

# Indiana for the Birds!

## Hoosier Educators Teaching Packet



Our Hoosier children are naturally curious about birds, wildlife, and all our amazing natural resources found in this great state. Nature is an incredible learning tool and free resource that children encounter every day, and we have the power to keep them connected to it.

This educational kit explores the fascinating lives of birds and features hands-on activities that highlight their behavior and survival, the habitats they reside in, and ways to observe them up-close through interactive outdoor experiences.

*Questions explored in the **Indiana for the Birds!** curriculum include:*

1. What do you know about birds?
2. What are feathers? How do they help birds?
3. How are beaks useful to birds? Why are they different?
4. What sounds do birds make? Are they all the same?
5. What are nests? How are they made? How do they help birds?
6. How do birds survive?
7. What is migration? Why do birds migrate? Do all birds migrate?
8. What are the common bird species we see in our backyard?



*Program sponsorship provided by:*



# Indiana for the Birds!

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## Indiana Audubon Society Our Mission

Indiana Audubon strives to protect and preserve the amazing bird life in Indiana. Indiana Audubon Society's mission is to stimulate interest in birds and their protection; to serve the needs of youth, civic, church, schools and other groups by providing information concerning birds; and to educate the public concerning the necessity for conserving and preserving Indiana's natural heritage, its unique flora, and fauna.



### Mary Gray Bird Sanctuary

Our network park and sanctuary partners provide nature based educational programs throughout Indiana. Mary Gray Bird Sanctuary, located in Connersville, provides educational programming throughout the year and hosts school groups for a variety of engaging and up-close programs related to birds and other natural resource topics. We are fully committed to creating a positive and supportive learning environment that is all-inclusive for everyone interested in birds, and their connection to the natural world.

### IAS Share & Connect

The *IAS Share & Connect* program provides optics and field guides to both youth and at-risk individuals that express an interest in birds. The program receives and donates birding supplies to those youth or adult mentors that apply on the Indiana Audubon website.



### Indiana Young Birder's Club

Engaging our youth is an integral part of meeting Indiana Audubon's mission and strategic plan. Through its Indiana Young Birder's Club, activities and events are tailored for youth, with youth often leading and planning these events. In addition to adult mentors, the IYBC maintains a youth advisory board that plans the year's events, including its signature Young Birder's Conference each August. Visit them online at [indianaaudubon.org/indiana-young-birder](http://indianaaudubon.org/indiana-young-birder).



Whatever direction you decide to take, we hope you find this educational packet useful as you share the wonder of birds to a new generation of naturalists. Do not hesitate to contact Indiana Audubon for additional guidance, ideas, and direction as you explore *Indiana for the Birds!*



[indianaaudubon.org](http://indianaaudubon.org)





## Why Teach Birds?

**Kids are naturally curious and love to learn. Birds hold a special fascination -- they can FLY!**

**Curiosity often is sparked by the simplest questions.**

“How do birds fly?”

“What is the smallest bird?”

“Why are Robin's eggs blue?”

**Encourage kids to stop, look, and listen.**

Birds sing, protect their territory, attract mates, and hunt for food. This behavior is fascinating to watch and is happening every day, right in our own backyard. Make sure the children in your life notice these things.

**Birds inspire us in so many ways.**

In their songs, their ability to fly, their unique courtship rituals, their many remarkable adaptations, and their seemingly-infinite variety of shapes, sizes, and colors.

By observing and learning about birds outside the classroom and in the local community, students can gain a greater understanding about the lives of birds everywhere, the animal kingdom, and beyond.

Birds are commonly found in all settings, in every community. The birds you can observe from inside your preschool classroom, in the school yard, and in the community, will vary with the weather and the seasons. What will be consistent is the excitement, interest, and enthusiasm the students will reveal when they are encouraged to learn about and observe the birds that can be found in your community. When a young child learns about birds, he/she is discovering the entire world of animals and nature. And when young children gain experience observing birds, they will also naturally extend that curiosity to the other natural world around them.

**Extending that bird experience beyond the classroom? Try these:**

Build a bird feeder and see who comes to eat.

Build a bird house and see what comes to nest

Find ten different birds in your area

Make an owl out of a pine cone

Look for bird's nests in your yard

Do a report about your favorite bird

Find twenty bird photos on the Internet

Try to find out how many birds there are

Figure out what a bird eats by looking at the shape of its bill





## **Our Hoosier Feathered Friends!**

### **Basic Concepts and Fun Facts**



#### **What makes a bird a bird?**

##### **Is it the pretty colors?**

No – other animals, like fish and insects, come in all sorts of beautiful colors too.

##### **Is it the bill or beak?**

No – other animals, like turtles have beaks.

##### **Is it the eggs?**

No – other animals, like fish, amphibians, reptiles, insects and even some mammals hatch from eggs

##### **Is it the wings?**

No – other animals, like insects and some mammals, have wings.



##### **What is it?**

Feathers! All birds have feathers and birds are the only animals that do!

#### **Characteristics of a Bird:**

- has a backbone
- is warm-blooded
- has two feet
- has feathers
- has two wings
- has a beak or bill without any teeth
- lays an egg with a hard shell
- has a high metabolic rate

#### **How do birds fly?**

- Most birds that fly have hollow bones that are very light and strong.
- Flight feathers are perfectly aerodynamic – lightweight, strong, smooth, flexible.
- Strong breast muscles give them power to flap their wings and push themselves through the air.
- Their wings are airfoils (like an airplane wing) that produce lift when they flap them.
- Their respiratory and circulatory systems are very efficient, so they have plenty of oxygen and energy for their flight muscles.
- They have a higher body temperature than mammals, which allows their muscles to work faster and recover more quickly.

**While all birds share a broad set of traits, they have many unique physical and behavioral adaptations that allow them to live in a variety of environments.**



### **Bird Feet**

Some birds can walk, some birds can hop, and some can do both, but all birds have feet. Almost all birds have 4 toes arranged with 3 in front and 1 in back. However, bird feet are highly adapted to where they live and what they eat.

- Raptors (birds of prey) have very sharp, hook like claws that are used to catch prey. (Red-tailed Hawk)
- Birds that perch in trees have long toes and curved claws to help them balance on a branch or other perch. (Black-capped Chickadee)
- Birds that wade through water have very long toes that spread out to keep them from sinking in the mud. (Great Blue Heron)
- Birds that climb trees have 2 toes in the front and 2 in the back. (Downy Woodpecker)
- Birds that swim have webbed toes. (Mallard Duck)
- Birds that walk on the ground and scratch for food have short blunt claws. (Wild Turkey)

### **Bird Beaks**

All birds have a beak or bill but they don't have any teeth. The shape of a bird's beak is suited to the type of food it eats.

- A multipurpose bird bill is relatively short with a blunt point. It's good for small seeds, berries, and insects. (Black-capped Chickadee)
- Raptors have strong hooked beaks for tearing flesh. (Red-tailed Hawk)
- Seed-eating birds have short, thick, cone-shaped beaks for cracking nuts and seeds. (Northern Cardinal)
- Birds that stalk and strike at their prey have long, straight, broad beaks for stabbing and grabbing. (Great Blue Heron)
- Hummingbirds have long tubular beaks to reach into the bottom of a flower and drink nectar. (Ruby-throated Hummingbird)
- Insect-eating birds have slender tweezer like beaks that let them pick small insects from leaves or flowers. (Yellow Warbler)
- Birds that catch insects out of the air also have small beaks, but they have large mouths. (Tree Swallow)
- Birds that live in water and eat algae and aquatic insects have flat, broad, rounded beaks that they use to strain food from the water. (Mallard Duck)



### **Feathers**

Feathers are a complex body covering unique to birds and can be very different depending on their function.

- Down feathers for insulation have no central shaft and are soft and fluffy. These are the first layer of feathers on a bird's body.



- Contour feathers cover the bird's body and tops of the wings.

They do have a central shaft, but the vanes on either side of the shaft are still soft and able to conform to the curves of the body or wing.

- Flight and tail feathers have a strong central shaft and the vanes are very firm. They are stiff enough to hold their shape as the bird moves through the air.
- Most birds molt, meaning they grow a new set of feathers every year. Feathers molt symmetrically so you might notice a flying bird with a missing feather on both wings.
- Feather patterns and colors create camouflage or special coloration. Some birds grow a new set of feathers every spring for a breeding plumage that attracts mates.
- Although very light, a bird's feathers usually weigh 2 to 3 times as much as its skeleton.

### **Bird Wings and Flight**

- Where and how a bird flies is reflected in the shape and size of its wings.
- The most common wing shape is relatively short and rounded. This type of wing allows the bird to take off quickly, but is not very fast or good for gliding (found on most songbirds and ground-dwelling birds).
- Raptors that soar have broad, long wings that allow them to ride on rising air currents (found on eagles, vultures, hawks).
- Birds that fly very fast or migrate long distances have long, slender, pointed wings (found on shorebirds, falcons, swallows, hummingbirds).
- Birds that spend their lives soaring low over the ocean have extremely long, narrow wings (found on albatrosses, shearwaters, jaegers).



### **Bird Vision**

Birds have the best vision among all vertebrate animals and it is their most important sense. They also have the largest eyes for their size. Most birds cannot move their eyes.

- Birds that hunt for prey have both eyes facing forward, which gives them the depth perception necessary to catch prey. Most birds of prey can also turn their heads far enough to look directly behind themselves.
- Birds have three eyelids. Birds use the transparent third eyelid to blink with and some species use it to protect their eyes while flying or diving underwater. Birds only use their outer eyelids when they close their eyes.
- There are two basic categories of sounds. Longer, more elaborate songs attract mates and declare territories while briefer calls are used to identify each other and convey information about food or predators.
- Some birds imitate or mimic the songs of other birds or human sounds such as alarms or whistles. (northern mockingbird)
- Woodpeckers have songs and calls, but they also communicate by rapping or drilling on trees or other surfaces. (downy woodpecker)





## Hoosier Bird Search Identification Fun

Challenge your students to find birds, or evidence of birds, in your local habitat. Whether you explore a playground, schoolyard, local park, or nature preserve, there are birds nearby.

Once outside, have students develop their observation skills by finding birds that fit categories you can create based on size, bill shape, behavior, or color.

**Have you ever seen this bird before?**

**Where did you see it?**

**Do you know its name?**

**Do you know what sound it makes?**

**What does it sound like?**

**How would you know it's a \_\_\_\_\_?**

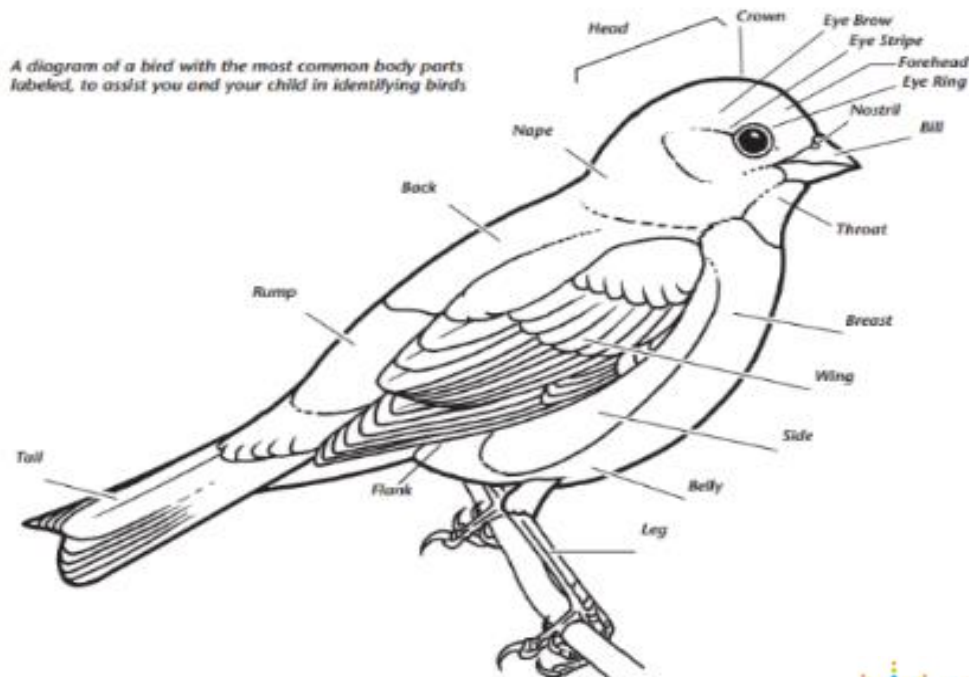


### Did You Know?

#### IF IT HAS FEATHERS, IT'S A BIRD!



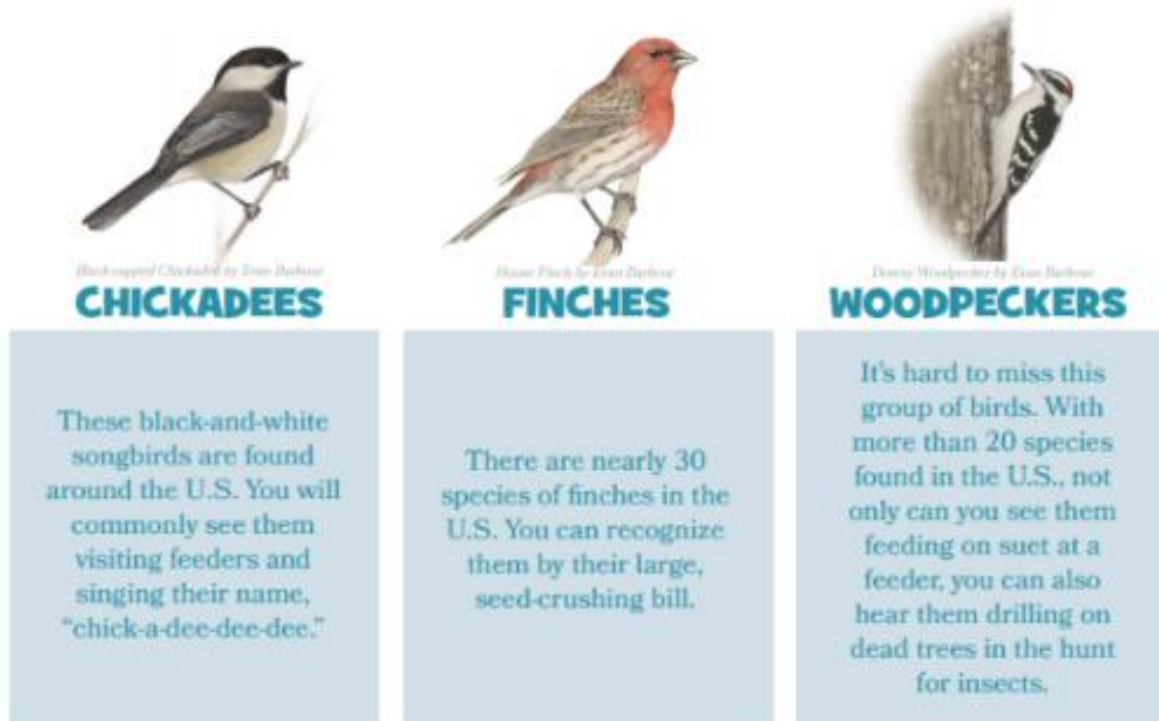
Birds are the only living creatures with feathers. Feathers are made of keratin, the same protein that makes up a bird's beak, lizard scales, mammal hair, human fingernails, animal hooves, and horns! Feathers help birds fly and keep them warm and dry. The color pattern of feathers, called "plumage," can help birds stay camouflaged or find mates.





## Identification Fun

### Explore Some Bird Groups



Make a list of descriptive words the students use for each group. Extend the lesson by showing videos, listening to sounds, and viewing more photos. Ask students to try to mimic the sounds of the birds; for example, the chickadee is "chick-a-dee-dee-dee."

- **After each bird group has been introduced, show the students all three together and ask**
- **How are these groups different from each other? (Remember to think about how they look and sound.)**
- **What things do these birds all have in common? (Birds have wings, feathers, hollow bones, and lay eggs. These birds also all visit feeders.)**

Through these activities, students will develop their own list of "What makes a bird... a bird?" Highlight the key points that all birds have two wings, two legs, hollow bones, beaks, and lay eggs. However, emphasize that feathers are what make a bird a bird.



## Engage: Seeking Out Birds

### More than meets the eye

Most students know more birds than they realize. By learning these eight basic silhouettes, even newcomers can begin to separate birds into the right group. This is one of the most effective ways to start learning how to identify bird species. Ask



- Which is the duck? The owl? Hummingbird? ...etc.
- How did you know? Make lists of characteristics for each group of birds.
- Which kinds of birds do you think we might see at a bird feeder? (hummingbird, dove, finch, and woodpecker)



Take students outside on a bird-watching adventure at the feeder for at least 10 minutes. If you can't go outside, the Cornell Lab's feeder cam is a great alternative ([http://cams.allaboutbirds.org/channel/40/Cornell\\_Lab\\_FeederWatch\\_Cam](http://cams.allaboutbirds.org/channel/40/Cornell_Lab_FeederWatch_Cam)). Look for the birds you discussed in class. If none are present, look and listen for other birds and animals. Focus on the similarities and differences between the birds you see. Do they look, sound, or behave differently? Now is a great time to get children in the habit of watching wildlife quietly! Visit the Indiana Audubon Backyard Birds page to help with identification.

Teach students to care for and use binoculars to observe birds. Encourage them to make detailed sketches and start a feeder bird sketch book. It is important to include field marks such as the curve of the bird's bill, its eye ring (if present), its crown, cheek, or ear patch. It may be helpful to have the students study bird illustrations in field guides or interview a bird artist. Does the artist keep a notebook of field sketches?

Alternate Activity: Behind the mask help your students to make feeder bird masks from papier mache or other materials. He or she can use these masks to act out stories about observed bird behaviors.

See the next page for the most common feeder birds reported during feeder watches.

## Indiana's Top 25 Feeder Birds to Look For!

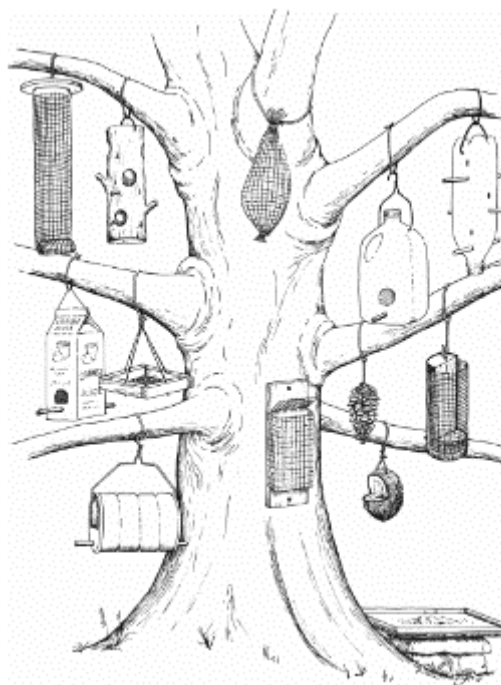
A total of 151 Feeder Watchers reported data from this region.



Rank	Common Name	Scientific Name	Percentage of Sites Visited	Average Group Size (when seen)
1	Dark-eyed Junco	<i>Junco hyemalis</i>	98.01	4.59
2	Northern Cardinal	<i>Cardinalis cardinalis</i>	97.35	3.37
3	Carolina/Black-capped Chickadee	<i>Poecile carolinensis/atricapillus</i>	97.35	1.99
4	House Finch	<i>Haemorhous mexicanus</i>	95.36	4.57
5	Downy Woodpecker	<i>Picoides pubescens</i>	95.36	1.68
6	Mourning Dove	<i>Zenaida macroura</i>	94.04	3.21
7	American Goldfinch	<i>Spinus tristis</i>	93.38	4.20
8	White-breasted Nuthatch	<i>Sitta carolinensis</i>	92.05	1.51
9	Blue Jay	<i>Cyanocitta cristata</i>	89.40	2.46
10	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	88.74	1.25
11	Tufted Titmouse	<i>Baeolophus bicolor</i>	84.11	1.95
12	House Sparrow	<i>Passer domesticus</i>	83.44	7.68
13	European Starling	<i>Sturnus vulgaris</i>	76.16	4.09
14	American Robin	<i>Turdus migratorius</i>	71.52	1.96
15	Carolina Wren	<i>Thryothorus ludovicianus</i>	62.25	1.22
16	Hairy Woodpecker	<i>Picoides villosus</i>	58.28	1.35
17	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	56.29	2.40
18	Common Grackle	<i>Quiscalus quiscula</i>	53.64	3.92
19	Song Sparrow	<i>Melospiza melodia</i>	52.98	1.37
20	Cooper's Hawk	<i>Accipiter cooperii</i>	49.67	1.03
21	Brown-headed Cowbird	<i>Molothrus ater</i>	47.68	2.36
22	Northern Flicker	<i>Colaptes auratus</i>	45.03	1.53
23	American Crow	<i>Corvus brachyrhynchos</i>	43.05	2.23
24	American Tree Sparrow	<i>Spizelloides arborea</i>	41.06	2.70
25	Eastern Bluebird	<i>Sialia sialis</i>	38.41	2.29

Here are some questions to consider as you and your students plan their bird feeders:

- What kinds of birds do you want to attract? For example, is your feeder for seed-eating birds or for insect-eaters who are attracted to fatty foods such as suet?
- What feeder type will you choose—or will your feeder be an original design?
- Will the birds need a perch?
- How will water drain out of your feeder when it rains?
- How will you protect your feeder from squirrels?
- How will you put seed or suet in your feeder?
- What materials will you need to make your feeder?
- How will you hang or mount the feeder?



## Guide to Bird Feeders

### Platform Flat Feeder:

raised surface for ground-feeding birds: doves, jays, juncos, sparrows

### House (Hopper) Feeder:

Roof and clear sides for large and small birds: doves, jays, titmice, chickadees



### Tube Feeder:

Tube shaped with many small port holes. Can be hard to clean. Best for songbirds: chickadees, titmice, and finches.

### Suet Cage:

Small metal cage or mesh bag filled with suet (animal fat) for insect-eating birds: woodpeckers, chickadees, and nuthatches.

### Dome Feeder:

Seed-filled bowl with clear dome above for small songbirds: chickadees, titmice, finches.



### Thistle (Nyjer) Tube Feeder:

Tube feeder with smaller holes, primarily for finches. Filled with Nyjer seeds. Can be relatively expensive.

### Hummingbird Feeder:

Tube or inverted bottle that holds sugar water Hummingbirds 1 part sugar dissolved in 4 parts hot water. Clean and replace nectar every three days



## Amazing Migration

### Taking flight across the country



Once they get up in the air, birds such as Turkey Vultures and eagles use their wings to soar. This helps them save energy in flight. This activity demonstrates how birds save energy while flying, and the many challenges of migration. Have students stand in place and practice flapping their “wings”(arms) for 30 seconds. When time is up, talk about how that felt. (Probably tiring!) Ask, if you had to flap your wings all the way home, could you do it? (Probably not!) Next, have students hold their “wings” out for 30 seconds, rocking gently side to side like a soaring eagle. How did it feel this time? Was soaring easier or harder than flapping?

Ask students if they’d prefer to fly to school by flapping their wings or soaring. Ask students if they know where some birds go in the winter. Explain that some migrate from their breeding grounds in the North to their wintering grounds in the South during autumn. They reverse the trip in spring, returning North. This seasonal movement is migration. In this game there will be both hazards and triumphs.

Tell your students that everyone in the class is a bird migrating to their winter locations. Have everyone start at the “North” end of a large room or outdoor space and progress “South” for migration (not all will succeed). To run the activity, choose a characteristic of the students (i.e. wearing sneakers; blue shirt; brown shorts) and randomly choose an event (suggestions on the next page) that makes them step forward, step back, or sit down. For example, anyone wearing a watch flew into a building, is dazed, and takes a step back. Once a student sits down, he or she fails to safely migrate. End the game when about half the kids are still standing and emphasize how challenging migration is for real birds.

#### STEP FORWARD

- ☐ Favorable winds
- ☐ Plenty of insects
- ☐ Plenty of water
- ☐ Good weather
- ☐ Strong tailwind
- ☐ Bird feeders

#### STEP BACK

- ☐ Left late
- ☐ Strong headwind
- ☐ Poor stopover habitat
- ☐ Stormy weather
- ☐ Got sick on the way
- ☐ Inexperienced migrator

#### SIT DOWN

- ☐ Killed in blizzard
- ☐ Ran into cell phone tower
- ☐ Eaten by a cat

At the end of the game, ask students what they thought of the migration trip with these follow-up questions:

- What were some of the negative things that happened? (Poor stopover habitat, strong headwinds, bad weather.)
- Some of the positive things? (Good weather, plenty of food.)
- How could humans help? (Create better bird habitat to provide plenty of food, water, and cover.)
- Can you name any birds that do not migrate (resident birds)?
  1. Northern Cardinal—eastern North America
  2. Black-capped Chickadee—northern North America
  3. House Sparrow—all of North America
  4. Downy Woodpecker—all of North America above Mexico
  5. Tufted Titmouse—eastern half of the United States
  6. Steller’s Jay—western North America
- Can you think of an animal that migrates but is not a bird? (Monarch butterfly, caribou, whales, earthworms)
- Do all birds migrate? (No. Some birds, like feeder birds, can stay.)

## Map Your Migration

Have the students think of a common route their family takes. Maybe this is their walk or drive to school, to a nearby park, or to a friend’s house. If they were a bird, what landmarks would they look for to help you navigate this route? Is there a specific store, statue, or tree that they recognize? What if you had to look for those landmarks from a bird’s-eye view? Use a sheet of paper have them a map from a bird’s-eye view, “migrating” from their home to a place they commonly visit. Feel free to use helpful tools, such as Google Maps.



## Paper Airplane Challenge

Experiment with flight by making and testing different paper airplane designs. How will different materials, shapes, and sizes affect the plane’s flight? What happens if you cut the ends of the wings in a zigzag shape or throw the plane into or away from a headwind (fan)? Have students jot down some of your observations.

## Happy Birding!





## Resources for Educators

### Indiana Audubon

Explore field trip options for schools, Indiana's Young Birder's Club, Bird of the Month feature stories, and more. [indianaaudubon.org](http://indianaaudubon.org)

### BirdSleuth K–12

Explore free resources that support K–12 classrooms through content about evolution, student investigations, life cycles, and more. [birdsleuth.org/free-resources](http://birdsleuth.org/free-resources)

Discover upcoming conferences, workshops, and free online webinars for professional development. [birdsleuth.org/events](http://birdsleuth.org/events)

### Crossing Boundaries

Motivate students with free online videos about young conservation scientists and use web-based technology for biodiversity lessons. [crossingboundaries.org](http://crossingboundaries.org)

### Bird Academy

Broaden your understanding of birds—from birding basics to college-level ornithology—through interactive content, webinars, and courses. [academy.allaboutbirds.org](http://academy.allaboutbirds.org)

### All About Birds

Discover something new about your local birds through our popular Bird Guide. Watch streaming bird cams and access Lab resources with a single search. [allaboutbirds.org](http://allaboutbirds.org)

### Merlin

Answer five simple questions about a bird you are trying to identify, and Merlin will come up with a list of possible matches. [merlin.allaboutbirds.org](http://merlin.allaboutbirds.org)

### eBird

Keep track of your bird sightings while contributing to science and conservation. Explore dynamic maps and graphs of worldwide bird distribution. [ebird.org](http://ebird.org)

### Citizen Science

Compare different citizen-science projects from the Cornell Lab of Ornithology and decide which ones fit your classroom's needs. [birdsleuth.org/citizen-science-educators](http://birdsleuth.org/citizen-science-educators)

### Macaulay Library

Introduce students to the wonders of the natural world through our collection of audio and video recordings. [macaulaylibrary.org](http://macaulaylibrary.org)

