

Unit Overview	
Content Area: Life Science	
Unit Title: Habitats	Unit: 3
Target Course/Grade Level: 2	Timeline: 31 days
<p>Unit Summary:</p> <p style="text-align: center;"><i>Why do we see different living things in different habitats?</i></p> <p>In this unit of study, students develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students also compare the diversity of life in different habitats. The crosscutting concepts of <i>cause and effect</i> and <i>structure and function</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>planning and carrying out investigations</i> and <i>developing and using models</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p> <p>This unit is based on 2-LS4-1, 2-LS2-1, 2-LS2-2, and K-2-ETS1-1.</p>	
Learning Targets	
NJSLS-Science	
2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.
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.
K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool
Disciplinary Core Ideas	
<p>LS4.D: Biodiversity and Humans</p> <ul style="list-style-type: none"> There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1) <p>LS2.A: Interdependent Relationships in Ecosystems</p>	

- Plants depend on water and light to grow. (2-LS2-1)
- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (*secondary to 2-LS2-2*)

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)
- Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

Science and Engineering Practices

Planning and Carrying Out Investigations

- Plan and conduct investigations collaboratively to produce evidence to answer a question. (1-PS4-1),(2-LS2-1)
- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (2-LS4-1)

Developing and Using Models

- Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)

Asking Questions and Defining Problems

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

NJSLS Connections

Primary Interdisciplinary Connections:

English Language Arts/Literacy:

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). (2-LS2-1) **W.2.7**

Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1),(K-2-ETS1-1) **W.2.8**

Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-LS2-2) **SL.2.5**

With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) **W.2.6**

Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) **RI.2.1**

Mathematics:

Reason abstractly and quantitatively. (2-LS2-1),(K-2-ETS1-1) **MP.2**

Model with mathematics. (2-LS2-1),(2-LS2-2),(K-2-ETS1-1) **MP.4**

Use appropriate tools strategically. (2-LS2-1),(K-2-ETS1-1) **MP.5**

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-LS2-2) **2.MD.D.10**

Unit Essential Questions

1. How does the diversity of plants and animals compare among different habitats?
2. What do plants need to live and grow?
3. Why do some plants rely on animals for reproduction?

Unit Understandings

- People look for patterns and order when making observations about the world.
- There are many different kinds of living things in any area, and they exist in different places on land and in water.
- Events have causes that generate observable patterns.
- Plants depend on water and light to grow.
- The shape and stability of structures of natural and designed objects are related to their function.
- Plants depend on animals for pollination or to move their seeds around.
- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people.

Unit Learning Targets (Outcomes) – Formative Assessment

Students who understand the concepts are able to ...

- Look for patterns and order when making observations about the world.
- Make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Make observations of plants and animals to compare the diversity of life in different habitats.
- Observe patterns in events generated by cause-and-effect relationships.
- Plan and conduct an investigation collaboratively to produce data to serve as a basis for evidence to answer a question.
- Plan and conduct an investigation to determine whether plants need sunlight and water to grow.

<ul style="list-style-type: none">• Plan and conduct an investigation to determine whether plants need sunlight and water to grow.
<ul style="list-style-type: none">• Develop a simple model based on evidence to represent a proposed object or tool.
<ul style="list-style-type: none">• Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
<ul style="list-style-type: none">• 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.
Cross Cutting Concepts: Cause and Effect <ul style="list-style-type: none">• Events have causes that generate observable patterns. (2-LS2-1) Structure and Function <ul style="list-style-type: none">• The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2), (K-2-ETS1-2)
Integration of Technology: interactive whiteboard, videos
Technology Resources: http://www.sheppardsoftware.com/science.htm https://www.bbc.com/education/subjects/z6svr82 https://jr.brainpop.com/science/ https://switchzoo.com/teach_learn.htm http://www.harcourtschool.com/activity/food/food_menu.html
Opportunities for Differentiation: Differentiation and support tips, which includes suggestions for ELL, struggling students, and accelerated students, are available below the instructional practice section of each model lesson.
Teacher Notes:

Career Ready Practices: *In this unit the following career ready practices are addressed*

- CRP1: Act as a reasonable and contributing citizen and employee
- CRP2: Apply appropriate academic and technical skills
- CRP3: Attend to personal health and financial well-being
- CRP4: Communicate clearly and effectively and with reason
- CRP5: Consider the environmental, social and economic impacts of decisions
- CRP6: Demonstrate creativity and innovation
- CRP7: Employ valid and reliable research strategies
- CRP8: Utilize critical thinking to make sense of problems and persevere in solving them
- CRP9: Model integrity, ethical leadership and effective management
- CRP10: Plan education and career paths aligned to personal goals
- CRP11: Use technology to enhance productivity
- CRP12: Work productively in teams while using cultural global competence

Prior Learning- by the end of Grade 1, students understand that:

- A situation that people want to change or create can be approached as a problem to be solved through engineering.
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- Before beginning to design a solution, it is important to clearly understand the problem.
- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.
- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Evidence of Learning

Summative Assessment

What Plants Need to Survive

1. Students identify and explain the roles of each plant part in providing growth and life.
2. Students identify a plant's basic needs for growth and life.
3. Students compare people's basic needs to those of plants.
4. Students participate in the investigation of plant needs.

Habitats and Ecosystems

1. Students describe main features of all ecosystems.
2. Students match plants and animals to specific ecosystems.

Adaptations

1. Students give examples of external structures used for eating, protection, and defense.
2. Students differentiate between physical and behavioral adaptations.

Food Chains

1. Students describe roles and gives examples of producers, herbivores, carnivores, omnivores, and decomposers.
2. Students construct and explain a food chain.

Changing Habitats

1. Students construct and explain how a food web shows interdependency between plants and animals.
2. Students give cause and effect examples of natural changes in habitats.
3. Students give cause and effect examples of human impact on habitats.

Equipment needed: Whiteboard, laptops, and hands-on materials for lessons

Teacher Instructional Resources (Hyperlinks):

[Do Plants Need Sunlight?](#) Students will explore the importance sunlight for a plant's survival by conducting an investigation. Each group of students will cover parts of plants' leaves with black construction paper and make observations of the plant's leaves over several days. This lesson serves to model the process of investigation. The investigation will take 7 days to complete. Then students can remove the black paper, place the plants back in the sunlight, and view the leaves in a second investigation.

[Who Needs What?](#) Students identify the physical needs of animals. Through classroom discussion, students speculate on the needs of plants. With teacher guidance, students then design an experiment that can take place in the classroom to test whether or not plants need light and water in order to grow.

Students conduct the associated activity in which sunflower seeds are planted in plastic cups, and once germinated, are exposed to different conditions. In the classroom setting, students test for the effects of light versus darkness, and watered versus non-watered conditions. During exposure of the plants to these different conditions, students measure growth of the seedlings every few days using non-standard measurement. After a few weeks, students compare the growth of plants exposed to the different conditions, and make pictorial bar graphs that demonstrate these comparisons.

[I Scream, You Scream, We All Scream for Vanilla Ice Cream!](#) In this lesson students design a vanilla plant pollinator. This is an end-of-the-unit task, taking about 3 days to complete. The students will view an amazing video that tells about the problems with pollinating vanilla by hand. The students pretend to be employees of Ben and Jerry's ice cream company and help to plan and design a pollinator for the vanilla plant so that the great vanilla flavored ice cream can continue to be produced. (This is the first of several lessons created by Jeri Faber on plant pollination at: betterlessons.com/)

[Building and Testing Our Vanilla Plant Pollinator:](#) In previous lessons designed by Jeri Faber, students have learned about how animals help pollinate flowers. The students have also planned and designed their own vanilla plant pollinator. In this lesson, students use the engineering design process to build and test the plant pollinator they planned the day before in class.

[Two Scoops Are Better Than One:](#) This lesson is the second day of an end of the unit task to address the Performance Expectation: Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. This end of unit task is expected to take 3-4 days to complete. In the previous lesson

(<http://betterlesson.com/lesson/628130/i-scream-you-scream-we-all-scream-for-vanilla-ice-cream>), the students were challenged to brainstorm their version of a vanilla flower pollinator. For this lesson, students work with a partner to choose and develop their engineering plans by drawing a diagram for a vanilla plant pollinator. They also create a list of materials needed for the task.

[Improving Our Vanilla Bean Pollinators:](#) This lesson is part of a series of lessons created by Jeri Faber on using the engineering design process to solve a problem. In the Ice Scream, You Scream We All Scream for Vanilla Ice Cream, the students were challenged to design a vanilla flower plant pollinator. For day 2, Two Scoops Are Better Than One, students worked with a partner to determine which design to build for their vanilla plant pollinator. For day 3, Building and Testing Our Vanilla Pollinators, the students constructed and tested the effectiveness of their pollinators based on the design plans. In this lesson, students improve their plant pollinator models and retest the pollinator's effectiveness.

[The Bug Chicks-Mission: Pollination \(Episode 5\):](#) The Bug Chicks' five minute video provides a fun, animated way of learning about the fascinating world of pollination and insects. In this video, the students observe interesting museums and habitats to look at lesser known insect pollinators. The student challenge at the end leads students into their environment to look for other pollinators and encourages them to bring their observations back to the classroom to discuss.

Modifications for ELL's, Special Education, 504, and Gifted and Talented Students:

(Note: Teachers identify the modifications that they will use in the unit. See NGSS Appendix D: [All Standards, All Students/Case Studies](#) for vignettes and explanations of the modifications.)

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).

- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Collaborate with after-school programs or clubs to extend learning opportunities.
- Restructure lesson using UDL principles
(http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA)

<u>ACTIVITIES</u>	<u>MATERIALS</u>
Grade 2 Life Science	
Unit: Ecosystems Concept: Living things interact with and depend on their environments	
<u>1.1 Plant Munchies-What Plants Need to Survive</u>	
<u>Session 1: (Approx. 1 day):</u> Lesson Question: What does a plant need to survive?	Student Activity Sheet 1 <i>Terence the Space Tomato</i> book
<u>Session 2: (Approx. 1 day):</u> Lesson Question: What are the parts of a plant, and what does each part do?	Student Activity Sheet 2
<u>Session 3: (Approx. 1 day):</u> Lesson Question: What happens if plants' basic needs are not met?	Student Activity Sheet 3 Plant Needs Kit Measuring spoons Cotton balls Plant Observation Journal for each student Water
<u>Session 4: (Approx. 1 day):</u>	Plant Observation Journal

<p>Lesson Question: What happened to plants whose basic needs were not met?</p>	<p>Plants from investigation</p>
<p><u>1.2 Habitat, Sweet Habitat</u></p>	
<p><u>Session 1: (Approx. 1 day):</u> Lesson Question: What is a habitat?</p>	<p>Student Activity Sheet 1 Student Activity Sheet 2 Student Activity Sheet 3(optional)</p>
<p><u>Session 2: (Approx. 1 day):</u> Lesson Question: What are the similarities and differences between woodland and rainforest ecosystems?</p> <p>Students learn about two ecosystems-woodland and rainforest-then look for similarities and differences. It is helpful to display the Student Activity Sheet PDF on the whiteboard so the students do not have to keep flipping their paper over to look for the answers.</p>	<p>Student Activity Sheet 4</p>
<p><u>Session 3: (Approx. 1 day):</u> Lesson Question: What are the similarities and differences between desert and tundra ecosystems?</p> <p>Students learn about two ecosystems-desert and tundra-then look for similarities and differences. It is helpful to display the Student Activity Sheet PDF on the whiteboard so the students do not have to keep flipping their paper over to look for the answers.</p>	<p>Student Activity Sheet 5</p>
<p><u>Session 4: (Approx. 1 day):</u> Lesson Question: What are the similarities and differences between ocean and freshwater ecosystems?</p> <p>Students compare two ecosystems-ocean and freshwater-then look for similarities and differences. It is helpful to display the Student Activity Sheet PDF on the whiteboard so the students do not have to keep flipping their paper over to look for the answers.</p>	<p>Student Activity Sheet 6</p>
<p><u>Session 1: (Approx. 1 day):</u> Lesson Question: How would YOU meet your basic needs in each of these ecosystems?</p>	<p>Student Activity Sheet 7 Backpack Outline</p>
<p><u>1.3 Adaptations and Interdependency</u></p>	

<p><u>Session 1: (Approx. 1-3 days):</u> Lesson Question: What are adaptations for eating?</p>	<p>Student Activity Sheet 1 Student Activity Sheet 2 Student Activity Sheet 3 Student Activity Sheet 4 Adaptation table Bird Beaks Kit Dino Munchies Kit</p>
<p><u>Session 2: (Approx. 1 day):</u> Lesson Question: How can body parts(structures) help protect an animal?</p>	<p>Student Activity Sheet 5 Student Activity Sheet 6 Adaptation table Camouflage Kit</p>
<p><u>Session 3: (Approx. 1 day):</u> Lesson Question: How can behaviors protect an animal?</p>	<p>Adaptation table Bandanas</p>
<p><u>Session 4: (Approx. 1 day):</u> Lesson Question: How can plants and animals help each other?</p>	<p>Student Activity Sheet 7 Student Activity Sheet 8</p>
<p><u>Session 5 and 6: (Approx. 2-3 days):</u> Lesson Question: How do adaptations help a living thing in its own habitat?</p>	<p>Student Activity Sheet 9 Cactus Packaging Kit Student Activity Sheet 10 Like Water on a Duck Kit Construction paper, cut into strips Student Activity Sheet 11 Built-In Insulation Kit 2 thermometers Paper towel roll Freezer Student Activity Sheet 12 Bird Beaks Kit Cotton balls Adaptation table</p>
<p><u>Session 7: (Approx. 1 day):</u> Lesson Question: Can we match living things to their specific ecosystems?</p>	<p>Student Activity Sheet 13 Student Activity Sheet 14</p>
<p><u>1.4 Eat or Be Eaten-Food Chains</u></p>	

<p><u>Session 1: (Approx. 1 day):</u> Lesson Question: How am I part of a food chain?</p>	Student Activity Sheet 1
<p><u>Session 2: (Approx. 1 day):</u> Lesson Question: What's the difference between predator and prey?</p>	Student Activity Sheet 2 Student Activity Sheet 3 Bandanas(optional)
<p><u>Session 3: (Approx. 1 day):</u> Lesson Question: What is a herbivore, carnivore, omnivore, or decomposer?</p>	Student Activity Sheet 4
<p><u>Session 4: (Approx. 1 day):</u> Lesson Question: How can I show relationships in a food chain?</p>	Student Activity Sheet 5 Student Activity Sheet 6
<p><u>Session 5: (Approx. 1 day):</u> Lesson Question: What happens when food chains and food webs change?</p>	Student Activity Sheet 7 Student Activity Sheet 8 9" x 12" piece of construction paper for each student
<p><u>1.5 Habitats Change</u></p>	
<p><u>Session 1: (Approx. 1 day):</u> Lesson Question: What is a food web?</p>	Student Activity Sheet 1 Student Activity Sheet 2 Habitat Changes Kit Student Activity Sheet 3 Scissors
<p><u>Session 2: (Approx. 1 day):</u> Lesson Question: What are some ways a habitat can change naturally?</p>	Student Activity Sheet 3 Student Activity Sheet 4 Habitat Changes Kit
<p><u>Session 3: (Approx. 1 day):</u> Lesson Question: How do humans and animals live together?</p>	Student Activity Sheet
<p><u>Session 4: (Approx. 1 day):</u> Lesson Question: What are helpful and harmful changes to a habitat or ecosystem?</p>	Student Activity Sheet
<p><u>Session 5: (Approx. 1 day):</u> Lesson Question: How do human decisions affect an ecosystem?</p>	Student Activity Sheet
<p><u>Session 6: (Approx. 1 day):</u> Lesson Question: How can we help care for habitats?</p>	Craft Supplies

