

Something Fishy Student Activity Guide

Objective

You will estimate the size of a large population by applying the concepts of ratio and proportion through the capture-recapture statistical procedure.

Materials

- 1 large container
- 300-350 fish-shaped cheese crackers
- 30-40 fish-shaped pretzel crackers
- 1 small aquarium fish net
- 1 plate

Directions

- 1) Capture a sample of goldfish from the bay (container) using the net and count them.
- 2) Tag these captured fish by REPLACING each one with a pretzel goldfish.
- 3) Put these tagged fish back into the bay.
- 4) Since fish crackers don't swim, mix the fish to distribute the tagged fish.
- 5) Capture another sample from the bay using the net.
- 6) Record the total number of fish in this sample and the number of tagged fish in this sample. Return the entire sample to the bay.
- 7) Repeat steps 4-6 three times.

Questions to Answer

- 1) What information has been obtained from the capture?
- 2) Do we know how many are in the bay yet?
- 3) When the fish are recaptured, what could be found in the sample?
- 4) What do you expect to find?
- 5) After the first recapture, what information will you obtain?
- 6) Use the following ratio estimate the total number of fish in the bay.

$$\frac{\text{Number Tagged in Recapture}}{\text{Total Number in Recapture}} = \frac{\text{Number Tagged in Bay}}{\text{Total Number in Bay}}$$

- 7) Why did the capture-recapture method provide a reasonable estimate?
- 8) Would estimates be closer to the actual if a larger sample is used?