



Tour Theme: Animals (grades 9-12)

Pre-Visit Activity #1: Coyote Run

Objectives:

- Identify and describe food, water and shelter as three essential components of habitat
- Describe the importance of habitat for animals
- Define “limiting factors” and give examples
- Recognize that some fluctuations in wildlife populations are natural as ecological systems undergo constant change

Overview:

A number of factors affect the ability of wildlife to successfully reproduce and to maintain their populations over time. Disease, predator/prey relationships, varying impacts of weather conditions from season to season, accidents, environmental pollution and habitat destruction and degradation are among these factors.

Animals have fundamental necessities of life and these necessities are food, water and shelter. Without these essential components, animals cannot survive. In the desert, animals have adapted to live with limited quantities of food and water at certain times of the year.

The activity is intended to be a simple but powerful way for students to understand the following:

- Everything in nature is interrelated
- Populations of organisms are affected by elements within the environment
- Populations of animals constantly fluctuate year after year in order to remain in equilibrium in their environment

Materials:

- Area indoors or outdoors large enough for students to run
- Dry erase board or poster board
- Writing materials
- Graph paper

Lesson:

This activity requires students to do a bit of running around. Warn them of this on the day before, so they can wear appropriate clothing and shoes. The activity simulates the boom and bust cycles of populations, which result from variations in habitat. In the activity, students will represent coyotes, as well as the habitat of the coyotes.

Procedure:

1. Take the class to a large enough area to line up all of the students on two lines, ten yards apart. A field works well, and of course a football field has lines, which are ten yards apart.
2. Number the students one through four.
3. Send the "ones" to stand on one of the lines, and all of the remaining students (the "twos," "threes," and "fours") to stand on the other line.
 - The "ones" will represent coyotes, while the "twos," "threes," and "fours" represent habitat. The coyotes need food, water, and shelter in order to survive a year in the desert.
 - Tell the coyotes that they will each seek only one of those components of their habitat during each "year" of this simulation.
4. Instruct the coyotes and the habitat to turn their backs on one another.
 - Tell the students to now decide upon a component of the habitat to seek or represent. The "coyotes" will seek that component of the habitat, while the "habitat" will represent that component of the habitat.
5. The coyotes and the habitat decide simultaneously, which component of the habitat they will seek or represent. Students "display" with their hands as follows:
 - To display "food" the student places their hands on their stomach.
 - To display "water" the student places their hands over their mouth.
 - To display "shelter" the student places their hands, palms together, over their head.
6. Count to three at which time the two lines turn to face one another.
7. The habitat stays on their line, while the coyotes move toward the habitat seeking the component represented by their hand position.
8. A coyote finding and "capturing" the component they seek represents a successful year in the desert, and they "reproduce" by bringing the student who represented the habitat back with them to the "coyote line." Each coyote may only take back one component of the habitat. If a coyote fails to

find the habitat component they sought, they “die,” becoming a part of the habitat and remaining on the “habitat line.”

9. Repeat steps 4-8 until 20 “years” have passed. Each year record the number of coyotes.
 - Note: Occasionally the students representing habitat will conspire to all be the same component, thereby “killing” all coyotes not seeking that component. Don’t discourage this behavior; explain that the habitat may have suffered a drought, famine or fire, which resulted in a lack of water, food or shelter.
10. Upon returning to the classroom, write the data on the board, and instruct the students to copy the data.

Homework:

1. Plot the coyote population vs. the year. Connect the points on the graph.
2. Predict how the population of a predator would change from year to year, and draw your prediction on the graph. Be sure to clearly differentiate the two lines.
3. Explain how a predator could be introduced into this simulation.