

# Mark-And-Recapture Lab

## Directions

**Problem:** How can the mark-and-recapture method help ecologists monitor the size of a population?

**Materials:**

Cup with beans

Spoon

Data Table

Calculator

For this simulation, the beans represent a population of turtles that live in a pond. The black beans represent **10** turtles that have been captured, tagged with black paint, and returned to their pond. The white beans represent turtles that have not been captured and tagged. Your task is to use the mark-and-recapture technique to determine the total number turtles in the pond.

**Procedure:**

1. Report to your assigned lab station and make sure you have your materials.
2. Without dumping the beans out of the cup, **estimate the total population** of beans in the cup. Write your estimate on your lab sheet.
3. Carefully mix up the beans with your spoon.
4. Use the spoon to **randomly** scoop a spoonful of beans and place them on the counter.
5. Count the total number of turtles captured (black **and** white beans) and record it in your data table.
6. Count the number of recaptured turtles (black beans) and record it in your data table.
7. Return all of the beans to the cup.
8. Take turns repeating steps 3-7 until 10 trials have been performed.
9. After you have completed 10 trials, use the equation below to find the Estimated Total Population and complete your data table:

$$\text{Total Estimated Population} = \frac{\text{Number Marked} \times \text{Total Captured}}{\text{Number Recaptured}}$$

10. Find the average for all trials and be ready to share your data with the class.
11. Analyze data. (Answer questions on your Lab Sheet!)

Name: \_\_\_\_\_ Period: \_\_\_\_\_

### Mark-And-Recapture Lab Sheet

→ 1. Estimate of # of beans (turtles) in cup before beginning: \_\_\_\_\_

2. Data Table:

Trial #	Number of Turtles Marked (total black beans in cup)	Total Number Captured (Black + white beans)	Number Recaptured (Black beans)	Estimated Total Population
1	10			
2	10			
3	10			
4	10			
5	10			
6	10			
7	10			
8	10			
9	10			
10	10			
Total for rows 1-10				
Total ÷ 10 = Average Estimated Population				

3. Carefully dump the beans from your cup onto the counter and count them.

Record the actual "population" of beans in the cup: \_\_\_\_\_

4. Write down the average estimated population found by the other teams in our class:

\_\_\_\_\_

5. What was the **class average estimated population**? \_\_\_\_\_

6. How similar were your team results to the class average? (Tell the data!)

\_\_\_\_\_

\_\_\_\_\_

7. Based on the data, is the mark-and-recapture method a good way to find the number of individuals in a population? \_\_\_\_\_ Explain your answer.

\_\_\_\_\_

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8. Even if the data isn't 100% accurate, sometimes ecologists use this method. When do you think it would be good idea to use it? \_\_\_\_\_

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