**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Environmental Science**

**Period\_\_\_\_\_\_**

**Something’s Fishy – Population study lab**

**Background**: In determining populations of a variety of species, one method biologists use is tagging. This is frequently used in our area with butterflies (namely monarchs) and fish. Sometimes the “tags” are stickers (in the case of butterflies), ear clips, or notches made in fins of fish. The purpose of these tags is to track migration patterns, health, and range as well as to help determine population numbers of species in an area. Determination of population occurs by capturing and tagging that sample of animals. Biologists would then release the animals and allow them to naturally “redistribute themselves.” By then taking random samples and determining the percent tagged, biologists are able to hypothesize the population of that species in that area.

**Procedure**:

* Obtain a bowl with your “species” in it.
* Do NOT count the number of fish in your pond yet!
* Have one member of your group remove a large handful of fish.
* Count the number of fish you just removed and write that number here: \_\_\_\_\_\_\_\_\_
* Replace these fish with “tagged” fish (in this case, colored “fish”)
* Mix your pond well to redistribute the tagged fish among the other fish.
* One member at a time (and without looking), remove a handful of fish and record the number of total fish in the sample, the number of tagged fish, and figure out the percentage of tagged fish. (see chart)
* Return your handful to the bowl!!
* Continue with this until you have taken 20 samples.

**Questions**:

1. What is the mean (average) of your percent tagged fish from your 20 samples?

2. Using the following formula, determine an estimated population for your pond:

population size = (number originally tagged/mean of the sample %’s) x 100

3. Now, actually count the number of fish in your bowl: \_\_\_\_\_\_\_\_\_\_\_\_ fish

4. Find your percentage error by using the following formula:

(difference between your guess and actual / actual population) x 100

5. What concerns should a biologist have about a species’ habits before (s)he uses this method to approximate the size of a population?

|  |  |  |  |
| --- | --- | --- | --- |
| Original number of tagged fish: \_\_\_\_\_\_\_\_\_\_\_ | | | |
|  |  |  |  |
| Sample # | # of tagged fish | total fish in handful | % of tagged fish in sample |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| 11 |  |  |  |
| 12 |  |  |  |
| 13 |  |  |  |
| 14 |  |  |  |
| 15 |  |  |  |
| 16 |  |  |  |
| 17 |  |  |  |
| 18 |  |  |  |
| 19 |  |  |  |
| 20 |  |  |  |
|  |  |  |  |
|  |  | Mean % of tagged fish: |  |