



HANDS-ON ACTIVITY

Modeling Natural Selection: Owls and Field Mice

We know from molecular, anatomical, and fossil evidence that species have changed over time. This change is called evolution. But how does evolution actually occur in nature? In this lab, you will model one mechanism of evolution called natural selection. You will represent the predator, an owl in search of field mice. Your group will “consume” all the field mice that you can easily see until only 25 percent of the population remains. These surviving field mice will then reproduce. You will continue the process for several generations of mice, with some being consumed and others surviving to pass on the traits that made them successful.

MATERIALS

- construction paper, five colors
- hole punch
- piece of fabric

PREDICT

How does a population change as a result of natural selection?

PROCEDURE

1. Spread out the fabric habitat given to you on the tabletop.
2. Count out 20 pieces of paper of each of the five different colors for a total of 100 pieces. This will be your initial population of field mice.
3. One person should spread the pieces out randomly over the entire fabric habitat, making sure that none of the pieces cover the others. The remaining members of the group should not watch this process.
4. The other members of the group are now owls. They should pick up 75 pieces (field mice) as they see them, one by one, until a total of 25 of the field mice remain in the habitat. Be sure to count carefully.
5. Carefully shake off the habitat to remove the surviving mice (a total of 25).
6. Group the survivors by color and record the numbers in Data Table 1.
7. Next, assume that each survivor has three offspring. Place three additional pieces of the same color with each survivor. Record the number of each color in Data Table 1. Note that there should again be 100 total pieces.
8. Mix up the new set of pieces and have a different person spread them over the habitat.
9. Repeat the entire process (Steps 3 to 8) two more times, making a total of three generations of field mice being preyed upon.

Name:

Class

Date:

OBSERVATIONS

DATA TABLE 1: EFFECT OF PREDATION ON FIELD MICE POPULATIONS OVER TIME

	COLOR 1	COLOR 2	COLOR 3	COLOR 4	COLOR 5
Number at start	20	20	20	20	20
Number after first predation					
Number after first reproduction					
Number after second predation					
Number after second reproduction					
Number after third predation					

ANALYZE

1. Graph your data in your Evidence Notebook. What patterns can you identify in the data?

2. Which traits appear to be the most beneficial for survival in this environment? Explain.

3. Explain why the number of some mouse varieties increased over time, while others decreased.

4. How do you think the data would have changed if the experiment were continued until a total of five generations of field mice were preyed upon?
