

Name \_\_\_\_\_

Class Period \_\_\_\_\_

## NATURAL SELECTION AND SPECIATION

### Part 1:

In today's lab you will role play members of a species in competition with one another for a food source. Each of you will be equipped with a different food gathering tool (scissors, toothpick, tweezers, or clothespin.) In the first portion of the lab you are to spread out all of the paper clips found on your lab table. Make sure there aren't any chains of paper clips in your food supply, and also make sure that there aren't any other food choices on the table either. At the teacher's signal you will start to collect food by using your food gathering tool to pick up one piece at a time and placing it into your stomach (cup).

You are a well mannered species and therefore you follow these food gathering rules:

- You may only pick up one food item at a time
- Your stomach must remain upright at all times
- Contact between members of the species is not allowed
- Failure to comply with these rules will result in the death of the organism

You will collect the food items until there are no more food items available. When you are done, each individual will count the number of food items collected to determine the number of offspring that the individual will now produce. For every five food items you collect, you will have one offspring. Record this information on the data table below. This procedure needs to be performed three times.

FOOD COLLECTION TOOL	1ST GENER.		2ND GENER.		3 <sup>RD</sup> GENER.	
	# OF FOOD ITEMS	# OF OFFSPRING	# OF FOOD ITEMS	# OF OFFSPRING	# OF FOOD ITEMS	# OF OFFSPRING
TWEEZERS						
SCISSORS						
CLOTHESPIN						
TOOTHPICK						

**PART 2:**

At the teachers signal you will place all of the food items on the lab table. This will include cheerios, marshmallows, buttons, marbles and the paper clips. If any of these objects are eaten by something other than the food gathering tools, the lab table will no longer be allowed to participate. These items are needed to feed many others throughout the day. Again, you will collect food items until there are no more items to collect, and you will follow the same food collection rules stated in Part 1. At the completion of each generation, complete the data table below.

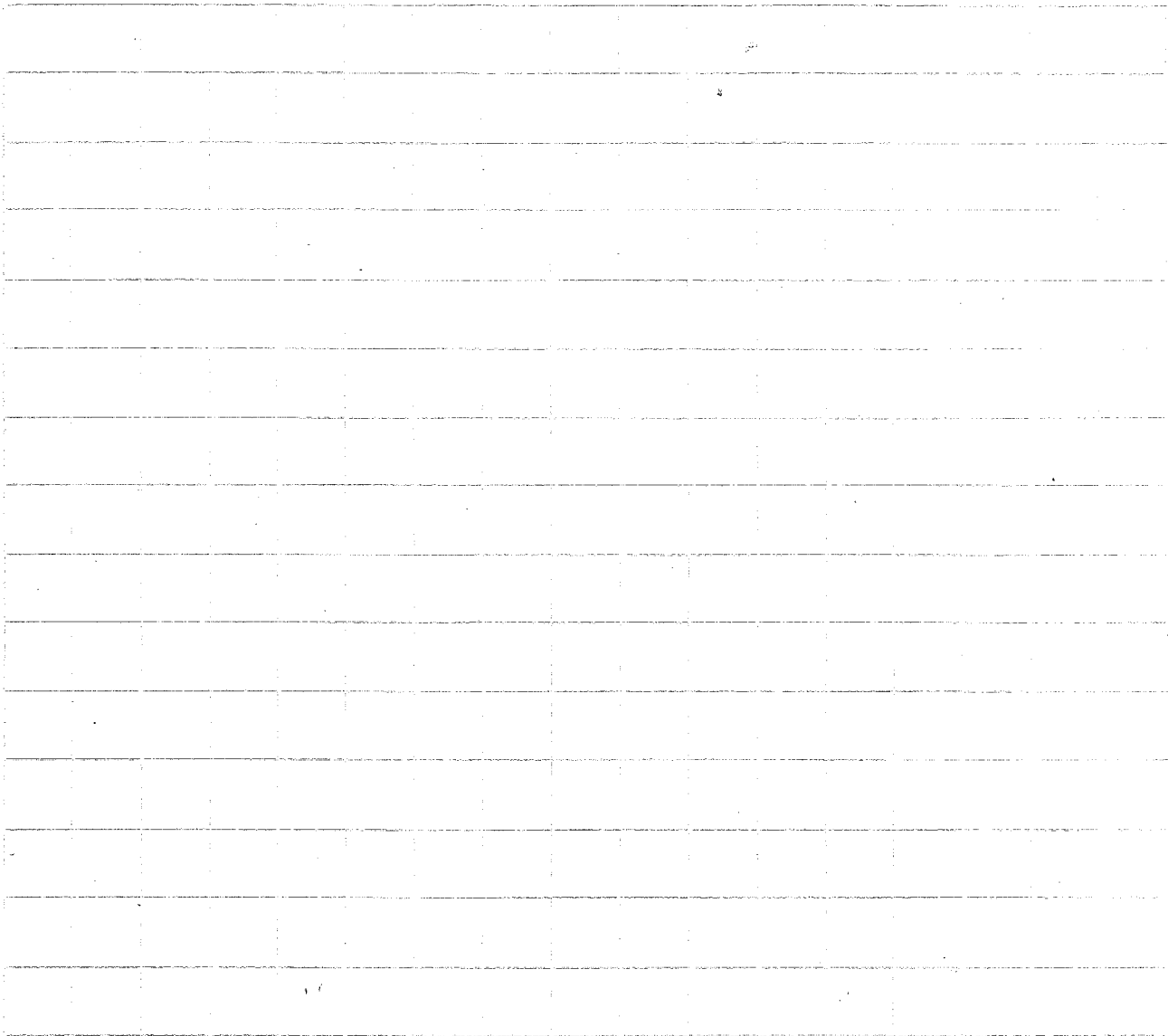
- Total **ALL** food items you collect to determine the number of offspring. Remember, 5 food items = 1 offspring.

FOOD TOOL	1 <sup>ST</sup> GENER.					2 <sup>ND</sup> GENER.						3 <sup>RD</sup> GENER.						
	Cheerios	Marshmallows	Buttons	Marbles	Paper Clips	# of offspring	Cheerios	Marshmallows	Buttons	Marbles	Paper Clips	# of offspring	Cheerios	Marshmallows	Buttons	Marbles	Paper Clips	# of offspring
TWEEZERS																		
SCISSORS																		
CLOTHESPIN																		
TOOTHPICK																		

**ANALYSIS QUESTIONS:**

1. In Part 1, which food gathering tool was most successful?
2. In Part 2, which food gathering tool was most successful?
3. What would happen to the toothpick organism if a marshmallow virus came through and eliminated all of the marshmallows? Explain your answer.
4. What process does Part #1 simulate?
5. What process does Part #2 simulate?

6. Create a bar graph to show which food gathering tool was the most successful in producing offspring in Part #2. Label the X axis with the # of TOTAL OFFSPRING. Label the y axis, FOOD GATHERING TOOL. Be sure to title your bar graph.



7. Using this lab as your support, explain why variation is a key to the survival of species.
8. During either part of this lab, did you notice anyone in your group or anyone in a surrounding group using his or her food gathering tool in a nontraditional manner? What did they do? Did it improve their food gathering process? What does their "non-traditional" food gathering show?