GRADES
K–2
VARIATION 3–5

From their leafy branches to their tangled roots, trees provide habitat for birds, other animals, and plants. Students will inventory living things in, on, and around trees and discover how birds and other living things depend on trees in many ways.

TREES AS HABITATS

SUBJECTS
Science, English Language Arts

PLT CONCEPTS
1.1, 1.2, 2.1

STEM SKILLS
Collaboration, Data Analysis, Technology Use

DIFFERENTIATED INSTRUCTION
Hands-on Learning, Higher-order Thinking, Nonlinguistic Representations

MATERIALS
Part A: Paper tubes, materials for decorations, magnifying glasses, binoculars, digital cameras or electronic tablets, clipboards (or cardboard with paper clips). Optional: Collection of animal signs.

Part B: Journals or paper and clipboards.

Optional: Field guides (for trees, shrubs, insects, and birds), magnifiers, bug boxes, binoculars, digital cameras or electronic tablets.

TIME CONSIDERATIONS
Preparation: 15 minutes

Part A: 40 minutes

Part B: 40 minutes, plus time for data analysis

OBJECTIVES

Students will

- **Observe birds and other living things that depend on and influence trees.**
- **Identify interrelationships between birds and other organisms that depend on trees.**

BACKGROUND

A **habitat** is the place where a plant or animal gets all the things it needs to survive, including food, water, shelter, and space for having and raising offspring. A habitat may be as large as 100 square miles (259 km^2) of grassland for a lion or as small as single plant for an insect. A tree may serve as part of an organism's habitat, or it may be the organism's entire habitat.

Trees provide optimal habitat for many different bird species, offering spaces for shelter, mating, and feeding. Their branches and limbs provide protection from weather and predators, as well as places to build nests. Birds feed on their seeds, nuts, fruits, buds, nectar, and sap and on insects in their bark. Birds also use tree crevices for hiding and storing food.

Even snags, or standing dead trees, provide habitat for a variety of different species. Tree frogs and beetles live under a snag's bark. Woodpeckers and other birds feed on the insects that live in snags. Owls and chickadees nest in cavities created by woodpeckers, and squirrels and deer mice store food in them.

GETTING READY

- Find an area with several trees (any size) or shrubs for students to examine.
- If you do not have access to trees or shrubs, you may use human-built structures instead. Many birds and other animals live on and around buildings, bridges, fences, and other structures.

SAFETY CHECK! Look for any hazards at the site, such as deep holes, sharp objects, or poisonous plants.

PART A:

- Gather (or make) paper tubes and collect art supplies for student-made telescopes.
- Make copies of the Bird Observation Bingo student page.

PROJECT LEARNING TREE
An initiative of SFI

FOREST FACT

Many bird species depend on trees for habitat, while also benefiting the forest. Fruit-eating birds disseminate tree seeds. Insect-eating birds control insect populations. And scavenging birds decompose animal and plant material on the forest floor, providing nutrients.

PART B:

- Make copies of the What's the Connection? student page.
- Optional: Collect fallen leaves, twigs, bark, fruit, nuts, or nests that show signs of plant or animal life. Signs may include chewed holes, tunnels, scrapings, egg cases, webs, galls, moss, lichen, or fungus.

DOING THE ACTIVITY

PART A: TREE HOUSE

1. Ask: What animals have you seen in or on trees? What were the animals doing in the trees? Do you think a tree can be a home for animals or other plants? How could we find out whether a tree can be a home? Suggest that one way to find out would be to look for signs of birds living in trees.

2. Lead students in making "telescopes" out of paper tubes, which can be decorated with tissue paper or paint, as a tool to study tree habitats. You might also provide magnifying glasses, binoculars, digital cameras, or tablets.

3. **HANDS-ON LEARNING** Lead students to a tree and have them use their telescopes to look closely at and around the tree. Distribute copies of the Bird Observation Bingo student page to focus student observations. Allow students plenty of time to complete the worksheet and collect related data.

4. Lead a discussion on the findings. Ask students what they saw living on the tree's trunk and branches. What are different ways that birds and other animals depend on trees to live?

PART B: LIFE ON TOP

1. Take students outside and show them several trees or shrubs in the same area. For dense urban areas, consider using buildings, fences, or other human-built structures to examine. Ask: Can you name some plants and animals that depend on these trees (or structures)? How might we learn which plants and animals depend on or use them in some way? Point out that one way would be to look carefully at and around the tree (or structure) and take an inventory of what they find.

2. Divide the students into groups of 2–3 and assign each group a specific tree part—trunk, branches, leaves, roots, etc. Challenge students to determine which plants and animals (including humans) visit the tree, live on it, and live in it. In urban areas, consider examining each part of larger structures for signs of life, i.e. windows, eaves, downspouts, railings, etc.

3. Optional: Show students examples of plant or animal signs (see Getting Ready). Ask students to describe what they see and what they think might have caused it.

4. **NONLINGUISTIC REPRESENTATIONS** Distribute materials for journaling and close observation (see Materials). Have students draw, take pictures, or otherwise document all the plants and animals they find, especially those they don't know or have questions about. Invite them to use their sense of hearing to find plants and animals and enourage them to look for supporting clues, such as chewed leaves, bark holes, or carved initials.

5. Optional: Use field guides to help students identify the organisms they find.

6. Using the What's the Connection? student page, have students identify how each plant and animal observed in Step 4 benefits from the tree, and how it affects the tree. They may need to conduct more research about the plants and animals they observed.

7. **HIGHER-ORDER THINKING** Have students organize their collected observations, data, and information into a booklet, portfolio, or other format.

8. Invite teams to share their observations with the whole group. Discuss:
   - What plants, animals, or animal signs did you find on the tree (or structure)?
   - How does the tree (or structure) benefit these plants and animals?
   - Which of these plants and animals seem to harm the tree (or structure)? Why do you think so?
   - Do any of the plants and animals you observed seem to benefit the tree (or structure)? In what ways?

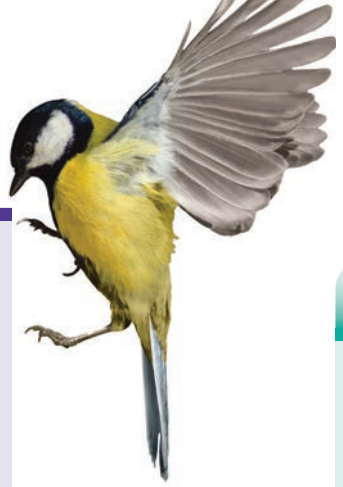
VARIATION: GRADES 3–5

1. Invite students to look for organisms—or signs of organisms—living in, on, under, and around trees. Discuss how these organisms use trees as a source of food, water, shelter, or space.
2. Make a group list of organisms that use trees as part or all of their habitat. Be sure to include one or more birds on the list.
3. Instruct students to choose an organism from the list and to make a mini-report on an index card about it, including a picture. Encourage students to include what their organism eats, what eats it, and how it interacts with trees.
4. Create a group "tree of life" mural showing how birds and other animals depend on trees as habitats. Draw a large tree in the center of the mural and invite students to add their mini-reports to the mural. They may use pieces of yard or string to show connections to the tree and to other organisms.

TIPS FOR FINDING BIRDS

1. **Explore where you are.** Birds are wherever you are. You can watch birds from your window or listen to their calls when you first wake up in the morning. You can look for birds in trees along city sidewalks, on wires along highways, in gardens, on ponds and by rivers, in forests and wetlands, or at the beach.
2. **Be quiet.** Birds are easily startled by noises and will head for cover if they hear you coming.
3. **Watch for movement.** Stay still and watch for movement in trees, shrubs, or grass.
4. **Listen for bird songs and sounds.** Many birds stay hidden, but if you keep an ear out, you can often hear them even if you don't see them.
5. **Be patient.** Finding birds often means waiting for the birds to show themselves.

ACADEMIC STANDARDS



SCIENCE

Practices

- Analyzing and interpreting data

Concepts

- Biodiversity and humans
- Natural resources
- Patterns

ENGLISH LANGUAGE ARTS

Practices

- Speaking and listening: comprehension and collaboration
- Speaking and listening: presentation of knowledge and ideas

SUSTAINABLE DEVELOPMENT GOALS

11 Sustainable Cities and Communities
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage

ASSESSMENT

Ask students to

- Conduct an imaginary interview with a tree (providing both questions and answers) or tell a story from a tree's perspective. These pieces should reveal how different plants and animals both depend on and affect trees.
- Explain how birds benefit from and affect trees, using evidence they collected to substantiate their claims.

ENRICHMENT

- Read aloud *Welcome to the Neighborwood* by Shawn Sheehy, *The Busy Tree* by Jennifer Ward, or another story about animals living in or around trees (see plt.org/myk8guide for suggestions). Have the students make costumes for the different animals, using construction paper and artificial feathers. Read the book again, allowing the students to act out the animals.
- Observe living things inside and outside human-built structures in urban areas, such as houses, bridges, or schools. Have students consider what aspects of the structure attract and support the organisms. Create a graphic organizer (pictured at right) and encourage students to list all the plants and animals living inside and outside the structure. Have students consider how all those living things depend on the structure and how the structure is affected by them.

URBAN STRUCTURES: SAMPLE ORGANIZER

	INSIDE	OUTSIDE
Plants		
Animals		

- Invite students to examine their tree at other times during the year. Have them compare their findings from season to season or create a "Tree Habitat" mural.
- As an engineering challenge, invite students to make a bird's nest using a paper plate as a base and natural materials, such as twigs, leaves, grass, moss, and string. No glue or tape allowed!
- Challenge older students to make a bird house for a specific bird species. Students could research their selected species' habitat, size, diet, and so on, and design a bird house based on their needs.
- Take a walk around the site or the neighborhood to look and listen for birds. Challenge students to imitate the bird sounds they hear using their voice, lips, or other parts of their body. Use a bird identification app, such as the Merlin Birding App at https://merlin.allaboutbirds.org, to learn the names of birds you find.
See Tips for Finding Birds on page 9 for more suggestions.

STUDENT PAGE

Bird Observation Bingo

NAME _____ DATE _____

Look for signs of birds living in and around your tree. Mark each sign you find with an "X." Then, answer the questions.

Location of Tree: _____ **Type of Tree:** _____

Bird Sound  ☐	**Bite Marks on Nut or Fruit**  ☐	**Hole in Trunk of Tree**  ☐
Bird in Tree  ☐	**Other Sign of Bird Living in Tree:** _____ _____ ☐	**Bird Nest**  ☐
Bird Droppings  ☐	**Feather**  ☐	**Bird Flying Around Tree**  ☐

I LOVE MY GREEN JOB!

CAREER CORNER

WILDLIFE BIOLOGISTS (buy-ALL-uh-jists) study wild animals and their habitats to find out what they need to live. They may watch animals in trees, forests, and other habitats.

STUDENT PAGE

NAME _____ DATE _____

1. **How do the plants and animals that live in and around the tree use it? Name as many ways as you can.**

- _____
- _____
- _____
- _____
- _____
- _____

2. **How might the tree be helped or hurt by the plants and animals that live on it or around it?**

- _____
- _____
- _____
- _____
- _____
- _____

CAREER CORNER

AVIAN REHABILITATORS (ree-hab-ILL-uh-tay-tors) care for injured birds. They diagnose injuries, give medicines or other treatments, and feed the birds. They also observe the birds' behavior.

I LOVE MY GREEN JOB!