

BIRDS

3-8 Science Unit Study



BIRDS

CREATED BY THE GOOD AND THE BEAUTIFUL TEAM



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UNIT INFORMATION

Student Journal



All The Good and the Beautiful science units include activities in a student journal. Each student should have his or her own student journal, and the parent or teacher will direct the student regarding when to complete the activities in the lessons. The journal can be purchased by going to goodandbeautiful.com/science and clicking on the *Birds* unit link.

Science Wall



All The Good and the Beautiful science units include vocabulary words to be placed on your science wall, which is a wall or trifold presentation board in your learning area on which you can attach the vocabulary words and other images. Cut out the vocabulary word cards at the beginning of the unit. The course will indicate when to place them on the wall.

Lesson Preparation



All The Good and the Beautiful science units include easy-to-follow lesson preparation directions at the beginning of each lesson.

Activities



Many of The Good and the Beautiful science lessons involve hands-on activities. An adult should always closely supervise children as they participate in the activities to ensure they are following all necessary safety procedures. This unit does not contain any experiments.

Unit Videos



Some lessons include videos that were created by The Good and the Beautiful. Have a device available that is capable of playing the videos from goodandbeautiful.com/sciencevideos or from the Good and Beautiful Homeschool app.

Content for Older Children



Some lessons include extra content that is more applicable for older children (grades 7–8). Parents or teachers may choose to skip this content if instructing only younger children.

Content for Younger Children



Some lessons include extra content that is more applicable for younger children (grades 3–6). Parents or teachers may choose to skip this content if instructing only older children.

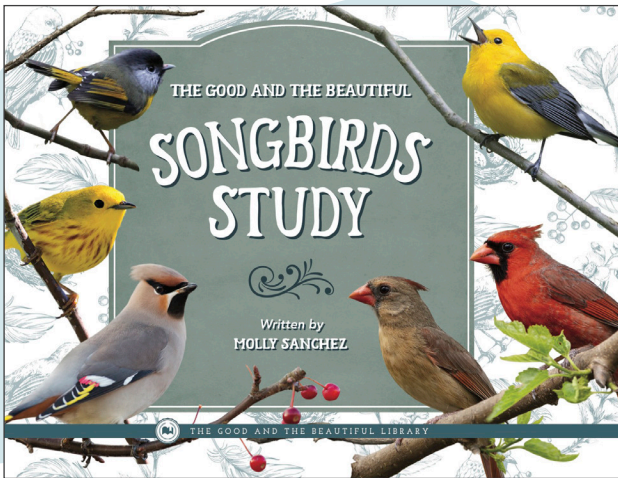
Versions

New discoveries in the study of birds are made on an ongoing basis. This course is reviewed and revised periodically to keep information as up to date as possible. This version is the second edition of this unit.



READ-ALOUD BOOK PACK

The books below are optional read-aloud books that complement this unit. These books can be purchased as a book pack by going to goodandbeautiful.com/science and clicking on the *Birds* unit link.



The Good and the Beautiful Songbirds Study
By Molly Sanchez



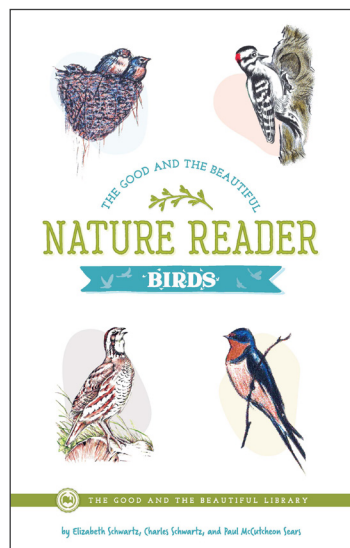
Mission Migration
By Ileana Board

CORRELATED LEARNING

The Good and the Beautiful has several books and activities that correlate well with the *Birds* unit. It can be a wonderful experience for children to interact with hands-on activities related to the subjects they are learning in science. Find these correlated products by going to goodandbeautiful.com/science and clicking on the *Birds* science unit product page.



Birdwatching Notebook



The Good and the Beautiful Nature Reader—Birds
By Elizabeth Schwartz, Charles Schwartz, and Paul McCutcheon Sears



Snatch! A Birds of Prey Game

LESSON EXTENSIONS

How the Extensions Work

Each lesson has an optional lesson extension for children in grades 7–8. Complete the lesson with all the children, and then have the older children complete the self-directed lesson extension. These extensions are located in the *Grades 7–8 Student Journal*.

Answer Key

The answer key for the lesson extensions can be found on the free Good and Beautiful Homeschool app in the science section. Visit [goodandbeautiful.com/apps](https://www.goodandbeautiful.com/apps) for information on accessing the app. The app can be accessed from a computer, phone, or tablet.

Flexibility

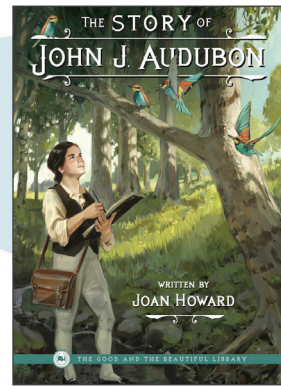
The amount of time it will take to complete each lesson extension will vary for each child. The average time is about 10–15 minutes per extension. Parents, teachers, and children may choose to omit parts of the lesson extension if desired. Encourage the children to stretch their capabilities, but also reduce work if needed.

Taking Notes

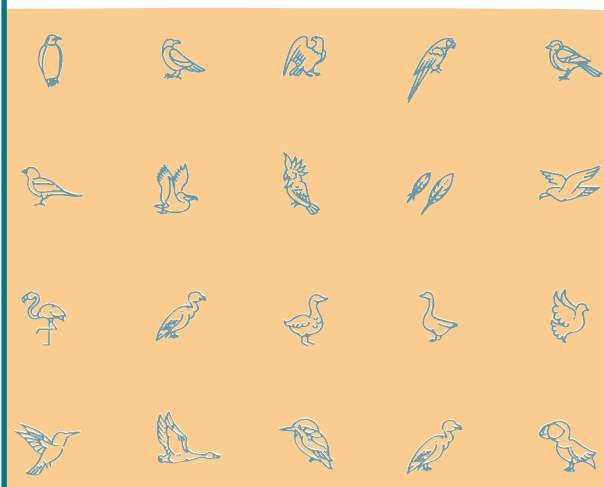
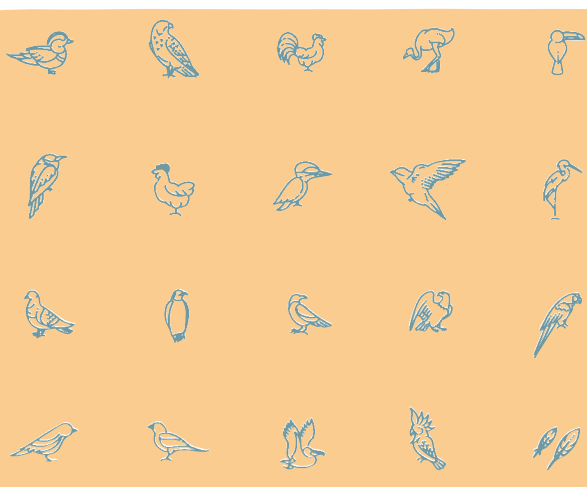
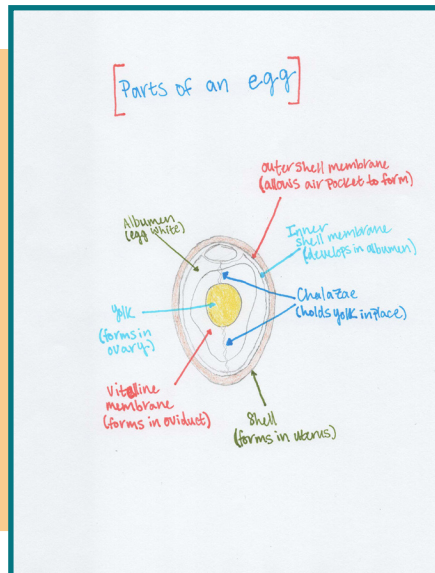
Some of the grades 7–8 lesson extensions have the children summarize the material read. Teach the children to look for key information, summarizing the most important points. Students can also add notes with their thoughts and the facts that are most interesting to them.

Optional Grades 7–8 Reading Book

We recommend *The Story of John J. Audubon* as extra reading for students in grades 7–8. This book can be purchased by going to [goodandbeautiful.com/science](https://www.goodandbeautiful.com/science) and clicking on the *Birds* unit link.



The Story of John J. Audubon
By Joan Howard



SUPPLIES NEEDED



You will need the following supplies for activities. This unit does not contain any experiments.

Lesson 1

- Stapler

Lesson 2

- Binoculars (optional)
- Clipboard or 3-ring binder for each child's "Birdwatching Notebook"

Optional Activity Supplies (per child):

Pine Cone Bird Feeder

- 20-cm (8-in) string
- 1 pine cone or stale bagel
- Butter knife
- 2 Tbsp nut butter, seed butter, or shortening
- $\frac{1}{4}$ c birdseed in a bowl

Plastic Bottle Bird Feeder

- Sharp scissors
- Clean, dry plastic bottle with a cap
- 2 chopsticks or pencils
- Birdseed (enough to fill about $\frac{1}{2}$ of the bottle)
- 30-cm (12-in) string

Lesson 3

- 5 small bowls
- Dried beans or rice
- Peanuts or sunflower seeds in the shell
- Gummy worms, cooked spaghetti, or cut rubber bands
- Cracker crumbs or sugar
- Water
- Large marshmallows
- Tweezers
- Pliers

- Tongs
- 1 drinking straw
- Scissors
- Glue stick

Lesson 4

- 1 sheet of paper, cut in half, for each child
- Stopwatch or timer

Lesson 5

- Scissors
- 1 round-head paper fastener (brad) per child
- Thermometer for air temperature (analog or digital—one per child if possible)
- Scrap piece of paper
- Glue stick

Lesson 6

- Scissors
- Tape
- Construction paper
- Cooking oil
- Paintbrush (optional)
- Water dropper or sponge

Lesson 7

- Measuring tape
- 1 quarter (coin)
- 2 pinto beans or jelly beans
- 1 average-sized cantaloupe (optional)
- 1 penny (coin)

SUPPLIES NEEDED

(CONTINUED)

o o o

You will need the following supplies for activities. This unit does not contain any experiments.

Lesson 8

- 1 sheet of newspaper
- Masking tape
- Measuring tape
- Colored pencils

Optional Activity Supplies (per child):

- Owl pellet (*Note: As SANITIZED owl pellets need to be purchased from a reputable seller, be sure to allow enough time for shipping.*)
- Rubber gloves
- Plate or piece of paper
- Tweezers
- Toothpicks
- Magnifying glass (optional)
- Bowl of water (optional)
- Glue (optional)
- Piece of cardboard (optional)

Lesson 9

- None

Lesson 10

- Compass or compass app (optional)
- Pencil
- Paper clip
- Tape

Lesson 11

- Bandana or necktie for each younger child
- Glue or an envelope (optional)
- Measuring tape or yardstick
- Painter's tape

Lesson 12

- Glue stick

Lesson 13

- Colorful sock
- 1 banana per child
- 1 toothpick or skewer per child
- Handful of chocolate chips or raisins per child (optional)
- Bowl of water
- Small strainer or slotted spoon
- Several pieces of dry cereal
- Empty metal container, such as a can or water flask
- Shallow bowl half full of water
- 1–2 Tbsp uncooked rice
- Toothbrush
- Spoon

Lesson 14

- Bingo markers, such as coins, beans, buttons, or small pieces of candy



VOCABULARY

Instructions: Cut out the vocabulary cards in this section. Place them on your science wall when prompted to do so in the lessons. Review the vocabulary words several times during this unit and, if desired, at various times throughout the school year.



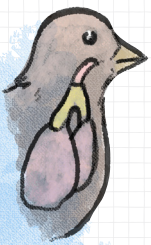
Plumage

the feathers of a bird



Aves

the class containing birds:
endothermic, bipedal vertebrates
that lay eggs and have a bill, wings,
feathers, and lightweight skeletons



Syrinx

the vocal organ, or voice box, of birds

Migration

regular seasonal movement between breeding and wintering regions in response to changes in food availability, habitat, or temperature; often directed north and south

Flyway

a flight path used by large numbers of birds while migrating between their breeding grounds and their winter regions

Zygodactyl

having four toes with two toes facing forward and two facing backward



Introduction to Birds

Objective

Help the children learn about the characteristics of birds and understand their worldwide presence.



Preparation:

- Cut out the “Characteristics of Birds” cards.

Activity Supplies:

- Stapler

□ The Amazing World of Birds Video



To introduce the children to the Birds unit, watch the video titled “The Amazing World of Birds” at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app.

□ Bird Characteristics



Spread the prepared “Characteristics of Birds” cards faceup in front of the children.

Read to the children: About 50 billion birds are estimated to live on the earth today. Let’s explore how you can tell if an animal is a bird.

Allow the children to select a card from the “Characteristics of Birds” cards and then read it aloud. Once all the cards have been read, help the children staple them together into a book and place it on your science wall.



Northern cardinal

journals. Read to the children: All over the world, in any outdoor setting, there is a good chance you will encounter birds. Birds live everywhere! Across the vast oceans, birds have found ways to create homes in every earthly environment, from the harsh climate of the desert to the frigid temperatures of the Antarctic and from the tops of trees to underground burrows. In fact, birds are so common that all 50 US states and many countries have adopted a representative bird. While birds are present throughout the world and share some common traits, different types of birds vary widely—each possessing unique beauty.



Bald eagle

As you read the clues on the next page, have the children find the number next to the country and guess which bird is the national bird. Direct older children to write the country number in the white circle next to the bird. Younger children can draw a line between the bird and the correct country. The pictures next to each of the headings on the following page show the answers for the student journals.

□ Birds of the World Activity



Have the children turn to the “Birds of the World” activity in Lesson 1 of their student

1. Argentina



This reddish-brown bird with an elongated, slightly curved beak is the national bird of Argentina. It is known as a red ovenbird because of its color and the interesting domed nest it builds off the ground. These nests are made out of mud and grasses and resemble clay ovens. Together, the parents build the nest with a protected inner chamber where their eggs will hatch. [rufous hornero]

2. Finland



Finland's national bird is one of the heaviest flying birds, weighing 7–14 kg (16–31 lb). With distinctive white feathers and a yellow beak tipped with black, this bird spends much of its time in the water, and many will migrate south for the winter. [whooper swan]

3. Papua New Guinea



This beautiful national bird of Papua New Guinea is recognized by the male's long tail feathers. These feathers can range in color from orange to maroon and are fluffed up when the male performs a mating dance. The males also have green throats and yellow heads with yellow bands around their necks. [raggiana bird-of-paradise]

4. India



The male of this national bird is very recognizable due to its brilliant blue coloring and long, spotted tail feathers, which it displays in a magnificent fan. This bird has been introduced to many countries, but it is native to India and Sri Lanka. [Indian peacock]

5. United States of America



The national bird of the United States is a distinctive bird of prey with a large, hooked beak. A juvenile's feathers are all brown; the tail and head feathers turn white when the bird reaches maturity. To catch a meal, this bird will dive to the water's surface and snatch a fish right out of the water. [bald eagle]

6. South Africa



South Africa's national bird has skinny legs, a bulbous head, and a thin neck. It has pale, blue-gray feathers on its body and dark wing-tip feathers that sweep the ground. It eats mostly grasses, seeds, and insects. [blue crane]

7. Mongolia



The national bird of Mongolia has large, round eyes and brown feathers that may be striped or spotted with white. It doesn't build nests—it lays its eggs in nests that other birds have left. Humans have used this skilled predator to hunt for thousands of years; it captures prey by flying low and persistently chasing the prey across the ground. [saker falcon]

8. Romania



One of Romania's two national birds has a bright-yellow pouch on its blue-and-pink bill that is used to scoop up fish, the bird's main source of food. It commonly feeds in a semicircular formation with other birds of its kind, trapping schools of fish. [great white pelican]

9. Antarctica



While Antarctica is not officially a country, this flightless black-and-white bird with yellow around its head is the continent's symbolic bird because that is the only place where it can be found in the wild. It is the largest bird of its family and the only bird in the Antarctic to breed during the winter. Its sleek body has excellent swimming capabilities that are very important to survive in this harsh environment. [emperor penguin]

10. Canada



This bird is known as the gray jay and is the national bird of Canada. With a large, round head and long tail, this songbird is mostly gray with a pale belly, throat, head, and cheeks. Its chicks hatch in April when there is still snow on the ground. This jay uses sticky saliva to glue small pieces of food to trees during warmer months and then comes back to eat the food during the winter. [Canada jay]

Bird Classification

Read to the children: In The Good and the Beautiful science unit *Kingdoms and Classification*, we learn about Carl Linnaeus and his methods for classifying organisms. Though quite a few changes have been made since his time, scientists still use Linnaeus’ system as a basis to classify and organize life-forms by comparing their similarities and differences.

Birds (as well as all other animals) belong to the kingdom called *Animalia*. They are classified in the phylum *Chordata*, along with other vertebrates, such as mammals and humans. Birds are then grouped into their own class, called **Aves** [AY–veez], which is the Latin word for “birds.”

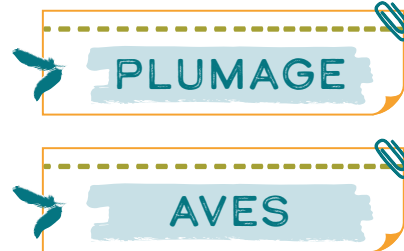
In this science unit, we will be studying some amazing bird species, but with so many birds in the world, there will be plenty of room to learn more about them throughout your life.



Science Wall: Vocabulary Words



Place the vocabulary cards **PLUMAGE** and **AVES** on your science wall. Read and discuss the words and their definitions.



Lesson 1 Extension



Have children grades 7–8 complete the self-directed Lesson 1 extension titled “Bird Plumage” in their student journals.



KINGDOM

PHYLUM

CLASS

ORDER

FAMILY

GENUS

SPECIES

Tips for Bird Identification

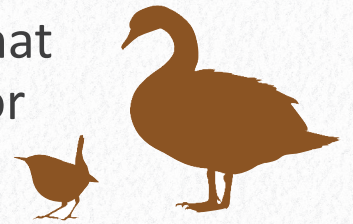
1 Habitat

Where do you see the bird? What are its surroundings? What season is it?



2 Size and Shape

What objects are similar in size to the bird? What does the bird's profile look like? What is the shape of its wings, tail, beak, feet, or other distinguishing features?



3 Color and Pattern

Is the overall color dark or light? What colors do you see? Are there colorful details? Does the bird have any stripes or spots?



4 Voice/Call

What bird songs do you already know? Do you hear distinct words or sounds?



5 Behavior

How does the bird run, fly, sit, eat, swim, move, and flock?



Parts of a Bird

Objective

Help the children identify unique and interesting bird parts and their functions.



Preparation:

- Before the lesson begins, prepare the materials as described in the “Specialized Bills Activity” section of this lesson.
- Cut out the “Specialized Bills Cards.”
- Have the children cut out the pieces from the “Parts of a Bird—Labels” page in their student journals. Assist younger children as needed.

Activity Supplies:

- 5 small bowls
- Dried beans or rice
- Peanuts or sunflower seeds in the shell
- Gummy worms, cooked spaghetti, or cut rubber bands
- Cracker crumbs or sugar
- Water
- Large marshmallows
- Tweezers
- Pliers
- Tongs
- 1 drinking straw
- Scissors
- Glue stick

Optional Read Aloud



At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. *The Good and the Beautiful Songbirds Study* by Molly Sanchez is suggested with this lesson.

Specialized Bills Activity



Preparation: Place each of the items from the orange column of the table on this page into separate bowls.

Set the bowls in a row on one side of the table. On the other side, place the tweezers, pliers, tongs, straw, and scissors.

sizes of bills vary widely, and this activity will help us understand how beaks are designed for specific purposes. Each of the tools here represents a different specialized bird beak, and the items in the bowls represent different foods birds eat. **Explain to the children what each food item represents as outlined below.**

ITEM	REPRESENTATION
Dried beans or rice	Insects
Peanuts or sunflower seeds in the shell	Nuts and seeds
Gummy worms, cooked spaghetti, or cut rubber bands covered with cracker crumbs or sugar	Worms or other underground invertebrates
Water	Nectar
Large marshmallows	Meat



Read to the children: Today we will learn about the different parts of a bird’s body. One noticeable feature of birds is their bills, also called *beaks*. The shapes and



One at a time, have the children choose a bird beak tool and test it by trying to pick up each of the food items. When all the tools have been tested, have the children place each tool next to the bowl of food they think is best suited to that bill type. Answers may vary; a suggested answer key is included at the end of this lesson.

Read to the children: Most birds use their bills to eat several types of food. From this activity, you can see that some beaks can work for more than one type of food, but some beaks are best suited to particular foods. For instance, most of the tools could manage to pick up the marshmallow, but a bird that eats meat needs to have a beak that is large enough to swallow the meat or cut it into smaller pieces. God designed each bird to have a beak that is best suited to its diet. The beak's size and shape help us learn what the bird eats because most birds eat their food whole. In addition, the majority of birds eat using only their beaks, though some will also use their feet.

Set the prepared "Specialized Bills Cards" in front of the children and read the information on each card. Then have the children place the card next to the bowl of food for which it is best suited. Compare the tool from the activity to the type of beak pictured. An answer key is located at the end of this lesson.



External Parts of a Bird Video



Have the children turn to the "Parts of a Bird" page in Lesson 3 of their student journals. Gather the pieces from the "Parts of a Bird—Labels" page. Have the children place the word labels in front of themselves. Set the internal bird parts pictures aside for the next activity.



Watch the video titled "External Parts of a Bird" at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app. As the video talks about each bird part, have the children place a label in the correct space on the "Parts of a Bird" page in their student journals, pausing the video when needed. When all the labels are in place, have the children glue the pieces to the page. An answer key is included at the end of this lesson.

Internal Parts of a Bird Activity



Place each child's internal bird parts pictures in front of him or her. Read to the children:



We learned about the external parts of birds in the video we watched, but birds have unique body parts on the inside as well. You will take turns picking a body part picture from your pile. As I read about that

part, find the place it belongs in your bird and glue it to the worksheet. **An answer key is included at the end of this lesson.**

BRAIN

Birds have large, well-developed brains. Their brains are 6 to 10 times larger than those of like-sized reptiles. Birds are very intelligent and can learn new things.

SYRINX

Humans have a voice box called a *larynx*. Birds have a unique voice box called a *syrinx* [SEER-inks]. Because of the syrinx, birds, especially songbirds, have the greatest sound-producing capabilities of all vertebrates.

EARS

Birds do not have an outer ear, but they do have inner ear parts hidden under their feathers. Owls and some other raptors have a group of feathers in a disc shape

around their ear opening to help direct sound waves into their ears.

HEART

Like mammals and some reptiles, a bird has a four-chambered heart that transports oxygen and nutrients throughout the body. A high amount of oxygen in the blood makes the bird’s flight muscles perform well. Smaller birds tend to have faster heartbeats than larger birds.

CROP

Most birds, such as raptors, chickens, and turkeys, have a muscular pouch in their throats called a *crop*, where the bird’s food is temporarily stored and, in some bird species, crop milk is produced

to feed babies. Geese, owls, and some other species do not have a crop.

PROVENTRICULUS AND GIZZARD

From the crop, food goes to the *proventriculus* [pro-ven-TRI-cue-less], where it is softened by digestive enzymes. It then goes to the *gizzard*, a muscular organ that crushes a bird’s food by shifting it around. Some birds swallow small pieces of grit or stones that help with the grinding process.

BONES

The insides of most bird bones are hollow, with air sacs that allow for extra oxygen surrounded by threadlike supports of dense bone material that give them strength and structure. The *furcula*, which is Latin for “fork” and also commonly called a wishbone, is a specialized bone unique to birds that is used to coordinate wing movement and provide strength in flight.



Science Wall: Vocabulary Words



Place the vocabulary cards SYRINX, CROP, PROVENTRICULUS, and GIZZARD on your science wall. Read and discuss the words and their definitions.

Lesson 3 Extension



Have children grades 7–8 complete the self-directed Lesson 3 extension titled “How Birds Breathe” in their student journals.

Answer Key for Specialized Bills Activity

FOOD	TOOL	SPECIALIZED BILL TYPE
Dried beans or rice	Tweezers	Gleaners
Peanuts or sunflower seeds in the shell	Pliers	Seed and nut eaters
Gummy worms/spaghetti/rubber bands	Tongs	Probers
Water	Straw	Nectar feeders
Marshmallows	Scissors	Meat eaters



"Uno spaventoso stato di cose" by Gaetano Chierici (1838-1920), unknown

Backyard Birds



POULTRY





Chickens

Most of the chickens in the world are raised to provide food for people. Broiler chickens are raised for meat. More than 60 billion meat chickens are eaten each year globally. These chickens take several weeks to grow big and plump. Females are called *hens*, males are called *roosters*, and young are called *chicks*.

Different breeds of chickens, known as layers, are raised for their large eggs. Around 6 billion laying hens are raised around the world. On average, an American eats almost 300 eggs per year. When you consider that only 1 out of 10 laying hens is raised in the United States, that's a lot of eggs around the world!

In the US, most chickens are raised on large commercial poultry farms in barns called chicken houses. Some chickens live outdoors on grass. These are called pastured poultry. Others are free-range and can roam at will.

QUICK FACTS

Uses:

- meat
- eggs
- feathers
- pest control

Diet:

- vegetation
- worms
- insects
- meat

Found:

- commercial chicken farms
- backyards
- free-range farms



2 Commercial farm



Free-range farm



Ducks

Ducks are another common backyard bird, and in addition to being used for food, they are amazingly useful for pest control—especially garden pests, such as snails and grasshoppers. Females are called *hens*, males are called *drakes*, and young are called *ducklings*.

All ducks have specialized features that help them live in and around water. Ducks in the wild are mostly aquatic birds and live in both fresh and salt water. Domesticated ducks do not have to live near a river or pond, but they do need water access for drinking and dunking their heads in to keep their bills and nostrils clean. Ducks' specialized bills filter their food from the water they often find it in, and their webbed feet propel them easily through the water.

Near a duck's tail feathers is the *preen gland*, which produces an oily substance. Ducks rub their beaks over this gland to cover them in oil. Then they use the oil on their beaks to coat their outer feathers completely, making the feathers waterproof. While much of their day can be spent swimming and diving in water, their feathers stay dry so they can fly whenever they desire.

This protective barrier of waterproof feathers is very effective, but it requires constant maintenance, so ducks spend a lot of time preening.

MALLARD

There are many different kinds of ducks, but one common species of duck is a mallard. A mallard drake (the male) has a glossy green head, while the hen (the female) has brown speckled plumage.



Uses:

- meat
- eggs
- feathers
- pest control

Diet:

- aquatic plants
- small fish
- insects
- worms
- grubs

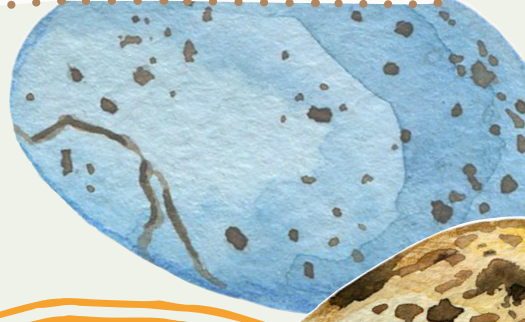
Found:

- farms
- wild

Specialized Features:

- preen gland
- waterproof feathers
- filtering bills
- webbed feet

QUICK FACTS





Turkeys

Turkeys have been used for meat and feathers for hundreds of years by Native Americans; they were introduced to Europe after the colonization of America. Some of the most distinguishing features of a turkey are its long, fanlike tail feathers; its prominent red, fleshy snood that covers its bill; and the brightly colored caruncles on its head and neck. However, these features, along with a peculiar gobbling sound, are more prominent in males (called *gobblers* or *toms*) than females (called *hens*) and help the males attract a mate. A turkey's young are called *chicks* or *poults*.

Turkeys are relatively large birds built with sturdy legs. They usually walk or run, but they can fly in short spurts. The diet of turkeys consists mostly of plants, seeds, and berries but also includes insects and sometimes snakes, lizards, or snails!

QUICK FACTS

Uses:

- meat
- eggs
- feathers
- pest control

Found:

- farms
- wild

Distinct Features:

- gobbling sound
- caruncles
- fanlike tail feathers
- red, fleshy snood

Diet:

- vegetation
- seeds
- berries
- insects
- snakes, lizards, snails, worms





GEESE

Geese are less popular as backyard pets, but they are interesting birds! Because they are territorial and protective, geese can be quite intimidating. Their loud honks and flapping wings are capable of chasing off anything that might come into their territory. Geese eat plants and insects, so they make fantastic weeders. Farmers use geese in their orchards for all-natural pest control, also reaping the benefits of their fertilizing contributions. A female is called a *goose*, a male is called a *gander*, and young are called *goslings*.

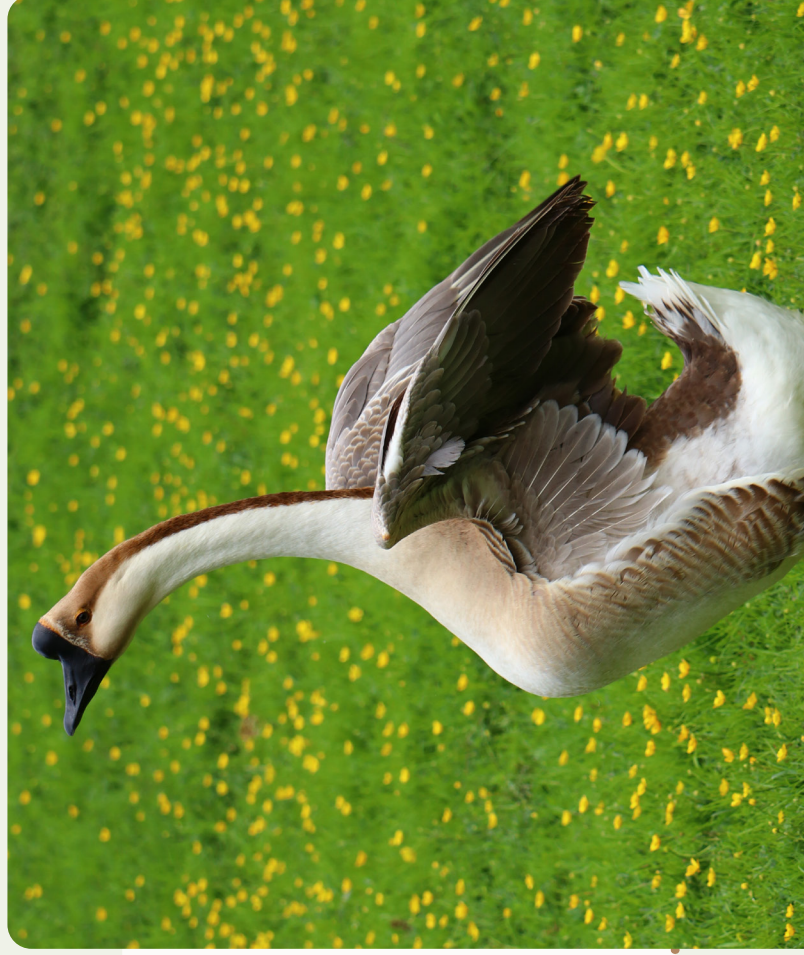
Goose eggs are white in color and are about the size of three chicken eggs. Inside the eggs are rich and golden yolks. Soft goose down is used as pillow and comforter stuffing, and goose quills were used for writing the Magna Carta and the Declaration of Independence. Thomas Jefferson raised his own geese to supply his need for quills.

Uses:

- meat
- eggs
- feathers
- weed control
- pest control
- fertilizing

Diet:

- vegetation
- insects
- worms
- meat (occasionally)



QUICK FACTS

Found:

- farms
- wild

Historical Uses:

- quills used in writing Magna Carta and Declaration of Independence

Birds Big and Small

Objective

Help the children learn about two bird extremes: ostriches and hummingbirds.



Preparation:

- Cut out the “Big and Small Memory Cards.”

Activity Supplies:

- Measuring tape
- 1 average-sized cantaloupe (optional)
- 1 quarter (coin)
- 1 penny (coin)
- 2 pinto beans or jelly beans

■ How Do You Measure Up?



Have the children turn to the “How Do You Measure Up?” chart in Lesson 7 of their student journals. Measure and record the items listed in the left column. The rest of the page will be completed later in the lesson.

■ Memory Game



Read to the children: When we say the word *bird*, we could be referring to animals that are either the size of your thumb or taller than a man! Today we will talk about the largest and the smallest birds in the animal kingdom: ostriches and hummingbirds. **Place the large pictures of the ostriches and hummingbirds found in this lesson in the center of the floor or table.** We are going to play a memory game to help us learn about these birds. The object of the game is to find the matching characteristic cards for both the ostrich and the hummingbird. When we make a match, I will read the information on the characteristic cards to learn about these amazing birds!

Shuffle the prepared “Big and Small Memory Cards” and lay them facedown on the floor or table. Have the children take turns flipping two of the cards to a

faceup position and reading the category. If the cards coordinate (e.g., Hummingbird Feet and Ostrich Feet are both turned over), read aloud the information in the matching section of the lesson. The underlined information will be needed in the last activity. Have the child collect the cards and place them next to the posters of the ostrich and hummingbird. Then, the child should take another turn. If the cards do not match, have the child turn the cards facedown, and the next child should begin his or her turn. Proceed until all the cards have been matched.



Memory
game
setup



Ostriches



Hummingbirds





APPEARANCE

The male hummingbird is usually more colorful than the female. All species of hummingbirds have long, narrow bills, and their feathers are iridescent, meaning they look different depending on how the light hits them.

Male ostriches are typically bigger than females. Males have black feathers on their backs and sides and white feathers on their bellies, while female ostriches are a sandy-brown color. Their feathers look soft and shaggy.

FEET

Hummingbird feet are too tiny for walking, so hummingbirds travel mostly by flight. They only use their feet to perch.

Ostriches, on the other hand, are made to be on their feet! They are the fastest runners of all birds and all two-legged animals. They can run up to 50 km (30 mi) per hour for 30 minutes continuously, covering 3–5 m (10–16 ft) in a single step.

WINGS

Hummingbirds' wings beat in a figure-eight pattern as fast as 80 beats per second. This allows them to hover in the air and fly backward. The speed of their wings makes a humming sound and allows them to travel 40–50 km (25–30 mi) per hour. Their wingspan ranges from about 3.3 cm (1.3 in) to 21.5 cm (8.5 in) depending on the species.

Ostriches cannot fly despite having large wings reaching about 2 m (6.6 ft) across. Their bodies are too heavy for flight, and their breastbones are not the proper shape to support large flight muscles. They use their wings for courtship displays and for balance as they run.

FOOD

Hummingbirds get most of their energy from the sugars found in nectar, but they can also catch insects mid-flight. They need to eat all day long, at least as much as their body weight, and they can starve to death in just a few hours without food.

Ostriches are omnivores. They eat leaves, roots, and seeds, but they are also known to eat insects, lizards, and other creatures. An ostrich typically has about 1 kg (2.2 lb) of stones in its gizzard at any given time.



FUN FACTS

- Hummingbirds help pollinate flowers. They have grooves in their tongues that help them lap up nectar.
- The heart of a hummingbird can beat as fast as 1,200 beats per minute!
- Hummingbirds have the largest brain-to-body size ratio of any bird. They never forget a flower they have visited.
- For short periods of time, hummingbirds can go into a state of torpor, similar to hibernation. They do this on cold nights to save energy.
- When threatened or sleeping, ostriches will crouch down low and press their long necks to the ground to avoid detection.
- Ostriches have the largest eye of any land animal at about 5 cm (2 in) in diameter. Their brains are actually smaller than their eyes!
- Ostriches are farmed for their meat, leather, feathers, and giant eggs. They can go several days without drinking, but they love being in water.

NEST

Show the children the quarter. Hummingbird nests are only about an inch across, similar to the size of a quarter. **Show the children the beans.** Typically only two eggs are laid at a time, and they are the size of small beans! Sometimes spider silk is used to hold the soft fibers, leaves, and feathers of hummingbird nests together. **Have the children place the beans on the quarter to resemble a hummingbird nest.**

Groups of female ostriches lay their eggs into the dominant hen's nest, which is a hollow in the sand about 3 m (10 ft) wide. Each female knows which eggs are hers. The largest eggs can be 15 cm (6 in) long and weigh up to 1.3 kg (3 lb)—as much as 24 chicken eggs! **Optional: Show the children the cantaloupe and let them feel its size and weight as a good comparison to an ostrich egg.**

SPECIES

There are approximately 350 species of hummingbirds. They are found in North America, Central America, and South America. Interestingly, the bee hummingbird species is found only on the island of Cuba.



There are only two existing species of ostrich, the common ostrich and the Somali ostrich, and they are fairly similar in appearance but vary in size and color. They both are native to Africa, but a small number can be found in the wild in Australia—the result of a failed ostrich farming attempt.

SIZE

Hummingbirds are the smallest birds; the smallest species is the bee hummingbird, which is about 5–6 cm

(2–2.5 in) tall and weighs as little as 2 g (0.07 oz)—less than the weight of a penny! Female hummingbirds are usually larger than males. **Let the children feel the weight of the penny in their hands.**

Ostriches are the largest birds alive today. Males can be up to 2.75 m (9 ft) tall and weigh as much as 150 kg (330 lb). Ostrich eggs are the largest of all existing bird eggs.

DEFENSES

Hummingbirds often choose feeding areas and may fiercely defend them against other hummingbirds and larger birds through sound, threat postures, and chases.

Male ostriches compete for a harem of 2–7 females by hissing, pushing, and kicking each other with their strong legs. An ostrich's kick can kill a lion.

■ Science Journal



Have the children turn to the “How Do You Measure Up?” page in Lesson 7 of their student journals. They should complete the second column, referring to the underlined information from this lesson as needed.

■ Lesson 7 Extension



Have children grades 7–8 complete the self-directed Lesson 7 extension titled “How Birds Defend Territory” in their student journals.

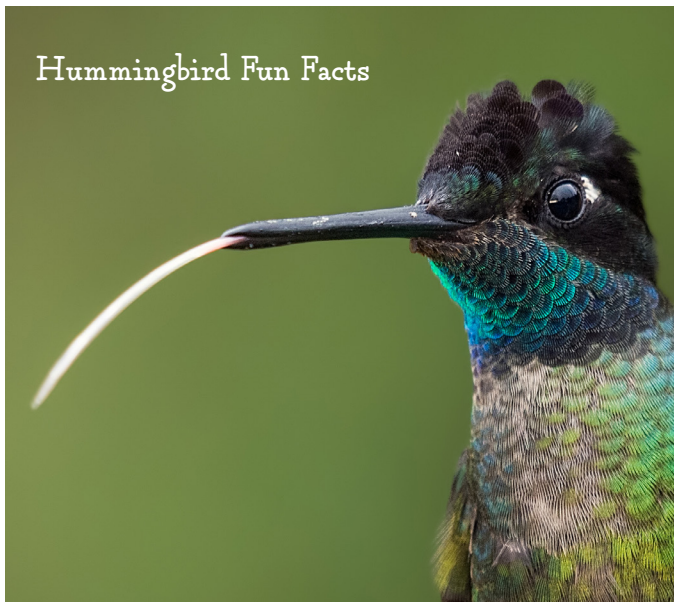


Big and Small Memory Cards

Ostrich Fun Facts



Hummingbird Fun Facts



Ostrich Appearance



Hummingbird Appearance



Hummingbird Wings



Ostrich Wings



All About Hawks

The smallest species in the world is the sharp-shinned hawk, and the largest is the upland buzzard. For both species the female is typically larger than the male.

Hawks are characterized by sharp talons, curved beaks, and muscular legs. Generally, hawks kill their prey with their talons instead of their beaks.

During a hunt for prey, hawks can dive 240 km (150 mi) per hour through the air. They can catch prey both in the air and on the ground. Hawks are not picky eaters; they will eat whatever they can catch, including frogs, insects, squirrels, rats, snakes, rabbits, and smaller birds.

Short, rounded wings and long tails are characteristic of accipiter hawks, one of two hawk subfamilies. Accipiter hawks are very secretive and hunt their prey by darting suddenly from a hidden perch. Buteo hawks, the other hawk subfamily, have long, broad wings and short, fanlike tails. They often drop to the ground from a high perch to catch their prey.



Red-shouldered hawk
(Buteo)

Marine Birds

Objective

Help the children learn about seabirds and shorebirds, which thrive in a marine environment.



Preparation:

- Cut out the “Marine Bird Sorting Cards and Heading Labels” in each child’s student journal. (For older children, cut out the “Bird Name Labels” as well.)

Activity Supplies:

- None

■ Birds and the Sea

Remove the “Sailing Ships and Seagulls” picture from this lesson and show it to the children as you read: A wonderful variety of birds lives near or on the sea and along the shoreline. Early in the age of exploration, sailors learned that certain types of birds could reveal a good fishing spot or help determine if land was near. In general, birds were a welcome sight to people who had been voyaging the open sea for months at a time.



On his first journey, Christopher Columbus and his crew grew hopeful that land was not far off when they observed bird clues. The following is an excerpt from *The Journal of Christopher Columbus*:

14 September. The crew of the *Nina* stated that they had seen a grajao, and a tropic bird, or water-wagtail, which birds never go farther than twenty-five leagues from the land.

17 September. This morning we saw a tropic bird, which does not sleep at sea.

19 September. This day, a pelican came on board; these birds are not accustomed to go twenty leagues from land.

7 October. Observed large flocks of birds coming from the North and making for the southwest. The admiral accordingly shifted course.

Columbus reached land five days later, on October 12.

■ Science Wall: Vocabulary Word



Place the vocabulary card PELAGIC on your science wall. Read and discuss the word and its definition.

PELAGIC

Seabirds



Flip over the “Sailing Ships and Seagulls” picture and show the children the “Seabirds” picture as you read: A seabird’s primary home and food source is in

open-water habitats, whereas shorebirds rely on beaches or wetlands for their survival. Seabirds are **pelagic**, spending the majority of their life at sea and returning to land only to breed. Due to their heavier bodies and paddle-like feet, seabirds have a difficult time walking around on land. However, their webbed feet, salt glands, and light under-feathers with dark upper coloring are the perfect features for life at sea.

Have the children point to the bird parts on the picture as you read.

- Webbed feet make it easier to swim at sea and provide traction for takeoff from the water.
- Supraorbital glands (salt glands) extract the salt from the seawater seabirds drink and the foods they eat so they do not dehydrate. The excess salt drains out of their nasal passages.
- The coloration with countershading (light coloring on the belly, darker coloring on the back) helps them stay safe from predators flying above or swimming beneath them.
- Some have thick, strong wings to help them dive under the water. Others soar in the air for long periods of time on long, slim wings.
- Thick plumage helps them stay dry and warm in their wet habitats.

These things make it possible for seabirds to live hundreds or even thousands of miles from shore.

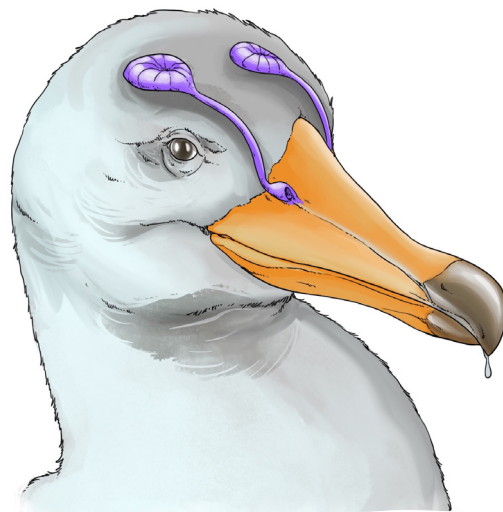
Penguins, puffins, auks, albatross, and gannets are all common types of seabirds. These birds often live in colonies and typically hatch only one offspring a year.

Shorebirds



Remove the “Shorebirds” picture from this lesson and show it to the children. Have them point to the bird parts as you read:

- Shorebirds have long, thin legs that make it easier for them to walk on sandy shores or in marshy waters.
- Their long, thin beaks are perfectly designed to probe for food in mud, sand, and water.
- Long, pointed wings help them fly quickly over great distances and maneuver in the air. Most shorebirds are migratory birds, sometimes flying for many days before stopping for food or rest.
- Many shorebirds also have supraorbital glands (salt glands) to remove salt from the water they drink.



Like seabirds, shorebirds build nests near one another, which is known as colonial nesting. However, shorebirds may hatch 3–4 chicks at a time. The eggs and chicks are well camouflaged in their grassy or sandy habitats. So next time you are at the beach, watch your step! There may be eggs or young fledglings nearby. Oystercatchers, plovers, and stilts are all types of shorebirds.

Wading Birds



Remove the “Wading Birds” picture from this lesson and show it to the children. Have them point to the bird parts as you read:

- Wading birds have long, thin legs and toes, which help them balance in muddy environments or changing water currents.
- Their long, thin beaks can be either pointed or rounded, depending on their food source.

- Long, thin necks provide flexibility while hunting.
- Many wading birds also have supraorbital glands.

Wading birds include herons, cranes, flamingos, spoonbills, and storks. They tend to stand still quietly for long periods of time as they wait for food to come within reach.



Great blue heron

■ **Marine Bird Sorting Activity**



Give each child his or her set of prepared bird cards and heading labels. Have the

children spread out the labels on either the table or floor and organize the pictures beneath each label. Remind the children to look for the body part clues as they try to guess in which category each bird belongs. If needed, the pictures used in the previous activities can be referenced. For older children, give them the cut-out “Bird Name Labels” and have them guess which label goes with which bird picture. An answer key is included at the end of this lesson.

■ **Birds of the Galápagos Mini Book**



Read the *Birds of the Galápagos* mini book to the children. Then discuss each child’s favorite bird and one interesting fact about it.

■ **Lesson 9 Extension**



Have children grades 7–8 complete the self-directed Lesson 9 extension titled “Wetland Birds” in their student journals.



Frigatebird

Sailing Ships and Seagulls



"Sailing Ships and Seagulls" by Edouard Manet (1832-1883), c. 1864

Birds of the Galápagos

The Galápagos Islands are a remote archipelago in the Pacific Ocean, located 1,000 km (620 mi) off the coast of Ecuador. Made up of 13 major islands and many smaller ones, the Galápagos is home to a diverse array of plant and animal species that cannot be found anywhere else! Today we are going to learn about its beautiful array of birds.



Galápagos petrel



The Galápagos petrel is one of six endemic (found in only one area) seabird species in the Galápagos Islands. These birds make their nests in small cavities on the hillsides. Due to their nesting habits, they have become prey to introduced predators, such as cats and rats. This has caused a significant decrease in the number of petrels, making them critically endangered.

Can you guess how another species of seabird endemic to the Galápagos, the flightless cormorant, got its name? Because it has no natural predators on the islands, this cormorant species doesn't need to fly to stay away from predators and instead spends most of its time swimming in the water. The flightless cormorant feeds primarily on eel, octopus, and fish.



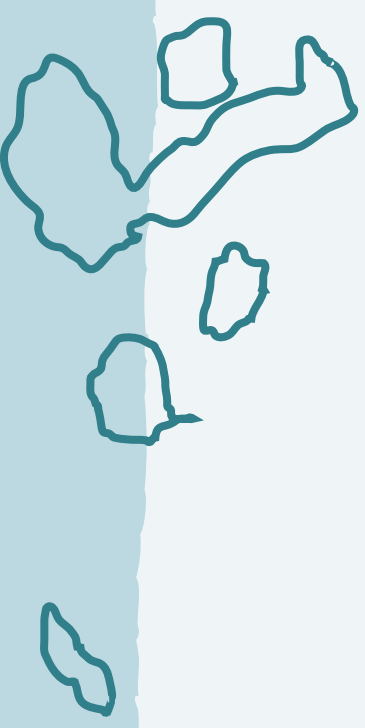
Flightless cormorant



White-cheeked pintail



The white-cheeked pintail is a species of duck living on the Galápagos Islands. Unlike many bird species, males and females share quite similar patterning and coloration with the characteristic white “cheeks” and black bill with a red base. Though these birds can be found in many areas around the Caribbean and South America, the subspecies Galápagos pintail is found only in the Galápagos. These ducks belong to a group known as dabbling ducks, which feed by “dabbling” at the surface rather than diving underwater.



Bird Migration

Objective

Help the children learn what migration is and how and why birds migrate.



Preparation:

- Cut out the six “Record Setters” cards.
- Cut out the four “Migration Danger Cards” for the Migration Game.
- Cut out the “Migration Game Spinner and Pieces.”
- Tape the game board together.

Activity Supplies:

- Compass or compass app (optional)
- Paper clip
- Pencil
- Tape

Optional Read Aloud



At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. *Mission Migration* by Ileana Board is suggested with this lesson.

On the Move

Read to the children: Think of a time when you took a trip. Did you hop in a car? Did you travel on an airplane or on a train? When we want to go somewhere, we have maps, vehicles, and even weather reports to warn us of dangerous conditions along the way. However, not all travelers have these kinds of tools.

At any given time, and under all sorts of weather conditions, birds can be found traveling in various parts of the world. Some travel only short distances, while others cover thousands of miles in semiannual migrations. Why do you think they travel? Do all birds go to the same places? How do they figure out where to go?

For just a moment, imagine yourself as a bird. It isn't always easy to survive in the wild. How would you get the food you need when the weather changes, and how would you cope as the temperature drops in winter?

Science Wall: Vocabulary Word



Place the vocabulary card **MIGRATION** on your science wall. Read and discuss the word and its definition.



Migration Picture Study

As you read to the children, have them view the pictures found on the “Migrating Birds” page in the lesson.

The semiannual *migration* of birds has long been a signal to people that the seasons are changing. Animals instinctively know what season it is and what they need to do to survive. Migration is part of God’s design for birds—for protection from predators, the gathering of food, and survival in the wild.

Some birds travel a mere few hundred yards up and down a mountain, while others cross the entire globe. Whatever the distance, birds prepare for their journey in advance by eating as much as possible. They are storing extra energy in the form of fat in their bodies.

Record-Setting Migratory Birds Activity



Spread out the “Record Setters” cards and allow the children to take turns choosing a card while you read the corresponding information about each bird to them.

NONSTOP FLIGHT—Alaskan Bar-Tailed Godwit

Alaskan bar-tailed godwits can fly over 13,550 km (8,420 mi) nonstop over the Pacific Ocean in 11 days!

FOREVER IN FLIGHT—Wandering Albatross

The wandering albatross can go almost two years without touching land. It has the longest wingspan of any bird at 2.4–3.4 m (8–11 ft) and can travel more than 120,000 km (75,000 mi) in a year.



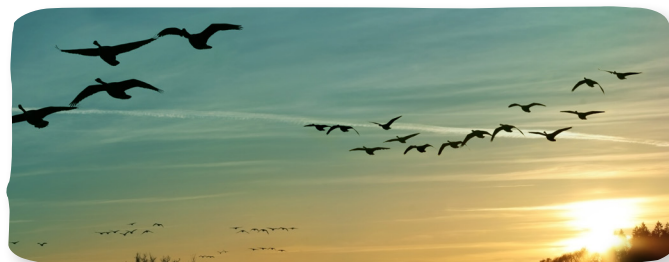
Arctic tern

FARTHEST-MIGRATING ANIMAL—Arctic Tern

The tiny Arctic tern migrates farther than any other animal in the world: nearly 89,000 km (55,250 mi) each year from the Arctic Circle to Antarctica and back!

FASTEST NONSTOP FLIER—Great Snipe

The great snipe not only travels 6,800 km (4,200 mi) from Europe to Africa, but it also does so in just 3.5 days, traveling at 97 km (60 mi) per hour!



LONGEST FLIGHT OF ANY HUMMINGBIRD—Rufous Hummingbird

Traveling from southern Alaska to southern Mexico and back again each year, this 10-cm (4-in) long hummingbird takes a round-trip journey of over 12,500 km (8,000 mi) every year!

HIGHEST MIGRATION—Bar-Headed Goose

These birds fly over the Himalayas on their migratory route, sometimes at heights over 8 km (5 mi) above sea level, making them some of the highest-flying birds.

Navigation and Migration Flyways



Show the children the page titled “North American Flyways.” As you read, have the children look at the major flyways.

Read to the children: How do you think birds know where to go? Some scientists have found that they follow markers on the land, such as mountains, rivers, or coastlines. This is known as *landmark orientation*. The birds’ ability to sense which direction they should fly when no landmarks are available, such as over an ocean, is called *compass orientation*. Scientists think birds may have a way to detect the natural magnetic poles of the earth, like a compass.

With these navigation tools, birds generally fly the same paths, known as *flyways* or migration routes, on their long journeys. In the United States, scientists have identified four flyways: the Atlantic, Central, Mississippi, and Pacific flyways.

Science Wall: Vocabulary Word



Place the vocabulary card **FLYWAY** on your science wall. Read and discuss the word and its definition.



Landscape and Compass Orientation Activity



Read to the children: Now that you have learned how birds find their way, it is your turn to practice navigation! Stand up and together walk to a faraway spot, paying attention to the path you take. Then come back.

Can you give me directions on how to get to your destination using landmark orientation? I will follow your directions and see if your landmarks help me get there. (For example, “Turn left at the sofa; then walk about 10 steps and turn right at the lamp.”)



Now let’s use our compass (or compass app) and try to give directions using compass orientation directions. (For example, “Walk **NORTH** toward the front door about 10 steps; then turn **EAST** and walk 3 steps.”) **Note: If you don’t have a compass, you can find north by first facing the direction the sun sets. Second, point your right arm straight out to the side. That is the approximate direction of compass north. If younger children are not familiar with compass directions, you can review cardinal [compass] directions with them or simplify this activity by using left and right but not including landscape objects in the directions.**

Migration Mysteries

Read to the children: Scientists aren’t sure what triggers migratory behavior in birds, but it seems to be an instinct that birds have from birth. It may be triggered by shorter days and lower temperatures or a reduction in food availability. To unravel this mystery, scientists in the 1800s tagged birds by capturing them, attaching metal bands to their legs, and releasing them.

If the birds were recaptured, the scientists could record information and make observations.

Today, birds are fitted with small geolocator devices and tracked year round via satellite. This method of tracking is extremely accurate and provides scientists with a wealth of information about where and for how long birds spend their time.

Migration Journey Game

Read to the children: Migration is no easy task. It is a long journey with some hazards along the way. This game will help us learn some of the challenges faced by birds as they migrate. **Give the children the prepared game pieces, spinner, pencil, paper clip, “Migration Danger Cards,” and assembled game board.**

Instructions:

1. Each player should choose a migratory bird game piece. Choose a player to go first.
2. The first player should place the paper clip on the spinner, then place the pencil point in the middle of the paper clip in the center circle of the spinner. Flick the paper clip with a finger to make it spin.
3. Move the game piece the number of spaces indicated by where the paper clip stopped.
4. Follow the instructions for that space; then it is the next player’s turn.
5. When everyone has reached the end, read any of the “Migration Danger Cards” that were not read during the game.

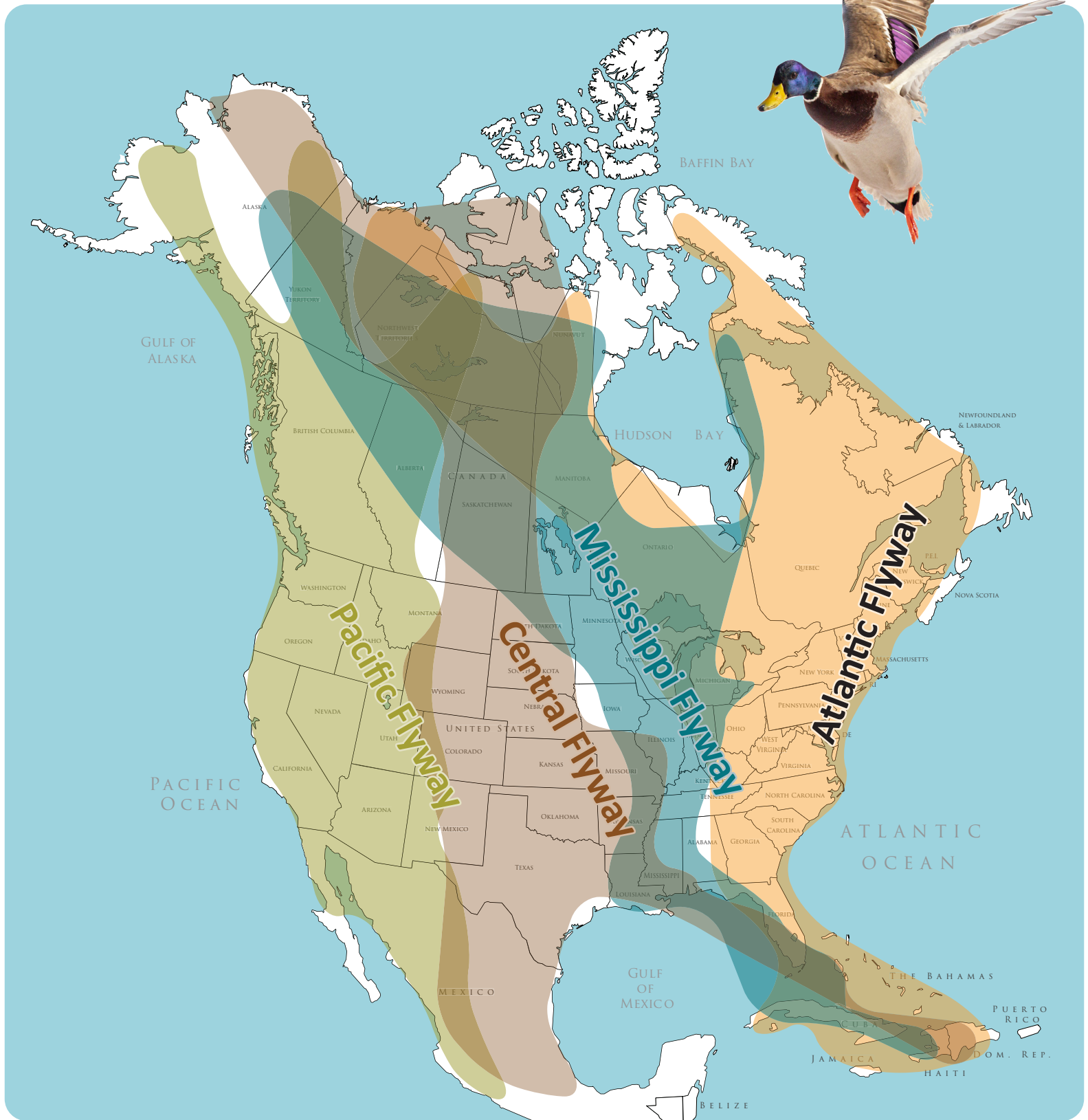
Lesson 10 Extension



Have children grades 7–8 complete the self-directed Lesson 10 extension titled “How Birds Stay Healthy” in their student journals.



North American Flyways



Tall Structures



Many of today's skyscrapers are built mostly of reflective glass. To a flying bird, these buildings look like an extension of the sky, and the bird may fly right into the buildings. New York City has hundreds of skyscrapers and is located in a high-traffic area for bird migration. Up to 230,000 birds die each year from flying into the tall New York buildings. Birds have also been found in large numbers at the base of cell towers, water towers, and power line towers. They fly into them at night because they can't see them.

Landscape Changes



Birds have been following the same migration patterns for centuries. Along the way they stop in roughly the same places year after year. When urban development and natural disasters, such as wildfires, change those landscapes, the birds lose their refueling locations. These changes cause an already dangerous flight to become a desperate search for food.

Pesticides



Clouds of sprayed pesticides lingering in the air cause harm to migratory birds, but great damage is also being caused by common pesticides that are applied directly to the seeds or the ground where plants grow. These chemicals enter the plants and are found in water sources, so when birds eat the plants or insects or drink the water, it makes them very ill and causes them to lose their sense of direction.

Weather



While birds are remarkably equipped to handle all sorts of weather conditions, many birds die when they encounter severe rainstorms, strong winds, hurricanes, and even late-season snowstorms along their migratory routes.

Migration Game

Finish

18

17

16

15

14

13

12

11

10

9

8

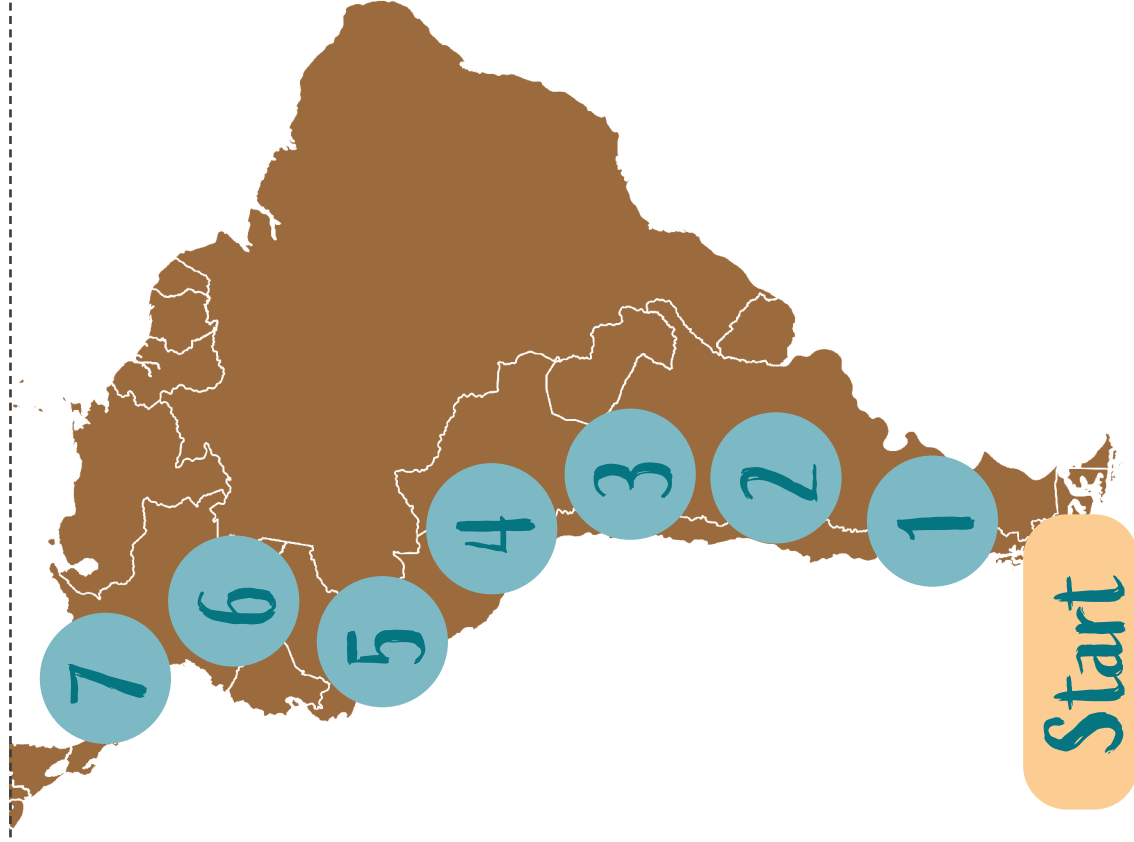
7



Remove this strip by cutting on the line below. Match this page to the other half of the "Migration Game" board, overlapping the #7 circles. Tape in place.

Instructions for Landing on Each Space

1. You catch a strong tailwind. Move ahead 2 spaces.
2. You are nearly eaten by a predator. It scares you back to "Start."
3. It's raining; it's pouring. You find shelter in a tree.
4. You find a lake with plenty of food and water.
5. You barely miss flying into a tall hotel. Lose a turn while you recover. READ THE "TALL STRUCTURES" CARD.
6. Strong winds from a hurricane blow you off course. Go back 2 spaces.
7. A strong storm blows in. You find shelter in a birdhouse.
8. Scientists capture you for research, put a band on your leg, and release you.
9. After flying long hours, you look for a familiar wildlife sanctuary, but you can't find your usual resting spot because a new mall was built. Go back 1 space to rest. READ THE "LANDSCAPE CHANGES" CARD.
10. You find lots of berries and seeds for fuel. You land in a homeschooler's backyard and find food, shelter, and water!
11. A pet cat nearly catches you! Lose a turn.
12. You find a wildlife sanctuary and take a much-needed rest. Move ahead 2 spaces.
13. An unexpected freeze causes food to be scarce. Go back 1 space.
14. You land in a polluted stream and get sick. Lose a turn. READ THE "PESTICIDES" CARD.
15. A late blizzard blows you off course. Go back 3 spaces.
16. A swift wind helps you fly faster. Move ahead 3 spaces.
17. You find a safe, wooded area to rest and refuel for the final leg of your journey.
18. A strong headwind slows your progress. Lose a turn. READ THE "WEATHER" CARD.



Parrots

Objective

Help the children learn about the unique features and native habitats of the parrot family of birds.



Preparation:

- Have the children cut out the map markers of each species on the “Map the Parrots” page in their student journals. Assist younger children as needed.

Activity Supplies:

- Glue stick

Optional Read Aloud



At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. Longer books may be split into more than one reading session.

The Good and the Beautiful Nature Reader—Birds by Elizabeth Schwartz, Charles Schwartz, and Paul McCutcheon Sears is suggested with this lesson.

Introduction to Parrots

Read to the children: Throughout history, people have been fascinated by the color and intelligence of parrots. During his travels in India, Alexander the Great found green ring-necked parakeets, now called Alexandrine parakeets. He was so enamored with them that he brought them back to Greece. Parrot ownership was a sign of wealth, and certain species, like the African grey parrot, were prized for their ability to learn and mimic thousands of words and sounds.



Ring-necked parakeet

When you think of a parrot, you might be picturing a vibrant scarlet macaw. However, that is just one of the more than 350 species of parrots, which include cockatoos, macaws, budgerigars (budgies), cockatiels, lovebirds, and parakeets.

Map the Parrots Activity



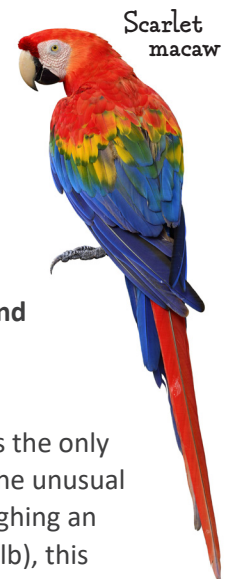
Have the children turn to the “Map the Parrots” page in Lesson 12 of their student journals. As you read about each parrot species, help the children locate where the species can be found and glue the cut-out parrot map markers on the continent.



1. Kakapo—New Zealand is the only place in the world to find the unusual kakapo, or owl parrot. Weighing an average of 2–4 kg (4.4–8.8 lb), this flightless, nocturnal parrot can live over 90 years!



2. Red-crowned Amazon parrot—Perhaps the most well-known parrot on the South American continent is the Amazon parrot. These medium-sized birds are typically green with bright accent colors.



Scarlet macaw



3. Scarlet macaw—The scarlet macaw is a large red, yellow, and blue bird that lives in the evergreen forests of Central America and South America.



4. Grey parrot—The grey parrot can be various shades of gray with a crimson tail. They live throughout the lowland rainforests in western and central Africa.



5. Peach-faced lovebird—Lovebirds can be found across arid regions in southern Africa, like the Namib Desert. These small green chirpers sleep sitting side by side with their faces turned in toward each other.



6. Sulphur-crested cockatoo—The cockatoos of Australia and surrounding island countries, like Indonesia, are larger birds that are less colorful than most other parrot species.



7. Parakeet—Parakeet species are found in tropical areas all over the world. **The children can place them anywhere on the map.** These birds range in size from small to medium and can be many colors.

One of the smallest parakeets, known as the budgie, is commonly kept as a pet.

Science Wall: Vocabulary Word



Place the vocabulary card **ZYGODACTYL** on your science wall. Read and discuss the word and its definition.



Parts of a Parrot

Read to the children: While members of the parrot family can be a vast array of sizes and colors, they share some common characteristics. Two features in particular differentiate parrots from other species of birds: hooked beaks and zygodactyl [zie-guh-DAK-tle] feet.



Blue-and-gold macaw

BEAK

All parrots have a hooked beak shape. The pointed upper part of the beak curves down and over the lower part of the beak. The beak is made of a keratin sheath covering the jawbones beneath, and it continues to grow throughout a bird's life because it is worn down by the hard nuts and seeds that make up most of a parrot's diet. If the food isn't enough to file the beak down, the bird will gnaw on wood or rub the beak against a rock. A parrot's beak is its most important tool, used to crack the shells of nuts, dig holes in branches and tree trunks for its nest, and defend itself with a bite stronger than a dog's!

FEET AND LEGS

Parrots have very short legs and strong feet. Unlike most birds, parrots have **zygodactyl** feet, with two toes facing forward and two toes facing backward.



This allows them to grip branches tightly, climb trees easily, and even hold their food while eating.

Parrot Habits

Read to the children: Even though each of the many species of parrots vary widely in size, life span, and breeding and nesting habits, they do share some common behaviors.

DIET

Parrots are omnivores, so they eat both meat and vegetation. Their diet mainly consists of nuts, flowers, fruit, buds, nectar, seeds, and insects. Their curved beaks and agile tongues are specifically designed to be able to open the husks of tough seeds and extract the seeds inside.

Birds in History

Objective

Help the children understand how birds have been useful to humans throughout history.



Preparation:

- Cut out the “Bird Bingo Cards.”
- Cut out the “Bird Bingo Boards” in the back of each child’s student journal.

Activity Supplies:

- Bingo markers, such as coins, beans, buttons, or small pieces of candy

■ Birds in History



Read to the children: From the very beginning, the lives of birds and humans have been connected. Birds have filled our world with more than melodious songs and beauty in the skies. They have fed and clothed us, kept us company, carried our messages, represented our nations, and inspired people with the desire to fly.

Birds have enriched our lives in countless ways. In this lesson we will learn just a few of the ways that birds have been important throughout history.

■ Science Wall: Vocabulary Word



Place the vocabulary card **FALCONRY** on your science wall. Read and discuss the word and its definition.



■ Birds as Art



Show the children the pages titled “Falconry in Art.” Have them examine the images of the tapestry as you read.

Read to the children: In the halls of the Bayeux [bi-you] Museum in Normandy hangs the *Bayeux Tapestry*, a long, embroidered piece of artwork with stitched images that provide an account of a battle fought in 1066.

This amazing piece of history provides fascinating detail about 11th-century culture. In at least four of the scenes depicted on this remarkable tapestry, we see birds of prey perched on men’s hands, indicating that the sport of *falconry* was of great significance to the people of this time period, both as a source of food and as a status symbol.

Have the children examine the other pieces on the “Falconry in Art” pages. There are many works of art that depict scenes of hunting and falconry. Historical records indicate that falconry was practiced as far back as 700 BC. Marco Polo even reported that the great Kublai Khan kept falcons as prized possessions.

Stories of legend and history tell of the importance of birds to some of the most ancient civilizations. Ancient Egyptians carved avian images in stone. Some of the

Falconry in Art



Scenes from the *Bayeux Tapestry*, c. 1077

Falconry in Art



"Falcon Hunt" by Pieter van der Plas (1595–1650), date unknown



"Prince With a Falcon" by unknown artist, c. 1600–1605



Illustration from "The Art of Hunting with Birds" by unknown artist, 1240s

Bird Bingo Cards



RED-TAILED HAWK

Often seen on fence posts, telephone poles, or soaring in circles patrolling highways and fields for rabbits and rodents, this large bird is commonly recognized by its ruddy-tipped tail and its characteristic screech.



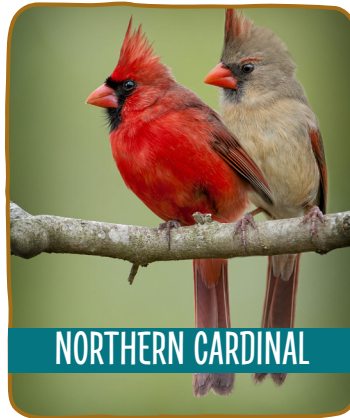
GOLDEN-CROWNED KINGLET

This tiny bird is constantly on the move as it forages for insects. Its call sounds like a high-pitched cricket. It is a drab olive color with a yellow crown encircled by a band of black.



RED-HEADED WOODPECKER

The ruby-colored head feathers give this bird its name. It has a snowy-white body and dark wings. It loves to catch insects midair and visit suet feeders in the winter. It uses its strong bill to bore into dead wood in search of insects.



NORTHERN CARDINAL

This unmistakable crested bird is a favorite at feeders. The male is a solid, bright red, and the female is a red-tinged brown. Both have a crest and an orange beak. The male and female fiercely defend their territory, and unlike most songbirds, both the male and female sing to each other.



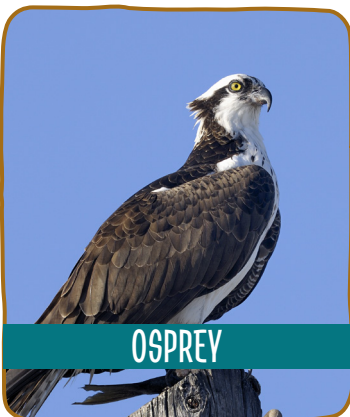
BARN SWALLOW

With a blue upper body and a characteristic forked tail, this bird is known for its quick darting and diving flights to catch insects midair, as well as its cup-shaped nests commonly built in barns and other structures.



GREAT BLUE HERON

Frequenting shorelines and marshes, this bird will perch motionless, closely watching for movement, and will strike quickly to capture fish with its sharp beak. With dusky blue-gray coloring, an elongated neck, and stilt-like legs, this elegant bird is a treat to see.



OSPREY

Also known as a fish hawk, this long-distance migrating raptor is found near open water. It excels at fishing, even diving to make its catch, and often builds stick nests on pilings and treetops to catch a bird's-eye view of available food and to protect its young from land predators.



BLACK-CAPPED CHICKADEE

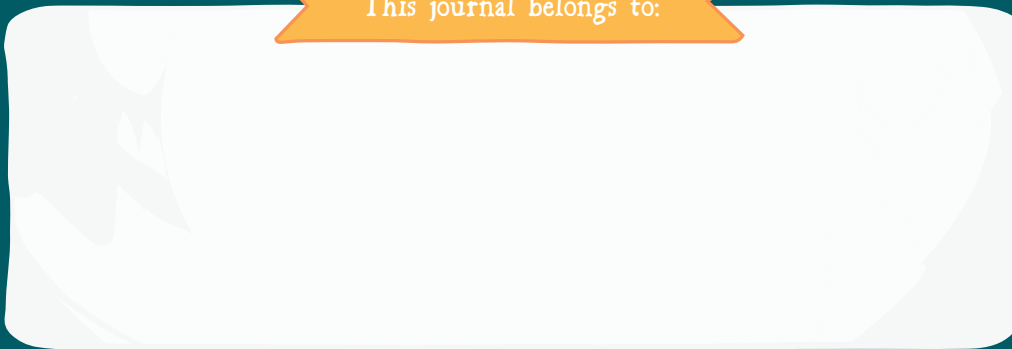
As a small, nonmigratory songbird, this bird must store food for winter. It stows seeds from bird feeders in tree bark. The male sometimes feeds the female, and they nest in crevices of trees. It has a black-capped head and is known for its call of "chick-a-dee-dee-dee."

BIRDS

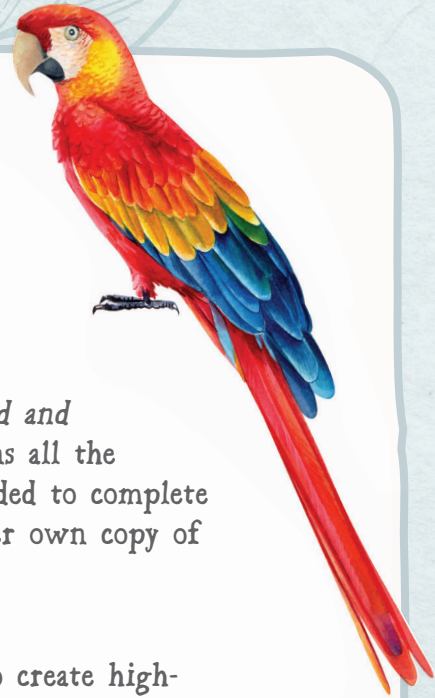
Grades 3-6

STUDENT JOURNAL

This journal belongs to:



INSTRUCTIONS



This student journal accompanies *The Good and the Beautiful Birds* science unit. It contains all the worksheets and journal pages that are needed to complete the unit. Each student will need his or her own copy of the science journal.

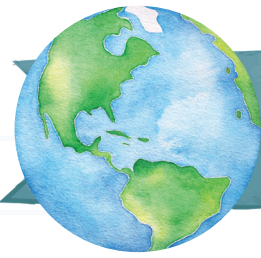
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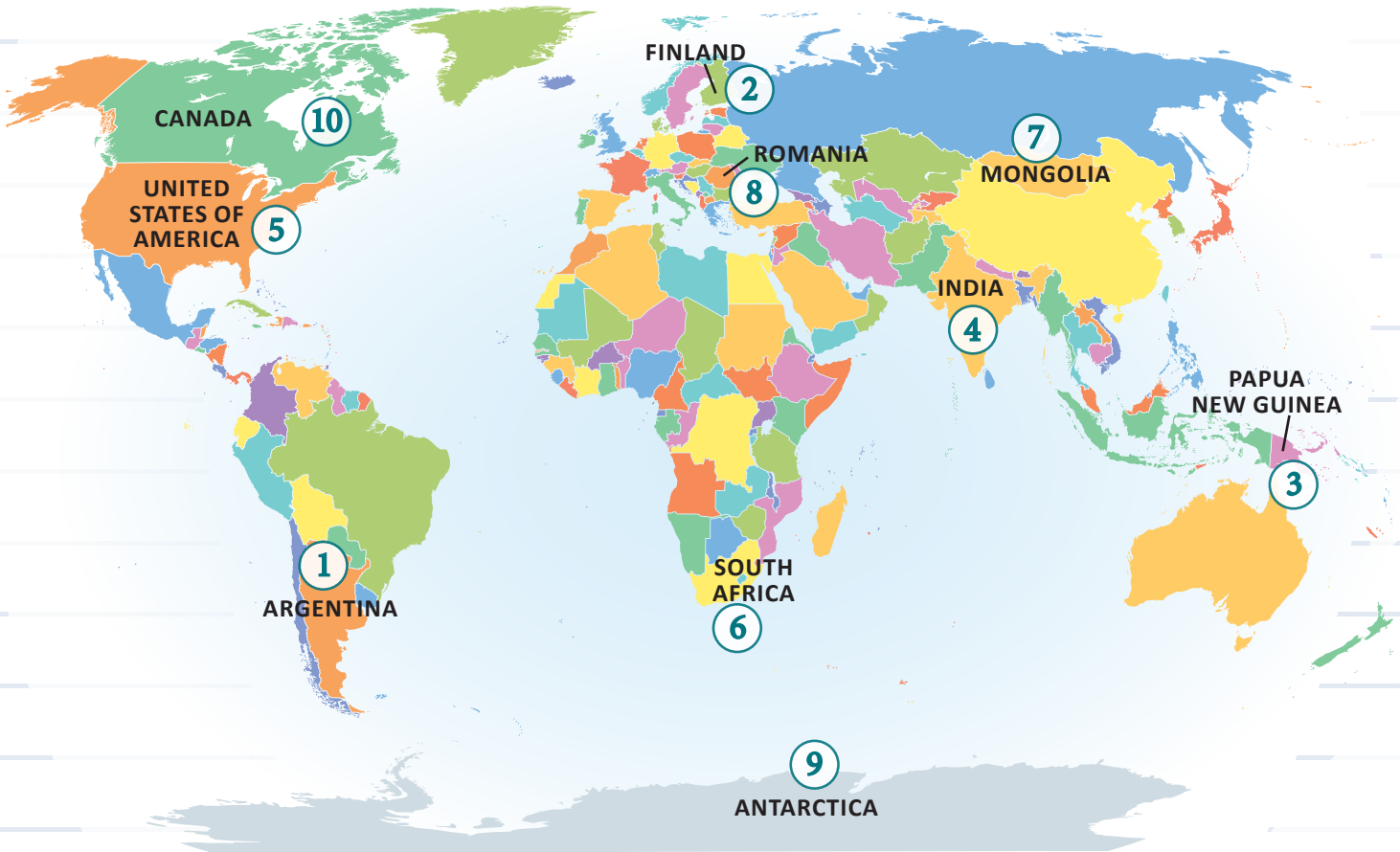
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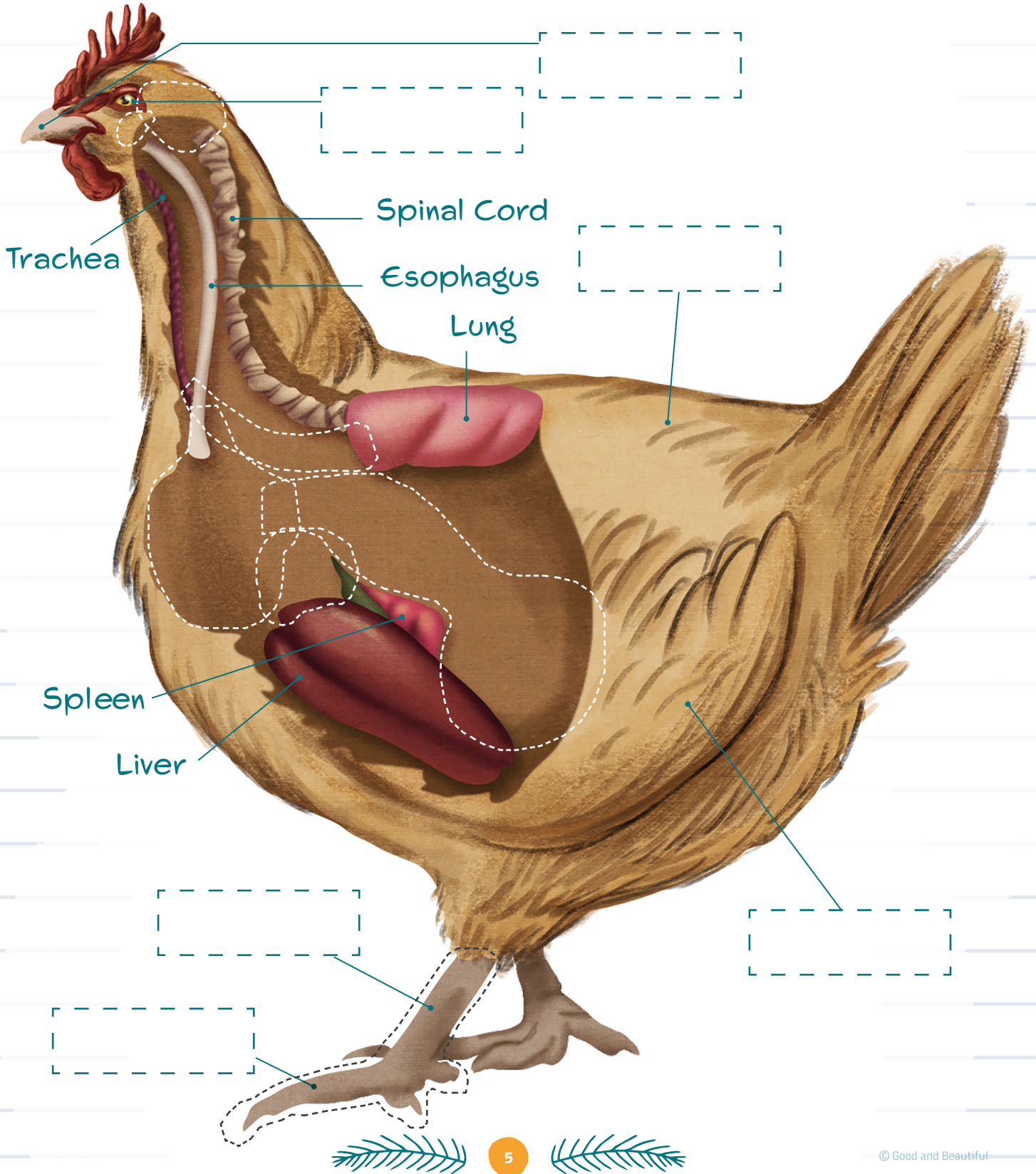
BIRDS OF THE WORLD

While listening to your parent or teacher read the clues in Lesson 1, draw a line between each labeled country and its correct national bird.



PARTS OF A BIRD

As you listen to the "External Parts of a Bird" video, place each piece in its correct spot on this page. Once all the pieces are in place, glue them to the paper. (You will place the internal pieces on the bird in the next activity.)



HOW DO YOU MEASURE UP?



How wide is your arm span?

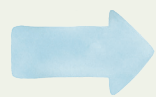
Stretch out your arms and measure from fingertip to fingertip.



How does your arm span compare to the wingspan of an ostrich? Circle the correct orange option.

An ostrich wingspan is **bigger / smaller** than mine.

How tall are you?



How does your height compare to the height of a male ostrich?

A male ostrich is **taller / shorter** than I am.

How long is your pointer finger?



How does your finger length compare to the length of a hummingbird?

A hummingbird is **longer / shorter** than my finger.

How long is your hand?

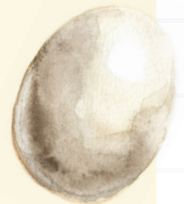
Measure from your wrist to the tip of your middle finger.



Would an ostrich egg fit in your hand? Would a hummingbird egg?

Hummingbird: **yes / no**

Ostrich: **yes / no**



How long is one of your steps?

Measure from the tip of one toe to the back of your other heel after you take a step.



How many of your steps would it take to cover one running ostrich step?

_____ steps

A penny weighs about 2.5 g (0.1 oz).



Which is heavier?

penny / bee hummingbird





My BIRDS OF PREY Booklet



HAWKS

As you listen to the facts from the "All About Hawks" poster, circle all the words you hear that describe hawks. Color each hawk.

Accipiter
hawk



rounded talons

sharp talons

very large wings

curved beak

large beak

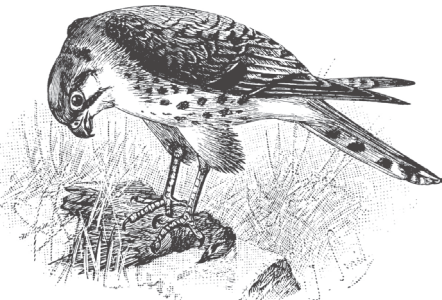
heavy body

slow dive

picky eater

fast dive

not picky eater



Buteo hawk



EAGLES

As you listen to the eagle facts being read to you, write or draw the two things you find the most interesting. Color the eagle.



As you listen to the information about the four types of eagles, draw a line to the correct option(s) of diet and habitat. Color each eagle.

Diet

- forest animals
- small mammals
- snakes
- lizards
- insects
- fish
- amphibians
- monkeys
- small birds

Snake eagle



Booted eagle



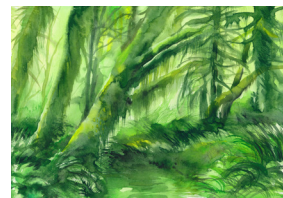
Harpy eagle



Sea eagle



Habitat



Tropical Rainforest



African Desert



Near Water

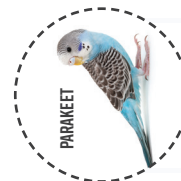
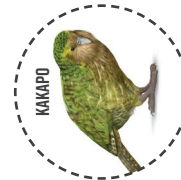


Migratory

MAP THE PARROTS



Cut out the parrot map markers below. As you listen to the information being read about the different parrot species, locate the continent or country where each species can be found and glue the corresponding marker to the continent or country.



Bird Bingo #3

B



GREAT BLUE HERON

I



WILD TURKEY

R



AMERICAN ROBIN

D



HOUSE WREN



BLACK-CAPPED CHICKADEE



EASTERN TOWHEE



GOLDEN-CROWNED KINGLET



BARN OWL



EASTERN BLUEBIRD



RUBY-THROATED HUMMINGBIRD



MALLARD



ROSE-BREASTED GROSBREAK



NORTHERN BOBWHITE



CANADA GOOSE



SONG SPARROW



PURPLE FINCH

Bird Bingo #4

B



SONG SPARROW

I



BLACK-CAPPED CHICKADEE

R



RED-TAILED HAWK

D



OSPREY



RUDDY TURNSTONE



CANADA GOOSE



NORTHERN BOBWHITE



TUNDRA SWAN



BLUE JAY



RED-HEADED WOODPECKER



AMERICAN ROBIN



BALD EAGLE



BARN OWL



GOLDEN-CROWNED KINGLET



HOUSE WREN



GREAT BLUE HERON

Birdwatching Notebook

BIRD LIFE LIST

Many enthusiastic bird lovers will keep a running list of all the birds they have observed. To help identify the birds you see, your local library may have books about birds in your area, or you may find a list of local birds on the internet with your parent's permission. Note the date and location where each bird was sighted for future reference.

Name of Bird	Date	Location

Birdwatching Notebook

OBSERVATION LOG

Fill in the information for a bird that you observed.

Name of Bird (common and scientific, if possible) _____

Date _____ Location _____

Appearance

Draw a picture of your bird or find a picture (printed from the internet or copied from a book) and paste it below. You may wish to label key features, use color, or draw the bird in different positions or angles.

Behavior

Circle or write in the best description.

Sound

Caw Honk Trill Screech Whistle Chirp

Movement

Flying Swimming Walking Eating Sitting

Socialization

Alone Caring for young In a group

Notes

Write anything you found interesting about the bird.

Size

Circle the best description.



Small



Medium



Large

Distinct Features



Crest



Multi-colored



Long tail feathers

Other (draw or write)

Color

Color each part of the bird.

Head feathers



Body feathers



Wing feathers



Bill



Feet

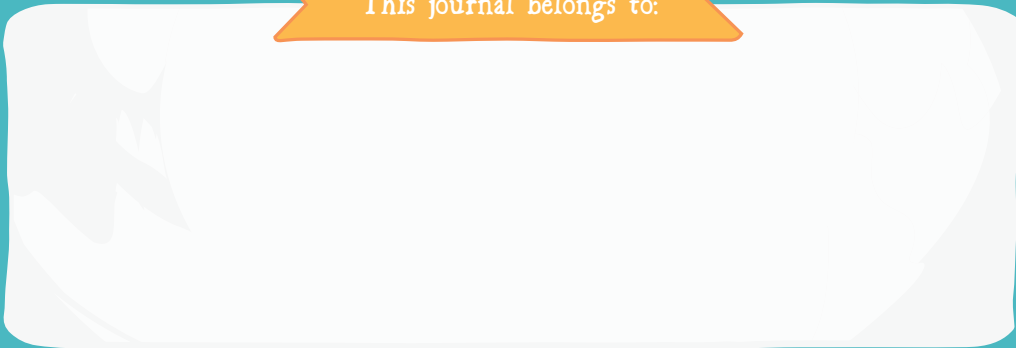


BIRDS

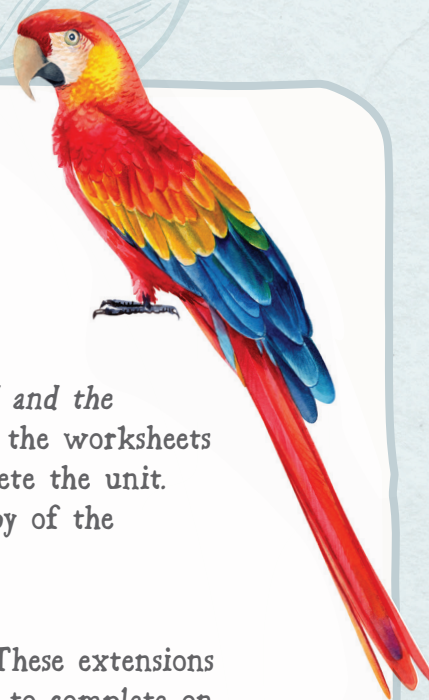
Grades 7-8

STUDENT JOURNAL

This journal belongs to:



INSTRUCTIONS



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The lesson extensions are also found here. These extensions are optional for older students (grades 7–8) to complete on their own. Each extension is accompanied by lined paper so the student can keep his or her work in one place.

Have each student take his or her time to create high-quality work as the activities and worksheets are completed. Students may enjoy looking back on their past discoveries when they've finished.



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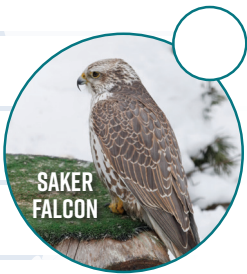
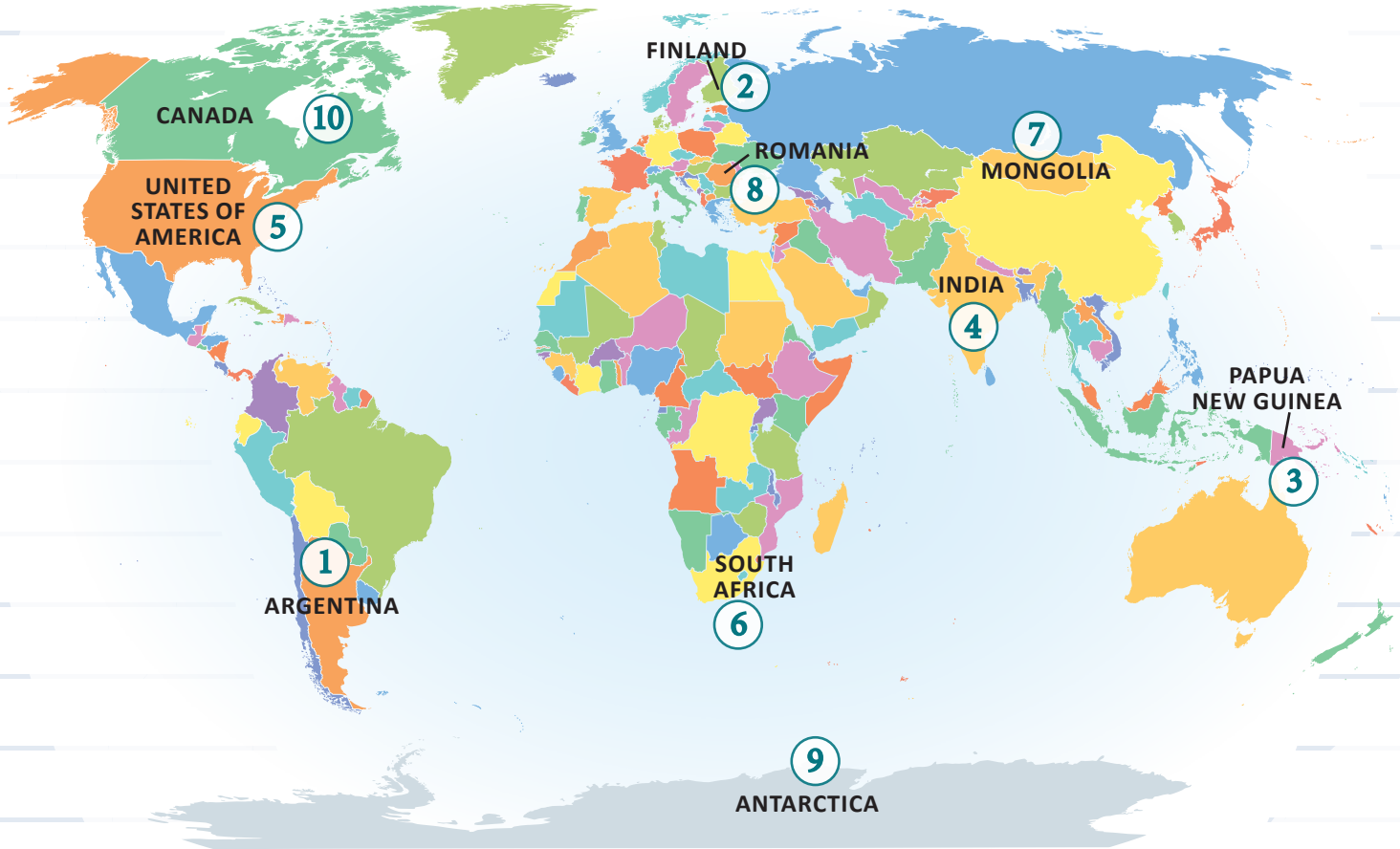
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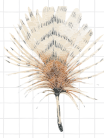




BIRDS OF THE WORLD

While listening to your parent or teacher read the clues in Lesson 1, write the correct country number in the white circle next to each national bird.





EXTENSION

Instructions:

1. Read the information below.
2. Describe the different types of bird plumage and the purpose of each one.
3. Explain how and why a bird's plumage changes color.



Bird Plumage

Birds are beautiful creatures with a wide variety of colors and patterns. Their feathered covering is called **plumage**, which can range from vibrant, bold colors to soft, muted patterns. Plumage serves many purposes throughout a bird's life and can change at different stages to meet the specific needs of the bird.



Baby
cockatiel

Hatchlings have natal plumage, which is often very plain and subdued in color. As the bird grows, it will develop juvenile plumage. This plumage may have some color but is still relatively plain to provide camouflage. Finally, birds develop a mature plumage, which has

the adult coloration and patterning that we are accustomed to seeing. During mating season, some birds also change into their breeding plumage, which is vibrant and colorful for attracting a mate.

Not every bird will develop every type of plumage; a bird's plumage depends on factors such as species, gender, and environment. Some adult birds have plumage that changes with the seasons. The male American goldfinch, for example, looks completely different in winter, when it is a gray-green color, than in the summer, when it is bright yellow and black.

Birds do not have color-changing plumage though; feathers are much like our hair or fingernails and are made of the same keratin substance. Feathers are "dead," meaning they cannot heal themselves or change in any way. Because of this the feathers will get worn down and need to be replaced through a process known as **molting**. During a molt a bird may replace all feathers, a few damaged feathers, or one area of its plumage.

Though we typically focus on the color of bird plumage, a closer inspection reveals a broad range of patterns classified into four main groups: spotted, mottled, scaled, and barred. Explore each of these by reading the chart on the top right.

SPOTTED



Spotted plumage has a dotted pattern. The spots can be found all over the bird's plumage or only on certain sections, such as the chest area.

MOTTLED



Mottled plumage is the most common pattern found on birds. Mottled patterns can include a combination of spots, stripes, and smears of color.

SCALED



Scaled plumage is a pattern that starts as one color at the base of the feather, then transitions to a different coloration on the edge of the feather.

BARRED

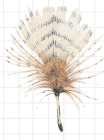


Barred plumage has stripes, or bars, of alternating dark and light color. This pattern is very striking but also relatively common.

God made birds with all these beautiful colors and patterns for distinct purposes. The downy plumage of a baby bird helps to insulate and camouflage it. The bold and vibrant colors of a male bird's breeding plumage catch the eyes of the females of its species. Different patterns and colors can help the birds blend into their environments.

It's hard to fathom that vibrantly colored tropical birds can be camouflaged, but it's true! They blend in perfectly with the sun flecks, foliage, and shadows of the lush canopies they call home. Can you find the bird in this picture?





EXTENSION

Instructions:

1. Read the information below.
2. Draw a diagram of a syrinx, showing the entrance from the trachea and two tubes to the lungs.
3. Go out to your yard or closest nature space and listen. Describe the sounds of the birds you hear. Try to focus on just one bird and describe any word-like sounds you can hear or other details you find important.

How and Why Do Birds Sing?



call is the result of some very unique anatomy, and there are several reasons why birds make these sounds.

Not all birds can fully sing. Some bird species are only able to make calls, which are the shorter, less rhythmic sounds that signal a threat or communicate with other birds in the area. True songbirds can make more structured vocalizations.

The anatomy of a songbird's trachea and bronchial tubes is what allows it to sing more complex songs. In a songbird like the mockingbird, the highly developed voice box allows it to sing a range of notes that surpasses that of a piano keyboard.

The songbird's voice box is called the syrinx. It is not much bigger than a teardrop in most birds and is located at the bottom of the trachea, where it splits into two bronchial tubes that enter the lungs. Each of these tubes can be controlled separately, which allows a songbird to sing two different notes or even an ascending and descending scale simultaneously! The syrinx has tympanic membranes on each side protruding into each bronchial tube, and the bird can tighten or loosen the tension of the membranes, thus changing the pitch of its song. The bird takes air into its lungs, and then, as the air is forced out through the syrinx, sound is produced. Some species, like the Eurasian skylark, have been recorded singing an unbroken 18-minute

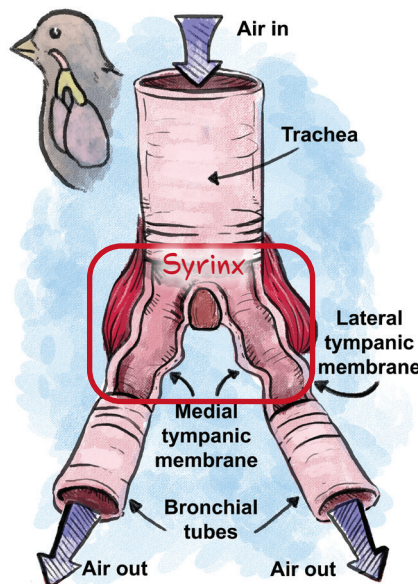
song because they can sing while inhaling and exhaling!

In many bird species, only the male sings or calls, in part because he is trying to attract a mate. A male will stand on his favorite perch and sing his entire **repertoire** (all the songs he knows) to let the females in the area know that he is strong and healthy. Females will choose the male who sounds the most robust, has the most complex song, and has the largest repertoire.

A male bird will also sing to mark his territory and warn other birds that he and his mate have claimed the area.

Birds use calls to communicate with their own species and even other species of birds! When a bird is threatened, it will use an alarm call to alert other birds in the area to the danger or even use a "mobbing" call as the birds gather and scare off the offender. This communication can be understood across species; for example, chickens have a different call for ground predators versus air predators, and other species of birds can understand and protect themselves accordingly.

It is possible to learn the different songs and calls of the birds around you. It takes careful study of the rhythms, intonations, and patterns found in each song, and it helps to focus on one of those aspects at a time. Learn which birds have a higher pitch than others, for example, and study those first. Write about the notes you're hearing—how do they differ in pitch and rhythm? Listen for birds that sing songs or make calls that sound like their names, such as the Eastern towhee, who sings "drink-your-tea." Learning to recognize birds by their songs and calls can be a rewarding way to get to know the animals in your backyard.



POULTRY COMPARISON CHART



CHICKEN



DUCK

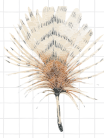


TURKEY



GOOSE

	CHICKEN	DUCK	TURKEY	GOOSE
Diet Circle all applicable	Insects Vegetation	Insects Vegetation	Insects Vegetation	Insects Vegetation
Common Uses Circle all applicable	Worms Meat	Worms Meat	Worms Meat	Worms Meat
Names	Meat Eggs Feathers Pest Control	Meat Eggs Feathers Pest Control	Meat Eggs Feathers Pest Control	Meat Eggs Feathers Pest Control
Male/ female Differences	Male: Rooster Female: Hen Young: Chick	Male: _____ Female: _____ Young: Duckling	Male: _____ Female: _____ Young: Chick, Poultry	Male: Gander Female: Goose Young: Gosling
Special Features	Roosters are larger, have more prominent wattles and tail feathers, may be more colorful, and have spurs.	Mallards:	Males are larger with larger snoods and fanning tails than females; hens have duller plumage and feathers on crown.	Very similar; may be hard to spot the difference; males may be larger and louder
Eggs	Most common bird in the world	Usually white; some green or gray	Pointed at one end; pale buff with reddish-brown spots	
Sounds	Shades of white, brown, blue, green, and pink	Quack	Gooble	Honk, hiss



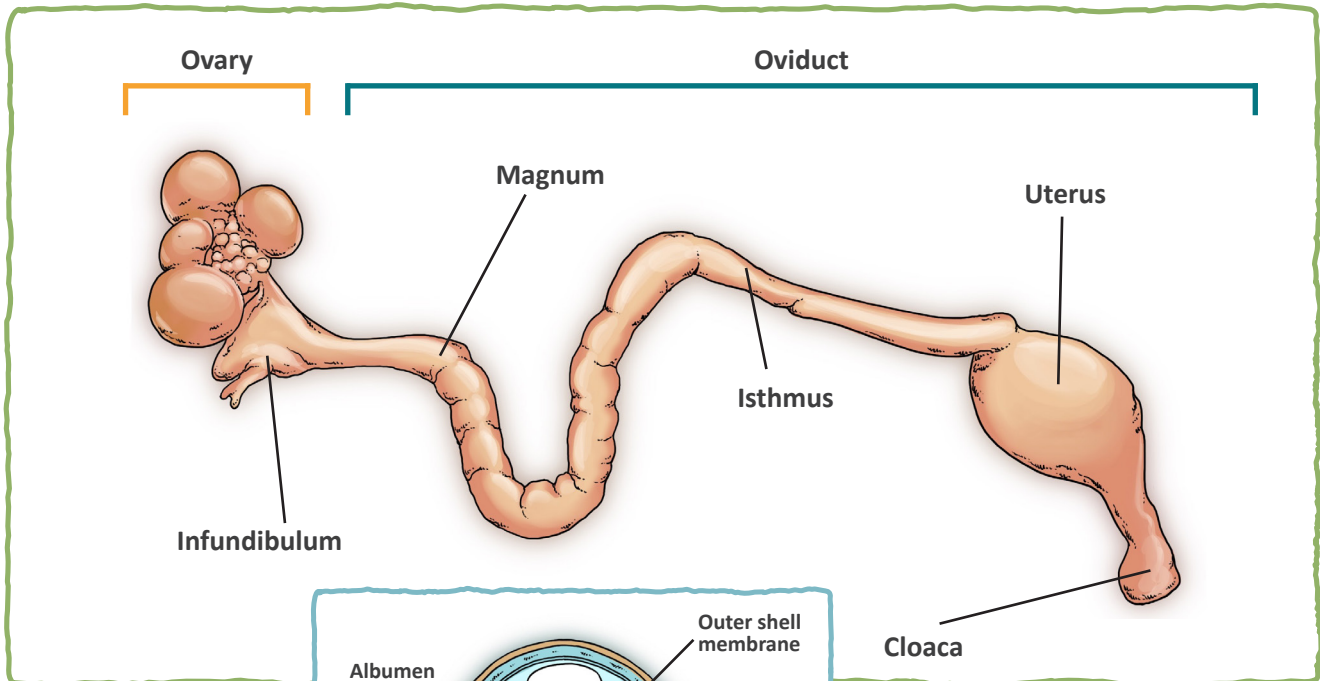
EXTENSION

Instructions:

1. Read the information below. Words in **bold** match the parts of an egg. Words in *italics* are found on the diagram of the bird's reproductive system.
2. Draw and label the parts of an egg. You may also wish to crack open an egg and see if you can find each of the labeled parts.



Egg Development



Unlike mammals, which experience live birth, all birds develop in eggs; there are no bird species that bear live young. All bird eggs go through similar stages of development, but the timing and processes may change with different species of birds and eggs. Since chicken eggs are familiar to many people, we will talk about the formation of a chicken egg here.

An egg starts as a follicle, or **yolk**, within a female bird's *ovary*. The follicle is engulfed by the *infundibulum*, then begins its travel down the *oviduct*, where **vitelline membranes** are completed and **chalazae** are formed around the yolk to hold it in the center of the egg. The process of applying the membrane takes about 15 minutes. Next, the membrane-covered yolk rotates and twists the chalazae as it travels through the spiralized

oviduct to the *magnum*, where **albumen** is assembled. This is what we commonly call the egg white, and it takes about three hours to form.

In the *isthmus*, two more membranes form. One is called the **inner shell membrane** and envelops the albumen. The **outer shell membrane** attaches to the shell and allows an air pocket to form between the two membranes in the wide end of the egg. This takes about 75 minutes.

The last step is the formation of the **shell**, which happens in the *uterus* and can take 20+ hours. The shell is mostly made of calcite and is covered in tiny pores that allow small amounts of air and moisture to pass through the shell. The shell contains pigments that give it color and features such as speckles. The entire trip through the *oviduct*, ending with the egg's being laid from the *cloaca*, takes about 25–26 hours in a chicken, and it is quite a miracle.





My BIRDS OF PREY Booklet



HAWKS

As you listen to the facts from the "All About Hawks" poster, circle all the words you hear that describe hawks. Color each hawk.

Accipiter
hawk



rounded talons

sharp talons

very large wings

curved beak

large beak

heavy body



Buteo hawk

slow dive

picky eater

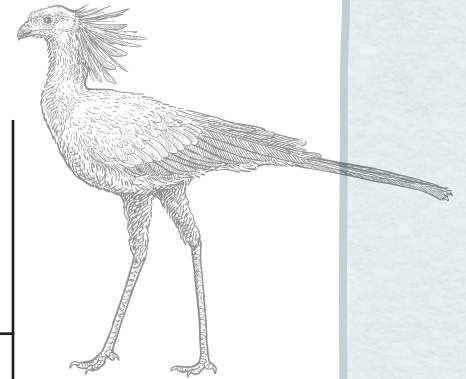
fast dive

not picky eater

SECRETARY BIRDS

As you listen to the information about secretary birds, complete the maze, crossing out any statements that are not true as you go. Color the secretary bird.

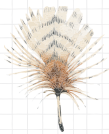
Longest legs of any raptor	Eats insects	Lives in Asia	Good flier	Can't fly
Can be 3 meters (10 feet) tall	Eats fish		Lives alone	Mostly walks
Native to Africa	Migrates great distances		Stomps on prey	



OWLS

After watching the video titled "Owls," write or draw an interesting fact you learned from the video in the provided box. Color the owl.





EXTENSION

Instructions:

1. Read the information below.
2. Write a paragraph explaining why grooming and preening are important to the health of a bird.



How Birds Stay Healthy

Birds instinctively know what they need to do to maintain their health. This may seem like a daunting task when the only tools they are given are bills, legs, feet, and, for some, talons, but birds have proven to be pretty good at personal hygiene in their own special ways. Let's take a look at a few things birds do for their health.

Water and Dust Bathing

Birds do not sweat like humans, nor do they pant like dogs to cool off. Instead, some birds seek pools of water in which to bathe and cool themselves from the sweltering summer heat.

Birds bathe using a few common movements. Those with weaker legs do not spend much time standing, and they dip through the water mid-flight. Birds with sturdier legs wade in the water, stretching their wings to reveal their skin underneath. Flapping their wings at the water's surface, they flick water droplets between their feathers, cooling their skin. Then they submerge and toss their heads back as they resurface, throwing water on their backs.



But what if you're a bird living in an arid climate with limited water sources? Why, you take a dust bath, of course! Species such as sparrows, chickens, ostriches, and game birds often take dust baths. First, birds create a well in the dirt to settle into. Then they create a dust cloud by scratching at the ground and flapping their wings, throwing dust all about their bodies. Frequent dusting helps remove mites and regulates the bird's ability to produce the right amount of oil on its feathers. Without proper dusting, a bird's feathers can become too oily and clump together. The dust absorbs the excess oil and removes dry skin.

Did you know?

Some birds take live ants in their beaks and distribute them over their feathers. The ants release a defensive secretion that serves as a natural insecticide and fungicide and that soothes skin during molting season.



Preening and Head Scratching

Stretching its wing to reveal each feather, a bird methodically rearranges and oils its feathers with its beak. This is called **preening**. Birds preen themselves and other birds. The uropygial [yur-ih-PIH-gi-uhl] gland, or preen gland, at the rump of the bird contains preening oil. The bird squeezes it with its bill, releasing oil that the bird distributes evenly over each of its feathers with its bill. Preening is necessary for waterproofing, regulating body temperature, and keeping feathers flexible and aerodynamic for flight. It also removes parasites and lice that carry disease and ruin feathers, removes leftover old feathers after molting, and is part of mating courtship.

Some birds, such as ostriches, emus, pigeons, and Amazon parrots, do not have a uropygial gland. These species either cannot fly or have powder down feathers that disintegrate into powder, serving the same purpose as preening oil. These birds are also less likely to bathe in water and therefore do not need the oil for waterproofing.

Since birds cannot reach their own heads for preening, they use their feet to scratch their head to maintain their plumage in unreachable places.

Eating Clay

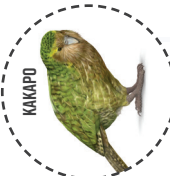
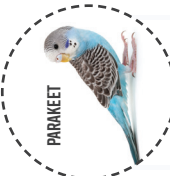
Some species of birds, such as the macaws of the Amazon, feast on clay. Scientists have spent years studying this behavior to determine why. They have found two possible reasons. First, eating clay might help rid their bodies of the toxins they naturally consume from eating certain plants. Second, the clay contains essential minerals that may be lacking in their plant-based diet, specifically sodium.



MAP THE PARROTS



Cut out the parrot map markers below. As you listen to the information being read about the different parrot species, locate the continent or country where each species can be found and glue the corresponding marker to the continent or country.





EXTENSION

Instructions:

1. Read the information below.
2. With a parent's permission, find and watch videos that highlight the amazing vocal abilities of lyrebirds, mynas, and mockingbirds.



More Birds That Mimic

Outside the parrot family, some songbirds also have the ability to mimic sounds—including human speech—to various degrees. In fact, about 15–20 percent of songbird species are able to mimic sounds around them. Scientists have found that birds need to hear their own songs as well as the songs of other birds to refine their vocals and expand their song repertoires. The same thing applies to imitating speech and other sounds; example and repetition are required for a bird to learn to reproduce a sound well. Since birds do not have vocal cords, all sound comes from air passing through the syrinx, and almost 100 percent of that exhaled air is used to make sounds when singing. Read below about some of the best sound imitators in the bird world.

Lyrebirds

In addition to the male's fantastic mating display of wispy tail feathers flipped over its head, Australia's lyrebird is known for its vocalizations; in fact, it is thought to be one of the best imitators of all bird types. Lyrebirds have the most complex muscle groups in the syrinx of any bird, which are believed to give them greater vocal agility and unmatched mimicry abilities. During mating season, a male lyrebird may sing for more than four hours a day, and its

song is a mixture of its own song and a variety of other imitated songs and noises.



Any sound is fair game for a lyrebird. They have been recorded imitating the click of a camera, sirens, chainsaws, car engines, gunshots, ringing phones, crying babies, barking dogs, and, of course, human voices, among many other sounds. They also mimic the calls of other birds and animals around them with near-perfect accuracy. Since lyrebirds can learn sounds from each other, they may imitate noises they have never heard themselves.

Mynas



Part of the starling family, beautifully colored mynas are native to India, Pakistan, and Bangladesh, but they have been introduced to other parts of the world. All mynas are musical, but captive mynas are known to produce sounds and speech. Hill and common mynas are popular cage birds because of their ability to imitate the human voice. They can learn up to 100 words when exposed to repetition. They will also sing, whistle, and screech.

Mockingbirds

Northern mockingbirds, the best-known mimics of the family, live throughout the United States, Mexico, and parts of Canada, as well as in the Bahamas and Cayman Islands. Mockingbirds sing all day and often into the night. They change and expand their repertoires of songs with the seasons and as they age, mixing in imitations of frogs, insects, other birds, mechanical sounds, and car alarms.

This intelligent bird is able to remember specific people and animals, particularly if they have threatened the bird in the past. Their vocal ranges help attract mates, which will be partners for life, and many northern mockingbird pairs are now creating homes in urban areas where human interaction is increasing.



Bird Bingo #1

B



NORTHERN CARDINAL

I



RED-TAILED HAWK

R



EASTERN BLUEBIRD

D



TUNDRA SWAN



AMERICAN GOLDFINCH



MALLARD



ROSE-BREASTED GROSBREAK



WILD TURKEY



PURPLE FINCH



RING-NECKED PHEASANT



TURKEY VULTURE



OSPREY



BLUE JAY



RUDDY TURNSTONE



BARN SWALLOW



BALD EAGLE

Bird Bingo #2

B



RUBY-THROATED HUMMINGBIRD

I



GOLDEN-CROWNED KINGLET

R



RED-HEADED WOODPECKER

D



RING-NECKED PHEASANT



BARN SWALLOW



HOUSE WREN



BLUE JAY



CANADA GOOSE



EASTERN TOWHEE



NORTHERN BOBWHITE



BALD EAGLE



AMERICAN GOLDFINCH



TURKEY VULTURE



NORTHERN CARDINAL



RUDDY TURNSTONE



TUNDRA SWAN

Birdwatching Notebook

OBSERVATION LOG

Fill in the information for a bird that you observed.

Name of Bird (common and scientific, if possible) _____

Date _____ **Location** _____

Appearance

Draw a picture of your bird or find a picture (printed from the internet or copied from a book) and paste it below. You may wish to label key features, use color, or draw the bird in different positions or angles.

Behavior

Circle or write in the best description.

Sound

Caw Honk Trill Screech Whistle Chirp

Movement

Flying Swimming Walking Eating Sitting

Socialization

Alone Caring for young In a group

Notes

Write anything you found interesting about the bird.

Size

Circle the best description.



Small



Medium



Large

Distinct Features



Crest



Multi-colored



Long tail feathers

Other (draw or write)

Color

Color each part of the bird.

Head feathers



Bill



Body feathers



Feet



Wing feathers

