

Battle of the Bird Beaks

April 2024

Columbia University Neuroscience Outreach

Objectives:

- Demonstrate how animals have specialized body parts that make them best suited for their ecological niches
- Explore a range of NYC bird beaks to test how each is specialized for their diet

Materials:

- Large, water-holding container
- Graduated cylinder
- Water
- Beads
- Food dye
- Styrofoam balls
- Large scooper
- Tongs
- Small strainer
- Transfer pipet
- Photos of four NYC birds and their beak morphology
- Photos of Darwin's finches

Possible Introductory Questions/Comments:

- **Q: Have you noticed how many birds have differently shaped beaks (like ducks and pigeons)? Why do you think that is?**
- Birds have different beaks to help them become masters of different types of diets! Let's play a game to see how this works!

Activity:

1. Setup:
 - a. Beads, styrofoam balls, and water in large container
 - b. Graduated cylinder filled with dyed water secured in center of container
2. Attendees will be choose a tool to remove objects from the container
3. After a set amount of time, attendees will be able to see which objects they were best able to capture
4. Volunteers can make the analogy between tool & object and real-world birds & their diets
 - a. (*Tool, Target object, Bird*): Explanation
 - b. (*Small strainer, Beads, Dabbling ducks*): Dabbling ducks have ridges in their beaks (called lamellae) that they use to strain small invertebrates from the water
 - c. (*Tongs, Styrofoam balls, Herons*): Herons have long bills they use to selectively pick out fish and other small animals

- d. (*Large scooper, Beads & Styrofoam balls, Pelicans*): Pelicans are generalists that use their large bills to catch prey indiscriminately
 - e. (*Transfer pipet, Dyed water, Hummingbirds*): Hummingbirds have long, thin beaks they use to sip nectar from flowers
5. For older/more interested attendees, volunteers can talk about Darwin's finches' beak specializations and how that discovery led to the development of the theory of evolution

Possible wrap-up/follow-up:

- What other animals have you noticed with unique body parts or shapes? How do you think that helps those animals master their environments?
- Potentially direct attendees to the Brain Bank, where they can see how brains are specialized for different animals