranges and habitat types of big cat populations throughout the world.

Prior Knowledge

Recommended Prior Activities

- None

Vocabulary

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of Speech</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Cats Initiative</td>
<td>noun</td>
<td>National Geographic Society program that supports on-the-ground conservation projects, education, economic incentive efforts, and a global public-awareness campaign to protect big cats and their habitats.</td>
</tr>
<tr>
<td>boreal forest</td>
<td>noun</td>
<td>land covered by evergreen trees in cool, northern latitudes. Also called taiga.</td>
</tr>
<tr>
<td>forest</td>
<td>noun</td>
<td>ecosystem filled with trees and underbrush.</td>
</tr>
<tr>
<td>habitat</td>
<td>noun</td>
<td>environment where an organism lives throughout the year or for shorter periods of time.</td>
</tr>
<tr>
<td>mangrove swamp</td>
<td>noun</td>
<td>coastal wetland dominated by mangrove trees, which have roots that can survive in salty water.</td>
</tr>
<tr>
<td>satellite imagery</td>
<td>noun</td>
<td>photographs of a planet taken by or from a satellite.</td>
</tr>
<tr>
<td>Term</td>
<td>Part of Speech</td>
<td>Definition</td>
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<td>-----------------</td>
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</tr>
<tr>
<td>savanna</td>
<td>noun</td>
<td>type of tropical grassland with scattered trees.</td>
</tr>
<tr>
<td>species</td>
<td>noun</td>
<td>native, geographic area in which an organism can be found. Range also refers to the geographic distribution of a particular species.</td>
</tr>
<tr>
<td>range</td>
<td>noun</td>
<td>grouping of tall evergreen trees, usually close to the Equator, which receives more than 203 centimeters (80 inches) of rain a year.</td>
</tr>
<tr>
<td>tropical rain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>forest</td>
<td></td>
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</tbody>
</table>

For Further Exploration

Websites

- IUCN: Red List of Threatened Species—Panthera leo
- IUCN: Red List of Threatened Species—Panthera pardus
- IUCN: Red List of Threatened Species—Puma concolor
- IUCN: Red List of Threatened Species—Panthera onca
- IUCN: Red List of Threatened Species—Leopardus pardalis