

New Jersey Geographic Alliance

Running a Modified BioBlitz

In this lesson you will teach students about eco-systems, local and global, using the practical tool of a BioBlitz. This modified BioBlitz is a field study program that incorporates social and physical sciences, as well as their real world applications. Prefacing a 'hands-on' BioBlitz is an introduction to ecology and food-chain interactions. Students will then have the opportunity to carry out their own field studies, on your school grounds. Following the study, students can determine their location's biodiversity and/or species richness. Incorporating the idea of global awareness, students can see observations from other BioBlitz locations and post their own findings using the iNaturalist application (inaturalist.org).

This lesson is meant to introduce students to fundamental characteristics of eco-systems. *The BioBlitz program is a social program, encouraging student involvement and interaction while incorporating ecology and geography.* This modified program is meant to *further the program's mission*, and to further stimulate student interest in the physical and social world.

Please adjust the included Lessons to best fit your students' needs.

Lesson 1

To introduce the program, *students should list what sort of biotic life is found in their area.* In order to get a good idea of organisms in your area, please help students think of at least 25 – 30 organisms. This simple activity can be used to explain biodiversity, which is why there are a variety of organisms to observe in the BioBlitz.

- Biological diversity (or biodiversity) is officially defined by the United Nations Convention on Biological Diversity (CBD) as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (United Nations, 1992).

The list of species created by students will then make it possible to introduce organism interactions. We will reuse this list in Lesson 3, so keep list visible to students. The second part of this Lesson you could include in your BioBlitz activity is to study ecosystems. (SS1) Ecosystems include the all of the interactions between populations of species in a specific area. A major theme students should grasp in this Lesson is the producer–consumer–decomposer cycle. This cycle will explain the transfer of energy in their ecosystems.

Materials

Provided Student Sheet will allow students to make distinctions between types of animals (SS1)

Supplement: Grade 7+

- Define species diversity, species richness, and species evenness
- Compare and Contrast these terms in relation to this BioBlitz

Additional Resources:

http://www.geography4kids.com/files/land_foodchain.html

<http://eschooltoday.com/ecosystems/what-is-a-foodchain.html>

Lesson 2

Students will discuss global biomes and compare and contrast with their own. Students will have learned about ecosystems, which are made up of populations of organisms. Students can understand a Biome, which are made up of ecosystems and include broad topics such as climate and food availability. (SS2)

Students should understand why organisms they will observe in their BioBlitz are different than those in other areas. It is important for students to understand the delicate balance of organisms in an ecosystem, and how this differs by geographic location.

Materials

Provided Student Sheet will allow students to practice understanding (SS2)

Additional Resources:

<http://www.kidsgeo.com/geography-for-kids/0164-ecosystems.php>

Lesson 3: Part 1

Field Guides

Students should be familiarized with field guides, and how to use them. Using a field-guide for plants and decomposers, students should pay attention to leaf shape and size. Using a field-guide for animals, students should pay attention to animals markings and tracks. *We will be using our list from Lesson 1 to create a wordbank.* Students will practice using field guides to search and find the organisms on the class list. Once found, students will record the scientific name and an interesting fact about the organism. (SS3, SS4) Another option students may want explore if you have an iPhone or iPad are two

apps, one called leafsnap (leafsnap.com) and the other called National Geographic Birds Lite (icons.com). They are both free apps for helping to identify plants and birds in the mid-Atlantic and Northeastern U.S.

After students have been familiarized with their field guides, the instructor can use their lists to play a Bingo-Style game, calling either the common or scientific names of the organisms you came up with together. Provided are two Bingo game boards, please use the board you find appropriate for your classroom. (SS5, SS6)

Physical BioBlitz

The BioBlitz should be divided into a two-part program. Assign a small group of students (4-6) to a plot. In ecology survey, a plot is a specific area delineated to provide clear boundaries. Students will spend 30 – 60 min. collecting the names of organisms observed. (SS8)

Important Reminders:

These reminders are available as a handout on page (SS7)

- Field-studies are non-invasive – Plants and animals are not to be disturbed, and are to be left exactly as found.
- Any materials brought to the study (i.e. Papers, pens, measuring tape, rope) needs to also be taken out of the study area after the allotted time.
- While this activity is meant to be fun and informative, it should be treated as scientific so every organism is respected.

Materials:

BioBlitz Protocol for Students (SS7, SS8, SS9, SS10)

Flexible Measuring Tape

Rope

Dowel Rods

Field Guides (Physical or Digital)

Cameras (Digital or Cell Phone)

Supplement: Grade 7+

- In addition to collecting the names of organisms observed, students will collect species abundance data (number of individual organisms) to estimate the species diversity.

Lesson 3: Part 2

Social Connections

Using either the app (iNaturalist) or the website (iNaturalist.org), students will share photographs with a global community of students, educators, and naturalists. Students' observations will contribute to the study of biodiversity, and students can receive personal feedback on their photographs. Information about their specific plants observed and entire ecosystems is available for their use.

Materials

Informational Page for students (SS11)

Mobile Device or Computer

Calculating Diversity (SS12)

Supplement: Grade 7+

Analysis of the BioBlitz should be done in the classroom. This exercise should familiarize students with the Simpson Diversity Index and the equations used to calculate species diversity. (SS12)

Additional Resources:

<http://www.inaturalist.org>

<http://greatnatureproject.org>

<https://www.youtube.com/watch?v=Xfr6IS-41VI&index=12&list=WL>