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June 2009

Backyard Biological Classification: A Lesson in Population Sampling, Dynamics, and Classification of Plants and Animals in Your Backyard

Grade: 7/8

Time: 1-2 class periods, depending on classroom period length, number of students, and distance to "backyard"

Lesson: Backyard Biological Classification

Materials:

- tape measure
- paper
- pencil
- flags
- worksheet (see attached)

Goals/ Objectives:

- Students will be introduced to basic classification techniques
- Students will use sampling to estimate population sizes within an ecosystem
- Students will catalog species located within their neighborhood
- Students will use frequency in ecological studies

NJCCCS Addressed

- Standards 5.1A, 5.1B, 5.3B, 5.3D, and 5.5B in 7^{th} and 8^{th} grade Science
- Standard 4.1A, 4.1B, 4.1C, 4.3A, 4.3C, 4.4B, 4.5A, 4.5E in 7^{th} grade Mathematics

Activities and Procedures:

Part 1. Take students outside and give them a quick introduction about population sampling and how it is used in ecological studies.

Part 2. Break students up into groups (number and size of groups will depend on class size). Give each student a worksheet and give each group a tape measure.

Part 3. Supervise students as they identify all of the organisms within a range of areas in the “ecosystem” they are studying. Students will name each organism they find and estimate the frequency of each organisms within each area studied.

Part 4. Students will compare their data with other groups.

Part 5. Have students make bar graphs, depicting frequency of different organisms they encounter.

Part 6. Students will classify organisms they find.

Part 7. Generate class discussion about population sampling, frequency, and classification techniques used by scientists in the field.

Accommodations:

SLD/ELL

- Students will work in groups
- Check up on students as they work
- Offer help to students as they work
- Students will be allowed to work with bilingual students
- Offer translations if possible
- Use words and ideas that are easier to understand in place of more complicated vocabulary

Assessment:

- Monitor students as they work to make sure everyone is doing the assignment
- Have students share their work with others upon completion

Follow-up:

Students will be reminded of this activity before their trip to the Great Swamp Outdoor Education Center.

A series of lessons will be based upon this lesson

Name_____ Date _____

BACKYARD BIOLOGICAL CLASSIFICATION

Taxonomy is the science of classification. In this laboratory, you will pretend that you are scientists sent to identify and classify new species in a previously undiscovered territory…your backyard. In this activity, you will identify, quantify, and classify different organisms found within two different areas of land. You probably know about most of the organisms in your backyard. However, this activity will require you to use your imagination to rediscover and reclassify the organisms you find. For example, if you come across a type of grass, you could rename it "greenblade" and then reclassify it so that it is in the "blade plants" group.

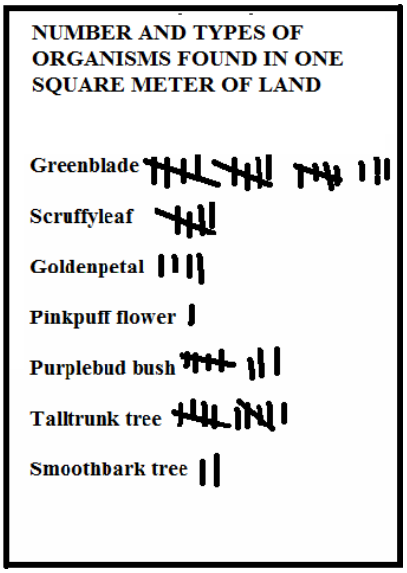
Procedure:

1. **Measure out a 1m^2 area of land with the tape measure you are given.**

2. **Mark off the corners of this area with flags.**

3. **Identify and rename different organisms you find within this area.**

   Use a new, blank sheet of paper to write down the names for these organisms. It may be easier for you to follow the example to the right by writing down the names and then tallying the organisms you see. You should use a separate sheet for each area of land that your survey.



4. **Find the population size for each organism by counting or estimating. You can estimate by breaking down this area into a smaller area and then multiplying. For example, if you only count the number of organisms found in ¼ of your area, multiply this number by 4.**

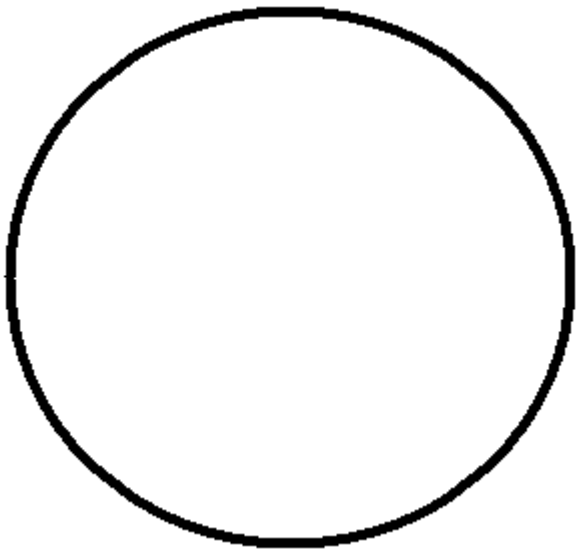
5. **Repeat steps 1-4 using a 5m^2 area of land.**

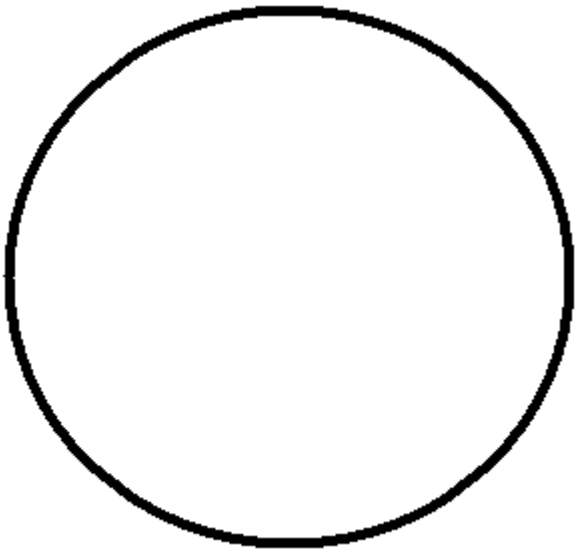
6. **Classify the organisms you have found by putting them into different groups based on the types of characteristics they have in common. Make sure to include the number of organisms you counted.**

   There are multiple ways to classify the organisms you find. You can classify based on whether your organisms are plants or animals and then break it down even further based on size, leaves, fur, feathers, you name it! You are the expert here, so be creative. Again, you may want to use a new sheet and a pencil to do this (you may need to erase).

Question 1. Did you see any difference in the types and number of organisms you saw within each area of land? If so, explain what you saw in a few sentences.

Question 2. Create two pie charts showing how often each organism was found within the $1m^2$ area and the $5m^2$area. You can fill in the chart using a different color for each organism as long as you have a key demonstrating what colors represent what organisms.





Question 3. Do the pie charts for each area look the same? Do they look different? Explain what you see in the space below. You may want to mention if you think the size of the area studied may affect your results.

Question 4. How do you think scientists study and classify different organisms? Do you think they may use similar methods? Explain why or why not.

Question 5. Compare your results with the results of your neighbor. Do your classification systems look the same? Explain your answer.