Natural Selection Lab Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Materials:**

4 colors of beans

5 feeding structures (hand, forceps, spoon, fork, lids)

4 cups

1 large sheet of newspaper

**Procedure:** Students will feed individually.

1. Each player picks a folded paper from the bag. This will be their assigned feeding structure.
2. Place 30 beans of each color (120 beans total) onto the large piece of newspaper – Intermix the colors well so there are no patches of just one color.
3. Form a hypothesis: Predict the success rate of each predator and prey (1 is best, 2 is second best…)

**Predator Success** **Prey Success**

\_\_\_\_\_hand \_\_\_\_\_red bean

\_\_\_\_\_forceps \_\_\_\_\_white bean

\_\_\_\_\_spoon \_\_\_\_\_speckled bean

\_\_\_\_\_fork \_\_\_\_\_black bean

\_\_\_\_\_lids

1. When told to start, each person will pick up as many prey (beans) as you can with your feeding structure until you are told to stop. You can only pick up one bean at a time and put it in the cup before going for the next one. The cups must stay flat on the table – you cannot shovel the prey into them.
2. When told to stop, count the number of each type of prey collected and record it on the table below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Hand | Forceps | Spoon | Fork | Lids |
| Red |  |  |  |  |  |
| White |  |  |  |  |  |
| Speckled |  |  |  |  |  |
| Black |  |  |  |  |  |
| TOTAL |  |  |  |  |  |

1. The predator groups will be reconstructed for the next generation. Predator types which capture fewer prey than others are not successful hunters and natural selection might remove them from the population. After two generations the least successful predator type will be considered extinct. After the third generation the least successful predator (of the remaining types) will again be considered extinct. Students that had those feeding apparatus will be assigned to other groups and will represent the offspring of the successful predator types
2. After each period of hunting, the prey remaining in the prey population (those not captured) will be doubled to represent reproduction. The additional beans of each color will be added to the remaining population in the habitat.
3. Repeat procedure and fill out the table for generation 2:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Hand | Forceps | Spoon | Fork | Lids |
| Red |  |  |  |  |  |
| White |  |  |  |  |  |
| Speckled |  |  |  |  |  |
| Black |  |  |  |  |  |
| TOTAL |  |  |  |  |  |

1. Repeat procedure and fill out the table for generation 3:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Hand | Forceps | Spoon | Fork | Lids |
| Red |  |  |  |  |  |
| White |  |  |  |  |  |
| Speckled |  |  |  |  |  |
| Black |  |  |  |  |  |
| TOTAL |  |  |  |  |  |

1. Repeat procedure and fill out the table for generation 4:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Hand | Forceps | Spoon | Fork | Lids |
| Red |  |  |  |  |  |
| White |  |  |  |  |  |
| Speckled |  |  |  |  |  |
| Black |  |  |  |  |  |
| TOTAL |  |  |  |  |  |

1. Which prey (bean) was the BEST adapted to your group’s environment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why?

1. Which prey (bean) was the LEAST adapted to your group’s environment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why?

1. Which predator (feeding structure) was the MOST successful? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why?

1. Which predator (feeding structure) was the LEAST successful? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why?