TheCornellLab
K-12 Education

Thank you for downloading "Behavior and Habitat," your free lesson from our *eBird Explorers: Building Literacy Through Nature* curriculum. Through this hands-on lesson, your students will discover what a habitat is and how animals use their habitats. They will have fun practicing moving like a bird then go outside to document common bird behaviors. You can access background information and the online resources needed for this lesson at **birds.cornell.edu/k12/free-eBird-K2**.

The "Behavior and Habitat" lesson is the fourth lesson within our *Building Literature Through Nature* curriculum. The entire curriculum contains five lessons that help students discover what makes a bird a bird, build bird identification skills through outdoor observation and hands-on activities, explore bird diversity and habitats through two wonderful books, and explore how citizen science is helpful.

If you'd like to teach this comprehensive curriculum and meet all the standards listed in this resource, please plan to purchase the *Building Literature Through Nature* curriculum kit. In addition to printed lessons and student handouts, the kit also contains supplies that make the unit easy to teach, such as:

- Life-size Bird images
- Bird ID Cards
- *Crow Not Crow* book (Yolen, 2018)
- *On Duck Pond* book (Yolen, 2017)
- Pairing Parents and Young Cards

The kit is currently in production and will be available in by the end of 2019. Please watch for an email from us when our partners at Nasco offer it.

We'd love to hear what you think of this lesson! Please reach us at:

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TheCornellLab

eBIRD EXPLORERS

Building Literacy Through Nature

K-2

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If you have questions about the Cornell Lab K-12 curriculum, please contact us.
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We would like to express our gratitude to the teachers who field tested these lessons and our curriculum development partners from around the country.

For additional background information, useful resources, and direct links to the videos and websites described within this lesson, please visit
birds.cornell.edu/k12/free-eBird-K2

The Cornell Lab of Ornithology

The Cornell Lab of Ornithology is a nonprofit membership institution whose mission is to interpret and conserve the earth's biological diversity through research, education, and citizen science focused on birds.

Building Literacy Through Nature

INTRODUCTION

It's never too early to help our youngest learners develop a lifelong passion for nature and science. Birds are the perfect place to start! Fun, colorful, and inspiring, birds capture students' curiosity and inspire them to get outside and explore their environment. With citizen-science projects like eBird, you can learn about your local birds while building students' science practice skills—from making observations, to collecting and sharing data, to asking scientific questions. Whether you're an expert birder or just getting started, our *Building Literacy Through Nature* kit will provide everything you need to teach confidently about birds, no matter your setting. Aligned with both Next Generation Science Standards and Common Core State Standards, these lessons provide engaging content and ensure that students develop key process skills.

Our curriculum provides teacher-tested tips, tools, and activities for scaffolding students in learning to identify birds and submit data to the eBird citizen-science project. One of the keys to enjoying bird identification and citizen science with your class is to embrace the unknown. Don't worry if you don't have all the answers. Learning with your students provides a great opportunity to model and encourage a curious mindset. You can purchase the entire kit at **birds.cornell.edu/nasco-science-kits.**

The kit includes:

- Life-size Bird images
- Bird ID Cards
- Life-size Common Grackle image
- *Crow Not Crow* book (Yolen, 2018)
- *On Duck Pond* book (Yolen, 2017)
- Pairing Parents and Young Cards

CITIZEN SCIENCE

Kids and adults all over the world are following basic scientific protocols and submitting their observations to databases that scientists use to answer real-world questions. From stars to flowers, and bugs to birds, citizen science is people-powered science that helps us understand and connect with our world.

When participating in citizen science, students are scientists—making careful observations, following protocols, and collecting data—while taking pride in contributing to research that reaches beyond their classroom or schoolyard. Participating in real science is a great way to get students thinking, acting, and learning like scientists.

eBIRD

With more than 100 million bird sightings contributed each year by eBirders around the world, eBird is the world's largest biodiversity-related citizen-science project. It harnesses the power of bird watchers in every country to document where birds are and when they are using different habitats. With

eBird's simple online tools and easy-to-use mobile app, you and your students can become part of a larger community of people helping scientists and birds.

Before using eBird with your students, we strongly recommend that you take the free *eBird Essentials* online course for an overview of how and why eBird works. In this short course, you'll learn how to enter data into the eBird database through the website or app, and how the data are used for research and conservation. These topics are not covered in *Building Literacy Through Nature*, so we urge you to enroll in *eBird Essentials* at **academy.allaboutbirds.org/product/ebird-essentials**.

MERLIN AND BIRD IDENTIFICATION

To participate in eBird, you and your students need to be able to identify birds. This can seem like a daunting task for our youngest learners, especially when you realize just how many bird species exist in your part of the country. But don't worry. Throughout the curriculum, we provide fun activities to break bird ID into bite-sized chunks, and share today's latest tools that make bird ID fun, easy, and intuitive. Merlin Bird ID is a free app that helps you narrow down a mystery bird to a few most likely possibilities for your location and date. It's fun to learn the name of your mystery bird, and with Merlin, even the youngest birders will be successful from the start!

If you have access to smart devices, download the Merlin app and have it available for students to use. Alternatively, you can use Merlin Bird ID on your computer by visiting **merlinweb.allaboutbirds.org/home**. Practice going through the five identification questions in the classroom before heading outside. You can do this by showing them still images or videos of birds.

TAKING STUDENTS OUTSIDE

One of the benefits of participating in eBird and citizen science is the opportunity to engage students in outdoor learning. If you are new to taking students outside, it can be helpful to start with short 10-minute walks during which students practice good bird-watching behavior. Before taking students outside, ask them "How can we see more birds?" or "How can we behave like scientists?" Create a list on the board and highlight behaviors you want students to practice such as: being quiet, being observant, looking all around, and staying together. Encourage students to practice those skills when outside collecting data. For more detailed tips for taking students outside visit **birds.cornell.edu/k12/outdoor-teaching-tips**.

K-W-L CHARTS AND SCHEMA MAPS

In Lesson 1, we recommend using a K-W-L Chart or Schema Map to organize and help you assess what students know before, during, and after the lesson.

K-W-L Charts are divided into three columns capturing what students know (K), want to know (W), and what they learn (L). The first and second columns—what students know and what they want to know—can be filled out before beginning the lesson. At this stage, you can either correct misconceptions that arise, or plan to revisit the chart as you progress through the curriculum and correct misconceptions later. The third column can be filled out as you complete each relevant activity or at the end of the unit to capture what students learned.

Similarly, a Schema Map captures the class's current understanding of a subject. Begin by setting up three sections on your chart paper: schema,

new learning, and misconceptions. Ask students to share what they know about the subject of study, writing all schema (what you think you know) on the chart under the "schema" section. These represent all student knowledge on the subject, even the misconceptions. After each lesson or activity, you revisit the chart and review the schema. Move all schema that your new learning has identified as wrong to the "misconceptions" section, and add all the new information you've learned to the "new learning" section.

You may wish to take a more in-depth look at these methods before beginning *Building Literacy Through Nature* or to substitute whatever system works best for your classroom.

STANDARDS

NEXT GENERATION SCIENCE STANDARDS

A *Framework for K-12 Science Education* (NRC, 2012) lays out the vision that students will learn about science by integrating content knowledge with experience in the practice of scientific inquiry. Students should engage with fundamental questions about the natural world as well as how scientists investigate and seek answers to these questions. Below are the specific performance expectations that are met in the curriculum.

LS1.C: Organization for Matter and Energy Flow in Organisms

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

LS3.A: Inheritance of Traits

1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

LS4.D: Biodiversity and Humans

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

ESS3.A: Natural Resources

K-ESS3-1 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

COMMON CORE STATE STANDARDS

Mathematics

As students observe and count birds, you will meet several Common Core Standards for Mathematical Practice.

Counting & Cardinality

CCSS.MATH.CONTENT.K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Measurement & Data

CCSS.MATH.CONTENT.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

CCSS.MATH.CONTENT.K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

CCSS.MATH.CONTENT.1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

CCSS.MATH.CONTENT.2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

CCSS.MATH.CONTENT.2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Geometry

CCSS.MATH.CONTENT.K.G.A.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

English Language Arts

Throughout the activities, students have many opportunities to build their reading and writing skills through literature, class discussions, and group research.

Reading: Literature

CCSS.ELA-LITERACY.RL.K.1 With prompting and support, ask and answer questions about key details in a text.

CCSS.ELA-LITERACY.RL.K.7 With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).

CCSS.ELA-LITERACY.RL.1.1 Ask and answer questions about key details in a text.

CCSS.ELA-LITERACY.RL.1.7 Use illustrations and details in a story to describe its characters, setting, or events.

CCSS.ELA-LITERACY.RL.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.ELA-LITERACY.RL.2.7 Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

Writing

CCSS.ELA-LITERACY.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

CCSS.ELA-LITERACY.W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

CCSS.ELA-LITERACY.W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

Speaking and Listening

CCSS.ELA-LITERACY.SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

CCSS.ELA-LITERACY.SL.K.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

CCSS.ELA-LITERACY.SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

CCSS.ELA-LITERACY.SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

CCSS.ELA-LITERACY.SL.2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

CCSS.ELA-LITERACY.SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

LESSON 4: BEHAVIOR AND HABITAT

BIG IDEA **A bird's habitat must contain enough food, water, cover, and space for it to survive and breed. The type of habitat a bird lives in and how it moves through that habitat can provide powerful clues for identifying birds.**

TIME

SPACE

Indoors and **outside**

LEARNING OBJECTIVES

Students will be able to:

- name the four components of a habitat;
- name two types of birds and three other animals that live in a pond habitat;
- describe at least three common bird behaviors.

MATERIALS

- **Common Classroom Supplies**
  - Whiteboard with markers
  - Large poster boards or sheets of butcher paper (1/group of 3–4 students)
  - Colored pencils or crayons (1 set/group of 3–4 students)
  - Clipboard(s)
- **Curriculum Handouts and Resources**
  - Bird Behavior Data Sheet
- **Kit Materials**
  - *On Duck Pond* book (Jane Yolen, 2017)
- **On the Web:**
  birds.cornell.edu/k12/free-eBird-K2
  - *Inside Birding: Habitat* video

GETTING READY

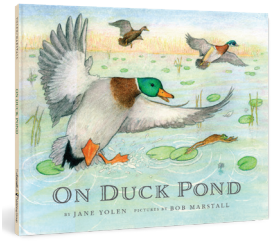
- For your own background information, watch the *Inside Birding: Habitat* video. Decide which parts, if any, you want to share with the class.
- Create or find a space large enough for students to practice moving like a bird.
- Read *On Duck Pond* by Janet Yolen and become familiar with the different animals shown in the illustrations.
- Prepare enough large poster boards or sheets of butcher paper for students to work with in small groups.
- Copy the Bird Behavior Data Sheet. Decide if you will record the data or if you want to have one or more students be data keepers. Make copies as needed

BACKGROUND INFORMATION

All living things, including birds, rely on their habitat—a place that provides food, water, cover, and space. Cover includes nesting areas, places to sleep or rest, and places to hide or escape. Space refers to having enough of the right habitat to allow plants and animals to survive. If a place does not provide adequate food, water, and cover, a plant or animal cannot live there. Animals are well-adapted to their habitat and these adaptations—like the webbed feet of a duck, or the long legs of a heron—can provide important clues to identification. Adaptations can also be behavioral. How a bird moves or acts can help a birder identify it.

ACTIVITY 1 What Makes a Habitat?

1. Tell students they are going to learn about a special habitat. A habitat is a place where a bird lives. All plants and animals, even humans, need four things in their habitat to live: food, water, cover, and space. Help students remember the four components by practicing hand motions to go with the words. Have students place their hands on their stomachs for food, cup their hands and bring them to their mouths like they're sipping for water, hold their arms over their head live a roof for cover, and hold their arms out to the side for space.
2. Ask students where they find these four things (food, water, cover, and space) in their lives. How is that different from where an animal finds its four habitat components?
3. Show students the cover of *On Duck Pond*. Ask: "What habitat do you think we're going to learn about?" *(A pond with lots of ducks.)*



4. Read the book to the class. Explain that the boy in the story was walking by the pond and observing things in nature like a scientist. Just like they will be doing when they count birds for science. Ask students questions about the pond habitat shown in the book while revisiting relevant pages:
   - What birds used the pond habitat in the story? *(A heron, ducks. In the illustrations, a Great Egret and Red-winged Blackbirds were also shown.)*
   - What animals besides birds were mentioned in the book? *(Turtles, frogs, tadpoles, trout. The illustrations also showed squirrels, rabbits, raccoons, deer, and dragonflies.)*
   - Were all four components of habitat shown in the book? Where did you see them? *(Fish, tadpoles, and frogs are food for herons. The pond was full of fresh water. There was space on the pond for lots of ducks. The tadpoles found cover under the lily pads.)*

ACTIVITY 2 Habitat Mural

1. Refer to the habitat scene with the long log in *On Duck Pond*, and have students point out the animals that they see. Provide small groups of students with a large poster board or sheet of butcher paper and invite them to paint or sketch a mural of a pond (or other) habitat. Encourage deeper thinking and more complete murals by asking students questions such as:

   - What types of animals will you include in your mural? Have you included animals that live on land and those that live in water?
   - What types of foods are available to these animals? *(Plants, insects, other animals, etc.)*
   - Where might the animals find cover within this habitat? *(Cover can include places to hide, to nest, to rest, etc.)*
2. Hang up the murals on a wall or bulletin board and transform the room into a pond habitat.
3. Have each group write a descriptive sentence about the pond on their murals.

ACTIVITY 3 How Birds use Habitat

1. Share that different birds can use the same habitat, like the pond, in different ways. They might forage or build their nests in different areas. This allows them to share space without eating the same food or getting in each other's way, just like the birds in your schoolyard are able to share a habitat. Refer back to *On Duck Pond*. Look through the illustrations, focusing on the similarities and differences in how the heron and ducks use the pond. Ask:
   - Do herons and ducks use the same parts of the pond? *(The heron walks along the edge of the pond and the ducks swim everywhere, including the middle of the pond.)*
   - How are the heron and the ducks' bodies different? How does this help them in their habitat? *(Herons have long legs and beaks, allowing them to fish along the edges of the pond. Ducks have webbed feet and short flat beaks that help them forage plants and invertebrates from the water.)*
2. Ask students what they have seen birds doing in the schoolyard or in their neighborhoods. Make a list on the board of the different behaviors. Make sure foraging (finding food), flying, walking, perching, preening (taking care of feathers), and singing are included on the list. These are the behaviors students will look for on the Bird Behavior Walk. If students are struggling for ideas, refer back to *On Duck Pond* and look for the different behaviors depicted in the illustrations.

ACTIVITY 4 Move like a Bird

Sometimes how a bird moves can help us identify it. In this activity, students will mimic bird behavior. Demonstrate the five movements students will use and have them practice the movement of those of birds.

- **Pigeon Strut:** Imitate a pigeon. Have students move their heads forward and back as they walk with their hands behind their backs, taking short steps.
- **Soaring Hawk:** Like a Red-tailed Hawk, have students spread their arms and gently tip their arms and bodies back and forth.
- **Heron Stalk:** Have students walk slowly, stalking forward with long steps, stopping and stretching out their necks to look for fish.
- **Hummingbird Flutter:** Acting like little hummingbird helicopters, have students flap their arms from their elbows as fast as possible.
- **Step-stopping Robin:** Just like robins, have students step, step, step, then stop to look for worms.
- **Raucous Duck:** Quack and flap for a quick, water landing.

Optional: After students are comfortable with the movements, turn it into a game by playing Birdy Says, a version of Simon Says. Explain the rules: You will call out one of the five movements or you may shout "Cooper's Hawk! " (a bird of prey that is a potential threat), and everyone must freeze! Players can only do what you say if you start with "Birdy says _____." If someone does the wrong movement, moves without you saying "Birdy says," or doesn't freeze when you call "Cooper's Hawk," they must take a seat. Encourage students to watch the different ways that birds move the next time they are outside.

ACTIVITY 5 Bird Behavior Walk

1. Explain to the class that they are going to go outside for a short time (10–15 minutes) to look for birds. Show students the Bird Behavior Data Sheet (page 36) and review the six categories of behavior they will be looking for. Keep the data yourself or assign one student, or groups of students, to record how many birds you see doing each behavior. Encourage students to keep an eye out for their Focus Bird.
2. After the walk, ask:
   - Which behavior was the most common? Why do you think that is?
   - How many focus birds did you see on your walk? What behaviors were they displaying?

The Cornell Lab of Ornithology

Bird Behavior Data Sheet

1. Where Did You Bird?

Name of Count Site: _____

2. How Did You Bird?

1. When did you bird? Date: _____ Start time: _____ A.M./P.M.
2. How many people in your group? _____
3. How long did you count? _____ (minutes)

3. What Did You See?

Tally the numbers of birds you see doing each behavior.

Foraging	Walking	Flying

Preening	Perching	Singing

REFLECT AND EVALUATE

1. Revisit your Schema Map or K-W-L Chart and reflect on what you learned. Ask:
   - Are there any things we thought we knew that we now see are wrong?
   - What new facts did we learn that belong on our chart?
2. Have students pick an animal from their pond habitat mural or use their focus bird and come up with a story about how the animal finds food, water, cover, and shelter. They can write their story down, illustrate it, or tell it to a partner.
3. Collect some video clips of birds foraging, preening, flying, walking, perching, or singing from Macaulay Library or All About Birds. Play the mystery clips for your students and challenge them to name the behavior of the birds shown.

Bird Behavior Data Sheet

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