

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

# Natural Selection Lab

In this lab, most of you will become Beanatross birds. We will be observing and recording as the birds feed, live, die, and go through the process of competition and natural selection.

**Birds:** we will need 20 students, 5 for each species, to play the parts of the animals. Each species has a special adaptation used to collect food, which will be beans scattered on the grass.

**Counters:** we will also need 4 students to be "bean counters." They will count a record the number of beans each species retrieves during the round.

**Predators:** we will need three students to be the predators. Any animal caught cheating or not following the rules will be eaten by predators and thereby removed from the simulation.

**Gene pool:** members of the class who have not been yet assigned a species or job and will enter the population to represent reproduction

**Mother Nature:** the teacher acts as nature, of course, and will supervise the activity.

<u>Name of species:</u>	<u>Objects used to collect food</u>
1. Tubies	Test tube holder
2. Spooners	Spoons
3. Forcepies	Forceps
4. Choppers	Chop Sticks

## Rules for collection food and roles for students:

1. Animals must only use their "special adaptation" to pick up beans and place them in there "stomach cups." Use the adaptation only as designed; do not flip the beans in the cup. Pick them up one at a time. Hold cups upright at all times.
2. Animals will not steal beans from others, or knock over the cups of others. Animals will not throw beans. The purpose of the lab is to study the effects of food collecting adaptations on the processes of population dynamics and natural selection, please don't do anything to mess up the results!!
3. Natural selection: animals collect beans for 30 seconds, at which time they will stop and count their beans. Report the number of beans to the counter for your species and she/ he will record the total number in your group. THE SPECIES WITH THE FEWEST BEANS WILL LOSE ONE MEMBER TO STARVATION (who returns to the gene pool). THE SPECIES WITH THE MOST BEANS WILL GAIN ONE MEMBER FROM THE "GENE POOL". **This represents natural selection. The new member represents reproduction**
4. Analysis of data: after all the data is collected, the class will return to the room. In groups of two you will graph your data and answer the questions on the back of this lab sheet. One member of your team needs to get all the data from a "bean counter." The graph will illustrate how natural selection allowed the best adapted species to increase in numbers, while the least adapted species became extinct

**Data table:**

Bird		1	2	3	4	5	6	7
1) Tubies	# beans	0						
	# animals	5						
2) Spooners	# beans	0						
	# animals	5						
3) forcepies	# beans	0						
	# animals	5						
4)choppers	# beans	0						
	# animals	5						

**Graph:** Prepare a graph as instructed below:

1. Title: natural selection and competition simulation."
2. Y-axis: "number of animals alive each generation."
3. X-axis: "generation number" use the whole bottom for this line, so it will spread the data points out.
4. Plotting your data: the graph should have four separate lines, one for each species. Use the colored pencils to graph the data and connects the dots.
5. Make a key, so I will know which color stands for what.

**Conclusion**

1. Name the bird that was the best adapted to the environment in this experiment. Why was it most successful?
2. Name the animal that was least well adapted to this environment. Why was it unsuccessful?
3. What could have happened in this experiment if the food had been lima beans (much larger beans) instead of pinto beans?
4. Explain how this activity simulates natural selection.