



# Bird Buddies

A 5-day science adventure for kids



Explore, read, play, invent, build and learn —  
all about birds and birding  
in your community



Brought to you by Reading Rockets, with support from the Park Foundation





# Bird Buddies

A book-based adventure about birds and birding

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# Welcome to Bird Buddies

The best way to get kids learning is to build on their curiosity and interests. The Bird Buddies program is kid-centered with an emphasis on inquiry and creativity.

We've designed the program to be user-friendly and adaptable. Use the materials each day for five days in a row, or once a week, for five weeks, (or any other way you like) to add hands-on learning to your summer programming.

Day 1: Bird beginnings

Day 2: Habitats, food, and foraging

Day 3: Bird brains

Day 4: The social life of birds

Day 5: Birds and humans

## Getting yourself ready

- **Each day has an emphasis on one or more topics related to birds.** You'll find an introduction to the concepts covered and recommended books for each day, as well as a list of questions to guide explorations and activities, and a list of **Bird Words** that kids might not be familiar with.
- **Start by gathering books from your library** using the booklists here in the toolkit.
- **Choose both fiction and nonfiction books** from the lists provided.
- **Read them through before you read them to the kids**, so you know what happens and can spot any unfamiliar words or concepts you'll need to explain. Also, look for **places to ask questions** while you're reading to engage listeners.



- Think about which other parts of the program you'd like to do after reading the books. An activity is always a good idea, and you may also want to include writing, exploring related websites, videos and apps, and heading outside, too.
- **Familiarize yourself with local birds and places nearby to go to find them.** You can check with your local Audubon chapter, a community nature center, or visit Cornell University's eBird website.

<https://www.audubon.org/about/audubon-near-you>

<https://ebird.org/explore>



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**For tips on reading aloud and sharing nonfiction books with kids, see pages 117-123 in the Appendix.**  
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## Learning with the kids

- **Introduce the theme** for the day and ask kids what they know about it. (See "Activating background knowledge" on the next page.)
- **Read one or more of the books aloud and ask questions.** Listen carefully to the kids' answers. By reading to them and asking questions, you'll get them thinking about the

topic, and what they want to learn. You'll also increase their understanding and excitement. Read another book and repeat.

- **Choose a hands-on activity** to let kids explore theme. By doing an activity, the kids get to use the concepts and new words they have learned.
- **Look for a local connection.** How can you connect the ideas in the books or the activities with the kids' personal experience? Think about bird walks, visiting a nature center or park, or watching birds visiting a feeder.
- **Keep asking questions** and listening carefully to the children's answers.
- **Encourage kids to write** about what they are learning or curious about by using one of the writing prompts in this toolkit, and by keeping a **Bird Journal** for observations, drawings, questions, and creative writing activities.
- **Provide access to books about the topic** for kids to look at on their own.
- **Share digital media with kids** (websites, apps, videos, and podcasts) that they can use to learn more about the topic and give kids time to try them out.
- **Take a field trip** to one of the recommended locations to further explore your topic for the day or theme for the week. Activities for each day will include a **Bird Walk** with special attention to different aspects about birds and their lives.

You can choose any of the activities in this toolkit, all of them, or just one or two, but we recommend that you **always Start With a Book.**



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## Review and teach new words

When you are pre-reading your books or looking at activities, websites, apps, or field trips, look out for words kids might not know. Take time to talk about those words and tell kids what they mean. You can provide images, video, and real objects to help them build an

understanding of unfamiliar words. You can even act words out! You can do this before you read, before you do an activity, or while you are reading or trying a hands-on activity.

If words or concepts are being repeated, ask kids if they remember what they mean and how they might be used the same way or differently in this new context.

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## Activating background knowledge

Ask kids what they know about birds as you begin this program.

- What characteristics do birds have in common?
- How are birds different from each other?
- How are birds similar and different from people?
- How are birds useful to people?
- What do you wonder about birds — e.g. how they can fly?



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## Connecting the days and concepts

Children will learn more readily and remember more if you review all five days of materials in advance and decide which books and activities you want to use. Connecting the ideas and activities day to day will help them create a big picture.

At the beginning of the day, ask them, “*What did we talk about yesterday?*” Then tie their answers to the focus for the day.

You may choose to use all the days or you may select specific days for your program. You may select different activities; however, the **daily Bird Walk** is critical in helping children connect ideas with their everyday environment.

Setting up an **Observation Station** — a spot where kids can find field guides and binoculars and enjoy observing bird behavior from a window — will provide opportunities to practice identification and reflect on their observations as well as help build compassion and interest in nature.

Ultimately, children will develop a deeper understanding if they connect the different ideas from each day.

## Planning the daily Bird Walk



You never know quite what you are going to find on a Bird Walk. Hopefully, you will see some birds! But the Bird Walk is just as much an opportunity to encourage exploration and a chance for kids to discover nature.

### **Bird watching is often about being patient and waiting for the birds to show themselves.**

While kids wait and watch for birds, there's much to observe. The highlight of the walk may not even be a bird, but an interesting rock formation, a flitting dragonfly, or a burst cattail.

To fire up kids' powers of observation before the walk, talk about where you'll be walking and what kinds of birds are often found there. Encourage kids to choose a bird or birds they really want to see. Let them take a look at the bird in a field guide and read up on its habits and habitat. As different species have specific patterns of when they like to be active during the day, if possible, you may want to align the time you take your Bird Walk with when birds of interest are out and about.

In taking a daily Bird Walk, you can plan to visit a wide variety of habitat types or visit the same spot each day. There are benefits to each approach. One will give kids the chance to see more varieties of bird species and learn more about their relationship with their associated habitats. The other lets kids get to know the "regulars" and their behaviors, helping them better be able to notice when something unusual comes along.

### What you'll need for daily Bird Walks:

- A place to walk and look for birds
- Field guide
- Bird Journal or notebook and pencil
- Binoculars (optional)
- Water, sunscreen, and first-aid items (optional)



## Finding locations for your Bird Walks

You don't need to go far. Some of the best birdwatching can be in your own backyard! Birds can be seen on city and suburban streets as well as in parks, yards, and nature preserves. If you can, walk in areas near water, where more easy-to-spot birds are usually found.



You may also check with your local bird clubs, Audubon chapters, Black birder groups, and other local nature organizations to find out where to go to find birds in your community. These groups frequently lead nature walks and can direct you to good spots and answer your questions.

Get more information here:

**Bird Club Finder**

<https://www.birdwatchersdigest.com/bwdsite/connect/birdclubs/clubfinder.php>

**Audubon Chapters Near You**

<https://www.audubon.org/about/audubon-near-you>

**Outdoor Afro: Where Black People and Nature Meet**

<https://outdoorafro.com/>

**Black Birders Week (usually the first week in June). Follow this group on Twitter:**

<https://twitter.com/hashtag/blackbirdersweek>

**eBird** can also help you discover the best places for birding action near you. Visit <https://ebird.org/explore>, then choose “Explore Regions” and type in the name of the county where you will be holding your bird walks. Scroll down to find “Top hotspots” on the right side of the page. When accessing a hotspot to visit, check out “Recent visits” on the page to get a good idea of what birds are currently being seen at that location. You can also use eBird to search for species and then see on a map where that species can be found locally.





# Binoculars

Binoculars really help when you're watching birds from a distance or want to get a closer view for identification.

However, binoculars are expensive and many families and youth programs cannot afford to buy a pair. Some local bird clubs, local Master Naturalist chapters, or Audubon chapters may be able to lend you binoculars or have grants available to help you purchase kid-friendly binoculars for student groups.

## Bird Club Finder

<https://www.birdwatchersdigest.com/bwdsite/connect/birdclubs/clubfinder.php>

## Directory of Local Naturalist Chapters (ANROSP)

<https://anrosp.wildapricot.org/directory>

## Audubon Chapters Near You

<https://www.audubon.org/about/audubon-near-you>

**If kids do have binoculars, be sure to demonstrate how to use them.** Most kids will likely not have experience with or know how to use binoculars properly — which end to look in, how to adjust them for their own eyes, how to use the focus knob in the center — and, most importantly, to always keep the bird in view as you bring the binoculars to your eyes.

**If you don't have binoculars for everyone, help kids focus on making the most of what they do have — their eyes and ears.** Moving quietly, frequently holding still, and looking for the movements of birds and other animals will increase their chance of seeing birds during a Bird Walk.

Plan to have kids stop, sit or stand, and listen for bird sounds periodically during the walk and see if they can find where the birdsong is coming from. Birds are often easier to hear than see.

Cardboard tube binoculars don't offer any magnification, but can help kids focus their attention. To make these "binoculars" lay two empty toilet paper tubes next to each other, then tape them together. Then use tape to secure a length of yarn or string to the sides. Other items from the recycling bin work too:



## How to Make Binoculars for Kids with Recycled Items

<https://www.parksconservancy.org/stories/how-make-binoculars-kids-recycled-items>

**You can also try this:** don't tape the tubes together, which provides flexibility for faces of all sizes. Separated tubes can also be used to help ears focus hearing.

## Before you walk

- **Set expectations.** Explain to kids that they may not always see a wide variety of birds but there will be more opportunities for Bird Walks and a chance to look for birds anytime they go outside.
- **Talk about what an observation is and how to make them.** Kids have sharp observation skills and natural abilities to use their senses. Model the behavior you expect to see as you encourage them to focus attention on their surroundings, slow down, and use their senses of hearing and sight and be curious about what they see and hear.
- **Provide directions on how to take notes or set up Bird Journals with an observation chart** that helps kids make notes about the birds they see. Notes can include the following: size (e.g., small, medium, large); color(s) of birds, noting the different colors and the location of the colors (e.g., blue head, red breast, etc.); any unusual feature (e.g., really long beak, very short tail); where the bird was seen (in a tree, flying over, in the water, etc.); and how many birds of this type they saw together.

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## Bird Walk etiquette

Kids get excited when they see something unusual. Spotting a bird or animal or observing its behavior is exciting and they will want others to share in their excitement. Sharing their sightings quietly will increase the chance that others get to see them too. Let kids know that loud noises are stressful to wildlife and make it hard for others to hear birds.

If your Bird Walks take you to a wildlife area, kids also need to know that it is important to stay on trails to avoid causing damage to the land, plants, and trees. Kids also need to leave rocks, plants, flowers, feathers, and other objects of interest as they find them and give others the chance to make the same exciting discoveries. Have kids make use of a journal or take a photograph to enjoy their finds. An adult can take the photographs if kids don't have access to a camera.

A Bird Walk is a slow-paced activity that may be very different from kids' other experiences outdoors. Set this expectation ahead of time and tell kids, "We are going to walk slowly and make many stops to listen, look, and observe." They may need to stay still for a while, alert for sound and motion, in order to see birds. But even if they are only casually taking note of their surroundings, the more they pay attention to birds, the more kids will notice them wherever they are.

## After the Bird Walk

When you return from your Bird Walk, be sure to make time for kids to review and reflect on what they saw. Encourage them to compare any notes they took and refer to field guides to review what they have seen. Have them add any new details they learn, questions they have, or drawings they want to make to their journals.

As part of your discussion, you can have kids select a “bird of the day” after each bird walk and give them space to create their own Bird Wall of Fame with images, drawings, and fun facts about the favorite birds they’ve seen.

You can also gather Bird Buddies together to create a group chart to list all the birds they saw and number of birds of each species. You may want to set up a group Bird Buddies identity on eBird and send your sightings to it. Just create a free Cornell Lab account, which works across Cornell Lab projects including eBird, Merlin Bird ID, Bird Academy, Project Feederwatch, and the Great Backyard Bird Count.

### Create a Cornell Lab Account

<https://secure.birds.cornell.edu/casso/account/create>

When you submit bird observations, talk with your Bird Buddies about how and why their contributions are valuable for scientists and conservationists around the world to learn more about the populations, distributions, and breeding activities of birds.

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## Observation Station

Fine tune kids’ attention to the natural world when you set up an indoor bird-watching station near a window for your Bird Buddies. Choose a window where kids will have the most opportunities to observe what’s happening outside. Have a basket with field guides and binoculars and comfy places to sit, watch, read, and write or draw in their Bird Journals. Add posters or images of birds common to your area to help Bird Buddies identify the birds they see.



Kids will see more birds outside the window if you attract them to the spot. Birds will flock to native plants and flowers in summer, but also to feeders. And hummingbirds always welcome nectar in feeders to help fuel their high metabolism.

### Safe bird feeding in the summer:

- Fill feeders halfway and refill frequently to keep seeds from getting moldy in hot, humid summer weather. Don't use suet in the summer as it can become rancid in the heat.
- Move feeders occasionally and don't allow bird droppings and seed waste to build up in one area.
- Clean feeders regularly with hot water and soap or diluted bleach.
- If you live in a location where bears are active, it's best to not have a bird feeder in the summer.

Birds need water too! You can purchase a bird bath or use shallow pans or dishes. Birds are happy with baths that are at ground level, but raised baths will attract birds too. Change the water every day to keep it fresh and clean.

Kids can help set up the Observation Station, feeders, and bird bath. Keep a duty roster at the station and assign Bird Buddies to keeping food and water fresh and plentiful for feathered friends outside the window. Make sure that kids get the opportunity to use the Observation Station and reflect on and talk about what they've seen.

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## Resources for your Observation Station

- *About Birds: A Guide for Children* by Cathryn Sill (Ages 6-9)
- *Birds, Nests & Eggs (Take Along Guides)* by Mel Boring (Ages 6-9)
- *National Geographic Kids' Bird Guide of North America* by Jonathan Alderfer (Ages 6-9)
- *Peterson Field Guide for Young Naturalists: Backyard Birds* by Karen Stray Nolting and Jonathan Latimer (Ages 9 -12)
- *Peterson Field Guide for Young Naturalists: Songbirds* by Karen Stray Nolting and Jonathan Latimer (Ages 9 -12)
- *The Sibley Guide to Birds* by David Allen Sibley (All ages)
- *Stokes: Beginner's Guide to Birds Eastern Region* by Donald and Lillian Stokes (Ages 9-12)
- *Stokes: Beginner's Guide to Birds Western Region* by Donald and Lillian Stokes (Ages 9-12)
- *The Young Birder's Guide to Birds of North America* by Bill Thompson III (Ages 9-12)

**Download Common Feeder Birds Poster (Feederwatch)**

<https://feederwatch.org/learn/identifying-birds/#download-feederwatch-posters>

**Dancing with Birds Posters** [in English and Spanish]

<http://birdday.org/birdday/free-materials?id=176>

**Why Do Birds Migrate poster (Audubon Adventures)**

[http://www.audubonadventures.org/docs/AA\\_Migration\\_poster\\_final.pdf](http://www.audubonadventures.org/docs/AA_Migration_poster_final.pdf)

**Window Bird Feeder (The Cornell Lab)**

<https://store.birds.cornell.edu/products/pennington-feeders-for-teachers>

**Make Your Own Bird Feeder (National Geographic Kids)**

<https://kids.nationalgeographic.com/nature/article/make-a-bird-feeder>

**Hummingbird Nectar Recipe (Smithsonian National Zoo)**

<https://nationalzoo.si.edu/migratory-birds/hummingbird-nectar-recipe>

**How to Make a Birdbath (Audubon)**

<https://www.audubon.org/news/how-make-birdbath>

**Resources on types of feeders, types of food, and recommendations for keeping things clean (The Cornell Lab)**

<https://www.allaboutbirds.org/news/browse/topic/feeding-birds/>



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## Bird Buddies toolkit authors

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Rachael has more than 30 years of experience developing partnerships with nonprofit organizations, corporations, and public agencies to benefit at-risk children and families. She launches national campaigns, coordinates special events, and develops original content for the National Education Association, Random House Children's Books, PBS, and WETA's Learning Media initiatives (Reading Rockets, Colorín Colorado, and AdLit.org). Visit Rachael at Belle of the Book: <https://www.belleofthebook.com/>

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**Tina Chovanec**: Director, Start with a Book and Reading Rockets

# Day 1

## Bird beginnings





## Introduction

This day focuses on where birds come from, what makes them unique, and why it's valuable to get outside and observe birds. Birds are one of two types of animals that evolved from dinosaurs and still exist today; the other is reptiles. Over 10,000 [species](#) (kinds) of birds exist in the world today, and about 750 species occur regularly in North America.



**Birding Basics:** For information about planning your daily Bird Walk, using binoculars, and setting up an indoor Observation Station, see pages 5-11.

## Questions to guide explorations and experiments

- How do birds differ from other animals? What makes birds unique?
- What do reptiles and birds have in common?
- Why are a bird's feathers so important?
- What can you learn from birds?



## Books and activities

- **Books:** all about birds, their ancestors, and their characteristics
- **Activities:** learn about the evolution of birds, explore flight, discover unique bird characteristics, start a bird journal, and take a Bird Walk





## Children's Books

### Fiction

- *Are You My Mother?* by P.D. Eastman (Ages 4-8)
- *Aviary Wonders Inc. Spring Catalog and Instruction Manual: Renewing the World's Bird Supply Since 2031* by Kate Samworth (Ages 9-12)
- *Birds* by Lemniscates (Ages 3-6)
- *Chicken Frank, Dinosaur!* by S. K. Wenger (Ages 6-9)
- *Feathers for Peacock* by Jacqueline Jules (Ages 4-8)
- *Gone Again Ptarmigan* by Jonathan London (Ages 6-9)
- *How to Make a Bird* by Meg McKinlay (Ages 4-8)
- *Lali's Feather* by Farhana Zia (Ages 4-8)
- *Tyrannosaurus Rex vs. Edna the Very First Chicken* by Douglas Rees (Ages 4-8)
- *Owl Diaries series* by Rebecca Elliot (Ages 4-8)
- *Wings* by Christopher Myers (Ages 6-9)

### Poetry

- *Dinosaur Feathers* by Dennis Nolan (Ages 4-8)
- *Hawks Kettle, Puffins Wheel and Other Poems of Birds in Flight* by Susan Vande Griek (Ages 6-9)

### Nonfiction

- *Animals in Flight* by Steve Jenkins and Robin Page (Ages 4-8)
- *Beautiful Blackbird* by Ashley Bryan (Ages 4-8)
- *The Big Book of Birds* by Yuval Zommer (Ages 6-9)
- *The Boy Who Drew Birds: The Story of John James Audubon* by Jaqueline Davis
- *Children's Encyclopedia of Birds* Claudia Martin (Ages 6-9)
- *Dinosaurs Are Not Extinct: Real Facts About Real Dinosaurs* by Drew Sheneman (Ages 4-8)
- *Feathered Dinosaurs of China* by Gregory C. Wenzel (Ages 6-9)
- *Feathers: Not Just for Flying* by Melissa Stewart (Ages 6-9)
- *Monster Fliers: From the Time of the Dinosaurs* by Elizabeth MacLeod (Ages 6-9)



# Bird Words

## The parts of a bird

### When is a leg not a leg?

In this diagram, the part labeled “leg” is generally called leg, but is it? Actually, what is called the “leg” is really the foot of the bird. Birds walk on their toes. The joint above the label “leg” is the ankle.

To help kids get a sense of this bird feature, have kids sit in chairs and bring one of their legs back along the side of the chair until their heel is under their hip. Which way is their ankle bending?

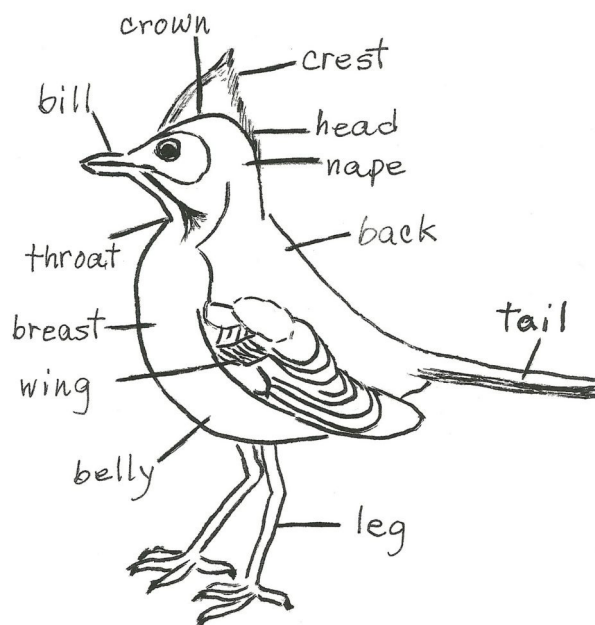


Diagram from Jake’s Nature Blog: <https://jakesnatureblog.com/2016/07/30/bird-diagram/>



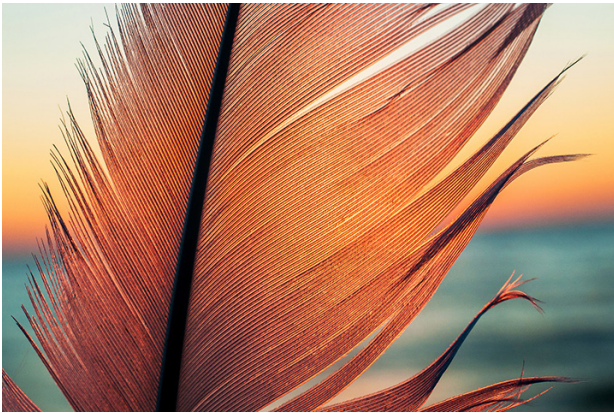
## Bird Words

### Aerodynamics

The way objects move through air

### Barb

Feather within a feather that contains even smaller parts that hook together to keep the main feather smooth



### Bipedal

Using two legs for walking

### Carnivore

Animal that eats a diet of mostly meat

### Dinosaurs

Prehistoric reptiles that lived about 250 million years ago

### Evolved

Developed slowly into something else

### Evolution

The changes of characteristics of a species over time

### Extinction

The dying off of a species

### Fossil

The remains or impression of a prehistoric organism

### Lift

The forces on an object that force it to move perpendicular to the direction of flow. Lift can be in any direction, but we usually think of objects going up.

### Paleontologist

A scientist who studies the record of life on Earth left as fossils

### Preening

Straightening and cleaning the feathers with the bill

### Reptiles

A class of animals that includes snakes, lizards, turtles, tortoises, and crocodiles

### Species

Group of living things (such as birds) with similar characteristics and are able to produce young. There are more than 9,000 bird species.

### Theropods

A diverse group of bipedal dinosaurs that include the largest terrestrial carnivores and the ancestors of birds



# Activity 1: Flying Dinosaurs

## Introduction

As the only living descendants of **dinosaurs**, birds have an extremely long and complex history. What birds look like now, where they live, how they act, and how they communicate, are all connected to how they evolved in relation to each other.

Birds evolved from a group called the **theropod** dinosaurs that included **bipedal carnivores** such as *Tyrannosaurus rex* and *Velociraptor*. The meteor strike that caused the extinction of the dinosaurs 65 million years ago also may have started the rapid **evolution** of bird **species**. Kids can explore the common ancestry of **theropods** and birds and “evolve” their own dinosaur into a bird that flies.

## Supplies

- Images of different birds
- Images of theropod dinosaurs
- Blank white paper and/or construction paper
- Scissors
- Markers or crayons
- Stapler, glue, tape
- Paper Cclips
- Tape measure
- Stopwatch or stopwatch app



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## Get kids thinking ...

**Ask:** What makes a bird a bird? How are birds different from other animals? Make a list (birds lay eggs, most fly, have beaks or bills, have wings and feathers, many build nests, etc.) together so that everyone can see and agree on what all birds have in common. While looking over the list, ask kids to think about other animals and consider what is unique about birds (feathers).



# Activity 1: Flying Dinosaurs

(continued from previous page)

Share that the oldest known bird *Archaeopteryx* had feathers, teeth, claws on the wings, and a bony tail as long as the rest of the body. *Archaeopteryx* provides fossil evidence that birds are close relatives to reptiles. But which reptiles? (Dinosaurs)

**Ask:** Do dinosaurs still live among us? Why don't we see a *T. rex* or *Velociraptors* when we go outside? What happened to these animals?



Talk about how some dinosaurs became extinct while some evolved. Share images of a variety of birds and theropod dinosaurs (Cornell Lab's Bird Academy Wall of Birds [academy.allabout-birds.org/features/wallofbirds/](https://academy.allabout-birds.org/features/wallofbirds/) is a good resource for both) to explore and discuss the similarities and differences of birds and their dinosaur ancestors.

## Let's get started!

*Archaeopteryx* was probably capable of flight, but many theropod dinosaurs could not fly even though many had traits needed for getting airborne, such as feathers and light, hollow bones. And not all birds fly the same way. Some birds, like hummingbirds, hover and zip around. Other birds soar through the air.

**Ask kids** to think about what accounts for these differences in flight and apply their ideas to creating a dino bird or modern bird paper airplane.

**Step 1: Choose a bird or theropod.** Wing and body shape affect how both a bird and a paper airplane will fly. Let kids get another look at images of a variety of birds and avian theropod dinosaurs and choose one that they will reimagine and make into a paper airplane.

**Step 2: Take time to explain lift** and why wing shape is important to flight. Lift is what's needed to overcome gravity. Lift is a force that is created when something solid moves through air. Without air or motion, there is no upward force of lift. Demonstrate how it works by holding a strip of paper below your bottom lip and blow air over it.

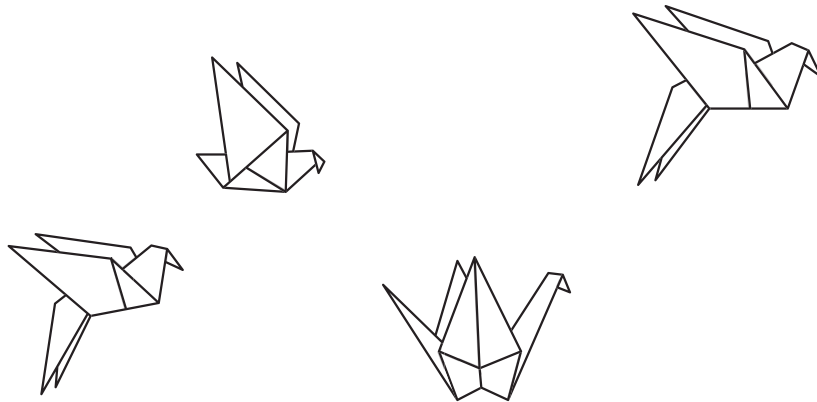


# Activity 1: Flying Dinosaurs

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**Step 3: Provide paper and some basics on folding paper airplanes.** Some kids may want to use a template, but encourage everyone to experiment with a variety of folding techniques that will result in creating a plane with wings and a body shape that represents the dino bird or modern bird they have chosen to make. Allow for test flights of planes before kids draw, color, cut out, and add distinguishing characteristics, such as:

- Wing feathers
- Tails
- Tail feathers
- Beak (bill)
- Teeth
- Legs and feet
- Claws
- Eyes



**Step 4: Build the paper planes.** Provide a stapler, glue, and/or tape for attaching bird or dino bird parts. Encourage kids to use markers or crayons to add any additional features to their creation. Counterweights may need to be added to some planes to help stabilize planes with generous additions of distinguishing characteristics. Offer paper clips and let kids do test runs to get weight in the right places.

**Step 5: Once planes are ready, have kids observe them in flight:** how far each flies, its flight pattern, how long it stays up, etc. Then set up a test to compare the flights of the modern bird planes with the dino birds to discover which will fly the furthest or which stays in the air the longest.

It's easier to measure if each plane gets thrown one at a time, but have planes paired — one modern bird and one dino bird — for each test. Before a plane is thrown, have kids look at both planes and offer their hypotheses on distance and hang time. Have each plane thrown from the same starting point and have someone time how long each plane stays in the air. Then have someone measure the distance it traveled. Kids can write observations in the results table (see next page) for their own planes or collect data on all the planes.

## Hypothesis

I think \_\_\_\_\_



# Activity 1: Flying Dinosaurs

(continued from previous page)

## Results

Name of Bird or Dino Bird	Time	Distance

**Step 6:** After each plane has flown in a test, have everyone take a look at the data and see what conclusions kids come up with. Look at which type of plane model went the furthest, which flew the longest, and ask kids why they think that's the case. Have them share their ideas about wings and body shape, size, weight, and feathers.

## More flying activities

These Paper Airplanes Fly Like Birds (Audubon for Kids)

<https://www.audubon.org/news/these-paper-airplanes-fly-birds>

Bird Inspired Paper Plane Experiment (Wild & Immersive)

<https://wildlearnings.ca/paper-planes>

Flying Paper Birds (Project BEAK)

[http://www.projectbeak.org/teacher/pdf/adaptations\\_wings\\_and\\_flight\\_paper\\_airplances.pdf](http://www.projectbeak.org/teacher/pdf/adaptations_wings_and_flight_paper_airplances.pdf)

Birds and the Wind Shape

<https://www.birds.cornell.edu/k12/wp-content/uploads/2018/09/BirdWingTypes-Handout.pdf>

Paper Airplane Designs

<https://www.foldnfly.com/>



## Activity 2: Fantastic Feathers

### Introduction

Feathers make flight possible, give birds their color and markings and, in some cases, allow them to stand out when trying to attract a mate or blend in with surroundings when hiding from a predator. Feathers also provide the bird with a “raincoat” and a warm winter “jacket.” Kids can examine real feathers and explore how feathers function and offer protection to birds.

### Supplies

- Large feathers from the craft store. NOTE: The **Migratory Bird Treaty Act** prohibits people from collecting feathers of migratory bird species. Learn more here: <https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>
- Water
- Vegetable oil
- Containers for water, oil, and soap
- Paper towels for drying the feathers
- Eye dropper
- Mineral oil or baby oil in a small spray bottle
- Liquid detergent

### Get kids thinking ...



Birds spend a lot of time **preening** their feathers. A feather can only be replaced by growing a new one, so birds work to keep their feathers in the best condition.

**Ask:** What do feathers do for birds? How? What happens to the bird if something happens to its feathers?

**What Actually Makes Water Roll Off a Duck's Back?**

<https://youtu.be/Q-8GXk9r0ik>





## Activity 2: Fantastic Feathers

(continued from previous page)

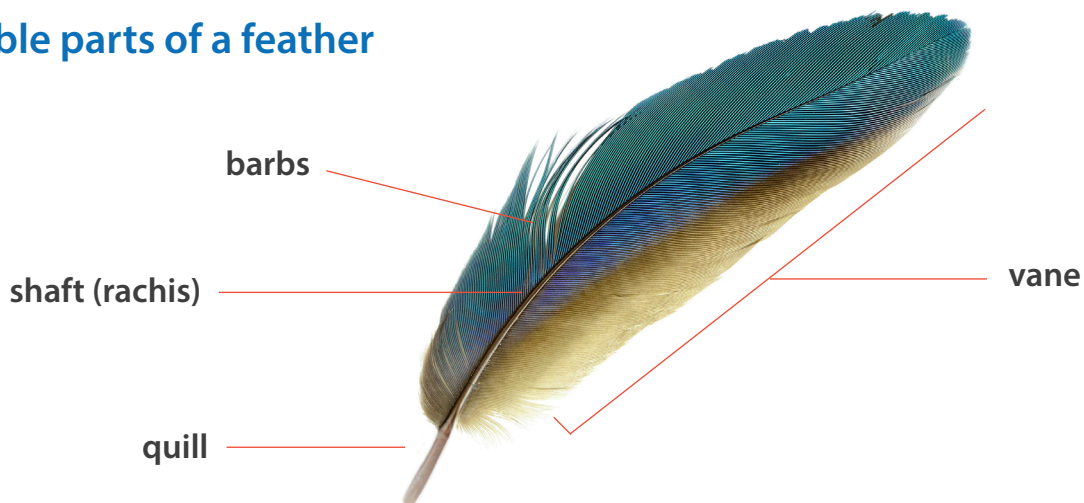
### Let's get started!

#### **Step 1: Download the Feather Biology Slide Collection:**

<https://academy.allaboutbirds.org/feather-biology-slide-collection/>

Show different types of feathers and ask kids how they think they are of use to birds before handing everyone a feather. Use the Parts of the Feather diagram or share the Feather Biology Slide Collection to have kids examine their feathers and identify the parts. Kids may want to draw their feathers and label their drawings.

### Visible parts of a feather



- **Shaft:** base to tip of feather — supports all the other pieces of the feather
- **Quill:** part of the shaft that attaches the feather under the skin
- **Vane:** grows out from the shaft on both sides and contains the barbs
- **Barbs:** grow out of the shaft and contain barbules that hook the parts of the feather together to keep it smooth. You need a magnifying glass to see the barbules.



# Activity 2: Fantastic Feathers

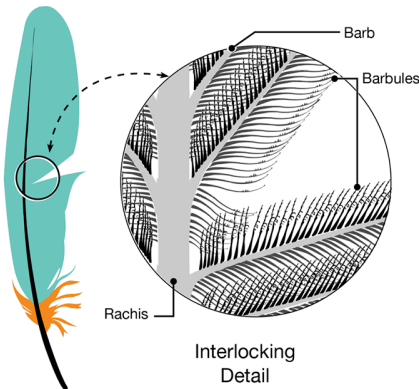
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## Types of feathers



(Image via Bird Academy/Cornell Lab of Ornithology)

- **Down feathers:** more delicate feathers that are located beneath the outside feathers and provide insulation for the bird
- **Contour feathers:** the visible feathers that one can see on the bird; they provide the color of the bird and hook together to keep the rain out
- **Flight feathers:** contour feathers of the wing and tail that make it possible for the bird to fly



(Image via Bird Academy/Cornell Lab of Ornithology)

Talk about how the feathers work and why. Encourage them to pull the **barbs** apart — separate the barbs so there are gaps between them. Then have them zip the barbs back together by starting at the bottom and running their fingers up the feather (like zipping up a jacket).

**Ask:** What’s happening to the feather? How do birds manage this movement?



## Activity 2: Fantastic Feathers

(continued from previous page)

Birds zip up their barbs by using their beaks. In addition to hooking the barbs together again, they add a little waxy, oily coating to the feather. This waxy coating comes from a gland on their rump. Have kids test to see if their feathers still have this coating.

### Oil Spill Experiment

**Step 1:** Have kids lay their feathers on a table and use an eye-dropper to place a few drops of water on the feather. **Check with them:** Does the water bead up? If not, have kids spray just a bit of the baby oil on their feather, then put a few drops of water on the feather again. **Ask:** Does the water bead up now? Why? The baby oil is working in place of the bird's natural oil.

**Step 2:** Next, have kids dip their feathers into a container of water, then separate the barbs and zip the feather back together. **Check with them:** What happens to the feather? Does it return to its original state? Why or why not?

**Step 3:** Now, have kids add oil to their container of water, and then drag their feathers through the container. Remove the feathers from the container and have them repeat the process of pulling the barbs apart and zipping them back together. **Check with them:** What happens now? How does this affect the birds' ability to keep dry?

#### **Kids can see that the barbs won't zip when coated in oil.**

Oil and other pollutants that birds might encounter when they swim, bathe, migrate, or look for food, coat the barbs and barbules and prevent them from locking together. When barbs can't "zip" up, feathers can't keep water out or keep the bird warm and the bird could drown or have a dangerously low body temperature. Unzipped barbs also affect [aerodynamics](#) of flight feathers, leaving birds unable to fly away.

**Step 4:** Cleaning the feathers. Have kids conclude by swishing their oily feathers in a container with soapy water to remove the oil, dry the feather and then repeat the separation and zipping up process. **Check with them:** Does it work? Why or why not?

Open up a discussion about what they learned from their experimentation. Encourage kids to share their ideas and concerns.



# Activity 2: Fantastic Feathers

(continued from previous page)

## More oil spill activities

Oil Spill! (U.S. Fish & Wildlife Service)

[https://www.fws.gov/rachelcarson/toolkit/Environmental\\_Contaminants/Oil\\_Spill\\_activity.pdf](https://www.fws.gov/rachelcarson/toolkit/Environmental_Contaminants/Oil_Spill_activity.pdf)

Oil Spill Challenge

<https://www.startwithabook.org/sites/default/files/Oil-Spill-Challenge.pdf>



Bird rehabilitation specialists clean a juvenile brown pelican after a Gulf coast oil spill.  
(Public domain photo by Tom MacKenzie, USFWS)



## Activity 3: My Bird Journal

### Introduction

Journaling gives kids the opportunity to use drawing and writing together to show their observations, document their discoveries, pose questions, note their ideas, and learn to see and hear more. Keeping a bird journal is a great way to get your Bird Buddies outdoors to explore and record their responses to and reflections about the natural world and keep track of what they're learning. Get Bird Buddies' started on their journals with information that will help them identify birds and provide them with some of the words they'll need to record their observations.

### Supplies

- Blank spiral notebook or sketchbook (or fold 10 sheets of paper in half and staple along the fold to create a booklet)
- Bird Buddies journal cover (optional)
- Writing tools
- Drawing materials



### Get kids thinking ...



**Ask:** What is a journal? Have you ever kept a journal? Who else might keep a journal? Why?

Talk about how scientists and naturalists keep field notes and journals of their observations and experiments. Writers keep journals of their observations and feelings about people and places.

As Bird Buddies, how do they think they could use a journal?



## Activity 3: My Bird Journal

(continued from previous page)

### Let's get started!

**Step 1:** As you pass out blank notebooks, let kids know that their journals can look however they want them to look! Kids can freely draw, write, or add photographs. It can be a place to brainstorm, keep notes and vocabulary words, make lists, sketch, or write poems. Tell them it is their place to write and draw their observations, thoughts, questions, and ideas, and as Bird Buddies, they will have a chance to make all kinds of observations.

**Step 2:** Make writing and drawing materials available and ask kids to sketch a picture of a bird from memory in their journal. As kids sketch, help them understand that they don't ever have to draw beautiful "perfect" pictures — their journal's best use is to document their observations and draw what they think is important to remember.

**Step 3:** After they've finished sketching, let kids pair up and compare their bird pictures. Have pairs share what the birds in their drawings have in common and what's different. As a group, chart of all the similarities and differences. From these lists and your discussion, choose words that help you draw a bird and all its key parts for the group. **Ask kids** to help and refer to **Parts of a Bird on page 14** to label your bird's key parts.

**Step 4:** Have kids add the Parts of a Bird to their journal. Let them know that knowing these parts will help them to better describe, sketch, or even identify the birds they will get to observe. Kids may also want to include some additional notes in their journal about things that could be helpful in identifying or journaling about birds they see, such as noting size or visual field marks — things you can see on the bird, such as wing bars (white bars on the wing), eye-rings (rings around the eyes), patches of color, spots on the breast, leg type, and bill type.

### Get them thinking more about how to use their Bird Journals:

Keeping a prompt or series of prompts in your journal can help you get started if you are feeling stuck. Try these sentence starters:

- I see ...
- I hear ...
- I wonder ...
- I was surprised by ...
- I feel ...



## Activity 3: My Bird Journal

(continued from previous page)

When using your journal out in the field, include the date, location, and weather information with each journal entry in order to be able to compare your observations.

When making field observations, answering these questions can help you include detailed descriptions in your journal:

- How does it move?
- What does it sound like?
- What is its habitat? Where does it spend its time?
- Was it alone?
- What is unusual about the way that it looks? Does it have interesting patterns or colors?
- What are its main colors?
- What does it eat?

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### More journal activities

Wildlife Projects for Kids: Making a Nature Journal (Great Stems)

<http://www.greatstems.com/2013/05/wildlife-projects-for-kids-making-a-nature-journal.html>

How to Teach Nature Journaling (John Muir Laws)

<https://johnmuirlaws.com/product/how-to-teach-nature-journaling/>

Opening the World through Nature Journaling (California Native Plant Society)

<https://www.cnps.org/education/students/parents-teachers/nature-journaling-curriculum-request>

Draw with a Park Ranger: Spotted Owl (Yosemite National Park)

<https://www.nps.gov/yose/planyourvisit/upload/howtodrawanOWL.pdf>

Draw with a Park Ranger: Steller's Jay (Yosemite National Park)

<https://www.nps.gov/yose/planyourvisit/upload/howtodrawaSTELLERSJAY.pdf>

# BIRD WALK



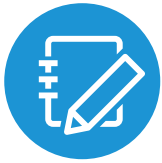
## Your first Bird Walk should focus on helping kids become active observers.

Talk about where you are taking your Bird Walk and let kids know about common birds in the area by showing them photographs from a field guide, website, or app. Take along pencils and Bird Journals or something for taking notes and drawing pictures and a field guide. You can also bring binoculars, but as many bird behaviors are more readily observed by birding with the naked eye than by detailed analysis through binoculars, you can make this first Bird Walk more about getting to know birds and their habitats.

Get kids planning for when they see their first bird. **Ask:** What birds do they think they might see? What birds would they hope to see? What can they learn by observing?

Tell them when they see their first bird to take their time and take a really good look at it. Have them plan to then write down five or more things about the bird they just saw — the bird's color, patterns, size, shape, sounds, what it was doing, where it is, or anything else they notice, wonder, or imagine about it. Let kids know that making notes like these will help them become better observers and better birders.





# Writing About Birds

## Diary of a bird

Have kids develop diary entries from a bird's point of view. Ask them to write and draw about their daily life as a bird. Offer as a starting point: You are a bird. How do you know that you are a bird? What kind of bird are you? What does it feel like to fly? What do you see around you? What do you like about being a bird? What do you not like?

## Field guide to local birds

Set additional purpose to field journaling by having kids use their observations and journals to develop a field guide to local birds. The information, ideas, and questions they include in their journal notes and drawings will lead to ideas about what to include in a field guide. The more information they collect, the more helpful the field guide will be!

Have kids choose birds from their field journals and do some research about each bird they decide to include in the field guide, such as where it can be found, what it looks like, and how to identify it. Creating a field guide will help kids develop a deeper understanding of local species of birds.

Kids can author and illustrate a guide by themselves or work together, with each contributing at least one species to the guide. You can format the guide as a PDF to easily share digital copies, but also print and bind the guide and let kids put it to use in the field!

## Sample field guides:

[Creating a Field Guide to Your Backyard](https://blog.nwf.org/2008/04/creating-a-field-guide-to-your-backyard-part-1/)

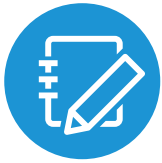
<https://blog.nwf.org/2008/04/creating-a-field-guide-to-your-backyard-part-1/>

[A Natural Integration: Student-created field guides seamlessly combine science and writing](https://web.nmsu.edu/~susanbro/educ451/docs/A_natural_integration.pdf)

[https://web.nmsu.edu/~susanbro/educ451/docs/A\\_natural\\_integration.pdf](https://web.nmsu.edu/~susanbro/educ451/docs/A_natural_integration.pdf)

[Molly of Denali Field Guide Family Activity](https://www.pbslearningmedia.org/resource/field-guide-activity-document/a-field-guide-to-birds-molly-of-denali/)

<https://www.pbslearningmedia.org/resource/field-guide-activity-document/a-field-guide-to-birds-molly-of-denali/>



# Writing About Birds

## Science fiction adventure!

Offer this prompt to kids: Tell the story of a time-traveling bird who wings it back to the Mesozoic Era, meets his or her dinosaur ancestors, and makes an important discovery. Encourage them to do some research to add some historical accuracy to their sci-fi adventure!

## Acrostic poem

Have kids write an acrostic poem about a bird of their choice. It can be about their favorite bird or any bird they've seen or been learning about. An acrostic poem is one that uses all the letters in a word or name as the first letter of each line of the poem.

### **Robin**

**R**ed breast

**O**ften feeds on lawns

**B**obs along

**I**nsect eater

**N**ests made of mud

Encourage kids to write an acrostic poem whenever they are enthusiastic about a new bird!



# Kid-friendly Digital Media

## Websites

Wall of Birds (Cornell Lab's Bird Academy)

<https://academy.allaboutbirds.org/features/wallofbirds/>

Flap to the Future — The Flight Adaptations Game (Cornell Lab's Bird Academy)

<https://academy.allaboutbirds.org/features/flaptothefuture/>

All About Feathers (Cornell Lab's Bird Academy)

<https://academy.allaboutbirds.org/features/all-about-feathers/#what-is-unique-to-birds.php>

The Feather Atlas (U.S. Fish and Wildlife Service)

<https://www.fws.gov/lab/featheratlas/browse.php>

Project Beak

<http://projectbeak.org/>

## Educational apps

Merlin (The Cornell Lab)

<https://merlin.allaboutbirds.org/>

The Audubon Bird Guide App (free)

<https://www.audubon.org/app>

## Podcasts

Dinosaurs Take Flight! How Birds Evolved To Fly

<https://www.npr.org/2019/05/31/728756629/dinosaurs-take-flight-how-birds-evolved-to-fly>

# Kid-friendly Digital Media

## Video

Dinosaur Animation: From Dinosaur to Bird

<https://youtu.be/EFkc3Yq2mfs>

Why are birds the only surviving dinosaurs? (The Natural History Museum, U.K.)

<https://www.nhm.ac.uk/discover/why-are-birds-the-only-surviving-dinosaurs.html>

Great Transitions: The Origin of Birds (HHMI BioInteractive)

<https://www.biointeractive.org/classroom-resources/great-transitions-origin-birds>

It's a Bird! It's a Plane! It's a DINOSAUR! (SciShow Kids)

<https://youtu.be/syAwnjoLNV8>

Learn to Draw Birds with David Sibley

<https://www.audubon.org/magazine/summer-2020/learn-draw-birds-david-sibley>

# Day 2

## Bird habitats, food, and foraging





# Day 2

## Bird habitats, food, and foraging

### Introduction

A bird's appearance, diet, and habitat are all connected. As kids focus on bird [adaptations](#) and the different ways that birds actually get their food, they will explore bird [habitats](#), [beaks](#), bird senses, and migration.

---

### Questions to guide explorations and experiments

- Where do birds live? What determines where a bird lives?
  - What is a habitat? What places near us could help a bird meet its habitat needs?
  - What impact does meeting your habitat needs have on the needs of birds and other living things?
  - What do birds eat?
  - How have birds adapted to their habitats?
- 

### Books and activities

- **Books:** all about bird adaptations, migration, and finding food
- **Activities:** explore beaks, discover keen bird senses, learn about migration, and take a Bird Walk





## Children's Books

### Fiction

- *The Barn Owls* by Tony Johnston (Ages 4-8)
- *Coo* by Kaela Noel (Ages 9-12)
- *Gracie, The Public Gardens Duck* by Judith Meyrick (Ages 4-8)
- *Have You Seen Birds?* by Joanne Oppenheim (Ages 4-8)
- *Hoot Owl, Master of Disguise* by Sean Taylor (Ages 4-8)
- *A House for Every Bird* by Megan Maynor (Ages 4-8)
- *Just Ducks!* by Nicola Davies (Ages 4-8)
- *The Most Amazing Bird* by Michael Arvaarluk Kusugak (Ages 4-8)
- *Sylvie* by Jennifer Sattler (Ages 3-8)
- *My Tiny Life* by Ruby T. Hummingbird by Paul Meisel (Ages 4-8)
- *Two Little Birds* by Mary Newell DePalma (Ages 4-8)

### Poetry

- *The Cuckoo's Haiku and Other Birding Poems* by Michael J. Rosen (Ages 4-8)
- *Today at the Bluebird Café: A Branchful of Birds* by Deborah Ruddell (Ages 4-10)

### Nonfiction

- *The Bald Eagle (Welcome Books)* by Lloyd G. Douglas (Ages 4-8)
- *The Beak Book* by Robin Page (Ages 4-8)
- *Beaks!* by Sneed Collard (Ages 6-9)
- *Beauty and the Beak: How Science, Technology, and a 3D-printed Beak Rescued a Bald Eagle* by Deborah Lee Rose and Jane Veltkamp (Ages 4-12)
- *Circle* by Jeannie Baker (Ages 6-9)
- *How Do Birds Find Their Way?* by Roma Gans (Ages 4-8)
- *Paddle Perch Climb: Bird Feet Are Neat* by Laurie Ellen Angus (Ages 3-8)
- *The Real Poop on Pigeons* by Kevin McCloskey (Ages 6-9)
- *Spit Nests, Puke Power, and Other Brilliant Bird Adaptations* by Laura Perdew (Ages 4-8)
- *Thunder Birds: Nature's Flying Predator* by Jim Arnosky (Ages 6-9)
- *Tiny Bird: A Hummingbird's Amazing Journey* by Robert Burleigh (Ages 6-9)
- *Vulture View* by April Pulley Sayre (Ages 4-8)



## Bird Words

### Adaptations

Process of change by which a bird becomes better suited to its habitat

### Auriculars

Feathers that cover the ears of a bird

### Beak / bill

More than just the bird's mouth, it functions like a hand, a comb, gets food, kills prey



### Binocular vision

When both eyes can focus on one thing at the same time

### Carnivorous

Eating other animals

### Carrion

The flesh of dead animals

### Concave

Having a surface that curves inward like that of a dinner plate placed on a table

### Diurnal

Active during the day

### Habitat

The natural environment of a plant or animal

### Migrate

To move seasonally from one area to another

### Nocturnal

Active at night

### Pishing

A sound humans make that may attract birds

### Prey

An animal that is hunted and killed by another for food

### Raptor / Bird of prey

Birds that eat other animals. Most hunt live prey (hawks, eagles, falcons, owls) but some eat dead animals (vultures)

### Species

Group of living things (such as birds) with similar characteristics and are able to produce young. There are more than 9,000 bird species

### Talons

The claws of a bird of prey





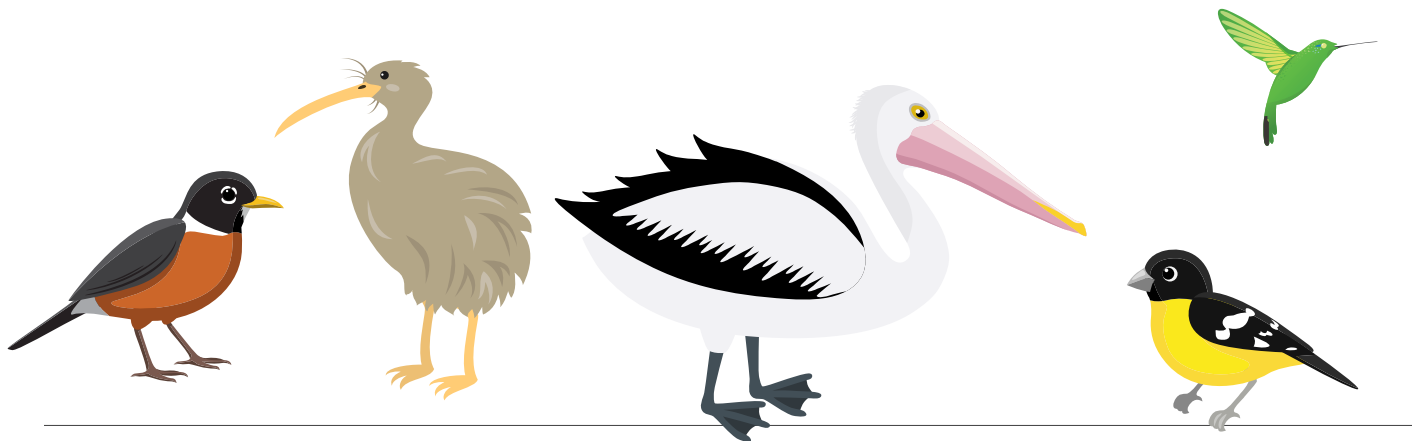


# Activity 1: Eating at Home

## Introduction

A **habitat** is what we call home. It's where we live. Like any home, it has to provide food, water, shelter, and space. Birds also need habitats with all these elements. Bird **species** have **adapted** to live in their habitats and to obtain the things they need in order to survive.

The **beaks**, feet, and legs of many birds are adapted to gather specific things in their environment. Help kids explore some of the adaptations that birds have made to find food in their habitats, especially birds' beaks and how they are adapted to getting particular foods.



## Supplies

- Tall vase
- A pan deep enough to hold 3 inches of mud
- Large mixing bowl
- A tray about 12 inches x 6 inches
- 6 paper drinking straws (whole) plus several more cut up into 1-inch pieces
- 3 large slotted spoons
- Tea strainers or sink strainers
- 2 sets of chopsticks
- Needle-nose pliers
- Tweezers
- 2 tongs
- Packing peanuts or small pieces of balsa wood
- Dirt to cover the tray and to make 3 inches of mud in the pan
- Bag of tiny styrofoam balls or pom poms
- Rubber bands, cut into "worms"



## Activity 1: Eating at Home

(continued from previous page)

### Get kids thinking ...

**Start by asking a couple of questions:** What is a **habitat**? What is important to have in a habitat? What does your own habitat look like? (If you like, kids could draw a picture of their own habitat in their journal.) Talk about the difference between the essentials in their habitat and the nonessentials.



**Have kids compare their habitats with those of birds,** emphasizing the need for food, water, shelter, and space. Ask questions about each need — e.g., what is your source of food? What are the birds' sources of food? Help kids make comparisons between their needs and birds' needs and how these needs are met.

To have needs met and to survive, birds and other species have to be well adapted to their environment. Although all birds have beaks, these beaks vary in size, shape, and function. Many are adapted to particular habitats and the foods they eat. So in part, their beaks determine where birds will live, since they must find food nearby every day.

### Let's get started!

Show kids these pictures of a **hummingbird**, **snipe**, **grosbeak**, **pelican**, and **robin** or some photos from a field guide (see pages 40-44). Get kids to focus on the beaks of each bird and guess what the beak could be used for and what the bird might eat. Explain how to rotate through 5 habitat stations to discover how the shape of a bird's beak is adapted for eating foods particular to where it lives.



# Activity 1: Eating at Home

(continued from previous page)

## Habitat Station Set Up

**Step 1:** Gather tools that have capabilities similar to those accomplished by birds' beaks, e.g., needle-nose pliers, tongs, straws, chopsticks, slotted spoon, and nutcrackers and set up five stations:

**Woodland edge station:** provide a tall vase full of water (nectar) with a slotted spoon, tweezers, and drinking straws

**Marsh station:** provide a pan with about 3 inches of mud with cut up straws buried in the mud with a slotted spoon and chopsticks

**Lawn station:** provide a dirt-filled tray with cut up rubber bands, needle-nose pliers, drinking straw, and a tea strainer

**Lake station:** provide a half-full large mixing bowl of water with tiny styrofoam balls floating on it, a slotted spoon, straw, and tongs

**Forest station:** provide packing peanuts or balsa wood, tongs, and chopsticks

**Step 2:** Next, kids should rotate to each station and try to pick up the "food" with each of the tools provided. (Note: Straws are not for sipping! Have kids use the straws by placing them in the water then putting their finger over the opening.)

**Step 3:** At each station, have them test each tool and note their results in retrieving each type of "food."

**Step 4:** After they have visited every station, ask them to share their ideas about which "beak" was best to get the food in each "habitat." Then have kids identify which of the birds they saw earlier have beaks similar to the kinds of tools they used to collect "food."

## Identifying Beaks, Food, and Habitats

**Woodland edge station:** Water = nectar. Straw = hummingbird beak

**Marsh station:** Cut up straws = insects and larvae. Chopsticks = snipe beak

**Lawn station:** Rubber bands = worms. Needle-nose pliers = robin beak

**Lake station:** Styrofoam balls = fish. Slotted spoon = pelican beak

**Forest station:** Packing peanuts or small pieces of pieces of balsa wood = nuts. Tongs = grosbeak beak

Talk about which birds have beaks that are very specific to finding food. The robin and the grosbeak could probably pick up other foods.



# Activity 1: Eating at Home

(continued from previous page)

**Ask kids:** What else do you think they might eat? The beaks of the pelican, hummingbird, and snipe are pretty specific in their function, although the hummingbird does catch insects in flight. Discuss other birds kids have seen and what they think those birds eat based on their beak type.

To see some beaks in action, watch:

Great Blue Heron Eats a Fish

<https://youtu.be/mCV6Yttysgw>

Pileated Woodpecker (Up Close Foraging Video)

<https://youtu.be/XmDPIUrEJGQ>

Amazing Giant White Pelicans (start at minute 2:34)

<https://youtu.be/30JeCGVGkmg>

Wilson's Snipe Eating

<https://youtu.be/Z33a59T74RU>



**Ask kids** what they've noticed about other characteristics have been adapted by birds to help them find food. For example, note that the snipe's eyes are set back farther back on its head. With his bill in the mud looking for larvae, the snipe is still able to spot danger. How about the webbed feet of ducks to move them through the water?

Conclude by giving kids some time to look through field guides to check out more beaks and to discover other habitat adaptations, such as different types of feet.

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## More activities

Eat Like a Bird (PBS Fetch! with Ruff Ruffman)

[https://www-tc.pbskids.org/fetch/parentsteachers/activities/pdf/FETCH\\_EatLikeABird\\_AG.pdf](https://www-tc.pbskids.org/fetch/parentsteachers/activities/pdf/FETCH_EatLikeABird_AG.pdf)

Whose Beak? Whose Feet? (Audubon Adventures for Young Nature Lovers)

<http://www.audubonadventures.org/beaksandfeet/index.html>

Bean Counter Evolution (Exploratorium's Science Snacks)

<https://www.exploratorium.edu/snacks/bean-counter-evolution>

## Rufous Hummingbird



## Common Snipe



## Evening Grosbeak



## Pelican





## American Robin





## Activity 2: Eating Out

### Introduction

**When the weather changes, so do bird diets.** In the winter, some birds will try to eat as many fatty foods as possible to increase body fat for additional warmth. Some, like the chickadee, will change its food preference in the winter. Instead of mainly eating insects as it does in the warmer months, it switches to seeds.

But many birds have to simply search for food elsewhere. To get food, they have to move to a different area to find the food that they need. Some 350 North American bird species **migrate** long distances every year. In this migration simulation, kids can experience some of the many natural obstacles and increasingly more human-created obstacles that birds face when migrating.

### 1. Migrate like a bird

#### Supplies

- Balloons
- Sticky notes
- Pieces of cardboard or something to use as a fan

#### Get kids thinking ...

**Ask kids:** Why do people move from one place to another? Talk about the different reasons people move. **Ask:** Why do birds migrate? What obstacles do they face in migrating?





## Activity 2: Eating Out

(continued from previous page)

### Let's get started!

To find food or a nesting location, birds must fly through rain storms; face tremendous winds that blow them off course; dodge tall, well-lit buildings that attract them; or deal with a housing development that was once a refueling stop. They have to face these dangers twice a year — when they leave their nesting grounds in the fall and then return to nest in the summer.

**In this activity, kids will help a “balloon” bird migrate across the room or an area outside.**



**Step 1:** Hold up an inflated balloon and explain to the kids that it represents a migrating bird (you can draw a bird on it if you like).

**Step 2:** Tell them they are going to help this bird migrate to its winter home and then back to its nesting grounds by batting the balloon to the next person in line and not allowing it to touch the ground.

**Step 3:** Have all but one of the kids lie down on their backs about 4 feet apart, heads in the same direction.

**Step 4:** Depending on the size of your group, give every other or every fourth child on the floor a sticky note. **Kids with sticky notes are “rest stops” for the bird and can hold it for a few seconds when it comes to them.**



## Activity 2: Eating Out

(continued from previous page)

**Step 6:** One child stands about half way along the bird’s course between two kids, near their feet, **fanning the air to simulate a storm**. If the fan blows the bird off course two times, the fanning (i.e., the storm) stops. Give the bird back to the first person in line and let fall “migration” begin again.

**Step 7:** When the bird reaches the last person in line, that child should catch the balloon and hold it for a few seconds before sending the bird back on its spring migration.

**Step 8:** After spring migration is complete, repeat the migration cycle. But this time, have some kids who were “rest stops” **get on their knees or stand up to create tall, lit-up buildings** — one of the obstacles migratory birds face every year. Start the fall migration and the storm.

**Step 9:** Repeat for spring migration.

**Ask kids** which of the two migration cycles was easier. Why? Talk about what other obstacles may interfere with birds’ migration. **Then ask:** How can humans help eliminate these obstacles?

**In the next activity, help kids to see that migration is exhausting and hungry work!**

### Audubon’s national program to help provide safe passage for nocturnal migrating birds

Every year, billions of birds migrate at night, navigating with the night sky. As they pass over big cities, they can become disoriented by bright artificial lights and skyglow, often causing them to collide with buildings or windows.

The Lights Out program encourages building owners to turn off extra lighting during migration season.

**Is there a Lights Out program in your city?**

<https://www.audubon.org/lights-out-program>





## Activity 2: Eating Out

(continued from previous page)

### 2. Flap your wings



The Ruby-throated Hummingbird migrates to Central America every winter. This hummingbird is less than 4 inches long and weighs about 1/10 of an ounce — the weight of three paperclips!

Most of these hummingbirds get to Central America by **flying nonstop 500 miles across the Gulf of Mexico in 23 hours!**

With this activity, you'll give the kids some idea of the tremendous energy that it takes to fly nonstop. Kids will flap their "wings" energetically and see how that affects their heartbeat.

### Supplies

- Place to record pulse and "wing flaps"
- Pencil
- Timer

### Let's get started

**First, have kids practice taking their pulse.** According to the Mayo Clinic, "to check your pulse at your wrist, place two fingers between the bone and the tendon over your radial artery — which is located on the thumb side of your wrist. When you feel your pulse, count the number of beats in 15 seconds."





# Activity 2: Eating Out

(continued from previous page)

Next, pair up the kids. One is the hummingbird; the other will count how many times the “hummingbird” flaps its “wings.”

**Step 1:** Set a timer for 15 seconds.

**Step 2:** Take the pulse of the hummingbird for 15 seconds and record the number of beats.

**Step 3:** Set a timer for 15 seconds.

**Step 4:** Once the timer starts, the hummingbirds will begin raising their hands above their heads and bringing their hands down to their sides as quickly as they can. The complete up-and-down motion counts as one flap. The counter tallies the number of complete flaps.

**Step 5:** After 15 seconds, the counter will say that time is up and record the number of flaps.

**Step 6:** Take the pulse of the hummingbird again and record the number.

**Step 7:** The hummingbird and the counter will swap roles and repeat this process.

Name	Pulse before flapping	Number of flaps in 15 seconds	Pulse after flapping

Explain to kids that in the same 15-second period that they flapped, a hummingbird would flap between 225 to 1200 times, depending upon the conditions it was facing, such as wind and rain. In the same 15 second period, its heart would have beat at least 315 times. **Think of how much energy these birds expend in their 23-hour flight!**



## Activity 2: Eating Out

(continued from previous page)

Have the kids compare their numbers with the actual hummingbird. Then let kids refuel with a drink and snack and talk about what would prompt such a strenuous journey.

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### More migration activities

Migration Challenge (PBS KIDS Plum Landing)

[https://pbskids.org/plumlanding/educators/activities/pdf/MigrationChallenge\\_FAA\\_Eng\\_Span.pdf](https://pbskids.org/plumlanding/educators/activities/pdf/MigrationChallenge_FAA_Eng_Span.pdf)

Migration Craft and Game Ideas Slides (The Cornell Lab)

[https://docs.google.com/presentation/d/1JiUG0NOoJIIY0-lu6mibqUMV96yjINz5DPf3FdYp1PI/present?slide=id.g7395d6a963\\_1\\_84](https://docs.google.com/presentation/d/1JiUG0NOoJIIY0-lu6mibqUMV96yjINz5DPf3FdYp1PI/present?slide=id.g7395d6a963_1_84)

Migration Craft and Game Ideas Activity Guide (The Cornell Lab)

[https://docs.google.com/document/d/1GMQfnVjv-jw2CfhJCCk6Jb2SSJNS9rvX97CN\\_NIVJhQ/view](https://docs.google.com/document/d/1GMQfnVjv-jw2CfhJCCk6Jb2SSJNS9rvX97CN_NIVJhQ/view)



## Activity 3: Hunting Prey

A bird of prey, or raptor, has excellent eyesight, powerful feet with long sharp talons, sturdy, partially hollow bones, and a strong hooked beak. Most hunt live prey and all are carnivorous. Birds of prey include hawks, eagles, falcons, owls, and vultures — though vultures lack strong, grasping feet and talons and dine on carrion.

Vultures also use their sense of smell to locate their food, but most other birds locate food by seeing or hearing it. A Great Horned Owl, which has no sense of smell, can prey on skunks because of this. Birds' preference for food is guided by being able to locate it and use their beaks to get it into their mouths.

**Have kids test their own senses of sight and hearing against birds of prey with these demonstrations.**

### Supplies

- A quarter coin
- Tape measure
- Empty narrow-necked bottle
- Fine-toothed comb
- Blindfold



### Get kids thinking ...

**Ask kids:** What do you notice about the eyes of birds of prey? Why would that be useful to birds of prey? What do they think when they hear: “*Eyes on the front, ready to hunt. Eyes on the side, ready to hide.*”

**Binocular vision** is when both eyes can focus on one thing at the same time. Birds of prey, especially eagles, have amazing long-distance vision and can use both monocular and binocular vision. Eagles can see perfectly clearly about **eight times as far** as people can, allowing them to spot and focus on even small prey animals that are two to three miles away.





## Activity 3: Hunting Prey

(continued from previous page)

### Let's get started

#### Find out how eagle-eyed kids are!

**Step 1:** Take kids outside to a large space, such as an empty parking lot, playground, or sidewalk where it is safe for everyone to stand.

**Step 2:** Have the kids turn their backs to you and place a quarter on the ground — don't let them know where you put it.

**Step 3:** Have everyone walk about 25 feet or so away from the quarter and then have them turn around and ask if they see anything on the ground back where they were first standing.

**Step 4:** In twos or threes, have kids walk toward the quarter and when they see the quarter, have them stand in that spot. Measure the distance and multiply it by 8. **That's about how far away an eagle would be able to see the quarter!**





## Activity 3: Hunting Prey

(continued from previous page)

**Nobody says “eagle-eared,” but this doesn’t mean eagles have poor hearing.**

Birds of prey like eagles and hawks that are **diurnal** (active during the day) do use their hearing to locate prey or other birds, but it’s not as essential as it is for owls, which locate their prey in the dark only by sound.



**Show kids a picture of a Great Horned Owl**

**Ask:** What are those tufts sticking up on its head? Where are the bird's ears?

Birds’ ears are funnel-shaped openings located below and somewhat behind their eyes. They do not have outer ears and their ear openings are covered by soft feathers called **auriculars**, which help protect the ears and help keep the sound of rushing wind out.

**Give kids an idea of how this works:**

**Step 1:** Get a narrow-mouthed bottle and blow over the opening. What happens?

**Step 2:** Next, hold a fine-tooth comb over the mouth of the bottle and blow through the comb. What happens? The teeth of the comb act like the soft feathers covering the ear openings and cut down on the noise.

Some owls, especially those who hunt at night, have one ear opening higher than the other and rely on their hearing to locate prey. Depending upon where the sound is coming from, the sound will be louder in one ear than the other. This difference helps the owl pinpoint where the sound originates.



## Activity 3: Hunting Prey

(continued from previous page)

**That's not all that helps owls' hearing.** Point out pictures of owls from your field guide and have them note their **concave** faces (like the Barn Owl at right). This face shape helps them funnel sound into their ears.



**Help kids understand how this works:**



**Step 1:** Pair them up and have them stand about 6 feet apart.

**Step 2:** One at a time, have them whisper to each other.

**Step 3:** Now have them cup their hands behind their ears and use the same whisper voice again.

**Ask:** Which way sounds louder? Why? Their cupped hands act like the curve of the owl's face and direct the sound to their ears.

**Demonstrate how important hearing where prey is located is to an owl:**

**Step 1:** Blindfold one child and have the others stand in a circle about 10 feet back around them.

**Step 2:** Choose one child to go up quietly as possible and tap the blindfolded "owl" on the shoulder.

If the blindfolded child is able to detect the "prey" before he is tapped, the "prey" has to take the place of the "owl" and is blindfolded.



## Activity 3: Hunting Prey

(continued from previous page)

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### More hunting activities

Predator Vs. Prey Games to Play With Kids (Sciencing)

<https://sciencing.com/predator-vs-prey-games-to-play-with-kids-12748126.html>

Raptor Study (New Jersey Division of Fish and Wildlife)

<https://www.nj.gov/dep/fgw/pdf/raptrpln.pdf>

Raptors! The Birds of Prey Audubon Adventures Activity Guide

[http://www.audubonadventures.org/docs/AA\\_Raptors\\_final.pdf](http://www.audubonadventures.org/docs/AA_Raptors_final.pdf)

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Great Horned Owl



# BIRD WALK



On this Bird Walk, encourage kids to pay particular attention to beaks, claws, and feeding behavior in the birds they observe.

This includes spotting other signs of birds, e.g., tracks, poop, and nests.

You can also introduce **pishing** — a sound Bird Buddies can make to attract birds' attention and get them to show themselves. To produce the sound, put a "p" in front of a long version of the "sh" sound you make when you want people to be quiet. Repeat this sound quickly over and over. Birds may respond to the sound and come in for a closer view of what is producing it, giving kids a closer view of beaks and claws. If a bird comes in close, after everyone has had a good look at them, stop pishing.

Sometimes pishing works, sometimes it doesn't. Check out videos of pishing so kids can see it in action and let them practice making the pishing sound before you head out for the walk.

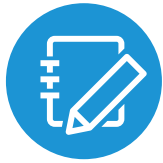
## Watch

Pishing for Birds

<https://youtu.be/Eba0M9AOgRo>

Pishing

<https://youtu.be/34E2EsVkdqg>



## Writing About Birds

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### Bird houses

Have kids select a bird that fascinates them and find out more about its habitat. Does it nest in shallow scrape, a burrow, or tree hollow? Tell kids to take the point of view of their bird and write a one-page descriptive essay using specific details and rich language to describe your nest, where it is, and why it's perfect for you. Kids can include a drawing, too!

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### Habitat map

Have kids visit a nearby outdoor space to map (a yard, garden, local park) and spend time observing what is there. Get them to take notes on what they see, noting all the different trees, flowering plants, shrubs, grass, etc., as well as water and food sources. After an initial survey of the yard, kids can draw and label a map of the space and use it to track how the space is being put to use as a habitat for wildlife or to advocate for improving the space for birds and other wildlife.

**Make a Habitat Mapping Game (PBS Parents)**

<https://www.pbs.org/parents/crafts-and-experiments/make-a-habitat-mapping-game>

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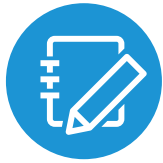
### Eagle-eyed hero

**Offer this prompt to kids:** If you swapped your eyes for an eagle's, what would you do with your incredible vision? Encourage kids to research all the characteristics of the eagles' eyes and incorporate some of those facts into a superhero tale.

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### Bird ads

Have kids help birds find the best places to stop and rest during a migratory flight. Have them get creative and write an advertisement for birds that promotes a good place for birds to stop or stay during migration. Kids can research a real place or use their imaginations to conceive the ideal location. But they should make sure birds who read this ad can find out all the details about the food, water, and shelter that are available to them.



## Writing About Birds

### Figures of speech

**Ask kids:** If someone says, “You eat like a bird,” did you actually have a meal of bugs or seeds? Very likely not! Explain that these figures of speech are idioms, expressions that have meanings beyond the actual words used in the phrase. To eat like a bird means to not eat very much or peck at your food. Have kids come up with and research more idioms and expressions about birds and their behavior. Here are a few to get kids started:

*As the crow flies* ..... shortest distance (in a straight line) between two points

*Lame duck*..... a politician who is leaving office or someone no longer effective

*Talk turkey*..... to talk seriously, usually about making a deal

*A little bird told me* ..... not telling where you got some information

*Wild goose chase* ..... a search that ends up with nothing found

When the kids have a good list of idioms and meanings, have them illustrate some of their favorite expressions using a literal interpretation, which means to create a drawing based on the exact wording of the expression.

Ask them to put the expression in a sentence, such as “*My friend Juana eats like a bird,*” and draw Juana pecking insects off a tree or pulling a worm out of the ground with her mouth. They should add the definition of the idiom to their illustration.

Compile all the illustrations into a book of idioms and share it with other birds of a feather!





# Kid-friendly Digital Media

## Websites

Beaks (Project Beak)

<http://projectbeak.org/adaptations/beaks.htm>

Fine Feather Feast Game (PBS KIDS Nature Cat)

<https://pbskids.org/naturecat/games/fine-feathered-feast>

Hunter and Hunted Game (Audubon Adventures)

<http://www.audubonadventures.org/hunterhunted/index.htm>

Guess Who's Coming to Dinner (Texas Parks and Wildlife)

[https://tpwd.texas.gov/kids/wild\\_things/birds/bird\\_bills\\_quiz1.phtml](https://tpwd.texas.gov/kids/wild_things/birds/bird_bills_quiz1.phtml)

BirdCast

<https://birdcast.info/>

## Educational apps

Sherlock Bones

<https://sherlockbonesmystery.com/>

<https://apps.apple.com/us/app/sherlock-bones/id1556348159>

<https://play.google.com/store/apps/details?id=com.RSMG.SherlockBones>

## Videos

Bird Feeding Adaptations: How Beaks are Adapted to What Birds Eat  
(Cornell University's Naturalist Outreach)

<https://youtu.be/i1BCehbUsTQ>

How Sharp Are an Eagle's Eyes? (NOVA)

<https://www.pbs.org/wgbh/nova/video/sharp-eagle-eyes/>

Barred Owl Bird Cam (The Cornell Lab)

<https://www.allaboutbirds.org/cams/barred-owls/>

FeederWatch Cam (The Cornell Lab)

<https://www.allaboutbirds.org/cams/cornell-lab-feederwatch/>

# Day 3

## Bird brains





# Day 3

## Bird brains

### Introduction

Birds learn and remember. And they are smart. They have to solve some of the same problems that humans do — finding nutritious foods, cooperating with or getting along with others, creating a safe environment to raise young. Activities on this day focus on behaviors that show how birds use their brains to plan, problem solve, reason, and learn.

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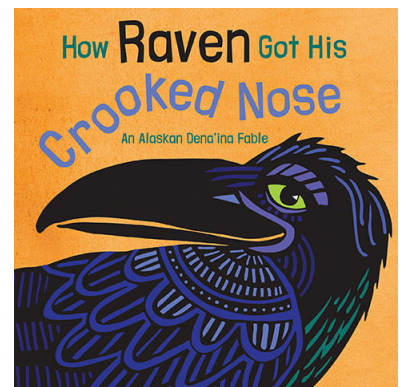
### Questions to guide explorations and experiments

- How smart are birds? Can birds solve problems?
- How do birds look at the world?
- How are instinct, behavior, and intelligence related?
- Who do birds learn from?

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### Books and activities

- **Books:** fables and brainy birds
- **Activities:** cache food like a bird and find it again, examine truths in fables, design an experiment, and take a Bird Walk





## Children's Books

### Fiction

- *Aesop's Fables* by Jerry Pinkney (Ages 4-8)
- *Birds of a Feather and Other Aesop's Fables* by Tom Paxton (Ages 6-9)
- *Fly, Eagle, Fly: An African Tale* by Christopher Gregorowski (Ages 4-8)
- *Freedom Bird* by Jerdine Nolen (Ages 6-9)
- *Hello Crow* by Candace Savage (Ages 4-8)
- *How Raven Got His Crooked Nose: An Alaskan Dena'ina Fable* retold by Barbara J. Atwater and Ethan J. Atwater (Ages 4-8)
- *Homer on the Case* by Henry Cole (Ages 9-12)
- *Inch by Inch* by Leo Lionni (Ages 4-8)
- *King of the Birds (Arlo & Pip)* by Elise Gravel (Ages 6-10)
- *The Lost Little Bird* by David M. McPhail (Ages 4-8)
- *Mr. Popper's Penguins* by Florence and Richard Atwater (Ages 9-12)
- *Real Pigeons Fight Crime* by Andrew McDonald and Ben Wood (Ages 9-12)
- *The Tale of the Mandarin Duck* by Katherine Paterson (Ages 3-6)
- *Welcome, Brown Bird* by Mary Lyn Ray (Ages 6-9)
- *What Is a Wise Bird Like You Doing in a Silly Tale Like This?* by Uri Shulevitz (Ages 6-9)

### Poetry

- *Seagulls Soar* by April Pulley Sayre (Ages 4-8)
- *Superlative Birds* by Leslie Bulion (Ages 8-12)

### Nonfiction

- *Alex the Parrot: No Ordinary Bird* by Stephanie Spinner (Ages 8-12)
- *Animal Fact/Animal Fable* by Seymour Simon (Ages 6-9)
- *Beastly Brains: Exploring How Animals Talk, Think, and Feel* by Nancy F. Castaldo (Ages 10-12)
- *Crow Smarts: Inside the Brain of the World's Brightest Bird* by Pamela Turner (Ages 10-12)
- *Crows: Genius Birds (Science Comics)* by Kyla Vanderklugt (Ages 9-12)
- *Professor Aesop's the Crow and the Pitcher* by Stephanie Gwyn Brown (Ages 6-9)
- *Wow! Look What Birds Can Do!* by Camilla de la Bedoyere (Ages 6-9)



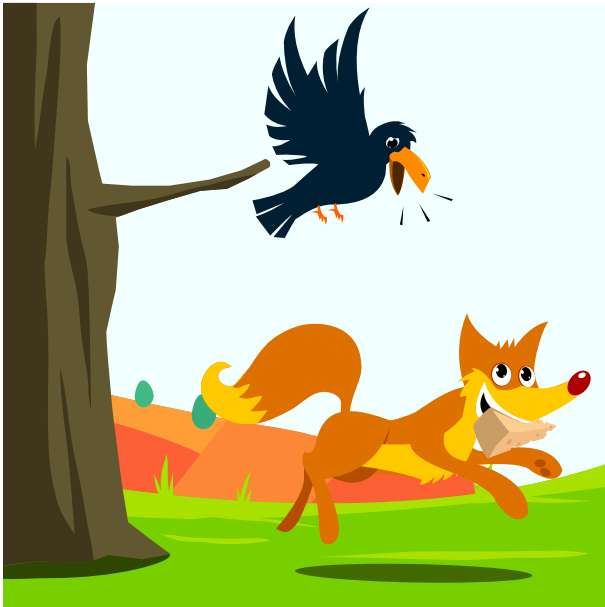
## Bird Words

### Cache

A safe place for hiding food (or other valuables) from others who may want to take it

### Fable

A short story usually with animals that act like people as the main characters and that often teach a lesson on proper behavior



### Hypothesis

A guess you make based on information you already know

### Instinct

A non-thinking response that an organism is born with to deal with the environment

### Learned behavior

Behavior that an organism develops through experience, either its own or from others

### Spatial memory

Brain activity that enables people and animals to remember different locations as well as spatial relations between objects



# Activity 1: Caching In

## Introduction

Many birds, including chickadees, crows and jays, will hide food to retrieve and eat at a later time. This behavior is called **caching** and helps birds survive when the weather or food sources are low. Some birds' brains — actually the hippocampus, the **spatial memory** part of the brain — grow larger in the fall to help them remember where they've stored food.

Birds who cache can store hundreds of seeds a day! They place seeds in different locations and can remember where each cache is, even a month later. Smart birds! Kids can try their hand at caching and test their own spatial memory.

## Supplies

- Small items that are decomposable, e.g., coffee beans, dried beans, popcorn kernels, etc.

## Get kids thinking ...

**Ask kids:** Do you have a hard time keeping track of your belongings? How do you know where to find where you've put something? Do you use landmarks to remember where you put it? Do you have a map inside your head of the location?

## Let's get started!

**Step 1:** Head to an outdoor space where you can spend a few hours or easily come back that same day. Explain **caching** behavior in birds and then give each child five small items that are decomposable, e.g., coffee beans, peanuts, other foodstuffs.

**Step 2:** Tell kids to "cache" or hide the items by covering them with leaves, grass, or other natural materials. (Make sure they don't dig any holes.) Ask them to make sure to remember where they hid their items because they will need to find them later.





## Activity 1: Caching In

(continued from previous page)

**Step 3:** After everything has been cached, you can either stay outdoors and do some reading aloud and birding, or head back and plan to return to the same spot later in the day. You want some time to pass before asking kids to come back and find their caches. Before you have them start their search, discuss the **Clark's Nutcracker** (shown below).



Remind kids that earlier in the day, they hid bits of food. In doing that they were acting like the birds who do the same thing in the wild — but birds do it on a grander scale. For example, **Clark's Nutcrackers bury pine seeds in as many as 5,000 caches!** They are able to retrieve many of them, but some seeds are found by others and some they don't find. The seeds they don't find may grow into pine trees and keep the forests green.

**Ask kids:** Why do you think we hid those items earlier? What does this activity have to do with bird intelligence? Do you think having a good memory has something to do with how much intelligence you have? The fact that the bird can find most of the 5,000 caches it hides seems



## Activity 1: Caching In

(continued from previous page)

to show that the bird has a tremendous intelligence to remember where these seeds are. Talk about some reasons birds might have better **spatial memory** than people. Do you use your memory a lot? What do you use it for?

The Clark's Nutcracker is clever in other ways too. It knows that other birds may be watching it as it hides seeds. If there's another bird watching, the Nutcracker will pretend to hide the seeds, but it then moves to another location to create the actual cache! That is clearly a sign of intelligence. Being aware of what others are thinking and acting on that awareness is a high level of intelligence.

**Ask kids:** Have you ever done anything similar to this strategy of Clark's Nutcracker?

**Step 4: Now have kids search for their caches.**

Give everyone plenty of time to look and remind them to only retrieve what they hid. Once the search is over, check in to see if they found all of their hidden items.

**Ask:** How did you remember where you left your cache? For items not recovered, discuss what might have happened to them.



### More memory activities

Some people try to remember things by repeating them over and over. Test kids' memory with this activity. You start with "I went to the woods and I saw a blue jay." Then the next person needs to repeat what you said and add their own bird sighting: "I went to the woods and I saw a blue jay and a sparrow." The game follows around the room with each player recalling the complete list of birds seen in the woods and adding a new one.

**Test the Smarts of Your Backyard Jays (Audubon)**

<https://www.audubon.org/news/test-smarts-your-backyard-jays-fun-memory-game>





## Activity 2: Experimental Learning

### Introduction

Much of bird behavior is **instinctive** — birds are born knowing how to build a nest or find their food. But scientists are beginning to understand that birds are capable of solving problems beyond the **instincts** that they are born with. Kids can solve problems too and learn from the experiments of others and their own.

### Supplies

- Computer or other device with audiovisual display
- Internet connection
- Bird journals (see Appendix)
- Pencils

### Get kids thinking ...

Crows can perform tasks that take real thinking. Aesop, the Greek storyteller who lived some 2,500 years ago, may have already realized this.

#### Share:

**The Crow and the Pitcher**

<http://www.read.gov/aesop/012.html>



### Let's get started!

Ask kids about the fable: Do you think this story is true? Is the crow smart enough to have figured out how to get the water on his own? Explain that scientific experiments have demonstrated that the crow was actually smart enough to carry out such a task on his own.

#### Watch:

**"How Smart Are Crows?" (NY Times)**

<https://youtu.be/s2lBayVsbz8>



## Activity 2: Experimental Learning

(continued from previous page)

Discuss any experiments kids have conducted in the past. **Ask kids:** What other ways could you test bird intelligence? Could they come up with an experiment to explore bird intelligence? Are there other fables or stories about birds that might give them ideas?

Share more research into bird intelligence with kids before helping them use experimental design steps to form a question, make a **hypothesis** or prediction, and determine the methods for conducting their experiment.

**Bird IQ Tests: 8 Ways Researchers Test Bird Intelligence (Audubon)**

<https://www.audubon.org/news/bird-iq-tests-8-ways-researchers-test-bird-intelligence>

**Teach Students the Design of Experiments**

<https://www.storyboardthat.com/articles/e/experimental-design>

**Experimental Design in Science**

<https://youtu.be/7q8acfBx5to>

Kids may not be able to carry out their experiments, but thinking of questions and outlining their research ideas are important concepts to learn that will enable them later to design and conduct sound scientific experiments. Remind kids about the importance of the ethical treatment of animals during any experiment.



**Crow solves an 8-step puzzle to get food. Watch CCBC video:**

<https://youtu.be/iVzmkbkYr0M>



## Activity 2: Experimental Learning

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(continued from previous page)

You can also try recreating a version of the crow and water pitcher experiment — but for kids instead of crows:

**The Crow and the Pitcher (National Council of Teachers of Mathematics)**

<https://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/6-8/CrowAndPitcher-AS.pdf>

**Professor Aesop's The Crow and the Pitcher Educator Guide (Random House)**

[http://www.randomhouse.com/crown/tricycle/images/Professor\\_Aesop\\_Guide.pdf](http://www.randomhouse.com/crown/tricycle/images/Professor_Aesop_Guide.pdf)

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### More activities

**Investigating Evidence (The Cornell Lab)**

[https://www.birds.cornell.edu/k12/investigating\\_evidence/](https://www.birds.cornell.edu/k12/investigating_evidence/)

**BirdSleuth Investigator (The Cornell Lab)**

<https://www.birds.cornell.edu/k12/student-publication/>

# BIRD WALK



During this Bird Walk, encourage kids to watch for dozens of bird behaviors, from preening and perching to walking and hopping.

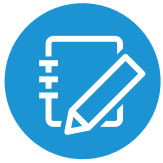
Ask kids to also be on the lookout for evidence of bird intelligence — are birds communicating with each other? Do kids notice any signs of play or cooperation?

Some Bird Buddies may benefit from specific instructions on what bird behaviors to look for. To help them identify what the bird was doing, you might offer these questions for kids to include in their Bird Journals to use as prompts for noting details:

## **Was the bird I saw:**

- On the ground?
- Flying?
- Moving in a pattern?
- Hopping?
- Picking something up with its beak?
- Eating something? What?
- Alert and looking around?
- Out in the open?
- Hiding under some thick brush?
- Standing very still?
- Singing?
- Calling?

When kids are looking out for bird behaviors, they are sure to have questions. They may wonder: *“Are those robins playing or fighting?”* Remind them to use their Bird Journals to note questions or things they wonder about so they can research answers and discuss what they’ve seen later with their fellow Bird Buddies.



## Writing about Birds

### Fabulous fables

Fables are short stories that teach a lesson. Most fables are filled with animals that have the characteristics of humans. Have kids think about The Crow and the Pitcher and how it teaches us to rely on our intelligence in a difficult situation; or The Lion and The Mouse, which teaches us about cooperation. Ask kids to write and illustrate a fable of their own, featuring at least two intelligent birds, that teaches an important lesson.

#### Share other fables for inspiration:

The Aesop for Children (Library of Congress)

<http://www.read.gov/aesop/index.html>

Silk Road Fables (American Museum of Natural History)

<https://www.amnh.org/explore/ology/anthropology/silk-road-fables2>

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### Chef bird

Humans often develop preferences for food based on how good we think it tastes. Birds are not so fussy. We humans have about 10,000 taste buds while birds, at the most, have about 500. Have kids choose a bird and thoroughly research what it eats. Then have kids come up with a fantastical recipe using those foods in the bird's typical diet as ingredients. They'll need to include a list of ingredients, measurements, and steps for what birds need to do to make this tempting new dish.

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### Smarty feathers

A know-it-all is someone who behaves as if they know everything. **Ask kids** what bird they think is the know-it-all of the bird kingdom. Have them create a comic about what happens when the know-it-all bird meets up with a bird who is actually quite wise.



## Writing about Birds

Creating Comics and Cartoons! (Read, Write, Think)

<http://www.readwritethink.org/parent-afterschool-resources/activities-projects/creating-comics-cartoons-30291.html>

Quick Cartooning Tips from Jarrett J. Krosoczka

<https://www.youtube.com/playlist?list=PLg9gpgNtuVmESfbnryFQ-wJJZoq3IniNy>

Writing Tips from JJK

<https://www.youtube.com/playlist?list=PLg9gpgNtuVmGFndpo0czbvyDzdbEoG2iF>

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### Life list

When exciting or unusual things happen, they often stand out in our memories. Writing things down can be a good way to help remember the exciting or not so exciting things you want to remember. Talk with children about the kinds of things they most easily forget or remember.

**Ask:** Would keeping a list help? Keeping a list of birds is definitely helpful when trying to remember which birds you've encountered. Have kids create a list poem about their sightings. A list poem is thoughtful — not just a random list — with the last line typically being funny, meaningful, or something very important.



# Kid-friendly Digital Media

## Websites

Bird Intelligence (Active Wild)

<https://www.activewild.com/bird-intelligence/>

Where Is That Bird Going with That Seed? (The Cornell Lab)

<https://www.allaboutbirds.org/news/where-is-that-bird-going-with-that-seed-its-caching-food-for-later/>

Birds (National Geographic Kids)

<https://kids.nationalgeographic.com/animals/birds>

## Podcasts

Bird Intelligence (The Science of Birds)

<https://www.scienceofbirds.com/podcast/bird-intelligence>

Myths (BirdNote)

<https://www.birdnote.org/explore/tune-kids-nature-resources-educators/shows-educators-topic>

## Videos

Why bird brains are more brilliant than anyone suspected

<https://youtu.be/H59GcPgXXv4>

Wild Crows Inhabiting the City Use it to their Advantage (BBC)

<https://youtu.be/BGPGknpq3e0>

Crow Intelligence (California Academy of Sciences)

<https://www.calacademy.org/explore-science/crow-intelligence>

Do Birds Play? (BirdNote)

<https://www.birdnote.org/explore/field-notes/2014/04/do-birds-play>

# Day 4

## The social life of birds







# Day 4

## The social life of birds

### Introduction

Birds engage in many behaviors that humans would consider to be quite sociable — dancing, singing, meeting a mate, creating a safe environment to raise young. Some birds will cooperate with each other while others are very competitive. Finding food and feeling safe influence bird behavior.

Birds may **flock** together during **migration, roosting**, or feeding, but their social interactions are most robust during **breeding** season. This day explores some of the social interactions around breeding and also ways in which birds communicate with each other.

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### Questions to guide explorations and experiments

- Why do birds flock together?
- In what ways are you social?
- How do birds communicate with each other?
- Why do birds sing? How do they decide what to sing?
- Do birds dance for fun? Why do birds dance?
- Why do birds build nests?
- What are nests used for?

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### Books and activities

- **Books:** all about nests, bird communication, and courtship.
- **Activities:** explore how birds use their voices, learn how to identify their songs, dance like a bird, build a nest, and take a Bird Walk.



## Children's Books

### Fiction

- *The Lion and the Bird* by Marianne Dubuc (Ages 4-6)
- *Make Way for Ducklings* by Robert McCloskey (Ages 4-8)
- *Mango, Abuela, and Me* by Meg Medina (Ages 4-8)
- *NOPE* by Drew Sheneman (Ages 4-8)
- *On Eagle Cove* by Jane Yolen (Ages 4-8)
- *Owl Babies* by Martin Waddell (Ages 3-7)
- *Red & Lulu* by Matt Tavares (Ages 4-8)
- *Telephone* by Mac Barnett (Ages 4-8)
- *Tico and the Golden Wings* by Leo Lionni (Ages 4-8)
- *The Trumpet of the Swan* by E. B. White (Ages 9-12)

### Poetry

- *Hello, I'm Here!* by Helen Frost (Ages 4-8)
- *A Round of Robins* by Katie Hesterman (Ages 4-8)
- *Snow Birds* by Kirsten Hall (Ages 6-9)

### Nonfiction

- *About Birds / Sobre los pájaros: A Guide for Children / Una guía para niños* by Catherine Sill (Ages 4-8)
- *Birding Is My Favorite Video Game: Cartoons About the Natural World from Bird and Moon* by Rosemary Mosco (Ages 10-12)
- *Bird Talk: What Birds Are Saying and Why* by Lita Judge
- *Birds Make Nests* by Michael Garland (Ages 4-8)
- *Birds, Nests and Eggs* by Mel Boring (Ages 6-9)
- *Cuckoo / Cucu: A Mexican Folktale / Un cuento folklórico mexicano* by Lois Ehlert (Ages 3-6)
- *An Egg Is Quiet* by Dianna Hutts Aston (Ages 4-8)
- *Have You Heard the Nesting Bird* by Rita Gray (Ages 4-8)
- *Mama Built a Little Nest* by Jennifer Ward (Ages 4-8)
- *A Nest Is Noisy* by Dianna Hutts Aston (Ages 4-8)
- *Nesting* by Henry Cole (Ages 4-8)
- *Noisy Bird Sing-Along* by John Himmelman (Ages 4-8)
- *Woodpecker Wham!* by April Pulley Sayre (Ages 4-8)



## Bird Words

### Breeding

The process of producing babies (offspring)

### Call

Short vocalization of a bird usually given as an alarm or for contact

### Flock

Birds of one kind feeding, resting, or traveling together

### Forage

To search for food

### Lek

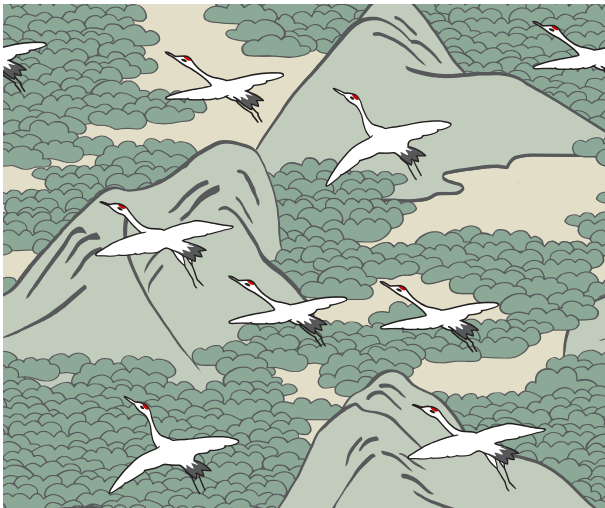
A meeting ground for male birds to gather and dance or display in hopes of attracting a female

### Mnemonics

Something to help assist memory

### Migration

Seasonal movement of animals from one place to another



### Roosting

Settling down to rest or sleep



### Scrape

A shallow depression scratched into the bare ground used by some bird species for nesting

### Species

Group of living things (such as birds) with similar characteristics and are able to produce young. There are more than 9,000 bird species

### Vocalization

To make a sound. Bird vocalization includes bird calls and bird songs



# Activity 1: Bird Songs

## Introduction

It's possible that birds may sing just because they want to, but for the most part, they are using their songs to communicate with other birds. Birds have a variety of vocal sounds they use to communicate in different situations. Kids can explore how birds use calls and songs to communicate and learn how to listen for songs and use mnemonics to identify the birds they hear and see.

## Supplies

- Computer or other device with audiovisual display
- Internet connection
- Bird Journals (see Appendix)
- Pencils



## Get kids thinking ...

Just like people, birds sing! They also use their voices to communicate in other ways. How do you use your voice? Why do we sing? **Ask kids:** Why do they think birds sing?

## Let's get started!

In many bird species, both females and males sing incredibly complex songs, but in some species, females do not sing at all. Birds may sing to attract a mate. They may also sing to identify their territory, letting other birds of the same species know that this territory is taken.

Birds also communicate when they make calls — shorter and simpler vocalizations — to let each other know their location or make alarm calls to warn of danger approaching, perhaps a hawk in the area. Each song is specific to a species, so you can identify a bird by what it is singing.



# Activity 1: Bird Songs

(continued from previous page)

**Step 1: Play the videos below for each bird** (or choose others if you prefer):

American Robin

[https://www.allaboutbirds.org/guide/American\\_Robin/sounds](https://www.allaboutbirds.org/guide/American_Robin/sounds)

Barred Owl

[https://www.allaboutbirds.org/guide/Barred\\_Owl/sounds](https://www.allaboutbirds.org/guide/Barred_Owl/sounds)

Black-capped Chickadee

[https://www.allaboutbirds.org/guide/Black-capped\\_Chickadee/sounds](https://www.allaboutbirds.org/guide/Black-capped_Chickadee/sounds)

Mourning Dove

[https://www.allaboutbirds.org/guide/Mourning\\_Dove/sounds](https://www.allaboutbirds.org/guide/Mourning_Dove/sounds)

**Step 2: Have kids watch and look and listen for:**

- the size, shape, and color of the bird
- what the bird is doing in the video
- the sounds the bird is making





# Activity 1: Bird Songs

(continued from previous page)

**Step 3:** Play the sound for the video again (without showing kids the screen) or some of the audio files found on the same page, letting kids know which bird they are listening to. **Ask kids** to listen carefully and describe each of the birds' songs or calls in their Bird Journal.

**Step 4:** Now see if kids can identify the bird just by hearing the song of that bird. Use a different audio file than before and have kids close their eyes and listen. After each file ends, ask kids to offer their identifications by raising their hand when you say the name of the bird they think they heard. Discuss how successful kids were at identifying birds with just their ears.

Sometimes it is easier to remember bird songs by using **mnemonics** — a memory tool. Birders often come up with phrases or sounds in their own language to help remember bird songs. Mnemonic phrases follow the same rhythm birds use and need to be catchy to help people remember them.



Sample of bird sound mnemonics (© Bird and Moon)

**Step 5:** Share these mnemonics for the birds you listened to earlier:

- American Robin: *Cheery up, Cheerio! Cheery up, Cheerio!*
- Barred Owl: *Who cooks for you? Who cooks for yooou-allll?*
- Black-capped Chickadee: *Chick-a-dee-dee-dee. Chick-a-dee-dee-dee*
- Mourning Dove: *Hooo-ah hoo-hoo-hoo*

**Ask kids:** Are these mnemonics good representations of the sounds the birds make? Would they help you remember the bird's song? Share additional English-language mnemonics for other birds:



# Activity 1: Bird Songs

(continued from previous page)

4

Bird Sound Mnemonics: Eastern Bird Sounds (Bird and Moon)

<https://www.birdandmoon.com/wp-content/uploads/2015/07/birdsounds.jpg>

Bird Sound Mnemonics: Western Bird Sounds (Bird and Moon)

<https://www.birdandmoon.com/wp-content/uploads/2015/07/birdsoundswest.jpg>

Mnemonic Bird Songs (South Bay Birders Unlimited)

<https://web.stanford.edu/~kendric/birds/birdsong.html>

**Step 6:** After kids review the phrases, let them look up some of the birds online or use a bird identification app and **listen to the songs of birds they are interested in**. Ask them to write down the bird name and mnemonic in their Bird Journal if the mnemonic works for them. If they can think of a better mnemonic or one in a language they prefer, have them include their version in their Bird Journal.

**Step 7:** To conclude, you can play a variety of bird songs and **let kids invent their own mnemonics and drawings** similar to the Bird and Moon comic mnemonics.

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## More bird song activities

Bird Communication (The Cornell Lab)

<https://www.birds.cornell.edu/k12/bird-communication/>

Songbird Songs – Activities (Nearby Nature)

<https://nearbynature.fwni.org/2018/09/09/songbird-songs-activities/>



## Activity 2: Bird Dancing

### Introduction

Bird dancing is primarily used for finding a mate, so there's always an audience for the dance — a potential mate! Some male birds take things a little farther with a spiffy dance floor or gather in **leks**, a meeting space where birds get together to dance in a group to attract female birds. Kids learn more about the kinds of displays birds put on to attract a mate and can try some bird moves of their own.

### Get kids thinking ...

#### Watch:

**This Cockatoo Sure Can Dance**  
[https://youtu.be/D8MFhizls\\_8](https://youtu.be/D8MFhizls_8)

**Birds of Paradise (Our Planet)**  
<https://youtu.be/rX40mBb8bkU>



The cockatoo Snowball is the first animal to dance to music without any training. He is responding to the beat and experimenting — much like people do when they dance. Other bird dances — like that of the Western Parotia — have to be more perfectly choreographed and attuned to what is of interest to a potential mate — not a driving beat. A bird that makes mistakes in the dance might be thought of as weak or inexperienced and not a good choice for mating.

### Let's get started!

**Put on some music** (Rockin' Robin: <https://music.youtube.com/watch?v=uLF3YZIjucs&list=R-DAMVMuLF3YZIjucs>), **have kids stand up, and see what happens.** Human brains are primed to move to music. Scientists think it's likely that most birds and animals don't have the same traits that create an impulse to dance. They also don't have access to a lot of music!

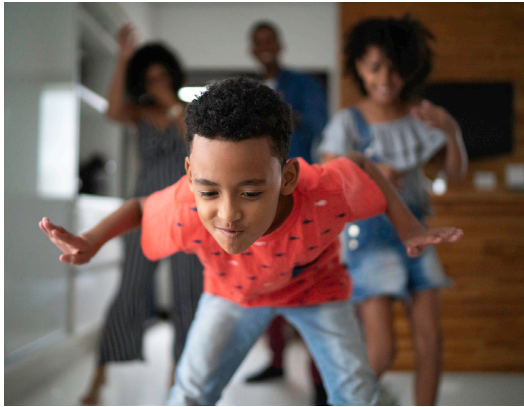
**Have kids get moving even more deliberately and interpret bird activity** using their bodies or imitate the ways different birds move.





# Activity 2: Bird Dancing

# 4



Get them started with the dances below, and then have them come up with some dances of their own!

### **“The Pigeon”**

Bert from Sesame Street made it famous, but everyone can move their heads in and out as they walk in short steps with hands behind their backs.

<https://youtu.be/VDJsgtoizj8>

### **“The Turkey Vulture Soar”**

Like the birds, kids hold their wings (arms) in a wide letter v-shape and rock gently from side to side as they glide around the room.

### **“Bird Hop”**

Just like sparrows and robins who spend a lot of time hopping around on the ground looking for food, kids can fold their wings (arms) next to their bodies and hop around!

### **“The Penguin Walk”**

The penguin can't fly, but it is a great swimmer, and its walk is distinct; kids can hold their arms down on their sides or straight out and take short wide steps and wobble while they walk.

### **Do the Penguin Walk / Wild Clips (Sesame Studios)**

<https://youtu.be/a6Ur326zJtM>

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## More bird dancing

**Dancing With Birds Merengue routine (English and Spanish)**

<https://youtu.be/qzM1TyNsVrI>

**Weird and Wonderful Dancing Birds Compilation**

<https://youtu.be/wTcfDCjBqV0>



## Activity 3: Nest Building

### Introduction

Some birds are more social than others. Crows for example, may **roost** together in the thousands on winter nights. Roosting together has advantages; younger birds can learn from more experienced birds about where to successfully **forage**. Different birds will roost together for different reasons, and will often change their roosting habits in different seasons.

When birds are nesting, birds focus on their mate, building a nest, and raising their young. Kids will learn more about how nests are built and what they are used for as they create a nest of their own.

### Supplies

- Natural materials that you find outside such as twigs, grass, leaves, dirt, mud, moss, rocks, sand, etc.
- Ribbons
- Yarn
- Bits of trash, such as plastic bags
- You might also want to provide some of the tools used in the **Eating at Home** activity (see page 36), such as pliers, tweezers, tongs, etc., if kids want to build using their “beak”



### Get kids thinking ...

**Ask kids:** Why does a bird build a nest? Do all birds build nests? What is the nest used for? Explain that birds typically only use their nests when they are raising their young. Once chicks become capable of flight, adults and young do not usually continue to use the nest. When they aren't nesting, birds select a roosting spot to rest. They often use the same spot to roost night after night.



# Activity 3: Nest Building

(continued from previous page)

## Watch:

7 Nests That Will Change How You Think of Birds

<https://youtu.be/mhWDCcBhxLQ>

Discuss the requirements for a bird's nest, e.g., right size for the bird, right depth for the eggs, ways to camouflage the nest and protect the young. **Ask kids:** What materials do you think would make a good nest?

## Let's get started!

Bird nests come in all shapes and sizes. Sometimes male and female birds work together to build their nests; in other species, the male builds the nest. In some species, such as the hummingbird, only the female builds the nest — a very tiny nest! Kids might also be interested in birds who lay their eggs on the ground in scrapes, like killdeer.



Hummingbird



Killdeer



Osprey



## Activity 3: Nest Building

(continued from previous page)

**Step 1: Provide field guides, pictures of birds and their nests,** or have kids research online for a specific bird they want to build a nest for:

Guide to Common Nesting Birds (The Cornell Lab)

<https://nestwatch.org/learn/focal-species/>

Clutch Size for Common Species

<https://nestwatch.org/learn/general-bird-nest-info/clutch-size-phenology-for-common-species/>

**Step 2: When nest construction is complete, have kids share information** about the bird they chose and the nest they built, explaining the nesting materials they used and what they learned about building nests.

**Step 3: For an additional challenge, see if kids' nests are able to withstand various tests.**

Can the nest hold the approximate weight of eggs and parent? Can the nest withstand a windstorm (a fan blowing air on the nest) or rainstorm (a deluge from a watering can or garden hose)?

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## More nest-building activities

**Step 4:** After building nests, **split kids into teams to place the nests in appropriate locations outdoors** without the other team watching. Then have kids see if they can find each other's nests: <https://dnr.maryland.gov/wildlife/Documents/BirdNests.pdf>

WILD at Schools: Build the Best Nest (Maryland Department of Natural Resources)

[https://dnr.maryland.gov/wildlife/Documents/BuildtheBestNest\\_LessonPlan.pdf](https://dnr.maryland.gov/wildlife/Documents/BuildtheBestNest_LessonPlan.pdf)

[https://dnr.maryland.gov/wildlife/Documents/BuildtheBestNest\\_PicturePack.pdf](https://dnr.maryland.gov/wildlife/Documents/BuildtheBestNest_PicturePack.pdf)

Guard Your Nest

[https://migration.pwnet.org/pdf/Guard\\_Your\\_Nest.pdf](https://migration.pwnet.org/pdf/Guard_Your_Nest.pdf)

Life in a Nest (The Cornell Lab)

<https://www.birds.cornell.edu/k12/life-in-a-nest-2/>

# BIRD WALK



**Focus on some careful listening to help kids find and identify birds.**

Spend more time on this walk sitting in one place and have kids listen carefully to the sounds around them. Have them describe what they hear — from passing cars to leaves rustling to bird calls and songs — in their Bird Journal.

**Get them thinking about these questions:**

- Did they hear some things at the same time?
- Were they able to hear distinctive sounds?
- Did they hear any sounds that they couldn't identify?
- Was there ever a moment when they heard no sounds at all?

Sitting in one place and listening for a while will help kids learn to determine if the bird is staying in one spot or moving around while singing. As kids listen for birds, have them look for birds based on where the sounds are coming from. As they see a bird, have them watch where the bird is moving and track its movements.

Kids can also more closely (and carefully!) investigate where the bird has been. Perhaps they'll also spot a bird's nest!



# Writing about Birds

# 4

## Secret signals

Harriet Tubman grew up in an area full of wetlands, swamps, and forests. Her knowledge of the outdoors helped her and those she led to freedom survive. She used the call of an owl, probably the Barred Owl (“*Who cooks for you? Who cooks for you?*”), as a signal to slaves seeking freedom. Learn more in this article:



[Harriet Tubman, an Unsung Naturalist, Used Owl Calls as a Signal on the Underground Railroad](https://www.audubon.org/news/harriet-tubman-unsung-naturalist-used-owl-calls-signal-underground-railroad)  
<https://www.audubon.org/news/harriet-tubman-unsung-naturalist-used-owl-calls-signal-underground-railroad>

Have kids work in pairs to research bird calls for birds in your area that can be easily imitated that they could use to develop their own secret signals. Get them to develop their own signal book with entries for each bird, call, what the call means, and when to use it. You can also work as a group to develop a signal book with bird call signals that can help you locate each other when out on Bird Walks or to announce a change in activity.

## But why?

Many legends and folktales are *pourquoi* tales. *Pourquoi* (pronounced *poor-kwah*) tales — sometimes called “origin stories” — are fictional stories that explain why something is the way it is (“*pourquoi*” means “why?” in French). Before people were able to use science to explain nature, they used these stories to make sense of the world around them. Have kids write a *pourquoi* tale to explain something about birds — why do birds sing, why do parrot talk, or why the peacock has such colorful feathers.

[Write Your Own Pourquoi Story! Worksheet \(Read, Write, Think\)](http://www.readwritethink.org/files/resources/lesson_images/lesson324/write.pdf)

[http://www.readwritethink.org/files/resources/lesson\\_images/lesson324/write.pdf](http://www.readwritethink.org/files/resources/lesson_images/lesson324/write.pdf)

[Teaching with Pourquoi Tales](https://www.scholastic.com/teachers/articles/teaching-content/teaching-pourquoi-tales/)

<https://www.scholastic.com/teachers/articles/teaching-content/teaching-pourquoi-tales/>



# Writing about Birds

# 4

## Bird beat

If observing nature were like watching a movie, bird song would be a big part of the soundtrack! Sometimes the sounds of birds singing seem like background music. Other times, the sounds of birds help tell a story of what's happening with the birds. Bird song is the music of the natural world. After spending time outside listening to birds, have kids write their own lyrics for their music.

## Riddle me a bird

Riddles often use ordinary words in unexpected ways. To write a riddle, you have to ask a question that describes something without actually naming what it is. The answer to the question is a surprise twist. Have kids use what they've learned about birds to write their own bird jokes. Here are some examples to get them started:

- What can honk without using a horn? A goose!
- What bird can you hear during mealtime? A swallow!

## Bird chat

Share images of birds in unique positions or situations. Ask kids to think about what the birds in the pictures are thinking or what they might say if they could talk. Pass out the bird chat images (see the next two pages) and ask the kids to write in captions for what they imagine the birds are thinking or saying.

**Find additional bird photos here:**

<https://unsplash.com/images/animals/birds>



Photo by Vincent van Zalinge (Source: Unsplash)



Photo by Richard Lee (Source: Unsplash)





Photo by Dim Hou (Source: Unsplash)



# Kid-friendly digital media

# 4

## Websites

All About Bird Song (The Cornell Lab)

<https://academy.allaboutbirds.org/features/birdsong/songbirds-in-action>

Bird Song Hero: The Song Learning Game for Everyone (The Cornell Lab)

<https://academy.allaboutbirds.org/bird-song-hero/>

BeastBox (The Cornell Lab)

<https://academy.allaboutbirds.org/features/beastbox/>

Who Lives Where Game (Audubon Adventures)

[http://www.audubonadventures.org/habitat\\_game/index.htm](http://www.audubonadventures.org/habitat_game/index.htm)

How to Learn Bird Songs and Calls (The Cornell Lab)

<https://www.allaboutbirds.org/news/how-to-learn-bird-songs-and-calls/>

Birds' Nests (DK Find Out)

<https://www.dkfindout.com/us/animals-and-nature/birds/birds-nests/>

## Podcasts

Cardinal Rule: Female Birds Sing, Too (Scientific American)

<https://www.scientificamerican.com/podcast/episode/cardinal-rule-female-birds-sing-too/>

You Can Take Part in the Female Bird Song Project (Cape and Islands NPR)

<https://www.capeandislands.org/show/living-lab-radio-on-cai/2018-05-21/you-can-take-part-in-the-female-bird-song-project>

## Educational apps

Chirp! Bird Songs \$

<https://www.spinysoftware.com/chirp/>

Larkwire game-based learning system for mastering bird sounds \$

<https://www.larkwire.com/>



# Kid-friendly digital media

# 4

Snapshot Adventures: Secret of Bird Island \$

<https://www.commonsense.org/education/game/snapshot-adventures-secret-of-bird-island>

Nature Maestro \$

<http://www.naturemaestro.com/>

## Video

10 Outrageous Ways Birds Dance to Impress Their Mates (Audubon)

<https://www.audubon.org/news/10-outrageous-ways-birds-dance-impress-their-mates>

Watch Blue-footed Boobies Dance (National Wildlife Federation)

<https://rangerrick.org/nature/watch-blue-footed-boobies-dance/>

Lance-tailed Manakins Bird Cam (The Cornell Lab)

<https://www.allaboutbirds.org/cams/lance-tailed-manakins/>

How Swallows Build Nests

<https://youtu.be/OhxYNPuVivw>

Inside Look at a Hornbill's Nest

<https://youtu.be/5xQR-8EVuX8>

Oropendolas — Master Nest Weavers

<https://youtu.be/-NRf5wpzbDI>

Osprey Nest Webcam (Audubon)

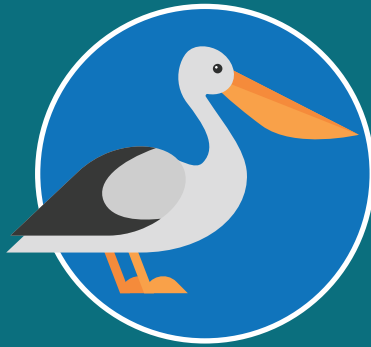
<https://www.audubon.org/news/hog-island-maine-osprey-nest-webcam>

Symphony of the Birds (Jim Fassett)

<https://youtu.be/7rKjOR-4964>

# Day 5

## Birds and humans





# Day 5

## Birds and humans

### Introduction

Birds and people have been interacting throughout history. Human and bird relationships are expressed through celebrations, legends, myths, religious teachings, literary writings, symbols, ceremonies, and other activities in a wide variety of societies and cultures.

Appreciation of birds will ensure that they continue to play an important role in human culture. But in the last 50 years, we have lost nearly one-third of the bird population in North America. Some of that is from pet cats who roam outdoors, but habitat loss is the number one threat to birds and other wildlife and plants throughout the world.

Birds are important because they distribute seeds, help control insects, serve as a food source for humans, act as **pollinators**, and provide fertilizer. They are good indicators of the health of their **habitats** (forests, grasslands, mountains, polar regions, and water) — and the health of our planet. With these activities, kids will explore why we need birds, what they need to know about birds, and what they can do to treat birds better.

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### Questions to guide explorations and experiments

- How are birds and humans connected?
- Why are birds important to humans?
- How do birds indicate the health of a habitat?
- What can humans do to protect birds?

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### Books and activities

- **Books:** endangered birds, bird rescues, birdwatching, and looking out for birds
- **Activities:** help a habitat, explore a watershed, create and play a bird identification game, and take a Bird Walk



## Children's Books

### Fiction

- *Bird Count* by Susan Edwards Richmond (Ages 4-8)
- *Bird House* by Blanca Gómez (Ages 4-8)
- *Birds: Just Like Us* by Bridget Heos (Ages 6-9)
- *The Birdwatchers* by Simon James (Ages 4-8)
- *The Blue Wings* by Jef Aerts (Ages 9-12)
- *Canary in the Coal Mine* by Madelyn Rosenberg (Ages 9-12)
- *Elsie's Bird* by Jane Yolen (Ages 6-9)
- *The Fog* by Kyo Maclear (Ages 4-8)
- *Free* by Sam Usher (Ages 4-8)
- *Helen's Birds* by Sara Cassidy (Ages 6-9)
- *How to Heal a Broken Wing* by Bob Graham (Ages 4-8)
- *Lotus & Feather* by Ji-li Jiang (Ages 6-9)
- *On Meadowview Street* by Henry Cole (Ages 4-8)
- *Mr. Lincoln's Way* by Patricia Polacco (Ages 7-10)
- *My America: Freedom's Wings: Corey's Underground Railroad Diary* by Sharon Dennis Wyeth (Ages 7-10)
- *Owl Moon* written by Jane Yolen (Ages 4-8)
- *Ruby's Birds* by Mya Thompson and Claudia Davila (Ages 4-8)
- *Sparrow Girl* by Sara Pennypacker (Ages 6-9)
- *Strange Birds: A Field Guide to Ruffling Feathers* by Celia C. Pérez (Ages 9-12)
- *Wild Wings* by Gill Lewis (Ages 9-12)

### Poetry

- *Fly with Me: A Celebration of Birds Through Pictures, Poems, and Stories* by Jane Yolen (Ages 6-9)
- *On the Wing* by David Elliott (Ages 4-8)



## Children's Books

# 5

### Nonfiction

- *All the Birds in the World* by David Opie (Ages 6-9)
- *Bird's-Eye View: Keeping Wild Birds in Flight* by Ann Eriksson (Ages 9-12)
- *Condor Comeback* by Sy Montgomery (Ages 9-12)
- *Kakapo Rescue: Saving the World's Strangest Parrot* by Sy Montgomery (Ages 9-12)
- *Look Up! Bird-Watching in Your Own Backyard* by Annette Cate (Ages 8-12)
- *Moonbird: A Year on the Wind with the Great Survivor B95* by Phillip M. Hoose (Ages 9-12)
- *Olivia's Birds: Saving the Gulf* by Olivia Boulter (Ages 7-10)
- *Pale Male: Citizen Hawk of New York City* by Janet Schulman (Ages 6-9)
- *Parrots over Puerto Rico* by Susan L. Roth (Ages 7-10)
- *A Place for Birds* by Melissa Stewart (Ages 6-9)
- *The Tragic Tale of the Great Auk* by Jan Thornhill (Ages 9-12)



## Bird Words

### Ecosystem

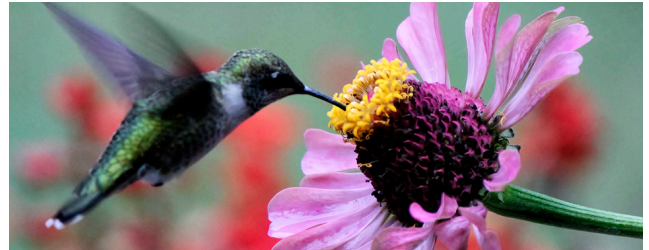
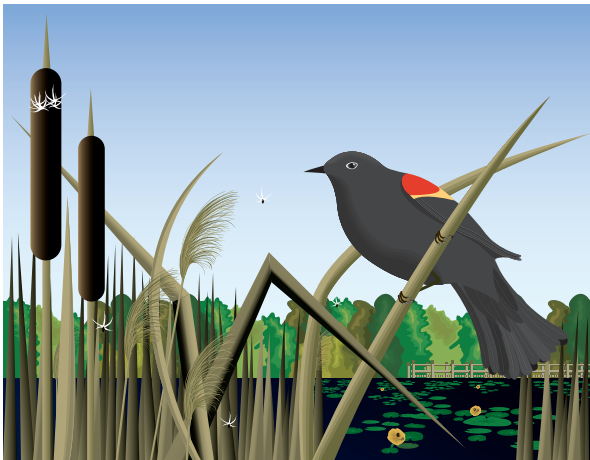
A community of living things in a shared environment

### Habitat

The natural environment of an animal or plant

### Marsh

A low, wet, muddy area, often thick with tall grasses



### Pollinators

Animals that move or carry pollen to a plant, allowing the seeds to be fertilized

### Watershed

The area of land drained by a river, river system, or lake





# Activity 1: Litter walk

## Introduction

Litter is unsightly, but the harm it does goes far beyond just looking like a mess. More than one million seabirds die each year from being tangled up in plastic trash or from eating it.

Ocean litter may come from anywhere because much of it is carried to the sea by rivers. Plastic waste also causes problems for birds on land. They may become entangled in it and can't fly, or they find small pieces of it and feed it to their young. Disposing of trash properly is a valuable way to help save the lives of birds and other wildlife.

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## Supplies

- Trash bags
- Rubber gloves

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## Get kids thinking ...

Ask kids to name products that they use regularly. **Ask:** How many of these products come in plastic packaging? How do they dispose of these products? Where do these products go once they have disposed of them?

## Watch:

**Facts on Plastic Pollution**

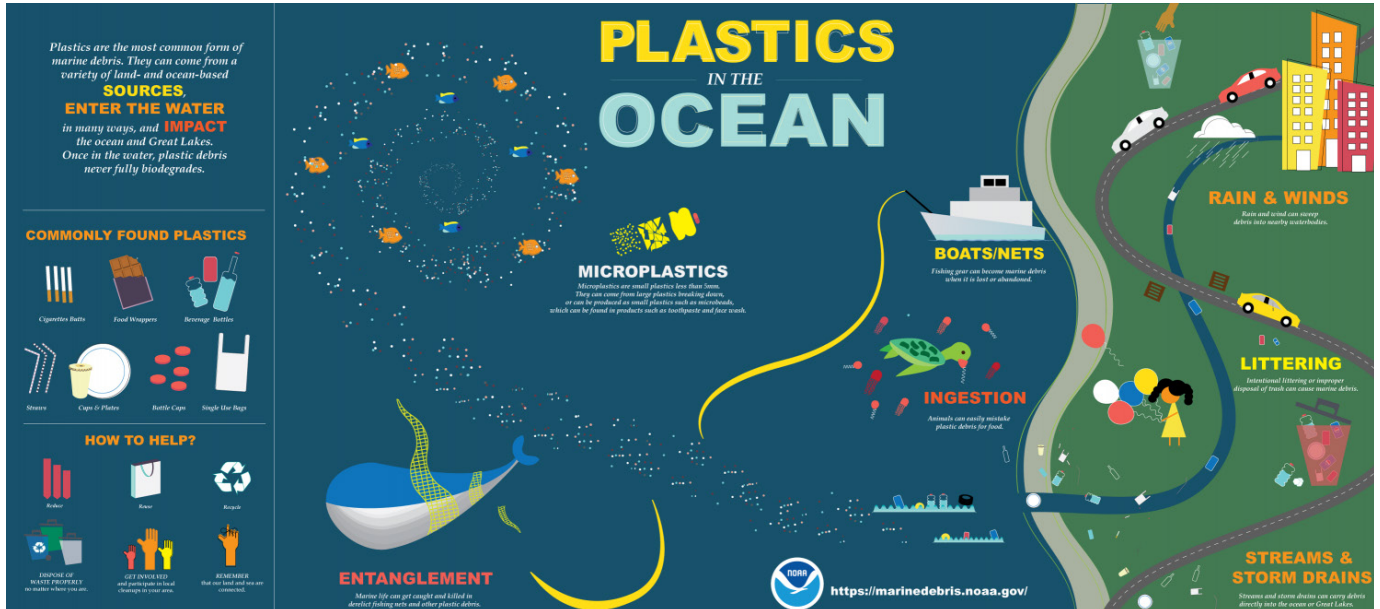
[https://youtu.be/npHUp\\_oQ-08](https://youtu.be/npHUp_oQ-08)

Trash that has not been properly recycled or thrown away is a problem for everyone. Discuss what ideas kids have for making litter and trash less of a problem.



# Activity 1: Litter walk

(continued from previous page)



## Plastics in the Ocean

© National Oceanic and Atmospheric Administration

### Let's get started!

**Step 1:** Head out to a park or hiking trail or just take a walk with a purpose — looking for litter. Bring a trash bag and provide rubber gloves for everyone. If your area has a recycling program, you may want to have a bag specifically to carry items kids collect that can be recycled.

One person in your group (or more if it's a large group), can keep track of the number of pieces and type of trash that is picked up — plastic, paper, metal, and other kinds. Kids can rotate between being collectors and counters. When the walk is over, dispose of the trash and recyclables properly.

**Step 2:** After the walk, have kids tally up the pieces of trash from their notes and determine what type of material was the most commonly found. Have them list the top 10 trash items and what materials those items are made from. Compare their list to the items collected during the **Ocean Conservancy's 2019 International Coastal Cleanup** (see the next page).



# Activity 1: Litter walk

(continued from previous page)

**Step 3: Ask kids about the items they found:** Do you use any of these products? Can you think of any substitutes that could be used?

Have kids create a list of substitutes for the plastic items they found or that were found during the International Coastal Cleanup. They can share it with others to encourage a “Reduce, Reuse, Recycle” mindset in their community.



Ocean Conservancy’s 2019 International Coastal Cleanup

© Ocean Conservancy



# Activity 1: Litter walk

(continued from previous page)

## More litter clean-up activities

Seabird scientist Dr. Jennifer Lavers shares her poem which explores how plastic pollution is affecting seabirds and the forests they live in. Watch the video and then have kids write their own poetry that expresses their concerns about how humans are impacting birds and wildlife.

Ode to Seabirds (BLUE the Film)

<https://vimeo.com/showcase/4987284/video/207595690>

Go "Plirding" (picking up trash while birding)

<https://www.talkinbirds.com/plirding>

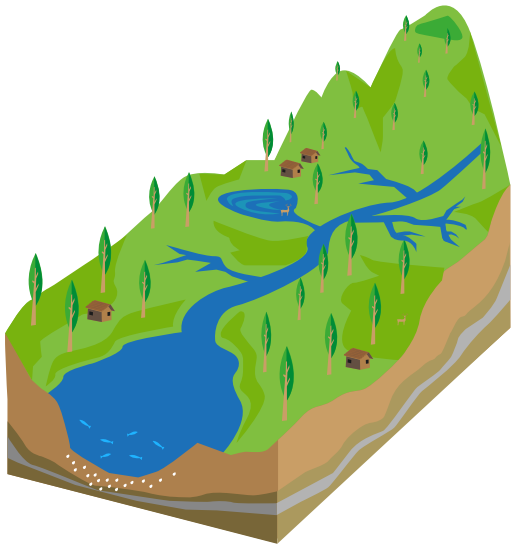




## Activity 2: Build a Watershed

### Introduction

Water is essential for all life, but it is particularly important as a habitat to the lives of many different kinds of birds — waterfowl, herons, rails, kingfishers, ospreys, shorebirds, and a host of perching birds that nest in or around marshes.



The land that drains precipitation into a body of water (such as a river) is its **watershed**. How the land is shaped — its hills, mountains, and valleys — determines how the water flows.

By building and experimenting with a model watershed, kids can see how polluted water may spread from a faraway source to threaten the habitat of many birds and other animals.

### Supplies

- A large, shallow plastic bin or storage container and a large sheet of plastic, such as a light-colored plastic shower curtain or a large white garbage bag cut open. To do this activity outside on a larger scale, you can use two plastic tarps.
- Clean objects of different sizes from the recycling bin to create watershed topography, such as plastic containers, boxes, cans, and bottles. Natural items such as rocks and sticks can be used, too.
- Empty cans (to represent a mine and a factory)
- A spray bottle filled with water
- Confetti (made from hole-punched paper)
- Vegetable oil
- Pencil, paper, or journal for map making or recording observations



## Activity 2: Build a Watershed

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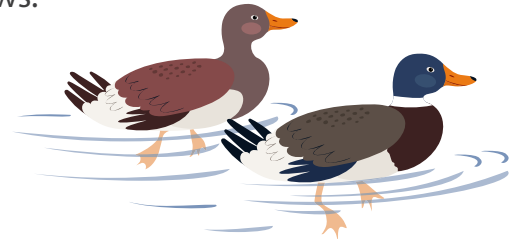
### Get kids thinking ...

**Ask kids:** How important is water to you? How many ways do you use it everyday? Where does your water come from? If something happened to your water, what would you do? Build a model watershed together to see how and where water flows.

### Watch:

What Is a Watershed?

<https://youtu.be/QOrVotzBNto>



**Ask kids:** How can birds help people understand more about watershed health?

### Let's get started!

**Step 1: Get kids to discuss what your model is going to look like. Ask:** Will it have a lot of hills and valleys? Big mountains? A river or lake?

**Step 2: Kids can stack and arrange the containers** and other objects to form the terrain and then drape the plastic over them. Have them push the plastic down between the containers to create valleys and bodies of water. Remind them to have some terrain to add a mine and a factory.

**Step 3: Once the model is ready, have kids use the spray bottle to "rain" over the hills** and watch where water runs and rests. Have kids create a map and name the rivers and lakes that formed in their model. **Ask:** What kinds of birds would you think would be using the bodies of water? What people live here? Where do they work?

**Step 4: Have kids add a mine and factory. At the site of these locations, show possible pollutants by adding confetti at the sites. Ask kids** to predict what might happen to the pollutants if it "rains" again. Then have kids use the spray bottle to "rain" over the hills and watch where water runs, carries the pollution, and then rests.

**Step 5: Discuss what happens. Ask:** How will both birds and people be affected? Birds rely on healthy habitat. If it isn't healthy for birds, it isn't healthy for other wildlife or people.



# Activity 2: Build a Watershed

(continued from previous page)

**Step 6:** Add additional confetti and small plastic caps filled with vegetable oil at the work sites. Have kids make a very heavy “rain.” Discuss what happens.

Kids can learn more about the conditions of the watershed where you live. Have them start with this resource to learn more:

[How's My Waterway? \(Environmental Protection Agency\)](https://mywaterway.epa.gov/)

<https://mywaterway.epa.gov/>

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## More watershed activities

[Migration Headache](https://migration.pwnet.org/pdf/Migration_Headache.pdf)

[https://migration.pwnet.org/pdf/Migration\\_Headache.pdf](https://migration.pwnet.org/pdf/Migration_Headache.pdf)





## Activity 3: Bird Detective

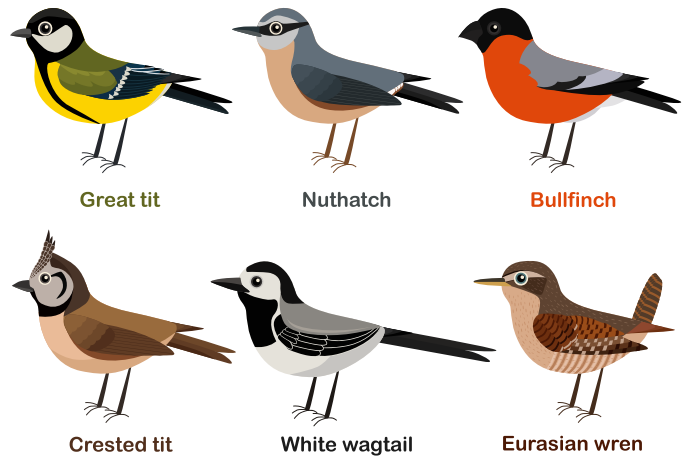
### Introduction

Knowing and understanding birds and bird behavior can help us detect when something is wrong in our **ecosystems**. Kids focus on bird identification by reviewing the characteristics of the birds that are in their area while they practice their questioning and thinking skills.

### Supplies

#### Basics

- Index cards
- Images of birds
- Scissors
- Glue
- Pen



### Get kids thinking ...

Ask why it is important to be able to identify birds. What are some of the important field marks to look for when identifying a bird?

### Let's get started!

**Step 1:** Give each child an index card that includes a name of a bird that kids are familiar with or have seen on their Bird Walks. Every card should have a different bird. Help kids find an image of their bird that they can cut out and glue to their card. Tell kids to try not to let anyone else see which bird is on their card.



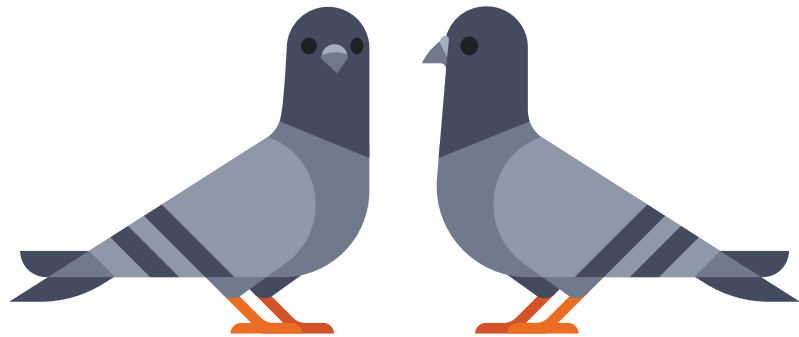


## Activity 3: Bird Detective

(continued from previous page)

**Step 2:** Next, give kids 10–20 minutes to review and jot down facts about their bird in their Bird Journal. They should focus on:

- Size
- Color
- Markings
- Type of beak
- Type of foot
- Food
- Habitat
- Behavior



As kids research and review, get them thinking too about how to ask questions about their bird that can be answered “yes” or “no.” For example in forming questions about the color of the bird, they should not ask “*What color is the bird?*” but “*Does it have any red color?*” Not, “*How large is the bird?*” but “*Is the bird larger than a pigeon?*”

**Step 3:** When everyone has finished their review, stack the cards image-side down. Then **gather kids into a circle to play!**

### How to play:

The first player grabs a card from the top of the stack. Without looking at the front of the card, the player holds the card up on his or her forehead so that all the other players can see what bird is on the card, but the player cannot.

The player holding the card tries to figure out which bird is on the card by asking only yes/no questions to the other players. The idea is to gradually narrow down the potential options until the player with the card feels confident to name the bird. If the player can't guess the bird after asking 20 questions, others can offer clues to help make the identification.

Give everyone a chance to draw a card and ask questions!



# Activity 3: Bird Detective

(continued from previous page)

## More bird games

Play Jeop-Birdy

<https://jeopardylabs.com/play/jeop-birdy-from-flying-wild>

Bird Bingo (The Cornell Lab)

<https://www.birds.cornell.edu/k12/bird-bingo>

Celebrate Urban Birds (The Cornell Lab)

<http://celebrateurbanbirds.org/wp-content/uploads/2016/11/CUBs-Kit-2016-Eng-1.pdf>



Bird bingo card (© The Cornell Lab)

# BIRD WALK



On this Bird Walk, have Bird Buddies look for favorite birds and new sightings, while also looking closely at where these birds are living.

Ask kids to examine their birding spot with these questions for their Bird Journal in mind:

- Are there native, pollinator-friendly plants that would help provide nutrition to birds?
- Are there plenty of trees and shrubs to help offer shelter and places to nest?
- Is there water nearby?
- Is there a visible human impact, such as litter?
- Are there established trails to keep humans from damaging plants?

Take time to discuss their answers while still on the Bird Walk. Ask kids to share their ideas about how to improve or increase local habitats for birds. Encourage them to come up with a plan and put it into action.

## Helpful Resources:

Setting Up a Bluebird Trail (North American Bluebird Society)

<http://www.nabluebirdsociety.org/PDF/NABSFactsheetGettingStarted.pdf>

How to Create a Bird-Friendly Yard (Audubon)

<https://www.audubon.org/magazine/july-august-2013/how-create-bird-friendly-yard>



# Writing about Birds

## Tickled about history



People used to write with feathers. Quill pens were made from birds' wing feathers (usually geese and used from the sixth century until the mid-19th century). Ask kids to imagine that they were the bird who provided the feather(s) for writing an important historical document, such as the Declaration of Independence, an invention idea from George Washington Carver or Benjamin Franklin, a letter from Frederick Douglass, or a play by Shakespeare. Have them do some research about the document and share how they feel — as the bird — about what its feathers are being used to pen.

## Save the birds!

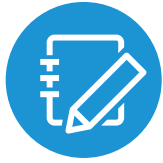
Have kids put together a colorful illustrated flier or a poster to share some ways their family and friends can help protect birds and their habitats. Share these questions with kids to provide topics for them to consider:

- What everyday objects are a hazard for birds?
- How can windows be made more bird-friendly?
- What pets are a danger to birds? How can pet owners help keep birds safe?
- What birds should not be pets?
- What pesticides are harmful to birds?
- What groups help to keep birds safe? How do you join these groups?
- What can you plant in your backyard that will help create bird habitats?
- How can you tell others about the problems birds face?

In making their flier or poster, kids should make their suggestions for saving birds simple and easy for others to do and help everyone understand how important birds are for the life of our planet.

### Or make a door hanger:

[http://projectbeak.org/teacher/pdf/birds\\_and\\_people\\_conservation\\_door\\_hangers.pdf](http://projectbeak.org/teacher/pdf/birds_and_people_conservation_door_hangers.pdf)



## Writing about Birds

### Where to bird

Hopefully kids have found good places to find and watch birds in your community. Ask them to help others do the same! Have them create a detailed map of one good birding spot. Remind them that someone reading their map will need to be able to find the location, so they should include street names and landmarks and give details about how to access the spot. They should also include a list and descriptions of birds likely to be seen, descriptions of habitats, and illustrations.

### Flying off the page

Kids can have their words take flight when they create a concrete poem in the shape of a bird.

How to Write a Concrete Poem

<https://www.poetry4kids.com/lessons/how-to-write-a-concrete-poem/>



## Websites

Take Action for Planet Earth (Audubon Adventures)

<http://www.audubonadventures.org/TakeAction.htm>

Roots and Shoots (Jane Goodall Institute)

<https://www.rootsandshoots.org/for-youth/resources/>

Get to Know Birds (Audubon Adventures)

<http://www.audubonadventures.org/docs/Get-to-Know-Birds-Final.pdf>

en español: [http://www.audubonadventures.org/docs/ES\\_Get\\_to\\_Know\\_Birds.pdf](http://www.audubonadventures.org/docs/ES_Get_to_Know_Birds.pdf)

Ranger Rick: Birds (National Wildlife Federation)

<https://rangerrick.org/category/animals/birds/>

Mapping Migraciones: Migration stories to see how people and birds intersect (Audubon)

<https://www.audubon.org/mapping-migraciones>

## Educational apps

Earth Rangers

<https://www.earthrangers.com/>

Nature Guides (National Wildlife Federation)

<https://www.nwf.org/natureguides>

iNaturalist

<https://www.inaturalist.org/>

Nature's Notebook

<https://www.usanpn.org/nn/mobile-app>



## Podcasts

**BirdNote: Birds and People**

<https://www.birdnote.org/explore/tune-kids-nature-resources-educators/shows-educators-topic>

**Laura Erickson's For the Birds**

<https://www.lauraerickson.com/radio/>

## Videos

**Saving Birds from Windows (California Academy of Sciences)**

<https://youtu.be/pyZDYkDUHSw>

**Seven Simple Actions to Help Birds (The Cornell Lab)**

<https://www.birds.cornell.edu/home/seven-simple-actions-to-help-birds/>

# Appendix

[Best of the birds](#)

[Bird words](#)

[Printable templates](#)

[Reading Rockets tip sheets](#)



# Best of the Birds



## Birds with Amazing Crests

Attractive crowns help male birds attract female mates. Learn about 10 birds with amazing crests, which show the diversity of bird plumage and the unique features that have evolved.

<https://themysteriousworld.com/birds-with-most-beautiful-crests/>

## Birds with Spectacular Beaks (Bills)

Explore birds' beaks to see the many weird ways that birds have evolved to get their food.

<https://www.audubon.org/news/10-wonderfully-weird-bird-beaks>

## Birds with Strange Sounds

Not all bird sounds are musical. Some have evolved to produce songs and calls that seem eerie, odd, or humorous to human ears.

<https://www.audubon.org/news/five-bird-calls-will-make-you-laugh>

## Birds that Hold Records

Meet the biggest, the smallest, the fastest, and more.

<https://www.audubon.org/news/world-records-10-superstars-avian-world>

## Birds that Are Champion Long-Distance Migrants

Find out about the incredible journeys of 7 species that migrate great distances.

<https://www.birdlife.org/worldwide/news/migration-marathons-7-unbelievable-bird-journeys>



# Bird Words

## Adaptations

Process of change by which a bird becomes better suited to its habitat

## Aerodynamics

The way objects move through air

## Auriculars

Feathers that cover the ears of a bird

## Barb

Feather within a feather that contains even smaller parts that hook together to keep the main feather smooth

## Beak / bill

More than the bird's mouth, functions like a hand, a comb, gets food, kills prey

## Bipedal

Using two legs for walking

## Breeding

The process of producing babies (offspring)

## Binocular vision

When both eyes can focus on one thing at the same time.

## Cache

A safe place for hiding food (or other valuables) from others who may want to take it

## Call

Short vocalization of a bird usually given as an alarm or for contact.

## Carnivore

Animal that eats a diet of mostly meat

## Carnivorous

Eating other animals

## Carrion

The flesh of dead animals



# Bird Words

## Concave

Having a surface that curves inward like that of a dinner plate placed on a table

## Dinosaurs

Prehistoric reptiles that lived about 250 million years ago

## Diurnal

Active during the day

## Ecosystem

A community of living things in a shared environment.

## Evolved

Developed slowly into something else

## Evolution

The changes of characteristics of a species over time

## Extinction

The dying off of a species

## Fable

A short story usually with animals that act like people as the main characters and that often teach a lesson on proper behavior

## Flock

Birds of one kind feeding, resting, or travelling together.

## Forage

To search for food

## Fossil

The remains or impression of a prehistoric organism

## Habitat

The natural environment of an animal or plant.

## Hypothesis

A guess you make based on information you already know



# Bird Words

## Instinct

A non-thinking response that an organism is born with to deal with the environment

## Learned behavior

Behavior that an organism develops through experience, either its own or from others.

## Lek

A meeting ground for male birds to gather and dance or display in hopes of attracting a female.

## Lift

The forces on an object that force it to move perpendicular to the direction of flow. Lift can be in any direction but we usually think of objects going up.

## Marsh

A low, wet, muddy area, often thick with tall grasses.

## Mnemonics

Something to help assist memory.

## Migration

Seasonal movement of animals from one place to another.

## Migrate

To move seasonally from one area to another

## Nocturnal

Active at night

## Paleontologist

A scientist who studies the record of life on Earth left as fossils

## Pishing

A sound humans make that may attract birds

## Pollinators

Animals that move or carry pollen to a plant, allowing the seeds to be fertilized.

## Preening

Straightening and cleaning the feathers with the bill



# Bird Words

## Prey

An animal that is hunted and killed by another for food.

## Raptor / Bird of prey

Birds that eat other animals. Most hunt live prey (hawks, eagles, falcons, owls) but some eat dead animals (vultures)

## Reptiles

A class of animals that includes snakes, lizards, turtles, tortoises, and crocodiles

## Roosting

Settling down to rest or sleep

## Spatial memory

Brain activity that enables people and animals to remember different locations as well as spatial relations between objects.

## Scrape

A shallow depression scratched into the bare ground used by some bird species for nesting.

## Species

Group of living things (such as birds) with similar characteristics and are able to produce young. There are more than 9,000 bird species.

## Talons

The claws of a bird of prey

## Theropods

A diverse group of bipedal dinosaurs that include the largest terrestrial carnivores and the ancestors of birds

## Vocalization

To make a sound. Bird vocalization includes bird calls and bird songs.

## Watershed

The area of land drained by a river, river system, or lake.

# Bird Buddies Name Cards

Make copies of these name tags and let child each choose their own Bird Buddies name. They can select from the Bird Words list (Barb, Flock, Pish, Roost, or Scrape?) or a bird you like (Raven, Owl, Egret, Crow, Sparrow, Hummingbird?).

My Bird Buddies name is:

---



My Bird Buddies name is:

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My Bird Buddies name is:

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My Bird Buddies name is:

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# Bird Buddies Name Cards

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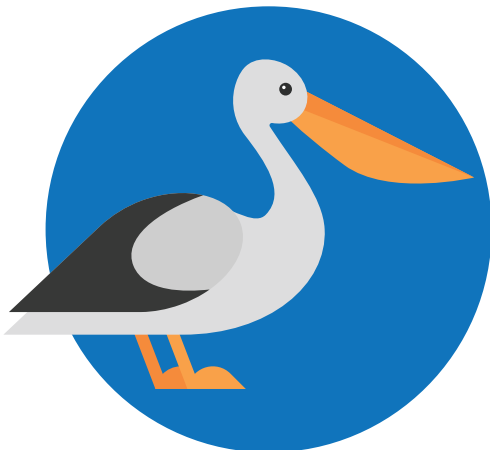
My Bird Buddies name is:

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My Bird Buddies name is:

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My Bird Buddies name is:

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# Bird Buddies Nature Journal



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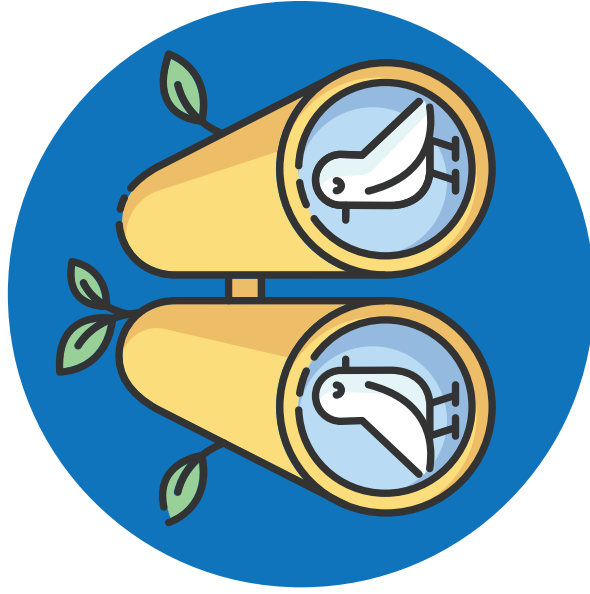
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# Bird Buddies Nature Journal



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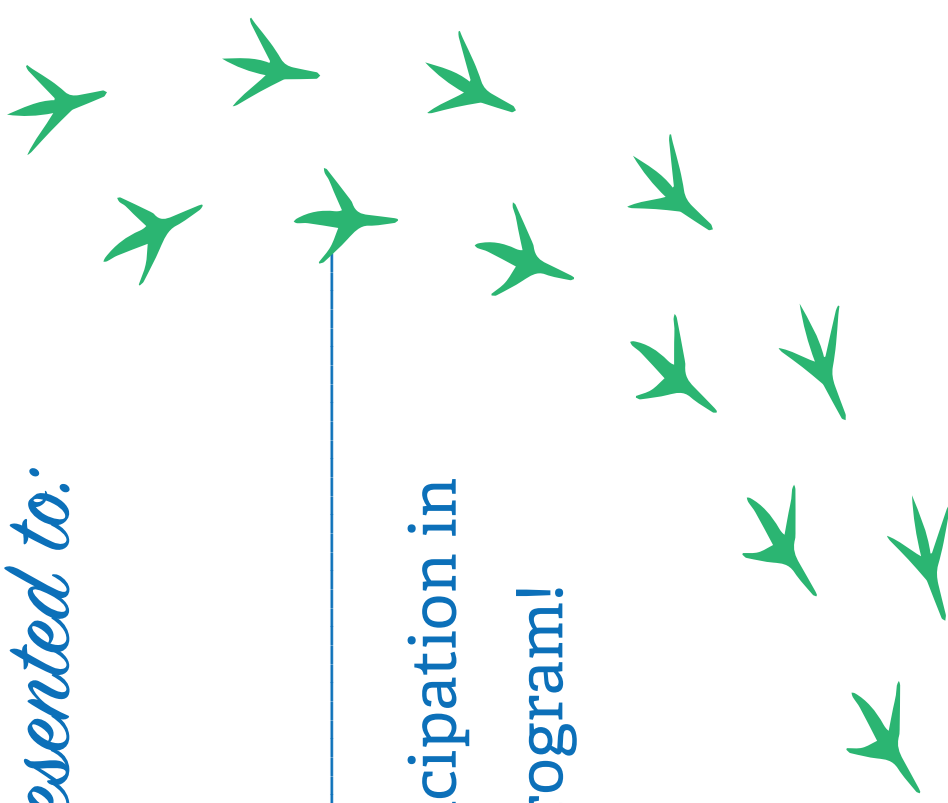
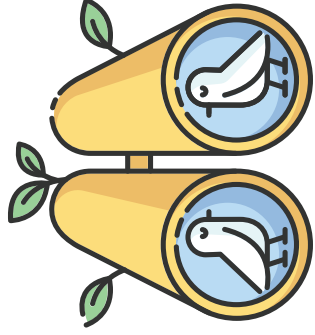


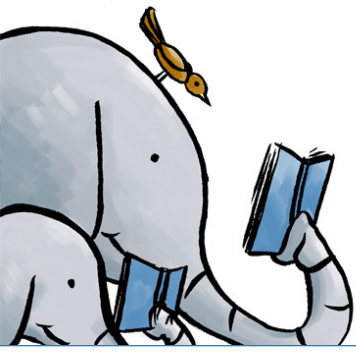
# Bird Buddies

*This certificate is presented to:*

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To celebrate your participation in  
the Bird Buddies program!





# Growing readers!

Parent tips for raising strong readers and writers  
from Reading Rockets



## Reading Aloud: Fiction Books

### The basics

- Take your time and talk about the story and pictures with your child.
- Ask your child questions and let your child ask questions.
- Read with expression to create excitement.
- You don't need to read every word. Keeping your child interested is the goal.

### Try “think alouds”

When you share books with your children, they are learning to think and act like good readers — without even knowing it! You can help them get even more from reading time when you talk to them as you read.

Children learn when they can make connections between what they hear and what they know. One method you can use to help make these connections is called a think aloud, where you talk through your thoughts as you read. Here are three ways to use think alouds, with examples from some of our favorite kids' books.

#### Connect the book to your child's own life experience

Example: *A River Dream* by Allen Say

“This book reminds me of the time my father took me fishing. Do you remember the time we went fishing?”

#### Connect the book to other books they have read

Example: *Mufaro's Beautiful Daughters* by John Steptoe

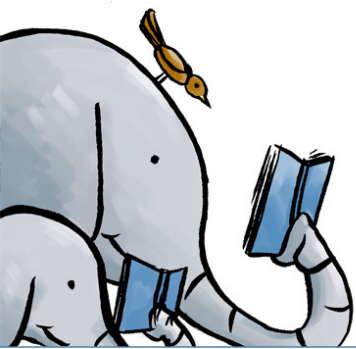
“This story reminds me of Cinderella. Both stories are about sisters. Do you know any other stories about nice and mean sisters? Let's keep reading to find out other ways the stories are similar.”

#### Connect the book to big ideas/lessons

Example: *Stellaluna* by Janell Cannon

“This story helps me understand that we are all the same in many ways, but it's our differences that make us special.”

Modeling these types of connections will help young readers know how to do it when they read alone!



# Growing readers!

*Parent tips for raising strong readers and writers  
from Reading Rockets*



## Reading Aloud: Nonfiction Books

### The basics

- Wonder out loud. As you are reading (or afterward), talk about facts you find interesting or questions you have.
- Explore the pictures and other graphics in the book, such as charts and diagrams.
- Don't be afraid to jump around, reading pages that especially interest your child. You don't have to read a nonfiction book straight through.

### Getting the most out of nonfiction reading time

Nonfiction books give kids a chance to learn new concepts and vocabulary, as well as broaden their view of the world. Here's how to take a "book walk" with a new nonfiction book and how to model active reading.

#### Take a "book walk"

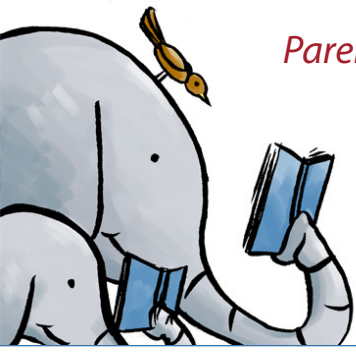
One great way to make predictions about an unfamiliar nonfiction text is to take a "walk" through the book before reading. By looking closely together at the front and back cover, the index, table of contents, the glossary, and the photographs or other images, readers can start to get a sense about the topic. This scanning and skimming helps set the expectation for the reading. Take the time to walk through the book before starting to read.

#### Encourage questions

A second way to develop more understanding with nonfiction books is to encourage your child to be an active reader who asks lots of questions. Parents can model these behaviors by talking or thinking out loud as you turn the pages of the book. This is a helpful way for your child to see and hear what a successful reader does when faced with difficult or unfamiliar topics.

For example, "When I looked at this photograph, I asked myself, "Where is Antarctica? Is that the same place as the South Pole?" Then talk together about how and what you would need to do to find the answer to the questions. This will reinforce that many questions can be answered by reading a text closely and by paying attention to captions and picture titles. Some children enjoy writing their questions on sticky notes and working to answer them during the reading.

**Previewing a text and asking questions are two terrific ways to navigate nonfiction texts. Enjoy spending more time with some fascinating informational books!**



# Growing readers!

Brought to you by Reading Rockets, Colorín Colorado and LD OnLine

**Literacy in the Sciences:** Activity No. 14

## How to Read Nonfiction Text

Kids love to read about real people, places, and events. Nonfiction books present real information in engaging and interesting ways. However, most kids read a lot more fiction than nonfiction, so spend some extra time helping your reader learn how to navigate a nonfiction book.

### Talk about nonfiction

Begin by explaining that the book you're about to share is nonfiction. That means that the book will give us information that is true. The book will be organized around a specific topic or idea, and we may learn new facts through reading. Some kids even enjoy sorting their home libraries into fiction and nonfiction books. This simple categorization task helps your child understand the difference between fiction and nonfiction.

### Look at the parts

Most good nonfiction books will have helpful features that are not a part of most fiction books. These parts include a table of contents, an index, a glossary, photographs and charts with captions, and a list of sources. Share the purpose of the features with your reader.

- **Table of Contents:** Located at the front of a book, the table of contents displays a list of the big ideas within the book and where to find them.
- **Index:** An index is an alphabetical list of almost everything covered within the book, with page numbers. Readers can use the index to look up specific terms or concepts and go right to the specific information they're looking for.
- **Glossary:** Located at the back of the book, a glossary contains key words that are related to the topic and their definitions. These definitions provide more information about new vocabulary words.
- **Captions:** Captions are usually right under photographs, figures, maps, and charts. Captions give a quick summary of what information is presented in the graphic.
- **Photos and Charts:** A lot of information can be found by "reading" the charts and photos found within nonfiction text. Readers will first need to figure out what information is presented. Then they'll need to discover how to navigate the information. Some charts use clear labels, others require more careful examination. Help your reader learn more about the different ways information can be displayed.

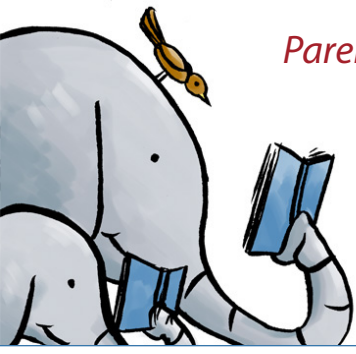
### Be the reading boss

Nonfiction books do not have to be read from cover to cover. Readers can use the table of contents and index to jump right to the information they are most interested in. In that way, they are the "reading boss" of that book! However, if your reader wants to read from cover to cover, encourage him to use the table of contents to understand how the book is organized. "First we will learn about the different types of frogs. Then we'll learn where they can live, what they eat, and how they survive." Passages from the book can be reread as often as necessary until your child understands what is written. You can refer to pictures, charts and tables over and over again as well.

As natural learners, young readers are drawn to books that give information about something or explain something they've always wondered about. With a little help and guidance about reading nonfiction, you can feel good about introducing your child to a new world of information.

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# Growing readers!

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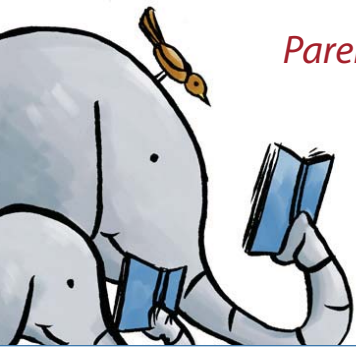
## Summer Literacy Challenge!

For most parents, it's a challenge to keep kids reading and writing all summer. Suddenly 10 weeks of summer can feel like a very long time! We've got a summer literacy challenge for you and your child. It's modest enough to be manageable –pick just one thing a week to kick start your week's literacy adventures. But it's also challenging enough to include a wide range of literacy fun for the whole family.

- ✓ **Investigate your public library's summer reading program.** Most libraries offer a special program or two during the summer, including puppet shows, book authors and children's storytellers. Most are free of charge.
- ✓ **Extend your reading circle.** We often find ourselves checking out the same types of books over and over again. This week's challenge is to bring a new type of book into the house. Consider fantasy or science fiction, historical fiction, poetry, biography, or an informational book.
- ✓ **Listen up!** Audiobooks are a great way to engage readers and can introduce students to books above their reading level. Many libraries have audiobooks available for check out, and an Internet search can turn up several sites, including Speakaboos.com, that offer free audio books for children.
- ✓ **Make your own audio book!** Most phones and computers have simple recording apps on them which are perfect for making homemade audio books! Have your child make up a story, or reread a favorite loved book. The recordings will be priceless!
- ✓ **Go wordless.** Wordless picture books are told entirely through their illustrations — they are books without words, or sometimes just a few words. Grab a few wordless books the next time you're at the library and have fun "reading" different versions of the same story. The language and the conversation will inspire you!
- ✓ **Visit a museum, online!** You'll be surprised by how much you can explore without leaving your house. One example is the Smithsonian Institution Kids site. It's complete with offerings from Art to Zoo, for kids and students of all ages.
- ✓ **Pack in a whole adventure!** Find FREE themed reading adventure packs that encourage hands-on fun and learning, centered around paired fiction and nonfiction books. Visit Reading Rockets and search Adventure Pack.
- ✓ **Point, shoot, and write.** Most families have access to a digital camera, iPad or camera phone. Snap some photos and then encourage your child to write a silly caption for each photo. Not feeling that ambitious? Cut out some pictures from a magazine or the newspaper and have your child write original captions for those.
- ✓ **Mix up the media.** Your child has read every Clifford book on the shelf. But has she heard Clifford author Normal Bridwell talk about writing? Explore author interviews from over 100 authors on Reading Rockets Author Interview page. We'll bet you can't watch just one.
- ✓ **Write it down.** Encourage your child to keep a simple journal or summer diary. Track interesting things like the number of fireflies seen in one minute, the number of mosquito bites on a leg, or the different types of food that can go on the grill. Each entry is a chance to be creative!

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# Growing readers!

Brought to you by Reading Rockets, Colorín Colorado and LD OnLine

**Literacy in the Sciences:** Activity No. 4

## Making Predictions

As a young reader, your child is learning to make predictions while reading. “What do you think will happen next?” “Who do you think drank Sara’s lemonade?” These types of questions we ask children as they’re reading help them learn to monitor their understanding of the story while thinking ahead to the next part. If your child is able to make good and fairly accurate predictions while reading, chances are she comprehends the story well.

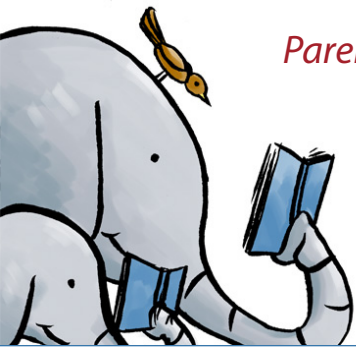
Scientists, just like readers, make predictions all the time. In fact, scientists use predictions as part of their hypothesis, or question they try to answer through their experiments. Help your child begin to see the connection between what she does as a reader and what she can do as a scientist.

Below are two simple ways you can encourage your child to put her prediction skills to work as a scientist:

- 1. Play favorites.** What is our family’s favorite flavor of ice-cream? What is our favorite movie to watch together? What is our favorite bedtime story? Choose a question, or make up your own, that your child is excited about. First, have your child predict or guess the answer to the question. Help her write down her prediction. “I think chocolate is our family’s favorite flavor of ice cream.” Then, have your child ask each member of the family for an answer. Have your child record the answers using a special Science Notebook or simply mark tally marks on paper. Finally, ask your child to compare her prediction to the actual answers.
- 2. Good guess!** Estimation is often very similar to a prediction. In both cases, your child will be working to make a good guess about an answer. As with our Play Favorites idea, encourage your child to write down (or write together) the questions and answers in a special Science Notebook. Whenever possible, encourage the use of scientific words like estimation, predication, collect data, analyze, and prove. Here are some estimation questions that require your child to make a prediction:
  - How many noodles will it take to fill up this jar? Encourage your child to use scientific language and thinking to answer. “I predict it will take 300 noodles to fill the jar.”
  - How many steps is it from our front door to the mailbox?
  - How much does our dog weigh?
  - How many library books fit on one shelf?
  - How long do you think it will take for the ice cubes to freeze (or melt)?

We predict your child will have great fun with these activities! And you can have fun knowing that you’re helping your child make important connections between the skills of prediction, reading, and science.

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# Growing readers!

Brought to you by Reading Rockets, Colorín Colorado and LD OnLine

**Literacy in the Sciences:** Activity No. 11

## Making Inferences and Drawing Conclusions

Observations occur when we can see something happening. In contrast, inferences are what we figure out based on an experience. Helping your child understand when information is implied, or not directly stated, will improve her skill in drawing conclusions and making inferences. These skills will be needed for all sorts of school assignments, including reading, science and social studies. Inferential thinking is a complex skill that will develop over time and with experience.

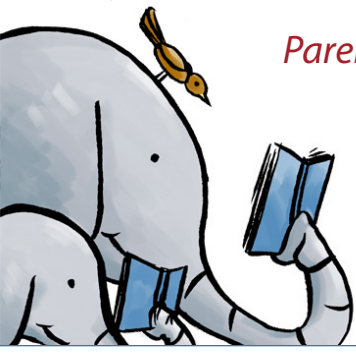
Families can create opportunities to practice inferential thinking. Below are a few ways to help familiarize your child with this way of thinking and learning:

- Explain to your child that we make conclusions about things and draw inferences all the time. Draw a conclusion together and then talk about what clues were used to come to that conclusion. For example, Erin played outside today. How can we tell? Muddy shoes, jump rope on front porch, water bottle out. Dad seems tired tonight. How can we tell? He's rubbing his eyes, he's on the couch, he was yawning at the dinner table.
- Paper bag mystery person: Put a few items into a brown paper bag. Tell your child the bag belongs to a certain type of person. Their job is to tell you something about the person. Then, take out each item one by one and talk about it.
  - Example #1: goggles, a swim cap, a swim ribbon, a stop watch
  - Example #2: a bookmark, a library card, a stuffed animal, a book
- Wordless picture books provide your child with practice using clues to create meaning. There are no wrong stories with wordless picture books, only variations based on what the “reader” sees and puts together. *Rosie's Walk* (Hutchins), *Good Dog, Carl* (Day), and *Beaver Is Lost* (Cooper) are all interesting and fun wordless picture books to explore.
- Play twenty questions! This familiar word game helps build inference skills. As your child develops skill with the game, encourage him to avoid asking direct questions like, “Is it a dog?” Rather, encourage him to ask broader questions, “Does it walk on four feet?” Then, when your child figures it out, ask him to tell you the clues that lead to the right answer.
- Create scenarios in which your child must use what they already know to predict an outcome. For example, growing seeds. Present your child with various scenarios (a seed will be given water and sunlight, a seed will get no water, a seed will be in a dark room). Ask your child to predict whether the seed will grow. Help your child become aware that she used information she knew about growing seeds, combined with new information, to fill in information about the seeds.

Learning to draw conclusions and inferences is a skill that develops over time. The skill requires children to put together various pieces of information, and relies on good word knowledge. Help your child develop skill by providing experience with inferential information, making implied information more clear, and helping your child draw conclusions based on the evidence.

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# Growing readers!

Brought to you by Reading Rockets, Colorín Colorado and LD OnLine

**Literacy in the Sciences:** Activity No. 6

## Recording Observations

Science and math explorations provide your growing reader with a chance to record all kinds of observations. Young children love to keep a special journal, and fill it with all sorts of drawings, scribbles, sketches, notes, and graphs. Try to date each entry and watch as your child's observational and recording skills grow along with your child.

### Create a special journal

Use any paper for the cover: cardstock, interesting cardboard and pretty greeting cards can all be used as a cover. Then, collect some twigs from the backyard and find a large, thick rubber band. Fold your cover in half. Fold your inside pages, and put them inside the cover. Trim as needed. Punch two holes with a hole punch, measuring down from the top and up from the bottom about 2 inches. Pull one end of the rubber band through the bottom hole and slide twig into the loop. Pull the other end of the rubber band through the top hole and slide the other end of twig through that. You now have a special journal into which your budding scientist can record observations.

### A scientist's field notes

Begin using the science journal by taking your child outside. Encourage your child to write down what she observes about her surroundings, looking at both the big picture and the small, examining plants and rocks and insects up close. Have her make a record in their journal of what they experience with each of their senses. Then have her choose one animal or plant to watch for 10 minutes. Your child can choose anything: a dandelion, a grasshopper, a bird soaring overhead. Ask her to describe it as clearly as they can, as if she is writing for someone who's never seen that before. Have her watch for movements and take note of any sounds made. Ask your child to draw and label a picture of the plant or animal.

### Other fun ideas to record in your field journal

**A flower tally:** Count the flowers in an area in the spring once a week for three weeks. Compare your tallies. Your child will have fun watching the numbers go up as flowers bloom in the spring.

**Ant watching:** There are ants everywhere! Try following them to their home and see what they're up to. Where do they live? How many can you count in one place? Record these observations and your ant grand total.

**Dig a hole:** As parents know, dirt can be pretty interesting to kids. Have your child dig a hole and notice how the dirt changes as he digs deeper. Can he describe the different layers? What creatures did he find as he dug? Record these and other interesting findings in the journal.

**Nature scavenger hunt:** Use your notebook to make (or draw) a list of some common things and a few rare ones that can be found outside near your home or in a park. Include things like: acorn, pine cone, flat rock, bird feather, weed, flower. Hand your child the notebook and let the scavenger hunt begin!

Special thanks to the Two Writing Teachers ([www.twowritingteachers.wordpress.com](http://www.twowritingteachers.wordpress.com)) for their field journal directions, and Nature Rocks ([www.naturerocks.org](http://www.naturerocks.org)) for the nature-based ideas for family fun.

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