

Comparing Bird Beaks: Form and Function

Grades: 3-6

Minimum Time: 30 minutes

In this lesson students will use the skull collection in the Exploring Birds Kit to examine a diverse assemblage of bird skull replicas. Students will make observations about different beaks and predict how the beak helps the bird survive. Students will learn how specialization allows different species to coexist in the same environment.

This lesson can be paired with *Bird Beak Buffet (BBB)*, either offered after to further learning about adaptations or before as an introduction to the form and function of bird anatomy.



Materials:

Comparative bird skull set:

Red tailed Hawk, Pileated Woodpecker, American Crow, Northern Cardinal, Ruby-Throated Hummingbird

Food cards/images:

Seeds, fruit, small mammal, tree with holes and grubs, flowers, earthworm and assortment of pet and human foods.

Learning Objectives:

- Bird beaks are an important adaptation that enable birds to obtain food
- All bird species have a beak that is uniquely adapted to a particular food
- Identify 5 basic beak types

Vocabulary: Adaptation, specialization

Background information:

Bird beaks are an important physical adaptation that allows birds to survive in their habitat. Different birds fill different niches in their environment and each species has a unique beak adapted for obtaining and consuming a particular food. Because of this diversity, competition is reduced and many species are able to coexist within the same area. A bird's beak is one of the characteristics used for identifying it. This set of 5 bird skulls represents a variety of adaptations specialized for exploiting different foods.

Northern cardinal has a cracker type beak: short, conical and thick for cracking seeds and nuts. They also eat fruit and insects.

Red-tailed hawk has a shredder type beak: strong with a curved upper portion that comes to a sharp point, used for catching live prey and tearing meat.

Ruby-throated hummingbird has a needle-like probe type beak, specialized for reaching nectar inside of flowers.

Pileated woodpecker has a pointed, chisel type beak, specialized for making holes in bark to reach insects.

American crow has a long sharp beak used to consume a variety of foods such as fruit, insects, seeds and other small animals. This beak is like a Swiss army knife - multipurpose.

Why do birds living in the same place have different beaks? Lean about this and other bird adaptations here:
<http://projectbeak.org/adaptations/start.htm>

Introduction and background discussion:

If students have received the BBB lesson, the discussion can begin with their understanding that a bird's beak is like a specialized tool and will work best with particular food types. Students can summarize their findings about which "foods" were best obtained by each "beak" type. Students will apply this understanding to real world examples as they examine the bird skull collection.

If students have not received BBB, they can begin by exploring the question "how can different birds live together in the same basic habitat"? They may have noticed different birds in their own yards. These birds have different colors, sizes, beaks and shapes. These physical traits are all adaptations that help the bird survive. What are some of our (human) adaptations? One way birds can thrive in the same general area is by exploiting different foods. This type of specialization exists throughout the natural world. A bird's beak is used to obtain, handle and eat its food. What do birds eat?

Activity (25 min):

1. Begin with students in 5 groups. Each group will be given one skull to examine. Allow students to touch the skulls and make observations. Each student can record a description of the skull and a sketch. Consider size and shape. Are the upper and lower beaks the same? Is the beak sharp or blunt? Does the beak remind them of a tool? How might the bird use its beak? Is the beak strong or does it seem fragile? Would it work best for large or small foods? Students can record all of their ideas.
2. Rotate the skulls so that each group has spent time with all 5 skulls. Students can spend time sharing their ideas and reporting their predictions about food types to other groups.
3. Pass out the food cards and have student groups' work together to match the foods to the skulls. Students can record their prediction along with at least one observation to justify their prediction.
4. Reveal the bird names or have students use the bird book to identify them. Students can research the bird to learn more about what it eats and other habitat requirements. If students have access to the internet, ALL About Birds is a great site for learning more about what each bird needs (see the life history section):
<http://www.allaboutbirds.org/Page.aspx?pid=1189>

Wrap-up (5 minutes)

Are students surprised by anything they discovered? Were their predictions correct? How many different birds would their schoolyard support? Students can take a campus tour and record any potential foods they find.

This lesson can be followed with the Habitat Hunt Lesson which allows students make a map of campus habitat.

Food Cards to be cut out and distributed:





