Name: _____ Class Period: _____ Date: _____

PREDICTING POPULATIONS DATASHEET

Directions

Mark and Recapture Study – Year One

1. Look at your year-one cup containing black or brown beans. These represent a lake sturgeon population. How many do you think there are? What mathematical skill might help you here?

2. Now, take a population sample by placing three spoonfuls of black or brown beans on your paper plate. To be clear, three spoonfuls equal one sample. Count the number of beans in your sample.

3. To do a mark and recapture study, replace each of the black/brown beans that are on the plate with white beans (a one-to-one ratio), representing your marked population. Record as M on your data sheet. M is the original amount of sturgeon you've marked and will remain constant throughout the activity. To avoid confusion, as you replace each black/brown bean, put the black/brown beans into your empty replaced cup. Then set this cup aside.

4. Return this new marked population (the beans on the plate) to your original cup. Mix.

5. Remove three spoonfuls. Count the total of both black and white beans. Mark as C on your data sheet. C is the total number of fish you've captured for this trial. To be clear, some of the captured may be black beans and some may be white beans.

6. Now, count the number of white beans you captured in this trial. Mark as R on your data sheet. R is the number of "recaptured marked" fish you've "caught" for this trial.

7. Complete your calculations by showing your work in your table below. Write the final number as N, your total population estimation based on this trial.

8. Repeat steps 4 to 7 for all five trials.

Mark and Recapture Study – Year Two

9. Repeat steps 1 to 8 for the year-two cup. Be sure to propose a potential cause for any difference in your year-two population estimate as compared to your year-one population estimate.

Mark and Recapture Study Year One

Original population estimate: _____   Original amount of marked (M) (white beans): _____

Remember: Three spoonfuls equal one sample.

Trial #	# Fish Captured (C)	# Fish Recaptured (R)	Population Calculation N=C x M / R	Estimated Population (N)
1				
2				
3				
4				
5				

Average of N: _____   Actual population (P): _____

Mark and Recapture Study Year Two

Original population estimate: _____   Original amount of marked (M) (white beans): _____

What may have caused your year-two estimate to differ from your year-one estimate? Hint: Consider what factors may influence a population to increase or decrease.

Trial #	# Fish Captured (C)	# Fish Recaptured (R)	Population Calculation N=C x M / R	Estimated Population (N)
1				
2				
3				
4				
5				

Average of N: _____   Actual population (P): _____

Compare Year One and Year Two

Now, let's compare. For each year, at the bottom of table, fill in the average of the N column. Then, fill in the actual number of sturgeon in your population (P) (that's right, count all the beans in the cup)!

1.   How did your estimates compare to the actual population?

2.   How does the population in year one compare to the population in year two?

3.   What is the ratio of year-one population to the year-two population?

4.   Ratio of year-one population to year-two population:

You know your population — now set a harvest limit. Using what you learned in the book, decide what percentage would be reasonable.

5.   Our proposed harvest limit:

Datasheet was created in collaboration with Olaf Jensen.

SAVING OUR STURGEON