

Bills, Eyes, Wings, Feet

Location of activity provided by staff



Summary

Intro discussion: 5 mins

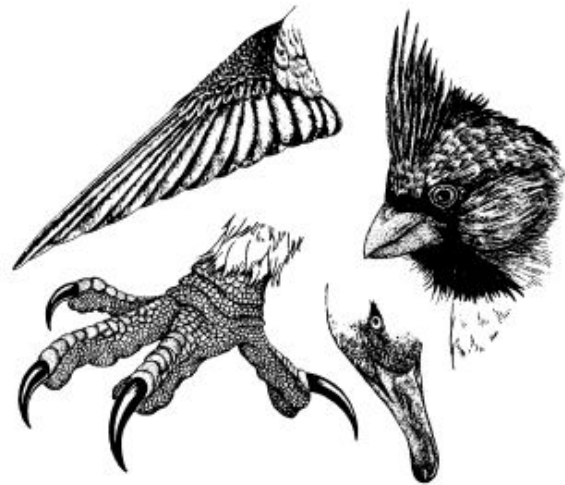
Activities: 15-20 mins

Grades: (suggested) 4-8

Subject: Ornithology and Adaptation

Activity Objective:

To provide students with activities that illustrate how the various adaptations of bills, eyes, wings, and feet assist birds in finding and eating food. (Familiar birds common to the Tucson area are represented)



Materials & Preparation:

PROVIDED:

- Velcro board
- **Bird bills:** 8 pictures of bill types, 8 tools that simulate bird bills, 7 food appropriate for each bird bill, 2 bird skulls
- **Bird feet:** 8 pictures, 4 bird foot models
- **Bird eyes:** 4 pictures
- **Bird wings:** 4 pictures
- Books about birds

NOT PROVIDED:

- Peanuts, walnuts, or pecans **in shells**

PREP: Check out the materials, select the activities to be used, leader may wish to do additional research on bird adaptations.

Key Vocabulary Terms: adaptation, bird bills, wings, feet, anatomy

Intro Discussion: (5 mins)

Tell the students:

I want you to think of birds that you know. Picture them in your mind. **What do they all have in common?**

(Possible answers: bills, wings, feathers, two feet.)

Now think of ways they are different. Name some differences.

(Possible answers: color, size and shape of the bird, size and shape of the bill, wings, and feet, where they live.)

Hold up pictures of the:

- a) hummingbird
- b) hawk
- c) duck

These are all birds—they have feathers, wings, two feet, and a bill, but they look quite different from one another. Take special notice of the bills, eyes, wings, and feet. **In what ways are these important to a bird?** *(Possible answers: they help them find food and escape predators.)*

Now we are going to look at the bills, eyes, wings, and feet of a number of different kinds of birds and learn how they are tools birds use to help them survive.

Activities: (15-20 mins)

Bird Bills: (8 birds are represented)

Before the first group arrives prepare the following:

- float bits of styrofoam in a bowl of water
- place plastic insects under rocks
- sprinkle rice onto the piece of wood
- scatter the tools (bird bills) and food items on a table

In this activity students examine pictures of the birds, tools that simulate different bird bills, and food types. Then they group the picture, tool, and food for each species.

The children gather around the table and look at the items. Explain that they are going to match a picture of the bird with a tool that resembles the bird bill. Then they will determine which food item would best be suited for that bird bill.

Hold up a picture of a bird. Ask the students, **which tool resembles the bill of that**

bird? *The child that answers may pick up the tool. Now ask which food item on the table would be eaten by a bird with that kind of tool for a bill? The child who answers may pick up that food.* Experiment with the tool and the food. Examples: the needle-nosed plier-like bill of the woodpecker can pick insects out of the styrofoam log; the eyedropper and protruding brush simulate the hummingbird's bill and tongue which can dip deep into a flower.

The chart below will help you match the species to the tool and the food.

SPECIES	TOOL	FOOD
Gila woodpecker	needle-nosed pliers	beads in styrofoam (insects in wood)
cactus wren	tweezers	rice in log (insects in wood)
curve-billed thrasher	smaller hair clips	insects under rocks
cardinal	pliers	peanuts to be cracked
hummingbird	eyedropper with brush	flowers
roadrunner	large hair clips	lizards, snakes, scorpions, centipedes
hawk	vice grip	mouse
duck	tea strainer	styrofoam bits in water

As students match the bird to the tool to the food allows them to discuss their choices and their observations.

Bird Eyes:

SPECIES	EYE PLACEMENT	FOOD
owl	forward facing	rodents
roadrunner	forward and downward facing	snakes, lizards, insects
cardinal	on the sides of the head	seeds and berries
hummingbird	on the sides of the head	flower nectar

Hold up a picture. Examine the eye placement. **How would forward facing eyes help a bird that hunts for moving prey? How would side placed eyes help a bird that eats plant material?**

Possible answers:

- *Forward facing eyes in birds and other animals helps them locate prey that is running away. This also gives animals 3-dimensional vision or depth perception which helps them in judging distance as they pounce upon moving prey.*
- *Eyes placed on the side of the head allow a bird to watch for predators as they eat. They have some 3-dimensional vision directly ahead, but as they feed on plant material those side-facing eyes can be on the lookout for possible danger.*

Review bills and eyes by examining two bird skulls

One at a time hold up the bird skulls. With each skull ask the group:

- Look at the bill. What does the shape and size tell you about the kind of food this bird would eat?
- Look at the eyes. Which direction do they face? How would eye placement help the bird look for food?

The **cormorant** dives into the ocean and catches fish.

The **owl** catches and rips apart small animals such as rodents.

Bird Feet:

SPECIES	DESCRIPTION	FOOD
hawk	strong talons–good for catching and holding active prey	mice, squirrels, snakes
duck	webbed–good for paddling, especially for ducks that upend and paddle in place while they eat from the pond bottom	water plants, seeds, insects, tadpoles, fish, worms
coot	lobes along length of toes–good for swimming and diving; they flare out on the backstroke, propelling the bird forward, then fold back on the forward stroke	plant material, algae, insects, tadpoles, fish, worms, snails, crayfish, eggs
woodpecker	two toes forward and two toes backward–give solid grip on vertical tree trunks (short, stiff tail feathers prop against the tree which brace the bird as it pecks)	insects

Bird Wings:

SPECIES	DESCRIPTION	FOOD
swallow	long, pointed–good for speed and maneuvering	flying insects
red-tailed hawk	broad wings–good for soaring on lifts of rising air	rodents, rabbits, reptiles, insects, birds
quail	stubby wings–good for quick takeoffs and dodging trees	seeds, leaves, berries
hummingbird	wings can beat very fast and at different angles–good for hovering in one spot as they feed on nectar	flower nectar, insects, spiders

Summary of Birds:

Use *The Bird Alphabet Book* to show pictures of a variety of birds. Ask the students to figure out what the bird eats by looking at bills, eyes, wings, and feet.

Reading a Story:

If time remains before the end of the activity time allotment, choose a book in the kit to read to the group.

Clean Up:

AFTER EACH GROUP: Collect all materials and return them to the appropriate boxes. Use the list in the kit to check that everything has been returned. Upon completion of all sessions arrange all materials in the activity kit.

Return the box to the table in *Biznaga* building.

