at Home

Habitats

Overview
In this lesson, students will be encouraged to explore various habitats. They will learn about the organisms that live there how they interact. Students will design an ecosystem of their choice and take part in a simple food web hands on activity.

Grade Level
1st, 2nd, 3rd, 4th, 5th

Approx. Time Required
5-10 hours

Cyber Connections

- **Student will explore businesses "online habitats" or websites.**

CYBER.ORG

CYBER.ORG

Module Preparation

1. This unit is meant to give students a fun way to explore science at home. Parents or caregivers can overview the module before beginning. Depending on the time you have and the personality and age of your child/ children, use any parts or activities you would like.
2. Choose any materials that you may have around the house for hands on activities. Materials listed do not need to be exact. Find anything available that is similar and may work.
3. Families are encouraged to work on this together. It is age appropriate for a wide variety of grade levels, and there will be times for family discussions. Younger students will need more assistance.

The STOP sign indicates the end of a section and is a good/ suggested stopping place. This symbol is visible in both the Student Workbook and the Teacher Manual.

Cyber Pop Outs connect the STEAM topic to the cyber

Bold Italicized Text **Bold, italicized text** indicates an important science term.

Orange Text **Orange text** indicates solutions that are only visible in the Teacher Manual.

Teacher Notes:

Phenomenon-based learning encourages students to question things around them. Introducing the phenomenon is a time to spark interest, explore general ideas, and discover what students already know about the topic. Let them wonder and even disagree without knowing the real answers. The actual learning will come later on, so do not give them factual information now.

DEVELOPING A CLASS DRIVING QUESTION:

1) After students record their own observations and questions on their handout, invite them to share their responses with each other. They can share verbally or post their questions to a central space.

2) Add additional questions and observations to guide students into developing a consensus about the driving question for the module**:** "What different kinds of habitats are found around the world?"

Phenomenon

What do you notice or observe?

Children may say, "I see an animal in a field, but in the background there is a city."

What questions do you have?

Children may say, "Why is that animal so close to a large city? or Why is there a field with animals so close to a city?"

What question has your class decided to answer?

Lead children to want to answer the question, "What different kinds of habitats are found around the world?"

HABITATS

Everywhere you look there are living things of all shapes, colors, and types. Living things are called **organisms.** Plants, animals, birds, people, fish, and insects are all organisms that can be found almost anywhere on the planet. Have you ever noticed that not every creature can be found in every place? Sharks live in the ocean but not in lakes or rivers. Polar bears only live in cold icy areas, and a cactus lives best in a dry desert. Why are certain living things only found in certain places?

Organisms are found in different places, and these different places support what the organism needs to live. The place where an organism lives is called a **habitat.** A habitat provides everything organisms need to survive. What do you think living things need?

Children may say, "I think living things need food and water." There is no wrong answers to this question. The next sentences will help narrow students' focus and identify the true needs of organisms.

All living things have only five basic needs. Discuss with your group what you think those five things may be.

1. Water
2. Air
3. Shelter
4. Food
5. Sleep

All living things have these same five needs, but some appear different based on the plant or animal. For example, the shelter for a bird would be a nest. The shelter for a rabbit would be an underground burrow. The type of food that is needed also changes from one organism to another.

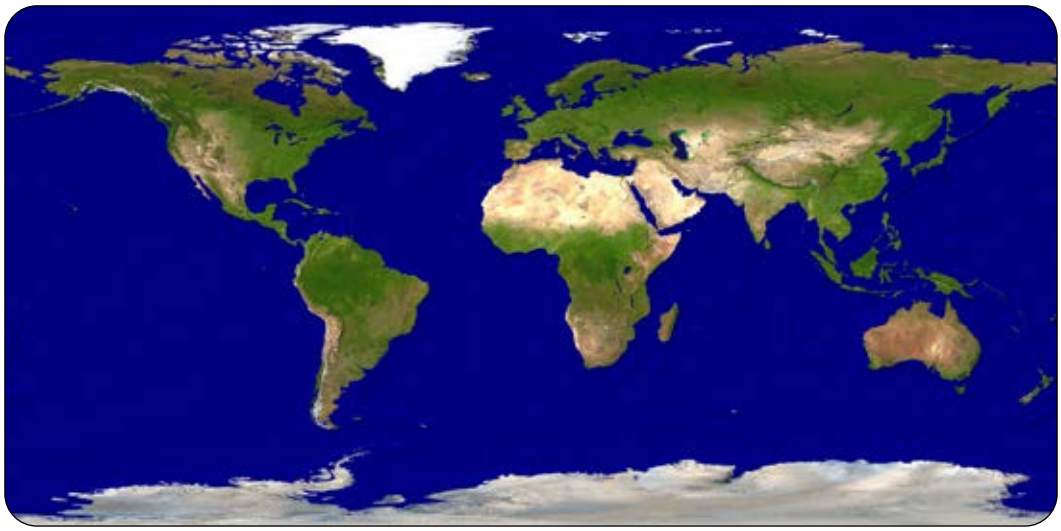
Living things have their own special needs. The American black bear does not have the same needs as the giant panda. For example, they do not eat the same foods, and they live in different climates.

Let's look at a few individual animals to gather information about their habitats.

Gather Information

When you gather information about something, it is called research. **Research** is when you learn as much as you can about something by discovering what others have learned. You will gather information about several types of habitats by studying one animal that lives in each habitat.

Before you begin studying different animals, look at the image below. This is a picture of the earth if it were laid flat. Look carefully at the map. What do you observe? **Observe** means to notice something using your senses. How something looks, smells, sounds, feels, or tastes are all observations you can make. When you look carefully at the image of the earth, you are observing it using your eyes.



Write down what you observe about the map.

Encourage students to write down everything they see: shapes, colors, places they recognize, etc.

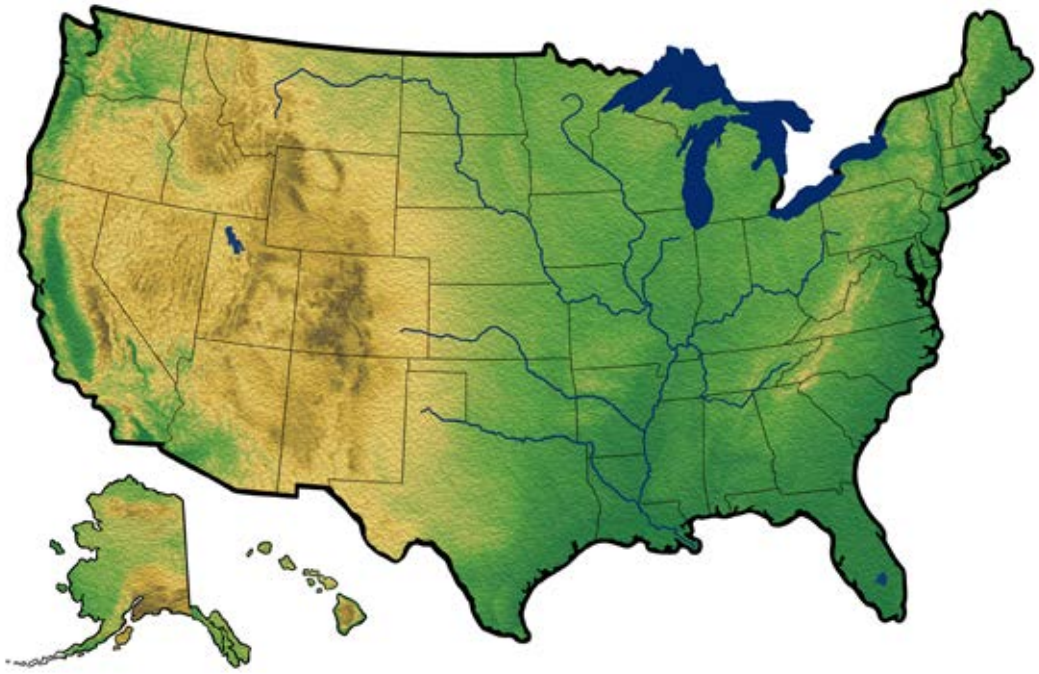
You may have written that you see different colors. Green, brown, yellow, blue, and white all represent different features of our planet. Green shows where land is covered by plants and forests. Near the middle of the map, you can see more brown and yellow areas. Brown and yellow show deserts and very dry areas where plants have difficulty growing. Blue represents liquid water. Most of the map is blue, which means that most of the earth is covered by oceans and seas. The areas that appear white are covered with ice, which is water that is frozen solid by the extreme cold.

Science Journal:

Your home is your habitat. On a sheet of paper, describe your habitat and how your five needs are met at your home.

If you look closely, you observe that ice is found near the top and bottom of the map, where the North and South Poles are located. These are the coldest areas of the planet. While green covers most of the land, there are also large patches of brown and yellow across the middle of the map. Since those colors represent deserts, you might guess that these areas are the hottest and driest areas on earth.

What other observations can you make? Children may say, "There is a lot of water between the areas of land. I see ice at the bottom and top. There is a green area just under a large desert area."



Materials Needed: crayons or colored pencils

For this activity, have a map of your state available to help students locate where they live in their state. They may also want to identify and draw any large bodies of water within your state.

A physical map of the United States is shown above. Again, you see yellow, brown, green, and blue to show deserts, forests, grasslands, and water. Color the map on page 6 to match the map above. Find the state where you live, and draw a star to represent your home.

When you think about the place you live? What do you observe? Is your community surrounded by plants and trees? Is your community in a dry area like a desert? Do you have large bodies of water nearby, such as a river, lake, or ocean? Discuss as a group the community that you live in.

The following websites may be used as research sites for students.

https://www.britannica.com/animal/raccoon

http://www.nationalgeographic.com/animals/mammals/r/raccoon/

The following video illustrates how raccoons have adapted to human intrusion by building homes in cities.

video.nationalgeographic.com/video/TIL/160531-sciex-til-john-hadidian-city-raccoons

Science Journal:

How does a deciduous forest change with the seasons? On a sheet of paper, draw pictures to show how a tree might look in spring, summer, fall, and winter.

The North American Raccoon

Raccoons are a very common mammal that can be found all across North America. Some say that raccoons look like bandits because of the dark shading around the eyes and because they are nocturnal. If an animal is nocturnal, that means it is active mostly at night. Raccoons naturally live in forests where food and shelter are easy to find. Raccoons are omnivores, which means they eat both plants and animals. They enjoy plants such as berries and fruit, but they will also eat insects, eggs, and smaller animals. Raccoons are very smart and curious. Their front feet are much like your hands, making it easy for them to grab and hold their food.

Raccoons can be found in deciduous forests, where they make their homes in trees, fallen logs, dens, or any other safe place near food and water. Deciduous forests are very common habitats throughout the world. Deciduous forests have trees and plants that lose their leaves in the fall and winter months as the temperature cools. The leaves grow back, and the plants produce new growth in the spring and summer months.

Look at the picture below and imagine you are a raccoon. Could you find what you need to survive? You have air and water, but what about shelter, food, and a place to sleep? On the lines below, write where you might find these.

Children may say, "I could sleep inside of a tree if I were a raccoon. I could find little berries to eat, and I could drink water from that little stream."

Animals and plants have **traits,** or special features, that make them suited for their environment. The raccoon has coloring that helps it blend in with its surroundings. It has fur that keeps it warm during colder months. Raccoons also have hands that allow them to climb, grab food, open containers, or lift things. What about animals in other places? Are there animals that live in the extremely cold areas you noticed on the map?

Helpful links:

http://www.nationalgeographic.com/animals/birds/e/emperor-penguin/

http://www.penguins-world.com/emperor-penguin/

Emperor Penguin

Emperor penguins live in Antarctica, a polar climate. Their habitat is surrounded by ice and snow, which makes survival difficult or impossible for most animals. Emperor penguins have special features that help them survive in very cold climates. These penguins have changed, or **adapted,** to fit their environment. Although penguins are a type of bird, they do not fly. Penguins swim. The main food source for penguins is found in the ocean since very little lives on land. Their feathers are designed to let the penguin slip through water easily to find fish or escape from ***predators.*** A predator is an animal that hunts or kills other animals for food. Orcas and leopard seals will eat adult emperor penguins swimming in the ocean.

Another difference between emperor penguins and most other birds is that they do not build nests. The penguins hold their eggs on their feet to prevent the eggs from touching the ice, which could cause them to freeze. Emperor penguins are safe as long as they are on land. Orcas and leopard seals hunt in the ocean, so the penguins simply move away from the water when they are not swimming for food. The cold emptiness of the land gives them the protection they need. With no land predators, nests, or need to fly, the penguins live in large groups in the open. During snowstorms or cold nights, they stand close

If you compare the deciduous forest photo on page 7 to this photo of Antarctica, how are they the same or different? Write what you observe about each image and what you think life might be like in both places.

This exercise could also be used as a creative writing opportunity as students imagine living in these two environments.

Science Journal:

Animals have adapted to fit best in their environment. People change to fit their environment also. When weather grows colder or warmer, you adapt by wearing different clothes. On a sheet of paper, draw or write down ways that you adapt to the weather.

Children may say, "This place is very different from the forest. On this mountain with snow, I would expect to find animals that have thick fur and live in a very cold habitat. There is also not a lot of places for a shelter. A polar bear with white fur might live here; because, it would blend in with the white snow and easily be able to hide. There are no berries on the mountain because of the thick snow."

DID YOU KNOW
Antarctica receives very little rain; therefore, it is technically considered a desert – a very cold desert.

STOP

CYBER POP OUT: Virtual Habitats

Many businesses, schools, and other entities have a website to share important information about themselves online. The main page of a website is called a home page. In a sense, this is the online habitat of a business. The homepage usually gives the most important information so visitors can quickly find what they are looking for. Your school or district probably has a home page. What kind of information can you learn about your school from its website? Visit your school or district online to discover what information is on the home page.

What is the home page for your school?

Children may say, "My school website address is www.

What resources does your school website lead you to?

Children may say, "My school has a place where I can find all of the online tool we use in our classroom like our Math or Reading program."

What is a place your really like to go to in town? Can you find their online habitat now?

Children may say, "I like to go to our town library. I found out that our library has books online that I can read from my home computer."

The following websites may be used as research sites for students.

http://kids.nationalgeographic.com/animals/poison-dart-frog/#poison-dart-frog-orange-blue.jpg

http://www.nationalgeographic.com/animals/amphibians/group/poison-dart-frogs/

Informational video about poison dart frogs and the rainforest:

https://www.youtube.com/watch?v=nyBZqRgbds4

Poison Dart Frog

The poison dart frog is the common name of a family of poisonous frogs that live in tropical areas of Central and South America. These frogs are named from the toxic liquids, or poisons, they have in their skin. This poison will kill or seriously hurt animals that try to eat them. For this reason, many of these frogs have bright colors, called warning colors, to tell other animals to stay away.

Poison dart frogs are a type of amphibian and need warm, moist areas in order to survive. Rainforests are warm and wet all year long, which means the plants and water these frogs need is available all year. They make their habitats in trees, under leaves, and in logs where they can find food and stay moist. They eat small insects that crawl or land near them, using their long sticky tongues to snatch their food.

Poison dart frogs need special conditions to live. This is why they are only found in certain places in the world: specifically, the rainforests of Central and South America. They cannot live in places that are very dry, very cold, or places where the weather changes greatly from summer to winter. Their habitat needs to be about the same all year long.

The rainforest is home to some of the most amazing plants and animals on the planet. If you look at the picture below, you can understand why so many creatures make their habitats here, where all of their needs can be met easily.

Although the rainforest has more types of animals and plants than any other environment, it is not the best for every animal. Each animal and plant needs its own special place to live – even you!

The following websites may be used as research sites for students.

https://www.desertusa.com/reptiles/sidewinder.html

http://sciencing.com/sidewinder-snake-adaptations-6470304.html

http://snake-facts.weebly.com/sidewinder.html

Informational video about sidewinder rattlesnakes:

https://goo.gl/Fh2m9t

Sidewinder Rattlesnake

The sidewinder is a species of rattlesnake that lives in hot desert climates where there is very little water. Unlike the frog's smooth wet skin, the sidewinder has rough, dry skin that does not need to stay wet. This reptile is named for the unique way it moves across the sand. Instead of slithering forward like other snakes do, the sidewinder rattlesnake moves sideways so that only small areas of its underside touch the hot ground at a time. This helps prevent overheating. The sidewinder is quickly recognized by the "horns" above its eyes, which are actually tall scales. Though this snake is venomous, it is not as dangerous as other vipers. It is also one of the smaller snakes in the pit viper family, but its bite is very dangerous.

Sidewinders prefer to eat small desert creatures such as lizards, mice, and kangaroo rats. During the hottest part of the year, many sidewinders wait until the sun sets before they hunt. Sometimes these snakes even hibernate through much of the summer.

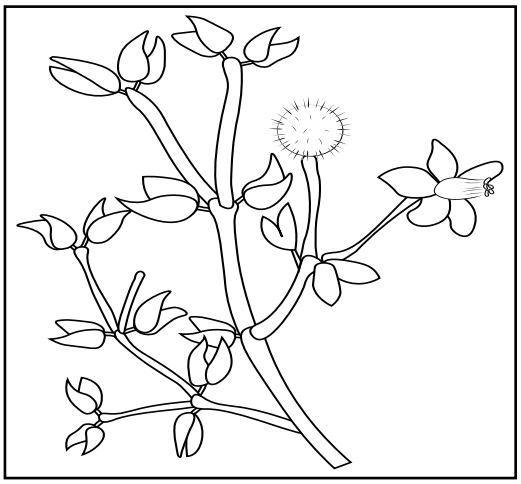
The organisms in an environment **relate,** or have a connection, to each other and depend on one another. A **food chain** helps show how some living things relate to one another. Let's look at the sidewinder rattlesnake in the following food chain activity.

TRY THIS: Food Chain

1. Color the creature cards with colored pencils.
2. Cut out each card. Turn cups upside down and glue a creature card to each cup.
3. Label each cup on the rim using a marker. See photo to the left.
4. Organize each cup based on where you think it falls in a desert food chain.
5. Discuss your decisions with the class.

Color and cut out the following pictures.

1.



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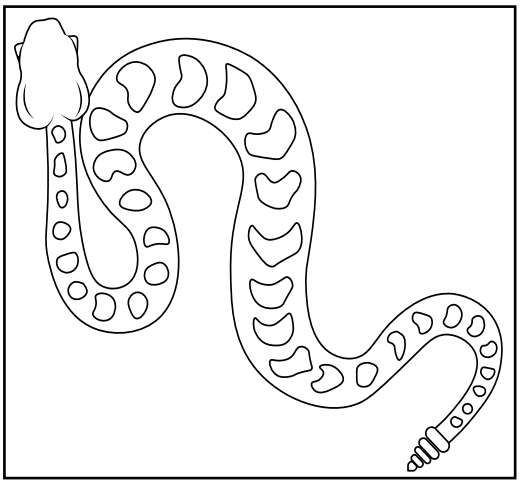
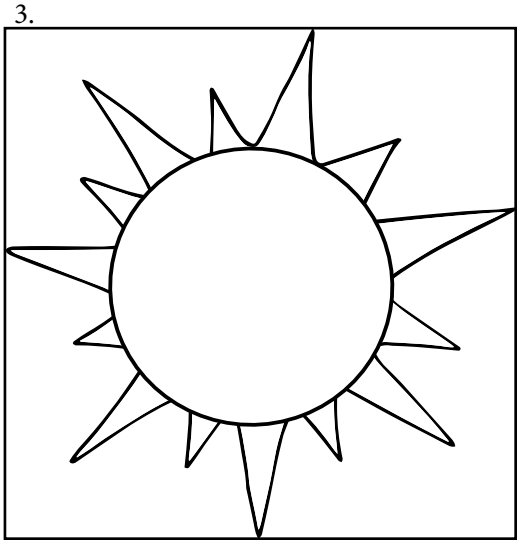
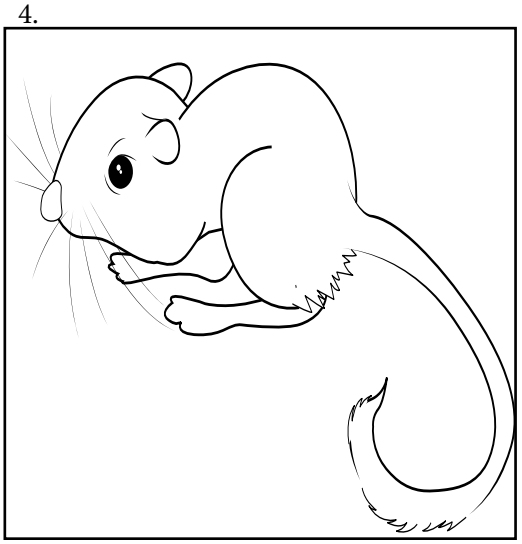


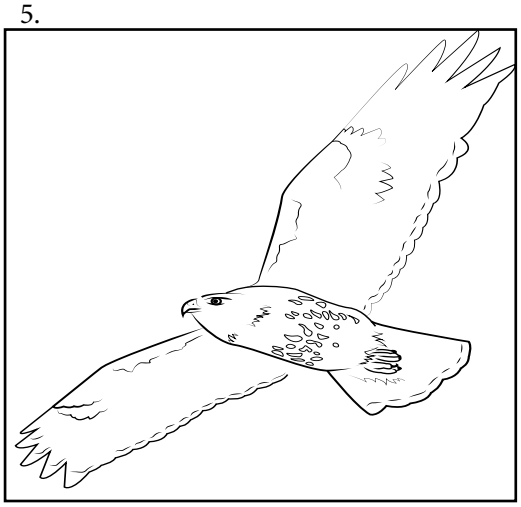
3.



4.



5.



Take a few moments to look up examples of each picture. This will help students as they begin to color their own images.

Images:

1. creosote bush
2. sidewinder rattlesnake
3. sun
4. desert mouse
5. red-tailed hawk

Correct Order

1. sun
2. creosote bush
3. desert mouse
4. sidewinder rattlesnake
5. red-tailed hawk

Rainbow Trout and Parrotfish

rainbow trout

parrotfish

The rainbow trout and the parrotfish are fish that live in **aquatic** habitats. Aquatic means "in the water." Both the rainbow trout and the parrotfish live their entire lives underwater. They do not live in the same type of water, though. There are two primary types of aquatic habitats in nature: fresh water and salt water. Salt water has a large amount of salt in it. The earth's oceans and many of its seas are salt water. Creatures that live in saltwater environments have adaptations that help them survive in the oceans, and they depend on the salty water for survival. Most saltwater creatures, like the parrotfish, cannot survive in fresh water.

Fresh water is most comfortable to humans. It has very little salt in it and is useful for drinking, bathing, swimming, and more. Fish and other living things in fresh water cannot survive in water that is too salty. Most of these animals, like the rainbow trout, need fresh water and would die in a saltwater environment. Fresh water can be found in lakes, rivers, and ponds. Rain is also fresh water. Make a list of places you have seen fresh water and/or how you have used fresh water yourself.

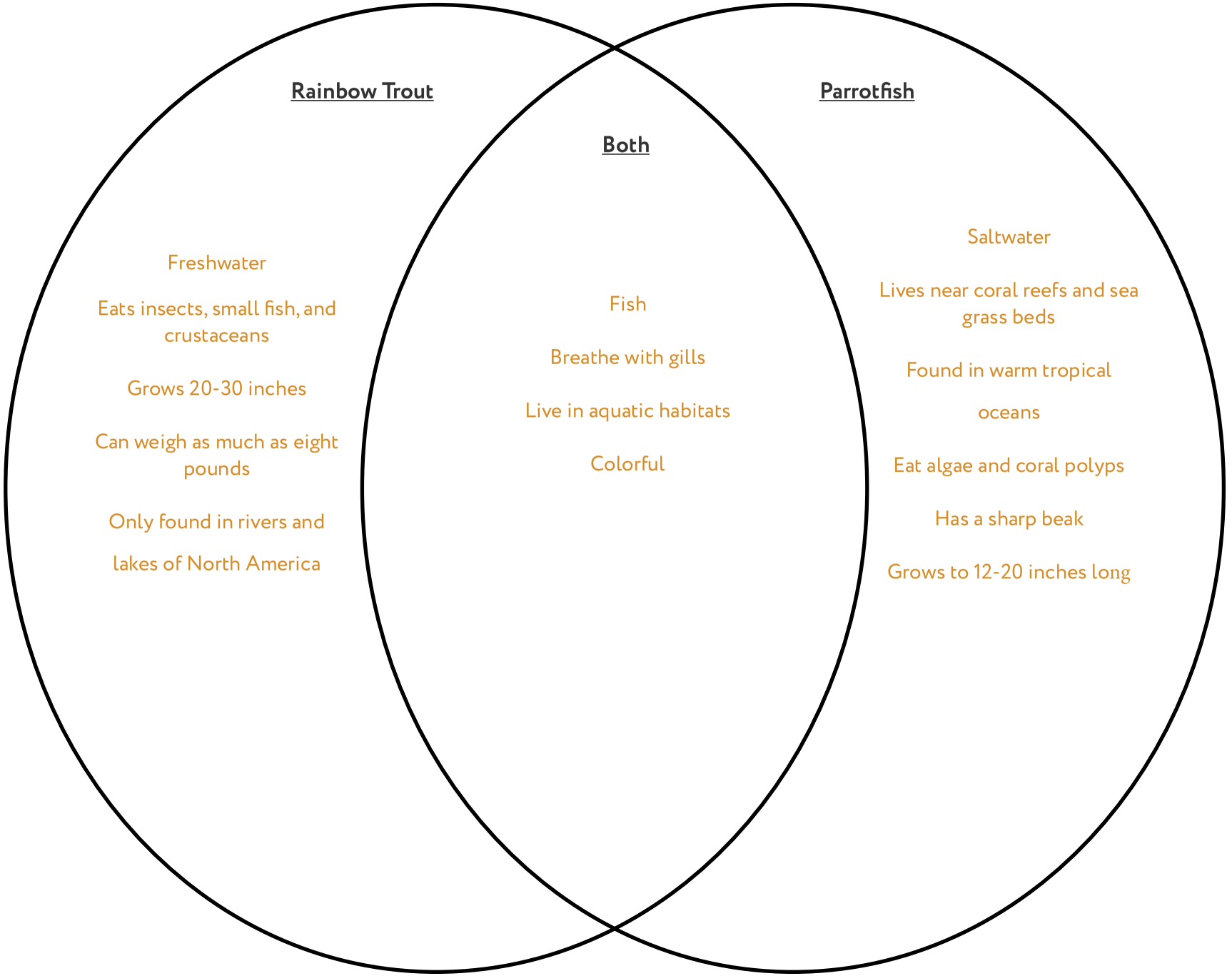
Here are some articles that will be helpful as you complete this activity:

http://www.bioexpedition.com/parrot-fish/

http://www.nationalgeographic.com/animals/fish/r/rainbow-trout/

Can two fish from different aquatic habitats have anything in common? What are their similarities and differences? Read the articles your teacher provides. Then use the Venn diagram on page 14 to show how the rainbow trout and parrotfish are alike and different.

STOP



DrawingConclusions

Now that you have learned about different types of animals, their habitats, and the environments they live in, you can draw conclusions based on what you have learned. To draw conclusions means that you make decisions based on what you know. You have learned about several animals and how they fit in their environment. Below are pictures of different animals. You may not know much about an animal, but based on the traits of the animals you studied, draw conclusions to match the animal with its habitat. Draw a line from the animal to the name of its habitat.

You may prefer to have students research each animal before completing this page. The name of each animal is listed below.

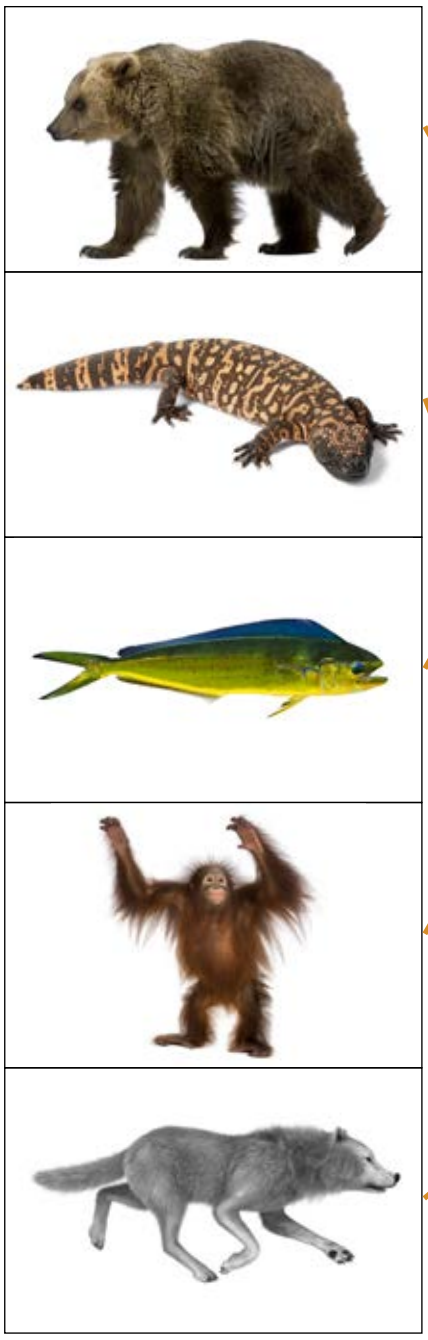
brown bear

gila monster

mahi-mahi

orangutan

arctic wolf



Aquatic

Rainforest

Deciduous Forest

Arctic

Desert

You have learned that every animal needs a place to live that meets its needs. Animals have special traits that allow them to live in their environment. The place where an animal lives in its environment is called a habitat. The habitat is its home within its environment.

Now you will demonstrate what you have learned and share your knowledge with the class by creating a diorama that shows where an animal lives. Follow the instructions for building your diorama. You may use the animal images provided or draw your own.

Students may wish to research their animal. The sites listed previously in this module provide sources for students to gather information.

Hint: Students should fold the rectangle under their sheet when drawing and coloring to keep that space clean for writing.

Do not allow students to color on the top, center triangle. This will help prevent issues with gluing later.

You may choose to work as a family on the same habitat or each child may want to choose a different one.

Animals discussed in this module are provided on the following pages. Students may cut these out and use these if desired. Students may wish to draw or print their own animals.

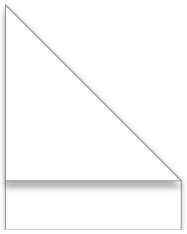
TRY THIS: Design you own Ecosystem

Materials

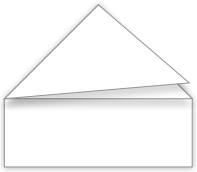
Paper | Scissors | Glue | Pencil | Colored pencils

1. Begin with a sheet of copy paper or cardstock.

2. Fold the top, right corner over to the left side of the page so the edges align forming a triangle.



3. Now bring the top, left corner over to the bottom edge of the right side of the triangle and fold as shown.



4. Fold the bottom of the paper up to make a crease along the bottom of the paper.

Continued on the next page.

Continued from the previous page.

5. Unfold. You now have four triangles and a rectangle at the bottom.
6. Use scissors to cut along the crease from the top right corner to the center.

7. Draw your scene with colored pencils on the triangles on the left, right, and middle. Do not color the top triangle in the middle. You may choose to sketch your scene in pencil before coloring.
8. Slide the top triangle in the middle behind the right triangle to see how the diorama will look. When you finish coloring your habitat scene, glue the top triangle to the back of the right triangle.
9. Draw and color pictures of animals that could live in your habitat (see page 19 for examples). Cut them out, and glue them to the bottom of your habitat so they are able to stand up on their own.
10. Use the rectangle space at the bottom to describe your scene or to list important facts about your animals.

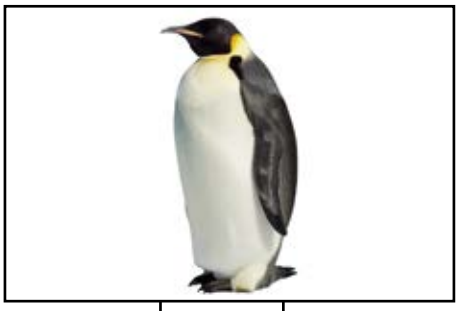
DID YOU KNOW

The Dead Sea has more salt in its water than any other body of water on Earth. There are no fish or plants, and a person can actually float on the water like a cork.

STOP

Cut out each animal that you need for your diorama habitat, and/or draw your own pictures. Attach the images to your diorama using the fold and glue tab at the bottom of each picture.

fold & glue



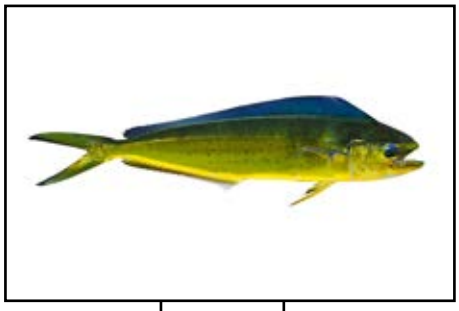
fold & glue

fold & glue

fold & glue

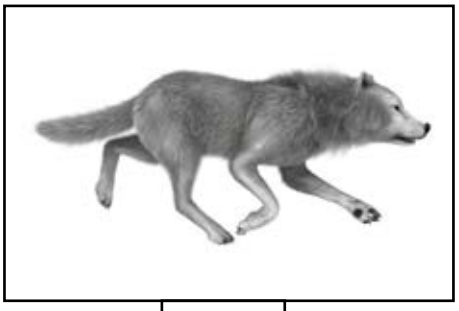
fold & glue

fold & glue



fold & glue

fold & glue



fold & glue

Vocabulary

1. adapt - to change to fit into an environment
2. aquatic - in the water
3. conclusion - an opinion or decision made after research or investigation
4. food chain - the way living things are linked together by what they eat
5. habitat - the place where an animal lives
6. nocturnal - active at night
7. observe - to notice something using the five senses
8. organism - any living thing
9. predator - an animal that hunts other animals for food
10. relate - to have a connection with another living thing
11. research - the gathering of information to learn more about a topic
12. trait - a special feature of a plant or animal