Mark-Recapture Laboratory

Teacher: You will need

- a large bag of dry pinto beans
- a small bag of a different color dry bean (white, red or black)
- either a small bag (a paper lunch bag or quart-size zipper seal bag) or small box (like a shoebox) for each student or small group of students
- One copy of the data sheet for each student or group of students

Instead of having students do step 1, the teacher may want to pre-fill the boxes/bags for the students. This will potentially prevent spillage of beans.

Modified from an activity by G. Lyon accessed at
http://www.accessexcellence.org/AE/ATG/data/released/0524-GLyon/index.html on 5/25/21

Name: _____ Date: _____

Mark-Recapture Laboratory data sheet

This is a laboratory that simulates a population census technique commonly used by wildlife biologists in the field. The first step is to trap a random sample of animals of the desired species. These animals are then ear-tagged or marked in some other manner and released. The next step is to trap once again. Some of the animals captured may have been marked from the first sample. Using a simple ratio, the biologist can come up with a quick population estimate.

N=population estimate
M= Number of animals captured and marked in first sample
n=Number of animals captured in second sample
m=Number of "n" that were already marked

$$N = \frac{M \times n}{m}$$

1. Put 4-6 handfuls of light brown (pinto) beans into a bag or box. Do not count them. Then make an estimate as to how many beans are in the bag/box. Write your estimate here: ____
2. Pick out a handful of beans from your bag or box. Count them. This is your first trapping sample, M. M=_____
3. Do not put these beans back in your bag/box. Set them aside. Count out the same number of beans that are a different color (white, black, or red). "Release" these marked individuals back into the population (bag/box.
4. Shake the bag/box. Be careful not to let any beans escape! Without looking, grab another handful of beans. This is your second trapping sample, n. n=_____
5. How many of the beans in your second trapping sample were already marked (colored beans)? m=_____
6. Now use the equation above to calculate your population estimate, N. N=_____
7. Count the actual number of beans in your bag/box. Write the number here: _____
8. Was your estimate using the equation closer to the actual number than your initial guess?
9. How could you increase the accuracy of your estimate?

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