

# Birding Demo

## Class Overview

1. Introduction
  - a. Ask students to go around the circle and give their name and a bird that like.
  - b. Have the students think about what makes a bird unique? What adaptations do they have?
2. Progression of Activities
  - a. Describe a Bird
  - b. Bird Beak Adaptation
  - c. Bird Parts/Observation
  - d. Jays and Juncos
3. Learning Standards Addressed
  - a. 4.A.2b, 4.A.2c, 4.A.3a, 4.A.3d, 4.B.2b
  - b. 12.B.2a, 12.B.3a, 12.B.2b, 12.B.3b
  - c. 19.C.2a, 19.C.3a, 19.C.3b
4. Vocabulary
  - a. Adaptation: An alteration in the structure or function of an organism to help them survive and multiply in their environment.
  - b. Hollow Bones: An adaptation that birds have to help them fly.
  - c. Plumage: The covering of feathers on a bird.
  - d. Crown: The top of the birds head.
  - e. Rump: The hind part of the body of an animal.
  - f. Nape: The back of the neck.
5. Wrap Up
  - a. What bird did you enjoy watching the best?
  - b. What is one adaptation birds have?
  - c. Which beak do you think would be most helpful?
  - d. Have the students review what they have learned.
  - e. What makes a bird a bird?
  - f. Why do birds have different beaks?
  - g. How do birds communicate?

# Describe a Bird

**Objective:** Students will brainstorm different characteristics /adaptations that make birds unique.

**Method:** Describing characteristics and drawing on chalkboard.

**Location:** Anywhere

**Time:** 10 minutes

**Materials:** Chalkboard/white board, chalk or dry-erase marker

**Vocabulary:** Adaptation, hollow bones, plumage

**Background info:** Birds are very unique animals and have many qualities/adaptations that make them unique. In this activity, students will try to produce a list of these special characteristics and turn them into a drawing of a bird. Bird is the common name for any member of the class of species of vertebrates containing animals with feathers. All adult birds have feathers. Some species (pelicans, kingfishers and jays) are completely naked when hatched. Some do not use their feathers for flight (penguins and ostriches).

Birds inhabit every continent and almost every island in the world and are adapted to virtually every ecological environment. Various species live in deserts, Antarctica, jungles, woods, fields, and cities. Even though birds are highly mobile they each occupy a specific niche. A bird's niche may consist of several square miles, an entire continent, or a single tiny island.

## Procedure:

1. Have students stand or sit near the chalkboard/white board so everyone can see.
2. Draw a round circle and head on the board that will represent the bird's body.
3. Have students raise their hands to tell you what characteristic or adaptation they would like to draw onto the bird. Pause in between each characteristic and talk about each item. See Adaptations below for information about each part.
4. Continue until the group feels their bird is complete.

**Adaptations:** Although birds share a similar body plan, they vary greatly in size and proportion. These modifications all have to do with survival, finding and capturing food, escaping enemies, and protecting eggs and young.

Beaks – adapted to what a bird eats and how the food is acquired

- long, straight and narrow (capture fish from water – Heron, Egret)
- sieve-like (scoop fish and drain water – Pelican)
- strong, vice-shaped (crunching seeds – Cardinal, Parrot)
- straw-like (suck nectar out of flowers – hummingbird)
- small, thin and pointy (get insects out of trees – Woodpecker)
- pointed and hooked end (rip and tear meat – Hawk, Owl)

Feet – adapted to the environment, what a birds eats, and how it evades predators

- webbed (swimming – Ducks, Geese)
- long and thin (wading – Heron, Egret)
- talons (grasping and holding meat – Hawks, Owls)

- 2 toes in back, 2 toes in front (walking up and down trees – Woodpeckers)
- 3 toes in front, 1 toe in back (perching – Robin)
- 2-3 toes facing forward (running – Seagulls, Killdeer)

Plumage - The feathers of a bird are collectively called plumage. A bird's plumage can protect a bird from the cold by trapping air and acting as insulation. Water birds have feathers with the ability to shed water. Down feathers are short and fluffy, lie next to the body, and have excellent insulating properties. Most adult birds molt (lose and replace all of their feathers) at least once per year. Molting of larger flight feathers may take up to two years. At the molt, new feathers grow within follicles in the skin, pushing out old feathers. In most migratory species, new plumage is grown after breeding and before fall migration. Plumage plays several roles:

- bright – ornamental, attracting a mate, warning
- camouflage – evade predators, stalk prey
- females – often duller colored than males – sit on nest unnoticed

### Senses

- Sight – most birds have large eyes, especially birds that are active in the dim light of dawn and dusk. Birds, like humans, are able to perceive colors. With few exceptions, bird's eyes are located on the sides of their heads so they can see a larger portion of their surroundings without turning their heads.
- Hearing – birds rely on hearing for many uses. They can recognize mates and young, find food, and listen for danger. Owls rely more on hearing since they hunt in low light.
- Smell – smell is poorly developed in most birds. A few birds that feed on the dead (vultures) rely on smell to find prey.
- Taste – little is known about the sense of taste. Some experiments have revealed that birds do have taste preferences. Birds have only a few taste buds.
- Touch – little has been studied in this area.
- Balance – birds have a superb sense of balance and are sensitive to small vibrations. This is vital in maintaining equilibrium on shaky perches and in correcting for wind and air currents during flight.

### Wings & Flight Ability

- Most living birds can fly. The bodies of birds are highly modified for efficiency in flight and are light and energy efficient.
- Different skeleton from other animals (keel is point of attachment for strong muscles)
- Hollow bones (lightness)
- some unused organs dropped
- more efficient metabolism (less fat needed to keep warm)
- feathers (help produce lift)
- better sight – poor sense of smell
- powerful breast muscles (for quick flight)
- lay eggs (do not have to carry eggs around during gestation)
- hard beaks (toothless bill lightens weight of skull)

### **Wrap Up:**

1. What are some adaptations birds have?
2. How do you think our bird compares to birds we will observe today?

# Bird Beak Adaptation Game

\*\*Updated 2016

Summary of change: Stations are scattered around the room. Each station has 3 tools at it. The students are to determine which tool works best at the station. Multiple tools may work, but one will work the best.

**The students do not take the tools with them when done.** The tools stay at the station and the next group tries to figure out which one of the three tools is best.

**Objective:** Students will discover that bird beaks are adapted for specific types of food and describe how adaptations work.

**Location:** Anywhere

**Time:** 30-40 minutes

**Materials:** eyedroppers, slotted spoons, tweezers, pliers, long-handled tongs, buckets, water, yogurt containers, log with holes drilled, marbles, seeds, nails/screws, sunflower seeds, beans, and station cards

## Cards for each station:

### Station #1 Log with Holes

Use your tool to remove seeds from the holes in the log and place them in the cup. Please put the seeds back in the log before moving to the next station.

### Station #2 Bucket with Submerged Marbles

Without getting your hands wet, use your tool to remove the submerged marbles from the water and place them in the cup.

Please return the items to the water before moving to the next station.

### Station #3 Cup of Water

Use your tool to move water from one cup to the other. Do not pick up or touch the cups with your tool.

Please return all of the water to the original container before moving to the next station.

### Station #4 Sunflower Seeds

Use your tool to crack the shell of the seed and remove the edible part and move it to the cup. Please pick up any seeds on the floor and place them in a cup.

### Station #5 Submerged Screws and Nails

Without getting your hands wet, use your tool to remove the submerged screws and nails from the water and place them in the cup.

Please return the items to the water before moving to the next station.

### Station #6 Pompons

Throw a handful of pompons into the air and use your tool to try to catch them. Place any you catch into the cup. Make sure that they aren't clumped when you toss them.

Please return pompons to their container before you move to the next station.

### Station #7 Clay

Use your tool to cut the clay into smaller pieces.

Mold the clay back to one big piece before moving to the next station.

**Background Info:** One adaptation birds have is their different beaks. Birds have unique beaks based on the type of food they eat as well as the habitat they live in. Birds that live closer to the forest and feed on seeds (like a cardinal) are going to have a much thicker beak than a bird who needs to feed on insects in a tree (woodpecker).

### Procedure:

1. Set up stations, each having 3 tools, before students arrive.
2. Students are divided into up to 7 groups and each group starts at a different station.
3. Each group uses the tools at their station to try to obtain food. They have to determine which tool works the best.
4. When done, the group moves on to another station. They **do not** take the tools with them. This rotation continues until each group has had the chance to try all 7 stations.

### Wrap Up:

1. Decide as a group which tool was best suited for each station. Why? (Consider using the birding poster to match the tool with the bird.)
  - A. Consider what type of beak each tool represents.
  - B. What type of food is represented at each station?

Station	Tool	Food	Bird	Habitat
#1 Log with Holes with Beans	Tweezers	Insects	Woodpeckers	Forest
#2 Bucket with Submerged Marbles	Slotted spoon	Fish/crustaceans	Ducks	Wetland/Near Water
#3 Cup of Water	Eyedropper	Flower nectar	Hummingbirds	Garden
#4 Sunflower Seeds	Pliers	Seeds	Seed eaters (cardinal)	Forest/Backyard Birdfeeders
#5 Submerged Screws and Nails	Tongs	Fish	Wading birds (heron)	Wetland/Near Water
#6 Pompons	Net	Insects	Flying, insect eaters (swallow)	Meadow/Field
#7 Clay	Scissors	Meat	Carnivores (hawk)	Forest/Roadside

2. Discuss the type of habitat each beak might most likely frequent.
3. Discuss other physical and behavioral characteristics of birds and how these might help promote success within niches in their habitats.

### Adapted from:

Council for Environmental Education. Flying Wild: Curriculum and Activity Guide, 2006.

## Bird Parts/Observation

**Objective:** Students will learn the different parts of the bird and observe them in their natural habitat.

**Location:** Poley bird porch

**Time:** 15-45 minutes

**Materials:** Bird parts picture, paper birds hung around room, binoculars, id guides

**Vocabulary:** Crown, rump, nape

**Background Info:** To properly identify a bird, it is important to distinguish between the different parts of the bird. Many birds are similar in their size, shape, and color. When identifying birds, make sure to pay attention to details such as the color of the crown or what the shape of the bird's beak looks like.

**Procedure:**

1. On the chalkboard, write these words: Crown, rump, nape, belly, wing, tail, head, throat, beak, and breast (if you are brave)
2. Pass out the id guides and teach the students how they will be able to locate birds in the book based on their colors.
3. Have look through the guide book to try to find a bird with the name of one of the words written down. Ask the students if they can identify what part of the bird that word is referring to. For example, if they find a bird named red winged blackbird they can identify that the wing is red and therefore know where the wing is. Ruby throated hummingbird, yellow rumped warbler, red naped sapsucker...
4. To review bird parts, cover the names of the parts on the bird picture. Have the students name the parts and pull off the name covers as each part is correctly identified.
5. Pass out the binoculars and teach the students how to adjust them properly.
6. Have the students practice using the binoculars. You can even place a few pictures of birds around the room and have the students practice using their binoculars to locate and focus in on the picture.
7. Discuss the importance of being quiet in the birding porch and have them quietly walk out there for observation.

**Wrap Up:**

1. How many different birds did you see today?
2. Where you able to find differences in their beaks? Color?
3. What were some other bird behaviors you noticed?
4. If there were not many birds at the feeders, why do you think that happened?

# Jays and Juncos

**Objective:** Students will act out birds foraging for food and discuss food chain relationships.

**Location:** Outside

**Time:** 15-30 minutes

**Materials:** Yogurt cups, beans (large), pictures of a Blue Jay and a Dark-Eyed Junco

**Background Info:** Jays and Juncos are very different birds. A Junco is a very small bird that usually builds its nest on the ground, while a Jay is a very large bird that occasionally will try to steal food or eggs from a nest.

**Procedure:**

1. In this activity one or two students will be Jays and everyone else will be Juncos.
2. Each Junco will get a yogurt cup that will represent their nest. While the Jay has his/her eyes closed, the Juncos must find a place within the boundary to hide their nests. The nests need to be on the ground, but the students are able to camouflage the nest if they want to. The Jay (or Jays) also get a yogurt cup to store food, although they will carry it with them.
3. Once the nests are hidden, the Juncos need to come and start collecting food (beans) from the teacher. They can only get one bean at a time and must take it back to their nest before receiving anymore.
4. After about 15 seconds of the Juncos getting food, the Jay (or Jays) will be able to open their eyes and start looking for nests. If a Jay finds a nest, he/she can empty the whole nest into their yogurt cup, then put the nest back carefully.
5. Juncos are not allowed to guard their nest or bully the Jays (they are too small) but can try to distract them in other ways.
6. The Juncos cannot move their nest during a round, even if it is found by a Jay. Instead, they want to keep on putting food in the nest in hopes they will have food at the end. Jays are allowed to visit the same nest more than once.
7. During one point in the game, the teacher will yell out "night time." When this is called, the Jay (or Jays) must stop and close their eyes while the Juncos can continue to collect beans. This will continue until "day time" is called out.
8. The game will end when the students get tired, usually 5-7 minutes per round.
9. Have the students collect their nest and count the number of beans they have. Let them know that, the more beans they have, the more offspring they will be able to produce. Tell the students that for every two beans, the Juncos can support one offspring, and for every three beans, the Jays can support one offspring. Why do the jays need more food for their babies?

**Possible Variation:**

Have the students play again. This time add a bunch of beans that are a different color (kidney beans or marker-colored beans). During the discussion, tell the students that these beans represent bugs that have been exposed to pesticides from a nearby farm field. Each colored bean causes an offspring to die. Discuss how this can affect bird populations.

**Wrap Up:**

1. What were some strategies used by the Juncos? Jay (or Jays)?
2. How did the Juncos "protect" their nests?
3. What do you think birds do if their nests are robbed?