Plant and Animal Habitats

We're All in This Together

Science Grade 2

This unit will explore the habitats of plants and animals. A habitat is a place where an animal or plant lives that meets its need to survive. Students will learn that animals must have oxygen, food/water, and shelter. Students will learn that plants need carbon dioxide, sun, water, and food (minerals). Students will also observe adaptations that allow animals and plants to avoid predators. Finally, the students will learn how plants and animals rely on each other to survive and reproduce.

Please provide us some background information on the unit development. In order to help others who are interested in this topic understand a bit more about what you created, we will write a short introduction to each unit and provide some images, in addition to posting the completed units on the Cape Cod Regional STEM Network website (www.capecodstemnetwork.org). Please help us by answering the questions below after you have completed your unit.

1. Who helped to create this unit?

Names	School (Grade/course taught)
Michael Irving	3rd grade - North Falmouth Elementary School
Grace Simpkins	Marine Education Specialist, Woods Hole Sea Grant (WHOI)

2. What were some sources of inspiration for this unit?

Our main inspiration for this unit is the ongoing Covid-19 Global Pandemic. We felt it was important to create lessons for both in-class and remote learning. These lessons include hands-on and outddoor activities for students who may be working from home. This unit is also inspired by the diverse ecosystem on Cape Cod. Within 50 miles of Cape Cod, you can find most landforms or bodies of water that a 2nd grader will study. Each of these landforms and their geographical characteristics provide a unique habitat for plants and animals.

3. In your own words, what are you hoping students learn—big picture—through this unit?

The students will learn that there are very specific reasons why animals and plants live where they live. The students will be able to examine a plant or an animal and discuss the reasons why the animal or plant is able to survive in that habitat..

4. What might students find exciting in this unit?

The students will enjoy both the variety of animals and plants we will study as well as the hands-on activities in the unit.

5. What science standards or real-world content did you strive to emphasize?

Life Science Grade 2 - This unit will emphasize that all living things need the same basic components to survive.

6. How would you say that this unit "matters" to the STEM community? Or to our community on Cape Cod? Or to the larger community?

The very close relationship between animals and plants is critical to the survival of all species. We are all dependent upon each other to survive. Our fragile ecosystem on Cape Cod must be understood so that its inhabitants can survive and prosper. By learning this relationship at

an early age, students will make good decisions as they get older and learn more about human's fragile relationship with Earth's animals and plants.

7. What's the most important lesson you learned as you created this?

   Although all animals and plants are different, their basic needs are the same. Small changes in their habitats can have very big consequences.

8. Anything else you would like fellow teachers or others to know about this unit?

   This is a great unit for kids to get dirty and explore! Even if they live in an apartment in a city, there are still animals and plants that can be observed.

Table of Contents

Stage 1 Desired Results

MA STE Standards:

2-LS2-3(MA): Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live.

Clarification Statement:

• Animals need food, water, air, shelter, and favorable temperature; plants need sufficient light, water, minerals, favorable temperature, and animals or other mechanisms to disperse seeds.

Next Generation Science Standards:

2-LS2-2: Develop a single 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.

Ocean Literacy Principles:

5 - The ocean supports a great diversity of life and ecosystems.

• d. Ocean biology provides many unique examples of life cycles, adaptations, and important relationships among organisms (symbiosis, predator-prey dynamics, and energy transfer) that do not occur on land.

• e. The ocean provides a vast living space with diverse and unique ecosystems from the surface through the water column and down to, and below, the seafloor. Most of the living space on Earth is in the ocean.

ESSENTIAL QUESTIONS:

What does the word habitat mean?
What are the 4 basic components of a habitat?
What is a human's habitat?
Why do animals live where they live?
Why do plants grow where they grow?
What happens if there are changes in a plant or animal's habitat?

UNDERSTANDINGS:

Living things exist in different places both on land and in water.
Animals depend on food, water, shelter and temperature regulation to survive.
Animals depend on plants for food and shelter.
Animals use adaptations to gather, catch and eat food.
Plants rely on air, water, minerals, light and proper temperature to grow.
Plants depend on animals to pollinate and disperse seeds.

TRANSFER:

Use observation, data collection and reasoning to analyze habitats.
Use observations and evidence to engage in discussions

	Cross-Curricular Connections CCSS.ELA-LITERACY.RI.2.1 Ask and answer such questions as *who, what, where, when, why*, and *how* to demonstrate understanding of key details in a text. CCSS.ELA-LITERACY.RI.2.4 Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area.* *CCSS.ELA-LITERACY.RI.2.5* *Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.* *CCSS.ELA-LITERACY.RI.2.7* *Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.* CCSS.ELA-LITERACY.W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

Stage 2 Evidence

Formative Assessment Ideas:

Define the components of an animal and plant habitat

Daily teacher observations

Summative Assessment Ideas:

Projects

Hands-on activities

Teacher observations

Stage 3 Learning Plan

Summary of Key Learning Events and Instruction

Lesson 1 - **What is a Habitat?** The students will learn the 4 basic components of a habitat. All animals and plants need shelter, air (oxygen or carbon dioxide), food and proper temperature to survive on earth. An animal's habitat can be on

land or in water. Flowering plants are mostly found on land.

Lesson 2 - **What Do Animals Need to Survive?** Animals need oxygen, food, shelter and the ability to adapt to temperature changes to survive. Animals can live on land or in water. In this lesson, we will be exploring marine animals. Animals have adaptations to help them survive. Students will learn that small changes to a habitat can have a big impact.

Lesson 3 - What Do Plants Need to Survive? Plants need carbon dioxide, sun, food (minerals), water and the ability to adapt to temperature changes to survive. Without any of these components the plants may not survive. We will be exploring plants that live in and by the ocean.

Lesson 4 - Plants Can't Walk. For a plant to survive it must reproduce. Plants are dependent on animals and other factors in nature, such as wind and gravity to pollinate and disperse their seeds. Students will learn how plants get animals to pollinate and disperse their seeds.

Introductory Lesson	**Constructing Lesson**	**Practice Lesson**	**Assessment Lesson**
Lesson that introduces the content. More teacher directed	Lessons that engage students in building and linking together understanding. Guided/collaborative. Student/teacher or partners/small group	Lessons or activities that students can complete relatively independently	Formative: Check-ins along the way to see if students "get it" Summative: Students showing what they know, when you feel they are ready

Stage 3 Learning Plan

Summary of Key Learning Events and Instruction

Lesson Name	**Type** (Introductory, Constructing, Practice, and Assessment)	**Content Addressed**	**Standards Included (by number)**

1. What is a Habitat?	Introductory, Constructing, Practice	Habitat Human impact on the environment	2-LS2-3(MA)
2. What Do Animals Need to Survive?	Constructing, Practice	Animal habitats Animal adaptations Marine animals and their habitats The effects of changes to animal's habitats	2-LS2-3(MA)
3. What Do Plants Need to Survive?	Constructing, Practice	Plant habitats Plant adaptations Plants that grow near water	2-LS2-3(MA)
4. Plants Can't Walk	Constructing, Practice	Seed dispersal Pollination The relationship between animals and plants	2-LS2-3(MA)

Lesson 1: What is Habitat?

Overview of the Lesson: In this lesson, the students will learn that a habitat is the "home environment" for animals and plants. We will explore the basic components of a human's habitat. The students will examine their personal habitats here on Cape Cod. They will answer the question: How have recent events affected our human habitat?

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Time (minutes): (45-60 minutes)

Standard(s):

MA STE Standards: 2-LS2-3(MA**)**.

Next Generation Science Standards: 2-LS2-2 and 2-LS4-1

Ocean Literacy Principles: 5 - d, e

Essential Question(s):

- What are the 4 basic components to a human's habitat?

- Why is habitat important to a human?
- What causes habitats to change?
- What happens if habitats change?

Science Objectives:

- Students will learn the four basic components of a habitat.
- Students will determine the effects of a changing habitat.

Anticipated Student Preconceptions/Misconceptions (optional)

Instructional Materials/Resources/Tools:
SmartBoard/Chart paper
Computer/Internet
Before you start this Plant and Animal Habitat Unit, put together a Habitat Portfolio for each student. This is a great job for a volunteer. Take a large piece of card stock with Plant and Animal Habitat on the front. Include the following pages:
Master Unit Vocabulary List -
Human Habitat Worksheet
Marine Animals I've Seen
Plant Observation Sheet
Add 5-6 Observation Pages in the back of the portfolio.
Human Habitat Worksheet

Assessment:
The student will be able to name and define the 4 basic components that make up a human's habitat.
Students will complete the Human Habitat Worksheet.
Teacher observation

Instructional Tips/Strategies/Suggestions for Teacher: These lessons were developed to utilize the 39 NOAA Live! Recorded Webinar Videos. While certain video clips were pulled out to highlight concepts, you may want to look at the whole playlist on YouTube to see the additional resources available. If your class has a particular interest, you may find a more relevant webinar to highlight in the video section of the lesson. If your students are not familiar with using the scroll bar at the bottom of a YouTube video to move to a specific timestamp you may want to review or practice with them first.

Science and Engineering Practices included (put the included ones in bold):

1. **Asking questions (for science) and defining problems (for engineering)**
2. **Developing and using models**
3. **Planning and carrying out investigations**
4. **Analyzing and interpreting data**
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. **Obtaining, evaluating, and communicating information**

Notes about Science and Engineering Practices included: In this lesson the students will start by questioning peers about human habitats. The students will observe humans in the habitats and analyze the effects of a changing habitat. They will investigate the effects of habitat changes for humans.

Lesson Overview: The students will learn that a habitat is the "home environment" for animals and plants. We will explore the basic components of a human's habitat. The students will examine the personal habitats here on Cape Cod. They will answer the question: How have recent events affected our human habitat?
Time (minutes): (45-60 minutes)

IN CLASS	VIRTUAL ALTERNATIVE
Opening/Engagement: (10-15 minutes) 1. The teacher will write the word habitat on the SmartBoard or chart paper. The teacher will ask the students, "What does the word habitat mean?" Possible answers will include: where we live..., what animals eat…, plants need sun... Lead the questioning if the students don't come up with the 4 basic components of habitat, air, food,	**Independent Assignment: (10-15 minutes)** 1. Before the students meet with the teacher, have the students watch a grade appropriate video or two on Habitats: https://www.youtube.com/watch?v=ZrSWYE37MJs 2. On Google Classroom, have the students complete a short assignment

shelter and temperature adaptation. List the answers on the SmartBoard or chart paper. 2. As a group or in small groups, ask the students to discuss what a human's habitat is like. What do humans need to survive? 3. Watch the human habitat video: https://www.youtube.com/watch?v=ZrSWYE37MJs 4. Have the students return their attention to the teacher and create a list on the SmartBoard or chart paper from the student's questioning. Answers should include: humans need homes, clothing, air, water, food, etc. Prompt with the following questions as needed: How do humans make sure they get air? What do humans eat? What do humans use as shelter? What do humans do when the temperature changes?	related to the video. 1.Watch the human habitat video: 2. Complete assignment in Google Classroom: What are the 4 components of habitat for an animal? What are the 4 components of habitat for a plant? Think about where you might find an animal's habitat.
IN CLASS	VIRTUAL ALTERNATIVE
During the Lesson: (15-20 minutes) 1. Explain to the students that there are generally six different regions for human habitats. Write the numbers 1-6 on the SmartBoard or chart paper. Have the students guess the six different habitats. Provide leading questions if needed. They should come up with : near water or ocean, temperate forest, desert, arctic, rain forest and mountains. 2. Briefly discuss the difference between the six habitats. 3. How would you describe your habitat on Cape Cod? Have the students turn and talk to a neighbor. Have them answer the following questions: What is our environment like on Cape Cod? How does our environment affect our habitat? Is it hot or cold? Do we live near the mountains or an ocean? Do we hunt for our food and get water from a stream? 4. Project a physical map of Massachuestts: https://geology.com/topographic-physical-map/massachusetts.shtml 5. Come back as a group and discuss Cape Cod's habitat.	**Meet with the Teacher (Zoom): (15-20 minutes)** 1. The teacher will write the word habitat on your screen or chart paper. The teacher will ask the students, "What does the word habitat mean?" Possible answers will include: where we live..., what animals eat…, plants need sun... Lead the questioning if the students don't come up with the 4 basic components of habitat, air, food, shelter and temperature adaptation. List the answers on your screen or chart paper. 2. Have the students return their attention to the teacher and create a list on your screen or chart paper from the student's questioning. Answers should include: humans need homes, clothing, air, water, food, etc. Prompt with the following questions as needed: How do humans make sure they get air? What do humans eat? What do humans use as shelter? What do humans do when the temperature changes? 3. Explain to the students that there are generally six different regions for human habitats. Write the numbers 1-6 on your screen or chart paper. Have the students guess the six different habitats. Provide leading questions if needed. They should come up with : near water or

6. Display a map of the United States (physical or web). Show or have the students find Cape Cod on the map. Pick a city in another region (example: Anchorage, Alaska) and compare how the habitats are the same and how they may be different. 7. Complete Vocabulary Worksheet from Habitat Portfolio.	ocean, temperate forest, desert, arctic, rain forest and mountains. 4. Briefly discuss the difference between the six habitats. 5. How would you describe your habitat on Cape Cod? Have the students turn and talk to a neighbor. Have them answer the following questions: What is our environment like on Cape Cod? How does our environment affect our habitat? Is it hot or cold? Do we live near the mountains or an ocean? Do we hunt for our food and get water from a stream? 6. Project a physical map of Massachuestts: https://geology.com/topographic-physical-map/massachusetts.shtml 7. Come back as a group and discuss Cape Cod's habitat.
	VIRTUAL ACTIVITY **Activity: Using the blank Human Habitat Worksheet draw a picture of your habitat. Include the following: your shelter, how you get food and water, how you get air, and how you adapt to changes in temperature. What kinds of animals live around your home?**
IN CLASS	VIRTUAL ALTERNATIVE
Lesson Closing: (15 minutes) **Activity: Using the blank Human Habitat Worksheet draw a picture of your habitat. Include the following: your shelter, how you get food and water, how you get air, and how you adapt to changes in temperature. What kinds of animals live around your home?**	**Lesson Closing (Zoom): (10 minutes)** 1. Check in with the students. 2. Have them show their Human Habitat Worksheets.
	EXPLORE OUTDOORS: Observe someone else's habitat. Pick a neighbor or a relative and analyze their habitat. What is their shelter, food, temperature adaptation and any other adaptations?

Lesson 2: What Do Animals Need To Survive?

Overview of the Lesson: In this lesson, the students will focus on the habitats of animals. The second part of the lesson will focus on the difference between land and marine animals. We will discuss the difference between land and marine animals. The students will observe pictures of different animals. In their Habitat Portfolios, they will complete animal habitat worksheets.

Time (minutes): (45-60 minutes)

Standard(s):
MA STE Standards: 2-LS2-3(MA**)**.
Next Generation Science Standards: 2-LS2-2 and 2-LS4-1
Ocean Literacy Principles: 5 - d, e

Essential Question(s):

- What are the 4 basic components of an animal's habitat?
- What is an adaptation?
- How does the habitat of a land animal and a marine animal differ?
- What happens when an animal's habitat changes?

Science Objectives:

- Students will be able to name the 4 basic components of an animal's habitat.
- After observing a picture of an animal, students will be able to describe the basic characteristics of the animal.
- Students will be able to identify adaptations.

Language Objectives and/or Targeted Academic Language:

predator	prey	compare	contrast
marine	adaptations		

Anticipated Student Preconceptions/Misconceptions (optional)

Instructional Materials/Resources/Tools
SmartBoard/Chart paper
Computer/Internet
Habitat Portfolio
Master Vocabulary Worksheet
Coloring pages for land and marine animals (choose at least 4 of each)
Crayons

Assessment:
Completion of Animal Habitat worksheet
Teacher observation

Instructional Tips/Strategies/Suggestions for Teacher: These lessons were developed to utilize the 39 NOAA Live! Recorded Webinar Videos. While certain video clips were pulled out to highlight concepts, you may want to look at the whole playlist on YouTube to see the additional resources available. If your class has a particular interest, you may find a more relevant webinar to highlight in the video section of the lesson.

Science and Engineering Practices included (put the included ones in bold):

1. **Asking questions (for science) and defining problems (for engineering)**
2. **Developing and using models**
3. **Planning and carrying out investigations**
4. **Analyzing and interpreting data**
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. **Obtaining, evaluating, and communicating information**

Notes about Science and Engineering Practices included:

Lesson Overview:
In this lesson, the students will focus on the habitats of animals. The second part of the lesson will focus on the difference between land and marine animals. We will discuss the difference between land and marine animals. The students will observe pictures of different animals. In their Habitat Portfolios, they will complete animal habitat worksheets.

IN CLASS	VIRTUAL ALTERNATIVE
Opening/Engagement: (10-15 minutes) 1. Begin the lesson by projecting the picture of an animal on the SmartBoard (example: mouse). 2. Take out the Habitat Portfolios 3. On the vocabulary list, define the following vocabulary words: predator, prey, adaptation. 4. Ask the students: If we were talking about a mouse, what would you think about when we see the words predator, prey and adaptation? Write the answers on the SmartBoard.	**Independent Assignment: (10-15 minutes)** 1. Before the students meet with the teacher, have the students use an observation sheet in their Habitat Portfolios for the activity below. 2. Have the students select a webinar clip from the list below: NOAA Live! Webinar 13: Leaping for Atlantic Salmon - 11:21-15:15 NOAA Live! Webinar 15 - Swimming Upstream with River Herring - 14:14 - 18:29 NOAA Live! Webinar 23: Winged Ambassadors: Ocean Travelers - 10:15-16:05 NOAA Live! Webinar 26 - The Life of Hawaiian Bonefishes - 35:14-38 ** (Bonus or extra activity)Bonefish - Habitat and life cycle activity NOAA Live! Webinar 29 - The Amazing Story of the Horseshoe Crab - 15:37-18:50

	NOAA Live! Webinar 38 - The Wonderful World of Plankton: the Tiny Animals of the Sea - 41:39-45:05 3. Listen for facts about their animal of choice: interesting features, adaptations, predators, prey and other unique marine facts.
IN CLASS	VIRTUAL ALTERNATIVE
During the Lesson: (15-20 minutes) 1. Ask the question: What does the word marine mean? Possible answers may include: something to do with water like boats, fish and the ocean. 2. What does a marine habitat look like? How is it different from land? Think about the temperature, amount of light, access to oxygen, etc. 3. The teacher will ask the question: What are the differences between a land animal and a marine animal? Think about how different their habitats are and what different adaptations they might have because of that. Return to the group and on the SmartBoard or chart paper ask the students to help you complete the compare and contrast diagram between land animals and marine animals. 4. Have the students use the observation sheet in the Habitat Portfolios for the activity below. Listen for facts about their animal of choice: interesting features, adaptations, predators, prey and other unique marine facts. 5. Have the students select a webinar clip from the list below: NOAA Live! Webinar 13: Leaping for Atlantic Salmon - 11:21-15:15 NOAA Live! Webinar 15 - Swimming Upstream with River Herring - 14:14 - 18:29 NOAA Live! Webinar 23: Winged Ambassadors: Ocean Travelers - 10:15-16:05 NOAA Live! Webinar 26 - The Life of Hawaiian Bonefishes - 35:14-38 ** (Bonus or extra activity)Bonefish - Habitat and life cycle activity NOAA Live! Webinar 29 - The Amazing Story of the Horseshoe Crab - 15:37-18:50	**Meet with the Teacher (Zoom): (15-20 minutes)** 1. Begin the lesson by projecting the picture of an animal on your computer (example: mouse). 2. Take out the Habitat Portfolios 3. On the vocabulary list, define the following vocabulary words: predator, prey, adaptation. 4. Ask the students: If we were talking about a mouse, what would you think about when we see the words predator, prey and adaptation? Write the answers on your screen. 5. Ask the question: What does the word marine mean? Possible answers may include: something to do with water like boats, fish and the ocean. 6. Review the observation sheet from the Independent Assignment. Have the student share their interesting facts.

NOAA Live! Webinar 38 - The Wonderful World of Plankton: the Tiny Animals of the Sea - 41:39-45:05	
	VIRTUAL ACTIVITY **Activity: Marine Animals I Have Seen Worksheet - Ask the students to take a moment and think about living on Cape Cod. Ask the question: What marine animals do we see everyday, when you go to the beach, or when you go out on a boat? What marine animals have you seen? In their Habitat Portfolios, have them turn to the page labeled "Marine Animals I Have Seen". Using their memory and analyzing skills have them complete the "Marine Animals I Have Seen" Worksheet.**
IN CLASS	VIRTUAL ALTERNATIVE
Lesson Closing: (20 minutes) **Activity: Marine Animals I Have Seen Worksheet - Ask the students to take a moment and think about living on Cape Cod. Ask the question: What marine animals do we see everyday, when you go to the beach, or when you go out on a boat? What marine animals have you seen? In their Habitat Portfolios, have them turn to the page labeled "Marine Animals I Have Seen". Using their memory and analyzing skills have them complete the "Marine Animals I Have Seen" Worksheet.**	**Lesson Closing (Zoom): (10 minutes)** 1. Check in with the students. 2. Have the students show their Marine Animals I Have Seen Worksheet
	EXPLORE OUTDOORS: Find an animal's habitat in your yard, the park or another location. Draw a picture of their habitat and their surroundings. Be sure to include their shelter, food, adaptation to temperature and any other adaptations?

Lesson 3: What Do Plants Need To Survive?

Overview of the Lesson: In this lesson, the students will learn the components of a plant's habitat. Plants need carbon dioxide, water, food (minerals) and proper temperature to survive. Students will learn that plants get and make their food in different ways. Plants use the sun to make food using the process of photosynthesis and they get their nutrients and water from the ground using their roots.

Time (minutes): (45-60 minutes)

Standard(s):
MA STE Standards: 2-LS2-3(MA**)**.
Next Generation Science Standards: 2-LS2-2 and 2-LS4-1
Ocean Literacy Principles: 5-d, e

Essential Question(s):

- What are the 4 basic components a plant needs to survive?
- What are the essential elements that plants need to survive and reproduce?
- What are some plant adaptations?
- How do plants reproduce?

Science Objectives:

- Students will be able to name the 4 essential components of a habitat for a plant.
- Students will be able to describe plant adaptations that help them survive.
- Students will be able to explain that plants use seeds to reproduce.

Language Objectives and/or Targeted Academic Language:

roots	soil	minerals	nutrients
pollinate	photosynthesis		

Anticipated Student Preconceptions/Misconceptions (optional)

Instructional Materials/Resources/Tools:
SmartBoard/Chart paper
Computer/Internet
Habitat Portfolio
Plant diagram

Assessment:
Completion of the Plant Habitat Worksheet
Teacher observation

Instructional Tips/Strategies/Suggestions for Teacher: These lessons were developed to utilize the 39 NOAA Live! Recorded Webinar Videos. While certain video clips were pulled out to highlight concepts, you may want to look at the whole playlist on YouTube to see the additional resources available. If your class has a particular interest, you may find a more relevant webinar to highlight in the video section of the lesson.

Science and Engineering Practices included (put the included ones in bold):

1. **Asking questions (for science) and defining problems (for engineering)**
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4. **Analyzing and interpreting data**
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence

8. Obtaining, evaluating, and communicating information

Notes about Science and Engineering Practices included:

Lesson Overview: In this lesson, the students will learn the components of a plant's habitat. Plants need air (carbon dioxide), water, food (minerals) and proper temperature to survive. Students will learn that plants get and make their food in different ways. Plants use the sun to make food using the process of photosynthesis and they get their nutrients and water from the ground using their roots.

IN CLASS	VIRTUAL ALTERNATIVE
Opening/Engagement: (10-15 minutes) 1. In their Habitat Portfolio, have the student turn to the Vocabulary List. Define the words for this unit. 2. Using the SmartBoard or Chart Paper, discuss the 4 basic components a plant must have to survive. The teacher will lead the discussion about sun, water, food (minerals) and temperature regulation. 3. In a group or in small groups of 2 or 3. Ask the students to describe plants that they are familiar with and what they have observed about that plant. 4. Come back as a group and have the students share their answers.	**Independent Assignment: (10-15 minutes)** 1. Before the students meet with the teacher, have the students watch a grade appropriate video or two on Plant Habitats: https://www.youtube.com/watch?v=EReZoP0P0Ao 2. On Google Classroom, have the students complete a short assignment related to the video. How does a plant get food? How does a plant get water? How are plants able to survive in extreme weather conditions?
IN CLASS	VIRTUAL ALTERNATIVE
During the Lesson: 15-20 minutes 1. Watch the video on plant habitat: https://www.youtube.com/watch?v=EReZoP0P0Ao 2. Have the students share the important information from the video. 3. Project a picture of a plant on the SmartBoard (example: eel grass) 4. As a group or in small groups, discuss or have the students discuss what makes a healthy habitat for that plant? What do you observe in the picture that is giving the plant what it needs to survive?	**Meet with the Teacher (Zoom): (15-20 minutes)** 1. In their Habitat Portfolio, have the student turn to the Vocabulary List. Define the words for this unit. 2. On your screen or chart paper, discuss the 4 basic components a plant must have to survive. The teacher will lead the discussion about sun, water, food (minerals) and temperature regulation. 3. In the group, ask the students to describe plants that they are familiar with and what they have observed about that plant.

5. Make a list on the SmartBoard.	4. Have the students share their answers. 5. Have the students share the important information from the video. 6. Project a picture of a plant on the screen (example: eel grass) 7. Discuss or have the students discuss what makes a healthy habitat for that plant? What do you observe in the picture that is giving the plant what it needs to survive? 8. Make a list on the screen.
	VIRTUAL ACTIVITY **Activity: In your yard or neighborhood, observe a plant. In your Habitat Portfolio use your Plant Observation Worksheet , sketch a picture of the plant you observed. Using the word bank to label your plant. Color your picture.**
IN CLASS	VIRTUAL ALTERNATIVE
Lesson Closing: (10-15 minutes) **Activity: In your yard or neighborhood, observe a plant. In your Habitat Portfolio use your Plant Observation Worksheet , sketch a picture of the plant you observed. Using the word bank to label your plant. Color your picture.**	**Lesson Closing (Zoom): (10 minutes)** 1. Check in with students. 2. Have the students show their observations.
	EXPLORE OUTDOORS: Find two plants. One plant should be "happy and healthy". It will be blooming, standing straight, etc. One plant should be "struggling to survive". It may be browning, wilting, etc. Draw a picture and compare the two plants. Why is one plant "happy" and one plant "struggling"?

Lesson 4: Plants Can't Walk

Overview of the Lesson: In this lesson the students will learn how plants have adapted to find ways to reproduce without moving. They will learn the ways that plants use animals and other ways to pollinate and spread their seeds. Using colors and smells plants attract animals to do their work for them. Students will learn that the animals benefit from this relationship as well. They will also learn that it is not just animals that disperse the seed. Wind, water and gravity all help spread pollen and seeds.

Time (minutes): (45-60 minutes)

Standard(s):
MA STE Standards: 2-LS2-3(MA**)**.
Next Generation Science Standards: 2-LS2-2 and 2-LS4-1
Ocean Literacy Principles: 5 - d, i

Essential Question(s):

- Why do seeds need to be dispersed for the plant to reproduce?
- How do plants use animals to pollinate and spread their seeds?
- What other ways do plants use to spread pollen and seeds?

Science Objectives:

- Students will learn how plants attract animals using color and scents.
- Students will observe how a seed gets from one location to another.
- Students will analyze the design of plants and seeds as transportation devices (ex: maple "helicopters")

Language Objectives and/or Targeted Academic Language:

dispersal	waterborne	gravity	reproduce

Anticipated Student Preconceptions/Misconceptions (optional)

Instructional Materials/Resources/Tools:
SmartBoard/Chart paper
Computer/Internet
Habitat Portfolio

Assessment:
The students will complete an activity that represents how a plant disperses a seed.
Teacher observation

Instructional Tips/Strategies/Suggestions for Teacher: These lessons were developed to utilize the 39 NOAA Live! Recorded Webinar Videos. While certain video clips were pulled out to highlight concepts, you may want to look at the whole playlist on YouTube to see the additional resources available. If your class has a particular interest, you may find a more relevant webinar to highlight in the video section of the lesson.

Science and Engineering Practices included (put the included ones in bold):

1. **Asking questions (for science) and defining problems (for engineering)**
2. **Developing and using models**
3. **Planning and carrying out investigations**
4. **Analyzing and interpreting data**
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. **Obtaining, evaluating, and communicating information**

Notes about Science and Engineering Practices included:

Lesson Overview: In this lesson the students will learn how plants have adapted to find ways to reproduce without moving. They will learn the ways that plants use animals and other ways to pollinate and spread their seeds. Using colors and smells plants attract animals to do their work for them. Students will learn that the animals benefit from this relationship as well. They will also learn that it is not just animals that disperse the seed. Wind, water and gravity all help spread pollen and seeds.	
IN CLASS	VIRTUAL ALTERNATIVE
Opening/Engagement: (5-10 minutes) 1. Preview the vocabulary for this lesson in your Habitat Portfolio: disperse, waterborne, reproduce and gravity. 2. The teacher will write the word disperse on the SmartBoard or on chart paper. The teacher will lead a discussion on why seeds need to be dispersed by plants to survive. 3. Review the differences between pollination and seed dispersal. Pollen is required to form a seed and then the seed needs to be spread. Teacher note: Flowers are designed to attract pollinators (such as bees) so that the pollen (male gamete or sperm) can be spread. Pollen is the male gamete and needs to be carried to the egg. Pollination is necessary for the formation of seeds. Seeds are then the "babies".	**Independent Assignment: (10-15 minutes)** 1. Before the students meet with the teacher, have the students watch a grade appropriate video or two on Seed Dispersal: https://vimeo.com/218127343 2. On Google Classroom, have the students complete a short assignment related to the video. Why does a plant want to disperse its seed?
IN CLASS	VIRTUAL ALTERNATIVE
During the Lesson: (15-20 minutes) 1. Project a picture of a plant with a seed ready to disperse (example: oak tree, sunflower, maple tree, etc.) Ask the students if they can tell what is going to happen to that seed. Will it drop? Will it blow away? Etc. 2. Ask the students if they can think of 5 ways a plant can spread its seeds for successful growth (you may also want to discuss why a plant would not want new plants growing right next to them - hence	**Meet with the Teacher (Zoom): (15-20 minutes)** 1. Review the differences between pollination and seed dispersal. Pollen is required to form a seed and then the seed needs to be spread. Teacher note: Flowers are designed to attract pollinators (such as bees) so that the pollen (male gamete or sperm) can be spread. Pollen is the male gamete and needs to be carried to the egg. Pollination is necessary for the formation of seeds. Seeds are then the "babies". 2. Project a picture of a plant with a seed ready to disperse (example:

they need their seeds dispersed). Give them clues if they need them to come up with gravity, wind, ballistic, water, and animals. 3. Have the students come up with examples of the 5 seed dispersal methods. Write their answers on the SmartBoard. Answers may include: Gravity - maple tree helicopters and oak tree acorns Wind - dandelions and grass Ballistic - milkweed pods Water - coconuts Animals - squirrels 4. Watch the following video on seed dispersal https://vimeo.com/218127343	oak tree, sunflower, maple tree, etc.) Ask the students if they can tell what is going to happen to that seed. Will it drop? Will it blow away? Etc. 3. Ask the students if they can think of 5 ways a plant can spread its seeds for successful growth (you may also want to discuss why a plant would not want new plants growing right next to them - hence they need their seeds dispersed). Give them clues if they need them to come up with gravity, wind, ballistic, water, and animals. 4. Have the students come up with examples of the 5 seed dispersal methods. Write their answers on the SmartBoard. Answers may include: Gravity - maple tree helicopters and oak tree acorns Wind - dandelions and grass Ballistic - milkweed pods Water - coconuts Animals - squirrels
	VIRTUAL ACTIVITY **Activity: Exploding Seed Challenge -** http://www.outdoorbiology.com/files/resources/activities/SeedDispersal.pdf
IN CLASS	VIRTUAL ALTERNATIVE
Lesson Closing: (20 minutes) **Activity: Choose one of the following games to play with your class:** http://www.outdoorbiology.com/files/resources/activities/SeedDispersal.pdf **Seed Dispersal Seed-Go Game** **Seed Dispersal Action Cards** **Old Sock Drag** **Exploding Seed Challenge**	**Lesson Closing (Zoom): (10 minutes)** 1. Check in with students 2. Have them describe the activity they completed.

	EXPLORE OUTDOORS: Old Sock Drag - Students will turn the socks inside out and put them on over their shoes. Take the class outdoors to a grassy area. A dry, weedy area would work best. Students will drag their socked feet through the grass to collect seeds. Before returning to the classroom students will take off the socks and turn them so the seeds are inside. Students will carefully turn the socks right side out and place socks in a place where they can dry. Students will carefully remove the seeds from the socks and sort them. Discuss how each kind of seed is scattered to a new place

Information to Support Teaching Learning - Dive Deeper

What additional resources can support teachers in developing background understanding of content or ideas in this unit?

Woods Hole SeaGrant: https://seagrant.whoi.edu/suggested-educational-resources-for-use-during-school-closures/webinars-noaa-live/

Complete List of NOAA Live! Webinars: https://www.youtube.com/playlist?list=PL1CGd4Scv4GICVRODGA8RRvzocNN1lL8H

Epic Books - https://www.getepic.com/

If you use the NOAA Live! webinars and curriculum in your class you are encouraged to contact Grace Simpkins at Woods Hole Sea Grant to receive free NOAA Live! iron-on patches for each of the students in your classroom. Please e-mail Grace at gsimpkins@whoi.edu

List of Unit Resources (in lesson sequence)

What additional resources can support the teaching and learning of this unit? What resources can support the teacher in implementing the unit?

Habitat Portfolio Contents:

Page 1 - Master Unit Vocabulary List

Page 2 - Human Habitat Worksheet

Page 3 - Marine Animals I've Seen

Page 4 - Plant Observation WorkSheet

Page 5 - Observation Sheets

Lesson 1:

Habitat Portfolio

Master Unit Vocabulary List - https://docs.google.com/document/d/1x7qMd7_K_3SRCJtNqVdb-c4AH3KOMDgdYDy91EtLG6c/edit?usp=sharing

Human Habitat Worksheet - https://docs.google.com/document/d/1r46EegNKlz58qFp7oM5yVg0_mAJivf6L4ZQQbPKDLpo/edit?usp=sharing

Physical map of Massachuestts - https://geology.com/topographic-physical-map/massachusetts.shtml

Habitat Video - https://www.youtube.com/watch?v=ZrSWYE37MJs

Lesson 2:

Habitat Portfolio

Master Unit Vocabulary List - https://docs.google.com/document/d/1x7qMd7_K_3SRCJtNqVdb-c4AH3KOMDgdYDy91EtLG6c/edit?usp=sharing

Blank Venn Diagram - http://www.readwritethink.org/files/resources/lesson_images/lesson378/venn.pdf

NOAA Live! Webinar 13: Leaping for Atlantic Salmon - 11:21-15:15
NOAA Live! Webinar 15 - Swimming Upstream with River Herring - 14:14 - 18:29
NOAA Live! Webinar 23: Winged Ambassadors: Ocean Travelers - 10:15-16:05
NOAA Live! Webinar 26 - The Life of Hawaiian Bonefishes - 35:14-38
NOAA Live! Webinar 29 - The Amazing Story of the Horseshoe Crab - 15:37-18:50
NOAA Live! Webinar 38 - The Wonderful World of Plankton: the Tiny Animals of the Sea - 41:39-45:05

Habitat Video - https://www.youtube.com/watch?v=ZrSWYE37MJs

Lesson 3:

Habitat Portfolio

Master Unit Vocabulary List - https://docs.google.com/document/d/1x7qMd7_K_3SRCJtNqVdb-c4AH3KOMDgdYDy91EtLG6c/edit?usp=sharing

Cartoon for Kids‼ What is plant's habitat? Science for Children, Plant Habitat Video - **https://www.youtube.com/watch?v=EReZoP0P0Ao**

Plant Observation Worksheet -https://docs.google.com/document/d/1kbkM9DGNheU2g91RDIABNloprwvHTLHg4-pcqhyNXu4/edit?usp=sharing

Lesson 4:

Master Unit Vocabulary List - https://docs.google.com/document/d/1x7qMd7_K_3SRCJtNqVdb-c4AH3KOMDgdYDy91EtLG6c/edit?usp=sharing

Sunflower - https://harvesttotable.com/wp-content/uploads/2007/08/bigstock-Close-up-Sunflower-With-Seeds-345008035-1-1024x683.jpg
Maple Tree - http://www.noticenature.ie/files/scots%20pine.jpeg
Gravity - maple tree helicopters and oak tree acorns

Wind - dandelions and grass
Ballistic - milkweed pods
Water - coconuts
Animals - squirrels

Seed dispersal - https://vimeo.com/218127343

Build an Exploding Seed Pod - https://aroundthekampfire.com/2019/02/seed-dispersal-activity-build-exploding-seed-pod-for-kids.html#:~:text=How%20do%20plants%20disperse%20their,away%20from%20the%20parent%20plant.

The Old Sock Drag - http://www.outdoorbiology.com/files/resources/activities/SeedDispersal.pdf

Curriculum Embedded Performance Assessment (CEPA; if applicable)

Detail the performance assessment and include any rubrics or resources