



Biologist: Bird Beak Buffet

Time: 45 Minutes **Skill Level:** Elementary (age 6–11), Middle School (age 12–14)

Background

What is Science Inquiry?

Children are natural scientists. From a very early age they explore the world, ask questions and seek answers. This journey of exploration and discovery is Science Inquiry. Science Inquiry helps young people understand their environment, solve problems and gain knowledge about scientific ideas and processes.

Next Generation Science Standards (NGSS)

Science and Engineering Practices

1. Asking questions
2. Developing and using models
4. Analyzing and interpreting data
6. Constructing explanations

Disciplinary Core Ideas

- LS1:** From molecules to organisms: Structures and processes
- LS4:** Biological evolution: Unity and diversity

Crosscutting Concepts

2. Cause and effect: Mechanism and explanation
6. Structure and function

Objective

In this activity, students learn about the structure and function of different bird beaks and how these shapes influence the bird's ability to gather food.

About the Scientist

A biologist is a scientist that studies living organisms. Some biologists are working to explain the underlying mechanisms for how organisms function. Other biologists are involved in *applied research*, where they attempt to develop or improve processes and understanding in fields such as medicine, industry, and agriculture.

Biologists that study animals and other wildlife are called *zoologists* and *wildlife biologists*. They study the physical characteristics of animals and how they interact with their ecosystems.

The Science of Bird Beaks

Bird beaks come in a variety of shapes and sizes. Each bird species has a beak adapted to obtain and eat different foods. For example, some beaks are designed to scoop fish from the water, whereas others are designed to probe for insects. This is similar to how we might use a spoon to eat soup or a fork to eat a salad.

Selected Types of Bird Beaks

- **Hooked:** These beaks curve down and come to a sharp point that is used for killing prey and tearing flesh. Examples: eagles, hawks, and owls.
- **Cracker:** These beaks are short and cone-shaped, used for cracking shells and extracting the inner nuts or seeds. Examples: sparrows, finches, and bluejays.
- **Tweezer:** These beaks are thin and function like a pair of tweezers to pick up insects. Examples: warblers and wrens.
- **Strainer:** These beaks are long and flat, and have an internal comb-like structure to filter food from a mouthful of water, sand, and other debris. Examples: ducks and swans.
- **Pouched:** These beaks are designed to scoop fish from the water. Examples: pelicans.

Materials List:

Masking Tape

“Food”: clay balls, marbles (or dry beans), pennies, paperclips, rubber bands, tea leaves, foam fish

“Beaks”: bent wire or paperclips, tongs or wooden clothespins, tweezers, strainers, spoons

Foil roasting pans

Water

Poster

Paper towels

Preparations: Prepare a “dry buffet” by creating a large circle on the floor with masking tape, then randomly distribute the “food” inside. Also prepare a “water buffet” in a large pan of water, which will be used in Part 2 of the investigation. You may want to create several water buffets, depending on the size of the pans and the number of students.

Discuss ...What do birds use their beaks for? Are all beaks the same? What beak shapes have students seen? Discuss the different beak types. How might each beak help a bird gather food?

Predict ...Give each group of students a different type of “beak.” Show students the “food.” Which beaks are designed for which types of foods? Have students record a prediction for their beak.

Experience “What to Do”- What is the plan for the investigation? Give teams five minutes to collect as much food as possible from the dry buffet. Have students determine how many of each food item was collected.

Share ...Have each team report their totals to the class. Record the class totals on the board.

Part 2 of the investigation: Have students repeat the exercise for the water buffet.

Reflect ...**Analyze and interpret the data and results. Discuss among the group.** Have each group analyze their beak’s data. Which foods were easier for their beak to collect? Did their beak work better on land or in the water? Discuss results as a class.

Generalize ...**to real world examples. Construct explanations.** Based on students’ findings, have each group identify a bird that has their type of beak. What type of real food might that bird eat?

Apply ...**outside the classroom or club meeting.** Some beaks could pick up a variety of food, whereas others could not. What does that mean for their survival? Why?

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Agriculture Sciences & Natural Resources, Family & Community Health, 4-H Youth, Forestry & Natural Resources, and Extension Sea Grant programs. Oregon State University Extension Service offers its programs and materials equally to all people.