

BioBlitz 2: Open Your Eyes

Middle School Biodiversity Curriculum

Class Time Required:

2 class periods (50-65 minutes each)
Extension (30-45 minutes)

Materials Needed:

- Engagement: None
- Investigation and Explanation: Worksheet 1, "BioBlitz 2: Open Your Eyes", Organism Cards Attachment 1, "BioBlitz 2: Open Your Eyes", Several Meter Sticks or Measuring Tape
- Extension: Worksheet 2, "BioBlitz 2: Open Your Eyes", Resource Materials (books, textbooks, or internet)

Teacher Preparation: 30-60 minutes to review activity, collect materials, and print copies; 60 minutes to hide cards for second day

Student Knowledge: Observational skills

Vocabulary: biodiversity, BioBlitz, 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:

Students will practice their mapping skills and look for different organisms in a designated "BioBlitz" area. A BioBlitz is a short-term event to discover and document all living organisms (biodiversity) found within a certain area.

This is a two day activity. On the first day, students will map to scale and insert key features of the area where they will perform their BioBlitz. On the second day, students will return to the same area and look for organisms (numbered cards) that their instructor has hidden in different locations throughout the area. Once found, students

will add the “organisms” to their maps. The purpose of this activity is to give students practice for a real BioBlitz event, conducted either locally or within a national park. For more information about the National Park Service’s Biodiversity Discovery program (including bioblitzes), see:

<http://www.nature.nps.gov/biology/biodiversity/biodiversitydiscovery.cfm>

Background Information:

Biodiversity refers to the diversity of living organisms and the connections between them in a given area (“BioBlitz”, 2013). Any natural area will support diverse organisms, regardless of the area’s size, including animals, plants, invertebrates, nonvascular plants, fungi, and microorganisms. All organisms need certain things in order to survive. These include food or nutrients, water, air, space to live, specific temperature ranges, etc. Different organisms, however, have different requirements and will be found only in environments that meet their specific needs.

“Open your eyes” encourages students to explore an area and observe the life therein, which will give them practice in noticing the life forms that share our planet, or in participating in a BioBlitz or similar activity in their area.

Focus Questions:

Where can I find living things in my environment?

How many different species can I find in a given time frame?

What things are important to consider when mapping an area?



Learning Target:

I can draw a map of a “BioBlitz” area and locate organisms accurately on the map.

Engagement:

(10-15 minutes)

Day 1: In the classroom, the class will play “I spy with my little eye....” to encourage students to look around and make observations. The game is played by a student choosing an object and saying, “I spy with my little eye something that” The “something” could be something that is red, something that is smaller than a shoebox, something that is metal, etc. Another student then asks a question such as, “Is it the stuffed animal on the shelf?” The first person can only answer with “yes/no” answers. The students continue guessing until the correct object is revealed.

Day 2: The instructor will write the following quote on the blackboard and ask students what it means. The instructor will help students break down the vocabulary as they work through the quote’s meaning:

“Biodiversity is the totality of all inherited variation in the life forms of Earth, of which we are one species. We study and save it to our great benefit. We ignore and degrade it to our great peril.”—E.O. Wilson (“Biodiversity”, 2014)

Investigation:

(25-30 minutes)

Day 1: Mapping an Area

When deciding on an area for the practice BioBlitz, it is best if there are many different features that students would need to add to their maps: trees or vegetative area, water source, rocky areas, manmade features, playground, etc. The more features students need to place, the greater their comprehension of mapping an area.

1. Students will need to know their walking pace in order to measure the area. Using their natural walking pace is much easier than counting steps and usually more accurate. Their pace is determined by walking along a premeasured area (usually 20-50 feet) and counting their number of paces. One pace is not the same as one step. Most people consider a pace equivalent to two steps. For example, a pace is the measurement from the back of the left foot until the back of the left foot touches the ground again.

To determine the length of their paces, students will take the distance of the premeasured area and divide by the number of their paces. Instructors should ascertain that students are walking at a natural pace (“Measuring”, 2014). The following website will help with pacing instructions: <http://sci.gallaudet.edu/GLOBE/MeasuringPace.html>

2. The instructor will divide the students into groups, show the students the area that they will be mapping, and hand out the Worksheet 1— Open Your Eyes. The instructor will direct students to pace the perimeter of the area and record their measurements on the maps they are drawing on their worksheets. Depending on the age of the students, it may be preferable to have a map already drawn to scale, showing the outline of the area, though students will still be required to measure each side. Group collaboration and comparison of measurements is advisable to encourage accuracy.

3. After the general outline of the area is mapped, students should start to add key features to the map. The instructor should advise students to be mindful about proportion and should give feedback to students as they work, so that they can make corrections in the field. Students should include any man-made features, trees, vegetation, water features, grassy areas, or rocks. After the features are sketched in, the instructor will direct students to color code the features using traditional map colors: green—vegetation; blue—water; black—man-made features; brown—rocky/dirt areas. Students should be directed to make a key identifying features, and include a north directional arrow, scale, and title.

Day 2: Looking for Organism Cards

1. Included in this lesson plan are “organism cards” in different shapes: Attachment 1, “Open Your Eyes.” The instructor will assign different numbers and letters on the cards. The instructor will decide on the number of cards that he/she will use, depending upon

the size of the area and the number of participatory students. The instructor should include cards reflecting a wide variety of living organisms.

2. Prior to Day 2, the instructor will hide the cards in the BioBlitz area, ensuring that cards are placed in different areas where real organisms might be found during a BioBlitz (for instance in trees, under rocks, on the side of walls, on sidewalks, etc.) Students generally like the challenge of discovering something that is difficult to find.

3. The instructor will take students to the BioBlitz area and direct them to look for the organism cards. As students find an organism card, they must keep the card in place, but mark the card's number *only* in the appropriate location on their maps. Students should then write the number of the card and identify the organism type and Letter on their worksheets; for example: Reptile A.

Explanation:

(15-20 minutes)

Day 1: The student's completed map with a key highlighting everything in the area in appropriate colors and with an adequate key.

Day 2: The student's completed map with the organisms marked at their approximate locations and documented on their worksheet.

Extension:

(30-45 minutes)

Using the information given on Worksheet 2, "BioBlitz 2: Open Your Eyes", students will make a pie graph showing the major threats to biodiversity and conduct research into the meaning of each of the topics.

References:

"BioBlitz: A Snapshot of Biodiversity." *NPS: Explore Nature » Biologic Resources » Preserving Biodiversity » BioBlitz*. N.p., 18 Oct. 2013. Web. 06 July 2014.
<<http://www.nature.nps.gov/biology/biodiversity/BioBlitz.cfm>>

"Biodiversity Photo Gallery." *EO Wilson Biodiversity Foundation*. N.p., n.d. Web. 06 July 2014. <<http://eowilsonfoundation.org/biodiversity-photo-gallery>>

"Measuring Your pace." *Measuring Your pace*. Ed. Mary Ellsworth. Gallaudet Univ-Clerc Center GLOBE Training Center, n.d. Web. 06 July 2014.
<<http://sci.gallaudet.edu/GLOBE/MeasuringPace.html>>

"Threats To Global Biodiversity." *Threats To Global Biodiversity*. University of Michigan, 4 Jan. 2006. Web. 16 July 2014.
<<http://www.globalchange.umich.edu/globalchange2/current/lectures/biodiversity/biodiversity.html>>