Unit 4 Ecosystems

Content Area: **Science**
Course(s): **Science K**
Time Period: **Marking Period 4**
Length: **MP 4**
Status: **Published**

Essential Questions

- What features help plants and animals survive in different environments?
- How do plants and animals depend on the land, air, and water to survive?
- How do plants and animals (including humans) change the environment to meet their needs?
- What are the basic needs of plants and animals?
- How do people affect the world around them?
- How can you help keep the Earth healthy?
- What can we do to reduce, reuse, and recycle our natural resources?

Big Ideas

In this unit, students use observations to understand the basic needs of plants, such as water and sunlight. They also observe young plants and the changes they undergo as they grow from seed to seedling. Students will use observations to understand the basic needs of animals. Students explore how animals need things to eat and a safe place to live, and also how animals can change their environments to meet those needs.

Cross-Curricular Integration

Integration Area: Language Arts

RI.K.1 With prompting and support, ask and answer questions about key details in a text (e.g., who, what, where, when, why, how).

RI.K.2 With prompting and support, identify the main topic and retell key details of a text.

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

Activities:

- Students will draw and write about an animal and its home.
- Students will draw and label what a plant needs to grow.

Climate Change

K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

- Activity: Students will be able to understand why animals change their environment to meet their needs and how changing their environment impacts their way of living through hibernation and migration.
- Activity: In this mini-lesson, students reason about why some animals hibernate and others do not. In the activity, Get Ready to Hibernate, students play a memory card game where they pretend to be bears searching for food. As they play the game, they consider how different foods might affect bears as they prepare for their winter hibernation.

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

- Activity: Students will be able to understand that plants need water, soil and sunlight to grow.
- Activity: Students will grow their own plants. Students will grow plants in small cups using soil. Students will water their plants as needed. Some plants will be placed out of the sunlight and not given water to show how plants cannot grow when they are not given the resources they need.

K-ESS3-3: Communicate solutions that will reduce the impact of climate change and humans on the land, water, air, and/or other living things in the local environment.

- Activity: Students will be able to understand that their choices make a difference in their environment and things that live there.
- Activity: In this Read-Along lesson, Sam wonders why his grandmother wants to keep an old log in her yard—until he begins to meet a few of her friends. The lesson includes a short exercise where students pretend to be lizards eating ants, and discover why old logs are helpful to animals. You can extend the lesson with the optional activity, Animal Visitors, where students learn what they could put in a yard or park to attract animals

CSDT Technology Integration

8.1.2.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.

8.1.2.E.1: Use digital tools and online resources to explore a problem or issue.

8.2.2.ETW.3: Describe or model the system used for recycling technology.

Activity- Students will learn how to recycle all different types of materials including technology.

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats

8.1.2.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information:

- Read grade-appropriate texts and/or use media to obtain scientific and/or technical information to determine patterns in and/or evidence about the natural and designed world(s).
- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question and/or supporting a scientific claim.
- Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.

Planning and Carrying Out Investigations:

- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
- Make predictions based on prior experiences.

Analyzing and Interpreting Data:

- Record information (observations, thoughts, and ideas).
- Use and share pictures, drawings, and/or writings of observations.
- Compare predictions (based on prior experiences) to what occurred (observable events).
- Asking Questions and Defining Problems:
    - Ask questions based on observations to find more information about the natural and/or designed world(s).

Developing and Using Models:

- Use a model to represent relationships in the natural world.

Engaging in Argument from Evidence:

- Construct an argument with evidence to support a claim.

Enduring Understandings

Next Generation Standards (Climate Change Standards)

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

K-ESS3-3: Communicate solutions that will reduce the impact of climate change and humans on the land, water, air, and/or other living things in the local environment.

Biogeology

K-ESS2.E Plants and animals can change their environment.

Natural Resources

K-ESS3.A 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.

Human Impacts on Earth Systems

K-ESS2.C Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

Developing Possible Solutions

K-ESS3.B 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.

Organization for Matter and Energy Flow In Organisms

K-LS1.C 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.

Student Learning Standards

Mathematics

K.MP.2 Reason abstractly and quantitatively.

K.MP.4 Model with mathematics.

K.C C Counting and Cardinality

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Focus Areas

Knowledge

- Plants are living things.
- Plants and animals can change their environment.
- All living things need food, water, air, and resources from land to survive, live and grow.
- Living things live in places that have the things they need to survive.
- Humans use natural resources from the environment.
- Plants, animals and their surroundings make a system, they work together to meet needs.
- Living things obtain their food from plants or other animals.
- Different kinds of food are needed by different types of animals.
- Humans can do things to minimize their negative impacts on the environment.
- There are specific things that people do to live comfortably that can affect the world around them.

Skills

- Differentiate between the needs of different animals and plants and the places they live.
- Recognize the basic needs of organisms.
- Describe patterns of what plants and animals (including humans) need to survive.
- Explain how plants and animals can change their environment to meet their needs.

- Diagram/explain what features animals and plants have to survive in different environments.
- Sketch/explain how humans use resources in different environments.
- Identify and practice activities humans can do to reduce their impact on land, water, air, and other living things.

- Identify and use water conservation practices.
- Explore and communicate solutions that will reduce the impact of humans in their local environment.

Understandings

- Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- Use observations to describe patterns of what plants and animals (including humans) need to survive.
- Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Resources

Primary Resources

- BrainPop, Jr.
- OpenSciEd
- Mystery Science

Core

- Mystery Science Plant and Animal Environment Read Along "Where Do Animals Live?"
- Environment Activity
- Mystery Science "How do Animals Make Homes in the Forest?"
- Mystery Science "How do Plants and Trees Grow?"
- Hibernation Activity
- Migration Activity
- Mystery Science - Camouflage Activities “Why are polar bears white?”
- Winter Survival “Warmth” Lab

- Animal needs: Eat Like an Animal "Why do Woodpeckers Peck Wood?"
- Parts of a Plant Activity
- Plant Needs Activity
- Plant Life Cycle Activity
- BrainPop, Jr. Parts of a Plant
- BrainPop, Jr. Plant Life Cycle

Supplemental

- Wetlands Activities
- Forest Activities
- Nature Walk Activity
- Food Chain, Activity
- Ecosystem Animals, Activity
- Desert Environment, Activities 25-28
- Compost Activity
- Recycling Activity
- Keeping Environment Clean Activity
- Plant a Tree Activity
- Cleaning Dirty Water Activity
- Human Impact Activity 1
- Earth’s Resources Activity 2
- Reduce, Reuse, Recycle Activities 5-7 and Lab 3
- Exploring Plants and Animals Activity
- Animals Babies Needs Activity