



# Ecosystems and biomes

from the Esri GeoInquiries™ collection for Upper Elementary

Target audience – Upper Elementary

Time required – 15 minutes

## Activity

This activity provides a broad look at biomes and ecosystems across the globe.

## Standards

**NGS: ESS2-2.** Analyze and interpret data from maps to describe patterns of the earth's features.

**C3: D2.Geo.2.3-5.** Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their environmental characteristics.

**CC: CCSS.ELA-Literacy.RI.4.7.** Interpret information presented visually and explain how the information contributes to an understanding of the text in which it appears.

## Learning Outcomes

- Students will describe an ecosystem/biome.
- Students will distinguish between ecosystems/biomes on the earth.

Map URL: <http://esriurl.com/fourgeo inquiry1>



## Engage

### What is an ecosystem?

- Click the map link above or type it into your Internet browser.
- Click the button, Show Contents of Map. Hint: Look in the upper left corner, under the Details button.
- Click the Ecosystems/Biomes Elementary layer name to see the legend.
- Compare the colors in the legend to the colors on the map. Hint: Layer visibility can be turned on or off by selecting the check box next to the layer name.
- Zoom in on the continental United States.
- ? What ecosystems or biomes are found in the United States? [*Temperate forest, grassland, and desert. Temperate forests have deciduous trees in them, although they could also have conifers.*]



## Explore

### What do ecosystems look like?

- Click the Home button (upper-left of the map) to zoom out to the entire map.
- Using the Ecosystems/Biomes Elementary legend, find the map marker located in a Temperate Forest area. Hint: The map marker is located in China.
- Click the map marker to open the pop-up window.
- Ask a student to read aloud the description for Temperate Forests; examine the photo.
- One by one, click the map markers in the other ecosystems, reading their descriptions and examining photos.
- ? How do the ecosystems look different? [*Student answers should reflect different vegetation types, landscapes, and climate.*]

## Explain

### Where are ecosystems located globally?

- Click the color in Europe that represents a Temperate Forest. Note: Do not click a pushpin this time.
- ? What happens to the map? [*All the Temperate Forests on the map are outlined in blue.*]
- Select the Major Latitude/Longitude Lines layer check box.
- ? Around the world, where else are Temperate Forests found on the map? [*Temperate Forests are located north of the Tropic of Cancer; south of the Tropic of Capricorn; and south and north of the Arctic and Antarctic Circles, respectively.*]

## Elaborate

### How do ecosystems differ?

- Click the Tropical Rain Forest and Tundra pushpins.
- ? How does the picture of the Tropical Rain Forests compare to the picture of the Tundra? [*Tropical Rain Forests have dense, green, lush tree growth while the Tundra has very short, stubbly scrub covered with snow and ice.*]
- ? What do you think contributes to the differences between the ecosystems? [*Answers may include: amount of rainfall and sun, and location of the ecosystems to the equator and the North and South Poles.*]

### CLICK A MAP FEATURE

- Click any feature on the map, and a pop-up window will open with information.
- Links and images in the window are often clickable.

### TURN A MAP LAYER ON AND OFF

- Make sure that the Details pane is selected, and click Show Map Contents.
- To show individual map layers, select the check boxes next to the layer names. Hint: If a map layer name is light gray, zoom in or out on the map until the layer name is black. The layer can now be turned on.

## Next Steps

**DID YOU KNOW?** ArcGIS Online is a mapping platform freely available to public, private, and home schools. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at <http://www.esri.com/schools>.

### THEN TRY THIS...

- For an advanced exploration of world ecosystems, see the *Explore a Tapestry of World Ecosystems* story map at <http://esriurl.com/Geo461>.
- Using a free ArcGIS Online organization subscription for schools (see <http://connected.esri.com>), have students modify the map used in this activity and save it to their accounts, sharing it with classmates.

## TEXT REFERENCES

This GIS map has been cross-referenced to material in sections of chapters from these texts

- *Science by Macmillan/McGraw-Hill — Chapter A*
- *Science by Glencoe/McGraw-Hill — Unit B*
- *Science by Harcourt — Chapter B*