

# Fill the Bill

## Summary

*Students learn about bird feeding adaptations by using a variety of tools to simulate eating different foods.*

**Grade Level:** 3-8; K-2

**Time:** 1 class period  
(30-45 minutes)

**Subject:** Science

**Skills:** Analysis, application, classification, comparison, generalization, observation, problem-solving

## Learning Objectives:

*Students will be able to:*

- Describe five different types of bird beaks
- Identify the most efficient tool to use with each type of food
- Compare how different tools can function like different types of bird beaks
- Explain how each type of beak is adapted to feed on specific foods

## Materials:

- Copies of handouts, or pictures of birds with different kinds of beaks
- 3 eyedroppers or straws
- 4 pairs of chopsticks
- 3 nutcrackers or pliers
- 2 large scoops or slotted spoons
- 3 strainers
- 3 envelopes or small fishnets
- 3 forceps or tweezers
- 3 tongs
- small log
- pennies
- paper clips
- seeds
- push pins
- string
- water



## Background

It would be impossible for a hummingbird to gobble up a mouse and it would be just as difficult for a hawk to fit its large beak into a flower to slurp up nectar. Different bird species have beaks and tongues adapted to eating a certain types of food. Some birds have beaks good for tearing and others can use their beak to crack open hard nut shells.

Species are adapted to the environment where they live. That's partly why protecting habitats is so important – a species is perfectly adapted only to its own habitat components: food, water, cover, and places to raise young. (See Adaptations in Background section). Bird beaks are an easy-to-see example of species adapting to the kinds of food they eat. Some examples include:

- Hummingbirds have long hollow beaks to probe flowers for nectar. The beak protects the tongue, which slurps the nectar.
- Curlews, godwits, kiwis, and snipes have very long beaks that to probe for worms, crustaceans and other small creatures in mud and water.
- Cardinals, sparrows, grosbeaks and other finch-like birds have very short, cone-shaped beaks. These beaks are very strong and can break open tough seeds.
- Spoonbills and pelicans have long, flattened or pouch-like beaks that they use to scoop up fish and other aquatic

creatures.

- Flamingos and some ducks have bills that act like strainers to filter tiny plants and animals from the water. (Only certain kinds of ducks are filter feeders.)
- Nighthawks, whip-poor-wills, swifts and swallows have large gaping mouths that act like nets to trap insects. These birds catch insects flying through the air.
- Warblers have small, sharp, pointed beaks for picking insects from leaves, logs and twigs.
- Toucans have very long, thick beaks for reaching out and plucking fruit from trees.

## Preparation

1. Collect all materials for the activity. Set up a large sheet or tarp on the playground or in a large empty place in the classroom.
2. Scatter all the small objects around the tarp.
3. Photocopy the handout provided, one for each student.

## Procedure

1. Pass out handout (or pictures of different birds, if available) showing different bird beaks to students. Ask students what they notice about the shapes of the beaks. *Are they all the same? What do birds do with their beaks? How does the beak help birds survive?* Talk about some of the examples of different bird



beaks discussed in the Background section.

2. Hand out the tools, and small plastic baggies, and instruct students to pick up as many objects as they can in 30 seconds, using only their tool.

3. Time the students and have them count up the different types of objects, and then put them back.

4. Have students switch tools with one another so they all have different ones this round.

5. Repeat the 30-second activity.

6. Have students count up their objects again. **What did they discover about their tools?** Discuss the benefits and disadvantages of each tool in picking up different foods.

7. Afterwards, ask students how the tools they used relate to real bird beaks pictured on the handout. Do any have similar shapes? Discuss this with students before having them match the tools with the beaks on the handout. Underneath each bird picture on the handout, have students write the letter of the tool that best matches the beak. Ask students, **What do you think would happen to a bird that ate nectar if it had the beak of a cardinal (which eats seeds)? Would it be able to survive?** Have students also make a hypothesis about what each bird actually eats and write it next to the bird. **How might they discover the answers?**

8. Discuss beak adaptations in general. Explain that many birds, after millions and millions of generations, have evolved very specialized beaks. The beaks allow the birds to eat a certain kind of food. Ask students **How do you think a specialized beak helps birds survive?** (A bird with a specialized beak may be able to eat a type of food that no other bird can eat). **Could they imagine a situation in which it might actually harm the bird to have such a specialized beak?** (If the bird's habitat changes and its food is no longer available, the bird might die because it can't eat anything else.) Point out that not all birds have such specialized beaks. Crows, for example, can use their beaks to eat a variety of foods, like fruits, nuts, berries, dead animals, fish and small rodents. Crows are generalists, and if one type of food is not available they can easily eat something else.

### Modifications for Younger Students

1. Set up four stations around the classroom. Copy the pictures of four of the birds (to match the stations you've chosen) onto the chalkboard. Lead students from looking closely at the beaks to investigating and testing the tools at the station.

2. Begin discussion by telling students that there are many different kinds of bird beaks. Have them look at the beaks and ask how the beaks look different from each other. **What do birds use a beak for?**

**Why might different birds (who live in different habitats) have different shapes of beaks?**

3. Start with one bird and ask students what they think it eats. Have the class focus attention on the matching station and provide two tools (one that works and one that doesn't) for students. Have two students come and test both tools (give each a chance with the correct tool). After they have both tested both tools, have them tell the class which tool they think works best. Direct attention back to the picture of the bird beak. **How is the correct tool like the beak? How is the incorrect tool different from the beak?**

4. Repeat for the rest of the stations.

### Extensions

✓ Have older students research birds with a focus on their beaks. Challenge them to find the most specialized and most generalized beaks. What is it about these birds' habitats that has led to this kind of beak adaptation??

### Assessment

✓ Have students go out to the schoolyard to look for birds and direct their attention to their beaks. What do their beaks tell you about what they eat? Have students hypothesize what each type of bird eats and then design an experiment to test their hypothesis. Does your schoolyard provide those types of food items? Could it?

# WORKSHEET

## Fill the Bill

Directions: How are birds adapted for eating different kinds of food? Match the following tools with the bird beaks below.



A - Tweezers



E - Nutcracker or Pliers



B - Strainer



F - Fishnet



C - Straw or Eye-dropper



G - Meathook



D - Scoop



H - Tongs

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Whip-poor-will \_\_\_\_\_

Food \_\_\_\_\_



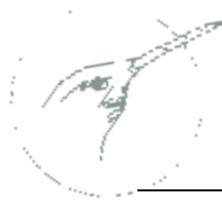
Snipe \_\_\_\_\_

Food \_\_\_\_\_



Pelican \_\_\_\_\_

Food \_\_\_\_\_



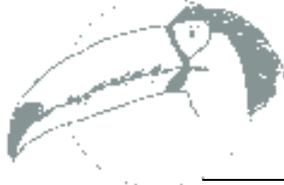
Hummingbird \_\_\_\_\_

Food \_\_\_\_\_



Warbler \_\_\_\_\_

Food \_\_\_\_\_



Toucan \_\_\_\_\_

Food \_\_\_\_\_



Grosbeak \_\_\_\_\_

Food \_\_\_\_\_



Flamingo \_\_\_\_\_

Food \_\_\_\_\_

Based on its beak, what do you think each bird eats in the wild? Write down your hypothesis next to each drawing. How will you find out if you are right?