

BIRDS

Grades 7-8

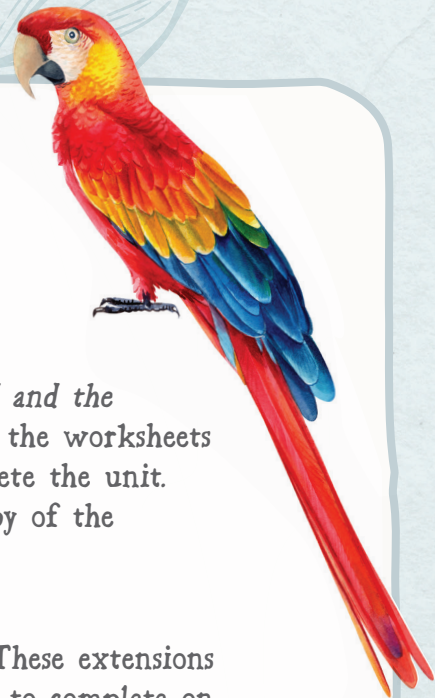
STUDENT JOURNAL

This journal belongs to:



THE GOOD AND THE BEAUTIFUL

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.

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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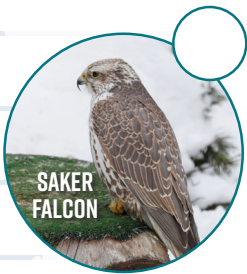
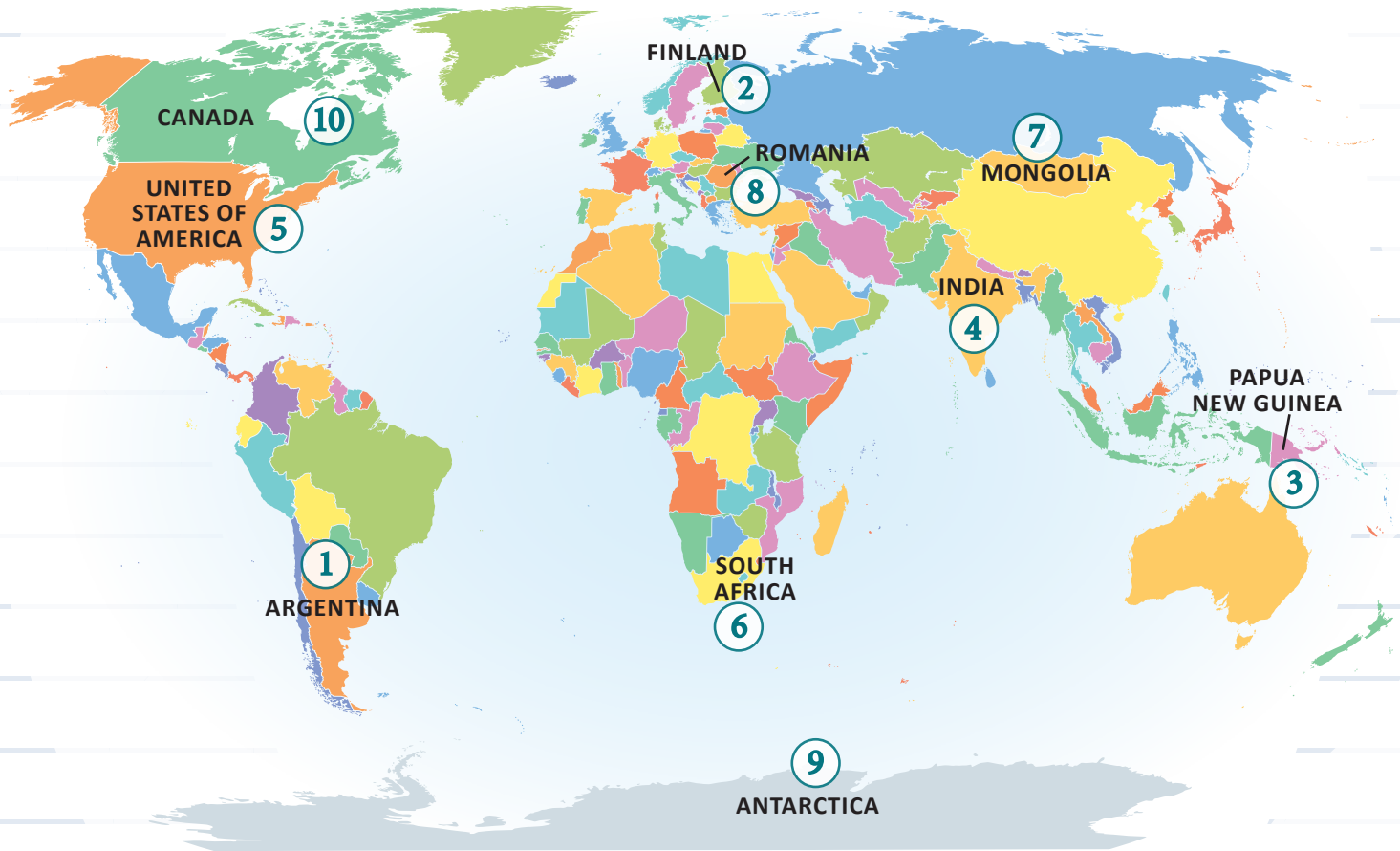
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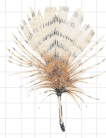




BIRDS OF THE WORLD

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

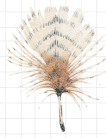


Barred plumage has stripes, or bars, of alternating dark and light color. This pattern is very striking but also relatively common.

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?



If you've ever stepped outside early in the morning and heard a series of songs, chirps, clicks, tweets, and twitters, then you've heard the complex system of communication, called a "dawn chorus," between birds. A bird's ability to sing and 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

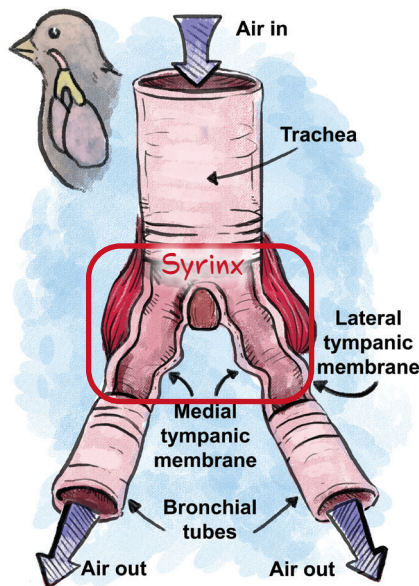
song because they can sing while inhaling and exhaling!

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

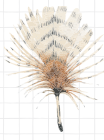


TURKEY



GOOSE

| Diet Circle all applicable | Insects Vegetation | Worms Meat | Insects Vegetation | Worms Meat | Insects Vegetation | Worms Meat | Insects Vegetation | Worms Meat |
|--------------------------------------|--|---|---|--|---|---|---|---|
| Common Uses Circle all applicable | Meat Eggs Feathers Pest Control |  | Meat Eggs Feathers Pest Control |  | Meat Eggs Feathers Pest Control |  | Meat Eggs Feathers Pest Control |  |
| Names | Male: Rooster Female: Hen Young: Chick | | Male: _____ Female: _____ Young: Duckling | | Male: _____ Female: _____ Young: Chick, Poultry | | Male: Gander Female: Goose Young: Gosling | |
| Male/ Female Differences | 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 | |
| Special Features | Most common bird in the world | | | | | | | |
| Eggs | Shades of white, brown, blue, green, and pink  | | Usually white; some green or gray  | | Pointed at one end; pale buff with reddish-brown spots  | |  | |
| Sounds | Cluck, cock, crow  | | Quack  | | Gobble  | | Honk, hiss  | |

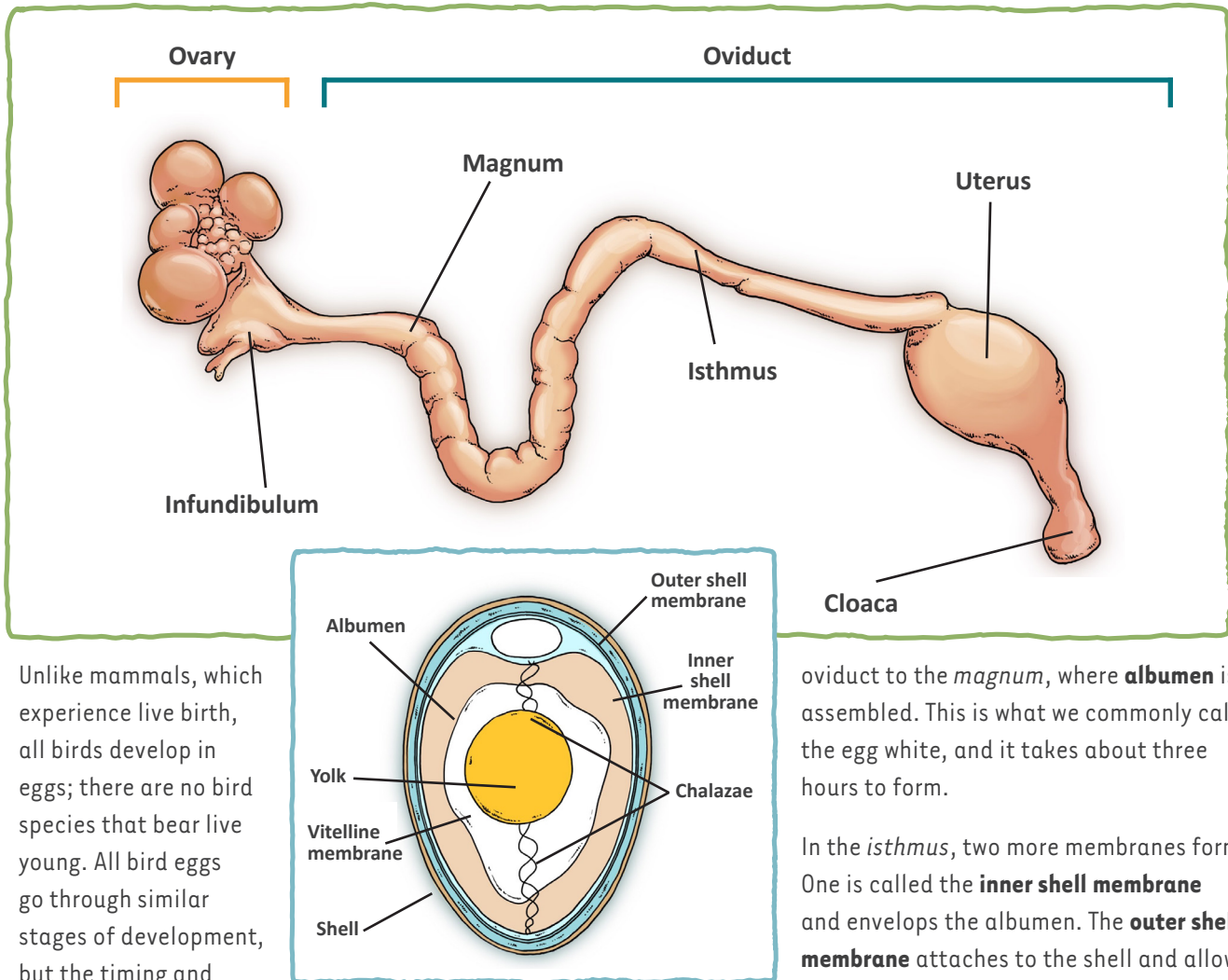


EXTENSION

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

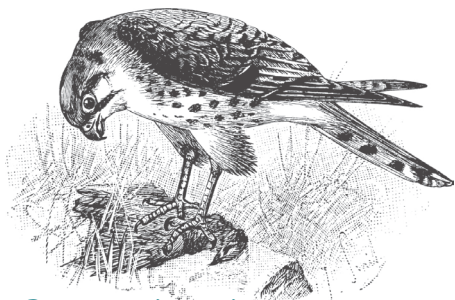
sharp talons

very large wings

curved beak

large beak

heavy body



Buteo hawk

slow dive

picky eater

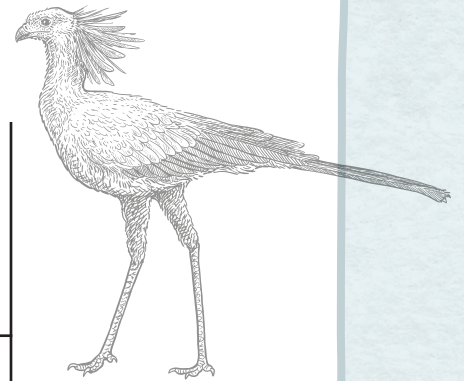
fast dive

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

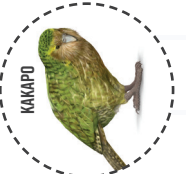
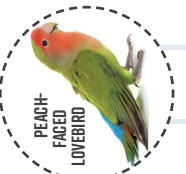
Some species of birds, such as the macaws of the Amazon, feast on clay. Scientists have spent years studying this behavior to determine why. They have found two possible reasons. First, eating clay might help rid their bodies of the toxins they naturally consume from eating certain plants. Second, the 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

I

R

D



NORTHERN CARDINAL



RED-TAILED HAWK



EASTERN BLUEBIRD



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

B

I

R

D



RUBY-THROATED HUMMINGBIRD



GOLDEN-CROWNED KINGLET



RED-HEADED WOODPECKER



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

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.

[illegible]

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

