

## TEACHER NOTES: Wormeaters and their funny beaks:

Question: How does variation that naturally exists within a population allow individuals to survive or perish?

The goal of this game is for students to explore that some variation can be advantageous and help individuals survive, while other variants can be disadvantageous and let individuals die. Students will pretend to be a strange species of birds called wormeaters, and will compete for resources –worms. They will work in groups of five and each wormeater will have a different beak shape.

Timing: playing the game will take approximately 20-25 min and the discussion can take 10-15min.

### Materials (per group of 5):

- Forks, spoons and sporks: 2 dozen spoons is plenty, 4 dozen each forks and sporks.
  - *Forky*: regular forks, two dozen.
  - *Forktunis*: remove all the middle tines leaving only the two outside ones, two dozen.
  - *Sporky*: regular sporks, two dozen.
  - *Sporticus*: remove the middle prong leaving only the two outside ones, two dozen.
  - *Spoony*: regular spoons, two dozen.
- Small paper cups (one per person).
- Box of rubber bands –worms. At least a big handful per group.
- Tape, masking or scotch. If possible a roll per group.
- Clock or stopwatch.

### Setting up:

1. Arrange enough tables –islands to accommodate the class in groups of 5.
2. Have extra beaks available at a central location or carry extras around and distribute.
3. Ask students to tape cups to table in front of them.
4. Explain the logistics of the game but refrain from telling them what they will figure out. Let them do the reasoning. You can let them know that they will try to catch as many worms as possible.
5. Explain how the data will be recorded.
6. Students will play five rounds of 30 seconds each. This is the equivalent of one generation.
7. Between generations students need time to count, record, and get new beaks.
8. After 5 generations students will record how many of each beak shape are left on their “island”. One group member enters it on the class data table.

### Suggestions:

- Ask students to graph how the population changed over time. In the first generation there should be equal amounts of beak shapes.
- If you are short on time, students can answer the discussion questions as homework. However, it is important to have a whole class discussion about how this activity supports the model – question 6.

### Further discussion questions:

- Did beak variation matter?
- Was beak variation the only determining factor?

*Beak shape is the most obvious trait that displays variation, however, speed of each individual is another variable trait. What about coordination?*

- What if all members of one species (say, sporky) die on all the islands?

*Students will almost always say “they’re extinct”!! This is a good time to talk about what we mean by “extinct”. It means the whole species is gone. In this activity all the beak variants are members of the same species –they’re all wormeaters. So, if all the Sporkies die, does that mean that wormeaters are extinct? Students will of course realize that the answer is “no”...They will revise their statement and say that that variant is gone. It is good to reinforce the idea that the focus here is on variations WITHIN species.*

You can use this table to record the results for each period.

After 5 generations:	Forky	Sporky	Spoony	Sporticus	Forktunis
Island 1					
Island 2					
Island 3					
Island 4					
Island 5					
Island 6					
Island 7					
<b>TOTAL</b>					