

Peterson Mark - Recapture Estimates

Mark-Recapture

To estimate the size of fish populations biologists use fish nets to capture live fish and mark them with a tag. The fish are returned unharmed to their environment. After the marked fish have time to mix with the unmarked fish, the fish from the population are recaptured and the number of marked fish are counted. A mathematical formula is then used to estimate population size.

Procedure: Mark-Recapture

1. Receive a container of fish representing your population.
2. Visually Estimate the number of fish in your container.
 - Your estimate = _____
3. Capture fish by removing them from the container with a full net.
4. Place a mark on the fish, this is called the **Marking Event**. Record the number of marked fish in the data table under Number Captured.
5. Return the marked fish back to the container and mix the fish.
6. Recapture a full net of fish from the population. This is your **Recapture Event**. Record the total number of fish captured in the data table, marking event 1, column 1. Record the number of fish with marks in marking event 1, column 2.
7. Return the fish to the container and repeat step 6 once. Record the number of fish captured in the data table, marking event 2, column 1. Record the number of fish with marks in event 2, column 2.

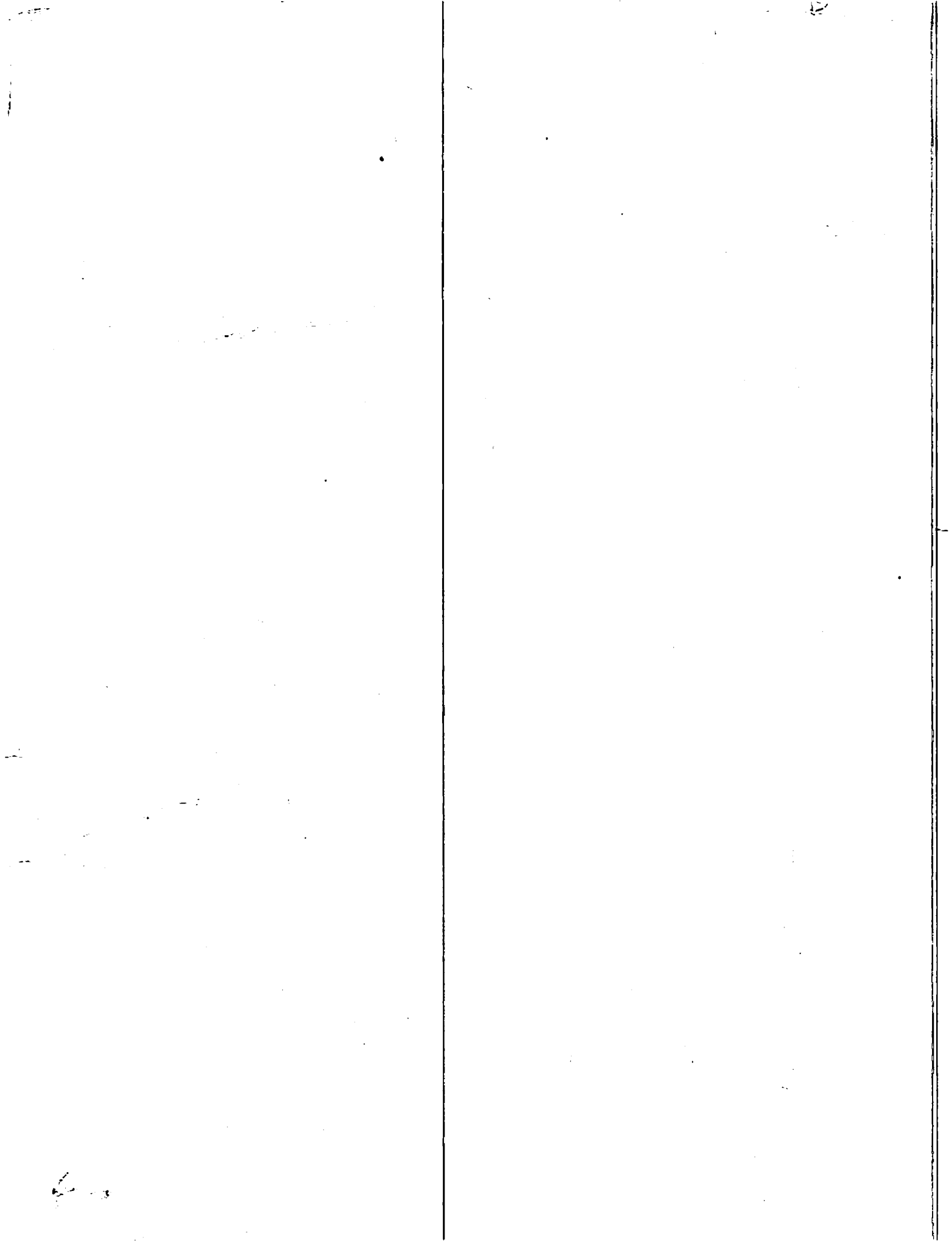
Calculations: Find Your Population Estimate

8. Population Estimate =
$$\frac{(\text{Number Captured in Marking Event}) \times (\text{Number of Captured Fish (event 1 or 2, col 1)})}{(\text{Number of Fish Recaptured with a Mark (event 1 or 2, col 2)})}$$
9. Check with Instructor for how many fish are actually in your population. _____

Analysis

10. Compare the actual size to the estimated size. Did you overestimate or underestimate?
11. Why do you think there are different estimates for each trial?

Trial #	Number Captured	Number Recaptured with Mark
Marking event		0
1		
2		
Estimate 1		
Estimate 2		



Materials for Peterson Mark-Recapture Estimates Activity



aquarium fish scoop net (small)
goldfish crackers

1. Place roughly 100 fish crackers in a bowl
 - a. (you might want to have a separate bowl for snacking so students do not snack from the "population" bowl)
 - b. have an accurate count of the number of whole crackers in each population bowl
2. Have students pair up to complete activity—one bowl of fish per pair
3. Follow instructions on Peterson-Mark Recapture Estimates

