

Which Beak Is Better?

An Adaptation Simulation Game

A number of basic concepts in ecology can be introduced with a high level of understanding using this simulation and variations on it. For competition within or between species this game helps students understand the concept of "survival of the fittest." It is probably easiest to ask students to imagine they are an individual of one of more species of birds found in the same general area. The birds differ from one another in terms of the shape and size of their bills. Students are asked to gather different kinds of food items. During the game record the data and afterwards analyze it. Use the raw data to make graphs showing the percentages of food eaten by each species. Students discover from their participation in this activity that differences in their success depend on their different bill types. The bill type is also related to the food item being gathered.

Materials—for a group of fifteen People

- Paper or Styrofoam cups—one per participant
- Marbles—300 per kit
- Round toothpicks—400 per kit
- ¼ to ½ inch washers—300 per kit
- Spoons—metal or durable plastic—4 to 6
- Tongue depressors or popsicle sticks—4 to 6 pairs
- Scissors—4 to 6 pairs
- Tweezers—4 to 6 pairs
- Clothespins (Spring type)—4 to 6 pairs
- Bird poster or bird beak chart
- Box to hold materials

Rules of the Game:

Cups are stomachs—they must be held upright at all times.

Food items are: Stick worms (toothpicks), Marble beetles and Washer weevils.

Bird beaks are: Spoons, Tongue depressors, Scissors, Tweezers, and Clothespins.

1. Birds must pick up food items using their peak and drop the food item into the stomach.
2. Food items may not be scooped or thrown into the stomach. The stomach must be held upright.

3. Teacher (Predator on Birds) distributes a food source and gives the signal to start and stop eating. At the signal to stop all birds will stand up at once.
4. Each bird will count the number of food items in its stomach and report its results to the group. Each beak type should determine the average number of food items per bird.
5. Each food item should be tested and data recorded. Students should analyze and discuss the data after each test. Results of the previous test should be considered for comparative purposes.
6. All three food items should be tested at once. Discuss the data and help students make and compare charts and graphs.
7. The teacher is a predator on birds. Any unruly behavior or violation of the rules will result in the predator capturing the conspicuous bird and removing it from the test situation

Helpful Hints:

1. If possible keep your group size to about 15 people.
2. Be sure to spread food items over a large enough area to avoid bumping and crowding by the birds.
3. Stop each test before food runs too low or at the first sign that crowding, bumping, or similar disruptive behavior may be imminent.
4. Use your predator status as a good natured warning (The predator is near and is looking for food.) Explain that birds that break the rules have behavior which always attracts predators.
5. During each discussion period try to correlate the simulation activity with the real world.