

Teacher’s Guide: ACTIVITY 2

BIODIVERSITY AND ORGANISMS OF LOCAL HABITATS

OVERVIEW:

In this science workshop the instructors will conduct a series of demonstrations to cover content on the biodiversity of three common habitats in the Upper Coastal Plain of SC: blackwater streams, sandhills, and loblolly pine plantations. The demonstrations and slides will highlight two SREL researchers who study some of these habitats and the sampling methods they use. Students will then break into groups of four to conduct their own “sampling” of one of these habitat types. During the science seminar, groups will share results and learn how to graph their results in the form of a bar graph.

TERMS WE WILL BE USING:

- **Process related**—observation, hypothesis, comparison, classification, prediction, independent variable, inference, data, random sampling, sampling, error, analyze
- **Content related**—landforms, biodiversity, habitats, species, population, community, adaptations, watershed, stream corridor, sandhills habitat, Upper Coastal Plain, ecosystem

OUTLINE OF WORKSHOP:

The first 40 minutes will consist primarily of slides and discussion of biodiversity, habitats, and local organisms and their adaptations. During this time we will highlight two SREL researchers. Tracey Tuberville is a *herpetologist* who studies gopher tortoises and other reptile species that inhabit the sandhills habitat. Dean Fletcher is an *ichthyologist* who studies fish in Upper Three Runs Creek and other local watersheds. We will tell the stories of their research, and branch off into comparisons of biodiversity differences among area habitats. This introduction will conclude with demonstrations of some of the methods used to sample plants and animals. We will emphasize the importance of “random sampling” as a means to estimate species presence and numbers, with a very brief introduction to hat “probability.”

Students will then break out into groups of four to conduct their own biodiversity experiment for one of three habitat types (ecosystems): pine plantation, blackwater stream corridor, and sandhills. Within each group of four, one pair of students will sample the plants of their assigned habitat type, and the other pair will sample the animals. The concept of random sampling will be illustrated by having the sampler be blindfolded while their partner records the data. Halfway through sampling the students will switch tasks. After collecting their data, each pair will work together to summarize and analyze their data. Data analysis will involve addition and division to compute an average. Calculators may be used if needed. Each group will report their results, and show other students some of the important species found in their habitat (using handouts we provide). During “science seminar” closure we will discuss the importance of biodiversity, graph the data, and draw conclusions based on the sampling.

STANDARDS COVERED:

Sci	Life Sci	Ecosystems	Populations and population interactions
Sci	Life Sci	Ecosystems	Functions and roles of organisms/niche concept
Sci	Life Sci	Ecosystems	Sun energy/photosynthesis
Sci	Life Sci	Ecosystems	resources and resource limitation
Sci	Earth Sci	Changes in surface: land and ocean	formation/SC regions/weathering processes

Sci	Inquiry	Process skills	observe, classify, measure, communicate, infer, predict, hypothesize
Sci	Inquiry	Inquiry skills	Plan and conduct simple investigations
Math	Alg-S1	Understand patterns, relations, and functions	Describe, extend, and make generalizations about geometric and numeric patterns
Math	Alg-S1	Understand patterns, relations, and functions	Represent and analyze functions, using words, tables, and graphs
Math	Alg-S2	Represent and analyze mathematical structures	Use variables
Math	Alg-S2	Represent and analyze mathematical structures	Use equations
Math	Alg-S3	Use models to represent and understand quantitative relationships	
Math	Alg-S4	Analyze change	How one variable affects another
Math	Alg-S4	Analyze change	Compare varying rates of change

SUGGESTED FOLLOW-UP ACTIVITIES:

Science and Math

- **Follow up sheet**—Do the science/math follow-up sheet for the Activity 2 biodiversity workshop.
- **Chart**—A chart is a listing of related facts and data in an organized or tabulated form. Create a biodiversity chart on large paper or poster board for your classroom that illustrates the three rarest and the three most common species for each habitat.
- **Habitat Sampling**—Collect data from your own back yard. You’ll need a hula-hoop, a blindfold, a notebook, a pen, and a watch. Go out into your front or back yard, blindfold yourself and *randomly* toss your hula-hoop. Take off your blindfold and go sit quietly by your hula-hoop for 20 minutes. Use your paper and pen to record the date, the time of day, the weather, if you are in the shade or sun, under a tree or by a bush. Sketch your hula-hoop and what you see inside. Be very exact. Now describe everything you see inside the hula-hoop. Count how many insects you see and what kind. How many blades of grass do you think are inside the hula-hoop? How many species of plants? What kind of soil do you see? Feel its texture and describe it. Summarize your findings for four hoop tosses.

Language Arts

- **Research (Reading)**—Go to the library and find articles on gopher tortoises. Read the articles and do a presentation for your class.
- **Bulletin Board (Reading)**—Research the plants and animals of the sandhills habitat, and create a bulletin board or other display for your teacher.
- **Puppet Show (Drama)**—Create a puppet show about life in a gopher tortoise burrow.
- **Flashcards (Vocabulary)**—Make vocabulary flashcards from the Activity 2 definitions sheet and spend 10 minutes every day studying your cards.

Technology

- **Internet Research**—Use the Internet to do further research on “Habitat loss of small wetlands.”
- **Internet Research**—Use the Internet to do research on pine plantations. Print out one article that discusses the benefits of pine plantations and one article that discusses the negative impact of pine plantations. Create a “Pro” and “Con” table and list the arguments for pine plantations on the Pro side and list the arguments against pine plantations on the Con side.

Physical Education

- **Game**—Using the “animal behavior” cards that we can provide, create a relay game that involves kids moving as animals would (e.g., hopping, “swimming,” crawling, running) from one habitat to another through an obstacle course.

Art

- **Scientific Drawing**—Make a scientific drawing of a millipede, a centipede, and a crayfish; label the parts.
- **Weaving**—Pine Needle Basket Weaving. Collect a paper bag full of long pine needles, and identify the species of pine trees. Learn how to weave a small pine needle basket from the needles by finding directions at the library or on the Internet. If you are really adventurous you can water proof your finished basket with pine pitch. Careful, it’s sticky!