San Diego Zoo
Wildlife Explorers

HABITAT HEROES

Teacher Resources & Activities

Second Grade

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These materials are made possible by the Vassiliadis Family Foundation

CURRICULUM GUIDE

Our world is made up of many different habitats, or places where a plant or animal makes its home. Some are cold year-round while others are hot, some are rainy while others are dry, and some change throughout the year. Thanks to all of these diverse habitats, we see diversity in the plants and animals that live in them, too! Throughout the activities in Habitat Heroes, you and your students will become scientists and discover the variety of plants and animals from habitats here in San Diego and around the world. In becoming scientists, students are challenged to make observations, discover patterns, and compare the wildlife across habitats. These lessons strive to empower students to become allies for wildlife and take action to protect the species and habitats right in their backyards.

The materials contained in this packet have been specifically designed for second-grade students participating in our Habitat Heroes program, which is a grant-funded program available to all second-grade classes in San Diego County. This curriculum was created to prepare students for their program and to reinforce key concepts when you return to the classroom, but can also be used in any second grade classroom to support the standards referenced on this page.

NEXT GENERATION SCIENCE STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS

Activities in Habitat Heroes correlate with the following Performance Expectations:

- **2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.
    - **Clarification Statement:** Emphasis is on the diversity of living things in each of a variety of different habitats.
    - **Assessment Boundary:** Assessment does not include specific animal and plant names in specific habitats.

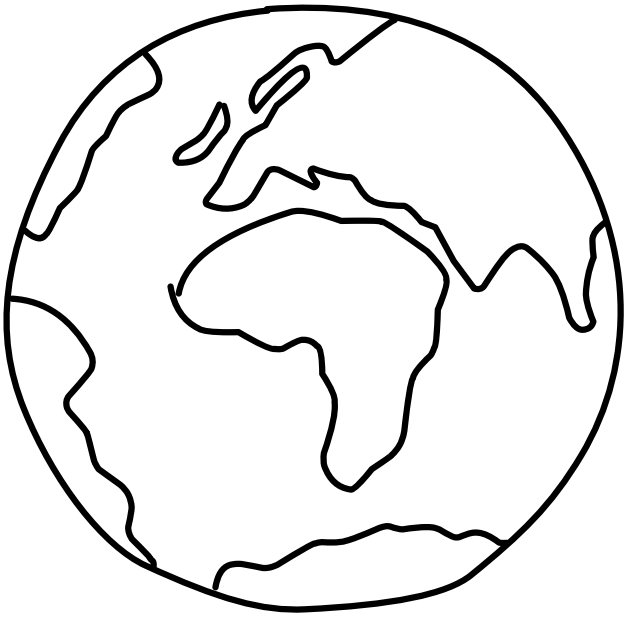
COMMON CORE STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS

To build a foundation for college and career readiness, students need to learn to use writing as a way of offering and supporting opinions, demonstrating understanding of the subjects they are studying, and conveying real and imagined experiences and events.

- **ELA/Literacy W.2.7:** 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).
- **ELA/Literacy W.2.8**: Recall information from experiences or gather information from provided sources to answer a question.
- **Mathematics MP.2**: Reason abstractly and quantitatively.
- **Mathematics MP.4**: Model with mathematics.
- **Mathematics 2.MD.D.10:** 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.

PRE-VISIT ACTIVITIES

HABITATS AROUND THE WORLD



FOCUS

Plants and animals will only live where their needs are met and those needs include food, water, and shelter, or a place to stay safe. The place where plants and animals live is called a habitat and there are many different habitats around the world. Each habitat can have many different plants and animals. In this lesson, students will learn basic elements of a habitat and identify basic needs of life. Students will then use their observations to create a group poster depicting the diversity of life in a particular habitat.

MATERIALS

- Habitat cards
- Animal cards
- Poster paper or board
- Markers
- Access to books or internet for habitat research

LEARNING OUTCOMES

- Students will describe elements of different habitats.
- Students will identify the basic needs of species.
- Students will compare different habitats and how they support life.

PREP

- Print and cut habitat and animal cards
- Plan for a visit to the school library or have books pulled prior to activity if possible

BACKGROUND

There are millions of different species (or groups of living organisms) on our planet. These include animals as well as plants. These species live in different places and look different from each other but they all have basic needs that must be met to ensure survival. For most species those needs are food, water and places to stay safe (or shelter). The place where these animal and plant species find those necessities and choose to settle are called habitats. These habitats can look very different from each other and the species that occupy those places can be amazingly different but they each find everything they need to survive, grow, and reproduce.

Habitats can be described using many factors. Some of these factors are of physical characteristics such as climate, soil type, amount of rainfall, sun exposure, light, etc. Other factors are biological and include the availability of food in the form of plants or animals, as well as the presence or absence of predators. Different species have different habitat requirements. Whereas some plants or animals are generalists, which can easily adapt and live in a wide range of habitats, others are specialists that can only thrive in one specific type of environment.

Habitats are constantly changing either due to natural processes such as droughts, fires, earthquakes, and disease, or due to human activities such as building cities, dams, or pollution. These changes affect the plants and wildlife that call them home.

INTRODUCTION

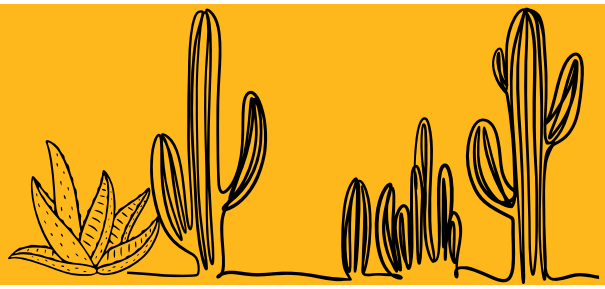
If you could live anywhere in the world, where would it be? Inside a volcano? Underwater? In a cozy house? Why?

Even though its fun to think about the different places we could live, we really can only live in places that we can survive, places that help us meet our needs. Plants and animals do the same!

Can anyone list the three things all plants and animals, include us, need to survive? Can you hold up one finger? The first is... food! Number two, let me see two fingers... is water. And three, last one, is.. shelter or a way to stay safe.

These three needs have to met in order for plants and animals to survive and they're found in the places that plants and animals make their home. Does anyone know what we call a place where plants or animals make their home? A habitat! Habitats are found all over the world and they all look different. Different habitats have different levels of rainfall, temperatures, and amount of sunlight and that makes each one look very different from the next.

Today we are going to split up into groups and explore a habitat and the life that lives within it. Then we'll make some awesome art to share our findings with each other. But first, let's practice our observation skills!



DIRECTIONS

Step 1. Play a quick guessing game with students by showing the attached images of different animals and have them guess which habitat they might live in. Once they raise their hand and guess a particular habitat ask them what clues they used to help them.

- Desert: tortoise
- Grassland: gazelle
- Wetland: frog
- Tundra: snowy owl

Step 2. Share with students that they will be working in groups to make posters that show the diversity of animals that live in our seven habitats. Tip: Decide if you'd like to assign groups their habitats or have them choose their own.

Step 3. Once habitats have been assigned, set a time limit on how long groups will have to research about their habitat. Have the following questions listed on the board for students to answer. Tip: Use library resources if possible, or visit reliable websites like https://animals.sandiegozoo.org/habitats to research online.

- How much sunlight does it get?
- What's the temperature like? Is it the same all year?
- How much rain does it get?
- What does the ground look like? Ex. Sand, rock, etc.

Step 4. Allow students 20-30 minutes to work on their posters. Remind them to include both plants and animals in their posters.

Step 5. When completed, have each group share their work.

DISCUSSION

- What do plants and wildlife need to survive?
- What do you notice when comparing the animals in your habitat? What is similar about all the animals that live there? Pick another habitat to compare. How do animals differ between the two habitats?
- Make sure the habitat cards are visible to the class as you introduce the word biodiversity, or the variety of life in the world or in a particular habitat. Ask the students to think about their own habitat. Is it diverse or no? Which habitat do they think would have the most and least biodiversity? Discuss as small groups or a large group. Remind students to share what information they used to make their guess.

HABITAT QUEST

FOCUS

In this lesson, students will have to assign a specific animal to its correct habitat. Seven habitat cards will be displayed throughout the classroom. After selecting an animal card, students will have to move to the habitat while acting out the animal displayed on their card. As they explain why they moved into a certain habitat, students will realize that a habitat is a place that helps an animal to survive by meeting its specific needs and learn that each habitat is different and supports different wildlife.

LEARNING OUTCOMES

- Students will describe different habitats.
- Students will identify the habitats of different animals.
- Students will compare and understand the diversity of life in different habitats.

MATERIALS

Habitat Cards (7 cards) & Animal Cards (4 per sheet):

- **Desert**: fennec fox, camel, roadrunner, tortoise
- **Ocean**: sea turtle, penguin, dolphin, sea lion
- **Grassland**: elephant, prairie dog, lion, gazelle
- **Tropical Rainforest**: sloth, gorilla, jaguar, macaw
- **Wetlands**: beaver, frog, heron, alligator
- **Tundra**: polar bear, reindeer, snowy owl, lynx
- **Temperate Forest**: grizzly bear, cougar, red-tailed hawk, walking stick

CLASSROOM PREP

- Visit the Curriculum Resources section to print all handouts
- Cut animal cards for 28 cards total
- Hang up the seven habitat images throughout your classroom on poster paper or sticky pages; make sure the students can see them clearly
- Shuffle animal cards prior to distributing to students

BACKGROUND

There are millions of different species (or groups of living organisms) on our planet. These include animals as well as plants. Some of these species, like us humans and many other mammals, like to live on land. Other species, such as fish, prefer to live in the water. Every species likes to settle in areas that provide access to food, water and places to stay safe. This particular environmental area is called a species' habitat. A habitat is the natural home of a specific animal or plant species.

Habitats can be described using many factors. Some of these factors are of physical characteristics such as climate, soil type, amount of rainfall, sun exposure, light, etc. Other factors are biological and include the availability of food in the form of plants or animals, as well as the presence or absence of predators. Different species have different habitat requirements. Whereas some plants or animals are generalists, which can easily adapt and live in a wide range of habitats, others are specialists that can only thrive in one specific type of environment.

Habitats are constantly changing either due to natural processes such as droughts, fires, earthquakes, and disease, or due to human activities such as building cities, dams, or pollution.

Habitats can be very fragile so that even small changes can have big effects. Corals for example live in the shallow waters of an ocean, which is their habitat. They have adapted to specific water conditions. If you change the water quality, for example, by making it more acidic, the corals die. This in turn has effects on the fish that live in the coral reef habitat. They can no longer hide between the corals and thus lose their protection from predators. The loss of habitats due to major habitat changes or destruction is a major cause of species extinction and poses a great threat to many animals and plants alike. This is why it is important to protect natural habitats and the animals and plants that live in these special environments.

INTRODUCTION

If you were a scientist that was studying animals, where would you find a snow leopard? (tundra, desert, ocean) Can you describe the place where that animal lives? What would it be like there? (hot/cold, really rainy/very dry, dark/bright, lots of tall trees/small shrubs, etc.) Why would a snow leopard not live in a desert or rainforest? (Option to use any animal example)

Different plants and animals need different types of environments. Each one of these environments have different climates. These climates have different rainfall levels, temperatures, amount of sun, and different types of plants and animals.

Does anyone know that word for a place where an animal lives? A habitat. A habitat is a place where a plant or animal lives. Animals and plants live in certain habitats because that place provides everything that they need to survive - food, water, and shelter. There are many different habitats in the world with many different living things in each one. Show images in slides.

DIRECTIONS

Step 1. Review different habitats.

Step 2. Have 4-6 students come up at a time and draw an animal card.

Step 3. Act out the moves of the animal on the card as you travel to the habitat image that your animal lives in. (You may have multiple students at a habitat at the same time.) The remaining students call out what animal each student represents. Have the students reveal their animal once they reach their habitat.

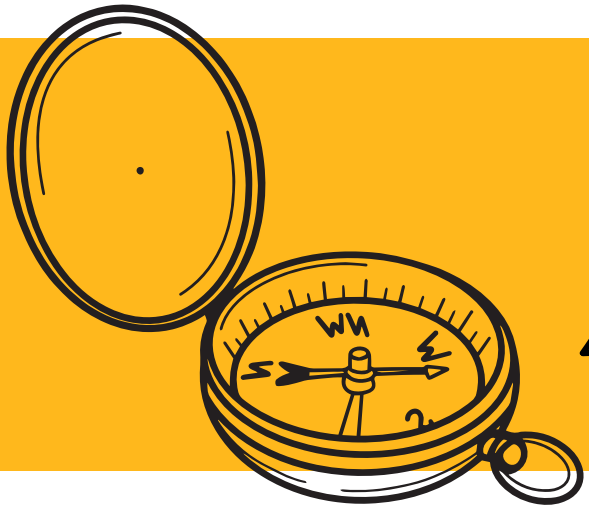
Step 4. Each student shares out: Why do you think this animal lives in this habitat? How does this habitat meet the needs of your animal?

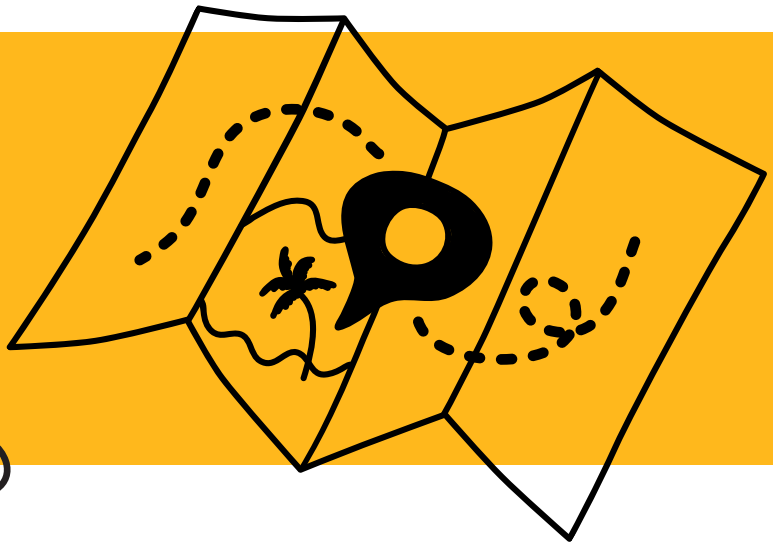
Step 5. Tape up the animal card on the poster paper at their habitat.

Step 6. Repeat the process for the rest of the class. At the end of all the rotations, lead the group in discussion.

DISCUSSION

- What was difficult or easy about finding the right habitat for your animal? What helped you make your decision?
- Review the habitat posters with the class: What do you notice when looking at all the posters? How many different animals live in each habitat?
- What do you notice when comparing the animals? What is similar about all the animals that live in the same habitat? How do animals differ between habitats?
- Animals in the same habitat may share certain body parts or body coverings. Do you notice any similarities in between the animals sharing a habitat? (color, texture, etc.)
- Animals in different habitats have different needs - different diets, different temperatures, etc.
- Now think of your animal, what challenges do you think it would face if it had to live in a different habitat?





POST-VISIT ACTIVITIES

CREATURE FEATURE

FOCUS

In this lesson, students will investigate different habitats and the creatures that live in those habitats. Students can use this activity to get a sense of the range of different species in an area and begin to consider what features help different plants and animals survive in different places. In this activity students will use what they have learned about different habitats to construct a creature that would be successful in different habitats.

MATERIALS

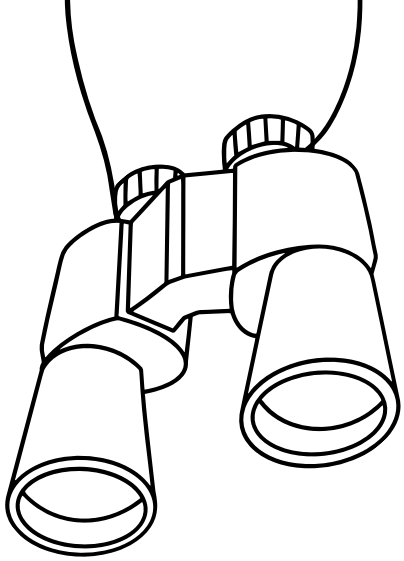
- Habitat cards
- Plant and animal creature features

PREP

- Print and cut materials provided in the Curriculum Resources, 1 set per group

LEARNING OUTCOMES

- Students will describe different habitats.
- Students will identify different features of plants and animals within a habitat.
- Students will develop conclusions and communicate the benefits of different features in different habitats.



BACKGROUND

This activity will encourage students to explore what features make some creatures suited for a habitat and others suited for something else. Students will work in groups to investigate a habitat: explore rainfall, temperature ranges, seasonality, and major weather events that occur in the habitat to determine what features are helpful for an animal to survive in their assigned habitat.

Students will share which features they believe will help creatures survive in their habitat and explain why the features they have selected are helpful for their habitat. At the end of the activity students will be able to share and discover how different habitats have different creatures. This variety of life in the habitats is called biodiversity and the feature they have discovered and paired helps to improve the biodiversity around the world.

REMINDERS FOR STUDENTS

- Allow *everyone* the opportunity to share.
- Take turns reading the information on the cards and sharing aloud.

INTRODUCTION

There are so many different and unique places around the world and each one has amazing wildlife. These places where plants and animals live are called their habitats. In a habitat, a plant or animal can find everything they need to survive (food, water, shelter/ways to stay safe) and they also have different body parts, body coverings, and features that help them stay healthy and successful. All those cool features and different creatures help improve and increase the amount of different plant and wildlife that are in these habitats, we call that biodiversity. Biodiversity is important because it helps create healthy places to live, clear air, and good food to eat.

Today we are going to be learning about some of the amazing habitats around the world. Then, we'll work together as we think about what features would be most helpful for a creatures survival in each habitat.

DIRECTIONS

Step 1. Place students into seven groups and assign each a habitat.

Step 2. Pass out habitat cards for each group to investigate and learn about their habitat.

Step 3. When groups are ready, pass out the creature feature cards.

Step 4. Read through each card as a group or individually and share with each other.

Step 5. Have each group select three features that they believe are best suited for a creature to survive in their habitat.

Step 6. Have groups share aloud information about their habitat and what they discovered are important creature features.

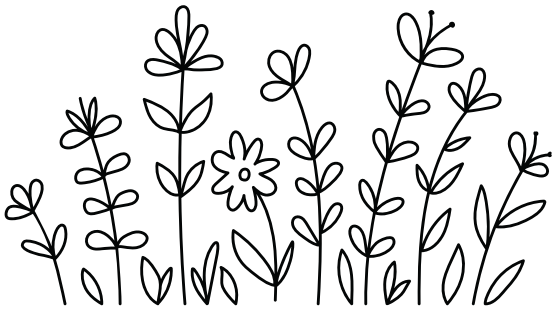
DISCUSSION

Ask questions to guide the conversation and communicate all the different life throughout the habitats and how different features are helpful to different species.

- What habitat do you have?
- What features did you select for that habitat and why?
- Did any other group have the same idea? Or a different idea?

We spent time thinking about many different habitats and we were able to see that each one of these habitats are different and a lot of the features that helped in those habitats were different from others. Different plants and animals need different types of environments, and can have different body parts to help which make them look different.

All of these differences and variety within a habitat is what biodiversity is all about. Having variety is important to making sure everyone in the habitat is healthy and has food, water, and ways to stay safe.



BACKYARD BIODIVERSITY

FOCUS

In this lesson, students will investigate and record the biodiversity of a local habitat. Students can use this activity to get a sense of the range of different species in an area and begin to consider factors that influence organisms. In this activity, students look for species, count individuals, then create pictures of the patterns.

LEARNING OUTCOMES

- Students will describe local habitats.
- Students will identify different plants and animals within a habitat.
- Students will understand the diversity of life in a local habitat.

MATERIALS

- Nature Journal
- Pencils
- Colored Pencils (optional)
- Nature Journal Example Template in the Curriculum Resources section

PREP

- Print or display nature journal example
- Determine location for exploring
- Set guidelines and parameters

NATURE JOURNALING 101

Educators can use journaling to engage their students with wild places wherever they are because nature is more than pristine wilderness. Nature is all around us, from urban parks, the school playground, to national forests. Nature journaling is about observing what is in front of us.

Nature journaling helps:

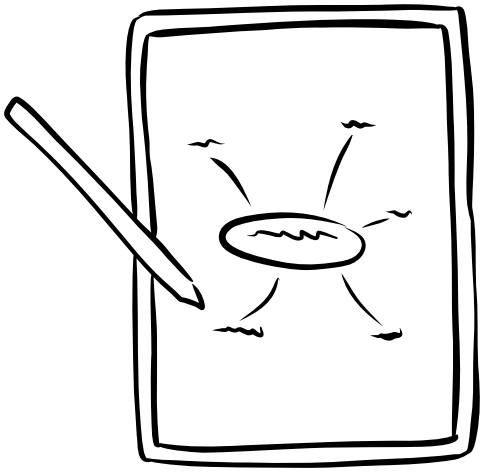
- Build connection to the world
- Build scientific skills and thinking
- Practice being more mindful
- Encourage creativity and discovery
- Encourage curiosity and wonder

Journals are valuable tools for scientists, naturalists, thinkers, poets, writers, and engineers. It deepens our observations, thinking, and memory. Journal entries that include words, pictures, and numbers lead the journaler to think in different ways and make a more complete record of what they see.

Writing strengthens our thinking because we have to organize our thoughts as we put them down on the page. Drawing leads to close, careful observation and improved memory, and using numbers helps us make different kinds of observations and reveals significant patterns. Journaling helps engage students of all ages and inspires them to be keen observers of wild places in their backyard and beyond!

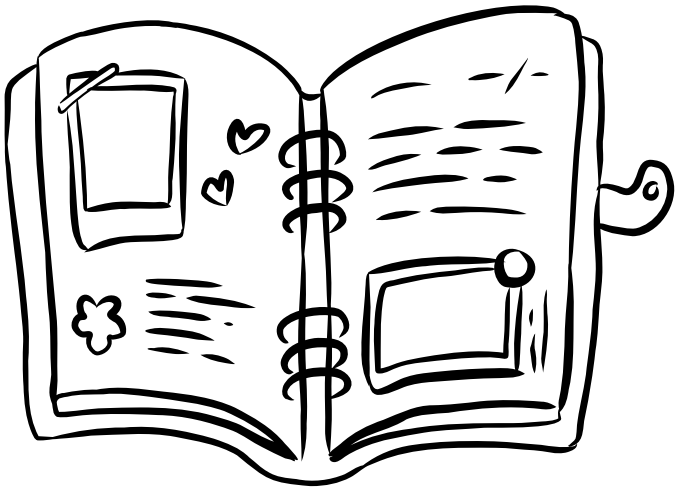
BACKGROUND

The goal of this activity is to observe the biodiversity within a small sample and extrapolate that information on a much larger scale across many different habitats. Habitats around the world have different climates. These climates have different rainfall levels, temperatures, amount of sun, and different types of plants and animals.



The variety of all these different living things in a habitat is called biodiversity. Nature journaling is a great way for us to stop, reflect, and notice the biodiversity around us in our own local habitats.

During our journaling time we want to incorporate 3 different things: pictures, numbers, and words.



Pictures:

- Sketch of the subject of you journal entry

Numbers:

- Number of… [legs, eyes, leaves, petals]
- Measurements
- Arrows [showing the direction something travels or grows]

Words

- Specific comparisons [Ex: not big → big as a dinner plate]
- Record what you notice, wonder, and what you are reminded of

REMINDERS

- This activity is not about making the most beautiful work of art or having every single detail possible. You may be limited in the amount of time or resources you have so instead of trying to capture everything like a photograph, nature journaling should be about taking time to pause, look closely, and become curious.
- This activity is like most skills; It can be challenging at first and you may not be perfect but the more you work outside your comfort zone, ask for help, share, and take on the new challenge the better you become.
- Moving objects can be a challenge to journal because they may leave before you are able to complete the detail and observations you want. Record what you can and use more time to include what you wonder.

INTRODUCTION

Does anyone know the word for a place where an animal lives? A habitat. A habitat is a place where a plant or animal lives. Animals and plants live in specific habitats because it provides everything that they need to survive - food, water, and shelter.

There are many different habitats in the world and each one has different plants and animals. Today we are going to focus on the habitat we live in! To help us understand and explore our habitat we're going to learn how to nature journal. With a journal and pencil you will be writing, drawing, and recording numbers about a living thing you observing in our habitat. As you are journaling we are going to:

Make observations and record them. You can start these sentences with, "I notice..."

- Observations are made using just your senses.
- What do you see, hear,
- Observations are facts, not opinions. Writing that something is smelly or gross is an opinion.

Ask questions and record them. You can start these sentences with, "I wonder..."

- I wonder what it feels like?
- I wonder what it eats?
- I wonder how it got here?

Make connections and record them. You can start these sentences with, "It reminds me of..."

- It reminds me of a toothbrush.
- It reminds me of a bundle of grapes.

The first thing we need to do before we start journaling is write down some information about when and where we are journaling. We call this our metadata and it includes the date, time, location (where we are), and weather. Why might this be important to include?

DIRECTIONS

Step 1. Record metadata together (date, time, weather, location)

Step 2. Review guidelines, boundaries, and introduce nature journaling.

Step 3. Explain activity (highlight three components in the journal entry words, pictures, numbers).

Step 4. Allow time for students to explore and find the location they choose to journal.

Step 5. Set a timer to allow students with quiet journal time

Step 6. Bring the group together and lead discussion.

DISCUSSION

Spend time sharing aloud what was found and what was journaled.

Ask questions to guide the conversation and communicate the variety of life they saw and journaled.

- What are some of the organisms you found? Journaled?
- Did we all find and journal the same exact thing?
- We spent time with one small habitat and we observed a lot of different things. If we traveled to a different habitat would we find similar or different? Why?
    - Ex. Different because the habitats are different. Some have a lot of rain while some have very little, some places get a lot of sun while others do not, etc.

Say, “Different plants and animals need different types of environments. With only a little bit of time outside to make observations in one habitat we found so many different things.”

After completing journal time help guide conversation with the following conversations.

- Would we find more or less if we…
    - Spent longer
    - Looked in more places
    - Went to new habitat
    - Came on a rainy day
    - Came on a warm day
- What might we see if we did this activity…
    - In the ocean
    - In the desert
    - In a rainforest, etc.

CURRICULUM RESOURCES

KEY WORDS	DEFINITION
Habitat	A place where a plant or animal makes its home
Shelter	A place giving protection from weather or danger
Diversity	Many different things existing together in a group
Biodiversity	The variety of life in the world or in a particular habitat or ecosystem
Prey	An organism that is eaten by another for food
Predators	An organism that consumes all or part of another
Metadata	Information that describes or explains data
Tundra	Treeless regions found in the Arctic and on the tops of mountains, where the climate is cold and windy, and rainfall is scant
Ocean	A large body of salt water that covers most of the Earth
Desert	An area of land that receives no more than 25 centimeters (10 inches) of precipitation a year; little water is available for plants and other organisms
Grassland	An area in which the vegetation is dominated by a nearly continuous cover of grasses; maintained by grazing animals and frequent fires
Rainforest	An area of tall, mostly evergreen trees and a high amount of rainfall; rainforests are Earth's oldest living ecosystems
Wetland	Areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year
Temperate Forest	Temperatures vary throughout the year because of the four distinct seasons at these latitudes; precipitation is abundant and lends to fertile soil that is able to support diverse flora


Fennec Fox


Camel


Tortoise


Roadrunner


Penguin


Turtle


Dolphin


Sea Lion


Elephant


Prairie Dog


Lion


Gazelle


Alligator


Frog


Beaver


Heron


Polar Bear


Reindeer/Caribou


Lynx


Snowy Owl


Sloth


Gorilla


Jaguar

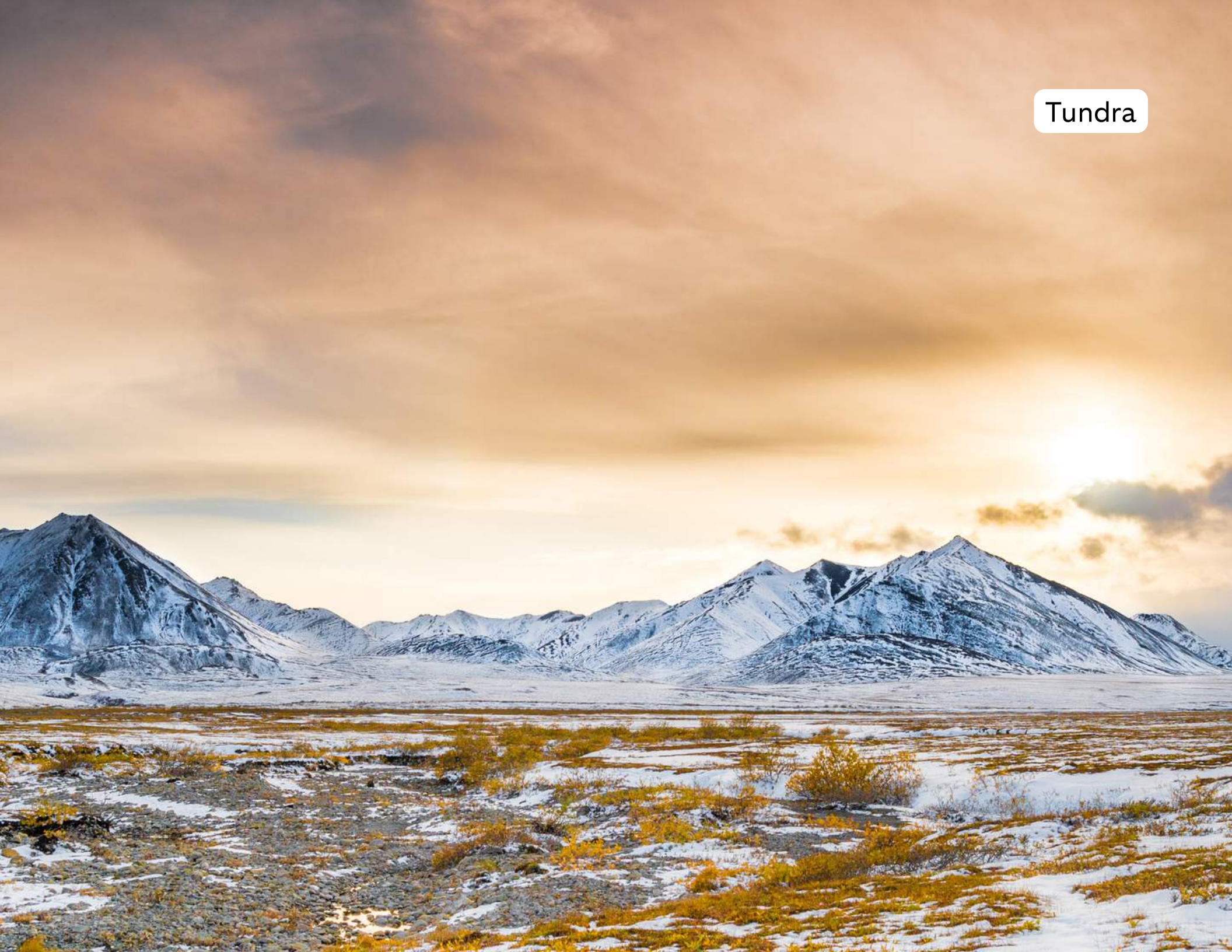

Macaw


Grizzly Bear


Cougar


Red-tailed Hawk

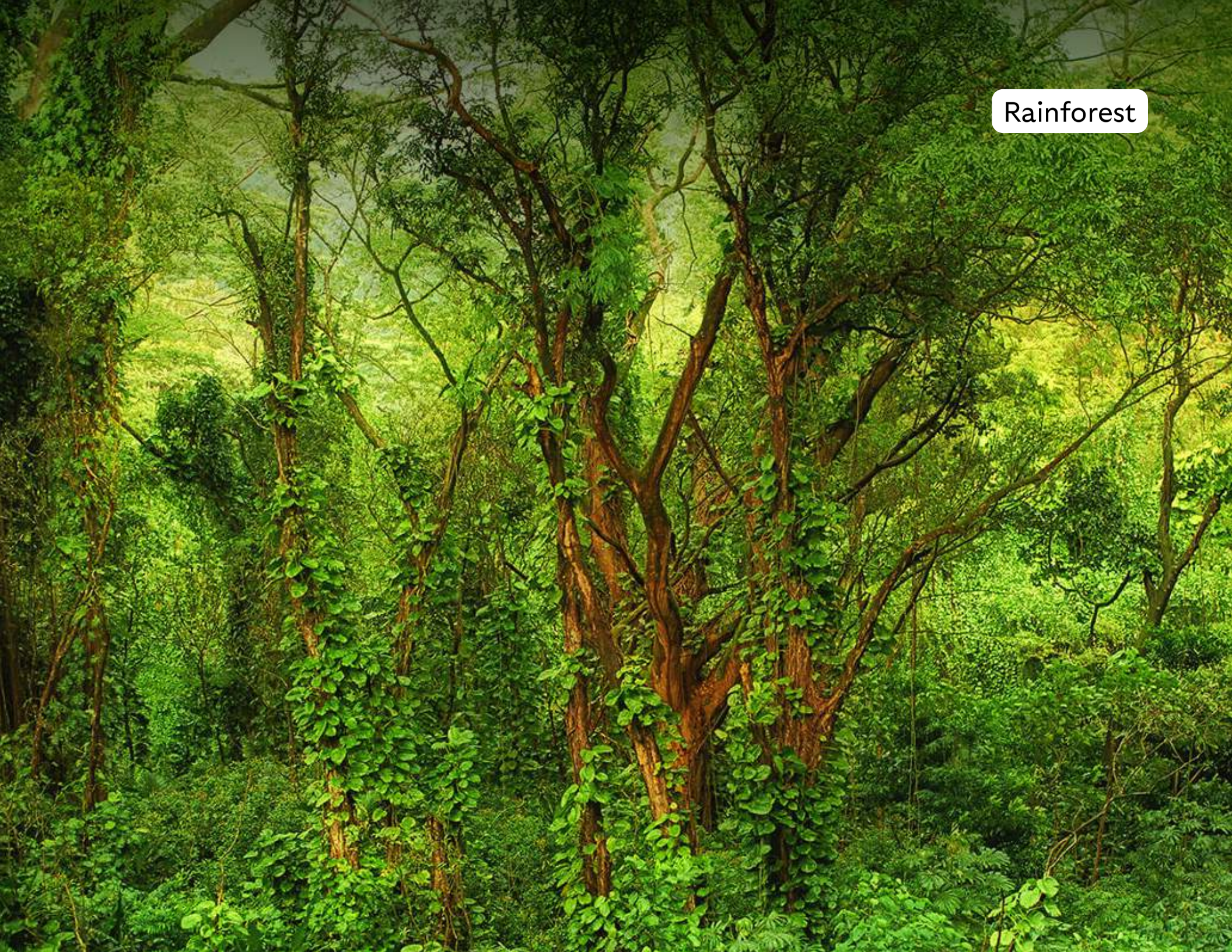

Walking Stick


Tundra

Ocean


Desert


Grassland


Rainforest


Wetlands


Temperate Forest

NGSS Performance Expectation 2-LS4-1

Creature Feature Activity Cards

Prior to activity, print and cut out a set of cards for each group of students.

WHITE FUR

My fur can help me blend in to my surroundings

GROW SLOW

Most of my food is available in the summer

TOE FUR

My fur lining keeps my feet from getting too cold

SCALES

These help me move more easily through water

FINS

These help me steer my body so I can go where I want

GILLS

These help me breathe in water

HUMP

I store fat in my hump so my body can stay cool

LARGE EARS

These help me get rid of heat in my body

CLAWS

My claws help me dig into my home underground

CAMOUFLAGE

This helps me blend in with the shadows so predators can't spot me

LONG LIMBS

My long arms and legs help me climb through the trees

LARGE BILL

Reach fruit on branches that are too small to support my weight

WINGS

I use the hot air to fly without much energy

STRONG LEGS

I can travel for long periods of time to find food and water

LONG NECK

I can see predators from far away and reach food up high

WEBBED FEET

My feet help me to be a great swimmer

WATERPROOF FEATHERS

My skin doesn't get wet our cold thanks to these

LONG LEGS

I can easily wade in water to find food

CHANGING FUR

It changes color twice a year to help me camouflage

FLEXIBLE ANKLES

This helps me climb up and down trees easily

STRONG SNOUT

I can easily root through soil to find food

Creature Feature Answer Key

Some adaptations are highly specific to one habitat while others might be useful in multiple. Below is a general grouping of features for each habitat.

Wetlands
- Webbed Feet
- Waterproof Feathers
- Long Legs

Desert
- Hump
- Large Ears
- Claws

Rainforest
- Camouflage
- Long Limbs
- Large Bill

Tundra
- White Fur
- Grow Slow
- Toe Fur

Ocean
- Scales
- Fins
- Gills

Savannah
- Wings
- Strong Limbs
- Long Neck

Temperate Forest
- Changing Fur
- Flexible Ankles
- Strong Snout

Nature Journal Sample