

Biodiversity 1: Threats to Biodiversity Bingo

Middle School Scientists Curriculum

Class Time Required:

1 class period (50-65 minutes)
Extension (30-45 minutes)

Materials Needed:

- Engagement: Worksheet 1, "Biodiversity 1: Threats to Biodiversity Bingo", Attachment 1, "Biodiversity 1: Threats to Biodiversity Bingo"
- Investigation and Explanation: Bingo Markers, Small Prizes
- Extension: Resource Materials (books, textbooks, internet)

Teacher Preparation: 30-60 minutes to review activity, collect materials, and make copies

Student Knowledge: prior knowledge about biodiversity and biodiversity threats

Vocabulary: biodiversity, acronym, HIPPO, invasive species, overconsumption, bioaccumulation, deforestation, fragmentation, predation, organism

Next Generation Science Standards:

- **MS-LS2-1.**

Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem

- **MS-LS2-4.**

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Overview:

The variety of life on Earth in all its many forms is important to the long-term health of the planet. Every species has an important role to play no matter how large or small. There are many threats to the biodiversity of life on Earth that we must be aware of in order to prevent further loss. In 2005, E. O. Wilson coined the acronym HIPPO to summarize those threats in order of descending importance. **H=Habitat Loss**, **I=Invasive Species**, **P=Pollution**, **P=Human Population**, and **O=Overharvesting**. This activity allows students to learn about the different threats to biodiversity (HIPPO) by making a card and playing bingo.

Background Information:

E. O. Wilson, considered the “father of biodiversity,” is an American biologist and leader in bringing biodiversity to the forefront of thinking by the citizens of the world. The loss of any species will impact the Earth and the health of the human population. Lost species may contain important scientific information or benefits to humankind, including “undeveloped medicines, crops, pharmaceuticals, timber fibers, pulp, soil-restoring vegetation, petroleum substitutes, and other products “(*The Diversity of Life*, 2013). Helping students and youth to become involved and invested in biodiversity stewardship is vital to the health of our planet. This activity helps students to understand and review the different threats that can be summarized with the HIPPO acronym.

Focus Questions:

What are specific threats to biodiversity?

What does the acronym HIPPO stand for in relation to biodiversity?

What can you do to reduce threats to biodiversity?



Learning Target:

I can discuss several threats to the biodiversity of life on Earth.

Engagement:

(10-15 minutes)

Students will fill in words in the remaining spaces on Worksheet 1, “Biodiversity 1: Threats to Biodiversity Bingo,” using the different topics under each of the letters “HIPPO” from Attachment 1, “Biodiversity 1: Threats to Biodiversity Bingo”. The instructor will remind students to mix up the words in the different squares to ensure that everyone has different bingo cards. Students should not put the words in the same order as they are listed on Attachment 1.

Investigation:

(25-30 minutes)

1. Students will play bingo and in the process review and further understand major threats to biodiversity. To play bingo, the instructor will need to make a copy of Attachment 1, “Biodiversity 1: Threats to Biodiversity Bingo,” cut out the clues, and place them in a container. The instructor will pull out one clue at a time and students will mark their cards in such a way as to be able to play bingo several times. When a student has marked off clues, either five horizontally, five vertically, or five diagonally, he/she will shout out “BINGO.” After verifying the clues, the instructor may keep going until there are more winners, or start a new game.

2. While playing bingo, the instructor should take the time to review and discuss the different topics related to biodiversity on the cards.

Explanation:

(15-20 minutes)

After having a winning bingo card, students should answer a question related to the threats to biodiversity in order to win a "prize." Each winner then picks another student in the class to ask a question about biodiversity. If that student answers correctly, they also receive a small prize.

Extension:

(30-45 minutes)

The students will record ten things that he/she can do to help reduce threats to biodiversity, providing specific examples. The website <http://www.50waystohelp.com>, similar websites, or books with similar themes may provide ideas and examples.

References:

"The Diversity of Life." *EO Wilson Biodiversity Foundation*. EO Wilson Biodiversity Foundation, 1 Jan. 2013. Web. 27 Aug. 2014. <<http://eowilsonfoundation.org/the-diversity-of-life>.>

Tschakert, Petra. "Threats to Biodiversity." *Welcome!* Pennsylvania State University, 1 Jan. 2014. Web. 23 Aug. 2014. <<https://www.e-education.psu.edu/geog030/node/394>>