

Map Habitats

Age:

5-13

Participants:

Group, Family, Pair

Why

To explore the protective coloration of prey.
To construct a bar graph.

What

Predators and prey are linked together in food chains. Predators feed on prey. Many predators are also prey to other predators.

One way prey and predators survive is by blending into their habitat. The color and patterns of their coverings provide protection for the prey and can help hide the predator.

The number of predators and prey in a habitat is important to the growth and survival of each one. A lack of predators will result in an increase in the prey population. In an environment with too few prey, the predator may not survive. In this activity, participants will be predators, collect prey and record the results.

A map is a flat diagram of an area on the earth's surface. Maps use symbols, lines, patterns and color to represent three dimensional features. A line may indicate a road, a state boundary, or an elevation change. However, the size, shape and color of each line will be different for each one. On a map, a legend explains the symbols, diagrams and other reference information. During this activity, the map will represent an environment for exploring protective coloration.

How

In this activity, family members are the predators looking for food. Prey are paper squares. A road map is the habitat.

- Open the road map on a table. You may want to tape it down to keep it from moving.
- Find 3 sheets of paper that match 3 colors on the map. Pink, red, white, blue, green and yellow are common map colors.
- To make prey, cut 20, 1/2 inch (1 centimeter) squares from each color of paper. Fold each square in half. This will make the prey easier to pick up.

Supplies

- *road map, preferably one with many colors*
- *tape*
- *3 sheets of paper, in colors similar to those on the road map*
- *scissors*
- *ruler*
- *cup*
- *1 piece blank paper*
- *tweezers, optional*
- *watch with a second hand*
- *pencil*
- *copies of 1 Centimeter Graph Paper*
- *crayons*

- Put all of the prey into a cup; then shake the cup to mix them up.
- Sprinkle the prey over the entire map.
- On each turn, one person is a timekeeper and another person is the predator.
- Place a blank sheet of paper along the side of the map to collect the prey.
- The predator will use his/her fingers or tweezers to pick up the prey one at a time and put them on the blank paper.
- The predator collects prey for 30 seconds. The timekeeper announces when to start and stop.
- Together, separate the prey by color and count them. In your journal, record the numbers of each prey color collected.
- Return the prey to the cup, and then scatter them on the map again.
- Each predator collects prey 3 times for 30 seconds each time.
- Calculate the average number of each color of prey the predator collected. Total the number of each color and divide by 3 to calculate the average.
- Switch roles and repeat the activity.
- Make a bar graph to compare the number of prey of each type collected.
- To make a bar graph, copy the *1 Centimeter Graph Paper* on page 127 and label each of the prey colors along the horizontal line at the bottom of the graph paper.
- Starting at the bottom left, number the boxes along the vertical side from 1 to 20.
- With crayons, color the number of boxes above each prey color that corresponds to the average number you collected.
- The bar graph compares the average number of each type of prey collected during the same length of time. The bar graph makes it easy to see patterns. This may be helpful in predicting future events. For instance, discuss which prey has the best chance of survival in your habitat. Which has the least chance of survival? Why are there differences?

Next

- You may want to challenge other participants by making new prey with more protective coloration. Repeat the experiment. Make a bar graph to display the results. Compare the new results with your first experiment.
- Use the same prey on a different map. Discuss any difference in the results.

- Start by scattering 60 prey, 20 of each color on the map. Your partner says stop when you have collected half of the prey, 30. Count the number of each color collected, and then put them aside. Sort and count the prey still on the map. Make additional prey so you can double the number of each type of prey remaining on the map. Then shake, scatter, and repeat. What is happening to the prey population?
- For an even greater challenge, obtain two identical maps. Cut your prey squares out of one map. After folding, scatter the prey on the whole map. Is there any change in difficulty finding the prey?



1 Centimeter Graph Paper

