



## The Basics of Creature Connectedness: Biodiversity Diversions

### Summary:

Go on a scavenger hunt and create a web collage to analyze relationships that exist in nature, right under our nose. Realize that humans are connected to our environment, and biodiversity depends on us.

### Background Information:

Biodiversity is the variety of life on Earth. This concept takes into account the interactions between species and those between ecosystems themselves. It's not just about numbers and kinds of organisms. It's also about environments where species evolve and live.

At the heart of Biodiversity is the concept that every living and nonliving thing is connected in the natural world, no matter its size, shape, behavior, or level of "activity." (For example, a rock is connected to a lizard, who is connected to a nearby stream.) Sometimes the "web" is so complex, it is difficult to pinpoint the relationship one organism has to another, especially because there is no beginning or end point. Everything is part of a cycle, ultimately.

As we begin to find and study these connections in the natural world, we begin to see just how much more there's yet to discover and appreciate. In doing so, we certainly can't help but consider our role as humans in this giant web of Biodiversity. It certainly affects our everyday lives, no matter where we live. Biodiversity keeps the earth livable for us and other species. It's something worth appreciating and studying, before it's lost due to human's destructive activities.

### Materials:

- student copies of Biodiversity Scavenger Hunt sheet
- pencils
- ruler, magnifying glass, popsicle sticks, cameras (optional)
- science magazines and travel guides,
- scissors, glue, construction paper
- push pins, string

**Grade Level:** 3<sup>rd</sup> and 4<sup>th</sup>

**Goal:** Discover connections between organisms in nature and between living things and their habitats in a familiar outdoor environment.

### Key Concepts:

Biodiversity, Interconnectedness, Webs, Species

**Objectives:** Upon completion of this lesson, students will: 1) Describe general ways organisms are connected to (affect and are affected by) other organisms. 2) Give specific examples of these relationships in a familiar, local environment. 3) Discuss specific ways people are connected to the natural world.

### Teaching Location:

classroom, in school's nature area (or in an undisturbed natural area on the playground)

**Lesson Time:** three sessions of 50 min. each (one for assessments).

Writing activities not completed in class may be homework.

### Subject Areas for

### Infusion:

Environ. Ed., Science, Lang. Arts, Art, Music

### Standards:

Science:

C.4.2, C.4.5, C.4.8; F.4.1, F.4.4, F.8.8

Environ. Ed.:

A.4.2, 4.4; B.4.4

## Set-Up:

1. Gather magazines and travel brochures throughout the school year.
2. Prepare an empty bulletin board for students to post magazine pictures.
3. Locate an outdoor area (at least 25 x 25 ft.) and mark boundaries with cones, flag, etc. This will keep students focused and prevent them from wandering off.

## Procedure:

### **Introduction:**

Ask the students if they think there is much "nature" out in the playground? Are there many plants or animals? What kinds of things have they seen out there before? If they wanted to convince a friend to come see the "natural wonders" of the playground, how would they describe that area?

Remind students of discussions they've had about biomes and ecosystems. It might be necessary to define those terms and give examples. Tell them that today they are going to think of the playground as a mini-biome. They are going to study a whole bunch of plants and creatures and see how they all work together in that biome.

### **Activities:**

#### **Activity 1: Scavenger Hunt**

1. Divide students into groups of three. Each team should receive one Scavenger Hunt sheet on which to record their information.
2. Explain to the students they will be going outside to a specific area to look for presence of wildlife and to look for connections in the natural world. They will have about 15-20 minutes to find as many items as they can. If they are unable to find an item, the group should decide on an organism they might have found that *would* fit into that category (partial points will be given for feasible examples).
3. Review the list with the students to be sure they understand each item. Don't give examples yet! Explain that the groups will have to explain/show the connections between what they find and what's on the list. Tell the students that when they go outside, they should look *everywhere* in the marked zone. That includes on the ground, on tree trunks and branches, on plant stems, under rocks, inside the grass, etc....
4. Take the students outside in their groups with paper bags and other investigatory materials (pencils, rulers, magnifying glass, popsicle sticks (to dig)). Remind them that they should not collect living animals, and they should only take very small samples of plants. If they find anything that's not appropriate to collect, they should sketch it and then ask the teacher to consider their item and

### **Vocabulary**

**Variety:** having many different forms or types

**Biology:** The study of living things

**Biodiversity:** The variety of living things on Earth

**Ecosystem:** a system made up of a natural community and its environment

**Habitat:** the place where a plant or animals naturally lives or grows

*(names of local plants and animals – can be found in field guides)*

Don't forget to look for animal **signs:**

- Nests
- Tracks
- Burrows
- Feathers
- Cocoons
- Spider webs
- Droppings
- Nibbled leaves

initial their sheet.

*Note:* If available, a great technology integration idea would be for students to record their Scavenger Hunt finding on a digital camera (one per group). In the picture they could include a scrap of paper with the Scavenger Hunt item number so that, once downloaded, the group would know which image went with which item.

5. The Biodiversity Scavenger Hunt sheet should have a number of items such as:

- a. A smaller animal that a bigger animal depends on in some way
- b. A big animal that a smaller animal depends on in some way
- c. A plant that grows on other plants
- d. An animal that lives in or around people's homes
- e. An animal that eats dead things
- f. An animal home that's on or in a plant
- g. A plant that helps humans
- h. An animal that helps humans
- i. An animal that harms humans
- j. An animal that looks like a plant
- k. An animal that spends its life in two different habitats
- l. An animal that eats seeds or fruits and then spreads them in its waste
- m. Something that will turn into soil
- n. A plant that depends on animals
- o. A plant or animal that's part of a food web

It should also have plenty of space to draw sketches and write examples.

6. At the end of the activity, the teacher will come to each group and tally their points. One point per item found and explained, and a half point for items not found but explained well. The team with the most points would get rewarded with extra free time, a special task, or a science prize.

7. The teacher will then number each person in the group. All the 1s will convene in one area, the 2s in another, and the 3s in a different spot. They will share their most exciting findings one at a time. The children can ask questions of each other for clarification. The teacher will rotate groups to guide the discussions and assess the students' understanding of the "interconnectedness" of the natural world around them.

8. As a conclusion, explain that the creatures, plants, and minerals they found are just a small part of the world's biodiversity. Imagine: this is just right outside our *classroom!* The planet is covered with an amazing variety of life. Give some "fun facts" about animals working together, or plants helping humans. After all, each and every organism is connected to each other... and to us humans.

9. Other extension questions to consider in this investigation: Which organism had

the largest population? Consider the habitat. How does it play a role in the presence of biodiversity? Can living organisms survive there easily (with enough air, food, water, and sunlight?)

## Activity 2: Collaborative Collage

1. Introduce a huge collection of science and travel magazine and tourism brochures (of Venezuelan/South American regions). Ask: *What kinds of pictures are in most of these magazines? Why are those kinds of images in a travel/tourism magazine? What does nature have to do with people's vacations?* These kinds of questions will help put this activity into context and relate it to the students' lives.
2. Each team will search through magazines and brochures to collect images about Venezuelan biodiversity. They will glue them onto mats and cut them out when dry, so they are sturdy.
3. Groups will take turns mounting their images to a large bulletin board. It should be a collage of landforms, waterways, animals, insects, plants, etc. that are found in Venezuela. As an extra challenge, you may have students group images together based on ecosystems (rainforest, mountains, coast, plains).
4. Assemble the groups around the collage, and identify the images posted on the board to make sure all students are familiar with their names. The teacher may have to suggest the names in both English and Spanish to assess students' familiarity. If the teacher is not familiar with the name of an organism, have the students describe it thoroughly and look it up in a guide book. If not done so already, the teacher should mention the habitat location of each animal.
5. Have one student come to the board, close his eyes, and point to an image. The teacher will push-pin the beginning of a ball of yarn to that organism. This starts the biodiversity "web."
6. The teacher will model this discussion by choosing another organism that affects or is affected by the first one. For example, if a turpial (bird) was selected first, the teacher might point to a mora (blackberry) next. She will say "A turpial bird needs blackberries for food." She will extend the ball of yarn until it covers that mora picture and pin it down.
7. The students will follow the teacher's lead and suggest other ways these organisms are connected. Each time an example is well explained, the teacher connects the images with the string. Continue on for at least eight more examples. The teacher will have to offer guidance and hints to keep the students on track and thinking creatively.
8. Quickly review the chain of connection the students just made.
9. Remind students how this kind of web is similar to a food web, or a food chain in which every creature is a predator or prey. You might consider singing the song "There Was an Old Lady Who Swallowed a Fly" just to refresh the students' minds and get them energized.
10. Each student selects one image and writes an acrostic poem

<p><b>A</b> little brown insect <b>N</b>uisance to humans <b>T</b>reat for the birds</p>
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about that organism, describing it (and explaining its connection to the environment, if possible). Students are encouraged to use encyclopedias, dictionaries, and the internet to assist them in this task. They may also work with their peers. This can be assessed on completion, creativity, and/or content, and may be used as part of the student's writing portfolio.

### **Conclusion:**

1. Ask the students to consider all the animals, plants, minerals, insects, etc. that they observed in their school "backyard" today. Were they surprised by the number or the kinds of living and non-living things they found?
2. Ask the students to think why an activity like this is important. What does it matter if there are lots of creature and plants in nature? Why should humans care if we are not a part of it... or are we? How can our actions affect the biodiversity around our school?
3. Mention that in this unit, students will be focusing their attention on areas of nature (ecosystems) that are known for a large variety of animals and plants. As a class, they will be considering the rainforest and ocean, and looking specifically at a few animals that live there and depend on the biodiversity of those regions. The animals in this unit happen to live in Puerto Rico, an island in the Caribbean that has a lot in common with Venezuela. Ask them to keep this activity in mind as they concentrate on Bats and Boas, the Puerto Rican Parrot, Sea Turtles, and Bioluminescence. You can never just study one thing without considering how it's connected to its surroundings.

### **Assessment:**

- Observe and record note about group interactions and discussions during and after the scavenger hunt. Informally gauge student understanding.
- Each student must write a paragraph about a biodiversity "connection" he did not realize or know about before this activity. At the bottom, he should draw a picture using arrows to show the relationship between these organisms.
- Have the class gather in a circle standing up. Ask each student to think of an organism they noticed in nature, saw in a picture, or heard about today. One at a time, each student must provide a sentence and act out a brief motion about how they are connected to that organism. For example, a student might act out planting a seed and say: I grow tomatoes in the soil that worms help fertilize.

### **Adaptations:**

This outdoor component of this lesson could be done as a field trip, or could be done strictly indoors using the magazines and brochures used in activity two. This activity could be adapted for older grade levels by increasing the sophistication of vocabulary terms used, and more specifically identifying the relationships between the organisms.

### References

“Connect the Creatures’ Scavenger Hunt.” Biodiversity basics : an educator’s guide to exploring the web of life. Tustin, CA : Acorn Naturalists, 1999.

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