**Modeling Natural Selection Grade** 9 **Standard** B.8.5

**Title of investigation:** Propagation of Successful Traits

**Source**:www.biologycorner.com

**Author(s):**  A. Johnson and C. Keller, modified investigation from *www.biologycorner.com*

**Leading Question:**

What happens to animals that cannot compete as well with other animals in the wild?

**Summary of the investigation:**

Students will model natural selection by using various utensils to capture food.

**Science Standard:**

B.8.5 Describe how organisms with beneficial traits are more likely to survive, reproduce, and pass on their genetic information due to genetic variations, environmental forces and reproductive pressures.

**Equipment:**

Beans (northern or lima)

Tray

Clothespins

plastic spoons

tweezers

dissecting needles (teacher selects this student)

**Engagement – (a story)**

Does how an animal's mouth is shaped affect how they obtain and eat food (carnivore, herbivore, omnivore)? Think about the human mouth. We are omnivores. However in the United States we don't eat a lot of fruits and vegetables, but because we have a lot of grinding teeth, perhaps we should be eating more fruits and vegetables.

On a distant planet there exists 4 variations of a creature called a woolybooger. Each woolybooger is similar except their mouth has variations. All woolyboogers eat beans. Some woolyboogers have a clothespin mouth. Some woolyboogers have a tweezer mouth, some have a needle mouth. One year a new species of woolybooger was discovered, this woolybooger was called the Spoon-Mouthed Woolybooger. Each of you will play the part of a woolybooger on this planet. The spoon-mouth wooly booger is rare, so only two of you will get to be this type of woolybooger.

**Procedure**:

You will run through several trials. Each trial will require your woolybooger to gain at least 20 beans. Each woolybooger mouth can hold only 1 bean at a time. If 20 beans are not acquired during the time period, your woolybooger has died.

Time for 1 minute.

Repeat 9 times for a total of 10 trials.

Count and record each type of woolybooger after each trial.

Graph results.

**Description of Procedures, notes (teacher manual):**

Depending upon the class, you may want to demonstrate how each utensil would be used to obtain food.

You might also want to select which student gets to be the needle-mouthed woolybooger (or eliminate this utensil altogether).

When a woolybooger dies, the student can play the offspring of the surviving woolyboogers. Give them a new utensil (probably a spoon or tweezer) for the next trial. You can be flexible here.

At the end, the only surviving woolyboogers will most likely be the Spoon-Mouthed Wollybooger.

**Follow-up Questions (whiteboard):**

How did the shape of the woolybooger's mouth affect what it could eat?

Does an animal's ability to obtain food affect its survival?

Explain what eventually happened to the population as a result of each variation?

How do these results support natural selection?