**‘GONE FISHIN’ --CATCH AND RELEASE SAMPLING METHOD**

Scientists and ecologists in particular, conduct surveys of sites to try and determine how many and what type of animals may live in the area. This helps them to understand whether the habitat is healthy and bio-diverse, with many types of plants and animals, or if the habitat is in poor health or struggling with species that are dying out or moving elsewhere.

Often it is not possible to count each and every animal, so scientists use a method called **Catch and Release** to estimate the size of a population. This involves taking a random sample of one species and carefully marking them in a way that does not hurt the animal or stop it moving freely. Then the researcher releases the animals back into the study area. At a later date, the scientists go back and take another random sample in the same area. They count the total number of individual animals in the new sample and also the number of marked ones “recaptured”. They then compare the number caught to the proportion of animals that had markings. This ratio is equal to the ratio of the number of marked animals to total number of that particular animal in the study area = the total population.

You are researchers for the Fish and Wildlife Service and you have been asked to determine what the population of flounder is in Potter Pond, a tidal salt pond in South Kingstown.

**MATERIALS:**

* GOLD FISH CRACKERS-PLAIN
* GOLDFISH CRACKERS- COLORED
* SMALL PAPER CUPS
* SMALL PAPER BAGS
* NAPKIN OR PAPER TOWEL
* PENCILS

**PROCEDURE:**

1. Break into groups of 2 or three and pass out one bag with an unknown quantity of plain goldfish crackers to each group. The paper bag represents Potter Pond, and the student’s task is to try and estimate how many flounder live in the pond. Each group gets a napkin/paper towel and a paper cup to represent the net they will use to catch the fish.
2. One group member will dip the cup into the bag and scoop up some fish. Dump the fish onto the napkin and count them. This is the sample size of ‘captured’ fish they will study. Record this number on the data sheet. Once these captured fish are counted, THEY MAY BE EATEN! Ask the students to brainstorm ideas as to how they could continue to count fish—what are the problems with trying to count each fish individually? Does the number they caught originally represent a good estimate of the total population? Why or Why not?
3. Ask each group what their original sample size was and give them an equal number of the colored goldfish. The colored fish represent the animals that have been caught and tagged. Return the colored fish to the bag (pond) and shake them up.
4. Students will now take a total of 5 samples from the pond. Each member of the group should get a chance to use the cup to scoop up fish. Count the number of fish each time and record on the data sheet. Count the number of colored or ‘captured’ fish and record in the data table. Return all the fish to the pond after each sample is taken and shake well to mix up them up. Continue taking 4 more samples and record info. If a sample is collected that does NOT contain colored fish, return the fish to the pond and try again.
5. After all 5 samples are taken, each group will tabulate their results. Each group member will find the average, mean, median, mode and range in each column. Create a ratio of the colored samples to the total samples. This ratio will be equal to the ratio of the original number of captured (colored) fish to the total number of flounder in the pond.

NAME:

GONE FISHIN’ DATA SHEET

NUMBER OF FISH CAPTURED INTHE ORIGINAL SAMPLE: \_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| SAMPLE | COLORED  GOLDFISH  (RECAPTURED) | TOTAL NUMBER  OF ALL GOLDFISH  IN SAMPLE |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| TOTAL: |  |  |

GIVE THE FOLLOWING RESULTS FOR YOUR GOLDFISH INVESTIGATION:

AVERAGE: \_\_\_\_\_\_\_\_\_\_\_\_\_ AVERAGE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

MEAN: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ MEAN: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

MEDIAN: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ MEDIAN: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

MODE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ MODE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

RANGE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ RANGE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

RATIO OF COLORED FISH TO TOTAL POPULATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

HOW MANY FISH WERE IN THE POND ORIGINALLY? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Check your answer by counting all the fish in your bag. Once you have answered all the questions and determined how many fish there are in the pond, DIVIDE THE FISH EQUALLY AMONG EACH GROUP MEMBER AND EAT THEM!)