WISDOM WONDER PROJECT™

Primary Science
Collection

Living Things
Month 01

Primary Science

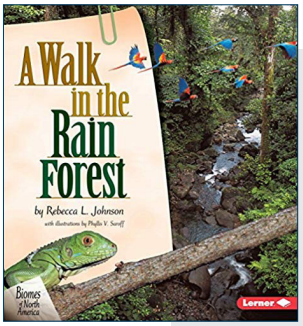
Living Things
Month 01

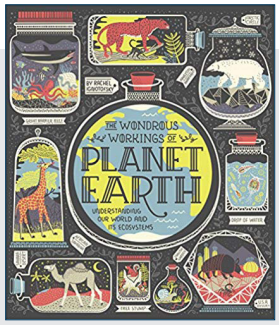
Rainforest & Tundra

The first two weeks of this month will focus on the exciting world of the busy rainforest, including its layers, and the plants and animals that call this biome their home. The next two weeks will explore the frozen tundra. Though barren and treeless, the tundra has many fascinating animals and plants to study. The activities and readings focus on tundra characteristics and life such permafrost, arctic foxes, and polar bears.

Rainforest

The reading this week (approximately the first half of the book) will focus on explaining biomes, climate, and the many layers of the rainforest.





A Walk in the Rain Forest
by Rebecca L. Johnson, p. 5-24

The Wondrous Workings of Planet Earth
by Rachel Ingnotofsky, p. 7-21

Biome—A biome is a large area of Earth that has its own climate, plants, and animals.

Climate—Climate is a large area's weather patterns over a long period of time.

Equator—The Equator is an imaginary line going around the Earth, dividing it into the Northern and Southern Hemispheres.

Canopy—The canopy is the umbrella-like structure, or "roof," of the rainforest, made from the tops of the trees.

Understory—The understory is the layer of the rainforest between the canopy and forest floor. It is an area that gets enough light for some plants and animals to survive.

Forest floor—The forest floor is the ground in the rainforest. There is very little light down there.

What is a biome?

Answer: A biome is a large area of Earth that has its own climate, plants, and animals. (p. 9)

What kind of climate does a tropical rainforest have?
Answer: The climate of a tropical rainforest is warm and wet. The temperature stays about the same all year. (p. 10)

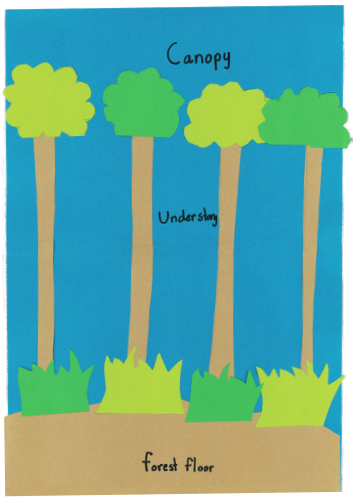
How much of Earth's plants and animals live in rainforests?
Answer: More than half of Earth's plants and animals live in the rainforests. (p. 11)

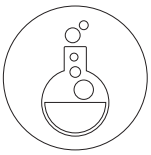
Why is it not very bright on the rainforest floor?
Answer: The canopy creates an umbrella-like structure over the rainforest, blocking out most of the sunlight. (p. 13)

Why are the leaves of the plants in the understory so large?
Answer: The leaves of plants in the understory are large so they can catch as much light as possible. (p. 16)

Biome Map. For our first biome journal activity, you will need colored pencils, a glue stick, your child's journal, and the map at the end of this document. Biomes are large areas that have their own climates, plants, and animals. Precipitation level and temperature determine the area that the biome occupies. Those things also directly affect which plant and animal life survives in the biome. There are many ways to create biome maps. This map correlates with the way biomes are studied in this unit. Have your child designate a color for each number on the map, which represent the different biomes. Ask them to color lightly over each number to show how the different biomes are spread out all over the world. Have your child glue this map into their journal.

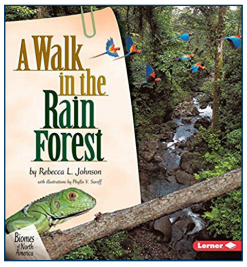
Activity 01—Rainforest Layers. For this art project, you need one piece each of large blue, green, and brown construction paper (12x18-inches), scissors, a glue stick, and a Sharpie. Review the layers of the rainforest and what you can find in each (p. 12- 16). Ask your child to cut 4 tree trunks out of the brown construction paper, about 1-inch wide and 12-inches long. You can draw them with pencil first if that helps your child. Have your child glue these to the blue paper. Then show your child how to cut cloud shapes out of the green construction paper. These



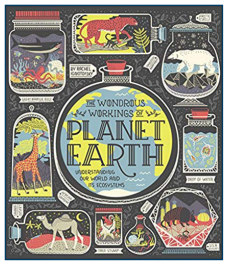


will become tree tops and understory. These can vary in size and shape, but they will be layered in a row at the top of the trees to create the canopy, and a few spread out over the tree trunks to become part of the understory. Have your child cut a few leaves out of the brown paper and scatter those along the forest floor. Using the Sharpie, have your child label each layer with as much assistance from you as is needed. The uppermost green leaves are the "Canopy;" the middle section of the tree trunks and the few green leaves can be labelled "Understory." Label the bottom the "Forest Floor." As an optional extension, have your child choose some animals, plants, and/or flowers, then cut them out of construction paper and add them to the appropriate layer.

Activity 02—Rainforest Trees. For this experiment, you will need a measuring instrument, masking or painter's tape, and a space that is about 120 feet long. If you use a yardstick, you will need to do a quick mini-lesson on 120 divided by 3. Look at page 18 in the book with your child. Reread the first paragraph to them about climbing one of the tallest trees in the rainforest. While this is not possible for most of us, we can get an idea of how tall those trees are. On one side of your long space, have your child help you use masking tape to mark on the ground where the bottom of the tree will be. After a discussion on what 120 feet may look like (120 rulers, 40 yardsticks, etc.), let your child walk out to where they think that 120 feet mark would be. Have them use the masking tape to mark their spot. Now, ask your child to help you use your measuring tool to measure out and mark with tape the actual height of the trees to get an accurate idea of how tall trees in the forest actually are. Discuss with your child how close their guess was. Did they guess too much or too little? To extend the math work, figure out together the difference between their guesses and the actual tree height. What other things does your child know about that may be as tall as those trees? What kind of animals do they think could live at the top, at the bottom, or in the understory?



A Walk in the Rainforest



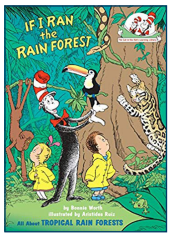
The Wondrous Workings of Planet Earth

12x18-inch Construction Paper, in blue, green, and brown
A Space More than 120 Feet Long
Biome Map
Ruler or Yardstick
Journal
Colored Pencils
Glue Stick
Masking or Painter's Tape
Scissors
Sharpie

Wild Republic Rainforest Nature Tube

Melissa and Doug Rainforest Floor Puzzle

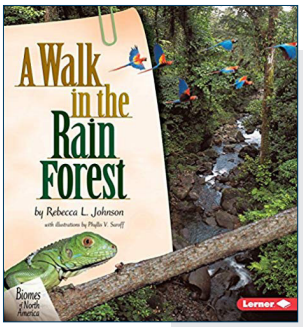
Mellisa and Doug Stamp a Scene Set: Rainforest

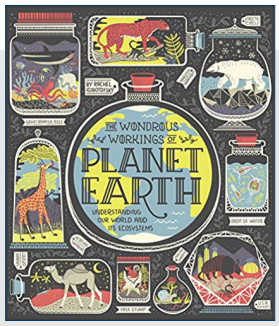


Rainforest

Part 02

This week spends more time looking closely at some of the many, many animals in the rainforest, as well as a few specific plants and flowers.





A Walk in the Rain Forest by Rebecca L. Johnson, p. 25-45

The Wondrous Workings of Planet Earth by Rachel Ingnotofsky, p. 35, 63, 67, 75

Biome—A biome is a large area of Earth that has its own climate, plants, and animals.

Epiphyte—An epiphyte is a plant that grows on another plant.

Predator—A predator is an animal that hunts another animal.

Prey—Prey are animals that are hunted and eaten by other animals.

What are some examples of epiphytes we read about?

Answer: Some examples of epiphytes we read about are: orchids and bromeliads. (p. 27)

How does a sloth not get drenched in the rain?

Answer: The fur on sloths grows from their belly towards their back, so the water just runs right off of them. (p. 29)

What do red-eyed tree frogs have to help them see in the dim understory?

Answer: Red-eyed tree frogs have large eyes. (p. 33)

What are some types of animals that live on the forest floor?

Answer: Crabs, scorpions, and slugs are some of the animals found on the rainforest floor. (p. 39)

Which animal is the largest predator in the rainforest?
Answer: The jaguar is the largest predator. (p. 43)
the rainforest, blocking out most of the sunlight. (p. 13)

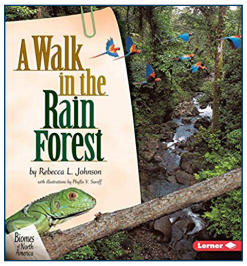
Animals of the Rainforest. For this week's journal activity, you will need the book, colored pencils, a glue stick, a piece of printer paper, your child's journal, and a pencil. As you review the book with your child, look at all of the animals. Ask your child, "Which animal is your favorite? Why? What facts are written in this book about your chosen animal?" After you and your child find the facts and discuss the animal, have them draw the animal in their journal. Have your child write or copy the name of the animal on the page. As an optional extension, your child can write or copy a few facts about the animal on a piece of paper and then glue the paper into the journal. You can even use the books listed in the Recommended Books to do further research together.

Activity 01—Rainsticks. To make your own rainstick, you need an empty paper towel tube, aluminum foil (2 sheets, about 12-inches long each), $^1/_3$ cup of rice, tempera paint (any color your child would like on their rainstick), scissors, a broomstick, a paintbrush, a paint palette or plate, construction paper, and clear tape. Tropical rainforests can get anywhere from 60 to 160 inches of rain annually. A rainstick is an instrument usually made from dried, hollowed cacti and filled with small pebbles. When tilted from end to end, these instruments mimic the sound of falling rain. To start, have your child paint the paper towel tube with their chosen colors or designs and set it aside to dry. While it dries, have your child cut two circles from the construction paper, about 1 inch wider than the ends of the paper towel tube. Next, ask them fold one sheet of foil into a 1-inch wide strip, accordion-style, then wrap the strip around a broomstick so it is a spiral shape, Have them fold up the other sheet of foil the same way, but instead of making it a

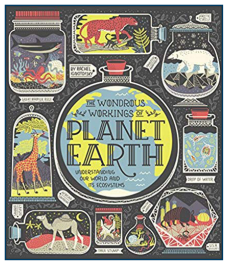
spiral, twist it into a long corkscrew shape. Ask them to string the skinnier foil into the center of the corkscrew foil. When the tube is dry, have your child place the spiral and twisted foil inside the tube, tape one construction paper circle completely over one end of the tube, and pour the rice into the open end. Help them seal that side with the other construction paper circle and tape. Invite your child to slowly tip the stick from one end to the other to hear the sound of rain.

Activity 02—Paper Bromeliads. To make these paper flowers, you will need one sheet each of 12-x18-inch green and red construction paper, tape, scissors, and a glue stick. Fold the red construction paper in half lengthwise. Place the paper in front of your child so it opens away from them. From the fold to the open side, draw large, skinny (about 1-inch wide) upside down "V"s over and over, from one edge of the paper to the other. Have your child hold the fold in their hand, cutting along the draw lines, through both pieces of paper. When your child is done, help them roll the "petals" and tape the end securely. From the green construction paper, you will follow the same steps as the petals but draw a "U" shapve instead of "V." Help your child roll the "leaves" around the red petals. Make several and put them in a vase to enjoy.

Activity 03—Food Chain. For this activity, you need the book, four sheets of white printer paper, colored pencils, and three paper clips. Turn to p. 36 - 37 in the book. Reread about the Azteca ants, Cecropia trees, and tamandua. Also take a look at p. 43 and review jaguars. Explain to your child that a food chain shows the order of how living things depend on each other for food. In this "chain," the Cecropia plant is eaten by the Azteca ants, which are eaten by the tamandua, which are eaten by jaguars. On one paper, have your child draw the Cecropia plant to the best of their ability. On another sheet, have them draw Azteca ants. Then have your child draw a tamandua on the third and the jaguar on the fourth. Label (or have your child copy) the name of each animal on each page. Have your child line the papers up in order of the food chain and help them poke the paper clip through two sheets to "chain" them together. Connect the remaining drawings in order.



A Walk in the Rainforest



The Wondrous Workings of Planet Earth

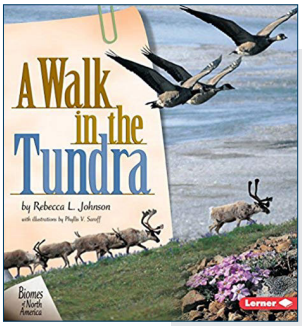
12x18-inch Construction Paper, one sheet each of green and red
Broomstick
Clear Tape
Empty Paper Towel Tube
Foil, 2 sheets, about 12-inches long each
Paper Clips
1/3 Cup of Rice
Journal
Colored Pencils
Construction Paper
Glue Stick
Pencil
Scissors
Tempera Paint (any color your child would like their rainstick to be)
White Printer Paper

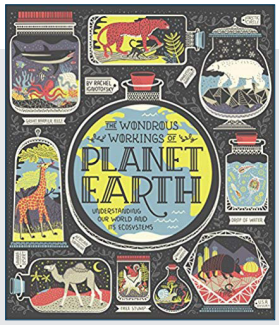
See Week 01 Shopping List

See Week 01 Shopping List

Tundra

The tundra is the focus of the week. It starts with learning about this unique biome's climate and plant life. The main focus will be on the Arctic Circle, but Antarctica is considered to be part of the tundra biome as well.





A Walk in the Rain Forest
by Rebecca L. Johnson, p. 5-25

The Wondrous Workings of Planet Earth
by Rachel Ingnotofsky, p. 83

Biome—A biome is a large area of Earth that has its own climate, plants, and animals.

Climate—Climate is a large area's weather patterns over a long period of time.

Tundra—Tundra is an area that is large, treeless, and often extremely cold.

Permafrost—Permafrost is the part of the ground in the tundra that is always frozen.

What is the climate like in the tundra?
Answer: The tundra is cold, dry, and harsh. (p. 10)

What are winter days and nights like in the tundra?
Answer: The winter days are short and the nights are very long. In the far North, the sun doesn't come up at all! (p. 11)

Why can't water be absorbed into the ground in the tundra?
Answer: Water can't be absorbed because of permafrost. (p. 16)

Why do tundra plants have shallow roots?

Answer: The roots are shallow because of permafrost. (p.18)

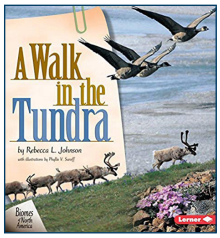
What do tundra plants have on them to keep them from drying out?

Answer: Tundra plants have tiny hairs covering the leaves and stems. (p. 21)

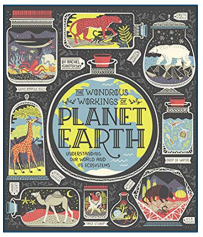
Arctic Tundra Map. For this journal activity you will need colored pencils, a globe, a glue stick, your child's journal, and the Arctic Tundra map at the end of this document. This week, you will "fly" to the top of Earth and take a bird's eye view of the Arctic Circle. Have your child find the Arctic Circle on the globe. On the Arctic Tundra map, have your child locate the areas they will be coloring: Greenland, Canada, Alaska, Europe, and Russia. Also have them locate the Arctic Ocean. Have them color in the land and water. Glue this into the journal.

Activity 01—Why Does the Tundra Stay Dark in the Winter? For this experiment you will need a globe tilted on its axis, a lamp without a lampshade, and a dark room. During the winter months, the northernmost parts of the tundra will remain dark 24 hours a day. This is called polar night and lasts about a month long. How does this happen? In a dark room, have your child place a lighted lamp (the "sun") in the middle of a table. Place the globe so that the North Pole is facing away from the "sun". Discuss with your child how the sun is unable to fully reach the North Pole because it is tilted away from the sun. Allow your child to spin the Earth and observe how day and night happen for the rest of the world. The options to extend this activity are endless! You can have your child move the globe around the table (the tilt always stays the same) and discuss seasons. Along with seasons, you can discuss how a full turn of Earth (one day) is a "rotation" and a full trip around the sun is a "revolution." You can talk about hemispheres, why seasons are opposite, etc. Allow your child to share their thoughts and questions and use that as a lesson extension.

Activity 02—Tundra Plant Protection. For this experiment, you need 5-8 pipe cleaners (any color), and something to hold the pipe cleaners up, like a fist-sized mound of clay or foam. Tundra plants grow low to the ground. This is partly because permafrost makes their roots grow shallow, and also because low height protects themselves from the harsh winds. Have your child bend the pipe cleaners into tree-like shapes, some taller than others. Then have them push about 1 inch of the pipe cleaner ends into the clay or foam to create the "roots." Now allow your child to blow on the "trees" as hard as they can. What do they notice? Which plants bend the most from the blowing? Which plants will be the safest against the strong winds?



A Walk in the Tundra



The Wondrous Workings of Planet Earth

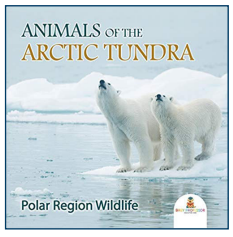
Clay or Foam, fist-size amount

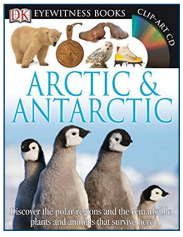
Globe

Arctic Tundra Map
Lamp, without lampshade
Pipe Cleaners

Journal
Colored Pencils
Glue Stick

Wild Republic Polar Nature Tube, Arctic Animals

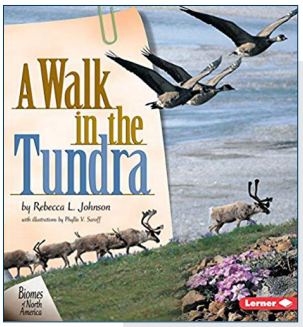




Tundra

Part 02

In the final week of this month, we will finish up learning about the tundra biome. The focus this week will be mainly on the animals and the protections they have to survive the harsh winters.



A Walk in the Tundra
by Rebecca L. Johnson, p. 26-45

Biome—A biome is a large area of Earth that has its own climate, plants, and animals.

Tundra—Tundra is an area that is large, treeless, and often extremely cold.

How does the fur of arctic animals change to protect them?
Answer: Some arctic animals have two coats of fur to keep them warm in the winter. Their fur can also change color to match the land. (p. 27)

Why are polar bears scary?
Answer: Polar bears are fast runners and will eat anything they catch! (p. 31)

How do caribou not sink into the ground?
Answer: They have very large hooves. (p. 34)

How are seeds scattered in the tundra?
Answer: Most seeds are scattered by the wind. (p. 40)

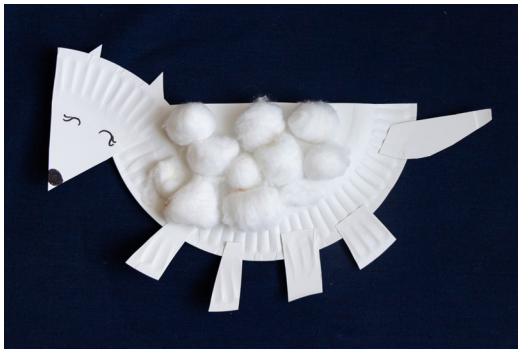
How do some animals protect themselves from the harsh winter in the tundra?

Answer: Some animals move south (birds, caribou). Some grow thicker fur and some animals sleep the entire winter. Others live in tunnels below ground and some brave the harsh winter. (p. 42-45)

Animals of the Arctic Tundra. For this week's journal activity, you will need the book, colored pencils, a glue stick, a piece of printer paper, your child's journal, and a pencil. Review the book with you child. Look at all of the animals. Ask your child, "Which animal is your favorite? Why? What facts are written in this book about your chosen animal?" After you discuss the animal, have your child draw the animal in their journal. Have your child write or copy the name of the animal on the page. As an optional extension, your child can write or copy a few facts about the animal on a piece of paper and then glue it into the journal. You can even use the books listed in the Recommended Books to do further research together.

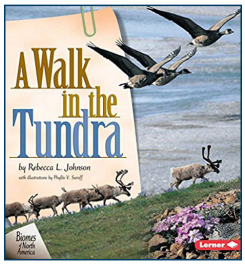
Activity 01—Polar Bear Paws. Polar bear paws can be up to 12-inches wide! To make these life-sized paws, you will need a 9x12-inch piece of white construction paper, a 9x12-inch piece of black construction paper, scissors, and glue. Have your child crumple up the white construction paper to make it look like fur. Next, have them carefully tear the edges of the paper off to make a large oval, then cut five 1-inch circles out of the black paper, and one larger circle, about 8-inches in diameter. Have your child glue the small black circles to one end of the white "paw" to make the toe pads, then glue the larger circle in the middle for the middle paw pad. Once it is all put together, discuss with your child the size of just one polar bear paw! Have your child place their foot up to the paw for comparison. Ask your child, "How big do you think the rest of the polar bear is?" Polar bears can be up to 10-feet tall when standing on their hind paws.

Activity 02—Arctic Fox. To make this fox, you need a white paper plate (about 8-inches in diameter) cut in half, then one half cut in half again; a piece of white printer paper; a Sharpie; scissors; at least ten cotton balls; and a glue stick. Have your child take the half paper plate piece and turn it so the straight edge is on top. Next, have them take one of the smaller paper plate pieces and turn it so the point is down, then glue it to the left-hand end of the half piece. The small paper plate piece is the fox's head, while the half paper plate is its body. Have your child cut the white



construction paper into four small rectangles for legs, a larger rectangle for a tail, and two smaller triangles for ears. Then have them glue all those pieces on. Using the Sharpie, have your child draw 2 black eyes and a nose on the head. To add the fur, have your child rub their glue stick all over the fox, then take the cotton balls and spread them out over the glue. If this is a fox in winter, children can add thicker cotton balls for the underfur and pull some pieces out to create the guard hair (p. 27 of the book). If this is a summer fox, children can color the "fur" grayish brown.

Activity 03—Camouflage Game. This game requires some prepwork ahead of time. You will need a small laundry basket or box the size of a small laundry basket, 2 white blankets/towels/sheets, and 10-12 small, light-colored items such as small toys, items around the house or classroom, etc. Put one unfolded white blanket/sheet/towel in a box or laundry basket so it is bunched up in some areas. Within its folds, place the light-colored items. Cover the top of the box or basket with another towel or blanket. When this is set up, invite your child over to the basket or box. Discuss why camouflage is important for prey animals. Explain that some animals even change color with the seasons. Then lift the covering and give your child 30 seconds to look at the contents of the box. Cover the box again and see how many items your child can remember. Which items were easiest to spot? Which were the most difficult?



A Walk in the Tundra

10-12 Small, Light-Colored Items (e.g. small toys or household/classroom items)
2 White Blankets, Towels, or Sheets
Small Laundry Basket or Box
Journal
Colored Pencils
Cotton Balls
Glue Stick
Pencil
Sharpie
White Paper Plate (about 8-inches in diameter)
White Printer Paper

See Week 03 Shopping List

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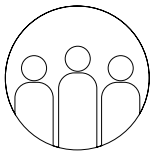

Activity 01—Blue Morpho Butterflies. For each child, you will need a white construction paper circle, approximately 8-inches in diameter; scissors; several shades of blue tissue paper cut into one-inch squares; and black tissue paper cut into 1-inch squares. For each group of 3-4 children, you will need a bowl, a sponge, and liquid glue. Pour the liquid glue over the sponge in the bowl. Open the book to page 19 and show the children the blue morpho butterfly. The circle they will be using for this project are about the same size as a real blue morpho butterfly. Show children how to cut a wide "v" out of the top of the circle, and a smaller upside down "v" at the bottom of the circle. Show children how to gently press pieces of blue tissue paper onto the glue-filled sponge, then cover the plate with them. Next, show children how to place black tissue paper on the border of the "wings" and down the middle to make a body. Children can add extra bits of black for unique designs.

Activity 02—Blubber. For each group of 3-4 children, you will need 1 cup of shortening, a large spoon, 2 sealable plastic bags (at least quart size), and a large bowl of ice. People often think of whales when they hear the word "blubber" but did you know that it is also found on other animals such as polar bears? Blubber is a thick layer of fat that keeps animals warm and stores energy, two important uses for polar bears living in the tundra. Tell your child the shortening will act as the "blubber" in this experiment and the plastic bags will be the "skin." Place the shortening in one plastic bag. Turn the other bag inside out and place it on top of the shortening inside the first bag. Seal the bags together, so the shortening stays inside the bags. Have your child place one hand in the "blubber" bag then place both hands into the bowl of ice. It will not take long for children to feel the difference! Discuss how the blubber can help polar bears (and other animals) survive in the tundra and other cold areas.

Expressions of Gratitude

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References

Sciencing.com

Britannica Kids

National Geographic Society

Scholastic

The Teacher Bag