

AFRICA + BIODIVERSITY



The Science of Biodiversity

Grades: 3-5

Background: Africa might be pretty far away from your classroom, so this activity can help students explore the biodiversity that is closer to home.

Objectives: Students will engage in activities that are essential scientific inquiry. They will record information (observations, thoughts, and ideas) and describe, measure, and/or compare quantitative attributes of different objects and display the data using simple graphs.

What's Inside?

- Activity background
- Activity procedure
- Bingo cards in English and Spanish

Sources: PBS Learning Media

Background for Teachers

Resource from PBS Learning Media

Here are suggested ways to engage students with this video and with explorations related to biodiversity.

You may want to have students do the activity (see Activity on page 3) prior to watching the video. This will allow you to reinforce the concepts raised in the activity and extend your discussion by comparing your students' results with what they see in the video. If you prefer to watch the video first, or only to watch the video, use the "Viewing the Video" suggestions below.

Viewing the Video: Use the following suggestions to guide students' viewing of the video.

- **Before:** Introduce students to the concept of biodiversity with a quick round of the game "Hot Potato." Gather the students in a circle and explain the rules: players quickly pass a beanbag or ball around the circle. In this version, challenge students to name a plant or animal they saw on their way to school today before passing the ball to the next player. To extend the challenge, tell them they can't repeat any living things already named.

To start the game, say the name of a living thing you saw today, and pass the ball to one of the students. Set a timer for one minute and jot down each organism the students identify on a flipchart. After one minute, say "STOP!" Ask for a volunteer to count how many different living things the class named. Then, ask for a volunteer to define "biodiversity," the variety of living things in a given place.

Finally, talk about biodiversity in your neighborhood. Do your students think you have biodiversity right in your schoolyard? Students often learn about biodiversity in exotic places such as rainforests, but don't always recognize that biodiversity exists everywhere, even in cities. Ask students: Where in our neighborhood do you think we might find the most biodiversity? Why?

- **After:** [Note: if you are doing the Activity after watching the video, skip this discussion, as you will complete it during the Activity wrap-up.] Write the word "BIODIVERSITY," in all capital letters, vertically on a flip chart or whiteboard. Have students suggest the name of a different living thing for each letter. Challenge them to use the names of animals and plants that live in their neighborhood,

including the ones they named while playing “Biodiversity Hot Potato” before the video. Encourage them to think broadly and creatively, using adjectives and alliteration if they can, especially if certain letters are difficult for them.

Here are some examples of plants or animals common in many regions, should students get stuck:

B: bug, bird

I: insect

O: oak tree, orange flower

D: dog, dandelion

I: ivy

V: violet

E: earthworm, elm tree

R: raccoon

S: sparrow, salamander, snake

I: inchworm

T: tree

Y: yellow flower

Explore Some More:

Beautiful Bark

Have students explore texture and pattern in trees by making bark and leaf rubbings. To make a bark rubbing, place a piece of paper on the bark of a tree, then gently rub the long side of a crayon (with the wrapper removed) on the paper. For a leaf rubbing, collect leaves that have fallen from a tree. Place a leaf under a piece of paper and gently rub the paper with the long side of a crayon until the shape of the leaf shows up, or have students trace the outline of the leaf on paper. Have students trade rubbings—can they identify the trees their partners used by looking at the pattern on the paper? When you return indoors, tape the bark and leaf rubbings to a wall to make “trees” in your classroom. Then, use an online field guide, such as the Arbor Day Foundation's *What Tree Is That?* or one of the nature guides published by the National Audubon Society.

Diversity Decorations

Have students collect leaves, acorns, twigs, and any other natural items that catch their eye (be sure that they collect only plant material that has fallen to the ground and that they do not pick live plants). Back indoors, hand out paper, glue sticks, and other craft supplies. Have students make the base of a wreath by folding an 8 x 11" piece of paper in half, cutting a large half-circle along the edges, then cutting a smaller half-circle along the middle of the fold (when they open the paper, it should look like a ring). Have students decorate the paper rings with their collections, making a nature wreath they can take home.

Biodiversity Bingo - Activity

Resource from PBS Learning Media

Activity Type: Outdoor

Objectives

- Understand that biodiversity is the variety of living things in a given place.
- Show that there are many different kinds of living things in any area, and they exist in different places on land and in water.

Suggested Time: 60 minutes

Materials

- 1 Biodiversity Bingo Card handout, per pair of students (See Student Handout attached)
- Beanbag or small inflatable ball
- Pencils
- Notebooks
- Magnifying glasses (if possible)
- Gardening trowel or other small shovels (if possible)
- Stopwatch or timer
- Flipchart or poster paper
- Marker

Before the Activity:

- Watch the video, read the activity, and gather the materials.



<https://tpt.pbslearningmedia.org/resource/plum14.sci.life.biobingo/biodiversity-bingo/>

- Print enough copies of the handout for each pair of students, plus one for yourself.
- Scout out places where this activity will work well, such as a neighborhood park, schoolyard, or even a walk through the neighborhood.
- Notice what kinds of living things (plants and animals) you find and where you find them.
- Troubleshoot any safety concerns (traffic, poison ivy, sharp objects, etc.).

Warm-up: [Note: If you have already completed the “Viewing the Video” discussion in Teaching Tips, skip ahead to Part A of the main activity.] Introduce students to the concept of biodiversity with a quick round of the game “Hot Potato.” Gather the students in a circle and explain the rules: players quickly pass a beanbag or ball around the circle. In this version, challenge students to name a plant or animal they saw on their way to school today before passing the ball to the next player. To extend the challenge, tell them they can’t repeat any living things already named.

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Part A: Bingo!

- Gather the materials, have students pair up, and head outside. Show students the boundaries you would like them to observe while you are exploring outdoors.
- Hand out "Biodiversity Bingo!" boards, field notebooks, and pencils.
- Quickly review the organisms on the bingo boards to be sure students recognize each one. Students may need help recognizing that "animals with 6 legs" are insects, such as ants, ladybugs, and bees; "animals with 8 legs" are spiders; and "animals with 2 legs" can be either birds or people.
- Explain how bingo works: as they explore, they cross off each item they find. When they have crossed off five in a row, they yell "BINGO!"
- Send students off to explore the outdoor area. As they look around, circulate among the groups. You might need to show students how to look for some of the items. Get down on hands and knees to peer into cracks in the sidewalk or between blades of grass. If you have a place where students can dig in the ground, show them how to gently turn over the soil to look for worms or other organisms.
- When students have completed their boards, head back indoors or have students sit in a circle on the ground outdoors.

Part B: What Lives Here?

- Hang an unused bingo board at the front of the room or, if you are still outside, on the flipchart.
- Go through each item on the board and have students raise their hands if they found it.
- Cross off each item students have identified.
- Compare the bingo board with the list you made while students were playing Hot Potato. How do they differ? Where do they overlap?
- Have students talk about what they found.

Ask:

- What was the easiest thing to find? Why might that be?
- What was the hardest thing to find? Why?
- Is there anything on the board that nobody found?
- Is there anything else we should add to this board? Why?

Wrap-up

Write the word "BIODIVERSITY," in all capital letters, vertically on a flipchart or whiteboard (See page 2). Have students suggest the name of a different living thing for each letter. Challenge them to use the names of animals and plants that live in their neighborhood. Encourage them to think broadly and creatively, using adjectives and alliteration if they can, especially if certain letters are difficult for them.

Optional

If you and your students would like to identify by name the plants and animals you saw, explore The Arbor Day Foundation's tree identification field guide *What Tree Is That?* or tree identification iPhone app. The National Audubon Society also publishes a variety of online nature guides and apps as well.

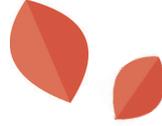
Optional

Now that students have completed the activity, you may choose to show them the "Biodiversity Bingo" video. Have a short discussion in which you compare your students' results with the outcomes for the kids in the video. What similarities and differences are there between your setting and the one in the video? Did your students find any of the same plants or animals as the kids in the video? If they did, what might be some reasons why? If they didn't, what might be some reasons for that?

Biodiversity Bingo!



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<p>5 or more ants</p> 	<p>A bird HOPPING on the ground</p> 	<p>3 YELLOW flowers</p>	<p>An animal with 4 legs</p>	<p>A leaf with WAVY edges</p> 
<p>A leaf BIGGER than your hand</p>	<p>A WHITE flower</p>	<p>An animal MAKING a sound</p> 	<p>A leaf with SMOOTH edges</p> 	<p>An animal with 6 legs</p>
<p>An animal with 2 legs</p>	<p>A FLYING animal</p> 	<p>A flower with 6 or more PETALS</p> 	<p>An animal with 8 legs</p> 	<p>A leaf with POINTY edges</p> 
<p>An animal EATING a plant</p>	<p>A tree with SMOOTH bark</p> 	<p>A flower with 2 or more COLORS</p>	<p>A worm</p> 	<p>A tree with ROUGH or BUMPY bark</p>
<p>A tree TALLER than you are</p>	<p>A moth or butterfly</p> 	<p>Grass</p> 	<p>A leaf SMALLER than your hand</p>	<p>A leaf divided into SMALLER leaves</p>



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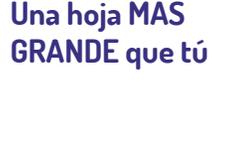
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Bingo de la biodiversidad



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<p>5 o más hormigas</p> 	<p>Un pájaro SALTANDO</p> 	<p>3 flores AMARILLAS</p> 	<p>Un animal de 4 patas</p> 	<p>Una hoja de bordes FESTONEADOS</p> 
<p>Una hoja MÁS GRANDE que tú</p> 	<p>Una flor BLANCA</p> 	<p>Un animal QUE HAGA un sonido</p> 	<p>Una hoja de bordes LISOS</p> 	<p>Un animal de 6 patas</p> 
<p>Un animal de 2 patas</p> 	<p>Un animal VOLADOR</p> 	<p>Una flor con 6 o más PÉTALOS</p> 	<p>Un animal de 8 patas</p> 	<p>Una hoja de bordes CON PUNTITAS</p> 
<p>Un animal COMIENDO una planta</p> 	<p>Un árbol de corteza LISA</p> 	<p>Una flor con 2 o más COLORES</p> 	<p>Una lombriz</p> 	<p>Un árbol de corteza ÁSPERA</p> 
<p>Un árbol MÁS ALTO que tú</p> 	<p>Una polilla o mariposa</p> 	<p>Pasto o grama</p> 	<p>Una hoja MÁS CHICA que tu mano</p> 	<p>Una hoja que se divida en hojas MÁS CHICAS</p> 



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