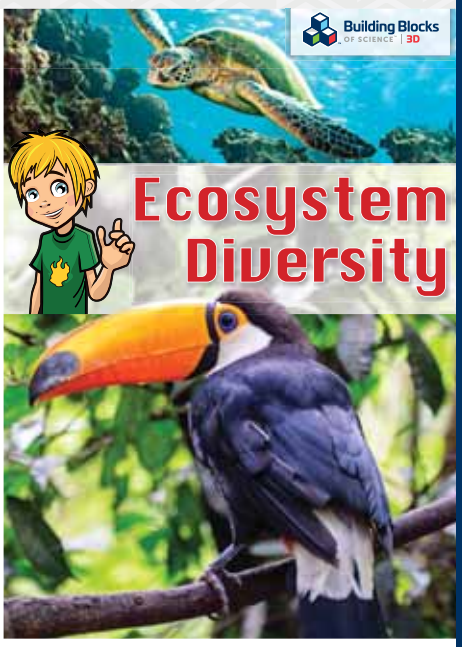
CA NGSS TIME Prescreen Review Guide

Ecosystem Diversity, Grade 2

Building Blocks OF SCIENCE™ | 3D

Building Blocks OF SCIENCE™ | 3D

Ecosystem Diversity



CAROLINA®
www.carolina.com

Building Blocks OF SCIENCE™ 3D

This prescreen tool uses one Building Blocks of Science™ 3D unit to provide a roadmap of how the program meets the criteria of the CA NGSS* Toolkit of Instructional Materials Evaluation. Each page of this document highlights features in the Teacher's Guide, with page references from the printed version. All the information found in the printed Teacher's Guide is also accessible in the digital version of the Teacher's Guide, which you can view at www.carolina.com/bbs3dreview. Both versions of the Teacher's Guide will be provided to all teachers who implement Building Blocks of Science 3D. In addition to the digital support, the equipment for the investigations is also part of the all-inclusive package that teachers receive.

To help with your review, here's an overview of the program's organization:

- Building Blocks of Science 3D consists of 18 units that cover the grade-level CA NGSS Performance Expectations and the three dimensions
- There are three units per grade level
- Each unit is divided into lessons, each lesson is divided into investigations

The cornerstone of each lesson is a phenomena-based, hands-on, three-dimensional learning experience **for all students.** Each all-inclusive unit includes:

- Investigative phenomena that provides real-world context for each lesson
- Notebook prompts that help students use data and ideas to develop evidence-based claims
- Informational texts that support the science content—in English and in Spanish
- Thought-provoking questions in every investigation for the teacher to ask to support students' sensemaking
- A comprehensive assessment system that provides formative, summative, pre- and post-assessments
- A complete digital version for every classroom—instantly access instruction, simulations, literacy, assessments and more at www.carolina.com/bbs3dreview

* Next Generation Science Standards is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards was involved in the production of, and does not endorse, this product.

CA NGSS TIME Prescreen Review Guide

Table of Contents

All digital resources—no annual license fee

Leveled literacy

All-inclusive, phenomena-based science

Building Blocks of Science™ 3D has already been reviewed by the Instructional Materials Advisory Panel (IMAP) and the Content Review Panel (CRP). They determined that Building Blocks of Science 3D meets the requirements of Chapter 13 of the CA Science Framework. This takes the verification of program requirements as outlined by the Framework out of adoption committee's responsibility, allowing the committee time to focus on developing a district lens for review.

Ecosystem Diversity, Grade 2

The examples in this prescreen tool are reflective of formatting and features that consistently appear throughout each unit in the program.

You can review the scope and sequence of instruction for the entire unit in the Evidence of Instructional Scaffolding chart on the last pages of this Reviewer's Guide and in the unit's Teacher's Guide (pages xxii-xxiii).

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

Criteria	Evidence from Ecosystem Diversity
Use Phenomena/Problems Materials provide relevant and authentic learning contexts through which students: • engage as directly as possible with phenomena or problems to ask and answer their questions as well as questions from other sources; and • have the potential to use the three dimensions to make sense of phenomena or design solutions to problems.	The **Anchoring Phenomenon** Phenomenon for the unit is understanding the internal and external structures of organisms and the conditions in which they function effectively. **1.** The unit begins instruction in Lesson 1 with an **Anchoring Phenomenon** (pg. 32) narrative, which is shared with the class. The Phenomena Video (pg. 32) accompanies this narrative. It is found at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **2.** A lesson-specific **Investigative Phenomenon** (pg. 32) opens each lesson. Students ask questions that they want to answer and that will be revisited at the end of each lesson in the Phenomenon discussion (pg. 43). **3. Investigation** titles are posed as a question to set a problem for students to solve (pg. 38). **4. Investigations** always put phenomena in students' hands. They are asked to gather and analyze information, share their learning with others, and provide claims based on evidence (Lesson 4, Investigation B, pgs. 96-97). **5. Tell Me More** prompts at the end of each investigation provide opportunities for formative assessment as students complete a task in which they apply their learning to additional phenomena, which helps students to develop more complex and complete understandings over time (pg. 80). **6. Using three dimensions:** The 3Ds are listed at the start of each investigation and are integrated into instruction at point of use (pg. 79).

Examples

ANCHORING PHENOMENON

Many different habitats can be found on Earth, each with its own unique climate, access to light, and communities of organisms. Whether you go on a short trip within your state or on an intercontinental vacation, you can make comparisons between your local region and a new region. Perhaps the air is drier, there are fewer birds, or you find brightly colored plants that you've never seen before. The anchoring phenomenon for *Ecosystem Diversity* is the variety of habitats on Earth and observing the life within them.

Read the investigative phenomenon aloud to the class. Encourage students to generate questions about what they hear. Keep track of students' questions on a class chart, or have students record the questions in their science notebooks. Refer to these questions at the end of the lesson and throughout the unit to support the unit's anchoring phenomenon.

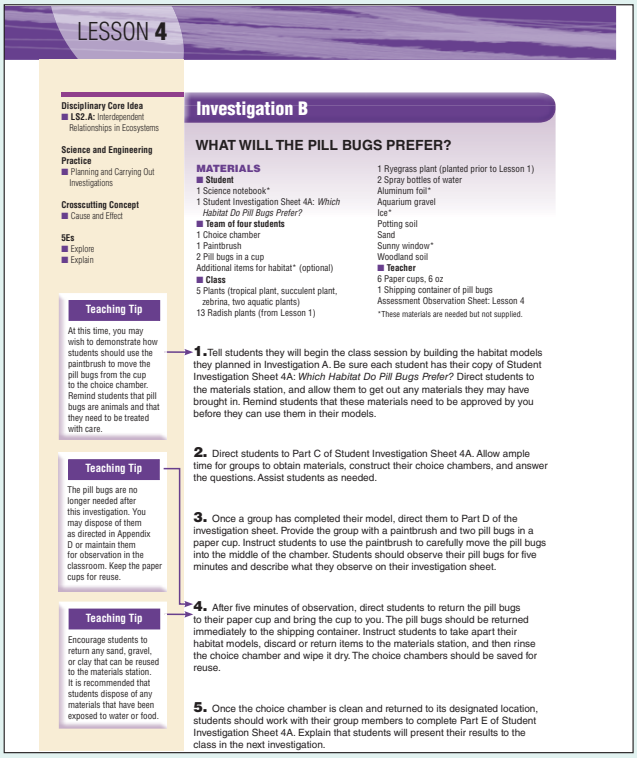
Investigative Phenomenon for Lesson 1: In many places, the temperature begins to drop and the weather becomes cool in the fall. There is also less sunlight. In time, the leaves may change color from green to red, orange, or yellow, and then fall off the trees. You might notice fewer birds and small mammals, like squirrels or rabbits. However, other places see an increase in birds and have warm weather during the fall. Plants in these places can even blossom. What does this make you wonder?

Anticipated Questions:

- What causes tree leaves to change color and fall off?
- Why are there more birds in some areas than others?
- Where do plants blossom during the fall?

Phenomena Video: Watch the phenomena video for *Ecosystem Diversity* as a class. As you watch, encourage students to record questions and in their science notebooks about what they see in the video. At the end of the video, create a class chart of students' questions. Save this chart to refer to at the end of the unit.

1. Phenomena (pg. 32)


LESSON 4

Disciplinary Core Idea
- LS2.A: Interdependent Relationships in Ecosystems

Science and Engineering Practice
- Planning and Carrying Out Investigations

Crosscutting Concept
- Cause and Effect

5Es
- Explore
- Explain

Investigation B

WHAT WILL THE PILL BUGS PREFER?

MATERIALS
- Student
1 Science notebook*
1 Student Investigation Sheet 4A: *Which Habitat Do Pill Bugs Prefer?*
- Team of four students
1 Choice chamber
1 Paintbrush
2 Pill bugs in a cup
Additional items for habitat* (optional)
- Class
5 Plants (tropical plant, succulent plant, zebrina, two aquatic plants)
13 Radish plants (from Lesson 1)
1 Ryegrass plant (planted prior to Lesson 1)
2 Spray bottles of water
Aluminum foil*
Aquarium gravel
Ice*
Potting soil
Sand
Sunny window*
Woodland soil
- Teacher
6 Paper cups, 6 oz
1 Shipping container of pill bugs
Assessment Observation Sheet: Lesson 4
*These materials are needed but not supplied.

Teaching Tip
At this time, you may wish to demonstrate how students should use the paintbrush to move the pill bugs from the cup to the choice chamber. Remind students that pill bugs are animals and that they need to be treated with care.

Teaching Tip
The pill bugs are no longer needed after this investigation. You may dispose of them as directed in Appendix D or maintain them for observation in the classroom. Keep the paper cups for reuse.

Teaching Tip
Encourage students to return any sand, gravel, or clay that can be reused to the materials station. It is recommended that students dispose of any materials that have been exposed to water or food.

1. Tell students they will begin the class session by building the habitat models they planned in Investigation A. Be sure each student has their copy of Student Investigation Sheet 4A: *Which Habitat Do Pill Bugs Prefer?* Direct students to the materials station, and allow them to get out any materials they may have brought in. Remind students that these materials need to be approved by you before they can use them in their models.

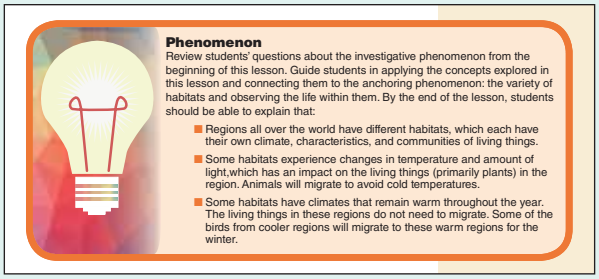
2. Direct students to Part C of Student Investigation Sheet 4A. Allow ample time for groups to obtain materials, construct their choice chambers, and answer the questions. Assist students as needed.

3. Once a group has completed their model, direct them to Part D of the investigation sheet. Provide the group with a paintbrush and two pill bugs in a paper cup. Instruct students to use the paintbrush to carefully move the pill bugs into the middle of the chamber. Students should observe their pill bugs for five minutes and describe what they observe on their investigation sheet.

4. After five minutes of observation, direct students to return the pill bugs to their paper cup and bring the cup to you. The pill bugs should be returned immediately to the shipping container. Instruct students to take apart their habitat models, discard or return items to the materials station, and then rinse the choice chamber and wipe it dry. The choice chambers should be saved for reuse.

5. Once the choice chamber is clean and returned to its designated location, students should work with their group members to complete Part E of Student Investigation Sheet 4A. Explain that students will present their results to the class in the next investigation.

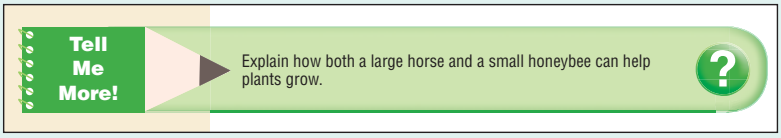
4. Phenomena in students' hands (pg. 96)


Phenomenon

Review students' questions about the investigative phenomenon from the beginning of this lesson. Guide students in applying the concepts explored in this lesson and connecting them to the anchoring phenomenon: the variety of habitats and observing the life within them. By the end of the lesson, students should be able to explain that:

- Regions all over the world have different habitats, which each have their own climate, characteristics, and communities of living things.
- Some habitats experience changes in temperature and amount of light,which has an impact on the living things (primarily plants) in the region. Animals will migrate to avoid cold temperatures.
- Some habitats have climates that remain warm throughout the year. The living things in these regions do not need to migrate. Some of the birds from cooler regions will migrate to these warm regions for the winter.

2. Phenomena (pg. 43)


Tell Me More!

Explain how both a large horse and a small honeybee can help plants grow.

5. Formative assessment (pg. 80)

Investigation B

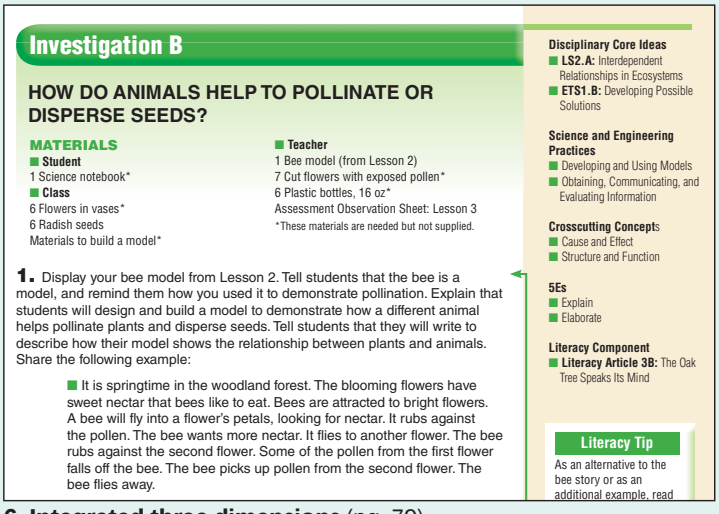
WHAT TYPE OF HABITAT DO I LIVE IN?

MATERIALS
- **Student**
1 Science notebook*
1 Literacy and Science 1B: *Habitat Climates*
- **Team of four students**
1 Teacher Sheet 1B: *Habitat Labels*
- **Class**
1 Habitat Card Set
Basic Needs of Living Things Map (from Investigation A)
- **Teacher**
1 Pair of scissors*
1 Roll of masking tape*
7 Sheets of chart paper*
Assessment Observation Sheet: Lesson 1
Marker*
*These materials are needed but not supplied.

1. Refer to the Basic Needs of Living Things Map from Investigation A. Review that living things need air, food, water, and shelter to survive. Draw attention to the need for shelter. Ask:

- What is a shelter? Provide an example of a shelter for a plant and an animal. *(A shelter is a place where a living thing stays. Examples for plants include a flower pot, a garden, or soil. Examples for animals include a cave, a nest, a tree, or a pond.)*

3. Investigations as questions (pg. 38)


Investigation B

HOW DO ANIMALS HELP TO POLLINATE OR DISPERSE SEEDS?

MATERIALS
- Student
1 Science notebook*
- Class
6 Flowers in vases*
6 Radish seeds
Materials to build a model*
- Teacher
1 Bee model (from Lesson 2)
7 Cut flowers with exposed pollen*
6 Plastic bottles, 16 oz*
Assessment Observation Sheet: Lesson 3
*These materials are needed but not supplied.

1. Display your bee model from Lesson 2. Tell students that the bee is a model, and remind them how you used it to demonstrate pollination. Explain that students will design and build a model to demonstrate how a different animal helps pollinate plants and disperse seeds. Tell students that they will write to describe how their model shows the relationship between plants and animals. Share the following example:

- It is springtime in the woodland forest. The blooming flowers have sweet nectar that bees like to eat. Bees are attracted to bright flowers. A bee will fly into a flower's petals, looking for nectar. It rubs against the pollen. The bee wants more nectar. It flies to another flower. The bee rubs against the second flower. Some of the pollen from the first flower falls off the bee. The bee picks up pollen from the second flower. The bee flies away.

Disciplinary Core Ideas
- LS2.A: Interdependent Relationships in Ecosystems
- ETS1.B: Developing Possible Solutions

Science and Engineering Practices
- Developing and Using Models
- Obtaining, Communicating, and Evaluating Information

Crosscutting Concepts
- Cause and Effect
- Structure and Function

5Es
- Explain
- Elaborate

Literacy Component
- Literacy Article 3B: The Oak Tree Speaks Its Mind

Literacy Tip
As an alternative to the bee story or as an additional example, read

6. Integrated three dimensions (pg. 79)

Ecosystem Diversity, Grade 2

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

Criteria	Evidence from Ecosystem Diversity
Presence of Logical Sequence Student learning across the three dimensions is: • arranged in a logical sequence; and • sufficient and appropriate for students to figure out the phenomena or problems.	***Ecosystem Diversity*** is a grade 2 life science unit. This unit supports NGSS Performance Expectations and provides connections to life science and engineering: • **2-LS2-1; 2-LS2-2; 2-LS4-1; K-2-ETS1-2; K-2-ETS1-3** **1. NGSS** for the unit (pg. vi) **2. Evidence of Instructional Scaffolding** (pgs. xxii–xxiii) **3. Investigations** refer to previous learnings and provide multiple opportunities to use the 3Ds to make sense of phenomena and problems. In Lesson 2, Investigation B (pg. 60, Steps 1-3), students build upon prior learning. **4. Tell Me More** prompts at the end of each investigation provide opportunities for formative assessment as students complete a task in which they apply their learning to additional phenomena, developing more complex and complete understandings over time (pg. 61). **5. Notebooking** tasks for each investigation provide authentic opportunities for students to share evidence-based arguments and reasoning (pgs. 60-61 and Student investigation Sheet 2B, Part B).

Examples

Next Generation Science Standards

The Building Blocks of Science unit *Ecosystem Diversity* integrates process skills as defined by the Next Generation Science Standards (NGSS).

Performance Expectations
- **2-LS2-1:** Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- **2-LS2-2:** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- **2-LS4-1:** Make observations of plants and animals to compare the diversity of life in different habitats.
- **K-2-ETS1-2:** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- **K-2-ETS1-3:** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Disciplinary Core Ideas
- **LS2.A:** Interdependent Relationships in Ecosystems
- **LS4.D:** Biodiversity and Humans
- **ETS1.B:** Developing Possible Solutions
- **ETS1.C:** Optimizing the Design Solution

Science and Engineering Practices
- Developing and Using Models
- Planning and Carrying Out Investigations
- Engaging in Argument from Evidence
- Obtaining, Communicating, and Evaluating Information

Crosscutting Concepts
- Cause and Effect
- Structure and Function

1. NGSS for unit (pg. vi)

Evidence of Instructional Scaffolding

Scaffolding is a crucial yet natural element in all classrooms. Building Blocks of Science strives to simplify this instructional strategy by integrating this guided process into each unit, systematically building upon student knowledge, using hands-on learning to reinforce concepts, and employing student-driven inquiry. These strategies introduce new concepts and, with practice and review, lead students toward mastery. It is important to integrate scaffolding not only throughout the unit but also throughout each lesson. As students demonstrate understanding of a concept, they should be encouraged to take a leadership role in class or to attempt assignments independently. Additionally, scaffolding reveals opportunities for differentiation. Below-level learners require more reinforcement as they learn new skills, so the process toward mastery will need to be adjusted. Above-level learners do not need as much support and achieve mastery more quickly; therefore, these students can be assigned more independent study.

	Lesson 1 ▸	Lesson 2 ▸
OBJECTIVES	■ Identify the relationship between nonliving and living things. ■ Describe the needs of living things and how they rely on their habitat to meet their needs. ■ Distinguish habitats by their characteristics. ■ Plan an investigation using radish seeds to determine the needs of plants.	■ Describe the life cycle of plants. ■ Examine the relationship between plants and animals. ■ Analyze different plants to identify their habitats.
SCAFFOLDING	Students should know: ■ Habitats are composed of living and nonliving things. ■ All living things have the same foundational needs: food, water, shelter, and air. ■ Living and nonliving things interact with one another. ■ There are different types of habitats, and each includes unique plants and animals. ■ Each habitat has different resources. ■ Seeds need sunlight and water to grow into plants.	Students should know: ■ Plants have a life cycle which begins when a seed germinates. The cycle continues as the seed grows into a mature plant, at which point it can be pollinated and develop seeds that can create more plants. ■ Plants need to be pollinated to form seeds. ■ The seeds of a plant need to be dispersed so new plants can grow. ■ Each type of habitat has its own unique plants, which have characteristics that allow them to survive, grow, and reproduce.

2. Evidence of Instructional Scaffolding (pg. xxii)

Disciplinary Core Ideas
- **LS2.A:** Interdependent Relationships in Ecosystems
- **LS4.D:** Biodiversity and Humans

Science and Engineering Practice
- Engaging in Argument from Evidence

Crosscutting Concepts
- Cause and Effect
- Structure and Function

5Es
- Explain
- Elaborate

Literacy Component
- **Literacy Article 2B:** Our Trip Through the Desert

Digital Component
- **Simulation:** Factors of Plant Growth, Part 1

Investigation B

WHERE DO PLANTS GROW?

MATERIALS
- **Student**

1 Science notebook*
1 Student Investigation Sheet 2B.1: *Do Different Habitats Have Different Plants?*
1 Student Investigation Sheet 2B.2: *Can I Calculate Color?* (optional)
1 Set of crayons* (1 each brown, dark blue, light blue, green, and red) (optional)
- **Class**

5 Plants (tropical plant, succulent plant, zebrina, and two aquatic plants)
1 Ryegrass plant*(planted prior to Lesson 1)
- **Teacher**

1 Student Investigation Sheet 2B.1: *Do Different Habitats Have Different Plants?* (Teacher's Version)
1 Roll of masking tape*
Assessment Observation Sheet: Lesson 2
*These materials are needed but not supplied.

1. Review the seven habitats that students learned about in Lesson 1. Refer to the Habitat Cards that are on display around the room and the following prompts to facilitate your review:
- Provide an example of one living and one nonliving thing in each habitat.
- For each habitat, explain how living things might depend on nonliving things.
- For each habitat, explain how living things might depend on other living things.
- Describe the climate in each habitat.

2. Ask students to recall the seeds they planted in Lesson 1. Facilitate a brief class discussion about the appearance of the seeds and the changes they observed. Remind students that plants require sunlight and water to grow.

Digital Tip
Compare the resources available in different habitats. Use the simulation Factors of Plant Growth, Part 1, to engage students and prompt them to think about how the plant in the simulation might differ from a plant in another habitat.

3. Refer to the Habitat Cards again. Ask:
- How do you think a habitat's climate affects the plants that live there?

Allow time for students to brainstorm, and then encourage students to share their ideas with the class.

4. Divide the class into six groups, and distribute a copy of Student Investigation Sheet 2B.1: *Do Different Habitats Have Different Plants?* to each student. Explain that students will rotate around the room in small groups to make observations of different plants. Students will record their observations in Part A of the investigation sheet. Allow students three or four minutes at each station before signaling for them to rotate to the next station.

60 ECOSYSTEM DIVERSITY

3. Build on prior learning (pg. 60)

Compare a cactus and an orange tree. Which plant can survive with less water?

Tell Me More!

4. Apply new learning (pg. 61)

Student Investigation Sheet 2B.1: Do Different Plants Have Different Habitats?

Name: _____ Date: _____

A. Observing Different Plants

Plant	What I noticed about this plant
1	
2	
3	
4	
5	
6	

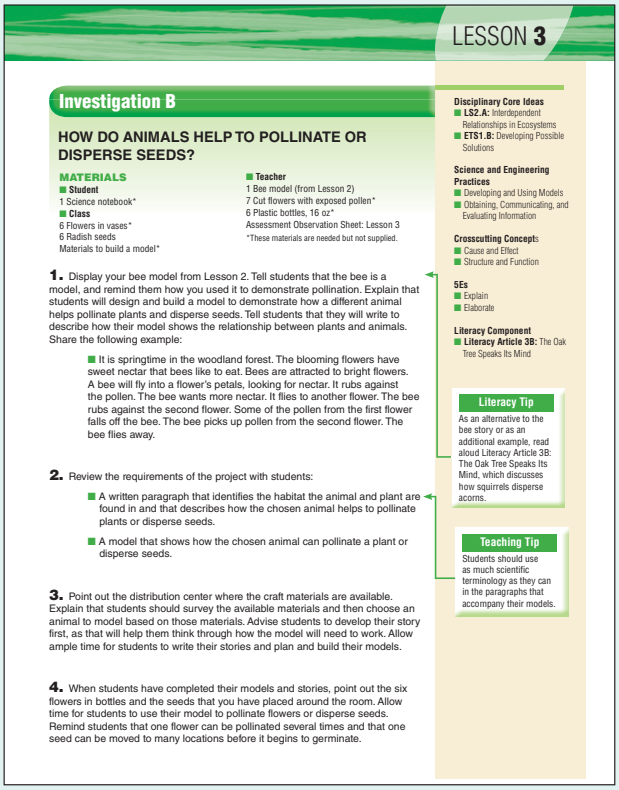
5. Notebooking (Student Investigation Sheet 2B.1)

Ecosystem Diversity, Grade 2

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

Criteria	Evidence from Ecosystem Diversity
Students Are Figuring Out Materials position students to make sense of phenomena and design solutions to problems by: • asking and answering questions that link learning over time; and • using the three dimensions to link prior knowledge and negotiate new understandings and abilities.	**1.** Each investigation provides an opportunity for students to make sense of phenomena. In Lesson 3, Investigation B (pgs. 79-80), students review past learning about models (Step 1), build a new model and story (Steps 3-4), and answer questions about patterns they observed and to make claims based on evidence and reasoning (Steps 6-7). **2.** Opportunities to develop possible solutions to problems are integrated into the instruction. In Lesson 5, Investigation A (pgs. 115-116), students work in groups to design and build a model of an animal that assists in seed-dispersal and explain in their notebooks how the animal assists in dispersal.

Examples



LESSON 3

Investigation B

HOW DO ANIMALS HELP TO POLLINATE OR DISPERSE SEEDS?

MATERIALS

- **Student**
  - 1 Science notebook*
- **Class**
  - 6 Flowers in vases*
  - 6 Radish seeds
  - Materials to build a model*
- **Teacher**
  - 1 Bee model (from Lesson 2)
  - 7 Cut flowers with exposed pollen*
  - 6 Plastic bottles, 16 oz*
  - Assessment Observation Sheet: Lesson 3

*These materials are needed but not supplied.

1. Display your bee model from Lesson 2. Tell students that the bee is a model, and remind them how you used it to demonstrate pollination. Explain that students will design and build a model to demonstrate how a different animal helps pollinate plants and disperse seeds. Tell students that they will write to describe how their model shows the relationship between plants and animals. Share the following example:

- It is springtime in the woodland forest. The blooming flowers have sweet nectar that bees like to eat. Bees are attracted to bright flowers. A bee will fly into a flower's petals, looking for nectar. It rubs against the pollen. The bee wants more nectar. It flies to another flower. The bee rubs against the second flower. Some of the pollen from the first flower falls off the bee. The bee picks up pollen from the second flower. The bee flies away.

2. Review the requirements of the project with students:

- A written paragraph that identifies the habitat the animal and plant are found in and that describes how the chosen animal helps to pollinate plants or disperse seeds.
- A model that shows how the chosen animal can pollinate a plant or disperse seeds.

3. Point out the distribution center where the craft materials are available. Explain that students should survey the available materials and then choose an animal to model based on those materials. Advise students to develop their story first, as that will help them think through how the model will need to work. Allow ample time for students to write their stories and plan and build their models.

4. When students have completed their models and stories, point out the six flowers in bottles and the seeds that you have placed around the room. Allow time for students to use their model to pollinate flowers or disperse seeds. Remind students that one flower can be pollinated several times and that one seed can be moved to many locations before it begins to germinate.

Disciplinary Core Ideas
- **LS2.A:** Interdependent Relationships in Ecosystems
- **ETS1.B:** Developing Possible Solutions

Science and Engineering Practices
- Developing and Using Models
- Obtaining, Communicating, and Evaluating Information

Crosscutting Concepts
- Cause and Effect
- Structure and Function

5Es
- Explain
- Elaborate

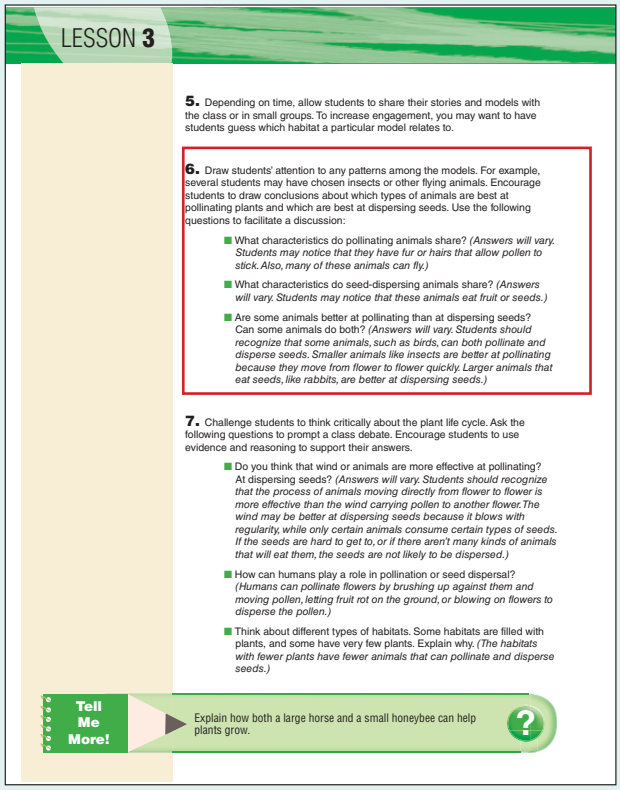
Literacy Component
- **Literacy Article 3B:** The Oak Tree Speaks Its Mind

Literacy Tip

As an alternative to the bee story or as an additional example, read aloud Literacy Article 3B: The Oak Tree Speaks Its Mind, which discusses how squirrels disperse acorns.

Teaching Tip

Students should use as much scientific terminology as they can in the paragraphs that accompany their models.



LESSON 3

5. Depending on time, allow students to share their stories and models with the class or in small groups. To increase engagement, you may want to have students guess which habitat a particular model relates to.

6. Draw students' attention to any patterns among the models. For example, several students may have chosen insects or other flying animals. Encourage students to draw conclusions about which types of animals are best at pollinating plants and which are best at dispersing seeds. Use the following questions to facilitate a discussion:

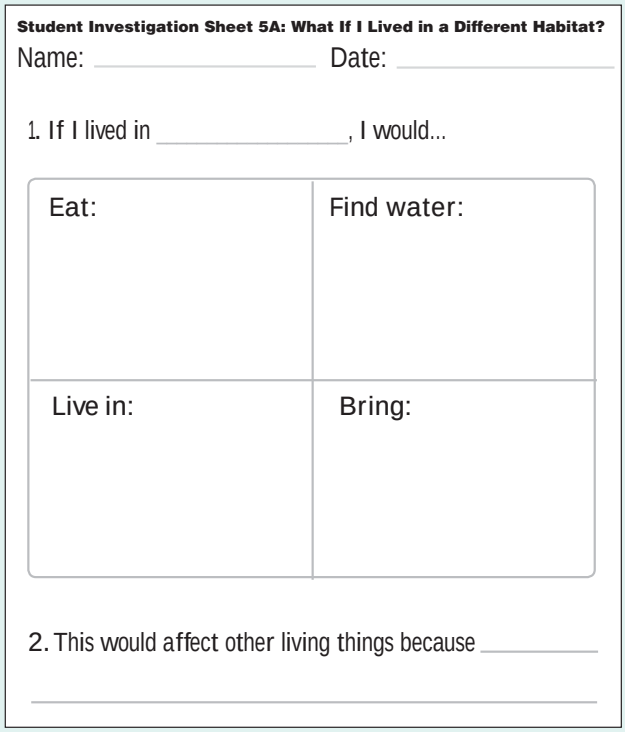
- What characteristics do pollinating animals share? *(Answers will vary. Students may notice that they have fur or hairs that allow pollen to stick. Also, many of these animals can fly.)*
- What characteristics do seed-dispersing animals share? *(Answers will vary. Students may notice that these animals eat fruit or seeds.)*
- Are some animals better at pollinating than at dispersing seeds? Can some animals do both? *(Answers will vary. Students should recognize that some animals, such as birds, can both pollinate and disperse seeds. Smaller animals like insects are better at pollinating because they move from flower to flower quickly. Larger animals that eat seeds, like rabbits, are better at dispersing seeds.)*

7. Challenge students to think critically about the plant life cycle. Ask the following questions to prompt a class debate. Encourage students to use evidence and reasoning to support their answers.

- Do you think that wind or animals are more effective at pollinating? At dispersing seeds? *(Answers will vary. Students should recognize that the process of animals moving directly from flower to flower is more effective than the wind carrying pollen to another flower. The wind may be better at dispersing seeds because it blows with regularity, while only certain animals consume certain types of seeds. If the seeds are hard to get to, or if there aren't many kinds of animals that will eat them, the seeds are not likely to be dispersed.)*
- How can humans play a role in pollination or seed dispersal? *(Humans can pollinate flowers by brushing up against them and moving pollen, letting fruit rot on the ground, or blowing on flowers to disperse the pollen.)*
- Think about different types of habitats. Some habitats are filled with plants, and some have very few plants. Explain why. *(The habitats with fewer plants have fewer animals that can pollinate and disperse seeds.)*

Tell Me More! Explain how both a large horse and a small honeybee can help plants grow.

1. Making sense of phenomena (pgs. 79-80)



Student Investigation Sheet 5A: What If I Lived in a Different Habitat?

Name: _____ Date: _____

1. If I lived in _____, I would...

Eat:	Find water:
Live in:	Bring:

2. This would affect other living things because _____

_____

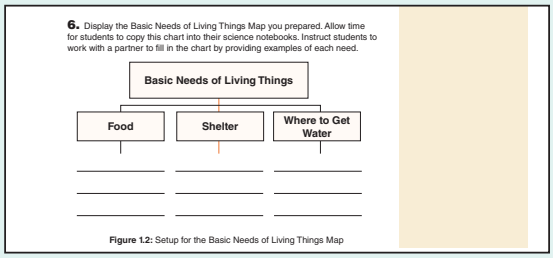
2. Three dimensions applied to engineering challenge (Student Investigation Sheet 5A)

Ecosystem Diversity, Grade 2

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

Criteria	Evidence from Ecosystem Diversity
Three-dimensional Performances Materials include assessments designed to: • match the targeted learning goals; and • elicit evidence of students' use of the three dimensions to make sense of phenomena and/or to design solutions to problems.	Three-dimensional assessment system provides 3D assessment throughout the unit to monitor new growth over time. **1. Pre-Assessment:** Lesson 1, Investigation A (pgs. 36-38): Students draw upon prior knowledge to develop charts about how you know if something is living (pg. 36) and the basic needs of living things (pg. 37). Assessment Observation Sheet (pg. 52) monitors understanding. **2. Formative assessment** opportunities are part of every lesson. The Tell Me More prompt on page 78 focuses on the 3Ds listed on page 77. **3. Assessment Strategies** at the end of every lesson (pg. 62) provide strategies for using Student Investigation Sheets and Tell Me More to assess the 3Ds. Also available digitally at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **4. Summative Assessments** in every unit's final lesson provide a performance task for group assessment of 3Ds (pgs. 115-116) and a written assessment (after Student Investigation Sheet 5A). A scenario-based assessment is available online at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **5. Summative Assessment Remediation Strategies** list lessons to revisit for Performance Expectations-specific remediation based on individual assessment items (chart follows Summative Assessment Answer Key)

Examples



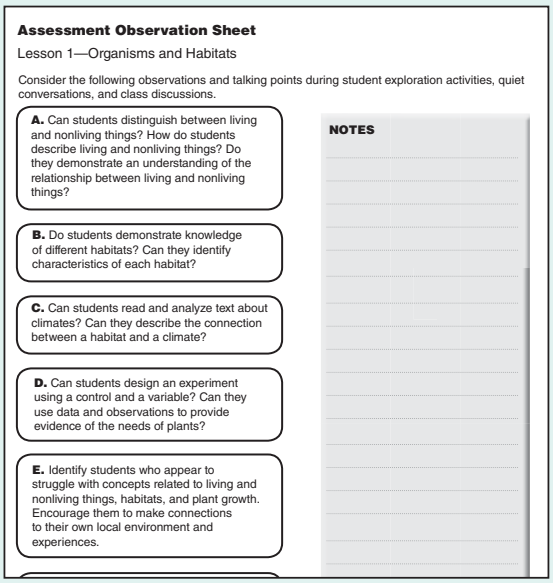
6. Display the Basic Needs of Living Things Map you prepared. Allow time for students to copy this chart into their science notebooks. Instruct students to work with a partner to fill in the chart by providing examples of each need.

Basic Needs of Living Things

Food	Shelter	Where to Get Water

Figure 1.2: Setup for the Basic Needs of Living Things Map

1. Pre-Unit Assessment (pg. 37)



Assessment Observation Sheet

Lesson 1—Organisms and Habitats

Consider the following observations and talking points during student exploration activities, quiet conversations, and class discussions.

A. Can students distinguish between living and nonliving things? How do students describe living and nonliving things? Do they demonstrate an understanding of the relationship between living and nonliving things?

B. Do students demonstrate knowledge of different habitats? Can they identify characteristics of each habitat?

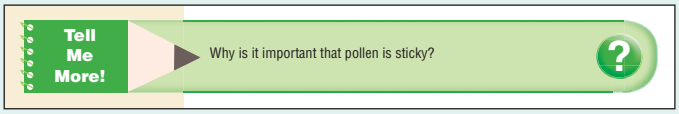
C. Can students read and analyze text about climates? Can they describe the connection between a habitat and a climate?

D. Can students design an experiment using a control and a variable? Can they use data and observations to provide evidence of the needs of plants?

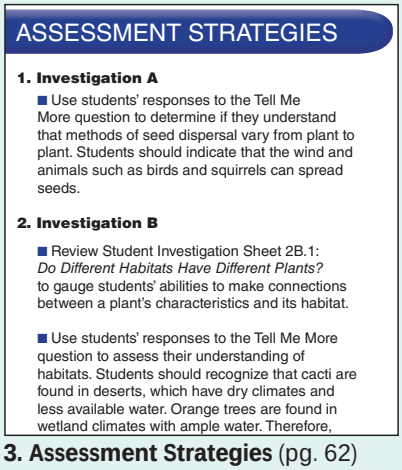
E. Identify students who appear to struggle with concepts related to living and nonliving things, habitats, and plant growth. Encourage them to make connections to their own local environment and experiences.

NOTES

1. Assessment Observation Sheet (pg. 52)



2. Formative assessment (pg. 78)



ASSESSMENT STRATEGIES

1. Investigation A

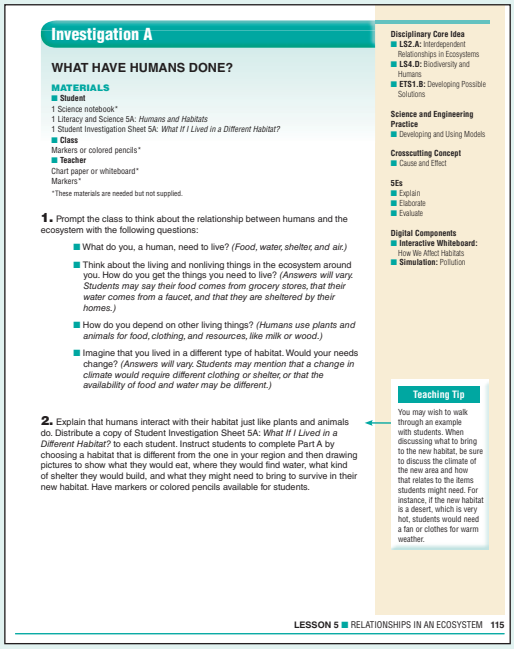
- Use students' responses to the Tell Me More question to determine if they understand that methods of seed dispersal vary from plant to plant. Students should indicate that the wind and animals such as birds and squirrels can spread seeds.

2. Investigation B

- Review Student Investigation Sheet 2B.1: *Do Different Habitats Have Different Plants?* to gauge students' abilities to make connections between a plant's characteristics and its habitat.

- Use students' responses to the Tell Me More question to assess their understanding of habitats. Students should recognize that cacti are found in deserts, which have dry climates and less available water. Orange trees are found in wetland climates with ample water. Therefore,

3. Assessment Strategies (pg. 62)



Investigation A

WHAT HAVE HUMANS DONE?

MATERIALS

- **Student**
  1 Science notebook*
  1 Literacy and Science 5A: *Humans and Habitats*
  1 Student Investigation Sheet 5A: *What If I Lived in a Different Habitat?*
- **Class**
  Markers or colored pencils*
- **Teacher**
  Chart paper or whiteboard*
  Markers*

*These materials are needed but not supplied.

1. Prompt the class to think about the relationship between humans and the ecosystem with the following questions:

- What do you, a human, need to live? *(Food, water, shelter, and air.)*
- Think about the living and nonliving things in the ecosystem around you. How do you get the things you need to live? *(Answers will vary. Students may say their food comes from grocery stores, that their water comes from a faucet, and that they are sheltered by their homes.)*
- How do you depend on other living things? *(Humans use plants and animals for food, clothing, and resources, like milk or wood.)*
- Imagine that you lived in a different type of habitat. Would your needs change? *(Answers will vary. Students may mention that a change in climate would require different clothing or shelter, or that the availability of food and water may be different.)*

2. Explain that humans interact with their habitat just like plants and animals do. Distribute a copy of Student Investigation Sheet 5A: *What If I Lived in a Different Habitat?* to each student. Instruct students to complete Part A by choosing a habitat that is different from the one in your region and then drawing pictures to show what they would eat, where they would find water, what kind of shelter they would build, and what they might need to bring to survive in their new habitat. Have markers or colored pencils available for students.

Disciplinary Core Idea
- **LS2.A:** Interdependent Relationships in Ecosystems
- **LS4.D:** Biodiversity and Humans
- **ETS1.B:** Developing Possible Solutions

Science and Engineering Practice
- Developing and Using Models

Crosscutting Concept
- Cause and Effect

5Es
- Explain
- Elaborate
- Evaluate

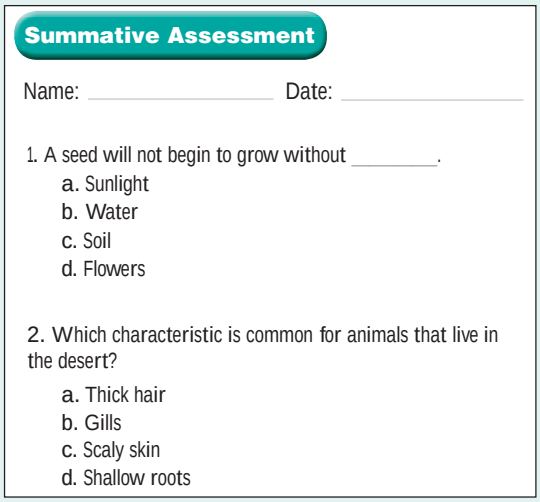
Digital Components
- **Interactive Whiteboard:** How We Affect Habitats
- **Simulation:** Pollution

Teaching Tip

You may wish to walk through an example with students. When discussing what to bring to the new habitat, be sure to discuss the climate of the new area and how that relates to the items students might need. For instance, if the new habitat is a desert, which is very hot, students would need a fan or clothes for warm weather.

LESSON 5 ■ RELATIONSHIPS IN AN ECOSYSTEM 115

4. Performance-task assessment for the unit (pg. 115)



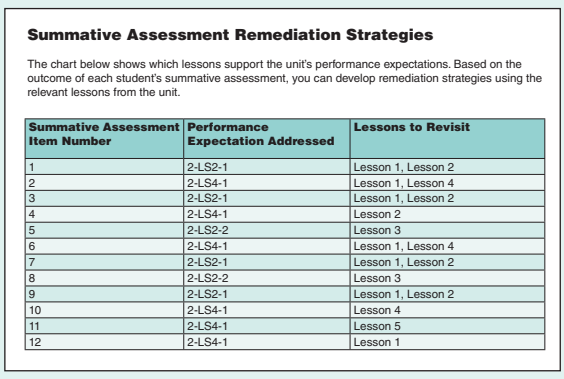
Summative Assessment

Name: _____ Date: _____

1. A seed will not begin to grow without _____.
   a. Sunlight
   b. Water
   c. Soil
   d. Flowers

2. Which characteristic is common for animals that live in the desert?
   a. Thick hair
   b. Gills
   c. Scaly skin
   d. Shallow roots

4. Summative assessment (pg. 123)



Summative Assessment Remediation Strategies

The chart below shows which lessons support the unit's performance expectations. Based on the outcome of each student's summative assessment, you can develop remediation strategies using the relevant lessons from the unit.

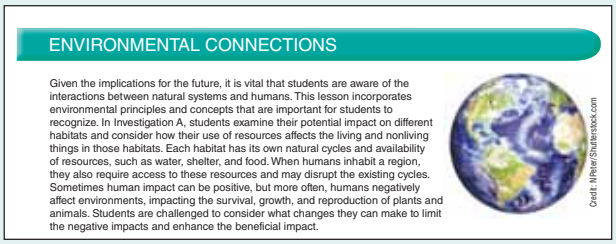
Summative Assessment Item Number	Performance Expectation Addressed	Lessons to Revisit
1	2-LS2-1	Lesson 1, Lesson 2
2	2-LS4-1	Lesson 1, Lesson 4
3	2-LS2-1	Lesson 1, Lesson 2
4	2-LS4-1	Lesson 2
5	2-LS2-2	Lesson 3
6	2-LS4-1	Lesson 1, Lesson 4
7	2-LS2-1	Lesson 1, Lesson 2
8	2-LS2-2	Lesson 3
9	2-LS2-1	Lesson 1, Lesson 2
10	2-LS4-1	Lesson 4
11	2-LS4-1	Lesson 5
12	2-LS4-1	Lesson 1

5. Summative Assessment Remediation Strategies (pg. 131)

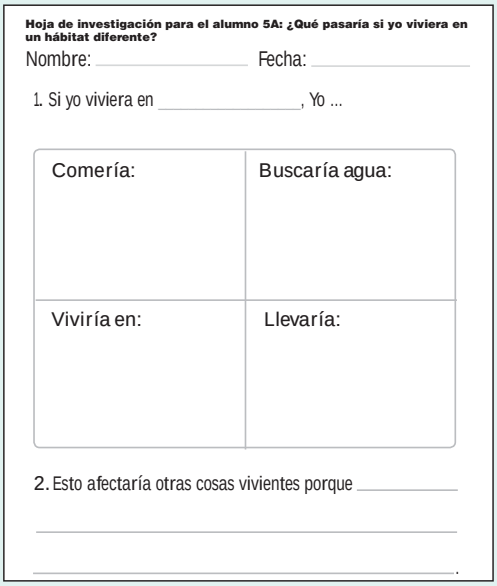
Ecosystem Diversity, Grade 2

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

District Lens and Helpful Supports	Evidence from Ecosystem Diversity
1. Environmental Principles and Concepts (EP&Cs)	Units include EP&Cs at the end of relevant lessons (pg. 119). A complete correlation of Building Blocks of Science to the EP&C and is available at www.carolina.com/cascience • **Click on:** Building Blocks of Science 3D > Correlations
2. Spanish Teacher and Student Materials	All student-facing materials are available in Spanish in both print and digital formats. Teacher instruction is also available in Spanish.



Coming soon: Digital Spanish Teacher's Guide



Hoja de investigación para el alumno 5A: ¿Qué pasaría si yo viviera en un hábitat diferente?

Nombre: _____ Fecha: _____

1. Si yo viviera en _____, Yo ...

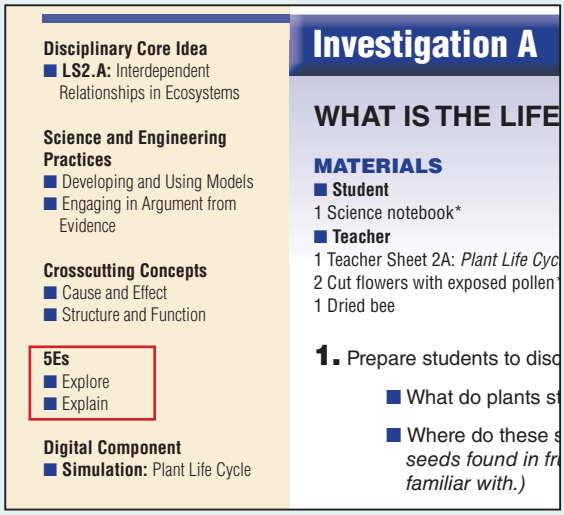
Comería:	Buscaría agua:
Viviría en:	Llevaría:

2. Esto afectaría otras cosas vivientes porque _____

_____

_____.

District Lens and Helpful Supports	Evidence from Ecosystem Diversity
3. 5Es	The 5Es are identified for each lesson: • Lesson Overview Charts (pgs. xxv-xxix) • Side column at the start of each investigation



Investigation Overview

Investigation A: What Do Living Things Need?

5Es: Engage

In a pre-unit assessment, students use prior knowledge to develop charts that describe the relationship between living and nonliving things in their area.

- **Teacher Preparation:** 10 minutes
- **Lesson:** 30 minutes

Tell Me More! In very cold areas, the water in ponds will freeze. How is this a problem for living things?

Investigation B: What Type of Habitat Do I Live In?

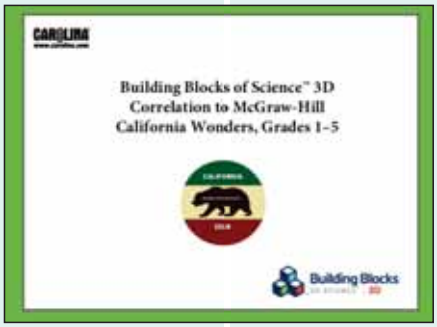
5Es: Explore, Explain, Elaborate

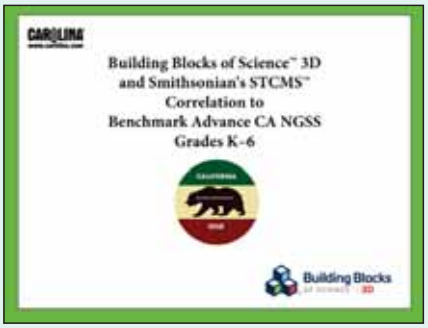
Student groups rotate through stations and make observations about images of different habitats.

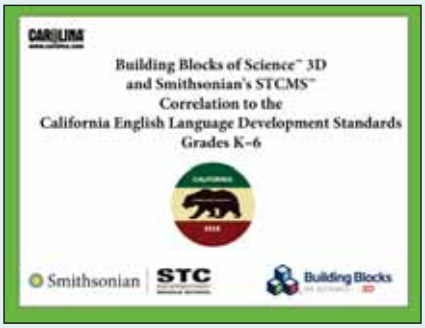
- **Teacher Preparation:** 20 minutes
- **Lesson:** 45–60 minutes

Tell Me More! Name the habitats where you might find the following animals: monkey, polar bear, shark.

4. Alignment to ELA Programs and ELD Standards	Correlations to Benchmark, Wonders, and CA ELD Standards are found at www.carolina.com/cascience • **Click on:** Building Blocks of Science 3D > Correlations







5. Common Core Math and ELA	The Language Arts and Math Standards are identified for each lesson: • Lesson Overview Charts (pgs. xxv-xxix)

Math

- **2.G.A.1:** Reason with shapes and their attributes.
- **2.G.A.2:** Reason with shapes and their attributes.

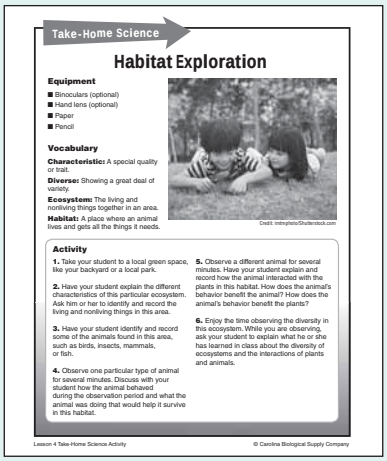
Language Arts and Math Standards
Language Arts

- **L.2.4:** Vocabulary Acquisition and Use
- **RF.2.3:** Phonics and Word Recognition
- **RI.2.1:** Key Ideas and Details
- **RI.2.2:** Key Ideas and Details
- **RI.2.3:** Key Ideas and Details
- **RI.2.4:** Craft and Structure
- **RI.2.5:** Craft and Structure
- **RI.2.6**: Craft and Structure
- **RI.2.7:** Integration of Knowledge and Ideas
- **RI.2.8:** Integration of Knowledge and Ideas
- **SL.2.2:** Comprehension and Collaboration
- **SL.2.3:** Comprehension and Collaboration
- **W.2.8:** Research to Build and Present Knowledge

Ecosystem Diversity, Grade 2

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Ecosystem Diversity.***

District Lens and Helpful Supports	Evidence from Exploring Organisms
6. Take-Home Science	Built into appropriate lessons, a Take-Home Science project reinforces learning (pgs. 107-109).
7. Safety	Safety, pgs. xvii-xviii
8. Literacy Support	• Literacy Articles provide additional informational text to support investigations. • Literacy Connections (pgs. 136-137) provide additional literacy strategies


Take-Home Science

Habitat Exploration

Equipment
- Binoculars (optional)
- Hand lens (optional)
- Paper
- Pencil

Vocabulary

Characteristic: A special quality or trait.

Diverse: Showing a great deal of variety.

Ecosystem: The living and nonliving things together in an area.

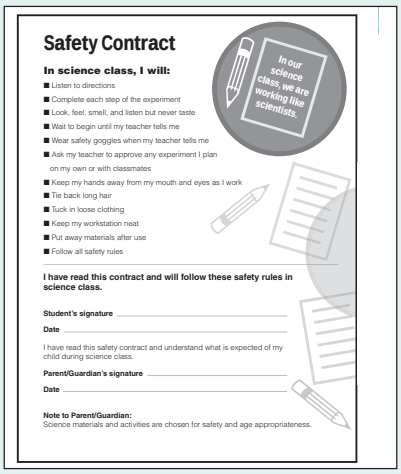
Habitat: A place where an animal lives and gets all the things it needs.

Credit: inhmphoto/Shutterstock.com

Activity

1. Take your student to a local green space, like your backyard or a local park.
2. Have your student explain the different characteristics of this particular ecosystem. Ask him or her to identify and record the living and nonliving things in this area.
3. Have your student identify and record some of the animals found in this area, such as birds, insects, mammals, or fish.
4. Observe one particular type of animal for several minutes. Discuss with your student how the animal behaved during the observation period and what the animal was doing that would help it survive in this habitat.
5. Observe a different animal for several minutes. Have your student explain and record how the animal interacted with the plants in this habitat. How does the animal's behavior benefit the animal? How does the animal's behavior benefit the plants?
6. Enjoy the time observing the diversity in this ecosystem. While you are observing, ask your student to explain what he or she has learned in class about the diversity of ecosystems and the interactions of plants and animals.

Lesson 4 Take-Home Science Activity © Carolina Biological Supply Company


Safety Contract

In science class, I will:
- Listen to directions
- Complete each step of the experiment
- Look, feel, smell, and listen but never taste
- Wait to begin until my teacher tells me
- Wear safety goggles when my teacher tells me
- Ask my teacher to approve any experiment I plan on my own or with classmates
- Keep my hands away from my mouth and eyes as I work
- Tie back long hair
- Tuck in loose clothing
- Keep my workstation neat
- Put away materials after use
- Follow all safety rules

In our science class, we are working like scientists.

I have read this contract and will follow these safety rules in science class.

Student's signature _____

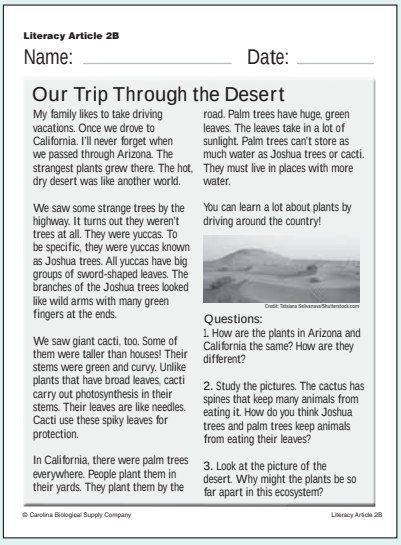
Date _____

I have read this safety contract and understand what is expected of my child during science class.

Parent/Guardian's signature _____

Date _____

Note to Parent/Guardian:
Science materials and activities are chosen for safety and age appropriateness.


Literacy Article 2B

Name: _____ Date: _____

Our Trip Through the Desert

My family likes to take driving vacations. Once we drove to California. I'll never forget when we passed through Arizona. The strangest plants grew there. The hot, dry desert was like another world.

We saw some strange trees by the highway. It turns out they weren't trees at all. They were yuccas. To be specific, they were yuccas known as Joshua trees. All yuccas have big groups of sword-shaped leaves. The branches of the Joshua trees looked like wild arms with many green fingers at the ends.

We saw giant cacti, too. Some of them were taller than houses! Their stems were green and curvy. Unlike plants that have broad leaves, cacti carry out photosynthesis in their stems. Their leaves are like needles. Cacti use these spiky leaves for protection.

In California, there were palm trees everywhere. People plant them in their yards. They plant them by the road. Palm trees have huge, green leaves. The leaves take in a lot of sunlight. Palm trees can't store as much water as Joshua trees or cacti. They must live in places with more water.

You can learn a lot about plants by driving around the country!

Credit: Tatsiana Sellvanava/Shutterstock.com

Questions:

1. How are the plants in Arizona and California the same? How are they different?
2. Study the pictures. The cactus has spines that keep many animals from eating it. How do you think Joshua trees and palm trees keep animals from eating their leaves?
3. Look at the picture of the desert. Why might the plants be so far apart in this ecosystem?

© Carolina Biological Supply Company Literacy Article 2B

Literacy Connections: *Ecosystem Diversity*

Students have wide and varied reading abilities and comprehension levels. Because of this, Building Blocks of Science® includes literacy components that can be incorporated into language arts or science sessions or that can be used outside of the classroom. These components can be completed and reviewed with the whole class, in small groups, in peer-teaching pairs, or individually to complement the inquiries, concepts, and core ideas presented in the unit. Literacy components can also be assigned to differentiate instruction. English language learners and developing readers may especially benefit from using these resources in small groups or high-ability/low-ability peer groups.

District Lens and Helpful Supports	Evidence from Ecosystem Diversity
9. Science in the News	Pull phenomena from today's news into your classroom with these projects (pgs. 138-140)
10. Innovators in Science	A diverse group of STEM professionals have impacted science. These scientists and engineers help students see themselves in these careers. Accessible at www.carolina.com/bbs3dreview • **Click on:** Unit Overview > Unit Resources > Digital Resources > Innovators in Science
11. Rubrics for Science	Appendix A, pg. 134

Teacher Sheet: Science in the News Article Report

To help students understand a concept, it is often helpful to associate it with an event or phenomenon. Depending on the topic, students may be able to draw connections to recent events in the news or to historical events in your area. Using a literacy tool like an article report is a helpful way to bring in literacy, reading comprehension, and science topics at any grade level.

Science in the News articles can be assigned at any point during a unit to assist students in seeing the "real-world connection" to a particular concept. These articles should be provided by the teacher in lower grades, but students in grades 3–5 may be ready for the challenge of selecting their own articles independently. The following guidelines will help you find appropriate articles. If you ask students to locate their own articles, you may wish to provide some of these guidelines along with the specific requirements for the assignment. Students at all grades are provided with an article report sheet to help them analyze their article and draw connections between it and the unit concepts. For students in grades 3–5, a rubric is provided in this appendix to help them to evaluate an article for bias and credibility.

General Rubric

	Exploration	Vocabulary	Concept Building	Science Notebook
4	Student displays a high level of interest by asking questions, building on concepts, and testing ideas. Provides input and participates in group settings.	Student uses a rich and varied vocabulary that includes appropriate scientific vocabulary that is used in an accurate manner. Writing displays a deep level of understanding of a concept.	Student's responses indicate a higher level of thinking by drawing connections between unit concepts and phenomena. Claims are supported with strong evidence and reasoning.	Student's entries display informative, in-depth responses that demonstrate an understanding of the content. Diagrams are detailed and labeled when applicable. Student draws strong conclusions.
3	Student remains engaged by participating, building on concepts, and testing ideas. Rarely asks questions but is cooperative in group settings.	Student uses a varied vocabulary that includes appropriate scientific vocabulary. Writing accurately describes a concept or experience.	Student's responses during investigations, conversations, and class discussions reflect growth of knowledge. Student understands concepts but may not be able to make strong connections. Claims are supported with evidence and reasoning.	Student's entries provide accurate and descriptive responses. Visual aids, such as data tables and diagrams, are included when applicable. Student draws a conclusion.
2	Student participates in investigations but does not appear to be building on concepts, asking questions, or providing input in a group setting.	Student's vocabulary is limited. Appropriate scientific vocabulary is used occasionally but may not be in the correct context. Writing describes an experience but may not be accurate or detailed.	Student's responses indicate knowledge of the material but do not demonstrate growth. Connections are not readily made, and misconceptions may be noted. Claims are supported, but sometimes evidence and reasoning have inaccuracies.	Student's entries lack accuracy. Student misses key ideas and struggles to form in-depth responses and conclusions. Visual aids are missing detail.

District Lens and Helpful Supports	Evidence from Ecosystem Diversity

12. Differentiated Instruction

- Cross-curricular Extensions (pg. 100)
- Teaching Tips (pg. 77)
- Differentiated Strategies (pg. 38)

Teaching Tip

This series of questions act as a pre-assessment for the next investigation in which students will design a model. Make sure students understand the process of pollination and seed dispersal before moving on.

Differentiation Strategy

Ask students who struggle to understand the basic needs of living things to think about how they might prepare to plant a garden or adopt a pet. Ask what things they would need to make sure the living thing can live and grow.

EXTENSIONS

Earth, Air, and Water Animals and People—The Art of Giuseppe Arcimboldo
Giuseppe Arcimboldo, an Italian 16th-century Renaissance painter, was known for painting human faces made up of fruits, vegetables, or animals. These "riddle paintings" were very popular at the time. In small groups at a computer or as a class using an interactive whiteboard, have students explore the artist's following paintings:

- Air
- Earth
- The Water

Be sure students note that the human profiles are created by compiling many different animals. Ask:

- Why do you think the painting has this title? *(Air consists of birds, Earth is made of land animals, and The Water is composed of water creatures.)*

13. Teacher Preparation and Support

- Background Information (pg. 91)
- Teacher Preparation for investigations (pg. 89)
- Teacher Answer Keys (pg. 71) Investigation Sheet 2B.1: Teacher's Version)
- Teaching Tips (pg. 42)

TEACHER PREPARATION

Investigation A

1. Make a copy of Student Investigation Sheet 4A: *Which Habitat Do Pill Bugs Prefer?* for each student.

2. Have available the Habitat Card Set and the student-generated chart for each card from Lesson 1.

3. Prepare a two-column chart titled "Characteristics of Habitats." In the left column, list the seven habitats from the Habitat Card Set. Leave the right column blank.

4. Each group of four students will need one choice chamber. Have these available from the kit.

5. Upon receipt of the pill bugs, open the shipping container to check their condition. You can keep the pill bugs in the shipping container until students need them. Have a spray bottle of water on hand to mist the paper towel inside the shipping container. For information about caring for and disposing of the pill bugs, refer to Appendix D of this Teacher's Guide.

BACKGROUND INFORMATION

This lesson introduces students to the huge amount of diversity within habitats, which includes both living and nonliving things. Students consider the interactions that occur within a habitat to help living things survive.

By this point in the unit, students recognize that all living things need air, water, shelter, and food. However, each type of habitat provides different types of resources to meet these needs. In this lesson, students will analyze each habitat and consider the availability of resources. Moreover, students will be challenged to think about how living things live interdependently within their habitat.

Pill bugs will serve as a model organism in this lesson. Pill bugs are terrestrial isopods that are commonly known as roly polys due to their ability to roll into a ball when in danger. They have an armored body and

Teaching Tip

The radish plants need three or four days to germinate, or sprout. As you wait for the plants to grow, move on to Lesson 2, in which students will further investigates plants. During this time, maintain the control plant and allow students to tend to their plants during class as needed. Resume this investigation when the control plant has sprouted stems and leaves. Not all pairs' seeds will develop into plants.

Student Investigation Sheet 2B.1: Teacher's Version

Do Different Plants Have Different Habitats?

A. Observing Different Plants

Students' responses will vary depending on the specific variety of each plant type you receive. The varieties shipped depend on availability. Below are general characteristics for each type of plant you will have available.

Tropical plants: Tropical foliage plants have big, greenleaves. They seldom, if ever, flower. If they do flower, the flowers are inconspicuous. Their foliage is the main attraction.

Succulent plants: Cacti have thick, green stems and no leaves. They are partly or completely covered with sharp, protective spines. Succulents have fleshy leaves and stems, lack spines, and occur widely around the world. Ceratophyllum: *Ceratophyllum* is a freshwater aquatic plant that has a rough texture and stem tips with crowded whorls of leaves. It grows completely submerged but at the surface of the water. It has no roots.

Elodea canadensis: *Elodea* is a freshwater aquatic plant. It contains many small, green leaves along its long stems. It starts as a seed that roots in the mud at the bottom of a pond or river. *Elodea* grows and spreads quickly.

Zebrina: Zebrina is a flowering plant, and students will probably characterize it as having "normal" plant leaves.

Ryegrass: Students will likely recognize this as a typical lawn grass. Ryegrass has fibrous roots.

B. Analyzing One Plant

Students' drawings and answers will vary based on the number you assigned to each plant.

C. What We Learned About Where Plants Live

Students' responses will vary according to the specific varieties that were shipped (based on availability). Following are general characteristics for each type of plant you may have available.

Tropical plants: Students should recognize that these plants would likely grow in the tropical rain forest.

Succulent plants: Cacti and succulents are adapted to arid environments. Cacti are native to the Western Hemisphere. Due to their adaptations, cacti and succulents require little water but need a lot of sunlight. Students should recognize that cacti and succulents will likely grow in the desert.

Ceratophyllum: *Ceratophyllum* is a freshwater aquatic plant that is found in ponds, marshes, and gentle streams intropical or temperate regions. It grows in water but will float on the surface rather than anchor to the ground. It has no roots. Because it floats on the surface, it offers good protection for freshwater animals. Students may suggest oceans. While they are aquatic, explain that these are freshwater organisms. Wetlands and woodlandponds are likely habitats for these plants.

Summary of Evidence for *Ecosystem DIversity*

How does a phenomenon/problem organize the learning?

The unit begins with a class discussion of an **Anchoring Phenomenon** and a viewing of a Phenomena Video to generate student-driven questions about the unit's central phenomena. Each lesson kicks off with an **Investigative Phenomenon**, sparking student questions that can be explored through that lesson's investigations, which put phenomena directly into students' hands. Questions are provided for the teacher to help guide instruction, dispel misconceptions, and connect concepts to prior learning as students engage with the unit's the three dimensions through hands-on investigations, data gathering and analysis, notebooking, and discourse.

How are learning opportunities sequenced to enable students to make sense of the phenomena or problems?

The sequence is clearly presented in the **Evidence of Instructional Scaffolding** chart in the front of the Teacher's Guide. Performance Expectations were initially mapped out along with the Crosscutting Concepts, Science and Engineering Practices, and Disciplinary Core Ideas to ensure grade-level instruction of NGSS. Each lesson connects to the previous, creating a seamless, connected instructional path for students. Where appropriate, engineering and other science-discipline PEs are integrated to eliminate any "silos of science." Students experience science and engineering as an integrated whole.

What is the path of student thinking from their prior knowledge to the expected three-dimensional learning outcomes?

By starting with an **Anchoring Phenomenon** and a **Pre-Assessment** lesson to tap into students' prior knowledge, the teacher is able to evaluate what understandings students bring to the sequence of learning for the new unit. Teacher questioning strategies are built into each investigation to tie to the unit's three dimensions, clarify any misconceptions, and help students make meaning out of what they discover in the investigations.

How do students show/demonstrate their three-dimensional understanding of the phenomenon?

- **Pre-Unit Assessment and Post-Unit Assessment Opportunities:** The pre-unit assessment asks students to draw upon previous knowledge, allowing teachers to gauge their levels of understanding. The post-unit assessment touches upon the topics and concepts from the entire unit and evaluates students' learning. Students are asked to compare the pre-unit assessment and post-unit assessment activities to evaluate growth.
- **Formative Assessment Strategies:** At the end of each lesson, specific strategies are listed for each investigation. These include ways to utilize Student Investigation Sheets and Tell Me More prompts as assessment tools. In lower grades, an Assessment Observation Sheet lists what to look for as you work with small groups of students.
- **Literacy and Digital Components:** These resources can be assigned to differentiate assignments and to assess student progress as needed.
- **General Rubric: Appendix A** includes a rubric that provides an expected progression of skills and understanding of science content. These guidelines can be used to assess students throughout the course of the unit.
- **Summative Assessment:** This unit-specific, cumulative assessment allows students to demonstrate their understanding of content presented by responding to questions in a variety of formats. Each question is aligned to performance expectations and provides insight on students' understanding of the concepts addressed. An answer key is provided, as well as a chart that indicates the performance expectation addressed by each question and lessons to revisit if remediation is required.
- **Digital Scenario-based Assessment:** This digital assessment resource supplies phenomena-driven questions that apply the unit's learning to new, authentic situations. It provides an alternative form of summative assessment that can be administered and corrected by the computer. Scores are sent to a report for the teacher.

Evidence of Instructional Scaffolding

Scaffolding is a crucial yet natural element in all classrooms. Building Blocks of Science strives to simplify this instructional strategy by integrating this guided process into each unit, systematically building upon student knowledge, using hands-on learning to reinforce concepts, and employing student-driven inquiry. These strategies introduce new concepts and, with practice and review, lead students toward mastery. It is important to integrate scaffolding not only throughout the unit but also throughout each lesson. As students demonstrate understanding of a concept, they should be encouraged to take a leadership role in class or to attempt assignments independently. Additionally, scaffolding reveals opportunities for differentiation. Below-level learners require more reinforcement as they learn new skills, so the process toward mastery will need to be adjusted. Above-level learners do not need as much support and achieve mastery more quickly; therefore, these students can be assigned more independent study.

	Lesson 1 ▸	Lesson 2 ▸
OBJECTIVES	■ Identify the relationship between nonliving and living things. ■ Describe the needs of living things and how they rely on their habitat to meet their needs. ■ Distinguish habitats by their characteristics. ■ Plan an investigation using radish seeds to determine the needs of plants.	■ Describe the life cycle of plants. ■ Examine the relationship between plants and animals. ■ Analyze different plants to identify their habitats.
SCAFFOLDING	Students should know: ■ Habitats are composed of living and nonliving things. ■ All living things have the same foundational needs: food, water, shelter, and air. ■ Living and nonliving things interact with one another. ■ There are different types of habitats, and each includes unique plants and animals. ■ Each habitat has different resources. ■ Seeds need sunlight and water to grow into plants.	Students should know: ■ Plants have a life cycle which begins when a seed germinates. The cycle continues as the seed grows into a mature plant, at which point it can be pollinated and develop seeds that can create more plants. ■ Plants need to be pollinated to form seeds. ■ The seeds of a plant need to be dispersed so new plants can grow. ■ Each type of habitat has its own unique plants, which have characteristics that allow them to survive, grow, and reproduce.

	Lesson 3 ▸	Lesson 4 ▸	Lesson 5
OBJECTIVES	■ Explain the interdependence between plants and animals. ■ Design and build a model to simulate pollination or seed dispersal. ■ Make connections between a habitat and challenges related to pollinating or dispersing seeds.	■ Identify the characteristics of different habitats to define the term "diversity." ■ Design two model habitats to determine the preferences of a pill bug. ■ Communicate results to draw conclusions about the preferred habitat of a pill bug.	■ Explain human impact on the distribution of resources in a habitat. ■ Evaluate the effect of human actions on ecosystems. ■ Revisit the interdependence of living and nonliving things to evaluate what students have learned.
SCAFFOLDING	Students should know: ■ Plants and animals depend on one another. ■ Plants provide animals with food and shelter. ■ Animals can pollinate flowers and disperse seeds. ■ Some habitats are better suited for plant survival than others.	Students should know: ■ There is diversity among plants and animals in each type of habitat. ■ Animals have characteristics that help them to survive, grow, and reproduce in their habitat. ■ Animals have preferences for certain foods and types of shelters.	Students should know: ■ Humans are an important part of the habitat and can affect the habitat in positive and negative ways. ■ Humans change their behaviors to find resources and survive in different habitats. ■ The diverse living and nonliving things in a habitat depend on one another in a successful habitat.

Building Blocks OF SCIENCE™ | 3D

CAROLINA®
www.carolina.com

Learning Framework

Kindergarten	**Push, Pull, Go** *K-PS2-1; K-PS2-2; K-2-ETS1-1; K-2-ETS1-2*	**Living Things and Their Needs** *K-LS1-1; K-ESS2-2; K-ESS3-1; K-ESS3-3; K-2-ETS1-2*	**Weather and Sky** *K-PS1-1; K-PS3-1; K-PS3-2; K-ESS2-1; K-ESS3-2; K-2-ETS1-1; K-2-ETS1-2*
1st Grade	**Light and Sound Waves** *1-PS4-1; 1-PS4-2; 1-PS4-3; 1-PS4-4; K-2-ETS1-1; K-2-ETS1-2*	**Exploring Organisms** *1-LS1-1; 1-LS1-2; 1-LS3-1; K-2-ETS1-2*	**Sky Watchers** *1-ESS1-1; 1-ESS1-2*
2nd Grade	**Matter** *2-PS1-1; 2-PS1-2; 2-PS1-3; 2-PS1-4; K-2-ETS1-1; K-2-ETS1-2*	**Ecosystem Diversity** *2-LS2-1; 2-LS2-2; 2-LS4-1; K-2-ETS1-2; K-2-ETS1-3*	**Earth Materials** *2-PS1-1; 2-ESS1-1; 2-ESS2-1; 2-ESS2-2; 2-ESS2-3; K-2-ETS1-1; K-2-ETS1-2*
3rd Grade	**Forces and Interactions** *3-PS2-1; 3-PS2-2; 3-PS2-3; 3-PS2-4; 3-5-ETS1-1; 3-5 ETS1-2*	**Life in Ecosystems** *3-LS1-1; 3-LS2-1; 3-LS3-1; 3-LS3-2; 3-LS4-1; 3-LS4-2; 3-LS4-3; 3-LS4-4; 3-5-ETS1-2*	**Weather and Climate Patterns** *3-ESS2-1; 3-ESS2-2; 3-ESS2-3; 3-ESS3-1; 3-5-ETS1-2*
4th Grade	**Energy Works** *4-PS3-1; 4-PS3-2; 4-PS3-3; 4-PS3-4; 4-PS4-1; 4-PS4-3; 4-ESS3-1; 3-5 ETS1-2; 3-5-ETS1-3*	**Plant and Animal Structures** *4-LS1-1; 4-LS1-2; 4-PS4-2; 3-5-ETS1-2*	**Changing Earth** *4-ESS1-1; 4-ESS2-1; 4-ESS2-2; 4-ESS3-2; 3-5-ETS1-2*
5th Grade	**Structure and Properties of Matter** *5-PS1-1; 5-PS1-2; 5-PS1-3; 5-PS1-4; 3-5-ETS1-2*	**Matter and Energy in Ecosystems** *5-PS3-1; 5-LS1-1; 5-LS2-1; 5-ESS2-1; 5-ESS3-1; 3-5-ETS1-3*	**Earth and Space Systems** *5-PS2-1; 5-ESS1-1; 5-ESS1-2; 5-ESS2-1; 5-ESS2-2; 5-ESS3-1; 3-5-ETS1-2*

Have questions? Please join us at www.carolina.com/bbs or www.carolina.com/cascience, or contact us at cascience@carolina.com.

CCPBB19031801